

Guidance Sheet on the Management, Restoration, and Creation of

Lakes, Ponds, and Temporary Water Habitat

This good practice sheet is intended as a basic guide for landowners and land managers to conserve and enhance the biodiversity value of Lakes, Ponds, and Temporary Water Habitats and help secure their long-term future. This guidance sheet combines advice on Mesotrophic Lakes, as well as Ponds and Temporary Water Habitat. Both habitats have been identified as priority habitats in both the UK Biodiversity Action Plan and Local Biodiversity Action Plan for Blaenau Gwent as they have suffered serious declines both nationally and locally

Biodiversity quite simply means 'all living things'. It is the rich variety of wild plants and animals around us together with the habitats that support them.

Local Biodiversity Action Plan Priority Species associated with this Habitat include:

Barbastelle Bat	Great crested newt
Otter	Palmate newt
Pipistrelle Bat	Beautiful demoiselle dragonfly
Water Vole	Brown hawker dragonfly
Reed Bunting	Red-eyed damselfly
Roach	Scarce blue-tailed damselfly
Common frog	Variable damselfly
Common toad	Bogbean



Water vole

Habitat Description

Lakes are defined as natural permanent water bodies of 1ha or more. Reservoirs are also permanent bodies of water, but have been constructed artificially. Ponds are small water bodies, both natural and man-made. Most ponds are temporary features of the countryside, undergoing succession to dry land, although some are ancient, permanent habitats.

Ponds can range from as little as 1m diameter, to as large as 2ha, and support a wide range of habitat types, including small flooded mine workings and peaty upland pools. They are important wildlife habitats for a wide variety of wetland plants and animals, many of which are absent or uncommon in rivers and lakes. Over the last Century, there has been a decrease in ponds due to succession, deliberate infilling, land drainage, and degradation by pollution. The small size of ponds often make them vulnerable to damage.

Water-bodies can be mesotrophic, eutrophic, or oligotrophic. Mesotrophic means 'middle nourished' and applies to water containing a medium level of dissolved nutrients. Eutrophic waters have high levels of nutrients and oligotrophic have low concentrations of nutrients. Of all the water types, mesotrophic waters are capable of sustaining the highest diversity of flora and fauna, but are particularly sensitive to disturbance from activities that increase the level of nutrients.

Factors Affecting Habitat

- Infilling as a result of agriculture and urbanisation
- Lowering of water levels caused by over abstraction of surface or ground water, or by drainage.
- Eutrophication (high nutrient levels) caused primarily by nitrates or phosphates in sewage or fertiliser run-off. Toxic blue-green algal blooms are the primary symptom of eutrophication.
- Pollution (including mine water seepage and historical dumping). Signs of pollution include oil films, scum, or an unpleasant smell.
- Inappropriate management or neglect.
- Changes in the surrounding land-use that alters the water table and results in soil erosion adding nutrients and reducing water clarity. One example is ploughing of adjacent and surrounding habitats.



Blue-green algal blooms - A clear sign of nutrient enrichment

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Good Practice

Protect and retain any lakes, ponds, and/or temporary habitat on your land by:

- Prevent pollution run-off from farmland, roads, and urban areas that can cause excessive nutrient input (eutrophication). In cases where pollution is very bad, and a pond is almost lifeless, it may be better to allow the pond to develop into marsh vegetation, and dig a new lake or pond in an area with a cleaner water supply.
- If your water body is polluted from an outside source, you should try to find out where it is coming from. If it is fed by a stream, you should consult the Environment Agency for advice.
- Avoid using fertilisers, manures, and pesticides close to the area of standing water. Establish a buffer zone of unfertilised and unsprayed land between the lake/pond and its surroundings. This may consist of tall vegetation such as rank grassland, hedges and scrub. The wider the buffer zone, the better. On agricultural land, a strip of between 10-20m wide is usually acceptable.
- Encourage a varied mosaic of marginal and aquatic plants together with some areas of open water that will benefit newts and wildfowl. Try not to have more than about a third of open water. A good target to aim for is about 5% of the lake/pond area supporting marginal plants, 10-25% supporting water plants with leaves floating at or near the surface, and 25-50% supporting submerged water weeds.
- Prevent loss and damage to marginal and bankside vegetation by grazing stock, canadian geese, and human trampling, by fencing off banks where appropriate, providing some areas are left for stock to drink from. Fences should be sited up to 10m back from the crest of the bank. Remember, fences within the floodplain will require land drainage consent from the Environment Agency.



Pond with good marginal vegetation cover



New farm pond created and fenced off to protect vegetation being grazed by livestock

- Moderate amounts of filamentous algae and duckweed should not cause concern. However, algal blooms and excessive and persistent growth is a sign that the pond is heavily polluted with nutrients. Regular removal of these plants may help to reduce nutrients.
- Areas of native trees and shrubs around the pond will complement the aquatic habitat. However, densely shaded water bodies may benefit from selective tree removal. This would increase habitat diversity by creating glade areas, and reduce litter and sediment build up. Trees should be removed from the southern side, but planted and retained on the northern side as long as they are sited well away from the pond. Some trees have Tree Preservation Orders (TPOs) so check with Blaenau Gwent County Borough Council first.
- Avoid introducing non native plants such as canadian pondweed (*Elodea canadensis*), water fern (*Azolla filiculoides*), and swamp stonecrop (*Crassula helmsii*) as these can quickly take over water bodies and exclude native species. If invasive, treat with a suitable herbicide. Environment Agency approval will be required.
- Water levels naturally rise in winter and fall in summer and some ponds may dry up altogether. A drop in water levels of up to half a metre is common and desirable. Many water plants such as water mint, thrive when water levels drop a little. Areas of bare shore is also used by many types of insects. So allowing water levels to fluctuate through the seasons benefits both marginal plants and animals.
- The best time to undertake any dredging or vegetation removal works to minimise damage is probably autumn avoiding the main bird and amphibian breeding period (March to July). Dredging should not be carried out in the winter as frogs and other animals will be hibernating in the mud. Removing vegetation by hand is preferable in small ponds. Only clear part of the water body at a time, preferably no more than a quarter in any year, and do not completely remove any habitat type. Several years should lapse before dredging again.
- Lakes/ponds heavily stocked with fish often suffer with algal bloom and have few other animals and plants. Therefore, do not introduce fish to previously fish-less water bodies, and try to reduce fish numbers in over stocked water bodies.



Removing vegetation by hand

Create New Lakes, Ponds and Temporary Water Habitat by:

- Carefully site your lake/pond making sure that it will not destroy something that is already good for wildlife such as an old wildflower meadow. Try and site the lake/pond in a sunny, sheltered spot, avoid shade and overhanging trees as rotting leaves will reduce the amount of oxygen in the pond



New pond on farmland

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- Maximise the area of shallow water (less than 0.4m deep) around the pond edge by incorporating a shallow gradient, wavy edge, and extend the margin to include bays and spits. Shallow water will encourage a range of wildlife including marginal and aquatic vegetation and invertebrates.
- A maximum water depth of 1m is normally sufficient for small ponds, and a maximum water depth of 1.5 to 2m for larger water bodies.
- If required, lake/pond design can incorporate features to encourage particular plant or animal groups such as dragonflies or amphibians. Dragonflies usually breed in shallow, sheltered ponds protected from prevailing winds with a surface area of 12 square metres or over, and water depth of about 60cms. Amphibians like large ponds of about 60cm in depth with plenty of shallows (10cms or less) that will warm up quickly in the sun. For great crested newts, the surface areas of lakes/ponds should be over 25 square metres and at least 1m in depth at the deepest point.



Ideal ponds for great crested newts

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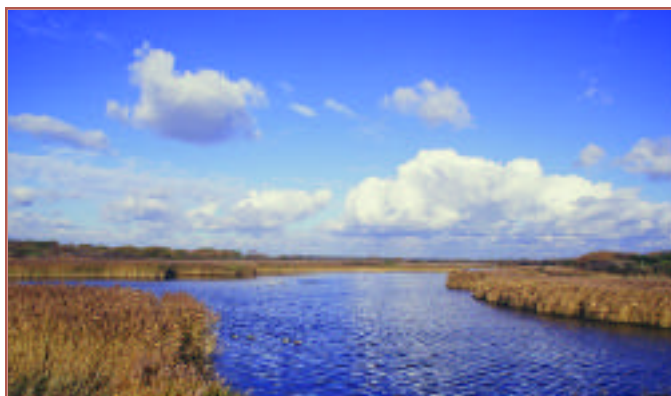
- If designing for dragonflies and amphibians, do not stock with fish. The fish will eat dragonfly larvae, and frog and newt tadpoles. Even sticklebacks can wipe out newts in a new water body.
- On larger lakes/ponds, provide islands as wildlife refuges. Islands should have an extended shoreline with shelter from prevailing winds and be low lying with gentle banks to allow easier access by waterfowl. Bare islands are best for attracting wading birds, and vegetated islands to attract wildfowl.



Ponds designed for waders & wildfowl with bare islands

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- Look for opportunities to create areas of reedbed, particularly, in damp areas on larger water bodies. Establishment of common reed can be achieved by sowing seed from a local reedbed source or planting pot grown plants, rhizomes, or stem cuttings. Coil matting containing reed can also be purchased from reputable suppliers. This should be carried out in April/May. Grazing by stock may need to be controlled during the early stages of establishment by fencing.



Lake with large areas of reedbed

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- If possible, try and construct several lakes/ponds together, varying size and depth. Also, make some permanent (water all year around) and some temporary (dry up during the summer months).
- Stream-fed lakes/ponds should include a sediment trap to prevent them sitting up. Stream-fed lakes/ponds will require consent from the Environment Agency.
- Maximise the amount of semi-natural habitat around the pond. Areas of scrub, tall herbs, rough grassland and wildflower meadow will provide habitat for animals (e.g. amphibians) using the pond, as well as a buffer zone to help protect the pond from high nutrient inputs. Buffer zones should be at least 20m in width.
- It is preferable to allow the natural colonisation of Lakes, Ponds, and Temporary Water Habitat. However, if desired, the process can be accelerated by selective introductions. Only introduce plant species which are native and local to the area (e.g from local pond sites) and appropriate to the size of the water body.

Please note, the recommendations contained within this sheet are for guidance purposes only. Due to the complexity of individual sites and the interactions occurring within them, it is advisable to seek specialist advice with relevant organisations from the early stages. This sheet can also be downloaded from the Blaenau Gwent Biodiversity Partnership website called 'The Web of Life'. This can be accessed through www.blaenau-gwent.gov.uk.

Do not carry out any of the following operations without first seeking further advice:

- Carry out any infilling, engineering, and de-silting works.
- Carry out any water abstraction, install any new drainage, or reduce existing water levels.
- Carry out any method of bank stabilisation or protection.
- Apply herbicides or pesticides within 10m of Lakes, Ponds, and Temporary Water Habitat, unless spot treating notifiable weeds. Environment Agency approval will be required on herbicide use on or close to water-bodies.
- Apply any inorganic or organic fertiliser such as farmyard manure, slurry, sewage sludge, chicken manure or fishmeal within 10m of any Lakes, Ponds and Temporary Water Habitat.
- Introductions of fish, particularly, bottom-feeding fish such as carp can lead to high levels of algal bloom.
- Changes in surrounding land-use that alters the water table and results in soil erosion that adds nutrients and reduces water clarity. One example is ploughing of adjacent grassland and surrounding habitats.

Species List for Lakes and Ponds

The following plant species are common and widespread throughout Blaenau Gwent and can be transplanted to new lakes and ponds.

* Too invasive for small ponds

Dryland/ bank plants	Wetland/ edge plants	Water Plants	
		Marginal Plants	Submerged and floating plants
Hemp agrimony	Angelica Gypsywort Marsh marigold Meadowsweet Purple looestrife Ragged robin Water figwort Water forget-me-not	Amphibious bistort Branched bur-reed* Common water-plantain Flowering rush Reed canary grass* Reed sweet-grass* Water mint* Yellow flag iris	Broad-leaved pondweed* Common hornwort Common water starwort Spiked water-milfoil
Please note this is only a rough guide, not a complete list.			

Further Advice



Blaenau Gwent Biodiversity Partnership
Provides advice on the restoration of priority habitats and species within the County Borough.
Tel. 01495 355702



Blaenau Gwent County Borough Council
Administers the Biodiversity Action Grant Scheme that offers landowners and community groups small grants up to £2k for biodiversity projects.
Tel. 01495 356070



Countryside Council for Wales (CCW)
Administers the Tir Gofal Agri-Environment Scheme where grants are available for a wide range of habitat management work on farms.
Tel. 02920 772400



Environment Agency Wales
Administers herbicide consents near watercourses **Tel. 08708 506506** and runs the Pollution Hotline **Tel. 0800 807060**