Management of wetlands for wildlife

Technical Note

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- Wetlands are a large and varied set of habitats that are water covered for a significant part of the year.
- Wetlands provide habitat, cover and a feeding area for invertebrates, birds, mammals, amphibians and many specialised plants.
- Management of wetlands will often be for a range of objectives. Prioritisation of these objectives will help to minimise potential conflicts.

Wetland with high water table

- When managing for botanical interest the needs of both individual species and communities must be considered. Vegetation structure and composition is important for invertebrates and birds and is strongly influenced by management.
- Birds on wetlands can be separated into waders and wildfowl. Wildfowl require winter flooding to provide feeding opportunities, whereas waders are dependent on the water table during the breeding season.
- Wetlands support a range of invertebrates. It is difficult to be specific about their requirements because of their huge variety, however there are two main factors, vegetation structure and long historical continuity of management which are important considerations.

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Wetlands include, by any definition of the term, a large and varied set of habitats. Here it means sites that are waterlogged or water covered for a significant part of the year: swamps, marshes, bogs, fens, and wet grassland. These categories often overlap. Marshes may flood becoming ponds. Fens may contain open pools, loch shores may be swamp fringed. In the same way wetlands grade into damp scrub, heath or moorland.

Wetlands are a threatened part of our natural environment. Centuries of draining have ensured the destruction of many of our wetlands. Declining area and quality of wetlands in recent times has had serious consequences for wildlife. Remaining areas of wetland habitat are increasingly small and isolated and their decline continues.

Wetlands are important for a whole range of wildlife. They provide:

- Habitat for invertebrates such as dragonflies, midges, butterflies and moths. All in turn providing a food source for other wildlife.
- Cover and feeding areas for birds such as snipe, water rail and corncrakes. Also important nesting and feeding areas for waders such as curlew, lapwing and redshank.

Dragonflies on wetland

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- Cover for mammals such as otter.
- Habitat for amphibians such as frogs and toads.
- Habitat for many specialist plant species e.g. ragged robin, marsh marigold, butterfly orchid and flag iris.

Different types of wetland require different management. There is a basic distinction between those wetlands which are almost invariably harmed by human interference, whatever its intention, and those which may either be harmed or may be maintained or improved through interference. The first category includes acid bogs and inundated swamps, which are biologically very fragile. For them the best management is usually strict protection and non-interference. The second category is the main focus of this paper. However every wetland is different, so if specific advice is required on the maintenance or improvement of a wetland for wildlife it is recommended that this is obtained from an SAC or SNH adviser.

Wetland managed for vegetation

In the management of most wetlands there will be a range of objectives both from the stand point of nature conservation and agriculture. Prioritisation of these objectives will help to minimise potential conflicts. Wetlands can be managed for specific objectives such as breeding waders, invertebrates or plant communities. This will depend on the type of wetland and the wildlife that it already supports. For example if your wetland has or had, in the recent past, many waders it would be sensible to manage for breeding waders. If however it supports interesting or uncommon plant communities then look at this as the objective. If you have any doubt on the quality or importance of your wetland contact your SAC or SNH adviser before you embark on any drastic change of management.

Management for plant communities

The needs of both individual species and communities must be considered when managing for botanical interest. Vegetation structure and composition is important for invertebrates and birds and is strongly influenced by management.

Most wetland communities are associated with low soil-nutrient availability. There is clear evidence to indicate that even very low levels of inorganic fertiliser can damage botanical interest, which persist for many years.

- **Do not spray fertilisers, slurry or farmyard manure near wetlands and avoid spraying where run off can enter a wetland.**
- **Do not allow run off from silage or manure to enter the wetland.**
- **Do not bury dead stock in a wetland or where the remains can leach into the wetland.**

The composition of plant communities may also be radically altered by minor shifts in the water regime. Some species are able to survive in situations with a high water table whereas other species must have a lower water table at certain times of year. Soil wetness can have an influence on the competitive balance between species. The timing of variations in the availability of both water and oxygen in the root zone with regard to key life stages is the critical factor.

- **Do not alter the water table of a wetland by drainage.**
- **Do not divert more water into a wetland without consulting an adviser.**

Vegetation management such as mowing or grazing is important for conserving wetland communities. Traditional management techniques such as hay making can create exceptionally diverse swards. Careful consideration should be given before altering a management regime where a long-term tradition of management is established.

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Grazing is important because it:

- **Removes plant material containing nutrients.**
- **Prevents succession to coarser grassland types or scrub.**
- **Favours less competitive species allowing slower growing species to survive.**

Generally management of grazing for species diversity on a wetland would be to stop grazing for 3 to 4 months in the summer to allow species to flower and set seed and to reintroduce grazing for at least a short period of time in the autumn or winter.

Redshank at nest

Management for birds

Birds on wetlands can be separated into waders and wildfowl. There are seven wader species that use wetlands for breeding; lapwing, snipe, curlew, ruff (rare), redshank, oystercatcher and black tailed godwit (rare). Wildfowl include swans, geese and ducks.

Wildfowl require winter flooding which provides feeding opportunities and secure roost sites. Deep permanent flooding is of little use to surface feeders and geese who much prefer large shallow winter floods. Low human disturbance is also of importance, in particular wildfowling, which will cause serious disturbance up to 400m from the disturbance site.

- **Provide a mosaic of flooded and unflooded grassland to attract a diverse population.**
- **Do not use the site for shooting.**
- **Allow shallow winter flooding.**

The single most important factor for breeding waders is the water table during the breeding season. A high water table in the spring ensures that most of the invertebrate prey remains close to the surface. Also important is the vegetation structure but preferred structure varies between species (see Table 1). The presence of mature trees will attract predators such as crows that can seriously reduce the breeding productivity of waders.

- **Do not put drains into land used by waders.**
- **Do not plant hedges or trees in close proximity to breeding areas.**
- **Minimise trampling during the breeding season.**

Table 1: Individual wader preferences.

	Curlew	Snipe	Redshank	Lapwing
Length of vegetation	Long with tussocks	Tall vegetation for concealment	Short swards with taller areas for nesting	Very short swards, often nests on arable areas returning to grassland to feed
Water table	Least dependent on wet conditions	Requires soft damp soil	Requires shallow surface water for feeding	Requires damp grassland

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Management for invertebrates

Wetlands support a wide range of invertebrates including ground beetles, snails, butterflies and moths and the adult forms of dragonflies and caddisflies. Most invertebrates are dependent on vegetation structure and are not associated with single plant species. Butterflies and moths however, normally associated with a single plant species, have specific needs (See Table 2).

The second important factor is **long historical continuity of management**. Many invertebrates are highly specialised with very precise habitat requirements. This means they can be sensitive indicators of environmental change. It also means they can be lost from a site through small changes in management of their habitat.

- **Create a varied vegetation structure with around quarter of the area to be tussocky.**
- **Invertebrates do not like change, long term management is important.**

Table 2: Specific requirements of wetland butterflies.

Species	Habitat	Main foodplant	Growth form of foodplant	Management	Status
Orange tip	Damp meadows, drainage channels and edges	Cuckoo flower	Large flowering plants in sheltered conditions	Heavy grazing or mowing in winter or spring. No disturbance May - August	Common throughout UK
Marsh fritillary	Damp and wet meadows	Devil's bit scabious	Medium sized plants in warm sheltered sward	Light grazing preferably by cattle. Sward length 5cm approx	Nationally scarce

It is difficult to be specific about the requirements of invertebrates because of their huge variety, however there are two main factors.

Vegetation structure (i.e. sward height, tussockiness) and composition (species present) influence the number and range of invertebrates present. Many insects require a mixture of sward heights in close proximity to the range of conditions needed during different life cycle stages. The tussockiness of a sward is a good indication of its value to invertebrates.

Further general information

BTCV (1976) Waterways and wetlands: a practical handbook.

RSPB (1997) The wet grassland guide.

Peter Kirby (1992) Habitat management for invertebrates.

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