



BLAGDON LAKE

Biodiversity Action Plan

2008



1 INTRODUCTION

This report is the third document to deal with nature conservation management at Blagdon Lake, following a Conservation Strategy prepared in 1987 and a Biodiversity Action Plan prepared in 1998.

The production of these plans is a reflection of the lake's designation as a Site of Special Scientific Interest (SSSI), and of Bristol Water's statutory obligation to further the aims of nature conservation. This obligation was first laid out in Section 3 of the 1991 Water Industry Act, which states that "*A water company must exercise any proposals relating to any functions of the company so as to further the conservation and enhancement of natural beauty and the conservation and enhancement of natural beauty and the conservation of flora, fauna and geological or physiographical features of special interest*". The 2006 Natural Environment and Rural Conservation Act re-iterated these obligations. Bristol Water plc reflect this obligation in their Environment Policy, which includes: "[We] recognise our general duty to care for the environment...Pledge ourselves to the management of our reservoirs and land in ways which achieve positive gains both for wildlife and people." These policies are reflected in a specific commitment: "*On the land and reservoirs we own, to maintain and improve habitats for wildlife, so as to further the conservation of the natural environment and to preserve biodiversity.*"

This Biodiversity Action Plan contains: a brief description of the lake; a summary of features of prime biodiversity value; and biodiversity action plans for key habitats. Each habitat plan includes a list of important species, management rationale, a review of the progress made in reaching targets in the 1998 plan and a list of new targets and management proposals.

2 DESCRIPTION

2.1 Location

Blagdon Lake is situated approximately 15 miles to the south-west of Bristol, within the unitary authorities of North Somerset and Bath and North-east Somerset. The central grid reference of the lake is ST 515 596.

2.2 History

Blagdon Lake was created as a drinking water reservoir by damming the River Yeo and flooding farmland. Its construction was completed in 1904.

2.3 Ownership

The freehold of Blagdon Lake, together with the surrounding land with which this plan is concerned, is owned by Bristol Water plc.

2.4 Land Use

The primary land-use is as a drinking water supply. The lake is also used for recreation. There is a large trout game fishery, two bird hides, footpaths and a lakeside meadow open to the public. Land around the lake is managed in order to maintain the nature conservation and landscape value of the area.

There have been no significant changes in land use since 1998.

2.5 Biological Interest

Blagdon Lake has significant examples of two UK Biodiversity Action Plan priority habitats: Eutrophic Standing Water and Lowland Meadows, and less significant examples of a further two habitats: Hedgerows and Lowland Mixed Deciduous Woodlands. Many Biodiversity Action Plan Priority Species, listed at Appendices 1 and 2, are associated with these habitats. The lake supports nationally important populations of little grebe, shoveler, gadwall and coot, with the numbers of shoveler sometimes exceeding the threshold for international importance. In addition, great crested grebe numbers sometimes reach the threshold for national importance, and numbers of several other species are regionally important.

2.6 Nature Conservation Designations

Blagdon Lake, including much of the surrounding land considered here, has been designated a Site of Special Scientific Interest (SSSI). It is also a Site of Nature Conservation Interest (SNCI).

2.7 Management for Nature Conservation

Management for nature conservation has been carried out by Bristol Water plc since the early 1980s. Capital items have included creation of pools on the foreshore at the Ubley end and works to plantations. Ongoing management, especially hay-cutting of grasslands, is carried out on a year-to-year basis.

Management of the site has always been informed by the large amounts of data, particularly bird counts, gathered by amateur naturalists and this effort continues to produce important information. Since the 1998 Biodiversity Plan was produced this has been supplemented by professionally produced reports. In particular, invertebrate surveys were carried out in 2004 and the results of waterbird counts were summarised and analysed in reports produced in 2001 and 2007.

2 BIODIVERSITY AUDIT

2.1 Introduction

The purpose of this section is to identify the wildlife features for which Blagdon Lake is of importance in a national and regional context and to focus on the contribution which management here can make to national and local biodiversity policies. Priority species and habitats are described under the Key Species and Key Habitats sections. A Trends section identifies changes in the lake's biodiversity interest that have occurred since the 1998 BAP was produced. There then follows a Conclusions section which briefly assesses the wildlife value of the lake and identifies priorities for nature conservation management.

Lists of priority species are published by the UK Biodiversity Partnership and have recently been revised. Both the North Somerset BAP and Bath and North-east Somerset BAP include lists of priority species, although the lists in the latter are far more comprehensive. Some species are included in these lists because they have experienced substantial population declines in recent decades, although they may remain widespread and common. Whilst management for these species is of importance, the contribution that an individual site such as Blagdon Lake makes to the conservation of most of these species is limited, and this has been reflected in the setting of management priorities. Species that are not included in BAP lists have been considered in setting management priorities where the populations at Blagdon Lake are of value in a wider context.

2.2 Key Species

A list of species occurring at Blagdon Lake and identified in the national BAP is included as Appendix 1 and in the Bath and North-east Somerset BAP at Appendix 2. For the sake of completeness these include species that have been recorded at the lake as vagrants. The lake is not of conservation significance for these species and they are not considered in this section.

2.2.1 Birds

There is a large volume of data describing the lake's bird populations. These data are summarised in the 2000 and 2007 reports on the lake's bird populations. Assessment of significance for birds is assisted by a recognised system for describing international and national importance. A site supporting in excess of 1% of a defined population (usually the north-eastern Atlantic population) is

considered to be of international importance, whilst a site supporting in excess of 1% of the national population is considered to be of national importance.

Nationally Important Species

The lake is of national importance for little grebe, gadwall, shoveler and coot. The threshold for national importance is exceeded in some years by great crested grebe.

Little grebe feed on fish and invertebrates and the population at the lake peaks in the late summer to early autumn, slightly earlier than that at Chew Valley Lake, and birds may move from one site to the other. There has been an upward trend in little grebe numbers at Blagdon, and several record counts have been made successively in the period under review. The lake is the seventh most important nationally for little grebe. Small numbers of little grebe breed around the lake.

Gadwall numbers at the lake peak in June or July, when a moulting flock of non-breeding birds forms, typically peaking at around 300. Numbers of gadwall at Blagdon have risen steadily, and sometimes now exceed those at Chew.

Coot numbers have also risen, to reach a peak of over 3,000 in August 2005 whilst historically peak counts were in the region of 1,000.

Locally Important Species

In a more local context, Blagdon is second only to Chew Valley Lake as the most important site in the Bristol area for many wildfowl species, including mallard, pintail, garganey, goldeneye and goosander.

UK BAP Species

Thirteen bird species listed as priorities for conservation in the UK BAP occur regularly at Blagdon Lake (see Appendix 1). The populations of most of these species, such as bullfinch and song thrush, at the lake are insignificant in comparison with the populations in the wider area. Species on the UK BAP list for which the lake is of particular interest are cuckoo and reed bunting.

Local BAP Species

The North Somerset BAP does not list any bird species as priority species.

Twenty nine bird species listed as priorities in the B&NES BAP occur regularly at the lake (see Appendix 2). Blagdon is amongst the most important site in B&NES for fourteen of these species. Notable species, in addition to those described above, include tufted duck, pochard, teal, wigeon, Bewick's swan, golden plover, lapwing and barn owl.

Numbers of tufted duck, pochard and teal are second in B&NES only to those occurring at Chew. They are all most numerous in the late summer, autumn and early winter and favour the Top End of the lake. Wigeon are more numerous than at Chew, although they are less abundant than formerly, and Bewick's swans visit Blagdon more frequently than Chew. Golden plover and lapwing were formerly more numerous at Chew, but now favour Blagdon in years when water levels drop. A pair of barn owls has bred at Blagdon for many years.

2.2.2 Mammals

UK BAP Species

Eight species of mammal included in the UK BAP list of priority species are known to visit the lake.

Hedgehog, included in the BAP list because of declining populations, occurs in unknown numbers – droppings are occasionally seen, as are road casualties.

Otter was previously extinct at the lake, but both actual animals and signs are now seen occasionally. Sightings have included an adult with young, indicating that breeding has taken place at or close to the lake.

Five species of bat on the list, brown long-eared, noctule, soprano pipistrelle, lesser horseshoe and greater horseshoe, forage over the site. Soprano pipistrelle breeds at the lake.

Brown hare is not resident at the lake but occasional individuals are seen.

B&NES BAP Species

Nine species of mammal listed in the B&NES BAP occur at Blagdon: otter, harvest mouse, daubenton's bat, water shrew, noctule bat, common pipistrelle, soprano pipistrelle, brown long-eared bat and pygmy shrew.

The bat species are known to forage over the site and some may breed. Water shrew and pygmy shrew have both been recorded on a small number of occasions, and their true status at the lake is unknown. The Blagdon population of pygmy shrew is unlikely to be of significance in the wider context of B&NES, but that of water shrew may be.

2.2.3 Herptiles

UK BAP Species

One species of amphibian on the national BAP list, common toad, and two species of reptile, grass snake and common lizard, have been recorded at Blagdon.

Toads are seen around the lake and breed in ditches, and possibly in the lake itself. Grass snakes are occasionally seen around the lake. Common lizard has been seen on hedgebanks and ditch sides, but its exact status is unknown.

B&NES BAP Species

Common toad, common frog and grass snake are listed in the B&NES BAP. The status of common frog at the lake is similar to that of common toad.

2.2.4 Fish

UK BAP Species

There is a small natural population of common eel at the lake, which has been supplemented by introductions.

2.2.5 Invertebrates

Invertebrates are less well recorded than the other groups considered here. There are reasonably complete records of butterflies, Odonata (dragonflies and damselflies) and Orthoptera (grasshoppers and related insects). Records of other groups are almost entirely based on a survey carried out in the summer of 2004 and should be regarded as indicative of the lake's potential value only. By comparison with similar surveys the surveyor concluded that some of the grasslands at Blagdon Lake are of high value for rare and scarce invertebrates. Of the areas surveyed, grasslands on the eastern side of Butcombe Bay, along the northern shore of the lake to the east of here and in the south-eastern corner of the lake proved the most valuable.

Nationally Rare Species

Three Red Data Book Species were found in the course of the 2004 survey, one beetle and two flies. The beetle (*Oulema erichsoni*), is the rarest species, now known in the UK only from northern Somerset. It is associated with grasses on ditch edges. The flies are: *Oxya nebulosa*, which is associated with ox-eye daisy in grassland; and *Exorista tubulosa*, a parasitic species associated with species-rich grassland.

A further twelve nationally scarce species were recorded: two moths; five beetles; one bee; and four flies. Seven of these species are associated with species-rich grassland and five with marginal vegetation.

UK BAP Species

One species of bumblebee, red-tailed carder bee (*Bombus ruderarius*), included in the national BAP has been recorded around Butcombe Bay. It requires large expanses of species-rich grassland with tussocks of grass.

Three species of butterfly listed in the national BAP have been recorded at Blagdon Lake. Small heath occurs in small numbers in grassland around the lake. Wall and marsh fritillary have not been recorded recently.

Thirteen species of moth listed in the national BAP have been recorded at the lake. Most of these species are widespread and are listed because the available evidence suggests that they are much less abundant than they were formerly. For most of these moths, the Blagdon populations are probably of little significance in any wider context. However, the record of narrow-bordered bee hawkmoth is exceptional. This species is much declined and this is the only record locally. Its larvae feed on devil's-bit scabious. Shoulder-striped wainscot is associated with wetland vegetation and its population at Blagdon may be of some significance.

B&NES BAP Species

One Odonatan on the B&NES BAP list has been recorded at Blagdon. Red-eyed damselfly is associated with floating vegetation. Its population here appears to have declined.

One Orthopteran on the B&NES BAP list has been recorded at Blagdon. However, long-winged conehead has become much more widespread nationally and is not currently of conservation concern.

Two bumblebees on the B&NES BAP list have been recorded at Blagdon. One of these is red-tailed carder bee, described above. The other is small garden bumble-bee (*Bombus hortorum*), which inhabits a variety of habitats. The overall diversity of bumblebees at the lake is exceptional.

2.2.6 Plants

Nationally Important Species

The Red Data Book starry stonewort (*Nitellopsis obtusa*) was recorded by Environment Agency surveyors in 2003, although the record has not been confirmed. This alga has been recorded from a very small number of sites nationally.

Locally Scarce Species

Blagdon supports a total of 75 plant species that are defined in the Flora of the Bristol Region as Avon Notable Species. Of particular note are: large populations of unimproved grassland indicator species such as dyers greenweed, saw-wort,

and green winged orchid; large populations of species of wetland margins such as sea club-rush, nodding bur-marigold, slender tufted-sedge and flowering rush; and large populations of water plants such as the various pondweeds and water-crowfoots.

BAP Species

Starry stonewort is a UK BAP priority species.

No other UK BAP plant species, which are defined on the basis of extreme rarity rather than population decline as in most animal groups, have been recorded at Blagdon but twenty species listed in the B&NES BAP are present. Five are primarily associated with wetland margins, seven with grassland, six with open water, one with woodlands and one with hedges. The lake is of particular significance in a B&NES context for 16 of these species, with particularly important populations of sea club-rush, brown sedge, slender tufted-sedge, flowering-rush and perfoliate pondweed. For many water plants the populations at Blagdon and Chew Valley Lakes are the largest, or only, in the district.

2.3 Key Habitats

This section describes the main habitat types represented at Blagdon Lake, and evaluates their biodiversity value.

2.3.1 Open Water

The open water at the lake is an example of Eutrophic Standing Water, a UK BAP priority habitat. It is a prime part of the lake's biodiversity interest and supports many of its most important plant and animal populations.

Growth of macrophyte vegetation varies from year to year, but populations of water plants are both more diverse and larger than at Chew. The make-up of the vegetation varies across the lake, with dense growth of narrow-leaved species such as small pondweed at the Top End and beds of broader-leaved species such as perfoliate pondweed off Butcombe Bay. Shallow water around the lake's margins has large populations of as marestalk, amphibious bistort and water crowfoots.

The open water is the key habitat for many of the species of bird for which the site is of importance. Large populations of coot, gadwall, shoveler and pochard feed on water plants, whilst species such as tufted duck feed on insects.

Fish in the lake, as well as large introduced populations of brown and rainbow trout, include several coarse species and a small population of common eel as well as a large introduced population of trout. Otter have recently returned to the lake to feed on the fish.

A habitat associated with the open water is the bare mud exposed in years when the water level drops. This mud supports a wide diversity of plants, including species frequent on bare soils such as fat-hen and scentless mayweed, as well as specialist wetland plants such as water mint, marsh cudweed, trifid bur-marigold and water chickweed. Shoreweed grows on more rocky stretches of shoreline at its only site in the Bristol region. When mud is exposed it attracts large numbers of birds. At such times numbers of wildfowl are high and wading birds are present.

2.3.2 Margins

This heading covers a variety of vegetation types. Most of this vegetation does not fall under a BAP habitat type heading, but it should be considered an integral part of the Eutrophic Standing Water element of the lake. It supports some of the most notable species found at the lake. Reedbeds, which dominate marginal vegetation at Chew, are largely lacking at Blagdon.

The marginal vegetation at Blagdon is exceptionally diverse, and includes substantial stands of several sedge species, including the locally rare slender tufted-sedge, flowering rush, bulrush, sea club-rush and mixed tall herb vegetation. The plant species growing here are notable in the context of the Bristol region, and include large populations of otherwise uncommon species such as water chickweed, round-fruited rush, marsh cudweed and meadow-rue.

This habitat is important for breeding species such as sedge warbler and great crested grebe. When inundated it is used by species such as snipe, shoveler and teal.

Five of the nationally scarce invertebrate species recorded at the lake are associated with this habitat. Locally uncommon insects recorded in this habitat type include double-lobed moth, fleabane tortoise-beetle, slender groundhopper and the sawfly *Eutomostethus gagathinus*. Further survey would doubtless reveal additional rare species.

2.3.3 Grasslands

The grasslands around Blagdon Lake include several exceptionally rich examples of a UK BAP Priority Habitat Type, Lowland Meadows.

The frequent grass species are largely those typical of grasslands on neutral soils, such as crested dog's-tail, meadow fescue and Yorkshire fog, with large quantities of glaucous sedge and other sedge species in damper areas. The grasslands around Butcombe Bay are drier, with a more marked calcareous influence, and upright brome and downy oat-grass are frequent here. The grasslands are outstandingly herb-rich and there are large populations of many species that have become scarce as a result of agricultural intensification,

including dyer's greenweed, saw-wort, devil's-bit scabious and betony. The orchid flora is exceptionally diverse, including a large population of southern marsh orchid in the south-eastern part of the site.

There is a small area of fen meadow, a very unusual habitat in the Bristol area and a BAP Priority Habitat, on the northern edge of the lake. Purple moor-grass is frequent here, and other locally uncommon species include meadow thistle, flea sedge, tawny sedge and marsh valerian.

The grasslands support exceptional populations of invertebrates. The 2004 surveys found three Red Data Book species and seven nationally scarce species. Two UK BAP Priority Species, red-tailed carder bee and narrow-bordered bee-hawk moth, were also recorded.

There are no significant breeding bird species in the grasslands but it is an important feeding habitat for two BAP priority species: barn owl and kestrel. Flocks of wigeon feed on some of the grassland areas during the winter.

2.3.4 Boundaries

The hedges around the lake are examples of a BAP priority habitat type, and include a few that are species-rich or ancient, although most do not fall into this category. Some fields are divided by ditches, either with or without an associated hedge. Ditches are included with hedges as a BAP priority habitat type in the North Somerset BAP.

Ancient hedges are most frequent along the northern boundary of the lake and are characteristically dominated by hazel, with other species including wild privet, dogwood, field maple and spindle. The ground flora of these hedges is generally rich, and includes plants normally associated with woodlands, such as bluebell, primrose, spurge laurel and yellow archangel.

The other hedges were mostly planted when the lake was created and are mostly dominated by hawthorn. The ground flora of both groups of hedges is much less diverse than that of the ancient hedges.

The breeding bird populations of the hedges are generally restricted to common and widespread species although some of these, such as song thrush and dunnock, are of conservation concern.

The invertebrates associated with the hedges are generally common species, such as holly blue and brimstone butterflies and oak bush-cricket.

Most ditches flow through the species-rich grasslands and contribute greatly to their biodiversity. They vary considerably, some being permanently wet and some flowing during the winter only. The banks of the ditches often have a

mixture of grassland, wetland and woodland plants, including large populations of cuckoo-flower, greater stitchwort and wood anemone. They provide an important invertebrate habitat for species such as the Red Data Book leaf beetle *Oulema erichsoni*.

2.3.5 Woodlands, Scrub and Trees

Most of the woodlands around the lake are plantations of various ages. There are areas of older woodland at Butcombe Bay, but these have been modified by planting with conifers. Willow-dominated areas at the Top End might qualify as wet woodland, a BAP priority habitat type, although the extent of this habitat type is small. Parkland trees around the lake are of interest in a local context, but they do not qualify as an example of a BAP priority habitat since there is no evidence that they pre-date the nineteenth century. There are no extensive areas of scrub, but woodland management has created patches of scrub, particularly around Butcombe Bay.

The dominant tree species in the plantations vary, but include Norway maple, alder, Scot's pine and silver birch. Other species, especially ash, have colonised some plantations. The ground flora of the plantations is generally dominated by ivy and is not diverse, but there are populations of some woodland plants including ramsons, primrose, wood sedge, dog's mercury and male fern. The ground flora of woodlands around Butcombe Bay is more diverse, and includes species such as spurge laurel and giant fescue that are indicative of ancient woodland.

There are several isolated trees, mostly pedunculate oaks, in areas of grassland, several of which support significant growths of lichens.

The bird populations of these habitats are generally restricted to common species, including sparrowhawk, buzzard, tawny owl and great spotted woodpecker. Breeding birds in scrubby areas include willow warbler, sedge warbler and blackcap.

The invertebrate fauna of these habitats has not been well surveyed but the wet woodlands in particular are likely to be of interest for invertebrates.

2.4 TRENDS

Several changes in the flora and fauna of the lake have been identified since the 1998 BAP was produced. Many of these are the result of wider trends, such as climate change, over which site management has no influence, but some are more site-specific.

The 2000 and 2006 bird reports considered changes in the water bird populations of the lake. The following key points were identified:

- A marked tendency for populations of most species, including those of conservation significance such as shoveler, gadwall and teal, to be higher in years of low water level;
- An ongoing decline in mallard numbers, mirroring a national trend;
- A marked increase in weed-eating species, particularly coot and gadwall, for reasons that are not clear;
- A marked increase in little grebe numbers;
- A tendency for bird numbers to remain higher in the late winter, due to a reduced frequency of extreme cold weather;
- An increase in tufted duck numbers, perhaps linked to ecological changes at Chew Valley Lake and the dramatic increase there.
- A dramatic decline in, and eventual disappearance of, smew, predicted as a likely outcome of the ruddy duck cull, with which it has coincided;
- A dramatic decline in ruddy duck numbers, as a consequence of the DEFRA cull; and
- An increase in numbers of lapwing and golden plover when water levels are low, probably linked to the decline in numbers of both species at Chew.

Breeding waterfowl populations continue to fluctuate according to water levels, with high early summer levels favouring most species. Shoveler bred in 2003 for the first time in many years.

Most trends in other bird populations mirror wider trends and are probably not linked to changes at the lake itself. These include dramatic declines in cuckoo and willow warbler. The installation of barn owl boxes has probably aided colonisation by that species since 1998, which represents a significant increase in the biodiversity value of the lake.

The colonisation of the lake by otter is part of a national trend, and is a significant addition to the lake's biodiversity interest. Mink appear to be less common than previously as a result of a programme of trapping, and more recently perhaps because of the presence of otter. The decline in mink is a beneficial trend. No other trend in mammal distributions has been noted, and neither has any in herptile populations.

Most changes in invertebrate populations are the result of increased recording effort, and identification of genuine trends is difficult. Many genuine trends, such as colonisation by long-winged conehead, are almost certainly linked to climate change. Some known declines mirror national trends, in particular the loss of wall butterfly and a decline in small heath butterfly populations.

Plants are better studied on the whole and there appear to have been few changes to the lake's flora. The populations of many other species fluctuate with

water level, so that significant species such as shoreweed are only seen when water levels are low.

Many non-native plants have been recorded in several habitats around the lake. Most are transitory introductions from bird seed or other sources and others, although permanently established, do not pose a threat to biodiversity.

2.5 Conclusions

The key features of biodiversity importance at Blagdon Lake are:

- The open water, which has nationally important bird populations, is a UK BAP priority habitat and has locally important populations of water plants;
- The species-rich grasslands, which are a UK BAP priority habitat and support nationally rare invertebrates and locally scarce plants; and
- The marginal vegetation, which forms part of the habitat of nationally important populations of birds, supports rare invertebrates and is locally important for plants.

Secondary features of biodiversity importance are:

- Species-rich hedgerows, which are a UK BAP priority habitat;
- Wet woodlands, which are a UK BAP priority habitat; and
- Parkland trees.

3 ACTION PLANS

3.1 Open Water

The following species of conservation importance are found on the open water in significant numbers:

Nationally Important Populations	UK BAP Species	B&NES BAP Species
Little Grebe	Bewick's Swan (in some years)	Kingfisher
Gadwall	Herring Gull	Pintail
Shoveler	Otter	Shoveler
Coot	Common Eel	Teal
Great Crested Grebe (in some years)	Common Toad	Wigeon
Starry stonewort (unconfirmed)	Starry Stonewort (unconfirmed)	Garganey
		Gadwall
		Tufted Duck
		Goldeneye
		Bewick's Swan
		Great Crested Grebe
		Black-necked Grebe
		Otter
		Water Shrew
		Common Toad
		Common Frog
		Various-leaved Water Starwort
		Rigid Hornwort
		Ivy-leaved Duckweed
		Small Pondweed
		Perfoliate Pondweed
		Lesser Pondweed

1998 Targets

"Maintain populations of water birds at least current levels."

The 2006 bird report shows that this target has been met. Numbers fluctuate from year to year, with most species favouring years when water levels drop, and some species have fared better than others but numbers now are comparable to those of ten years ago. Teal were of national importance in 1998, but are not now, due to a series of years with high water levels. On the other hand, little grebe and coot populations are now of national importance.

1998 Management Proposals

“Maintain existing controls on recreational activities.”

This action has been taken. There has been an increase in unauthorised access to the southern shore of the lake, which may partially account for a decline in wigeon populations, and continued vigilance has been necessary to keep this under control.

“Designate the Top End as an area free from bank anglers.”

This has been done, but enforcement has been irregular.

“Continue to monitor nutrient levels in the lake and take measures to prevent nutrient enrichment if this becomes necessary.”

No particular measures have been taken since the 1990's, when Bristol Water plc assisted in pollution control measures at a nearby farm.

Revised Targets

Maintain populations of water birds at least current levels.

Ensure that little grebe, coot, gadwall and shoveler populations remain of national importance.

Maintain populations of water plants and ensure that existing balance does not tip towards algal domination.

Management Rationale

Water bird populations are affected by several variables, many of them beyond human control. Those under at least partial control by Bristol Water plc are:

- Water quality;
- Water levels; and
- Disturbance.

Growths of water plants, and therefore the populations of birds and invertebrates that depend on them, require good water quality. In any one year the lake currently oscillates between a macropyhte dominated state, with clear water and extensive growths of water plants, and a state dominated by algal blooms when the water becomes obscured and less light penetrates to the submerged plants. Any increase in phosphate and nitrate concentrations would tend to shift this balance towards algal dominance, which would threaten the SSSI's favourable status. These inputs are likely to be almost exclusively from farmland in this catchment and from the trout farm at Ubley Hatchery. There is no evidence that there is at present any adverse impact caused by water quality, but monitoring and mitigation (if required) of inputs should continue.

Water levels at the lake depend on the level of rainfall and the volume of water extracted. The ideal situation at Blagdon is that levels should remain high until

July, and then drop through the autumn and early winter. Extraction decisions will be dictated by supply requirements and rainfall, but it is recommended that biodiversity impacts are taken into account as a secondary consideration.

Many of the bird populations at the lake are potentially vulnerable to increased disturbance and existing restrictions should be maintained.

There is concern over silt inputs to the lake and measures to remove have potential adverse impacts. In order to minimise the need for further silt removal it is recommended that sources of silt input to the river are identified and if possible steps are taken to mitigate these, for instance retaining uncultivated buffer strips alongside streams and undersowing maize crops so that ground is not bare in winter in the catchment.

Management Proposals

3.1.1 Maintain existing controls on disturbance, including ban on bank anglers at Top End when lake levels fall 1.5 metres below top level.

3.1.2 Ensure that signs and barriers restricting access remain in good condition and that restrictions are warded.

3.1.3 Give higher profile to guidelines to anglers on minimising disturbance to birds.

3.1.4 Manage draw down of the lake to benefit bird populations, when other considerations allow.

3.1.5 Identify any inputs of silt to river.

3.1.6 Work with individual land managers and Natural England to reduce volumes of silt and excessive plant nutrients entering the lake, where possible.

3.2 Margins

The following species of conservation importance are found in the margins in significant numbers:

Nationally Important Populations	UK BAP Priority Species	B&NES BAP Priority Species
Teal (in some years)	Lapwing	Sedge Warbler
Little Grebe	Grass Snake	Teal
Coot	Shoulder-striped Wainscot	Garganey
		Linnet (in some years)
		Great Crested Grebe
		Lapwing
		Golden Plover
		Water Shrew
		Grass Snake
		Nodding Bur Marigold
		Sea Club-rush

		Slender Tufted-sedge
		Brown Sedge
		Fen Bedstraw
		Shoreweed

1998 Targets

“To maintain the diversity of wetland plant species at the lake.”

No losses of species to the lake are known, and the overall diversity of the marginal vegetation has remained very high.

1998 Management Proposals

“Remove willow scrub from the areas shown on map 3. The work should be carried out in the autumn or early winter when birds are not nesting and water levels are low. Elsewhere monitor spread of willows and control as necessary.”

This has been carried out as physical conditions allow, and has maintained important areas of diverse vegetation.

“As aerial photographs become available continue to monitor the extent of the two small reedbeds. If expansion is occurring then carry out control by digging out rhizomes with a mechanical digger. The work should be carried out outside the bird breeding season. Consideration should be given to using the rhizomes to assist reedbed expansion at Chew Valley Lake.”

Systematic monitoring has been carried out and this and other surveys show that between 1998 and 2008 the two reedbeds on the southern shore have grown slightly, and a smaller patch of reeds has become established on the lake's northern shore.

“Carry out a survey to establish whether harvest mice are present at Blagdon Lake, since large areas of suitable habitat are present, especially between Rugmoor Point and the Ubley End.”

Surveys have been carried out, but no harvest mice were recorded.

Revised Targets

To maintain the diversity of wetland plant species at the lake.

To maintain diverse populations of insects.

Management Rationale

Some management is required to prevent encroachment by common reed and trees, especially willows, across this habitat type. Whilst these are valuable habitat features in their own right, the importance of the marginal vegetation for birds, plants and in particular for invertebrates justifies their control. The two main reedbeds are in areas that are relatively poor in other marginal plants and, since

they add to the lake's biodiversity, it is proposed they are allowed to spread within the limits shown on the attached map. The reedbed on the northern shore threatens more diverse vegetation and it is proposed that this is dug out. Willows should be allowed to dominate the top end, as at present, but elsewhere should be present as scattered trees in otherwise open vegetation only. For this reason, removal of large trees is not proposed, but there are several areas where saplings should be removed. There is one area, between Rugmoor Point and the top end, where there is a fringe of willows off the shore protecting areas of shallow water. These fringes of willows should be retained, but the marginal vegetation behind them should be monitored and encroaching willows should be removed.

Wetland plant populations are especially vulnerable to invasion by introduced species and any non-native plants should be controlled early when populations are small.

Management Proposals

3.2.1 Remove willow saplings from areas shown on map 2 - if possible pull or dig out, if not cut to base.

3.2.2 Allow reedbeds on southern shore to grow within the limits shown on map 2, but if they exceed these limits prevent further expansion by digging out rhizomes and creating a trench of deep water.

3.2.3 Dig out reedbed on northern shore, in late autumn when water level is low so that work can be carried out from exposed lake bed, rather than adjacent species-rich grassland.

3.2.2 Monitor vegetation for non-native species and remove as necessary.

3.3 Grasslands

The following species of conservation importance are found in the species-rich grasslands in significant numbers:

Nationally Important Populations	UK BAP Priority Species	B&NES BAP Priority Species
<i>Oxya nebulosa</i>	Lapwing	Kestrel
<i>Exorista tubulosa</i>	Small Heath	Barn owl
<i>Oulema erichsoni</i>	Narrow-bordered Bee Hawk Moth	Lapwing
	Red-tailed Carder Bee	Narrow-bordered Bee Hawk Moth
		Small Garden Bumble-bee
		Red-tailed Carder Bee
		Slender Soft Brome

		Brown Sedge
		Tawny Sedge
		Flea Sedge
		Green-winged Orchid
		Spreading Meadow-grass
		Devil's-bit Scabious

1998 Targets

"At least two pairs of barn owls should be breeding at the lake."

One pair has bred in most years.

"The area of unimproved grassland should be no less than it is in 1998."

This target has been met.

"The distribution of marbled white should be no less than it is in 1998."

There has been no systematic monitoring, but no changes in the distribution of this species have been noted, and this target appears to have been met.

1998 Management Proposals

"No artificial fertilisers or herbicides should be applied to any of the grasslands."

This has been complied with, and is important if biodiversity is to be maintained.

"The areas shown on map 5 should be mown annually after July 15th. Mowings must be removed."

This has been carried out.

"The grassland around the pumping station should be managed following the regime shown on map 6."

This has been done to some extent, but the timing of grass cutting has varied according to the requirements of public events, with several areas being cut earlier in the year than specified.

"Monitor the impacts of car parking on the grasslands and control where necessary."

This has been done and in March 2008 no damage to important areas could be seen.

Revised Targets

Barn owls should continue to breed at the lake.

Species-rich grasslands should retain their diversity.

The existing extent of species-rich grassland should be retained.

Small heath butterfly should remain extant at the lake.

Management Rationale

The grasslands require management in order to maintain their diversity. Grazing is not possible within the lake enclosure so management relies on mowing. Grassland management for nature conservation involves striking a balance between maintaining features that invertebrates require and preventing unfavourable habitat succession. The grasslands at Blagdon are of importance for invertebrates and these should be accommodated by mowing fringes around grassland areas on a rotation.

The existing management of the grasslands at Blagdon has been successful in maintaining biodiversity, and no significant changes are proposed.

Management Proposals

3.4.1 No artificial fertilisers or herbicides should be applied to any of the grasslands.

3.4.2 The areas shown on map 3 should be mown annually after July 15th. The mowings must be removed.

3.4.3 The grassland around the pumping station should be mown, following the existing regime as shown on map 4.

3.4.4 When grasslands are mown, 5% of the area should be left uncut, for instance along fencelines or on ditch banks. The uncut areas should not be the same from year to year. If scrub encroaches onto permanently uncut fringes it should be removed.

3.4.5 Monitor impact of car-parking on grasslands, keep signage up to date and take further control measures where necessary.

3.4.6 Repair and replace barn owl boxes as necessary. Work is currently required to the box on the southern shore between Butcombe Bay and Rugmoor Point.

3.5 Boundaries

The following species of conservation importance are found in species-rich hedgerows or ditches in significant numbers:

Nationally Important Populations	UK Species	BAP Priority	B&NES Species	BAP Priority
<i>Oulema erichsoni</i>	Cuckoo		Marsh Tit	
	Marsh Tit		Bullfinch	
	Bullfinch		Song Thrush	

	Song thrush	
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1998 Targets

“Maintain hedges in good state for breeding birds.”

Hedges generally do remain in a good state, with dense basal growth and healthy populations of standard trees.

1998 Management Proposals

“3.6.1 All hedge management should be carried out outside the bird nesting season.”

This has been complied with, as is required by the law.

“3.6.2 Flail hedges, except those which are laid, into an A shape where possible.”

This has been carried out, and most hedges around the lake are now A shaped, with some minor exceptions. However, the hedge along much of the western part of the southern boundary of the lake is very thin and offers poor habitat for birds and other animals. This is in contrast with the hedge along the northern boundary, which is both more dense and more tall and where sapling standard trees have been retained.

3.6.3 Lay hedges as shown on map 7. Leave hedges on northern shore to grow tall and then lay, and continue programme of hedge laying on the southern side of the lake.”

Some of this work has been carried out, but opportunities for hedge laying remain. New hedges have been planted in the Butcombe Bay area.

Revised Targets

Ensure that population of bullfinch remains at current level.

Ensure that cuckoo and marsh tit survive as breeding species at the lake.

Management Rationale

The hedges generally provide good habitat for breeding birds. Most of the management proposals are for the continuation of existing regimes. There are opportunities for further hedge laying.

Management Proposals

3.5.1 Carry out all hedgerow management outside the bird nesting season.

3.5.2 Flail hedges, except those shown on map 5, into an A shape, flail each hedge every other year.

3.5.3 Allow the hedge on the western part of the southern boundary (shown on map 5) to grow wider for three years, then flail to wider A shape.

3.5.3 Lay hedges as shown on map 5.

3.6 Woodlands, Scrub and Trees

The following species of conservation importance are found in woodlands, scrub and trees in significant numbers:

UK BAP Priority Species	B&NES BAP Priority Species
Spotted Flycatcher	Spotted Flycatcher
Marsh Tit	Marsh Tit
Bullfinch	Bullfinch
Song Thrush	Song Thrush
Soprano Pipistrelle	Soprano Pipistrelle

1998 Targets

“Support an increased population of songbirds in woodlands.”

In the absence of systematic monitoring it is difficult to gauge success in meeting this target. The woodlands continue to support large and varied populations of songbirds.

“In the bat boxes support a bat population at least as large as it is at present.”

Monitoring of bat boxes (carried out most recently in 2005) suggests that populations have remained fairly stable. Several boxes are now in poor repair, however.

1998 Management Proposals

“3.7.1 Continue the existing programme of management of the plantations under the guidance of Landmark Environmental Consultants.”

There have been ongoing management works to several plantations, including selective thinning and limited removal of conifers, but the Woodland Grant Scheme is no longer in place and Landmark Environmental Consultants are no longer involved.

“3.7.2 Cut scallops into the woodland edges marked on map 8. The scallops should be semi-circles approximately 10 metres across and five metres in radius.”

This was proposed at Butcombe Bay and has not been carried out, although areas of plantation have been thinned.

“3.7.3 Continue to monitor bat boxes and replace as necessary. Provide further bat boxes.”

Bat box monitoring continued until 2005, when the volunteers involved moved away from the area. There is now a need for replacement of bat boxes, some of which are now in poor condition.

Revised Targets

Ensure that song bird populations remain at the same level overall.

Ensure that parkland trees remain, with standing dead wood as appropriate.

Management Rationale

Many of the plantations around the lake are now mature and have rather even-aged stands of dense trees with little or no understorey. They therefore provide relatively little habitat for birds or other animals. Areas that have been cleared around Butcombe Bay now have a dense growth dominated by immature ash. These areas will lose value for breeding birds unless further management is carried out. There is potential for creating areas of dense, scrubby woodland edge in places and elsewhere to promote species such as birch and oak by thinning conifers, sycamore and ash.

The resource of parkland trees at Blagdon is important and although none as yet qualifies as a veteran they have the potential to mature to this status. None of the trees requires work at present. Standing dead wood is an important feature of these trees and should be removed only if absolutely necessary.

Management Proposals

3.6.1 Thin canopy trees in areas of woodland as shown on map 6. Favour oak over ash at Holt Copse, birch over conifers close to Lodge and mixed hardwood species over ash on eastern side of Butcombe Bay.

3.6.2 Coppice areas of young trees in small compartments (c10 metres by 10 metres) around Butcombe Bay as shown on the attached map.

3.6.3 Fell trees in scallops on woodland edges as shown on the attached map to create patches of dense undergrowth.

3.6.7 Repair and replace bat and bird boxes, including boxes suitable for spotted flycatcher, as necessary.