

**Brixworth Country Park**  
**Wildlife Management Plan**

**Northamptonshire County Council**



**With support from**



**The Wildlife Trust for Bedfordshire, Cambridgeshire,  
Northamptonshire and Peterborough**

## **1: VISION STATEMENT & EXECUTIVE SUMMARY**

This document details the management prescriptions necessary to protect and enhance the biodiversity resources of Brixworth Country Park. It will be used in conjunction with the overall park management plan to help balance the needs of conservation and recreation, and to ensure best practice in land management.

## **2: POLICY STATEMENTS**

Northamptonshire County Council owns Brixworth Country Park. The Countryside Services section, part of the Customer and Community Services Directorate, manages the park.

The corporate vision of Northamptonshire County Council is to “Make Northamptonshire an excellent place to live and work”

### **1. Relevant corporate outcomes and priorities**

<b>Corporate Outcomes</b>	<b>Corporate Priorities 2008-09</b>
<b>A cleaner, greener and more prosperous county</b>	<b>We will protect and promote the heritage of Northamptonshire</b>
<b>A more secure, healthy and independent future for our children, for our young people, and for our adults</b>	<b>We will enable more people to engage in music, sports, leisure and cultural activities</b>
	<b>We will improve the achievement of children at school, and of those in care; improve attendance and reduce the number of children excluded from education</b>
	<b>We will enable older people and those with disabilities who need support to exercise personal choice and live more independent and fulfilled lives</b>
<b>A smaller, more enabling council focused on our customers</b>	<b>We will ensure that we have outstanding and valued employees</b>
	<b>We will provide better access to, and choice of services, targeting our resources on our customers and communities, improving our efficiency and maintain council tax increases at or below the rate of inflation, provided that changes in central government funding do not prevent this.</b>

The Countryside Services contributes to the above aims by:

- Providing attractive, accessible and well managed Country Parks, countryside sites and through the provision of the Pocket Parks scheme.
- Encouraging the maximum use of the parks for healthy recreation.
- Encouraging understanding and enjoyment of the country parks and the county’s natural and cultural heritage through providing outdoor environmental activities for schools and groups, information and interpretation and a programme of public events.
- Promoting active citizenship by providing opportunities for countryside volunteering in Country Parks and by facilitating the Pocket Park scheme.

## **3: GENERAL DESCRIPTION**

### **3.1: General information**

#### **3.1.1: Location & site boundaries**

Brixworth Country Park is adjacent to the southern end of Pitsford Reservoir, 10km north of Northampton, between Brixworth and Pitsford on the A508. Map reference is SP 756 695.

The site boundaries are shown on Map and the surrounding land use consists of agricultural land, a newly established vineyard and a drinking water reservoir.

The whole of the area of Pitsford Water is designated a Site of Special Scientific Interest (SSSI).

Vehicle access is from the Brixworth roundabout on the A508, from where the park is signposted. See map for the main access routes to the country Park. The A508 additionally carries a direct public transport service between Northampton and Market Harborough. Pedestrian access is via the footpath along the perimeter of Pitsford Water and the Public Footpath leading down from Brixworth village.

#### **3.1.2: Tenure**

Northamptonshire County Council purchased the area which is now Brixworth Country Park in 1990 from Pamela Jean Saunders.

#### **3.1.3: Management/organisational infrastructure**

The Park is owned by Northamptonshire County Council and is managed by the Countryside Services section, which is part of the Customer and Community Services Directorate. On the ground the site is run in conjunction with Sywell Country Park and the Brampton Valley Way by a team consisting of one Country Parks Officer, two Countryside Rangers, two Assistant Rangers, one estate worker and various part-time Information Assistants employed on a supply basis.

The park engages a variety of volunteers and voluntary groups to undertake much of the habitat work. Volunteers range from individuals and college placements to organised teams such as the BTCV New Deal and Community Service.

#### **3.1.4: Map coverage**

Ordnance Survey 1:50,000 Landranger Series, sheet 152, Northampton and Milton Keynes.

Ordnance Survey 1:25,000 Explorer Series, sheet 223, Market Harborough.

#### **3.1.5: Photographic coverage**

Two colour aerial photographs taken in 1990 exist of the park. A variety of general photos are also held, but no formal fixed-point photographs have been taken. Refer

to Map for suggestions of the locations and directions for a suitable scheme of monitoring using fixed point photography.

### **3.1.6: Zones or compartments**

Refer to Map for a view of the main habitat areas within the Country Park, and to Section 3.2.2 below for descriptions.

## **3.2: Environmental information**

### **3.2.1: Physical**

Brixworth Country Park consists of 15ha of hay meadows, recently planted trees and scrubland.

There is an extensive Rights of Way network accessible from the Country Park.

#### a) Geology and soils

The site is on an area of Upper Lias Clay overlaid in places by Northampton Sand and Ironstone.

#### b) Topography and landscape

The site is on a gentle slope running west to east, towards the reservoir. This slope is a continuation of a slope leading down from the arable fields adjacent to the country park.

#### c) Climate

Climatologically the county is amongst the driest in the United Kingdom with an average rainfall of 630mm recorded. Despite the low rainfall, localised flooding is commonplace. The impervious Lias clays which form the basis of the relief and the high frequency of summer convectional rainfall result in swift saturation of the soil and rapid run-off.

#### d) Hydrology

The site is next to Pitsford Water, a reservoir created between 1952 and 1955. The reservoir has a top water level of 303.5ha and occupies a complex valley between the villages of Pitsford, Holcot, Hannington, Walgrave, Old, Brixworth and Scaldwell. Within this valley there are three main streams – Holcot, Walgrave and Scaldwell. The confluence of these streams occurred just above the present road from Brixworth to Holcot (the causeway), forming a tributary of the River Nene, Hannington Brook, which was dammed just north of Pitsford village to flood the valley.

On the site there are three man-made ponds.

## **3.2.2: Biological**

### **3.2.2.1: Habitats / communities**

As this site is relatively new it needs to be allowed time for the wildlife to establish itself following a ten year phase of intense development.

There have been no official surveys or evaluations of the site, although members of the Northamptonshire Wildlife Trust carried out several surveys in 2001 as a basis for this plan.

The habitats which are of significance for wildlife are summarised below:

#### **a) Meadow**

Hill Meadow comprises of an area of 1.4ha of grassland that is cut for hay and grazed for approximately 280 sheep weeks per year. It should be noted, however, that this grazing regime did not happen in the 2001/02 timeframe.

The other meadow area, adjacent to Hill Meadow, was sown, in 1990, with a mix of fine grass species containing some *Arrhenatherum* and Yorkshire Fog. This has resulted in a very uninteresting sward, with no real variety or wildflower interest. However this area does seem to be good habitat for grasshoppers and crickets.

Various management techniques have been suggested to improve the diversity and interest of the area. These include scattering a flower-mix seed collected from Pitsford Nature Reserve, cutting in sections, ploughing areas up and mowing and baling the hay. This will be looked into later in this management plan.

#### **b) Hedgerows**

Hedgerows are very valuable for wildlife as they provide a haven for insects and wildflowers, as well as nesting areas for birds. They also provide a corridor along which wildlife can travel.

Throughout the Country Park approximately 730m of hedges have been planted from 1992 onwards and have thus given rise to hedges of different ages being present on the site. For instance, 624m of hedges were planted between 1992 and 1994, and 107m of hedges were planted in the winter of 1998. (The lengths of these planted hedges were measured using a Truemeter Wheel). Some of the hedges were replanted during 1999.

The hedges are mainly comprised of hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*) and rose (*Rosa canina*) with some ash (*Fraxinus excelsior*). Due to the relatively young age of these hedgerows, no trimming or laying has taken place, although it is planned to lay the area at the back of Jack's Wood and along the side of the Dog Trail.

#### **c) Jack's Wood**

The wood was planted in 1992/93 and, as a result of some basic management, now has a good structure. It is a native broadleaved mix, mainly composed of oak, ash, hazel, silver birch and aspen. In the future, open areas need to be maintained to give space and light in order to allow wildflowers to establish.

A number of bird boxes were installed in Jacks wood in 2005; these are monitored annually by the rangers and volunteers.

During the winter the wood supports large flocks of yellow hammer and brambling. Grass snakes have also been recorded in this area.

#### **d) Scrub**

As the site is in the Woodland Grant Scheme, a period of intense planting of a mix of native trees and scrub has taken place in various areas of the site. 6,500 trees have been planted over 2 years; during the winters of 1998 and 1999.

Being a successional habitat, as these areas mature, they will develop towards woodland. However, the maintenance of the interest of the scrub in the meantime will depend upon management to retain both a variety of structure and more particularly to retain a scrub / grassland margin around the edge of the areas.

#### **e) Ditch and Ponds**

The ditch is quite diverse botanically but will need positive management as invasion by hawthorn (*Crataegus monogyna*) and sycamore (*Acer pseudoplatanus*) could become a problem in the future if no intervention takes place.

There are three ponds on site. The first is near to the Sensory Garden and the Visitors Centre. The second pond is next to the bird hide near to Jack's Wood. Care needs to be taken to prevent this pond becoming too shaded by the surrounding trees and shrubs; coppicing small areas may prevent this. Algal bloom can also be a problem due to the levels of nitrates in the run-off water from the surrounding farmland. The third pond is to the north of the site, it is a man-made pond which also has a dipping area - although it is much less intensively dipped than the top pond.

#### **3.2.2.2: Flora**

Much of the floristic interest of the site has already been described in the habitat section above. A full list of species known to occur on the site is in Appendix 1, although comprehensive botanical surveys have not yet been completed for the site.

#### **3.2.2.3: Fauna**

A full list of species known to occur on the site is listed in Appendix 1; however some information about the vertebrate use of the site may be usefully described here.

#### **a) Birds**

The hedgerows support willow warbler (*Phylloscopus trochilus*) and chiffchaff (*Phylloscopus collybita*). Whilst Jack's Wood supports large mixed flocks of yellow hammer (*Emberiza citrinella*), brambling (*Fringilla montifringilla*) and fieldfare (*Turdus pilaris*) during the winter months. The grazed meadow area provides nesting opportunities for skylarks (*Alauda arvensis*). Additional habitats provide food, shelter and breeding potential for many more species.

Two Barn Owl boxes were installed in 2003 (1 on Hill meadow and 1 in a secluded position close to the perimeter of the park). A pair of Barn Owls in 2005 had a brood of 5.

Due to the site's close proximity to Pitsford Water Nature Reserve SSSI various gulls and waterfowl visit the reservoir next to the Country Park.

## **b) Reptiles and amphibians**

Pond maintenance works should therefore be undertaken during the winter months, to minimize the possibility of harming newts. As a general good practice it is also recommended that removed dredgings from ponds are stored for some time adjacent to the pond to enable some animals to re-enter.

Grass snakes have also been recorded, and are another species covered by the national Biodiversity Action Plan, having suffered from the drainage and improvements of rough grasslands adjacent to water bodies / courses.

## **c) Mammals**

Badgers (*Meles meles*) have been known to use the site, especially at the northern end, although there is no known sett within the park's boundaries. As they are protected by a range of legislation care must be taken whenever works are undertaken which may impinge on the badgers. Guidance and advice are available from English Nature, and whenever there is any doubt about works which may disturb badgers, English Nature should always be consulted.

In past years Otters (*Lutra lutra*) have bred at Pitsford Nature Reserve and otter spraint has been found on the causeway. As these are protected, under the Wildlife and Countryside Act 1981, care must be taken with management works carried out on suitable habitats.

The site supports a fair number of rabbits due to it being based on sandstone, which is good for burrowing. They currently present no problems in terms of the proposed management under this plan, so no control is recommended here unless they prove to be a problem for the site's neighbours. However, regular checks should be made on their population size and impact on the site.

### **3.2.3: Past management for nature conservation**

Prior to the establishment of the reservoir the area was farmed and was typical of many mixed farms in the county.

When the valley was flooded in 1955, the character of the area was changed completely although the impact on the farmland wildlife was reduced by the retention of the streamside hedgerows and some of the grassland above the waterline.

#### **a) Details of constraints on Management**

The main constraints will be time, labour resources and money. In addition, due to the recreational nature of the site, certain management practices may conflict with the recreational use. There may be some conflict between historic community projects and ideal habitat management; i.e. inappropriate tree planting. There is therefore a need to ensure that this plan is integrated with any future plans to manage the public access and with community programmes.

#### **b) Details of Grant-Aided Management Schemes**

The site is currently in the 6th year of the Woodland Grant Scheme, which is the main grant-aided scheme for the site.

### **3.3: Human impact, use & interest**

#### **3.3.1: Archaeology**

There are no known sites of archaeological interest within the boundaries of the Country Park.

#### **3.3.2: Present land use**

Present management concentrates on visitor access as well as tree planting and grassland management.

#### **3.3.3: Present legal status of site**

The entire site is designated as a Country Park as prescribed in the 1968 Countryside Act.

#### **3.3.4: Current services & facilities provision**

As well as the main car parking area, the amenity grassland is used as an overflow car park during the summer months. There is a Visitors' Centre and shop manned during office hours throughout the week and at weekends. Information leaflets and other interpretation material has recently been prepared and is now available. Areas of grassland are amenity cut to provide picnic/general recreation areas (see Map 3). A play area is provided on the eastern edge of the amenity grassland.

### **3.4: Landscape**

The Country Park is adjacent to Pitsford Water, which was designated a Site of Special Scientific Interest in 1970 and is included in English Nature's 'Reserves Enhancement Scheme'. The designated Nature Reserve, to the north of the causeway, comprises of many habitats typical of lowland Britain and supports a very wide range of wildlife.

The surrounding land is predominantly agricultural, with a few villages such as Brixworth and Pitsford. The town of Northampton lies 10km to the south, with the M1 motorway 15km to the west, running north-south. The area is also known for its private estates, such as Althorp.

The Country Park is a valuable part of the local landscape, being managed to conserve wildlife as well as providing recreation for the general public.

### **3.5: Bibliography**

- Sutherland, W.J. & Hill, D.A. Managing habitats for conservation. Cambridge University Press 1995.
- Web site; [www.northantsweather.org.uk](http://www.northantsweather.org.uk)

## **4: CONSERVATION FEATURES**

### **4.1: Identification / confirmation of conservation features**

#### **4.1.1; List of recognised conservation features**

Feature 1 - Vertebrate interest of the site.

Feature 2 - Botanical interest of the site.

Feature 3 - Aquatic interest of the site.

## **5: SERVICES & FACILITIES**

### **5.1: Identification / confirmation of services and facilities**

Country Parks are by their nature multi-purpose. This plan is intended to deal only with the wildlife aspects of the Country Park, and therefore consideration of other services and facilities is not made here.

## **Objectives**

### **Feature / Facility 1 - Vertebrate use of the site**

#### **Description**

The predominant vertebrates on the site are birds, both nesting and over-wintering. With large mixed flocks of yellowhammer (*Emberiza citrinella*) and brambling (*Fringilla montifringilla*) during the winter months and skylarks (*Alauda arvensis*) nesting on site. A number of the bird species which feed or nest on the site are included within the Northamptonshire Biodiversity Action Plan, due to their decline within the county.

Badgers also have been recorded to use the site, although there are currently no known setts within the park's boundaries. Badgers are protected by the Wildlife and Countryside Act 1981.

#### **Favourable Status**

Due to the recent intense period of tree planting, and establishment of the land as a Country Park, it is not currently possible to define a favourable status for this feature.

#### **Factors & Limits**

Factors affecting the vertebrate communities on site are:

- Abundance of food, throughout the year.
- Availability of shelter.
- Nesting opportunities within the site.

## **Objective 1 - Enhance the nesting opportunities within the site, and maintain populations of other vertebrates**

### **Rationale & Prescription**

The nesting opportunities within the site are concentrated in the hedges, scrub areas and woodland areas.

Woodlands and scrub are valuable habitats as they contain such a diverse range of species, providing food, shelter and nesting opportunities.

Hedgerows are also important habitats as, when well-managed, they provide shelter, food plants, nectar sources as well as hibernation and nest sites. They are also important in helping to reduce possible spray drift from neighbouring farmland.

Badgers are known to use the site and should be carefully regarded, as these species enjoy legislative protection, but there is little that can be practically done to enhance the site for them.

### **Prescription list**

#### **1 - Manage the network of hedges around the site to maximise the nesting and feeding opportunities**

##### **ME01/1-Boundary structures - Maintain hedges**

The 'perfect' hedge is generally considered to be a double-planted, 2 metre tall hedge, which is 'A'-shaped; i.e. wide at the base, but tapering towards the top. The traditional management technique for hedges is to lay them on a rotational basis. Hedgelaying achieves the requirements for wildlife of a hedge, and enhances the appearance of an overgrown hedge, but the work is very time-consuming.

As the hedges on the site are all recently planted, they will not yet have reached the ideal conditions for laying. It is therefore recommended that they are trimmed on a rotational basis, approximately every third year, allowing new growth to last for two seasons, as it often bears a large amount of flowers and fruit. This should be carried out at the end of the winter period - birds are not nesting, most of the available fruit has already been taken, and the resulting damaged appearance will soon be covered by new spring growth.

When the hedges reach the required maturity, usually at between 10 - 15 years old, they should be laid. This then needs to be lightly trimmed on a yearly basis to maintain structure. The hedges will then need re-laying every 12 - 15 years depending on growth.

#### **2 - Enhance nesting opportunities within the woodland**

##### **RA03/1-Collect data, mammals, monitor - Monitor bat boxes**

Bats and their roosts are protected under the Wildlife and Countryside Act 1981, making it an offence to disturb, handle or kill bats. Therefore a license is needed before monitoring can commence. Although the occupancy of boxes can be simply checked by watching at dusk and recording any sightings.

### **RA13/1-Collect data, birds, monitor - Monitor nest boxes**

A nest box scheme should be set-up to record which species are using the boxes and how successful they are in raising young. This should occur during the breeding season; i.e. from April onwards.

### **MS30/1-Manage species, mammal - Increase bat roosting opportunities**

Bats are currently in decline, with an estimate from the National Bat Colony Survey suggesting a population decline for Pipistrelle Bats of approximately 70% since 1978. This is mainly due to the disturbance and destruction of roosts as well as the loss of feeding areas and reduction in prey species. The felling of woodland, removal of hedgerows, destruction of wetlands and the use of pesticides all affect feeding and roosting habitats.

Bat boxes and bat roosting boards provide important artificial roosts for bats where natural roosts are lacking. Therefore a number should be erected at suitable locations in the woodland, such as rides and glades. Furthermore, some bat boxes could also be attached to the buildings on the site.

### **MS40/1-Manage species, bird - Increase nesting opportunities**

To encourage nesting birds into the area a number of nest boxes should be erected within the woodland area. The nest boxes should be a range of different types and sizes suitable for use by a variety of birds. This proposal should also include for the erection of a few barn owl boxes in suitable positions around the site.

## **3 - Enhance the woodland area**

### **RF13/1-Collect data, trees/shrubs, monitor - Scrub levels**

The monitoring of scrub levels is vitally important to an early successional site such as Brixworth. Modern technology allows detailed monitoring to be undertaken relatively easily.

The simplest method of monitoring the extent of the scrub over a large area is to use regular aerial photographs. With standard aerial photography it is not possible to accurately map floral communities, but it is generally simple enough to assess the level of scrub cover over a site.

As the County Council has access to regular aerial photography for the county it is recommended that a separate folder of printouts is maintained for Brixworth Country Park, with a standard view of the site used; i.e. with a standard scale and central location. The photographs should be maintained so that an easy comparison can be made over time of the relative scrub levels across the site. Photographs should be clearly labelled showing the year, and preferably the season, in which they were taken.

### **MH00/1-Manage habitat, woodland/scrub, by coppicing - Maintain a varied age structure**

The importance of woodland / scrub as a habitat is well documented, and considerable research has been carried out. The value of woodland / scrub as a habitat both for invertebrates and vertebrates is considerably enhanced where a

varied age range is maintained within the scrub.

Effectively, the only method available to promote a varied scrub structure is to remove older scrub and allow it to re-grow. Scrub can either be coppiced or laid. The advantage of the latter option is that it allows the regrowing stumps to be protected and gives an instantly varied structure. The disadvantage is that it can make future management more difficult as the pleachers (the laid stems) will overlay each other.

Scrub habitats are slow-developing (Glaphorn Cow Pastures SSSI is predominantly a scrub community and is around 180 years old), so a very long-term view of coppicing or laying can be taken, with a 100-year cycle being an appropriate aim; i.e. 1% of the scrub within the grassland areas could be coppiced / laid each year. In reality, it is probably easier to undertake a larger area on a regular basis; e.g. 3% every 3 years.

Due to the fact that most of the woodland / scrub has been planted within the last few years, it is currently too young to coppice / lay. Therefore, it should be monitored until it reaches such an age.

The retention of deadwood within the woodland and scrub areas is essential for a range of invertebrate species. Both fallen and standing deadwood provide useful habitat. However, particularly with standing deadwood, health and safety concerns need to be considered. As a general rule standing dead timber should only be retained if it lies more than a tree length from a path.

#### **MH04/1-Manage habitat, woodland/scrub, by ride/path/glade maintenance - Create new glades and rides**

The general considerations to be kept in mind when managing woodlands are that the management of open spaces within the wood are as important as management of the tree stands themselves. The long-term aim should also be a varied age structure, maintaining a continuous supply of young growth as well as protecting and enhancing mature features, such as large trees and dead wood.

Rides and glades can support large numbers of light-demanding species which may be absent elsewhere in the wood. Well-managed rides and glades can provide vital habitats for scarce grassland plants and large numbers of grassland and scrub invertebrates.

Jack's Wood has had some management and as a result has a reasonable structure despite being so recently-planted. To encourage the establishment of wildflowers it is recommended that rides of 1 to 2m and glades of 5 to 6m are established at suitable locations within the wood. This will be best achieved through selective tree felling. This activity should obviously be done at an appropriate stage in the wood's development, which is likely to be anytime from 2007 onwards. Then, a set of 2 or 3 glades can be created at the same time and the process repeated on a rolling 5-year sequence.

### **Feature / Facility 2 - The botanical interest of the site**

#### **Description**

Due to the relatively young age of the site it has not yet had time to develop fully, therefore it is of limited interest botanically. The areas that will potentially develop into the most

interesting are the meadow areas, woodland / scrub areas and the ditch.

The prescriptions necessary for the management of the woodland / scrub areas have been listed under the vertebrate interest feature of the site elsewhere in this plan and therefore they will not be duplicated here.

### **Favourable Status**

Due to the relatively young age of the site all the areas of botanical interest are still developing and therefore it is not possible to define a favourable status for this feature.

### **Factors & Limits**

Factors involved in maintaining the range of botanical habitat communities within this site are:

#### A) The meadows

- Extent of grazing
- Extent of mowing
- Extent of flower-seed sowing
- Extent of soil disturbance
- Extent of scrub removal

#### B) The ditch

- Extent of vegetation removal
- Extent of scrub removal

## **Objective 2 - To enhance the botanical interest of the main habitat areas**

### **Rationale & Prescription**

Many of the prescriptions necessary to maintain the botanical interest of the scrub and hedgerows have been listed under the vertebrate use of the site feature elsewhere in this plan. To avoid unnecessary duplication, this objective will concentrate on prescriptions to enhance the botanical interest of the meadows and the woodland.

### **Prescription list**

#### **1 - Enhance the interest of the meadows**

##### **RF02/1-Collect data, vegetation, survey - Map plant communities within the grasslands**

A baseline NVC survey should be carried out. The data recorded should be placed on to a map to show location and extent of different plant communities within the grassland areas.

### **RF03/1-Collect data, vegetation, monitor - Monitor plant communities within the Grassland**

NVC surveys should be carried out to monitor the changes in the plant communities due to management techniques. A full NVC survey is time consuming, and rates of change in grassland (unless management is completely abandoned) can be expected to be low. It is therefore recommended that an NVC survey is carried out every five years.

### **MH10/1-Manage habitat, grassland, by controlled grazing - Graze grassland**

Seasonal grazing using sheep during the winter period, October - March, prevents vegetation build-up, thereby arresting succession, but still allows plants to flower and set seed. This is also the time period when grazing inflicts the least damage to invertebrates as most of these are either in dormant stages or underground.

For neutral grassland habitats, this grazing is best done at an annual stocking rate of 0.5 Livestock Units / hectare / year. As Hill Meadow is around 1.4ha in area this equates to a total of 280 sheep weeks of grazing (i.e., 28 sheep for 10 weeks, 14 sheep for 20 weeks, etc.). The area to the west of Hill Meadow, which is around 2.0 ha in area, would require a total of 400 sheep weeks of grazing.

Grazing during the winter period will also avoid any unnecessary disturbance to ground nesting birds, such as skylarks, in the hay meadow area.

### **MH12/1-Manage habitat, grassland, by mowing - Take a Hay cut**

The meadows should be managed in a traditional manner, with a hay cut being taken once a year. This hay cut, and resulting arisings removal, should take place in the autumn. It is preferable if some areas are left as long grass so as to create a greater diversity within the sward. This effect could be achieved by both leaving a higher fringing edge to the area and by employing a differential mowing regime – by either changing the height of the cutting blades or else by simply leaving sections uncut.

The intention of hay cutting is to allow flowering herbs to set seed before the hay is cropped. Hay cutting should therefore only take place after the flowering season is completed. As a general guide a hay cut should not be taken before the middle of July. The hay should also be removed before the beginning of September, if at all possible, as hay cutting equipment can cause significant damage if used over water-logged soils.

In the event that sheep grazing cannot be organized for the grassland areas an additional hay cut, during the early spring months, can be useful in preventing overall build up of nutrient levels and in reducing the over dominance of coarse grasses. However, this management alternative is less efficient at promoting herb rich grassland than grazing.

### **MH13/1-Manage habitat, grassland, by sowing/planting/ turf laying - Seed to increase wildflower diversity**

The meadow areas are currently uninteresting areas sown with a mix of fine grass species. False oat grass (*Arrhenatherum elatius*) is beginning to take over the site and thus needs controlling. This requirement can be achieved by implementing an appropriate grazing regime.

The wildflower interest is currently very low with some black medick (*Medicago lupulina*) and red clover (*Trifolium pratense*) being present.

To increase the diversity of wildflowers, seed should be collected from the hay meadow areas at Pitsford Nature Reserve (SSSI) and sown over the meadow areas on this site. This would have to be done with the prior consent of the Warden from the Nature Reserve site. The imported seed mix can simply be scattered directly over the existing vegetation cover in these areas and then trampled in using livestock.

#### **MH14/1-Manage habitat, grassland, by scrub control - Prevent scrub encroachment**

Given the potential importance of the open meadow areas, both botanically and for invertebrates, it is vital to manage the scrub areas; to prevent encroachment and maintain a scrub / grassland margin. This margin is important as it allows the development of scrub-edge flora, which in turn is an important food source for invertebrates

Although the margin could be maintained naturally by allowing young scrub to develop out onto the slope and into the grassland, this would lead to a reduction in the grassland content of the site. It is therefore proposed, that when the scrub has become established, margins are scalloped.

The theory of scalloping is that it allows the flora to develop whilst retaining shelter for the invertebrates which feed on the flora. To allow the scrub to re-grow within the scallops it is proposed that a 15-year rotation of scallop cutting is carried out, with a single scallop being cut each year.

## **2 - Enhance the interest of the ditch**

#### **RF03/2-Collect data, vegetation, monitor - Botanical content of ditch**

An initial botanical survey of the ditch needs to be carried out to establish what species are there. This then needs to be repeated in year five of this management plan to assess the effects of the management techniques. Refer to Map 6 to see the location of this ditch.

#### **MA01/1-Manage habitat, artificial, by mowing/harvesting/selective cutting - Remove vegetation**

Vegetation growing on the south-facing slope of the ditch should be cleared. This will create a well-drained habitat that will warm up quickly during the spring and summer providing a sheltered, warm, bare earth habitat for invertebrates.

Vegetation removal can easily be carried out using hand tools during the spring and summer period (at the frequency of once a month).

#### **MA09/1-Manage habitat, artificial, by other activities - Control scrub invasion**

Invasion by hawthorn scrub and by sycamore may become a problem if not monitored and controlled.

## **Feature / Facility 3 - Aquatic interest of the site**

## **Description**

Three ponds exist within the boundaries of Brixworth Country Park. These are the pond beside the Visitor Centre, which is called Top Pond, the pond next to the bird hide, called Bird Hide Pond, and the pond in the north of the site, called Bottom Pond. Refer to Map 6 to see the location of these three ponds.

Top Pond and Bird Hide pond were constructed fairly recently, being only 1 to 2 years old, and were done using liners. Bottom Pond, on the other hand, was constructed in 1995, and so it is now about 7 to 8 years old. It is not lined, but instead has been clay-puddled - apart from the bounding wall which forms the edge to one side of the pond.

Due to the relatively young age of the ponds near to the Visitors Centre and the bird hide, the diversity of these is currently minimal, although with time this should improve. The older pond, Bottom Pond, is more interesting and is known to have water scorpion (*Nepa cinerea*) and great diving beetle (*Dytiscus marginalis*) in it. Although these two particular species have already been seen in Top Pond too.

## **Favourable Status**

With the exception of Bottom Pond, the other two ponds on the site are relatively newly-built and still establishing. Therefore it is currently not possible to comment on a favourable status for these particular features.

Bottom Pond itself, being longer-established, should be managed in such a way so as to always maintain a mix of at least 75% of its area as clear (vegetation-free) open water together with a good proportion of marginal and emergent vegetation.

## **Factors & Limits**

Factors affecting the aquatic communities on site are:

- Nutrient enrichment
- Extent of dredging
- Extent of vegetation growth
- Unauthorised introduction of non-native species

## **Objective 3 - Enhance the aquatic communities**

### **Rationale & Prescription**

The maintenance of the aquatic communities will rely on ensuring that the ponds are not allowed to silt up over time, which can lead to them being swamped by vigorous growth of species such as reedmace (*Typha latifolia*) and floating sweet grass (*Glyceria fluitans*). In addition, to allow the free drainage of surplus surface water, the drains will need to be cleared on a long-term rotational basis.

The key to management of the aquatic habitats is to manage them on a rotational basis so that disturbance is limited, and to allow recolonisation from one area to another. The possible presence of Great Crested Newts on the site also limits the timing of clearance works - in general, works should be undertaken during the winter months when the majority of newts are hibernating outside the pond areas.

To increase the range of species at Brixworth, it is essential to create a diversity of aquatic conditions. Deep water areas are supplemented by shallow, graded slopes, allowing emergent vegetation to develop, which in turn allows for egg-laying by some aquatic invertebrates.

## **Prescription list**

### **1 - Carry out dredging operations in the ponds on a rotational basis**

#### **MH64/1-Manage habitat, open water, by clearing/dredging/ re-profiling - Clear ponds on a rotational basis**

Ponds, as with other habitats, undergo a successional process, tending to develop silt over time. This in turn leads to a reduced depth of water, and can promote the development of emergent aquatics such as reedmace and *Glyceria* spp. which overtake the open water. Eventually larger vegetation develops which can dry out the pond through transpiration leading to a succession of scrub habitats.

All the stages of pond succession have value for wildlife. Deep clear water is used by a rich variety of aquatic invertebrates. Partially-silted ponds support a different range of invertebrates, and a number of species prefer these conditions.

It is therefore important to maintain the ponds on site in a variety of stages of succession, through a long-term rotational pattern of dredging. Given that the site is so recently developed, no work is anticipated for the next three years, but following that a dredging programme could be undertaken, with small-scale dredgings being carried out every few years.

It is important to ensure that no individual pond is completely dredged at any one-time. It is also ideal if dredgings can be left adjacent to the pond, from which they came, for a few days to allow wildlife to return to the pond.

The possible presence of great crested newts on site must be borne in mind. Regular surveying episodes should be carried out to establish whether or not these creatures, or indeed any other type of newt, are in fact present on the site. If their presence is confirmed, or as a precautionary measure in any case, works should only be undertaken during the winter months, when the majority of the newts will be out of the open water and hibernating on land.

Finally, to retain the marginal habitats on the site it is important that a variety of water levels within the ponds and on their edges are maintained. Where deep water is being retained the implications for the health and safety of visitors should be borne in mind, and if there are any doubts about the impacts of pond works the advice of the Health and Safety Executive should be sought.

### **2 - Ensure no introduced species are allowed to flourish at the expense of native wildlife**

#### **RB03/1-Collect data, biological, monitor - Monitor introductions to ponds**

Unfortunately ponds in areas open to the public often have problems with deliberate or accidental introductions. These often occur when members of the public clear their own ponds and want the contents to go somewhere they feel they will flourish.

Many of these introductions are harmless, but some species are known to cause problems for native wildlife. Country Park staff should be aware of the more commonly introduced species. If there is ever any doubt about an aquatic species as a threat to native wildlife the advice of the Environment Agency should be sought.

### **MH69/1-Manage habitat, open water, by other activities - Remove unwanted non-native species**

Where non-native species are found in the open water or pond margins on site, which are known to cause problems for native species, they should be removed immediately. Different species have different suggestions for their removal, and the more common of these are listed below. This is a developing area of countryside management, and the Environment Agency regularly reviews their advice to land managers.

#### **A) New Zealand pygmy weed (*Crassula helmsii*)**

This pond weed species tends to rapidly expand, smothering the surface of a pond. It is very easily spread, as it reproduces vegetatively from very small fragments of an individual plant. Current best practice is to use a herbicidal gel which is applied directly to the plant in the water - details can be obtained from the Environment Agency. Alternatives include the application of chemicals to the water, but these have consequences for native wildlife, or in the case of small ponds the entire area can be covered, often with a disused carpet, for a number of months. This prevents the growth of all pond weed species. The carpet and dead vegetation should be removed carefully, and all material bagged before being disposed of.

#### **B) Water fern (*Azolla filiculoides*)**

This species is much less of a problem, but can generate blanket growth in warm weather. In some circumstances it dies off when the ponds freeze over during winter. Removal is only necessary if growth extends over a significant proportion of the pond surface, and it can simply be removed with a net and bagged before disposal.

#### **C) Parrott's Feather (*Myriophyllum aquaticum*)**

As with *Azolla*, this is a minor problem, but large areas of growth should be removed and bagged for disposal.

#### **D) Non-native animals**

There are a variety of non-native animals which find their way to public sites. These include the red-eared terrapin (*Chrysemys scripta elegans*), a range of frogs and toads and a number of species of crayfish. If caught, in many cases it is inadvisable to re-release these species into the wild - if in doubt the Environment Agency should be consulted.