

**CRAWLEY BOROUGH COUNCIL
SITES OF NATURE CONSERVATION IMPORTANCE (SNCI)
& WILDLIFE SITES REVIEW**

***DOLPHIN ECOLOGICAL SURVEYS
SEPTEMBER 2010***



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Broadfield Playing Field Wood & Rathlin Flood Meadow and Pond

Survey date & weather

6th May 2010 in partial cloud, cool with a light breeze and 2nd July 2010 in warm, sunny conditions.

Site summary and current condition

This site combines diverse semi-natural habitats with amenity areas. There are quite extensive areas of woodland (including some of ancient origin), scrub, wet grassland and fen vegetation and a large, shallow pond. Broadfield Brook runs along the southern edge of the site and there is a mature, mixed and probably ancient hedgerow along the northern boundary, adjacent to Crawley Avenue.

The site has quite high levels of biodiversity, with a range of woodland and wetland birds and several species of butterflies recorded during the survey. The diverse flora of the site includes ancient woodland indicator species and a variety of wetland plants.

The juxtaposition of intensively managed amenity grassland, an informal playground and formal sports pitches with areas of semi-natural habitat provides an excellent example of urban wildspace. There is scope for some enhanced management, especially of the recreation ground area, but on the whole this site is in good condition and appears to have been significantly improved since 1990.

General description (with common and notable species)

Broadfield Brook is a small, narrow stream, which runs along the southern edge of the site and links the pond and wetland area with the woodland in the south. There is a planted, mixed hedge separating it from adjacent housing. The wooded stream banks have frequent alder, oak, hazel and hawthorn with tall herbs and some woodland ground flora species.

The southern block of woodland, near the sports pitches, is a small fragment of ancient, semi-natural woodland comprising mixed hazel, hornbeam, ash and field maple coppice stools with an oak and ash canopy layer. There are blackthorn thickets in the southeastern corner and holly is locally frequent in the shrub layer. A small flush and ephemeral pond with alder and willows is present in the east of the copse and there are old banks and ditches along some of the edges of the woodland. The ground flora in this area is very rich with a dense carpet of bluebell and wood anemone along with other ancient woodland indicator species such as pignut, yellow archangel and wood melick.

There is a grassy play area between the southern woodland and the properties at the end of Rathlin Road. A wooded strip with hornbeam and ash coppice separates the play area from the main recreation ground and links the southern and northern woodlands. This small shaw has a diverse ground flora and a dense shrub layer in the east. In the west it merges into the large block of woodland that occupies the northern half of the site.

Near to Rathlin Road there is an area of overshot hornbeam coppice stools and oaks with locally dense holly and a stand of old hazel stools, some of which have collapsed over the path. The ground flora is rich in this area with wood anemone, yellow archangel and dogs mercury and there is abundant deadwood of much value to wildlife. Further to the west the woodland has a more dense, scrubby shrub layer with much hawthorn and bramble with stands of hazel below an ash canopy and locally frequent English elm suckers. There are some patches of snowberry in the western part of the woodland.

The northern woodland grades into the wetland habitats within the floodplain of the stream and there is a dense, scrubby woodland edge habitat along the break of slope with banks of bramble and willows. This type of ecotone is of great value to a range of fauna.

The wetland area includes a valuable mosaic of vegetation including developing willow carr with some poplars in the north, the stream, the shallow pond and an area of wet grassland and fen vegetation.

The wet grassland appears to be largely unmanaged and there are stands of tall wetland plants such as hemlock water-dropwort, yellow flag, great willowherb and sedges along with characteristic species of floodplain grassland such as tufted hair-grass, lesser spearwort, gipsywort, water mint and cuckoo-flower. Willows, young oak trees, bramble and dog rose are beginning to colonise this area and there is an accumulation of dead vegetation, which suggests the area has not been mown in recent years. This area is very good habitat especially for invertebrates and herpetiles, with large numbers of orange tip butterflies observed during the survey, attracted by their larval foodplant cuckoo-flower.

The pond is very shallow and had low water levels at the time of the survey. Some quite large items of rubbish were present in the pond. There are wooded islands and scattered alders around the edges along with occasional patches of marginal vegetation including rushes, yellow flag and marsh marigold, but the pond banks are trampled by both people and the numerous Canada geese.

The wide hedgerow/shaw that runs along the northern edge of the playing fields appears to be long-established and possibly of quite ancient origin since it contains a good variety of woody species including hawthorn, blackthorn, oak, ash, hazel, spindle, hornbeam, field maple and holly and has a relict woodland flora at ground level. The presence of small-leaved lime is a feature of particular interest. The hedge is trimmed on the recreation ground side but is unmanaged and free-growing on the roadside. There is scope to relax management of the hedgerow and allow it to develop into a wide, wooded shaw. Mowing less intensively along the base of the hedge and allowing a wider unmown buffer strip to develop would be very beneficial.

There is a small group of young trees in the north of the playing field and a row of mature oak trees in the south. Two old stumps have been retained near the sports pitch and southern woodland. These features enhance the rather bleak, closely mown improved grassland of the recreation ground and could form the basis of a more varied grassland management regime that would allow linked areas of longer grass to develop around the trees and stumps and the field edges. New tree planting could help to create a parkland character around the margins of the field and enhance the woodland edge habitats.

There are planted hedgerows in the south of the site, around the sports pitches and on the road edge and small areas of unmown, tall grassland as well as an earth mound that supports ruderal vegetation. These habitats of recent origin are nevertheless valuable for invertebrates and small mammals as well as providing useful links between the more established semi-natural habitats.

Management recommendations and further surveys needed

1. Control non-native, invasive species, especially in the woodland areas. The most abundant are stands of snowberry in the west and scattered rhododendron but there is also a single bird cherry in the southern woodland and some variegated yellow archangel in the northern woodland.
2. Continue to remove litter from all areas.

3. Continue to manage and maintain paths and rides through the woodland but avoid opening up scrubby, inaccessible areas that act as wildlife refuges.
4. Carry out rotational mowing of the wet grassland/fen area to prevent succession to woodland. Cut and remove vegetation from alternate halves of the area each year.
5. Coppice the large, collapsing hazel stools near the Rathlin Road entrance to the woodland.
6. Selective cutting of sycamore and Norway maple and removal of their seedlings throughout the northern woodland would be beneficial.
7. The pond is very shallow and would benefit from dredging to remove accumulated silt.
8. Increase the width of unmown, tall grassland zones to at least 3m adjoining hedges and woodland edges around amenity grassland areas.
9. Allow islands of unmown grassland to develop around trees within amenity grassland areas and link them into adjoining semi-natural habitats.
10. Consider planting more shade trees of native species around the edges of the recreation ground, linked by taller grassland sward to create a parkland effect. Benches could be installed under some of the trees.
11. Surveys of wetland birds, dragonflies, invertebrates, amphibians and reptiles in the wetland area are recommended.
12. Erect interpretive boards to highlight the wildlife value of the site.

Crabbet Park

Survey date & weather:

19th May 2010 in warm and sunny conditions and 3rd August in cloudy weather.

Site summary and current condition

Crabbet Park is a small narrow site, sandwiched between housing and the M23 road, but it supports an interesting range of habitats and a surprising diversity of wildlife.

The southern part of the site includes an area of improved grassland, old avenues of mature horse chestnut trees and a small area of ancient, semi-natural woodland. The remainder of the site comprises an expanse of dry, quite herb-rich grassland and an unusual area of wet grassland and scrub within a wide, linear depression that was probably created as a borrow pit when the road embankment was built. There is a small fragment of dry, acid, species-rich grassland at the northern tip of the site.

The site is in good condition and current management appears to be sustaining the variety of habitats present, though there have been significant successional changes since the 1990 survey. Modifications to site management may be needed in future to avoid the loss of some wet habitats.

General description (with common and notable species)

The southern tip of the site is a small area of mown, improved grassland with rows of mature (and some pollarded) horse chestnuts that are likely to be relicts of former, landscaped grounds and therefore have some cultural heritage value.

There is a small copse, once part of Burleys Wood, in the south of the site. This comprises a mixture of oak, birch, hazel, holly, beech, sycamore and horse chestnut with much bramble in the ground layer along with bluebell, wood anemone, wood sorrel, violets and honeysuckle. There are some dense patches of variegated yellow archangel, occasional rhododendron and sycamore regeneration is prolific. The woodland has a dense, tangled structure with a small circular path through it. A large old ditch marks the northern end of the copse and there is an internal bank visible. On the western edge is a further mossy bank and ditch. These features of woodland archaeology are typical of ancient woodland sites and add to the cultural interest of the site.

A surfaced path runs up the eastern side of the woodland copse, parallel to the wooded road embankment.

A well-structured woodland edge with dense bramble and tall, quite tussocky herb-rich grassland occurs at the northern end of the copse. Fine grasses such as red fescue and sweet vernal grass and tussocky species including tall fescue and cocksfoot are present here along with herbs such as common birds-foot-trefoil and common knapweed.

Dry grassland habitat occupies the central part of the site where scattered lime and field maple trees are also present. Parts of the sward are quite low and trampled with some less herb-rich areas where perennial rye grass and white clover are prominent. Elsewhere pignut is locally frequent and wildflowers such as common St Johns-wort and birds-foot-trefoil are locally frequent. This area appears to be mown more frequently than is ideal for wildlife.

The most interesting part of the site is the narrow northern arm, which includes the long depression with a raised bank on the western edge and the scrubby motorway embankment

on the eastern side. A small stream winds through this zone and the area appears to have quite complex soils and hydrology since there are both wet and dry areas as well as distinctly acidophilous plants such as ling and species typical of more neutral soils such as pale sedge.

The southern part of the wet grassland is lush and grassy with a range of wetland plants including rushes, tufted hair grass, sedges including stands of brown sedge, hairy sedge and oval sedge, creeping Jenny, meadowsweet and great willowherb. There are also coarser species such as nettle, docks and hogweed in this part of the site, which suggests that management may be too light and enrichment of the sward may be taking place.

Patches of gorse scrub, bramble and grey willow begin in the south of the depression and become much more abundant further northwards where the habitat becomes an intimate mosaic of young willow carr, bramble and gorse scrub, young oaks and open glades containing tussocky, damp acid grassland species such as tormentil, tufted hair grass, rushes and ling.

At the northern tip of the site there is a raised plateau with a patch of very herb-rich, acid grassland with much common knapweed, ling, sedges, tormentil, birds-foot-trefoils and red clover. Gorse scrub and grey willow also occur in this area and there is a very warm, sheltered microclimate, making this part of the site especially good habitat for invertebrates and reptiles.

Crabbet Park is likely to support a good range of fauna including invertebrates, breeding birds, reptiles and amphibians. Fauna observed during the survey include wasp spider, large emerald moth, small copper, meadow grasshopper, bumblebees, orange tip, common blue and speckled wood. There was evidence of deer in the wetland area.

Local residents are already taking an interest in the wildlife of the site and their interest could be harnessed to help with site patrolling and management.

Management recommendations and further surveys needed

1. Remove rhododendron from woodland.
2. Remove the occasional garden species that have taken root in the woodland and wetland areas.
3. Remove garden debris from the woodland and wetland areas and discourage adjoining landowners from dumping waste on the site.
4. Continue to maintain a small, informal path in the woodland.
5. Continue to mow paths through the dry grassland during the growing season.
6. Mow the main dry grassland area annually, late in the season leaving wide, unmown margins and remove cut material. There is already a pile of grass cuttings in the southeast of the grassland and this could continue to be used, but its area should be kept as small as possible.
7. Manage the wet grassland/scrub area to maintain the mosaic of glades and woody areas. Cut back banks of bramble on rotation, coppice old gorse bushes to rejuvenate them, remove at least some of the young oak and ash trees and coppice older grey willows. Glades should be mown every 2-3 years, on rotation, and the cut material removed. The aim should be to conserve and enhance the structural diversity of this area.
8. Maintain the rich woodland and scrub edge habitats as much as possible for the benefit of fauna on the site.
9. Surveys of invertebrates (especially butterflies and moths), herpetiles, breeding birds and bats are recommended.

Ewhurst Wood SNCI

Survey date & weather:

4th May 2010. Cold and cloudy weather conditions.

Site summary and current condition

There are three parts of Ewhurst Wood, separated by major roads and there is considerable public access especially into the two northern sections of woodland. The wood is a valuable area of urban habitat, but suffers from high levels of litter and disturbance. Managing this site needs to take into account the amount of use it receives and should focus on access needs and control of abuses.

The woodland appears to be little changed from the previous survey in 1992, though the amount of disturbance and litter may be greater than in the past.

All three areas of woodland have a reasonably diverse structure and patches of good ground flora with ancient woodland indicator species present. There are also non-native, invasive species present across the site.

General description (with common and notable species)

The eastern part of Ewhurst Wood, adjoining West Green Park and the ambulance station, comprises oak, birch and occasional ash with holly and hazel dominating the shrub layer. The ground flora has carpets of bluebell and wood anemone with some patches of bramble. Rowan and wild cherry are also present and occasional cherry laurel. There is an old wood bank and ditch along the eastern edge of the wood and abundant deadwood present. A dense, unmanaged area of planted trees adjoins the northern edge of the ancient woodland area.

The southern part of Ewhurst Wood suffers less human disturbance than the other two areas, but has a rather coarse ground flora with much hogweed, ivy and bramble, suggesting there has been some ground disturbance in the past. However, ancient woodland indicator species such as bluebell, wood anemone and goldilocks buttercup are also present, especially in the west of the area. Sycamore regeneration is locally frequent along with mature wild cherry, overshot hazel stools, holly and oak. There is a large bank in the northwest of the copse and a ditch runs through the centre. Deadwood is abundant and some litter is present, especially along the boundary with gardens to the south.

The largest, northern section of Ewhurst Wood has the highest levels of public use and human impacts. There is a mown, grassy area in the south of this block with mature oak, ash and wild service trees. A surfaced path bisects this part of the woodland and there are wide, grassy margins along the path with relict woodland species present including dog-violet, wood avens and wood sedge along with cultivated daffodils.

The northern area of woodland is predominantly oak, holly, hawthorn and hazel with scattered cherry laurel over dense areas of bramble, dog rose and honeysuckle with some bluebell, ivy and enchanters nightshade. The presence of wild service-tree seedlings and saplings to the east of the path is a notable feature. Holly is locally dense and in these areas the ground flora is sparse. Bluebell is more frequent in the east of the site whilst in the west bramble is abundant along with cow parsley and ivy where the ground has been trampled and disturbed. There are some wet flushes in the west and occasional stands of goldilocks buttercup. Camps have been made in the west of this area, near the housing.

Management recommendations and further surveys needed

1. Continued removal of litter and debris associated with camps is likely to be the main management activity in all three parts of Ewhurst Wood.
2. Control of invasive, non-native species should be carried out, particularly cherry laurel, but also the snowberry and other garden species that are present in the southern block of woodland and the extensive stands of variegated yellow archangel that occur in the north of the northern block.
3. Grass cuttings from West Green Park are dumped within the woodland edge in the eastern block of Ewhurst Wood. This should be discontinued as it will adversely affect the woodland ground flora.

Goffs Park

Survey date & weather:

27th May 2010. Cloudy and mild.

Site summary and current condition

Goffs Park is a site of considerable importance for its cultural heritage as it encompasses part of the old parkland grounds of a 14th Century manor house. In addition to the parkland trees the site includes an interesting mixture of formal amenity areas, a small golf course and semi-natural habitats. The mixture of grassland, woodland, a large pond, hedgerows a shaw and mature trees provides habitat for a good range of wildlife in this urban setting. The linear features help to link areas of semi-natural habitat across the site.

The amenity grassland areas are mown regularly during the growing season and one part of the parkland was fenced off at the time of the survey. The "conservation area" in the northwest of the site has the potential for enhanced management.

General description (with common and notable species)

The main area of parkland is in the east of Goffs Park where old trees including oak and lime occur over patches of herb-rich grassland with scattered ancient woodland plants such as bluebell and goldilocks buttercup. The grassland in this part of the site is kept short, but in a fenced enclosure where mowing had ceased a fairly herb-rich sward had developed with common wildflowers such as ox-eye daisy, red clover and buttercups. There are also areas of quite diverse uncut grassland around the model railway track where plants such as common knapweed, bugle, hoary ragwort, creeping cinquefoil and common sorrel occur.

In the centre of the park there is an ornamental pond and area of woodland. There is a surfaced path around the pond, which has a mixture of native and exotic plants on its margins and is fenced to prevent access to the water. Canada geese, moorhen and mallards were numerous on the pond, whose margins are quite eroded and largely devoid of emergent vegetation.

The woodland area is quite varied with a central open, grassy glade containing play equipment. The eastern side has a very open structure with even-aged trees and a sparse shrub layer. There are over-shot hornbeam coppice stools, some field maple and oak over a very trampled field layer with extensive bare patches. However, there are fragments of ancient woodland ground flora in the less trampled areas with plants such as wood anemone, wood sedge, bluebell, wood melick, sanicle, moschatel, pignut and goldilocks buttercup observed. There are old banks and ditches around the margins of the woodland block and some good standing dead trees.

The western part of the woodland is less disturbed and has a better structure and more intact ground flora. There are a few coppice stools on the western edge and ash regeneration is frequent. The ground flora includes much wood anemone, wood sedge, bluebell and dog violet.

To the north of the woodland is an open expanse of amenity grassland with a row of old oaks on a quite herb-rich bank. There is also a narrow wooded shaw and stream bisecting the golf course in the west of the site. The golf course has scattered trees over a closely mown grassland sward and was excluded from this survey.

In the northwest corner of the site, separated from the golf course by the wooded Goffs Lane, is the "conservation area". This is an area of damp, semi-improved grassland with mown paths and scattered trees and shrubs that appears to be only very lightly managed. It is a sheltered, sunny habitat with rich woodland and scrubby edges that are likely to be valuable to a range of wildlife, especially grassland invertebrates, small mammals and birds. The colourful sward includes many species typical of damp grassland including oval sedge, greater birds-foot-trefoil, soft rush, hard rush, great willowherb along with several vetch species, grass vetchling and common knapweed.

There is a dense area of mixed scrub with grey willow, ash, hawthorn, bramble and oak along the western edge and adjoining that is a small, dense broadleaved plantation with species such as poplar, small-leaved lime, field maple and silver birch over very dense bramble. This wooded zone is likely to be of value to breeding birds, reptiles and small mammals.

Management recommendations and further surveys needed

1. Grass cuttings and wood chips have been dumped in the western end of the woodland near the track. These will cause enrichment of the soil as they rot down and will adversely affect the ground flora so ideally a new area for such material should be found where it does not affect semi-natural habitats.
2. Continue control of rhododendron and cherry laurel in woodland areas.
3. Leaving margins of longer grass, especially adjoining the shaw and hedgerow, would enhance the rough areas in the golf course.
4. Increase the extent and width of unmown grass margins around other amenity areas wherever possible.
5. Mow and remove cuttings from the grassland in the conservation area late in the year. Continue to mow paths. Prevent more trees becoming established in the sward.
6. Manage the plantation by thinning trees and creating glades to link existing open, herb-rich areas. Remove tree guards.
7. Carry out surveys of breeding amphibians in the pond, butterflies (especially in the conservation area), bats in the parkland and breeding birds across the site.

Hawth Woods SNCI

Survey date & weather:

4th May 2010. Cold and cloudy conditions.

Site summary and current condition

Hawth Woods SNCI comprises a diverse area of ancient, semi-natural coppiced woodland. The ground flora is very rich with many ancient woodland indicator species.

The site is extremely topographically varied with many old extraction pits, mounds and boundary banks. These features of woodland archaeology add to the interest and value of this site. A new surfaced path has recently been installed in the woodland and there is a grassy amphitheatre and stage in the northeast corner.

The site is in good condition despite high levels of public access and the potential for vandalism and abuses, particularly in view of its proximity to a school playing field. It appears to be little changed from its condition in the 1992 SNCI survey.

General description (with common and notable species)

Hawth Wood is predominantly hazel coppice with oak, ash and birch in the canopy and locally frequent holly, hawthorn, bramble and honeysuckle in the shrub layer.

Most of the area is ancient, semi-natural woodland though there appears to be an area of secondary woodland on disturbed ground in the north of the site where ash and hawthorn are prominent and ash regeneration is frequent. The hawthorn in this area is very drawn-up and the ground flora includes locally frequent enchanters nightshade and some dense bramble patches.

The majority of the woodland has a very diverse ground flora with numerous ancient woodland indicator species including bluebell, early purple orchid, wood anemone, goldilocks buttercup, wood spurge, primrose, wood sorrel, wood melick, wood sedge and early dog-violet. In the damper, shadier areas of the woodland and in hollows the ground flora has a mossy, ferny character.

There are occasional non-native species in the woodland such as cherry laurel and cypress trees. There are quite extensive stands of variegated yellow archangel in the west of the site, which tends to suppress the native ground flora species.

There is an old woodland bank on the western edge of the woodland, adjoining the playing fields, where old oak and wild cherry trees occur.

The woodland structure is particularly good with a dense shrub layer in many places. The numerous pits and hollows in the wood create different aspects and varied microclimates within the site.

The new path has caused some ground disturbance in the woodland but it will help to keep most pedestrian traffic on a single route and reduce use of some of the minor paths within the wood. Piles of deadwood have been retained near the path edges and there is abundant deadwood from old storm damage throughout the site.

Management recommendations and further surveys needed

1. The high levels of public access limit management options on this site. Re-coppicing the hazel could have biodiversity benefits but would probably not be advisable due to the risk of vandalism and fires.
2. A management objective should be to retain the woodland's dense structure and impenetrable thickets as wildlife refuges.
3. Some selective thinning of ash and hawthorn in north could be carried out to enhance shrub layer growth.
4. Non-native trees such as cherry laurel and cypresses should be removed.
5. There are old metal fence panels in the southeastern corner of the woodland, which should be removed.
6. The large amounts of variegated yellow archangel in the west of the site, near the housing, should be removed if possible.
7. Regular litter picks should be continued and the amount of damage from bikes on the steep mounds and larger pits should be monitored.
8. The site is likely to support a good population of small mammals and there is a small possibility that dormice may be present. A survey of opened hazelnuts should be carried out in autumn to look for evidence of this species.

Ifield Mill Pond and Water Gardens SNCI

Survey date & weather:

16th June 2010. Warm and sunny conditions.

Site summary and current condition

This site is divided into three parts by the railway line and a road. The railway bisects the Mill Pond SNCI and the Bewbush Water Gardens lie to the west of Waterfield Gardens. All three sections of the site contain open water and wetland habitats of particular importance for their bird assemblage. There are also woodland areas of biodiversity interest and the whole site is of high public amenity value.

The condition of the three areas is varied. To the north of the railway the habitats are in good condition and levels of access are compatible with the wildlife interest. South of the railway there is considerably more access and consequently higher levels of disturbance. The water level in this part of the Mill Pond was very low in summer 2010 and this, combined with high numbers of waterfowl, had reduced the water quality and amount of aquatic vegetation. Water quality in the Water Gardens also appeared to be quite poor, but the marginal habitats were in good condition.

All three parts of the site seem to have developed considerably since the 1990 survey, not just through natural succession, but as habitat creation work has matured, especially tree and shrub planting around amenity areas.

General description (with common and notable species)

Mill Pond South

The Mill Pond water levels were very low and the water turbid due to high numbers of water fowl, including a large flock of Canada geese. Aquatic vegetation is minimal and emergent vegetation is also quite limited, partly due to excessive shading by trees and shrubs and also through erosion of the banks associated with angling. Plants present on the margins include common reedmace, branched bur-reed, soft rush, gipsywort, hemlock water-dropwort and water mint. There are small amounts of yellow water-lily, especially in the northern part of the pond near the railway line.

There is a wooded island in the Mill Pond and a narrow strip of ancient, semi-natural woodland along the western edge of the waterbody. This woodland comprises oak, birch and alder with some hazel and hornbeam over a ground flora with bramble and patches of bluebell and wood anemone. A bank parallel to the water's edge has the highest concentration of ancient woodland indicator species and the presence of wild service-tree in this area is of note. There is a dense stand of cherry laurel near the adventure playground.

The woodland area along Douster Brook is predominantly hazel coppice with informal paths and grassy glades as well as a rich ground flora in places with bluebell, wood anemone, yellow archangel, wood melick, ivy and cow parsley all locally frequent. Variegated yellow archangel is locally abundant on the eastern edge of the woodland and there are some properties on this edge that have dumped garden waste in the wood. There are some fine mature oaks in the woodland whilst alder and willow are dominant along the stream and around the series of small, shallow ponds that are present at the northern end of the wood. The marsh violet, previously recorded from this area, was not re-found during the 2010 survey, but may still be present.

The ponds are largely inaccessible and have abundant vegetation including grey willow, hemlock water-dropwort, common reedmace, reed canary-grass, broad-leaved pondweed, branched bur-reed and duckweed. The ponds have good potential to support aquatic invertebrates, amphibians and grass snakes.

On the southern side of the Mill Pond there is an area of planted trees over unmown grassland that has both coarse, tussocky areas and a few more herb-rich patches with much meadow vetchling and stands of sharp-flowered rush.

There is a strip of mown, amenity grassland alongside the canalised Broadfield Brook. Patches of mixed scrub are present along the brook and form a link with the woodland area along Douster Brook. A low embankment along the roadside is unmown and supports a mixture of coarse grassland and some flowery areas with ox-eye daisy, common birds-foot-trefoil, red clover, common knapweed and creeping buttercup. The amenity grassland extends up the entire eastern side of the Mill Pond but the strip of woodland and scrub on the Mill Pond edge has developed into a useful buffer zone.

Mill Pond North

This part of the Mill Pond has far better developed wetland habitats than the southern area with much less disturbance. Angling is prohibited in this area so trampling of the banks is much less widespread. Floating aquatic vegetation is more extensive with rafts of yellow and white water-lily, and there are intact areas of mixed emergent vegetation around the pond edges that include common reedmace, branched bur-reed, bulrush, yellow flag, purple loosestrife, water mint, soft rush, hemlock water-dropwort, great willowherb, pendulous sedge and gipsywort. There is an area of willow carr adjacent to the railway line that provides excellent, undisturbed habitat and patches of alder and willows occur on the banks of the Mill Pond.

The grassland to the west of the Mill Pond is largely improved and botanically poor but the large unmown areas are attractive to bees as they contain a high proportion of clover, vetches and birds-foot-trefoil. Scattered trees are present in this area, which includes the site of an old orchard. The western boundary of this area includes a hedgerow, scattered trees and patches of scrub next to a surfaced path.

This part of the site has good potential to support a range of dragonflies and damselflies.

Bewbush Water Garden

The Water Garden is an unusual area, part formal garden and part wet woodland habitat, all of it potentially valuable to wildlife and complementary to the adjoining Mill Pond as well as being of historical interest.

The central area is a series of ponds and islands developed on the Bewbush Brook, with formal gardens of grassland and a mixture of native and exotic trees and shrubs on the surrounding slopes. Some of the grassland is mown but there are also areas of taller sward and the sinuous margins between grassland and trees provide much useful edge habitat.

Emergent vegetation is present around the waterbodies and there are also dense thickets of bramble and exotic shrubs on the steep banks of the ponds, which provide good cover for fauna.

At the southern end of the Water Garden there is a higher proportion of alder and willow on the banks, which provides a good wildlife corridor to the land immediately downstream of the Water Garden where there is more extensive wet woodland habitat.

The Water Gardens have a formal atmosphere but the habitats present provide a good range of conditions for wildlife and there is considerable structural diversity in the wetland, grassland, scrub and wooded areas. This area is likely to be rich in dragonflies, breeding birds and herpetiles.

Management recommendations and further surveys needed

1. Continue mowing paths regularly.
2. Cut long grass areas on 3-4 year rotation and remove cuttings (especially in areas south of the railway).
3. Dredge and re-profile banks at the south end of the Mill Pond to remove accumulated silt and promote better aquatic and semi-aquatic vegetation. New marginal ledges would need to be protected from wild fowl and anglers to allow vegetation to establish.
4. No major woodland management is recommended at present. Aim to maintain low levels of access into the woodland on Douster Brook.
5. Consider restoring the old orchard and extending it into the improved grassland area.
6. Carry out long rotation, low-key coppicing of marginal willows north of the railway to maintain open banks and emergent vegetation.
7. Remove garden waste and liaise with adjoining property owners.
8. Remove stand of cherry laurel from western woodland near the adventure playground.
9. Continue to remove rubbish regularly, especially from fishing bays on the eastern side of the Mill Pond.
10. Surveys of odonata and bats, especially in the north end of the Mill Pond and herpetile surveys in the southern woodland pond areas are recommended.

Maidenbower Pond

Survey date & weather:

19th May 2010. Hot and cloudy conditions.

Site summary and current condition

This is a newly created site associated with large-scale development in the area. A series of three large ponds, separated by low causeways with overflow channels is surrounded by sown grassland, bare ground with ruderal vegetation and planted trees and shrubs. The Gatwick Stream lies to the south of the ponds and there is a small fragment of semi-natural, wet woodland on the stream bank where alder and ramsons are prominent.

Water quality in the ponds does not appear to be very good and at the time of the survey there was a considerable amount of alga and silt present. There is also a major problem with the non-native and highly invasive plant parrot's feather in the ponds.

General description (with common and notable species)

The margins of the pond area are developing a mixture of flowery grassland and mixed scrub/woodland habitats. A wide range of native species has been planted including trees and shrubs such as alder, silver birch, oak, hazel, hawthorn, blackthorn and field maple. These species complement the area of semi-natural woodland and dense scrub on the southwest-facing bank at the north of the site, which adjoins the Worth Way SNCI disused railway line. Alder is colonising naturally on the pond margins and a small island of willow is developing in the northern pond area.

The grassland areas around the pond have been sown with a wildflower and grass mixture, and are already developing into valuable habitat for invertebrates, especially on the sunny banks. There are large numbers of cultivated daffodils planted in the sward and it is possible that some of the wildflowers present are not of native origin but are cultivated varieties. In places the grassland sward is very sparse and there are areas of bare ground where ruderal vegetation occurs.

A fringe of emergent vegetation is beginning to develop around the ponds, but is currently incomplete and is probably slowed down by the action of numerous grazing geese and other wildfowl as well as by anglers using the ponds.

The habitats on this site are very young and still have a slightly artificial character, but in time this area will develop into a useful urban greenspace of potential value to birds, invertebrates, small mammals, amphibians and reptiles. Common frog tadpoles were abundant in the pond margins during the survey.

Management recommendations and further surveys needed

1. Undertake a programme of parrot's feather control.
2. Thin planted trees and remove tree tubes.
3. Remove rubbish from northern woodland.
4. Investigate water quality.
5. Thin trees and shrubs on margins to maintain the balance of open and shaded banks.
6. Take annual fixed-point photographs to document development of the habitats.
7. Surveys of dragonflies, damselflies and breeding amphibians are recommended.

Manor Royal Flood Pond (also known as Crawters Brook)

Survey date & weather:

7th June 2010. Warm and sunny conditions.

Site summary and current condition

This small site, hidden away in the Manor Royal industrial estate and surrounded by development, is an interesting mixture of woodland, scrub, fen and wet grassland on the banks of a canalised stream. The value of the site as a refuge for wildlife is increased by its isolation from other semi-natural habitats and a surprising number of species of fauna and flora were observed during the survey.

The site has changed considerably from the description of it in 1990 when it was regularly mown and very open. Relaxed management has allowed much greater structural diversity to develop and has probably enhanced the site greatly for invertebrates and breeding birds in particular. It is currently in good condition, but there are signs that too little management allowing tree and scrub encroachment and gradual drying may lead to a loss of wetland habitat in future.

General description (with common and notable species)

This rectangular site has the largely concrete-lined Crawters Brook running along the eastern edge and is primarily an embanked area in the floodplain of the stream with raised, wooded banks on all four edges. The floodplain area supports a rich mixture of wet grassland and fen vegetation.

The woodland on the west bank comprises mainly oak, birch, hawthorn, hazel and elder over a tangle of bramble, nettle, bracken and Indian balsam with some patches of bluebell on the lower part of the slope. There had been some recent scrub clearance in this area prior to the survey and some piles of logs were present. In places the ground layer is sparse or even bare and there is a considerable amount of rubbish along the edge of the site adjoining the buildings.

At the northern end of the site is an area of woodland with oak, ash, elder, holly, cherry laurel, alder and a ground flora locally dominated by ivy but with some patches of bluebell, enchanter's nightshade and abundant honeysuckle. There is a small stand of the invasive, non-native Japanese knotweed on the north side of the stream in this area. This plant should be removed as a priority before it spreads further into the site.

The alder in the north of the site and along the narrow, eastern wooded bank had been coppiced recently. There are some gaps in the wooded and scrubby fringes to the site and management to consolidate the gaps whilst enhancing the structural diversity of the wooded fringe through coppicing would be very beneficial.

The site is much wetter in the north and the blackthorn, bramble and grey willow scrub is encroaching from some of the embankments onto the open fen, especially on the western edge. There are also some bare, sunny patches on the embankments that will provide good habitat for basking reptiles and aculeates.

The floodplain area is a mixture of a tall, coarse sward with much dock and nettle and a shallow flushed area dominated by water-pepper and redshank that is probably a seasonal pond in the north. Further south there are stands of sedges, meadowsweet, rushes, great willowherb and other fen vegetation in a mosaic with wet grassland with common sorrel, greater birds-foot-trefoil, sharp-flowered rush, common marsh bedstraw and marsh foxtail.

Bladder sedge is a notable species within this area of wetland habitat. The invasive and non-native Indian balsam is present across much of the site, but especially in the fen area.

In the southern part of the site it appears that the ground is drying out and young oak trees are becoming established in the sward along with dense stands of bramble and bracken. This will eventually cause a loss of the wetland habitats if remedial management is not carried out.

In the south of the site, adjoining the main road, there is a mown picnic area with a coarse, ruderal sward and young mixed hedgerow shrubs and some older oak, hornbeam and horse chestnut trees on the edges of it. This area is separated from the rest of the site by an earth bund, which has much rubbish on it.

The site has good potential to support a range of breeding birds, invertebrates, amphibians and reptiles. Rabbit grazing is very evident across the site.

Management recommendations and further surveys needed

1. Remove the clump of Japanese knotweed and dispose of the material appropriately.
2. Control Indian balsam by pulling up plants before they set seed.
3. Remove rubbish and metal debris from site edges.
4. Institute rotational fen management by cutting and removal in sections on a 4-year rotation.
5. Deepen the northern, shallow pond and create a new pond in the south.
6. Remove young regenerating oak trees in the south.
7. Carry out a reptile and amphibian survey.
8. Promote the development of more continuous, dense scrubby margins.
9. Plant additional pollen, nectar and fruit bearing shrubs on the margins of the picnic area.

Target Hill LNR

Survey date & weather:

27th May 2010. Cool and drizzly/cloudy conditions.

Site summary and current condition

Target Hill LNR has a mosaic of grassland, scrub and woodland habitats with a network of surfaced and mown grassy paths. There is a pond in the south of the site and wet flushes in the grassland and woodland nearby.

The habitats on Target Hill are of relatively recent origin but nevertheless are of high biodiversity value and a good range of native fauna and flora have colonised this former landfill site. Natural succession has progressed since the 1990 survey and the balance between open, grassy habitats and scrubby/wooded areas has changed so that there are now far fewer open areas and views from the site are probably reduced.

The site is currently in good condition, but there is a need for ongoing management to ensure the valuable structural diversity and edge habitats are maintained.

The good connectivity between this site and the adjoining Buchan Country Park will have hastened the colonisation of Target Hill by wildlife and adds to its biodiversity value.

General description (with common and notable species)

The woodland on Target Hill is all of secondary origin, some of it planted and some from natural regeneration. Birch and willow are among the most common species, but other woody species present include oak, ash, sweet chestnut, hawthorn, aspen and hazel. The ground flora in the wooded areas is generally quite coarse.

The small pond has a dipping platform and at the time of the survey was almost dry with very little open water and extensive emergent vegetation including a range of wetland plants such as yellow flag, common club-rush, great willowherb, purple loosestrife, lesser spearwort, marsh marigold, sedges and rushes. The edges of the pond are mown and there are banks of bramble and grey willow scrub surrounding this area.

To the north of the pond is an area of wet woodland dominated by willow with flushes containing pendulous sedge, soft rush, common marsh bedstraw and purple loosestrife. This wet area grades into drier woodland with birch, willow, rowan and blackthorn over dense bramble with occasional rhododendron shrubs. Common dog-violet and bugle are locally frequent in the woodland but the ground flora is generally quite coarse with frequent nettle, docks and bracken.

On the north-facing slope of Target Hill there is an area of mixed scrub and woodland with some rhododendron. There is a large stand of great horsetail on this slope and scattered broad-leaved helleborine plants occur along the upper path edge.

Bramble, tall herbs and bracken have come to dominate some of the woodland glades and areas alongside the main path that were formerly grassland (in 1990). These areas will need management by cutting and removal of arisings to restore the herb-rich grassland swards. The glades should be cut on a 3-4 year rotation, especially those around the benches at the top of the north-facing slope.

The main area of grassland is on the top of the hill in the south of the LNR. The sward is generally grass-dominated and tussocky but has common herbs such as creeping cinquefoil, vetches, meadow buttercup, meadow vetchling and birds-foot-trefoil which are rich in nectar and pollen, so are of value to invertebrates. Coarse species such as creeping thistle, bramble and nettle are encroaching in places but there are also areas with a quite damp sward of a more semi-natural character where plants such as silverweed, oval sedge, sweet vernal grass, rushes and tufted hair-grass were noted.

The weather on the day that the survey was carried out was not good for recording invertebrates, but a range of common birds was noted and the structurally diverse habitats present are likely to be attractive to insects such as butterflies, moths and bumblebees, small mammals, reptiles and amphibians.

Previous records include some significant BAP species on the site, such as adder, dingy skipper and grizzled skipper. Further surveys of the fauna of the LNR are recommended to establish the status of these and other species.

Management recommendations and further surveys needed

1. Control rhododendron in woodland and on north-facing slope. Use clearance work to create open glades in the woodland and maintain a diverse structure in the wooded habitats.
2. Continue to remove rubbish regularly.
3. Continue path edge mowing but extend vegetation management to create larger scallops and glades along paths. Use cut branches and brash as dead hedging to restrict public access to woodland areas where possible.
4. On the path along the northern edge of the hilltop, near the viewing benches, soften the scrub edge by further cutting back to create a more sunny and open ecotone with graded edges from grassland to scrub.
5. Manage glades and the main grassland area with a late season cut and removal of cut material.
6. Manage all scrub edges on rotation to maintain and enhance the diverse structure and rich ecotones.
7. Thin birch and grey willow in the wet woodland north of the pond to promote better woodland structure.
8. Widen path edges on the main route in from the northeast (St Clement Road) entrance.
9. Restore the pond by clearing at least 50% of the emergent vegetation.
10. Surveys of fauna using the site could be carried out, including breeding birds, butterflies and moths, foraging bats, reptiles and amphibians.
11. Dormice are known to be present on the adjoining Buchan Country Park and could have colonised the scrubby woodland of Target Hill. A survey for their presence using nest tubes is recommended.

Tilgate Golf Course SNCI and LNR

Survey date & weather:

25th June 2010. Hot and sunny conditions.

Site summary and current condition

Tilgate Golf Course forms the eastern part of the larger Tilgate Park SNCI. The Golf Course includes areas of semi-natural habitat of high biodiversity value including broadleaved and coniferous woodland, acid grassland, heathland and ponds.

The site is primarily used for recreation including golf, cycling and walking but the extensive areas of high value habitat make it an important addition to the SNCI and an area rich in wildlife. There is a designated cycleway through the site as well as public footpaths.

The condition of this site is mixed. Some areas are well managed and there has been heathland restoration work in parts of the plantation woodland, but there is considerable scope for more removal of invasive species and better management of the woodland and the heathland areas. Less intensive, more wildlife-friendly management of the golf course rough would also be beneficial.

General description (with common and notable species)

The woodland areas of the golf course include ancient, semi-natural woodland (some of it now planted with conifers), secondary woodland and plantation on former heathland. Typical woodland species include oak, birch, rowan, sweet chestnut, beech, sycamore and rhododendron with holly, hawthorn and hazel present in the more semi-natural areas. Open, secondary birch woodland with abundant bracken is very common.

The woodland ground flora varies according to the type of woodland, with plantations and secondary woodland typically having much bracken, bramble and honeysuckle and relict heathland species whilst ancient semi-natural areas have a more diverse ground flora with frequent ferns and bluebell. The wet woodland along the eastern edge of the site is especially species rich.

The amount of rhododendron varies across the site, but in places it is abundant especially in the west and north. In the northeast corner of the golf course there is a block of unmanaged, mixed woodland with mature hazel and little rhododendron that is potentially good habitat for dormice. To the south of this area there is more open birch woodland that grades into the wide, heathy ride below electricity pylons that is one of the best features of this site.

The ride has a mixture of scrubby, acid grassland and wet heathland habitats with much bracken, purple moor-grass and regenerating birch. There is a small pond next to the ride with abundant lesser spearwort and unfortunately much New Zealand pigmyweed too.

A second, larger pond is present within the golf course to the west of the ride. Another non-native invasive species was noted in this pond in the 2003 SNCI survey. Most of the parrot's feather has been removed from this pond, but a few patches are still present on the margins so control measure will need to continue. This pond had low water levels at the time of the survey, but was rich in dragonflies and damselflies.

To the north of the pond the pine plantation had been thinned and heathland creation work was underway. Tree felling had also been carried out in places on the edges of fairways to create open bays into the heathy woodland.

The central part of the golf course has the best areas of acid grassland and heathland vegetation. Whilst blocks of ling have been retained within the playing area they are now rather even-aged and would benefit from management to enhance their age structure. The edges of the fairways across the golf course are quite closely mown and there is an opportunity to increase the width of tall vegetation buffers between playing areas and surrounding woodland. Both tall grassland and heathland fringes between the fairways and woodlands would be very valuable.

In the south of the site, where the pylon ride meets the main footpath, there is an area of heathland vegetation suffering from prolific birch invasion and stands of very dense bracken on the ride. These areas need ongoing management to maintain the heathland vegetation.

In the southwest corner of the site is an area of open pine plantation, which has great potential for a combination of ancient woodland and heathland habitat restoration work through conifer removal. This area could form an important link between open habitats in the two parts of the SNCI.

Management recommendations and further surveys needed

- Further conifer removal and heathland recreation including ride widening and creation of glades on woodland edges.
- Control of rhododendron across the site.
- Selective felling of sycamore and non-native oaks.
- Increased unmown margins around golf playing areas as long grass and heathland rough.
- Rotational cutting of even-aged stands of ling to enhance age structure.
- Cut and treat young, regenerating birch in the southern heathland area.
- Mow or spray bracken under pylons in south.
- Undertaken heathland restoration in the southern pine plantation to link the pylon ride with restored heathland in Tilgate Park. Ground scraping may be needed to remove the dense carpet of pine needles.
- Retain scrubby, wooded margins along the southern boundary and combine with some PAWS restoration along southern edge of the site.
- Enhanced management of restored heathland habitats through mowing (or ideally grazing) is needed to avoid invasion by birch and bracken.
- Remove New Zealand pigmyweed from the small pond.
- Continue to control parrots feather in the larger pond.
- Carry out dormouse surveys in woodland areas.

Tilgate Park SNCI

Survey date & weather:

25th June 2010. Hot and sunny conditions.

Site summary and current condition

Tilgate Park SNCI is a large and very important site within Crawley Borough for its wildlife, educational facilities, formal parkland landscape and as an area for recreation. Adjoining areas of semi-natural habitat complement the Park and add to its overall biodiversity potential.

The Park contains many different habitats, from formal parkland to ancient woodland, large open waterbodies and small shaded ponds, with areas of unimproved acid grassland, heathland and scrub. The wildlife found within these habitats is already well documented by CBC staff and others and the site is known to be particularly rich in birdlife (especially wetland species), reptiles and amphibians.

The focus of this SNCI review was on the potential for Tilgate Park to support dormice. There are records of this legally protected species from woodland on the site and from the adjoining motorway embankment. Survey effort was therefore concentrated on the woodland areas in the western and southern parts of the site and the parkland areas were largely excluded. Woodland to the east of Tilgate Lake was not accessible for survey due to ongoing construction work during summer 2010.

General description (with common and notable species)

The woodland to the west of Titmus Lake is plantation on an ancient woodland site dominated by a mixture of birch, beech, sweet chestnut and pine with a very sparse shrub layer that includes some holly and rhododendron. Conifers are locally frequent in the northwest and old sweet chestnut coppice occurs in the southwest. The ground flora is patchy and includes some areas where bluebell is locally abundant but elsewhere bracken is frequent whilst bramble and honeysuckle are sparse. Deadwood is plentiful in this area of woodland and there are numerous pits, banks and hollows, which are features of woodland archaeological interest. ***This area is currently sub-optimal dormouse habitat since it lacks structural complexity and a diverse shrub layer.***

There is a major east-west woodland ride along the southern edge of the site, which has much rhododendron and bracken on the edges along with damp flushes and patches of heathy vegetation. This is a valuable feature of the woodland especially for plants of open, sunny habitats, invertebrates and reptiles. A smaller north-south ride runs between Titmus Lake and the western woodland. A small stand of the non-native and invasive Japanese knotweed is present beside the ride and should be removed as a priority.

There is a small block of wet woodland around the stream that flows into Titmus Lake. This area has a mixture of birch, hazel, oak, rowan, alder and sweet chestnut with rhododendron in the drier areas, but a much more diverse shrub layer in the wettest parts. There is a rich ground flora in this part of the site with much pendulous sedge and enchanters nightshade around the stream and wet flushes. ***This area has good dormouse potential with well-developed structure and a variety of potential food sources.***

The strip of woodland to the south of the Nature Centre has some diverse heathy glades amongst birch woodland with extensive rhododendron.

To the southeast of the Nature Centre there is a further substantial block of woodland with parkland and formal gardens on its margins. The woodland includes extensive pine plantation as well as areas of sweet chestnut, beech, birch and varied amounts of rhododendron throughout. Willows are present in wet flushes and there are some dense, tangled areas of shrub layer with holly, bramble, bracken and honeysuckle. Rowan and hornbeam are occasional components and whilst the ground flora is either sparse or dominated by bracken in places, there are also some very mossy zones and wood sorrel is locally prominent. ***Parts of this area of woodland have good dormouse potential, especially where young birch and a dense shrub layer is present. The conifer plantation is potentially less hospitable.***

To the south of this area of woodland is the site of the old Pinetum, which has both mature and newly planted conifers on an excellent area of unimproved acid grassland and heathland sward.

To the south of Silt Lake is a structurally diverse area of rhododendron, birch, oak, maples, alder and rowan with a dense, tangled shrub layer with some grassy, wet glades, areas of bracken, abundant honeysuckle, bramble and bluebell. There are also several ponds in this area that were constructed to receive water from the motorway but have developed into valuable habitats. The largest of these ponds has had great crested newts recorded from it and has a rich emergent flora including reedmace, water mint, gipsywort and reed sweet-grass as well as an area of south-facing, herb-rich grassland and gorse scrub on its northern bank. ***The dense, scrubby parts of this area have the potential to support dormice and the diverse structure in parts of the woodland adds to the value of the habitat.***

East of Silt Lake and Titmus Lake there are extensive areas of woodland including conifer plantation in the south that has been thinned recently. A fringe of wet, broadleaved woodland is present around the lake margins and although much of the woodland was inaccessible due to work on the main lake, the area appears to include mixed woodland with conifers, sweet chestnut, beech, hazel, sycamore and birch. Bracken is frequent and there is an ancient woodland ground flora. The woodland appears to have a semi-natural character with a higher proportion of hazel and better structure towards the lake edge. ***The eastern woodland areas appear to contain some very suitable habitat for dormice.***

There is a major north-south ride separating Tilgate Park from Tilgate Golf Course. On both sides of the ride the woodland has much rhododendron but birch, hazel, oak, rowan, beech and holly are also present with dense areas of bramble and honeysuckle.

There is an open area of restored heathland with much invasive bracken and birch to the east of Silt Lake.

Management recommendations and further surveys needed

A dormouse survey using nest tubes is strongly recommended to establish the current distribution of dormice across the site. Dormice could easily be present in the formal gardens, hedges and scrubby areas away from woodland. They have also been recorded from conifer plantations, so it is important to be aware that they could occur in almost any part of Tilgate Park.

It would also be possible to install dormouse nest boxes throughout the site, perhaps as part of the National Dormouse Monitoring Programme, for survey purposes and to provide additional nesting opportunities for dormice and thus support increased populations.

Some of the woodland in Tilgate Park is already high quality dormouse habitat, but there is scope for management to enhance the woodland areas for this species. However, in some

areas management for dormice may be a lower priority than heathland recreation or management for reptiles.

Management priorities to enhance all the woodland for dormice should be:

- To promote connectivity of suitable structurally diverse habitat across the whole site.
- To continue gradual removal of rhododendron.
- To promote the development of a structurally complex and diverse shrub layer.
- To promote species within woodlands that provide important resources to dormice, especially bramble, honeysuckle and hazel.
- Deer browsing may be a problem with regrowth if coppicing or thinning is carried out to promote dense natural regeneration. It may be necessary to use brash piles or tree tubes in the short term to protect young tree or shrub growth.

The western wood is currently too even-aged, the shrub layer is very sparse and there is a lack of temporal continuity of dormouse food and habitat connectivity. The wet areas have the best semi-natural character and potential to support dormice, so management work should radiate outwards from this core area, aiming to enhance woodland structure and diversity. Sycamore is present at low levels and care should be taken to avoid its dominance when light levels increase through management. Selective removal of sycamore may be necessary in future (though it is valuable for dormice so shouldn't be eliminated).

Specific recommendations for the western wood are:

- Thin even-aged beech and birch to enhance structural diversity.
- Create glades to promote more prolific ground flora and shrub layer growth.
- Remove rhododendron especially in southwest where old sweet chestnut dominates.
- Selectively cut large sweet chestnut coppice stools.
- Restore areas of pine plantation to mixed broadleaved woodland.
- Promote growth of the existing occasional hawthorn seedlings and other shrub species.

Other management recommendations for Tilgate Park are:

- Remove the small stand of Japanese knotweed west of Titmus Lake.
- At the GCN pond south of Silt Lake, remove the area of small, dense conifers on the northern edge of the pond. Increase open water by partial clearance of vegetation. Open up the south side by thinning birch and willow and removing conifers.

Woldhurstlea Wood SNCI

Survey date & weather:

4th May 2010. Cold and dry with patchy cloud.

Site summary and current condition

Woldhurstlea Wood SNCI lies to the north of Broadfield Brook and comprises a small block of mixed woodland surrounded by housing that contains a good range of native trees and shrubs and a diverse ground flora including several ancient woodland indicator species. Many non-native, invasive species are also present on the site.

There are well-used paths throughout the woodland and litter is conspicuous. Garden waste dumping is also locally frequent on the site margins.

General description (with common and notable species)

The site lies on a gentle south-facing slope with a surfaced path alongside Broadfield Brook forming its southern boundary and housing on the remaining sides. Much of the woodland is semi-natural though there is also some evidence of an old, formal garden in the central north part of the site.

The canopy comprises oak, ash, hornbeam and horse chestnut whilst the shrub layer includes hawthorn, hazel and blackthorn as well as some locally dense areas of the non-native shrubs cherry laurel and rhododendron. The ground flora contains stands of bluebell and wood anemone as well as other ancient woodland indicator species such as wood melick, moschatel, yellow archangel, early dog-violet and wood sedge. The presence of the uncommon small-leaved lime is notable.

The woodland has a diverse structure and there is abundant fallen and standing deadwood within the site that provides valuable habitat for a range of wildlife. There are also some dense tangles of shrubby vegetation in places with blackthorn, bramble and honeysuckle around fallen trees making parts of the site inaccessible to people and therefore valuable refuges for wildlife.

Natural regeneration of horse chestnut is prolific and sycamore of mixed ages is locally frequent in the southwest of the wood.

The woodland would once have been managed as mixed hazel, ash and hornbeam coppice with oak standards and contains features of archaeological interest such as relict wood banks, a ditch and a sunken track with large lime and wych elm trees along the banks of the old route. These features of woodland archaeology are of interest from a cultural heritage perspective as they provide clues about the history and former land-use of the area.

An embankment in the central northern part of the woodland, near the boundary of adjoining housing, has straight rows of planted, young yew trees and dense stands of the garden plant fringe cups as well as some large rhododendron shrubs and locally frequent Norway maple. This area appears to have been part of an old, formal garden at one time.

The major threats to the biodiversity of the SNCI are invasive, non-native shrubs and herbs, particularly rhododendron, cherry laurel and the garden sub-species of yellow archangel.

A good range of common woodland bird species is present considering the urban setting of the woodland and the site has the potential to support a variety of small mammals and invertebrates.

Management recommendations and further surveys needed

1. Remove/control invasive non-native species especially cherry laurel, rhododendron (especially dense stands in central part of woodland), snowberry, cypress trees (especially on northeast edge), garden privet and bamboo.
2. Carry out regular litter picks.
3. Control sycamore and horse chestnut regrowth and promote regeneration of native tree/shrub species.
4. Maintain path edges and encourage use of major routes through the site rather than smaller paths.
5. Improve the surface drainage on the main path where it is very wet.
6. Control/discourage garden waste dumping especially on the western edge and the northwest corner of site.
7. Control large stand of variegated yellow archangel in the northwestern part of site.
8. Fell young yew and rhododendron shrubs around the embanked area of former garden.

Worth Park SNCI & Grattons Park LNR

Survey date & weather:

7th June 2010. Warm, sunny conditions.

Site summary and current condition

This site combines two separate but nearby areas in the northeast of Crawley. Worth Park in the east includes the Grattons Pond SNCI and the formal gardens of Milton Mount whilst Grattons Park LNR in the west includes ancient woodland, part of the Gatwick Stream and an area of wet, herb-rich grassland.

The two halves of this site make an interesting contrast. The formal gardens in the east reflect the cultural heritage of the town and the relict semi-natural habitats in the west are fragments of the older, landscape heritage of the Sussex countryside.

Both areas are heavily used for recreation and have been subject to recent management. The wetland flora associated with the SNCI pond appears to have deteriorated since its designation in 1992 and the amount of wetland vegetation around the pond has decreased. The rare species orange foxtail *Alopecurus aequalis* was not observed during the survey, but may still be present and enhanced management of the pond margins would favour its growth.

Grattons Park LNR appears to be in better condition for biodiversity than when it was surveyed in 1990, largely due to enhanced management of the grassland areas.

General description (with common and notable species)

Worth Park

The area to the north of Somerville Drive includes the SNCI pond, a small block of wet woodland and an expanse of grassland. The pond has a mixture of marginal and aquatic vegetation with a fringe of native and exotic trees and shrubs, a wooded island and a rocky island. There is a well-used path around the pond and many angling stations on the north and west margins.

The wet woodland to the west of the pond has a variety of tree species present including ash, alder, sweet chestnut, elder, field maple, hazel, blackthorn, holly and rhododendron. The ground flora includes much enchanter's nightshade, nettle, foxglove, cow parsley and ivy with three-veined sandwort locally abundant on a mossy bank. There has been some recent clearance of the dense rhododendron in this area, which will be very beneficial to the woodland habitat.

The pond margins are mostly trampled and shaded. To the north of the pond there is a dense band of cherry laurel and rhododendron on the top of the bank with a steep, wooded dip down to adjacent houses. This inaccessible area makes a good refuge for wildlife.

Access to the pond for angling is permitted around the northern and western edges of the pond but the eastern side has much less direct access to the water's edge and there are dense banks of bramble, which protect the fringe of marginal vegetation. This marginal vegetation includes common reedmace, yellow flag and yellow loosestrife. There is a small area of willow and alder carr in the southeastern corner of the pond where emergent vegetation is also present. Several of the wetland species recorded in 1992 were not observed during the 2010 survey, for example greater spearwort, marsh speedwell, water-purslane and marsh pennywort.

The grassland area to the southeast of the pond has a botanically poor sward, but is only lightly mown with some long grass areas that will be valuable to invertebrates. There are some widespread wildflowers present in this area, especially around the edges and on the embankments, including selfheal, common birds-foot-trefoil, yarrow, common catsear, common knapweed, lesser stitchwort and common sorrel. The large plane tree is an attractive and valuable feature of this area.

To the southeast of Somerville Drive there is a football field with a short, mown grassland sward. There is a strip of trees including birch, hornbeam, oak, larch and alder along the margin over longer grass with common wildflowers and grasses. There are numerous planted daffodils in this area.

Beyond the playing field lies the formal garden area around Milton Mount. This includes areas of mown grassland, mature trees including a splendid old mulberry and shrubs with an ornamental fishpond. The gardens have an old parkland character in places and there is a relict, species-rich grassland sward present with some plant species typical of unimproved and valuable woodland/grassland habitats such as pignut, three-veined sandwort, bluebell and black bryony as well as more common grassland plants such as sweet vernal-grass, selfheal, common catsear, common dog-violet, field woodrush, common mouse-ear and red clover. The gardens have an excellent, varied structure with mature trees, shrubs and grassland. A standing dead stump has been retained. The habitats present are likely to be valuable for a range of invertebrates and breeding birds. They may also provide good foraging habitat for bats, with potential roosts in the mature trees and surrounding buildings.

Grattons Park LNR

Grattons Park includes a variety of habitats including ancient woodland, two branches of the Gatwick Stream and areas of herb-rich grassland.

The two streams are either wooded or tree-lined through the site and whilst the smaller, western arm follows a natural, meandering course the main, eastern arm is partly canalised. The woodland in the north of the site is diverse old hazel coppice with oak standards and alder in the wetter, streamside areas. Sycamore and sweet chestnut are present in the canopy whilst hawthorn and holly occur in the shrub layer. The woodland has a varied structure and is potentially good habitat for a range of fauna such as dormice, breeding birds and woodland butterflies.

The braided stream channels within the woodland add to the value of the habitat. There are pools and riffles as well as some steep, eroded banks. There are also some sizeable old banks within the woodland and an old bank and relict hedge lie along the eastern edge of the site.

There are some non-native species present in the woodland that should be removed, such as snowberry, rhododendron and cherry laurel. These species are especially prominent in the eastern strip of woodland alongside the canalised stream adjacent to the school grounds. In this strip hornbeam replaces hazel as the main coppice species though with a similarly rich ground flora with ancient woodland indicator species such as pignut, bluebell, wood anemone and ramsons.

The flood meadow occupies the central part of the site and is an expanse of wet grassland surrounded by embankments with mown paths through it. This area was formerly of low botanical interest and still supports white clover and perennial rye-grass, which are typical of improved grassland. However it was enhanced with native wildflowers in 1998 and there are also fragments of what appears to be a naturally herb-rich sward, for example in the southeastern corner, where there are also occasional anthills on the embankments. The sward across the flood meadow is now generally herb-rich with fine-leaved grasses and

includes typical plants of neutral grassland such as common knapweed, common birds-foot-trefoil, germander speedwell, lady's bedstraw, field woodrush, common sorrel, sweet vernal-grass, creeping bent, lesser stitchwort, red clover, meadow vetchling, Yorkshire fog and meadow buttercup.

In some parts of the flood meadow the sward is coarser with tussocky grasses, hogweed and creeping thistle, especially where the ground has been disturbed in the north of the field.

The grassland is structurally varied and flowery so is likely to provide very good habitat for insects including bees, butterflies, moths and grasshoppers. The woodland and scrubby edges around the north, east and west edges of the flood meadow on the embankments have some stands of bramble and bracken as well as tall grasses and scrub. These structurally diverse areas with sunny, varied aspects provide excellent habitat for fauna such as invertebrates, breeding birds, small mammals, reptiles and amphibians. The wooded edges of the flood meadow are also likely to be good habitat for foraging bats.

There is a bare scrape in the southern part of the flood meadow that may be seasonally flooded and provide good habitat for wetland birds in the winter months.

To the south of the site there is a small area of mown, semi-improved grassland with benches surrounded by a mixed, trimmed hedge.

The western side of the site (the Railway Field) is short, mown, improved grassland with a low scrubby hedgerow separating the field from a path along the railway line.

Management recommendations and further surveys needed

Worth Park

- Manage pond margins to promote better growth of marginal vegetation. Fell selected trees, reduce cover of dense shrubs, especially rhododendron and increase light reaching the waters edge. Following tree and shrub clearance it may be necessary to fence sections of the pond margins to reduce disturbance and promote recovery of marginal vegetation.
- Some of the fishing platforms are in need of repair.
- Continue to mow amenity grassland infrequently and create unmown islands of most species rich patches to be cut annually in autumn and cuttings removed.
- Continue to control rhododendron in the wet woodland.

Grattons Park LNR

- Continue clearance of the dense stand of rhododendron and cherry laurel on the eastern edge of the site where some shrub clearance has already taken place. Open up glades and treat stumps to prevent regrowth.
- Ensure grass is taken off the flood meadow after mowing to prevent enrichment and loss of sward diversity.
- Stop regular mowing of the southwestern embankment and allow the herb-rich sward to grow until taking an annual cut in autumn.
- Carry out low-key rotational management of scrub edges around flood meadow embankments to create and maintain sunny bays.
- Carry out targeted control of creeping thistle in north of flood meadow to prevent spread. Either manual control or spot-spraying would be appropriate.
- Continue litter picking, especially in woodland.
- Further surveys of bats, butterflies, breeding birds are recommended. Request dormouse and reptile data from EA, who have carried out surveys in the area in 2010.

- Selectively cut large sweet chestnut stools along the stream to open up small glades and increase light reaching the stream.
- Consider coppicing hazel to create glades and enhance structural diversity of woodland (the plan of work will depend on whether dormice are found to be present).
- Increase the unmown, tall grass margin around the Railway Field, especially adjoining the wooded stream to create a buffer between the semi-natural area and the amenity grassland.

Worth Way SNCI

Survey date & weather:

19th May 2010. Warm and sunny conditions.

Site summary and current condition

The Worth Way disused railway line on the eastern side of Crawley is an important corridor of undeveloped land that may act as a refuge and dispersal route for wildlife as well as being a valuable recreational asset in this urban area.

Worth Way has both cuttings and embankments along its length and encompasses a mixture of fragments of ancient woodland and secondary woodland with a varied ground flora and diverse structure. There are patches of scrub and a few open areas, some of which are quite waterlogged.

The site is in reasonably good condition, but has undergone some changes since it was designated as an SSSI in 1992, primarily through natural succession from open habitats towards more closed scrub and woodland vegetation. The presence of numerous non-native and potentially invasive plant species may be a long-term threat to the biodiversity of the site.

General description (with common and notable species)

The woodland along the Worth Way is quite varied, but the most interesting and longest established areas comprise a mixture of oak, hazel, sycamore, goat willow, ash and holly over a rich ground flora that includes patches of ancient woodland indicator species such as bluebell, wood anemone, wood spurge, wood speedwell, pignut and primrose.

At the eastern end of the site the Worth Way runs through a steep-sided cutting with fragments of ancient woodland vegetation such as bluebell and wood anemone on the steep, mossy cutting sides and abundant sycamore regeneration. Ferns and ivy are locally prominent on the banks along with bramble, dog's mercury, enchanter's nightshade and garlic mustard and there is much deadwood present. The old track bed is quite damp in this part of the site and there is a small ditch alongside the track where wetland species such as pendulous sedge and brooklime occur as well as stands of nettle.

Further west the Worth Way passes under the B2036 road and there is a short, open, sunny stretch with a wet flush adjacent to the track where alder, great willowherb and pendulous sedge occur.

West of this point the cutting banks are less steep and the woodland has a more secondary character with more birch, sycamore and young oak than in the east and some areas where goat willow is locally frequent. There are still occasional patches of bluebell on the banks along with bramble, field rose and dog rose.

Near the allotment gardens in the west, the Worth Way runs along a low embankment where goat willow is abundant. This area has the potential to be opened up to create sunny glades with a grassy ground flora that would diversify the overall structure of the site.

The western-most part of the SSSI lies on a quite steep, wooded embankment adjacent to the Manor Royal Flood Pond site. This area has well-established woodland vegetation and some areas of quite dense scrub that will provide good habitat for a range of fauna, including breeding birds.

There are non-native garden escapes throughout the site, some of them arising from dumped garden waste and some deliberately planted. These include Montbretia, daffodil, cyclamen, Wilsons honeysuckle, cotoneaster, fringe cups and kerria. Many of these species will not become naturalised and will have a minimal impact on the biodiversity of the site. However, some species will need to be removed or controlled to prevent them spreading at the expense of native plant species, in particular the Japanese knotweed that occurs at a garden fence in the east of the site and the rhododendron and cherry laurel shrubs that are present throughout the site but most frequently in the east.

Management recommendations and further surveys needed

- Remove rhododendron and cherry laurel.
- Remove Japanese knotweed at eastern end.
- Control non-native, garden escapes throughout the site. Some of these have been deliberately planted so communication with adjoining householders is needed.
- Clear accumulated rubbish especially around the Church Road bridge.
- Check possible garden encroachment onto CBC land in the central area.
- Create sunny glades and scallops especially in the central portion on the embankment where goat willow is locally abundant and in the section between the eastern road bridges.
- Clear fallen trees from across the path and stack wood as habitat piles.