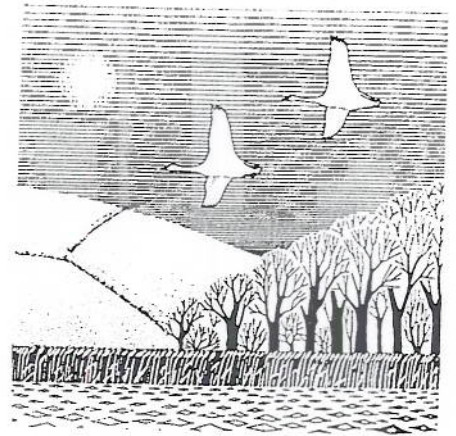


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CALLINGTON ROAD

ECOLOGICAL REPORT 2008

for

BRISTOL CITY COUNCIL

CALLINGTON ROAD

ECOLOGICAL REPORT 2008

1 INTRODUCTION

An ecological survey and report of the proposed Local Nature Reserve (LNR) at Callington Road was carried out for Bristol City Council in 2005. The purpose of the 2008 report is to update and supplement these surveys and to assess the impacts of management work carried out since 2005. This management work has included construction of a footpath network, implementation of a grassland management regime, creation of a dew pond, restoration of a smaller pond that had been lost and tree and shrub planting.

2 SITE DESCRIPTION

General

The central grid reference of the site is ST613 704.

The site consists of two distinct areas. The eastern area, Area A, covers ten acres, mostly on steeply sloping ground with a south-easterly aspect. It was formerly part of the Talbot Road allotments site and now consists of a combination of secondary woodland, scrub and rough grassland. There has been relatively little management work in this part of the site since 2005, but it is now more accessible due to completion of a footpath network, and there are small areas of tree and shrub planting.

The western area, Area B, covers six acres of a more gentle slope, again with a south-easterly aspect. It was formerly a pitch and putt course associated with the Imperial Tobacco Sports Club. It consists largely of grassland, with fringes of scrub and trees on the margins. It was unmanaged in 2005 but a regime of hay-cutting has since been instigated. There are small tree and shrub planting plots in the area and a dew pond has been created at the bottom of the slope. Areas of spoil and disturbed earth associated with pond creation have been planted with a wildflower seed mix.

The site is owned and managed by Bristol City Council.

3 SURVEY METHODOLOGY

Field surveys were carried out from April to September 2008. They covered a range of groups, as follows.

Vegetation

The site was walked and areas of reasonably homogenous vegetation identified and mapped. A vascular plant species list was drawn up for each of these areas,

and frequency recorded using the DAFOR (dominant, abundant, frequent, occasional, rare) scale. The surveys were carried out in May, with additional visits made in June, July and August to record species that had been missed.

An exhaustive survey of bryophytes (mosses and liverworts) was not carried out, but species that make up a substantial part of the vegetation were collected and identified.

The site was checked for features that support lichens – in practice these were restricted to trees and shrubs. Lichens growing on these were recorded, with notes on frequency.

Birds

Six visits were made at first light in order to survey birds during April, May and early June. On each occasion the whole site was walked and birds seen and heard were mapped using standard Common Bird Census (CBC) codes, which distinguish between different types of behaviour such as singing, food carrying and agitated behaviour. Birds seen and heard in the course of subsequent survey visits were also mapped. The survey maps were used to produce a master map showing the locations at which birds bred.

Bats

The site was visited at dusk on three occasions in mid-July, early August and early October, on each occasion during fair weather conditions. The whole site was walked by a surveyor armed with broad-band and heterodyne bat detectors and a static time-expansion bat detector was set at different locations for the duration of each survey. Where necessary time-expanded echolocation calls were recorded for later analysis.

Amphibians and Reptiles

Ten pieces of roofing felt were placed in suitable habitat around the site and, together with other items already present, these were lifted and checked for amphibians and reptiles on ten occasions. Visual searches of suitable habitats were also made.

Insects

All habitats on the site were searched for insects in the following groups: Lepidoptera (including leaf-mines), Orthoptera, Odonata, hoverflies, bumblebees and shield-bugs during six visits between May and September. An actinic moth trap was operated in area A on three occasions in June, July and September, for between four and five hours after sunset on each occasion. This is a slight change from the methodology employed in 2005, when the trap was left overnight. The surveyor remained with the trap in 2008 because the site is now more accessible to the public, because the original more secluded trapping site is now overgrown with brambles and because the trap used was more powerful (and expensive) and therefore more visible than the one used in 2005. The third

visit was delayed until September because poor weather during the summer of 2008 meant that the emergences of many species were delayed.

4 SURVEY RESULTS

Vegetation

Species lists are included as Appendix 1, for grassland, and 2, for scrub.

Area A has a mosaic of grassland and scrub habitats. The grassland habitats are mostly on the lower parts of the slope, with the scrub generally on the upper parts.

As in 2005 the grassland, column 1 in appendix 1, is generally dominated by false oat-grass (*Arrhenatherum elatius*). Other frequent grasses in this vegetation include cocksfoot (*Dactylis glomerata*), timothy (*Phleum pratense*) and creeping bent (*Agrostis stolonifera*). The most frequent herb species in this grassland are tall species, including parsnip (*Pastinaca sativa*), common ragwort (*Senecio jacobaea*) and hoary ragwort (*Senecio erucifolius*). Several members of the pea family, notably black medick (*Medicago lupulina*), tall mellilot (*Melilotus altissima*), common vetch (*Vicia sativa*) and smooth tare (*Vicia tetrasperma*) are also locally frequent. On the edges of the grassland areas there are some large patches of Canadian golden-rod (*Solidago canadensis*) and michaelmas daisy (*Aster novi-belgii*).

In places, particularly in the north-eastern part of the area, there are some smaller patches of grassland that are dominated by upright brome (*Bromospis erecta*). Herb species in these areas include lady's bedstraw (*Galium verum*) (*Lotus corniculatus*) and lesser trefoil (*Trifolium dubium*).

In 2005 there were areas that had recently been cleared of bramble, and supported a very distinctive vegetation type, which is column 2 in appendix 1. By 2008 this vegetation type had become much less distinct as grassland has invaded areas that were previously rather weedy.

There is scattered scrub in the grassland. Bramble (*Rubus fruticosus* agg) is the most frequent species, with saplings of ash (*Fraxinus excelsior*) and hawthorn (*Crataegus monogyna*) and plum (*Prunus domestica*) suckers.

The main areas of scrub have changed very little since 2005. The more established areas are dominated by immature ash trees, with other species including plum, elder (*Sambucus nigra*) and hawthorn. On the margins of these areas there are patches of less mature scrub. The most frequent species here are plum, which forms dense stands in places, hawthorn, old man's-beard (*Clematis vitalba*) and bramble. Other species include lilac (*Syringa vulgaris*), dogwood (*Cornus sanguinea*) and purging buckthorn (*Rhamnus catharticus*). On the edges of the scrub there are several large bramble patches. Ground flora is

better developed under the more mature scrub. It is dominated by ivy (*Hedera helix*) with species present in smaller quantity include cow parsley (*Anthriscus sylvestris*), wood false-brome (*Brachypodium sylvaticum*) and goosegrass (*Galium aparine*). Under the less mature scrub ivy is often the only species present.

Area B consists largely of grassland, with areas of trees and scrub around its margins. Its plant species are listed in column 3 of Appendix 1.

The sward is rather patchy, with several grass species locally dominant. These species include false oat-grass, upright brome, crested dogstail (*Cynosurus cristatus*), meadow barley (*Hordeum secalinum*) and yellow oat-grass (*Trisetum flavescens*). Well-distributed herb species across the area include crow garlic (*Allium vineale*), black medick, ribwort plantain (*Plantago lanceolata*), meadow buttercup (*Ranunculus acris*), bulbous buttercup (*Ranunculus bulbosus*), creeping buttercup (*Ranunculus repens*), common ragwort, hoary ragwort, red clover (*Trifolium pratense*) and white clover (*Trifolium repens*). Locally frequent species include bird's-foot trefoil, lady's bedstraw and wild carrot (*Daucus carota*).

At the southern edge of the area, where the pond and paths have been created, spoil mounds have frequent tall herbs, including cow parsley, creeping thistle (*Cirsium arvense*) and field bindweed (*Convolvulus arvensis*). Wild flowers have been planted on some of these areas, and locally there are good growths of species such as wild carrot, black knapweed (*Centaurea nigra*) and lady's bedstraw.

A large dew pond has been created here. The vegetation in the main body of the pond is rather sparse, although there are small quantities of rigid hornwort (*Ceratophyllum demersum*) and fringed water-lily (*Nymphoides peltata*). A small channel leading into the pond has much better developed vegetation. Species here are:

| | |
|-----------------------|---------------------------------|
| Water-plantain | <i>Alisma plantago-aquatica</i> |
| Upright water-parsnip | <i>Berula erecta</i> |
| Marsh marigold | <i>Caltha palustris</i> |
| Rigid hornwort | <i>Ceratophyllum demersum</i> |
| Meadow-sweet | <i>Filipendula ulmaria</i> |
| Yellow flag | <i>Iris pseudacorus</i> |
| Purple loosestrife | <i>Lythrum salicaria</i> |
| Water mint | <i>Mentha aquatica</i> |
| Fringed water-lily | <i>Nymphoides peltata</i> |
| Greater spearwort | <i>Ranunculus lingua</i> |

Most of the scrub around Area B is dominated by hawthorn, elder and bramble, with patches of blackthorn (*Prunus spinosa*). In the southern part of the field

there is a semi-mature pedunculate oak (*Quercus robur*) tree and semi-mature trees of ash and sycamore, as well as a patch of English elm (*Ulmus procera*). The Callington Road boundary of the site has planted trees including white poplar (*Populus alba*) and silver birch (*Betula pendula*). The boundary between areas A and B is formed by a hedge along an old green lane. This hedge includes four semi-mature trees of pedunculate oak and a single ash. A line of poplars (*Populus nigra cultivar*) has been planted along the southern part of the hedge.

A small pond in the scrub between areas A and B has been opened up. It now supports the following wetland species:

| | |
|---------------------|-----------------------------|
| Meadow-sweet | <i>Filipendula ulmaria</i> |
| Yellow flag | <i>Iris pseudacorus</i> |
| Water mint | <i>Mentha aquatica</i> |
| Water forget-me-not | <i>Myosotis scorpioides</i> |

Lichens and Bryophytes

The diversity and abundance of lichens and bryophytes was very similar to that recorded in 2005. Species are listed in appendix 3.

The greatest diversity of lichens recorded on the plum trees in the western part of area A was unchanged from 2005, and the following were recorded:

| | |
|----------------------------|----------------------------|
| <i>Buellia punctata</i> | <i>Evernia prunastri</i> |
| <i>Lecanora chlorotera</i> | <i>Parmelia glabratula</i> |
| <i>Parmelia perlata</i> | <i>Parmelia sulcata</i> |
| <i>Physcia adscendens</i> | <i>Physcia tenella</i> |
| <i>Usnea subfloridana</i> | <i>Xanthoria parietina</i> |

The poplars at the southern end of the hedge between areas A and B had an increased diversity in 2008. The following were recorded in both years:

| | |
|----------------------------|----------------------------|
| <i>Diploicia canescens</i> | <i>Evernia prunastri</i> |
| <i>Lepraria incana</i> | <i>Xanthoria parietina</i> |

And the following in 2008 only:

| | |
|----------------------------|----------------------------|
| <i>Lecanora chlorotera</i> | <i>Lecanora dispersa</i> |
| <i>Hypogymnia physodes</i> | <i>Parmelia sulcata</i> |
| <i>Parmelia caperata</i> | <i>Parmelia glabratula</i> |
| <i>Parmelia perlata</i> | <i>Physcia tenella</i> |

Other trees in area B have:

| | |
|-------------------------|----------------------------|
| <i>Buellia punctata</i> | <i>Lecanora chlorotera</i> |
|-------------------------|----------------------------|

Parmelia sulcata
Xanthoria parietina
Diploicia canescens
Physcia adscendens
Evernia prunastri

Physcia tenella
Parmelia perlata
Lepraria incana
Physcia tenella

The mosses recorded were very similar to those found in 2005. Most were present under the scrub, and are listed in appendix 3.

Birds

A species list of birds recorded and a map of the locations at which they bred are included as an appendix.

Twenty one species were recorded breeding, the most frequent being wren (17 pairs), robin (eleven pairs), blackbird (eight pairs), wood pigeon (five pairs), dunnock (five pairs), great tit (five pairs) and blackcap (five pairs). Other species breeding on the site include lesser whitethroat, bullfinch, long-tailed tit, garden warbler and whitethroat. Swift and house martin were recorded feeding over the site on several occasions, and non-breeding visitors include sedge warbler and sparrowhawk.

Bats

At least six species of bat were recorded foraging over the site: common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*), noctule (*Nyctalus noctula*), serotine (*Eptesicus serotinus*), a *Myotis sp* and long-eared (*Plecotus sp*). Common pipistrelle was the most commonly recorded species, with one or two individuals present during each visit. Their activity was concentrated over scrub on the periphery of area B, and in particular along the green lane and around the poplars at the southern end of the green lane. At least two soprano pipistrelle was recorded flying around the poplars during one visit. Several passes by *Myotis* bats were recorded foraging along the green lane during two visits. Serotine bat was recorded on one visit, also along the green lane. Noctule bats were recorded commuting over the site during each visit, and on one occasion foraging over area A. At least three individuals were recorded. Single long-eared bats were seen foraging along the green lane during two of the three visits.

No bat roosts were found on the site.

Other Mammals

Evidence of roe deer activity was seen around the scrub in area A.

Field voles were seen in both areas A and B. Grey squirrels, wood mice and brown rats were seen in area A.

Hedgehogs were seen in area A.

Signs of fox activity were seen in both areas.

Amphibians and Reptiles

The only amphibians recorded was common frog. No evidence of breeding was seen in either pond.

The only reptile species recorded was slow worm. Slow worms were recorded at three locations around area A. The highest number of individuals recorded in any one visit was seven.

Invertebrates

A list of insect species is included as an appendix. It should be noted that 2008 was a very poor year for invertebrates generally due to poor weather conditions in both 2007 and 2008 and a lower diversity would be expected than that recorded in 2005.

Insects recorded in 2008 include: sixteen butterfly species; fifty eight macro-moth species; forty one micro-moth species; nine species of Orthoptera; 23 species of hoverfly; and nine species of bumblebee. Most of these species were recorded in Area A, but the diversity in Area B was also high. Species present in good quantity include common blue, large skipper, small skipper, meadow brown and small copper butterfly; shaded broad-bar, latticed heath and six-spot burnet moths; and the bush-cricket long-winged conehead.

5 ASSESSMENT AND TRENDS

Introduction

The nature conservation value of the various features of the site has been assessed using standard ecological criteria, such as rarity, fragility, diversity and recreatability. Reference has been made to documents such as Biodiversity Action Plans and lists of threatened and uncommon species.

The results of the 2008 surveys have been compared to those from 2005 in order to identify any changes that have occurred over the intervening three years.

Vegetation

As in 2005 no nationally rare or scarce plant species were recorded. The site continues to be of value, however, for its plants of unimproved grassland, large populations of tall herb species and populations of ruderal species associated with disturbed soil.

Grasslands

Five plants defined in the Flora of the Bristol Region as Avon Notable Species were recorded in the grasslands, as follows:

- Meadow brome (*Bromus commutatus*) is present in small quantity in Area B. This grass is a scarce species of unimproved grasslands.
- Short-fruited willowherb (*Epilobium obscurum*) is present in small quantities in areas disturbed by bramble clearance in area A. This species is reasonably widespread in disturbed ground in Bristol;
- Square-stalked willowherb (*Epilobium tetragonum*) is present in small quantities in areas disturbed by bramble clearance in area A. This species is reasonably widespread in disturbed ground in Bristol;
- Corn salad (*Valerianella locusta*) is present, locally in large amounts in patches of sparse grassland and in areas from which bramble has been cleared in area A. This species is reasonably widespread in similar habitats in Bristol;
- Smooth tare (*Vicia tetrasperma*) is present in outstandingly large quantity in area A. This species is fairly widespread in rough grassland in Bristol, but the population at Callington Road is exceptionally large.

The vegetation of Area A has remained broadly similar since 2005, but there have been many changes in the occurrence of the less frequent species. The table below summarises those changes that have occurred:

| Species Recorded in 2005 but not 2008 | Species Recorded in 2008 but not 2005 | Species that Declined between 2005 and 2008 | Species that Increased between 2005 and 2008 |
|--|--|---|--|
| Wild oat, annual meadow-grass, cow parsley, common orache, shepherd's purse, fat-hen, lesser swine-cress, beaked hawksbeard, montbretia, globe-thistle, broad-leaved willowherb, hoary willowherb, fennel, ivy, Turkish iris, red dead-nettle, field forget-me-not, long-fruited poppy, redshanks, bristly ox-tongue, sage, soapwort, lesser meadow-rue, field penny-cress, upright hedge-parsley, coltsfoot, wall speedwell, grey field-speedwell | Common bent, meadow barley, hairy willowherb, hedge bedstraw, broad-leaved everlasting pea, flax, wild marjoram, cowslip, hedge woundwort, prickly sow-thistle, tansy, tulip | Upright brome, soft brome, red fescue, rough-stalked meadow-grass, yellow oat-grass, scarlet pimpernel, glaucous sedge, rosebay willowherb, creeping thistle, wild carrot, cut-leaved cranesbill, meadow vetchling, garden forget-me-not, hoary plantain, creeping cinquefoil, bush vetch | Creeping bent, timothy, agrimony, hedge bindweed, field bindweed, tall melilot, red bartsia, parsnip, common ragwort, Canadian goldenrod, red clover, hairy tare, common vetch |

Table 1: Changes in composition of vegetation in Area A between 2005 and 2008.

On the face of it, this table suggests that the diversity of the area has declined substantially since 2005. However, most of the species that have been lost or declined fall into two groups. Firstly, many are species that are associated with

disturbed ground, which appeared in bare soil where bramble was removed. Such species have disappeared or declined as vegetation has become more continuous. This category includes 16 of the 28 species that have disappeared and eight of the 15 species that have declined. The second category is relicts of cultivation, which might be expected to gradually disappear as the interval since the site was cultivated increases. This category includes another seven of the 28 species that have disappeared and one of the species that have declined.

Of more significance in nature conservation terms are the fortunes of plants associated with unimproved grassland, since remnants of this threatened habitat type are amongst the most valuable features of the site. Only one of these species (ox-eye daisy) has disappeared, but six (out of a total of 17 such species on this part of the site) have declined. On the other hand two additional species (cowslip and marjoram) were recorded and one species (agrimony) became more frequent. The main reason for this change has been a lack of management of a small area of species-rich grassland (shown on the attached map), leading to encroachment by bramble and other scrub.

In Area B changes in the composition of vegetation has been more marked, with changes in the abundance of the most frequent grass species particularly marked. The table below summarises these changes:

| Species recorded in 2005 but not 2008 | Species recorded in 2008 but not 2005 | Species that declined between 2005 and 2008 | Species that increased between 2005 and 2008 |
|--|--|--|---|
| Barren brome, common couch, hybrid bluebell, long-fruited poppy, knotgrass, lesser celandine, bush vetch | Sweet vernal grass, meadow brome, small cat's-tail, yarrow, scarlet pimpernel, shepherd's purse, black knapweed, fat-hen, smooth hawksbeard, beaked hawksbeard, teasel, hairy willowherb, hedge bedstraw, lady's bedstraw, meadow vetchling, ox-eye daisy, scented mayweed, white melilot, tall melilot, red bartsia, bristly ox-tongue, hoary plantain, creeping cinquefoil, cowslip, self-heal, yellow rattle, salad burnet, hoary ragwort, hedge mustard, smooth sow-thistle, dandelion, lesser trefoil, red clover, scentless mayweed, common field-speedwell, common vetch, smooth tare | Meadow foxtail, false oat-grass, cocksfoot, perennial rye-grass, | Creeping bent, upright brome, soft brome, crested dogstail, Yorkshire fog, meadow barley, timothy, yellow oat-grass, crow garlic, field bindweed, wild carrot, cut-leaved cranesbill, black medick, ribwort plantain, ratstail plantain, meadow buttercup, bulbous buttercup, common ragwort, |

Table 2: Changes in composition of vegetation in Area B between 2005 and 2008

Almost all of these changes can be readily attributed to management of the site since 2005 and they show a distinct positive trend.

Some changes are due to management works, especially pond and footpath creation, creating areas of bare soil that have allowed colonisation by ruderal species, the converse of one of the trends affecting Area A. This factor accounts for 14 of the 37 species that have appeared in the area, and for four of the 18 species that have increased. It is likely that as these bare areas become vegetated the frequency of most of these species will decline. In the meantime several provide nectar for insects and seeds for birds.

Several of these disturbed areas have been sown with wild flower seed, producing small patches of grassland rich in herbs of unimproved grassland. Species introduced to the site as a result include salad burnet (*Sanguisorba minor*) and yellow-rattle (*Rhinanthus minor*). A common criticism of wild flower seeding is that species or varieties of plants inappropriate to the locality, and often not native to Britain, are often introduced; this does not appear to have occurred here. The long term survival of these plants on the site depends on their ability to compete with other species, especially vigorous grasses. If the soils are sufficiently nutrient-poor, as most appear to be, they should be able to survive.

The major change in the composition of the vegetation here has been caused by the regime of hay-cutting that has been introduced, following several years of neglect. This has reduced the abundance of tall grasses typical of under-managed swards, such as false oat-grass, common couch and cocksfoot, and has allowed finer-leaved grasses such as sweet vernal grass, upright brome, crested dogstail, Yorkshire fog, meadow barley and yellow oat-grass to become more frequent. Low-growing herbs have also benefited from the reduction in competition and shading from tall grasses, with species such as bulbous buttercup, black medick, red clover and lesser trefoil increasing in frequency.

A particularly welcome consequence of the change in management has been the appearance of several species associated with unimproved grassland, and the increased frequency of several others. The overall number of such plant species has increased from seven species in 2005 to nineteen in 2008. Four of the seven species recorded in both years increased in frequency between 2005 and 2008. Some of these changes are due to wildflower seeding, but other species have either appeared or increased purely as a result of appropriate management. These include the Avon Notable grass species, meadow brome (*Bromus commutatus*), and herb species such as black knapweed and wild carrot are now scattered across the field. In several places on the upper slopes there are now patches of grassland with frequent yellow oat-grass, upright brome, meadow barley, lesser trefoil and lady's bedstraw, whilst one patch has black knapweed, burnet saxifrage and wild carrot.

The vegetation of the scrub has changed little, and the botanical value of these areas remains fairly low, although they provide habitat for invertebrates and birds.

Scrub

The vegetation of the scrub areas has changed very little since 2005.

Ponds

The ponds are a new feature on the site. Both support wetland plant communities. In the larger dew pond most, if not all, of these species are introduced. They include locally uncommon species such as rigid hornwort, greater spearwort and fringed water-lily. The smaller pond has a smaller range of species, all of which are common wetland plants in the surrounding area. The presence of all of these plants adds to the biodiversity of the site.

Lichens and Bryophytes

The value of the site for these groups remained fairly constant between the two years. There was some increase in lichen diversity, but this was probably due to a gradual improvement in air quality in Bristol as a whole rather than any site-specific change.

Birds

The scrub has maintained its value for breeding birds. Changes between 2005 and 2008 were relatively minor and within the range to be expected as a consequence of natural fluctuations and wider population trends. Amongst the more numerous species, blackbird and wren have become less frequent and robin has become more frequent; these changes reflect wider trends in the populations of all three species. Most of the other widespread species have remained at more or less the same population level.

Amongst the species of conservation concern, song thrush has declined from four to three pairs, dunnock has remained at five pairs and bullfinch has remained at one pair.

Amongst the species that are uncommon in Bristol, lesser whitethroat decreased from two pairs to one, whitethroat increased from one pair to three, garden warbler increased from none to one pair and willow warbler decreased from one pair to none. These changes are consistent with wider changes in all four species' populations and in particular with a catastrophic decline in willow warbler.

Invertebrates

The features that were identified in 2005 as being of value for invertebrates are still well represented on site. These include rough grassland with a high

proportion of tall herb species in Area A and scrub edge with a diversity of woody species, especially old man's-beard.

The following eight species of insects recorded (five in both years, one in 2005 but not 2008 and two in 2008 but not 2005) are nationally scarce:

- Red-belted clearwing: Pupal exuvae of this moth species, which feeds as larvae in the trunks of fruit trees, were found on apple and plum trees in area A. This species has been recorded at several sites in Bristol but is very uncommon; it seems to be more widespread in urban areas than in rural areas. Recorded in both 2005 and 2008.
- Currant clearwing: An adult moth was seen around the red currant bushes in area A. There was feeding damage on the bushes. This species has been recorded at several sites in Bristol but is very uncommon. Recorded in 2005.
- The micro-moth *Commophila aeneana* was recorded in small numbers flying around common ragwort, its larval foodplant, in area A. This is the only site in the region from which this species, whose distribution is centred in south-eastern England, has been recorded. Recorded in 2005 and 2008.
- Long-winged conehead: This bush-cricket was found in large numbers in tall grassland in both areas A and B. It has a limited national distribution but its range has spread rapidly in recent years and it has become widespread in suitable habitat in Bristol since first being recorded in 2000. Recorded in 2005 and 2008.
- The hoverfly *Volucella inanis* was recorded feeding on spear mint, other herbs and bramble on the edge of grassland in area A. Its larvae are parasites of wasp nests and adults are usually seen where woodland or scrub adjoins grassland. The range of this species has expanded greatly in recent years. Recorded in 2005 and 2008.
- The hoverfly *Volucella zonaria* has a similar ecology to the previous species and its range has also expanded greatly in recent years. It was seen feeding on ivy flowers on the edges of Areas A and B. Recorded in 2008.
- The hoverfly *Epistrophe diaphana* was seen feeding on ragwort and parsnip flowers in Area A. It has been recorded from approximately twelve sites in the historic county of Somerset, including a record at Hawkfield Meadows roughly 2.5km from the survey site. It is characteristic of species-rich grassland with adjacent scrub or woodland. Recorded in 2008.
- *Bombus rupestris*: This cuckoo bee, which is a parasite of nests of the bumblebee *Bombus lapidarius*, was seen in both 2005 and 2008 in Area A. It is known from several sites in the Bristol area.

Species of insect recorded in one or both years that are locally uncommon include:

- Brown argus butterfly, which is associated with short, species-rich grassland. It has become slightly more widespread in the last twenty years, but more recently its range appears to be contracting as suitable habitat is lost. Recorded in 2005 and 2008;
- Essex skipper butterfly, which is associated with tall grassland and is spreading through the Bristol region. Recorded in 2008;

- Brown rustic moth, which is associated with both woodland and grassland habitats. It is rarely recorded in the Bristol region, although it is widespread nationally. Recorded in 2005;
- Marbled green moth, whose larvae feed on lichens on both trees and buildings. Recorded in 2005;
- Four-spotted footman moth, whose larvae also feed on lichens on trees, has only been recorded at one other site in Avon since 1990. However, the individual recorded in 2008 was probably a migrant rather than a resident;
- *Adaina microdactyla* micro-moth, which feeds as a larva on hemp agrimony. Recorded in 2005 and 2008;
- *Argyresthia spinosella* micro-moth, which feeds as a larva on blackthorn. Recorded in 2005;
- *Cydia compositella* micro-moth, which feeds as a larva on clovers. Recorded in 2008;
- *Sitochroa verticilis* micro-moth, which is associated with tall, often rank, species-rich grassland. Recorded in 2005 and 2008;
- *Stigmella plagiocolella* micro-moth, whose larvae feed on plum. Recorded in 2005;
- Lesser marsh grasshopper, which is found on tall grassland. Recorded in 2005 and 2008.

A list of macro-moth species considered to be of conservation concern was published in 2006, and these species have recently been included in the UK BAP. Most remain widespread, but have been included because their populations have declined significantly over the previous 35 years. Eight of these species have been recorded at Callington Road (four in both years and four in 2008 but not 2005), as follows:

- Blood-vein: The larvae of this species feed on various docks and related plants. One seen in Area A in 2008;
- Buff ermine: The larvae of this species feed on many low-growing plants, especially nettle. Larvae seen in both areas in 2008;
- Cinnabar: The larvae of this species feed on common ragwort and although they remain widespread they seem to have become less abundant, including in the years since 2006. Larvae and adults seen in Area A, in lower numbers in 2008 than in 2005;
- Latticed heath: Although this species remains widespread it is associated with species-rich grassland and has declined markedly (by 87% between 1971 and 2006). Its larvae feed on clovers and trefoils. It is outstandingly numerous in Area A, where it was recorded in 2005 and 2008, and was also seen in Area B in 2008;
- Mottled rustic: The larvae of this species feed on many low-growing plants. A single adult was seen in Area A in 2008;
- Shaded broad-bar: The larvae of this species feed on vetches and clovers in species-rich grassland and it declined by 73% between 1971 and 2006. Like latticed heath it was recorded in large numbers in Area A in both years and in smaller numbers in Area B in 2008;

- Small emerald: The larvae of this species feed on old man's-beard and it is considered local in a national context. Small numbers were seen in Area A in 2005 and 2008; and
- Small phoenix: The larvae of this species feed on willowherbs. Small numbers were seen in Area A in 2008.

When considering trends it should be noted that most invertebrates are difficult to survey and species lists for most groups should be viewed as samples rather than complete censuses. Unlike in some other groups, such as vascular plants and birds, absence or presence from one year's list cannot be taken to indicate extinction or colonisation. General trends can be distinguished, however, particularly in the more conspicuous groups such as butterflies and dragonflies.

The overall value of the site for invertebrates has remained more or less the same between 2005 and 2008, with good representation of species of scrub, grassland and tall herb vegetation. The assemblages of species dependent on old man's-beard, of species dependent on vetches and clovers, of hoverflies and of bumblebees are noteworthy. It is notable that the number of macro-moth species recorded rose slightly (from 49 to 58) despite 2005 being a better year generally for moths than 2008.

Several of the changes probably represent wider trends, rather than differences on the site itself. For instance, amongst the butterflies small tortoiseshell was recorded in 2005 but not in 2008 and Essex skipper was recorded in 2008 but not in 2005. Small tortoiseshell has become generally far less common, whilst Essex skipper has spread through the Bristol area. The apparent absence of some moths, including blue-bordered carpet, common wainscot and common rustic, in 2008 reflects that this was a very poor year generally for these species.

The abundance of some species, notably latticed heath moth, increased markedly between 2005 and 2008, whilst others, such as marbled white butterfly, became less numerous. These changes probably reflect population fluctuations.

The diversity of hoverfly species recorded rose, from 19 to 22 species and the additional species recorded included two Nationally Scarce Species. The diversity of bumblebee species remained constant, and is notable in a Bristol context. The most marked change in invertebrate populations was amongst the Odonata (dragonflies and damselflies). The creation of wetland habitat has resulted in an increase in species diversity from one to six. All of the species recorded are common and widespread, but this is a clear indication that the works have led to an improvement in the value of the site for wetland invertebrates. Other species of wetland habitats recorded in 2008 but not in 2005 include the hoverflies *Helophilus hybridus* and *Eristalis nemorum*.

Bats

The level of bat activity was similar to that recorded in 2005, with the exception that long-eared bat was recorded in addition to the five species recorded in 2005. The numbers of bats using the site are fairly low, but the diversity is high and the site is of high value for bats in a local context.

Slow Worms

The value of the site for slow worms has remained constant between 2005 and 2008.

Summary

Habitats

| Feature | Bristol Context | Local Context | Trend |
|---------------------|-----------------|---------------|-----------------------|
| Grassland in Area A | High | High | Stable, local decline |
| Grassland in Area B | Moderate | High | Improvement |
| Scrub in Area A | Moderate | High | Stable |
| Scrub in Area B | | Moderate | Stable |
| Woodland in Area A | | Moderate | Stable |
| Trees in Area B | | Moderate | Stable |

Species

| Species | Regional Context | Bristol Context | Local Context | Trends |
|----------------------------|------------------|-----------------|---------------|------------|
| Smooth tare | | Moderate | High | Stable |
| Grassland Plant Assemblage | | Moderate | High | Increasing |
| Foraging Bats | | Moderate | High | Stable |
| Breeding Birds | | Low | High | Stable |
| Slow Worm | | Moderate | High | Stable |
| <i>Commophila aeneana</i> | Moderate | High | High | Stable |
| Red-belted Clearwing | | Moderate | High | Stable |
| Currant Clearwing | | Moderate | High | Declining |
| Long-winged Conehead | | Moderate | High | Increasing |
| <i>Bombus rupestris</i> | | High | High | Stable |
| <i>Volucella inanis</i> | | Moderate | High | Stable |

| Species | Regional Context | Bristol Context | Local Context | Trends |
|--------------------------------|------------------|-----------------|---------------|------------|
| <i>Volucella zonaria</i> | | Low | Moderate | Increasing |
| <i>Epistrophe diaphana</i> | | High | High | Increasing |
| Grassland Butterfly Assemblage | | High | High | Stable |
| Grassland Moth Assemblage | | Moderate | High | Increasing |
| Scrub Moth Assemblage | | Low | High | Stable |
| Bumblebee Assemblage | | Moderate | High | Stable |
| Hoverfly Assemblage | | Moderate | High | Increasing |

6 MANAGEMENT

Conservation management of the site has been responsible for some marked improvement in biodiversity, notably in the species-diversity of the grassland at Area B. The increase in species recorded here and in particular the change in dominance of grass species suggests that continued management of this area as a hay meadow should lead to further enhancement.

On the other hand, a small area of species-rich grassland in Area A (shown on the attached map) is being lost as a result of scrub encroachment. Management of this area is made difficult by access constraints, but periodic removal of scrub would keep the area and maintain its ability to act as a seed source for other areas.

Elsewhere in Area A much of the interest, in particular for invertebrates, depends on the high proportion of tall herbs and the presence of seedheads in unmanaged areas of vegetation over the winter. Management of this area will be necessary to prevent scrub encroachment, but ideally any part of the area should be mown once every three to four years only and on a rotation, so that the whole of the area is not mown in any one year.

Both common and hoary ragwort are locally frequent, especially in Area A. These species are often regarded as a problem, but on this site they are of particular value for invertebrates. The larvae of the micro-moth *Commophila aeneana* and the cinnabar macro-moth are amongst those that feed on ragwort leaves, whilst the flowers provide a valuable nectar-source for a wide range of invertebrates, including hoverflies and moths. Ragworts are an important constituent part of the site's biodiversity.

The green lane between areas A and B is of importance as a foraging habitat for bats. Light spillage onto the lower part of the lane, and onto area A, from the new hospital development is very significant and probably reduces the site's value for bats. Planting of a tall hedgerow along those parts of the hospital boundary where this is absent would reduce light pollution and benefit bats, and possibly invertebrates.

Callington Road - Breeding Bird Survey

| Breeding Species | No. of pairs 2005 | No. of pairs 2008 |
|---|----------------------|----------------------|
| Blackbird | 12 | 8 |
| Wren | 21 | 17 |
| Robin | 7 | 11 |
| Dunnock | 5 | 5 |
| Song thrush | 4 | 3 |
| Wood pigeon | 8 | 6 |
| Chaffinch | 2 | 2 |
| Great tit | 4 | 5 |
| Blue tit | 4 | 4 |
| Chiffchaff | 2 | 2 |
| Long-tailed tit | 2 | 3 |
| Blackcap | 4 | 5 |
| Starling | 1 | 1 |
| Carrion crow | 1 | 1 |
| Magpie | 1 | 1 |
| Lesser whitethroat | 2 | 1 |
| Bullfinch | 1 | 1 |
| Greenfinch | 1 | 1 |
| Whitethroat | 1 | 3 |
| Willow warbler | 1 | |
| Garden warbler | | 1 |
| Goldcrest | | 1 |
| Possibly Breeding Species | | |
| Great-spotted woodpecker | 1 | |
| Sparrowhawk | 1 | 1 |
| Non-breeding Species | | |
| Collared dove | x | x |
| Goldfinch | x | x |
| House martin | x | x |
| House sparrow | x | x |
| Sedge warbler | | x |
| Swift | x | x |
| Recorded in 2005, but not during survey | | |
| Green woodpecker | | |
| Historic Records | | |
| Nightingale | | |

Callington Road - Grassland Plant Species Lists

| | | 1 | | 2 | | 3 | | Status |
|--------------------------------|----------------------------|------|------|------|------|------|------|--------|
| | | 2005 | 2008 | 2005 | 2008 | 2005 | 2008 | |
| Grasses | | | | | | | | |
| <i>Agrostis stolonifera</i> | Creeping bent | R | O | | | R | O | |
| <i>Agrostis capillaris</i> | Common bent | | R | | | | | |
| <i>Alopecurus pratensis</i> | Meadow foxtail | R | RLF | | | RLF | R | |
| <i>Anisantha sterilis</i> | Barren brome | OLF | R | | | R | | |
| <i>Anthoxanthum odoratum</i> | Sweet vernal grass | | | | | | R | GI |
| <i>Arrhenatherum elatius</i> | False oat-grass | FLA | F | R | O | F | OLF | |
| <i>Avena fatua</i> | Wild oat | | | R | | | | |
| <i>Brachypodium sylvaticum</i> | Wood false-brome | R | R | | R | | | |
| <i>Bromopsis erecta</i> | Upright brome | OLF | RLF | RLF | | R | RLF | GI |
| <i>Bromus commutatus</i> | Meadow brome | | | | | | R | GI, AN |
| <i>Bromus hordaceus</i> | Soft brome | OLF | R | | | R | O | |
| <i>Cynosurus cristatus</i> | Crested dogstail | R | R | | | R | OLF | |
| <i>Dactylis glomerata</i> | Cocksfoot | O | O | | R | O | R | |
| <i>Elytrigia reptans</i> | Common couch | R | R | | | R | | |
| <i>Festuca rubra</i> | Red fescue | RLF | R | | R | R | R | |
| <i>Holcus lanatus</i> | Yorkshire fog | R | R | | R | R | O | |
| <i>Hordeum secalinum</i> | Meadow barley | | RLF | | | RLF | OLF | GI |
| <i>Lolium perenne</i> | Perennial rye-grass | R | R | | | O | R | |
| <i>Phleum bertolonii</i> | Smaller cat's-tail | R | R | | | | R | GI |
| <i>Phleum pratense</i> | Timothy | R | O | R | R | R | RO | |
| <i>Poa annua</i> | Annual meadow-grass | | | R | | | | |
| <i>Poa pratensis</i> | Smooth meadow-grass | | | | | R | R | |
| <i>Poa trivialis</i> | Rough-stalked meadow-grass | O | R | R | | O | O | |
| <i>Trisetum flavescens</i> | Yellow oat-grass | RLF | R | | | RLF | OLF | GI |
| Herbs | | | | | | | | |
| <i>Achillea millefolium</i> | Yarrow | R | R | | | | R | |
| <i>Aegopodium podagraria</i> | Ground elder | | | RLF | RLF | | | |
| <i>Agrimonia eupatoria</i> | Agrimony | R | OLF | O | R | | | GI |
| <i>Allium vineale</i> | Crow garlic | R | R | R | R | R | O | |
| <i>Anagallis arvensis</i> | Scarlet pimpernel | O | R | R | | | R | |
| <i>Anthriscus sylvestris</i> | Cow parsley | R | | | | RLF | RLF | |
| <i>Armoracia rusticana</i> | Horse radish | | | | R | | | |
| <i>Asparagus officinalis</i> | Asparagus | R | | | | | | C |
| <i>Aster novi-belgii</i> | Michaelmas daisy | RLF | RLF | OLF | O | | | C |
| <i>Atriplex patula</i> | Common orache | | | R | | | | |
| <i>Barbarea verna</i> | Spring land-cress | | | | | R | R | C |
| <i>Calystegia sepium</i> | Hedge bindweed | | RLF | R | R | | | |
| <i>Capsella bursa-pastoris</i> | Shepherd's purse | | | R | | | R | |
| <i>Cardamine hirsuta</i> | Hairy bittercress | R | | R | R | | | |
| <i>Carex flacca</i> | Glaucous sedge | RLF | R | R | R | R | R | GI |
| <i>Centaurea nigra</i> | Black knapweed | R | R | | | | RLF | GI |
| <i>Chamerion angustifolium</i> | Rosebay willowherb | | | RLF | R | | | |
| <i>Chenopodium album</i> | Fat-hen | | | R | | | R | |
| <i>Cirsium arvense</i> | Creeping thistle | O | R | R | R | R | R | |
| <i>Cirsium vulgare</i> | Spear thistle | R | R | R | R | R | R | |
| <i>Convolvulus arvensis</i> | Field bindweed | R | O | R | R | R | RLF | |

Wessex Ecological Consultancy,

D - dominant; A - abundant; F - frequent; O - occasional; R - rare; L - locally

2008

Callington Road - Grassland Plant Species Lists

| | | 1 | | 2 | | 3 | | Status |
|---------------------------------|------------------------------|------|------|------|------|------|------|--------|
| | | 2005 | 2008 | 2005 | 2008 | 2005 | 2008 | |
| Coronopus didymus | Lesser swine-cress | R | | | | | | |
| Crepis capillaris | Smooth hawksbeard | | | | | | R | |
| Crepis vesicaria | Beaked hawksbeard | R | | | | | R | |
| Crocoshmia x crocosmiiflora | Montbretia | R | | | | | | C |
| Daucus carota | Wild carrot | O | R | R | R | R | RLF | GI |
| Dipsacus fullonum | Teasel | R | R | R | R | | R | |
| Dryopteris filix-mas | Male fern | | | R | R | | | |
| Echinops sphaerocephalus | Globe-thistle | F | | | | | | C |
| Epilobium ciliatum | American willowherb | | | R | | | | |
| Epilobium hirsutum | Hairy willowherb | | R | | | | R | |
| Epilobium montanum | Broad-leaved willowherb | R | | O | | | | |
| Epilobium obscurum | Short-fruited willowherb | R | | R | R | | | AN |
| Epilobium parviflorum | Hoary willowherb | | | R | | | | |
| Epilobium tetragonum | Square-stalked willowherb | | | R | R | | | AN |
| Eupatorium cannabinum | Hemp agrimony | R | R | | | | | |
| Foeniculum vulgare | Fennel | R | | | | | | C |
| Fragaria vesca | Wild strawberry | | | R | R | | | C |
| Galium mollugo | Hedge bedstraw | | R | | | | R | |
| Galium verum | Lady's bedstraw | R | R | R | R | | RLF | GI |
| Geranium dissectum | Cut-leaved cranesbill | O | R | R | R | R | RLF | |
| Glechoma hederacea | Ground ivy | R | R | | | | | |
| Hedera helix | Ivy | | | R | R | | | |
| Heracleum sphondylium | Hogweed | R | | | R | R | R | |
| Hyacinthoides hispanicus | Spanish bluebell | | | R | R | | | C |
| Hyacinthoides hisp. x n-s | Hybrid bluebell | | | | | R | | C |
| Iris orientalis | Turkish iris | R | | | | | | C |
| Iris sibirica | Siberian iris | | | R | R | | | C |
| Lactuca serriola | Prickly lettuce | R | | R | R | R | R | |
| Lamium purpureum | Red dead-nettle | R | | R | | | | |
| Lapsana communis | Nipplewort | | | R | R | | | |
| Lathyrus latifolius | Broad-leaved everlasting pea | | R | | | | | C |
| Lathyrus pratensis | Meadow vetchling | RLF | R | R | R | | R | GI |
| Leucanthemum vulgare | Ox-eye daisy | R | | | | | RLO | GI |
| Linum usitatissimum | Flax | | R | | | | | |
| Lotus corniculatus | Bird's-foot trefoil | R | R | | | RLF | RLF | GI |
| Matricaria recutita | Scented mayweed | | | | | | R | |
| Medicago lupulina | Black medick | O | O | | R | R | O | |
| Melilotus alba | White melilot | | | | | | R | |
| Melilotus altissima | Tall melilot | R | OLF | | R | | R | |
| Mentha spicata | Spear mint | R | R | R | | | | C |
| Myosotis arvensis var sylvatica | Garden forget-me-not | | | RLF | R | | | C |
| Myosotis arvensis | Field forget-me-not | R | | | | | | |
| Odontites verna | Red bartsia | R | OLF | | R | | R | |
| Oenothera glazioviana | Evening primrose | | | R | R | | | C |
| Origanum vulgare | Wild marjoram | | R | | | | | GI |
| Papaver dubium | Long-fruited poppy | RLF | | | | R | | |
| Pastinaca sativa | Parsnip | RLF | OLF | | R | | | C |
| Persicaria maculata | Redshanks | | | R | R | | | |
| Picris echioides | Bristly ox-tongue | R | | R | | | R | |

Wessex Ecological Consultancy,

D - dominant; A - abundant; F - frequent; O - occasional; R - rare; L - locally

2008

Callington Road - Grassland Plant Species Lists

| | | 1 | | 2 | | 3 | | Status |
|---------------------------|------------------------|------|------|------|------|------|------|--------|
| | | 2005 | 2008 | 2005 | 2008 | 2005 | 2008 | |
| Pimpinella saxifraga | Burnet saxifrage | | | | | R | R | GI |
| Plantago lanceolata | Ribwort plantain | R | R | | | R | O | |
| Plantago major | Ratstail plantain | R | R | R | R | R | RLF | |
| Plantago media | Hoary plantain | RLF | R | | | | R | GI |
| Polygonum aviculare | Knotgrass | R | | RLF | R | RLF | | |
| Potentilla reptans | Creeping cinquefoil | O | R | | | | R | |
| Primula veris | Cowslip | | R | | | | R | GI |
| Prunella vulgaris | Selfheal | | | | | | R | |
| Ranunculus acris | Meadow buttercup | R | R | | | R | O | |
| Ranunculus bulbosus | Bulbous buttercup | R | R | | | R | O | |
| Ranunculus ficaria | Lesser celandine | | | R | R | R | | |
| Ranunculus repens | Creeping buttercup | R | R | | R | O | O | |
| Rhinanthus minor | Yellow-rattle | | | | | | R | GI |
| Rumex crispus | Curled dock | | | R | R | R | | |
| Salvia officinalis | Sage | R | | | | | | C |
| Sanguisorba minor | Salad burnet | | | | | | R | GI |
| Saponaria officinalis | Soapwort | R | | | | | | C |
| Senecio erucifolius | Hoary ragwort | O | O | R | R | | O | GI |
| Senecio jacobaea | Common ragwort | R | O | | R | R | O | |
| Sisymbrium officinale | Hedge mustard | | | | | | R | |
| Solidago canadensis | Canadian goldenrod | RLF | OLF | R | R | | | C |
| Sonchus asper | Prickly sow-thistle | | | | R | R | R | |
| Sonchus oleraceus | Smooth sow-thistle | | | | | | R | |
| Stachys sylvatica | Hedge woundwort | | R | | | | | |
| Tanacetum vulgare | Tansy | | R | | | | | |
| Taraxacum vulgare agg | Dandelion | R | | R | R | | R | |
| Thalictrum minus | Lesser meadow-rue | R | | | | | | C |
| Thlaspi arvensis | Field penny-cress | R | | | | | | AN |
| Torilis japonica | Upright hedge parsley | | | R | | | | |
| Tragopogon pratense | Goatsbeard | R | R | | | R | R | |
| Trifolium dubium | Lesser trefoil | | | | | | RLF | |
| Trifolium pratense | Red clover | | O | | R | | O | |
| Trifolium repens | White clover | R | R | | | O | O | |
| Tripleurospermum inodorum | Scentsless mayweed | | | | | | R | |
| Tulipa sp | Tulip | | R | | | | | C |
| Tussilago farfara | Coltsfoot | R | | | | | | |
| Urtica dioica | Nettle | R | | R | R | R | | |
| Valerianella locusta | Corn-salad | RLF | RLF | R | R | | | AN |
| Veronica arvensis | Wall speedwell | R | | | | | | |
| Veronica persica | Common field-speedwell | R | | R | R | | R | |
| Veronica polita | Grey field-speedwell | R | | | | | | |
| Vicia cracca | Tufted vetch | R | R | | | | | GI |
| Vicia hirsuta | Hairy tare | R | O | | | | | |
| Vicia sativa | Common vetch | R | OLF | O | R | | O | |
| Vicia sepium | Bush vetch | O | R | | | R | | |
| Vicia tetrasperma | Smooth tare | OLF | OLF | | R | | R | AN |

D - dominant; A - abundant; F - frequent; O - occasional; R - rare; L - locally

Wessex Ecological Consultancy,
2008

Callington Road - Scrub and Woodland Plant Species List

| Woody species | | 2005 | 2008 | Status |
|--|------------------------------|------|------|--------|
| <i>Acer campestre</i> | Field maple | R | R | |
| <i>Acer pseudoplatanus</i> | Sycamore | F | F | |
| <i>Clematis vitalba</i> | Old-man's beard | OLF | F | |
| <i>Cornus sanguinea</i> | Dogwood | O | O | |
| <i>Crataegus monogyna</i> | Hawthorn | R | O | |
| <i>Fagus sylvatica</i> | Beech | R | R | |
| <i>Fraxinus excelsior</i> | Ash | F | F | |
| <i>Ilex aquifolium</i> | Holly | R | R | |
| <i>Ligustrum ovale</i> | Garden privet | | R | C |
| <i>Ligustrum vulgare</i> | Wild privet | R | R | |
| <i>Malus domestica</i> | Apple | R | R | C |
| <i>Parthenocissus quinquefolia</i> | Russian vine | RLF | R | C |
| <i>Prunus domestica</i> | Plum | OLF | OLF | C |
| <i>Prunus spinosa</i> | Blackthorn | OLF | OLF | |
| <i>Pyracantha coccinea</i> | Firethorn | R | R | C |
| <i>Quercus robur</i> | Pedunculate oak | R | R | |
| <i>Rhamnus catharticus</i> | Purging buckthorn | R | R | |
| <i>Ribes rubrum</i> | Red currant | R | R | C |
| <i>Rosa arvensis</i> | Field rose | R | R | |
| <i>Rosa canina</i> | Dog rose | R | R | |
| <i>Rosa cult.</i> | Garden rose | R | R | C |
| <i>Rubus fruticosus</i> agg | Bramble | A | A | |
| <i>Rubus idaeus</i> | Raspberry | R | R | C |
| <i>Sambucus nigra</i> | Elder | R | R | |
| <i>Syringa vulgaris</i> | Lilac | R | R | C |
| <i>Ulmus procera</i> | English elm | R | R | |
| Herbaceous species | | | | |
| <i>Aegopodium podagraria</i> | Ground elder | R | R | |
| <i>Alliaria petiolata</i> | Hedge garlic | R | R | |
| <i>Anthriscus sylvestris</i> | Cow parsley | OLF | OLF | |
| <i>Arum maculatum</i> | Cuckoo pint | R | O | |
| <i>Brachypodium sylvaticum</i> | Wood false-brome | RLF | RLF | |
| <i>Calystegia sepium</i> | Hedge bindweed | R | R | |
| <i>Circaea lutetiana</i> | Enchanter's nightshade | R | R | |
| <i>Cirsium vulgare</i> | Spear thistle | R | | |
| <i>Dryopteris filix-mas</i> | Male fern | R | R | |
| <i>Epilobium hirsutum</i> | Hairy willowherb | R | R | |
| <i>Epilobium montanum</i> | Broad-leaved willowherb | R | | |
| <i>Galium aparine</i> | Goosegrass | OLF | RLF | |
| <i>Galium mollugo</i> | Hedge bedstraw | | R | Hedge |
| <i>Geum urbanum</i> | Wood avens | O | R | |
| <i>Glechoma hederacea</i> | Ground ivy | O | R | |
| <i>Hedera helix</i> | Ivy | A | A | |
| <i>Heracleum sphondylium</i> | Hogweed | R | R | C |
| <i>Hyacinthoides hispanicus</i> x non-scriptus | Hybrid bluebell | R | R | C |
| <i>Lathyrus latifolius</i> | Broad-leaved everlasting pea | RLF | RLF | C |
| <i>Lathyrus pratensis</i> | Meadow vetchling | R | | |
| <i>Ranunculus ficaria</i> | Lesser celandine | O | O | |
| <i>Rumex sanguineus</i> | Wood dock | R | O | |

Callington Road - Scrub and Woodland Plant Species List

| | | 2005 | 2008 | Status |
|-----------------------------|-----------------------|------|------|--------|
| <i>Stachys sylvatica</i> | Hedge woundwort | | RLF | |
| <i>Torilis japonica</i> | Upright hedge parsley | R | O | |
| <i>Urtica dioica</i> | Nettle | O | R | |
| <i>Veronica hederifolia</i> | Ivy-leaved speedwell | O | R | |
| <i>Vicia sepium</i> | Bush vetch | R | R | |

Callington Road Ecological Survey - Lower Plant Species Lists

| | | 2005 | 2008 |
|--------------------------|---------------------|------|------|
| Bryophytes | | | |
| Brachythecium rutabulum | Scrub and grassland | x | x |
| Calliergonella cuspidata | Grassland | x | x |
| Eurhynchium confertum | Scrub | | x |
| Eurhynchium praelongum | Scrub and grassland | x | x |
| Fissidens dubius | Grassland | x | x |
| Fissidens taxifolius | Scrub | | x |
| Homalothecium lutescens | Grassland | x | x |
| Hypnum cupressiforme | Scrub | x | x |
| Mnium hornum | Scrub | | x |
| Plagiomnium undulatum | Scrub | x | x |
| Pseudoscleropodium purum | Scrub and grassland | x | x |
| Thamnobryum alopecurum | Scrub | | x |
| Thuidium tamariscinum | Grassland | x | x |
| Lichens | | | |
| Buellia punctata | | x | x |
| Diploicia canescens | | x | x |
| Evernia prunastri | | x | x |
| Hypogymnia physodes | | | x |
| Lecanora chlarotera | | x | x |
| Lecanora dispersa | | | x |
| Lepraria incana | | x | x |
| Parmelia caperata | | | x |
| Parmelia glabratula | | x | x |
| Parmelia perlata | | x | x |
| Parmelia sulcata | | x | x |
| Physcia adscendens | | x | x |
| Physcia tenella | | x | x |
| Usnea subfloridana | | x | x |
| Xanthoria parietina | | x | x |

Callington Road Invertebrate Species List

| Butterflies | | 2005 | 2008 | Status (if known) |
|---------------------------------|-----------------------------------|------|------|-------------------|
| Brimstone | <i>Gonepteryx rhamni</i> | x | | |
| Brown argus | <i>Aricia agestis</i> | x | x | |
| Comma | <i>Polygonia c-album</i> | x | x | |
| Common blue | <i>Polyommatis icarus</i> | x | x | |
| Essex skipper | <i>Thymelicus linneola</i> | | x | |
| Gatekeeper | <i>Pyronia tithonus</i> | x | x | |
| Green-veined white | <i>Artogeia napi</i> | x | x | |
| Holly blue | <i>Celastrina argiolus</i> | x | x | |
| Large skipper | <i>Ochlodes venatus</i> | x | x | |
| Large white | <i>Pieris brassicae</i> | x | x | |
| Marbled white | <i>Melanargia galathea</i> | x | x | |
| Meadow brown | <i>Maniola jurtina</i> | x | x | |
| Orange tip | <i>Anthocharis cardamines</i> | | x | |
| Red admiral | <i>Vanessa atalanta</i> | x | | |
| Ringlet | <i>Aphantopus hyperantus</i> | x | x | |
| Small copper | <i>Lycaena phlaeas</i> | x | x | |
| Small skipper | <i>Thymelicus flavus</i> | x | x | |
| Small tortoiseshell | <i>Aglais urticae</i> | x | | |
| Small white | <i>Artogeia rapae</i> | x | x | |
| Speckled wood | <i>Parargia aegeria</i> | x | x | |
| Macro-moths | | | | |
| Angle shades | <i>Phlogophora meticulosa</i> | x | | |
| Barred straw | <i>Eulithis pyraliata</i> | x | x | |
| Blood-vein | <i>Tilandra comae</i> | | x | UK BAP species |
| Blue-bordered carpet | <i>Plemyia rubiginata</i> | x | | |
| Bright-line brown-eye | <i>Lacanobia oleracea</i> | x | x | |
| Brimstone | <i>Opisthograptis luteolata</i> | x | x | |
| Broad-bordered yellow underwing | <i>Noctua fimbriata</i> | | x | |
| Brown rustic | <i>Rusina ferruginea</i> | x | | |
| Buff ermine | <i>Spilosoma luteum</i> | | x | UK BAP species |
| Burnet companion | <i>Euclidia glyphica</i> | x | x | |
| Burnished brass | <i>Diachrysia chrysitis</i> | | x | |
| Cinnabar | <i>Tyria jacobaeae</i> | x | x | UK BAP species |
| Cloaked minor | <i>Mesoligia furuncula</i> | | x | |
| Common carpet | <i>Epirrhoe alternata</i> | | x | |
| Common footman | <i>Eilema lurideola</i> | x | x | |
| Common marbled carpet | <i>Chlorolysta truncata</i> | x | x | |
| Common rustic | <i>Mesapamea secalis</i> | x | | |
| Common wainscot | <i>Mythimna pallens</i> | x | | |
| Currant clearwing | <i>Synanthedon tipuliformis</i> | x | | Nationally scarce |
| Dark arches | <i>Apamea monoglypha</i> | x | x | |
| Dingy footman | <i>Eilema griseola</i> | x | x | |
| Double square-spot | <i>Xestia triangulum</i> | x | x | |
| Double-striped pug | <i>Gymnoscelis rufifasciata</i> | x | | |
| Dunbar | <i>Cosmia trapezina</i> | | x | |
| Flame shoulder | <i>Ochropleura plecta</i> | | x | |
| Four-spotted footman | <i>Lithosia quadra</i> | | x | |
| Garden carpet | <i>Xanthorhoe fluctuata</i> | x | x | |
| Green pug | <i>Chloroclystis rectangulata</i> | | x | |
| Haworth's pug | <i>Eupithecia haworthiata</i> | | x | Local |

Callington Road Invertebrate Species List

| | | 2005 | 2008 | Status (if known) |
|--|---------------------------------|------|------|-----------------------|
| Heart and club | <i>Agrotis clavis</i> | x | | |
| Heart and dart | <i>Agrotis exclamationis</i> | x | x | |
| Large yellow underwing | <i>Noctua pronuba</i> | x | x | |
| Latticed heath | <i>Chiasmia clathrata</i> | x | x | UK BAP species |
| Lesser broad-bordered yellow underwing | <i>Noctua janthe</i> | x | x | |
| Lesser common rustic | <i>Mesapamea didyma</i> | | x | |
| Lesser yellow underwing | <i>Noctua comes</i> | x | x | |
| Light emerald | <i>Campaea margaritata</i> | | x | |
| Marbled beauty | <i>Cryphia domestica</i> | x | | |
| Marbled green | <i>Cryphia muralis</i> | x | | Local |
| Marbled minor | <i>Oligia strigilis</i> | | x | |
| Mottled beauty | <i>Alcis repandata</i> | | x | |
| Mottled rustic | <i>Caradrina morpheus</i> | | x | UK BAP species |
| Narrow-bordered five-spot burnet | <i>Zygaena lonicerae</i> | x | x | |
| Oak eggar | <i>Lasiocampa quercus</i> | | x | |
| Pale mottled willow | <i>Paradrina clavipalpis</i> | x | | |
| Privet hawkmoth | <i>Sphinx ligustri</i> | | x | |
| Red-belted clearwing | <i>Synanthedon myopaeformis</i> | x | x | Nationally scarce |
| Riband wave | <i>Idea aversata</i> | x | | |
| Ruby tiger | <i>Phragmatobia fuliginosa</i> | | x | |
| Scarce footman | <i>Eilema complana</i> | x | x | Local |
| Setaceous hebrew character | <i>Xestia c-nigrum</i> | x | x | |
| Shaded broad-bar | <i>Scotopteryx chenopodiata</i> | x | x | UK BAP species |
| Shuttle-shaped dart | <i>Agrotis puta</i> | | x | |
| Silver Y | <i>Autographa gamma</i> | x | x | |
| Six-spot burnet | <i>Zygaena filipendulae</i> | x | x | |
| Small fan-footed wave | <i>Idea biselata</i> | | x | |
| Small emerald | <i>Hemistola chrysoprasaria</i> | x | x | Local, UK BAP Species |
| Small phoenix | <i>Ecliptopera silaceata</i> | | x | UK BAP species |
| Small waved umber | <i>Horisme vitalbata</i> | | x | |
| Smoky wainscot | <i>Mythimna impura</i> | x | x | |
| Square-spot rustic | <i>Xestia xanthographa</i> | x | x | |
| Straw dot | <i>Rivula sericealis</i> | x | x | |
| Straw underwing | <i>Thalpophila matura</i> | | x | |
| The clay | <i>Mythimna ferrago</i> | x | x | |
| The fern | <i>Horisme tersata</i> | x | x | |
| The rustic | <i>Hoplodrina blanda</i> | x | | Local |
| The snout | <i>Hypena proboscidalis</i> | x | | |
| The uncertain | <i>Hoplodrina alsines</i> | x | x | |
| The vapourer | <i>Orgyia antiqua</i> | x | | |
| Vines rustic | <i>Hoplodrina ambigua</i> | x | x | |
| White ermine | <i>Spilosoma lubricipeda</i> | x | | |
| White-spotted pug | <i>Eupithecia tripunctaria</i> | | x | |
| Willow beauty | <i>Peribatodes rhomboidaria</i> | x | | |
| Wormwood pug | <i>Eupithecia absinthiata</i> | | x | |
| Yellow shell | <i>Camptogramma bilineata</i> | x | x | |
| Micro-moths | | | | |
| <i>Acleris sparsana</i> | | | x | |
| <i>Adaina microdactyla</i> | | x | x | Local |
| <i>Agapeta hamana</i> | | x | | |

Callington Road Invertebrate Species List

| | | 2005 | 2008 | Status (if known) |
|-------------------------------|---------------------------------------|------|------|-------------------|
| Agriphila straminella | | x | x | |
| Agriphila tristella | | x | x | |
| Alucita hexadactyla | | | x | |
| Anthophila fabriciana | | x | x | |
| Argyresthia spinosella | | x | | Local |
| Blastobasis decolorella | | x | x | |
| Caloptilia syringella | Larval mines on ash, privet and lilac | x | x | |
| Celypha lacunana | | x | x | |
| Chrysoteuchia culmella | | x | x | |
| Cochylis atricapitana | | | x | |
| Cochylis roseana | | x | | Local |
| Coleophora trifolii | | x | x | |
| Commophila aenaena | | x | x | Nationally scarce |
| Crambus lathoniellus | | x | x | |
| Crambus perlella | | x | x | |
| Cydia compositella | | | x | Local |
| Cydia funebrana | | x | | Local |
| Cydia succedana | | x | x | |
| Depressaria pastinacella | | | x | |
| Emmelina monodactyla | | x | x | |
| Endotricha flammealis | | x | x | |
| Epiblemma udmanniana | | x | x | |
| Epiphyas postvittana | | | x | |
| Eudonia mercurella | | | x | |
| Glyphipterix simplicella | | x | | |
| Hedya pruniana | | x | | |
| Hofmannophila pseudospretella | | x | | |
| Parornix anglicella | Larval mines on hawthorn | x | x | |
| Parornix finitimella | Larval mines on plum | x | x | |
| Phlyctaenia coronata | | x | x | |
| Phyllonorycter corylifoliella | Larval mines on hawthorn | x | x | |
| Phyllonorycter quercifoliella | Larval mines on oak | x | x | |
| Pleuroptya ruralis | | x | x | |
| Pseudargyrotoza conwagana | | x | | |
| Pterophorus pentadactyla | | x | x | |
| Pyrauster aurata | | x | x | |
| Pyrauster purpuralis | | x | x | |
| Scoparia pyralella | | x | | |
| Sitochroa verticalis | | x | x | Local |
| Stigmella aurella | Larval mines on bramble | | x | |
| Stigmella lapponica | Larval mines on birch | | x | |
| Stigmella lemniscella | Larval mines on elm | | x | |
| Stigmella oxyacanthella | Larval mines on hawthorn | x | x | |
| Stigmella plagiocolella | Larval mines on plum | x | | Local |
| Stigmella regiella | Larval mines on hawthorn | x | | |
| Stigmella splendidissima | Larval mines on bramble | x | x | |
| Stigmella trimaculella | Larval mines on poplar | x | x | |
| Udea olivalis | | | x | |
| Ypsolopha scabrella | | | x | |
| Ypsolopha sequella | | x | | Local |

Callington Road Invertebrate Species List

| | | | | |
|-----------------------------|----------------------------|---|---|-------------------|
| Orthoptera | | | | |
| Common earwig | Forficula auricularia | x | x | |
| Common groundhopper | Tetrix undulata | | x | |
| Field grasshopper | Chorthippus brunneus | x | x | |
| Lesser marsh grasshopper | Chorthippus albomarginatus | x | x | Local |
| Meadow grasshopper | Chorthippus parallelus | x | x | |
| Dark bush-cricket | Pholidoptera griseopatera | x | x | |
| Long-winged conehead | Conocephalus discolor | x | x | Nationally scarce |
| Oak bush-cricket | Meconema thalassinum | x | x | |
| Speckled bush-cricket | Leptophyes punctatissima | x | x | |
| Hoverflies | | | | |
| Baccha obscuripennis | | x | | |
| Chrysotoxum bicinctum | | x | | |
| Chrysotoxum festivum | | x | x | |
| Dasysyrphus albostrigatus | | | x | |
| Epistrophe diaphana | | | x | Nationally scarce |
| Epistrophe eligans | | x | x | |
| Epistrophe grossulariae | | x | x | |
| Episyrphus balteatus | | x | x | |
| Eristalis arbustorum | | x | x | |
| Eristalis nemorum | | | x | |
| Eristalis pertinax | | x | x | |
| Eristalis tenax | | x | x | |
| Eumerus strigatus | | x | | |
| Helophilus hybridus | | | x | |
| Helophilus pendulus | | x | x | |
| Melanostoma scalare | | x | | |
| Meliscava cinctella | | | x | |
| Merodon equestris | | | x | |
| Metasyrphus corollae | | | x | |
| Platycheirus albimanus | | x | x | |
| Platycheirus angustatus | | | x | |
| Platycheirus clypeatus | | x | x | |
| Platycheirus manicatus | | x | | |
| Scaeva pyrausti | | | x | |
| Spaerophora scripta | | x | x | |
| Volucella inanis | | x | x | Nationally scarce |
| Volucella pelluscens | | x | | |
| Volucella zonaria | | | x | Nationally scarce |
| Xanthogramma citrofasciatum | | | x | |
| Xanthogramma pedissequum | | x | | |
| Wasp Fly | | | | |
| Physocephala rufipes | | | x | |
| Beetles | | | | |
| Adalia bipunctata | Two-spot ladybird | x | x | |
| Clytus arietis | Wasp beetle | x | | |
| Coccinella 7-punctata | Seven-spot ladybird | x | | |
| Dorcus parallelipedus | Lesser stag beetle | x | | |
| Oedomera nobilis | | x | x | |

Callington Road Invertebrate Species List

| | | 2005 | 2008 | Status (if known) |
|-----------------------|-----------------------|------|------|-------------------|
| Bumblebees | | | | |
| Bombus campestris | | | x | |
| Bombus hortorum | | x | x | |
| Bombus lapidarius | | x | x | |
| Bombus lucorum | | x | x | |
| Bombus pascorum | | x | x | |
| Bombus pratorum | | x | x | |
| Bombus ruderarius | | x | | |
| Bombus rupestris | | x | x | Nationally scarce |
| Bombus terrestris | | x | x | |
| Bugs | | | | |
| Aelia acuminata | | x | x | |
| Coreus marginatus | | x | x | |
| Dolycoris baccarum | | x | x | |
| Palomena prasina | | x | x | |
| Odonata | | | | |
| Aeshna mixta | Migrant hawkler | | x | |
| Coenagrion puella | Azure damselfly | | x | |
| Enallagma cyathigerum | Common blue damselfly | | x | |
| Ischnura elegans | Blue-tailed damselfly | | x | |
| Pyrrhosoma nymphula | Large red damselfly | | x | |
| Sympetrum striolatum | Common darter | x | x | |