

Lee Donaldson Associates Environmental Consultants

**Croxley Common Moor  
Vegetation Survey**

**2015**



## Contents

1.	Background .....	3
2.	Site Context and Status.....	3
3.	Aims .....	3
4.	Objectives.....	3
5.	Methods .....	4
	5.1 Flora Survey .....	4
	5.2 Rabbit Survey .....	5
6.	Survey Constraints .....	5
7.	Results .....	5
	7.1 Site Description .....	5
	7.2 Flora .....	6
	7.2.1 Key Species.....	6
	7.2.2 Key Species Not Recorded.....	8
	7.2.3 Other Notable Species Recorded.....	8
	7.2.4 General Scrub Survey.....	8
	7.3 Fauna .....	9
	7.3.1 Rabbit Survey.....	9
	7.3.2 General Fauna Sightings.....	9
8.	Discussion/Evaluation.....	10
	8.1 Key Species Assessment .....	10
	8.2 Other Notable Species .....	10
	8.3 Habitat Extent and Condition .....	11
	8.4 Grazing Management.....	13
9.	Conclusions .....	14
10.	References.....	15
APPENDIX 1 - Maps .....		16
	Map 1. Key Habitats .....	17
	Map 2. Petty Whin & Dyer’s Greenweed Distribution .....	18
	Map 3. Location of Rare & Uncommon Species.....	19
	Map 4. Location of Gorse & Broom .....	20
	Map 5. Scrub Distribution .....	21
	Map 6. Rabbit Distribution .....	22
APPENDIX 2 - Plant Species Recorded on the Site .....		23
APPENDIX 3 - Faunal Species Recorded on the Site.....		29
APPENDIX 4 - Photosheets .....		32

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## 1. Background

Lee Donaldson Associates Environmental Consultants was commissioned by Three Rivers District Council to undertake a vegetation survey at Croxley Common Moor.

The survey was undertaken on the 25 and 30<sup>th</sup> of June and the 16<sup>th</sup> July 2015. Dr. Barry Tranter carried out the survey and produced this report.

## 2. Site Context and Status

Croxley Common Moor lies within Croxley Green, in Three Rivers District. The site is centred on OS grid reference TQ 081 948.

The surveyed area at Croxley Common Moor is notified as a Site of Special Scientific Interest and is a Local Nature Reserve.

## 3. Aims

The main aim of the survey was to provide comparative data to:

- Plot the occurrence of rare species.
- Plot areas supporting communities of particular/characteristic interest.
- Consider associations between rare species and encroaching scrub.
- Assess any relationship between rabbit grazing and rare species.
- Serve to monitor rare species survival against recent and past historical records.
- Influence ongoing positive conservation management.

## 4. Objectives

The key aspects of the required survey were:

- Primarily, to assess the extent to which the important habitat types are still present, along with their key rare and characteristic species (see below).
- To map clumps of Gorse and Broom within the site and describe their condition, with a view to providing management prescriptions. Any encroachment on to adjacent areas of acid grassland should also be noted.
- To record the location of rabbit warrens and the local impact of rabbit grazing on rare vegetation communities.
- To record other notable or rare species (not listed below).
- To record other features of interest related to the habitats and species noted.

## 5. Methods

Initially a walkover survey was conducted to locate and map the major habitats and significant features within the site. This map was then used as a basis for the detailed survey of the vegetation. To aid in habitat mapping and recording the location of the key plant species (and other species of note) a Garmin Montana GPS was used.

### 5.1 Flora Survey

Subjective estimates of the relative abundance of plant species are given in the text using the DAFOR scale. The DAFOR scale ranks species according to their relative abundance within a parcel of land or area as follows:

Code	Description	Meaning
D	Dominant	Comprises most of the community
A	Abundant	Very frequent in the community but not dominant
F	Frequent	Frequently seen in the community
O	Occasional	Seen but not frequently occurring
R	Rare	Hardly ever found

In addition L (Locally) or V (Very) may be appended to any of the above to reflect local distribution within the site.

The estimates of abundance refer only to the given parcel of land and have no relevance to the abundance of the plant species in the wider landscape.

In this report scientific names are given after the first mention of a species, thereafter only the common names are used. The nomenclature used follows that in the New Flora of the British Isles (Stace, C. A., 2010).

The key species, to which particular attention was to be paid, were:

#### Acid grassland species

Petty Whin	<i>Genista anglica</i>
Dyer's Greenweed	<i>Genista tinctoria</i>
Heather	<i>Calluna vulgaris</i>
Betony	<i>Stachys officinalis</i>
Meadow Saxifrage	<i>Saxifraga granulata</i>
Mat Grass	<i>Nardus stricta</i>
Gorse	<i>Ulex europaeus</i>
Broom	<i>Cytisus scoparius</i>

#### Calcareous/base-rich grassland species

Large Thyme	<i>Thymus pulegioides</i>
Eyebright	<i>Euphrasia nemorosa</i>
Salad Burnet	<i>Poterium sanguisorba</i>
Fairy (Purging) Flax	<i>Linum catharticum</i>
Crested Hair-grass	<i>Koeleria macrantha</i>

#### Damp hollows species

Fen Bedstraw	<i>Galium uliginosum</i>
Marsh Pennywort	<i>Hydrocotyle vulgaris</i>

In accord with the brief, the position of clumps of Gorse and Broom were mapped.

In addition, the location and extent of other shrub species and trees was recorded, though small specimens (<1m) were excluded.

## 5.2 Rabbit Survey

For compatibility with the survey carried out in 2003, two early morning visits were undertaken to determine the grazing rabbit population and the position of active warrens. The visits were timed to coincide with the daylight peak in rabbit activity – before the moor became disturbed by human activity.

## 6. Survey Constraints

The site was very dry at the time of the survey due to the high temperatures and lack of rain during June and early July. This hindered the accurate identification of some species, particularly of grasses in parts of the heathy areas, which were also grazed short by rabbits.

## 7. Results

### 7.1 Site Description

See Appendix 1 Map 1 for a representation of the main habitats present on the site. An overall plant list for the site along with an assessment of their abundance using the DAFOR scale is provided in Appendix 2. Photographs of several of the important species supported by the site are given in Appendix 4.

The surveyed site comprises a large area of land with a railway line to the south and the River Colne to the north. The main access is via a wide footpath that crosses north-south approximately mid-site. A network of well used paths traverses the drier parts of the site and the approximate locations of the majority of these are depicted on the survey maps.

The site lies mainly on sandy soils and is of uneven topography, with the lowest lying land predominantly to the western end of the site and alongside the river. The varied topography, and also the varying pH and wetness of the substrate across the site, has resulted in a complex mosaic of plant communities.

To aid in the surveying and reporting of the vegetation on the site, the moor has been broadly divided into a number of habitat areas (see Map 1), which are briefly described below. These areas were plotted on the ground using GPS tracking, though due to the complexity of the habitats present they can only be taken as an approximate indication of their position and extent on the maps produced.

Area	Habitat description
A and B	Heathy acid grassland on drier, relatively high ground. The topology is somewhat undulating, and in Area B there are numerous hollows that support wetland vegetation similar to Area O.

C	Heathy acid grassland with numerous anthills.
D, E, F, G, H, I and J	Several areas of neutral to somewhat acid grassland with numerous anthills in places.
K and L	Neutral grassland.
M	Neutral grassland on the lower lying land adjacent to the river, extending in places towards the western end of the site.
N	A large area of semi-improved neutral grassland with much invading scrub in the north.
O	The main area of low lying ground supporting wet marshy grassland and tall fen vegetation. This wet community also occurs in lower lying hollows in Area B, and in places between other areas of open grassland in the western half of the site.
P	Main areas of mature woodland and scrub within and bordering the site.

## 7.2 Flora

### 7.2.1 Key Species

The key species list provided in the brief comprised 15 species, 12 of which were recorded in the present survey. Maps 2-4 depict the locations where these species were found.

#### **Acid grassland species**

##### Petty Whin

This species is most prevalent within the main two areas of heathy grassland, Areas A and B (see Map 2), but is also found scattered within acid grass communities elsewhere on the site, particularly in Areas C, D and E. This plant had completed flowering by the time the survey commenced but is comparatively easy to identify vegetatively (Photo 1). Initially, GPS positions were recorded for individual plants but it soon became clear that this species was too numerous and variable in extent to make this practicable. Cover varied from individual plants to areas comprising several plants of one metre square or more. It is estimated that the number of plants within the site exceeds 100.

##### Dyer's Greenweed

The distribution of this species is shown on Map 2 and a plant in flower is shown in Photo 2. At the time of the survey Dyer's Greenweed was in full flower and was found to be quite abundant within the main areas of heath, Areas A and B, but uncommon elsewhere. Specifically, it was most prevalent within Area A, where in places it covered several square metres (Photo 3).

##### Heather

Heather was found in two areas (see Map 3): in Area B as several plants on the west side of a former field drain (Photo 4), and in Area C where c15-20 scattered plants are present (Photo 5).

**Betony**

This species came into flower in early July and was recorded only within Area A (see Map 3), with several plants in two small areas (at TQ 08350 94994 and either side of a path at TQ 08356 95026) and a single plant noted further to the north (TQ 08263 95083). See Photo 6.

**Mat Grass**

This grass is quite widespread but nowhere common. It is most frequent in Area B and was occasional in Area C. It was also recorded in Area A and very rarely in Areas F and I (see Photo 8).

**Gorse**

The location of Gorse is shown on Map 4 and details are given in the table below. Gorse is uncommon and largely restricted to the heath Area B. There was evidence of management of some of the clumps.

<b>Grid Reference</b>	<b>Notes</b>
TQ 08047 94679	Clump approx. 10m <sup>2</sup>
TQ 08102 94740	Clump approx. 5m <sup>2</sup> – some clearance
TQ 08189 94810	Small area with c8 small plants
TQ 08190 94794	Rough area with numerous small Gorse + other shrubs
TQ 08229 94840	2 plants at southern end of an area of Broom

**Broom**

The distribution of larger Broom plants is shown on Map 4. Broom is common to locally abundant in the heathy areas, particularly in Area A where it often forms extensive clumps. In area B there are two main areas supporting small plants. Within Area B, particularly along the southern side, there are frequent very small, rabbit (?) grazed plants generally less than 5cm high. These were too numerous to map accurately. Elsewhere Broom is very rare, only being recorded in two locations (see Map 4), though it is possible that Broom occurs in other places buried amongst other scrub species.

**Calcareous/base-rich grassland****Large Thyme**

This species was only found on the edge of the calcareous hollow at TQ08344 95110 (see Map 3 and Photo 10).

**Fairy (Purging) Flax**

Only a single poor specimen of this species was noted growing on an anthill in Area I, at TQ 08112 94972.

**Crested Hair-grass**

This grass was recorded in the open parts of the main heathy areas but was noted as uncommon and widely scattered. It occurs mainly in the shorter turf. Due to the prevailing conditions accurate identification was problematic but it is considered that this species is not common on the site.

**Damp hollows****Fen Bedstraw**



This species was found to be quite common in the marshy grassland and fen in the western part of the site and also within some of the lower lying, seasonally wet hollows, particularly in Area B. Due to the relative abundance of this species and inaccessibility to some of the areas of wet vegetation it was considered that accurate mapping of this species was impracticable.

#### 7.2.2 Key Species Not Recorded

Species not recorded during the survey were:

- Meadow Saxifrage
- Eyebright
- Salad Burnet
- Marsh Pennywort

#### 7.2.3 Other Notable Species Recorded

##### Heath Grass (*Danthonia decumbens*)

This species was not recorded in the 2003 survey but is common within Area C (see Map 3 and Photo 7).

##### Pyramidal Orchid (*Anacamptis pyramidalis*)

One spike of this orchid was seen in the rough vegetation at TQ 08113 94933 (see Map 3 and Photo 11).

##### Harebell (*Campanula rotundifolia*)

An occasional species occurring both within the acidic areas of the site and also the calcareous hollow.

##### Common Rockrose (*Helianthemum nummularium*)

This plant was only found at the northern end of the calcareous hollow (see Map 3 and Photo 8).

##### Heath Groundsel (*Senecio sylvaticus*)

Heath Groundsel was recorded scattered in the central open area of Area A (see Map 3).

##### Smith's Pepperwort (*Lepidium heterophyllum*)

This species is occasional in shorter turf and bare ground, particularly alongside footpaths. It is noted as rare but possibly increasing in the Flora of Hertfordshire (see Photo 13).

##### Common Valerian (*Valeriana officinalis*)

One plant was recorded along the southern edge of the marsh at TQ 07893 94544 (see Photo 12). This species is noted as decreasing in the Flora of Hertfordshire.

#### 7.2.4 General Scrub Survey

In addition to the recording of Gorse and Broom on the site, and to provide a more accurate idea of the habitats within the site, other scrub species were mapped as accurately as possible using aerial photographs (Google Maps) and on the ground. This enabled a comparison with previous surveys.

Hawthorn (*Crataegus monogyna*) is the dominant scrub species across the site with Blackthorn (*Prunus spinosa*) locally frequent especially in the scrub bordering the site. Dog-rose (*Rosa canina*) and Bramble (*Rubus fruticosus* agg) are also common with Elder (*Sambucus nigra*) occurring predominantly along the river. In the wetter areas willows, mainly Grey Willow (*Salix cinerea*) and Goat Willow (*Salix caprea*) are most frequent. Small Pedunculate Oak (*Quercus robur*) are to be found widely scattered across the moor.

### 7.3 Fauna

#### 7.3.1 Rabbit Survey

The results of the rabbit survey are shown on Map 6. At least 4 warrens were tentatively identified, mainly within the wide band of scrub between Areas A and N and along the southern edge of the site beside Area B. Warrens were often below dense scrub of Blackthorn (*Prunus spinosa*) and were inaccessible. A more isolated warren may be present below Bramble (*Rubus fruticosus* agg.) nearer to the river. No warren was noted within the wooded strip along the eastern side of the site though rabbit activity is quite high along this edge. In fact rabbit activity was recorded across much of the drier parts of the site.

#### 7.3.2 General Fauna Sightings

Incidental sightings were recorded during the survey. Species noted are given in Appendix 3.

## 8. Discussion/Evaluation

### 8.1 Key Species Assessment

The brief listed 15 species to which particular attention should be paid, many of which are characteristic of the habitat interest of the site. 11 of these species were found during the present survey. Despite extensive searching the remaining 4 species were not detected. However, this does not mean that they are no longer present particularly, as from past records, these species have always been uncommon on the moor and only recorded sporadically.

Three of these species were not seen in the 2003 survey - Meadow Saxifrage, Salad Burnet and Marsh Pennywort. Common Eyebright was recorded in 2003 in the calcareous hollow but not in the current survey, despite several visits to the site. Common Eyebright usually prefers chalky grassland, but may be found in more acid conditions; it was recorded in Area B in an NVC survey of 1996.

Meadow Saxifrage is easiest to detect when in flower but flowers early in the year. Salad Burnet prefers basic conditions and therefore is most likely to occur in the calcareous hollow, which, as stated, was surveyed thoroughly.

Marsh Pennywort is uncommon in Hertfordshire, and is decreasing. It prefers boggy conditions and has been recorded in the wetter western part of the site. Due to the inaccessibility of some of the wet habitats at the time of the survey this species may have been missed. Also, it is possible that drier conditions in recent years have resulted in the loss of this plant at this site.

Of those key species recorded on the moor, Petty Whin and Dyer's Greenweed were most common. Despite the cover of each species not being mapped in the 2003 survey, comparison with that survey would indicate that both species are still doing well, and may be increasing. In addition, the 2003 survey did not detect either species beyond the main heath areas, though the present survey found populations scattered widely within the grassy areas to the western side of the site. Interestingly, the NVC survey of 1996 also recorded both Petty Whin and Dyer's Greenweed beyond the main heath areas. Due to the size of the site it is quite possible that further isolated specimens of these species were undetected by the present survey.

The majority of other key species were recorded in the same locations, or locations approximating, to that of the 2003 survey. Mat Grass and Crested Hair-grass both persist within the heath areas, though they were not as abundant as the 2003 survey indicated. Mat Grass was also found in other locations, in particular in Area C along with a good population of Heather. The latter species has always been recorded as rare on the site and the only available maps produced during previous surveys (1982, 1996 and 2003) plot Heather in Area B, where it was found during the present survey. It is surprising that the Heather population in Area C, which looks well established, has not been recorded previously which leads to the assumption that the Heather has been planted since 2003, though there is no record on file of this.

### 8.2 Other Notable Species

During the present survey over 190 species of flowering plant were identified (see Appendix 2). In addition to the species in the key species list, the site supports a number of other Hertfordshire rare or uncommon plants. These are

highlighted in the flora list for the site and include Pyramidal Orchid, Heath Grass and Upright Tormentil. Many of the species recorded are also Wildlife Site indicator species (listed as bold in the plant list).

Photographs of some of the more unusual species are included in Appendix 4.

### 8.3 Habitat Extent and Condition

The varied topography, pH and wetness of the substrate across Croxley Common Moor, has resulted in a complex mosaic of habitats. The main areas of habitat on the site are shown on Map 1, the distribution of Gorse and Broom on Map 4 and other woody species on Map 5.

The heathy grassland represents one of the few remaining areas of this type of habitat in Hertfordshire and supports an important community with many rare and uncommon species. The extent of the main area of this habitat, comprising Areas A and B, is broadly similar to previous surveys though recent scrub clearance has increased the area open to grazing. Further heathy areas identified in this survey, particularly Area C, were not noted on maps from previous surveys.

The main area of heath, in particular, was very parched by the time the survey commenced in late June but generally the sward appeared in good condition with no extensive areas of bare ground (but see below). The sward was grazed by rabbits and cattle with a height mostly less than 10cm. Grazing had restricted the size of species such as Petty Whin and Dyer's Greenweed but plants were common and seemingly in greater abundance than the 2003 study. The sward height was somewhat higher in Area C where rabbit grazing was less evident.

An extensive network of footpaths cross the heath areas, particularly Area B, with excessive trampling in places causing erosion and creating areas of bare ground. This has inevitably led to some loss of vegetation cover within the heath.

Ragwort is a problem in places, particularly in Area A and requires ongoing management to control its spread.

Further open areas of neutral to acid grassland lie to the west and north of the main heath Area B. Closer to the River Colne the grassland community is generally lower lying and becomes more neutral in character, probably influenced by the more alluvial soils along the flood plain of the river. These grassland areas are of botanical interest, supporting a good diversity of species. At the time of the survey the sward was well managed by grazing cattle and to a lesser extent by rabbits.

Old anthills are common in these neutral to acid areas of grassland, particularly to the western half of the site and provide important microhabitats for a range of plants.

To the eastern side of the site there is a further area of grassland (Area N). Historically this area was ploughed but was converted back to pasture. Given the vegetation present it can now be considered to represent semi-improved neutral grassland. The plant community is very different to the rest of the site. The sward is dominated by tall ranker grasses but is reasonably diverse

supporting a number of neutral grassland indicator species. There is significant invading scrub, mainly of Hawthorn, to the northern corner of this area. Rabbit grazing was mainly restricted to the margins of the paths running through and around this area, particularly along the western side. No sign of cattle grazing was evident though cattle from the main part of the moor have access to this area. At present Area N is in good condition but any cessation in management will lead to the dominance of coarser, species-poor vegetation and eventual conversion to scrub. It is suggested that the scrub is not allowed to increase above that currently present and should be maintained as an open mosaic within the grassland.

The western end of the moor and many of the lower lying hollows in Area B support wetland habitat. The substrate is mostly neutral in character but within the heath areas there is likely to be some acidic influence on the communities present. At the time of the survey the ground was only damp and no open areas of water were observed, though standing water is probably present during the winter. The communities present are varied, with stands of sedge, tall herb and tall fen grading to more open marshy grass areas. There is a good diversity of plant species including several Hertfordshire rare and uncommon species. Dominance of the wetland by tall vegetation, such as Great Willowherb (*Epilobium hirsutum*), did not seem to be a major problem at the time of the survey. Cattle traverse the wetland creating numerous paths with some grazing noted but generally their impact appeared limited.

Further wetland habitat is found along the river where fringes of marginal vegetation are present along the banks. The aquatic vegetation is also reasonably diverse but was not surveyed in detail. The river bank is poached in places, presumably where the general public make use of the river or cattle come to drink or cross to the northern strip of the moor, but the length of bare bank is not extensive and adds habitat diversity along the river corridor.

Scrub habitat on site mainly comprises Hawthorn, Blackthorn, willows, rose, Broom and to a lesser extent Gorse and Bramble. Following the brief, particular attention was given to the presence of Gorse and Broom.

The distribution of Gorse appears similar to the 2003 survey, occurring mainly in the western area of the heath (Area B), as isolated clumps. The lack of expansion of this species since 2003 may be due to ongoing management work. Recent management was noted during the present survey, where some of the Gorse clumps had been thinned. The few clumps of Gorse presently growing on the site are not considered a threat to the heath vegetation though monitoring of this species should continue to ensure it does not become a problem.

Broom is much more extensive than Gorse in the heath areas. It is particularly common in Area A, where plants form several significant clumps mostly between 1-2m in height. Area B also supports frequent Broom but these are mostly reduced by rabbit grazing to very small plants. The 2003 survey did not map the extent of Broom on the site so direct comparison of cover cannot be made. However, the 2003 survey did state that Broom was common on the site, being well distributed across the central area.

When compared to the aerial photography from 2000 the cover of Broom appears to have increased. At present, Broom does not seem to be causing a problem and does add habitat diversity to the site. However, like Gorse, the

population should be closely monitored to ensure that it does not expand further and have a detrimental effect on the heath or other areas of acid grassland. In fact, it may be prudent to remove some of the smaller areas of Broom within Area A before they become too dominant.

Map 5 provides a general idea of the distribution of the other scrub species, and small trees, within the site. Hawthorn is generally dominant in the drier, more neutral areas while willows are most common in the wetter parts to the west. Comparing the current situation with historic aerial photographs and maps indicates that scrub has increased on the site since management ceased in the early 1990s, though it was noted during the present survey that recent management has opened up several areas, particularly to the western half of the moor. However, scrub encroachment, is considered an ongoing problem across the whole site. Management should aim to create scrub habitat of variable age and height within the site while limiting the development of mature and dense areas. The present level of scrub on the site should be reduced further, particularly the willow in the west of the site and the Hawthorn in the area to the north of the heathland.

The site is used extensively by the general public, though most use is restricted to the network of paths. Unfortunately most paths lie within the heathy areas, which is the most sensitive area botanically, and many are heavily used with erosion evident. Due to the open access within the site, restricting the number of paths is probably infeasible but an investigation into closing some of the smaller paths is suggested, even if closure is only temporary to allow vegetation to regenerate.

#### 8.4 Grazing Management

Cattle were present on the site during each of the visits to the site and no interaction was seen between the numerous dog walkers and the livestock.

The whole of the moor is open to grazing, though much less grazing was noted in the wetter areas. As some breeds have a preferences for the vegetation they graze it may be necessary in the future to vary the animals used, at least temporarily, to ensure grazing across the whole site is accomplished.

At present the mosaic of grassland types appears to be well managed under the current cattle grazing regime augmented by rabbit grazing. This suggest that the numbers of cattle employed and the present population of rabbits is appropriate to maintaining the grassland in a favourable condition.

## **9. Conclusions**

The site represents a remnant of the formerly extensive lowland heath once present across Hertfordshire. The current survey confirmed that the mosaic of habitats for which Croxley Common Moor was notified as a SSSI in 1986 are still present and mostly in good condition.

Compared with 1986, there is probably more scrub present today (and definitely when compared to the early aerial photograph from 1946 when the site was evidently under greater management).

The majority of plant species recorded in previous surveys were identified in this survey, which also suggests that management of the site has been successful in maintaining species diversity.

The diversity of species and habitats supported by Croxley Common Moor affirms its importance as a site for wildlife. Grazing by cattle and the local rabbit population and ongoing scrub management appear to be maintaining this diversity.

Finally, it is suggested that a further botanical survey earlier in the year may be useful to determine the presence of additional species, including key species not located in the present survey.

## **10. References**

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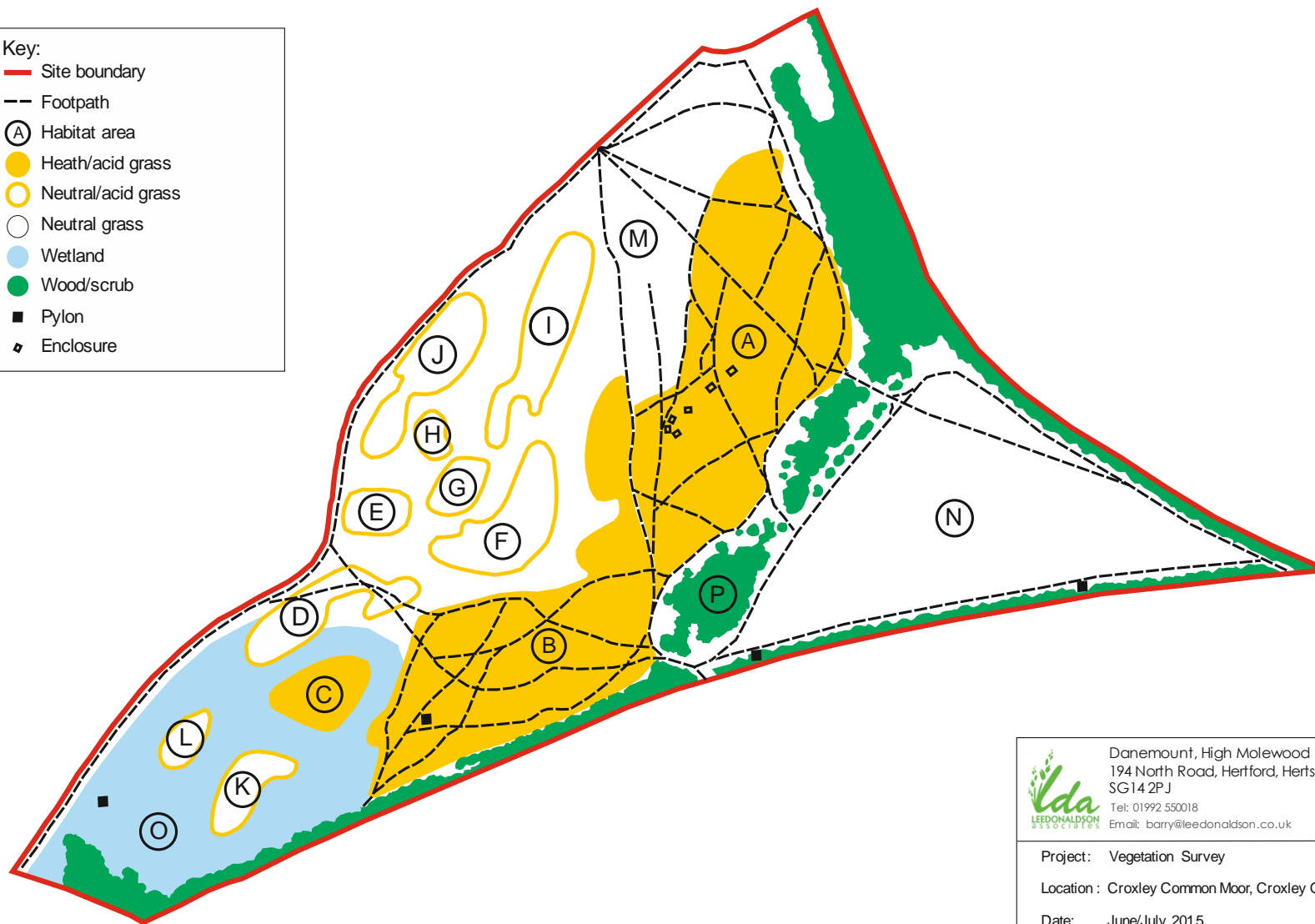



**APPENDIX 1 - Maps**

**Map 1. Key Habitats**

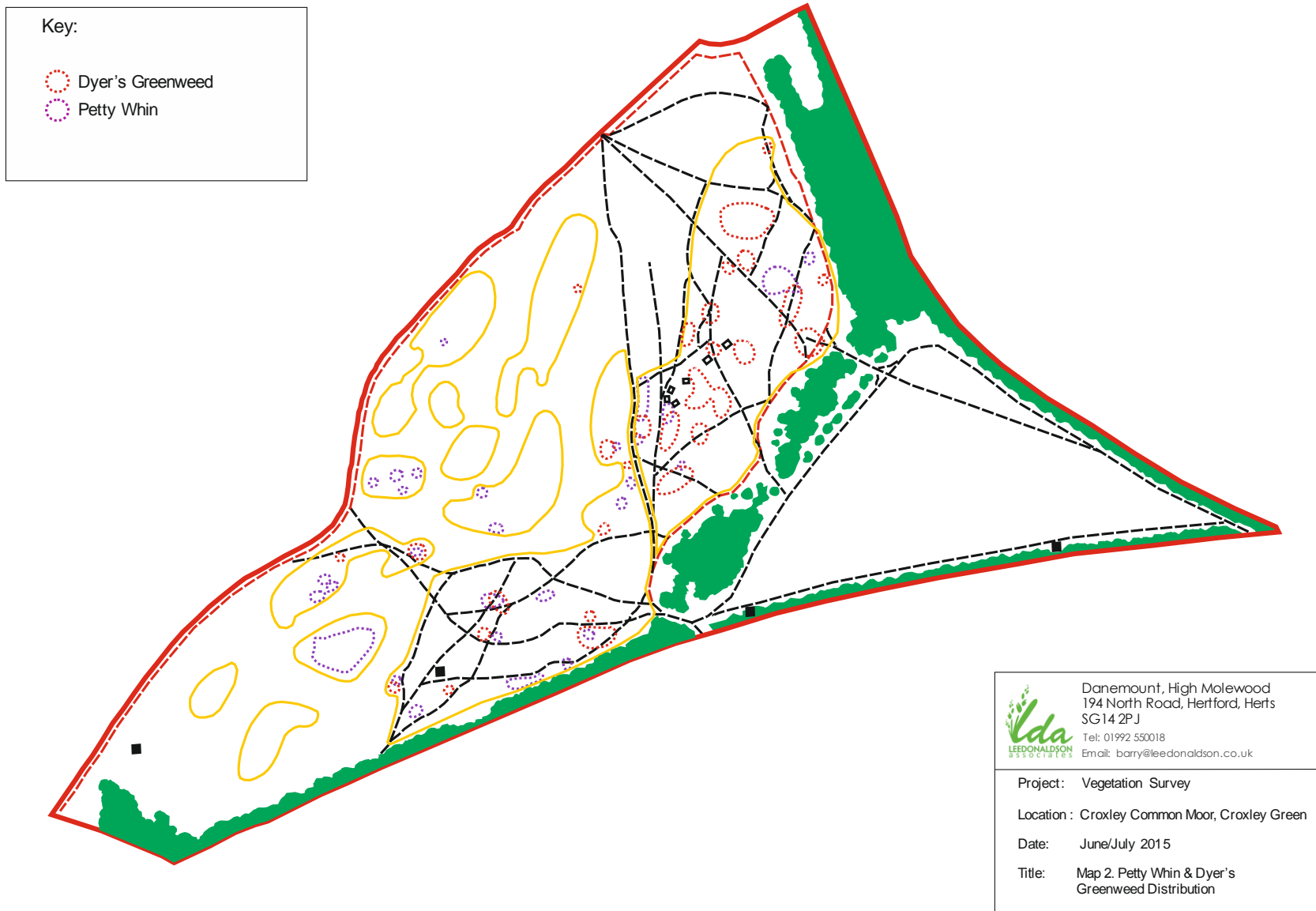
**Key:**

- Site boundary
- - - Footpath
- Ⓐ Habitat area
- Heath/acid grass
- Neutral/acid grass
- Neutral grass
- Wetland
- Wood/scrub
- Pylon
- ◆ Enclosure

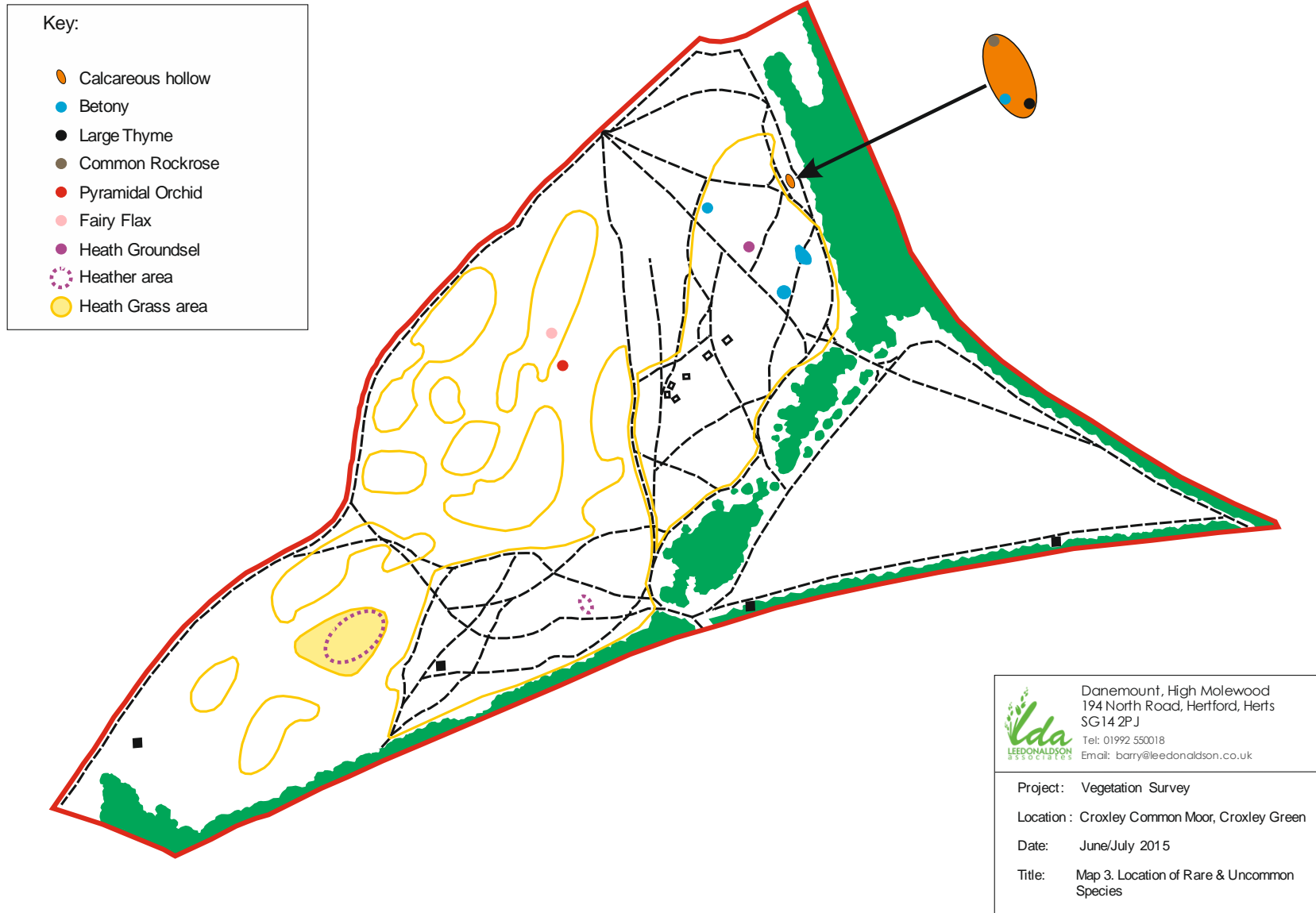


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	Project: Vegetation Survey Location: Croxley Common Moor, Croxley Green Date: June/July 2015 Title: Map 1. Key Habitats

### Map 2. Petty Whin & Dyer's Greenweed Distribution



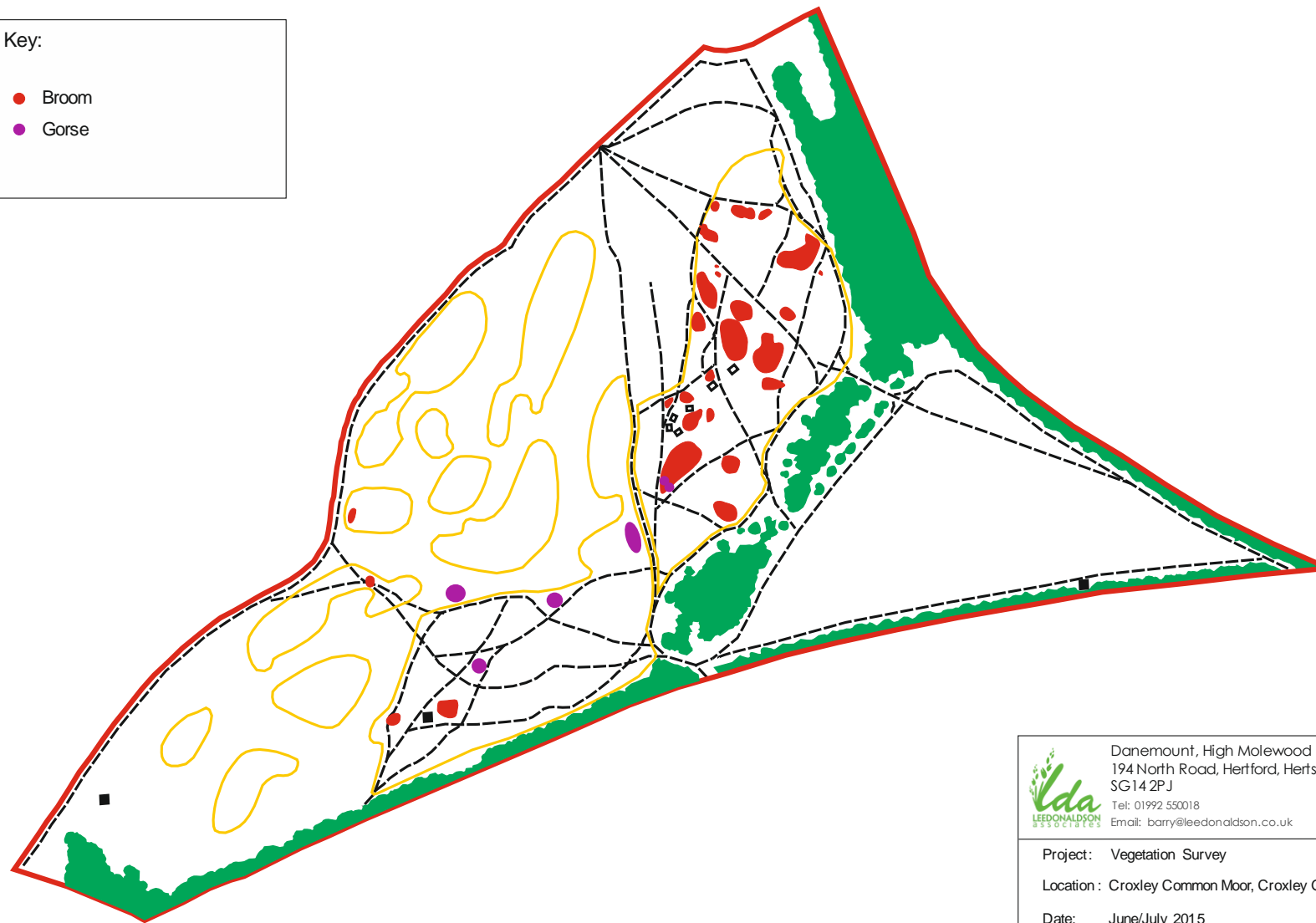
**Map 3. Location of Rare & Uncommon Species**




**Map 4. Location of Gorse & Broom**

Key:

- Broom
- Gorse



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	Project: Vegetation Survey
	Location: Croxley Common Moor, Croxley Green

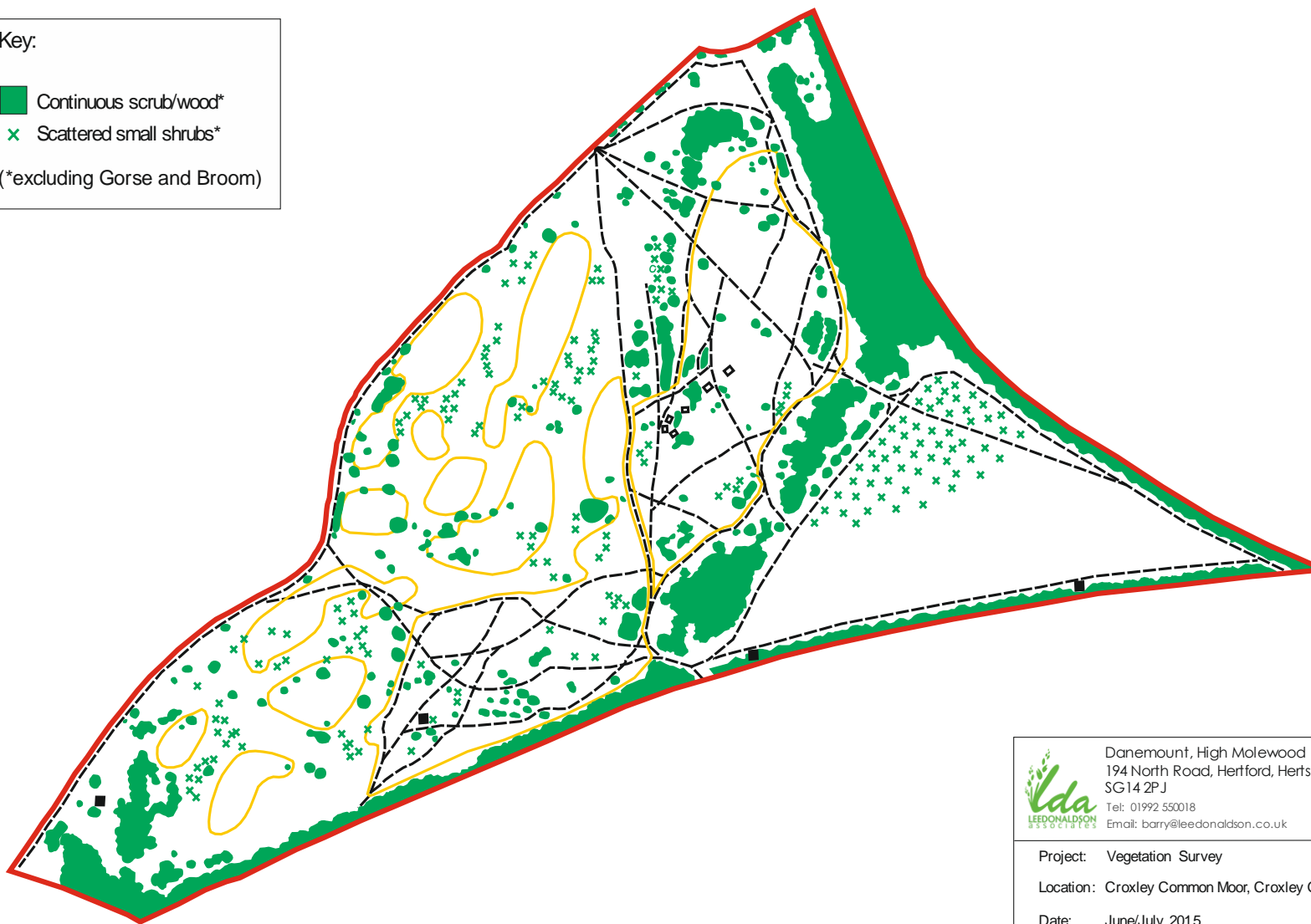
Date: June/July 2015
Title: Map 4. Location of Gorse & Broom


### Map 5. Scrub Distribution

Key:

- Continuous scrub/wood\*
- Scattered small shrubs\*

(\*excluding Gorse and Broom)

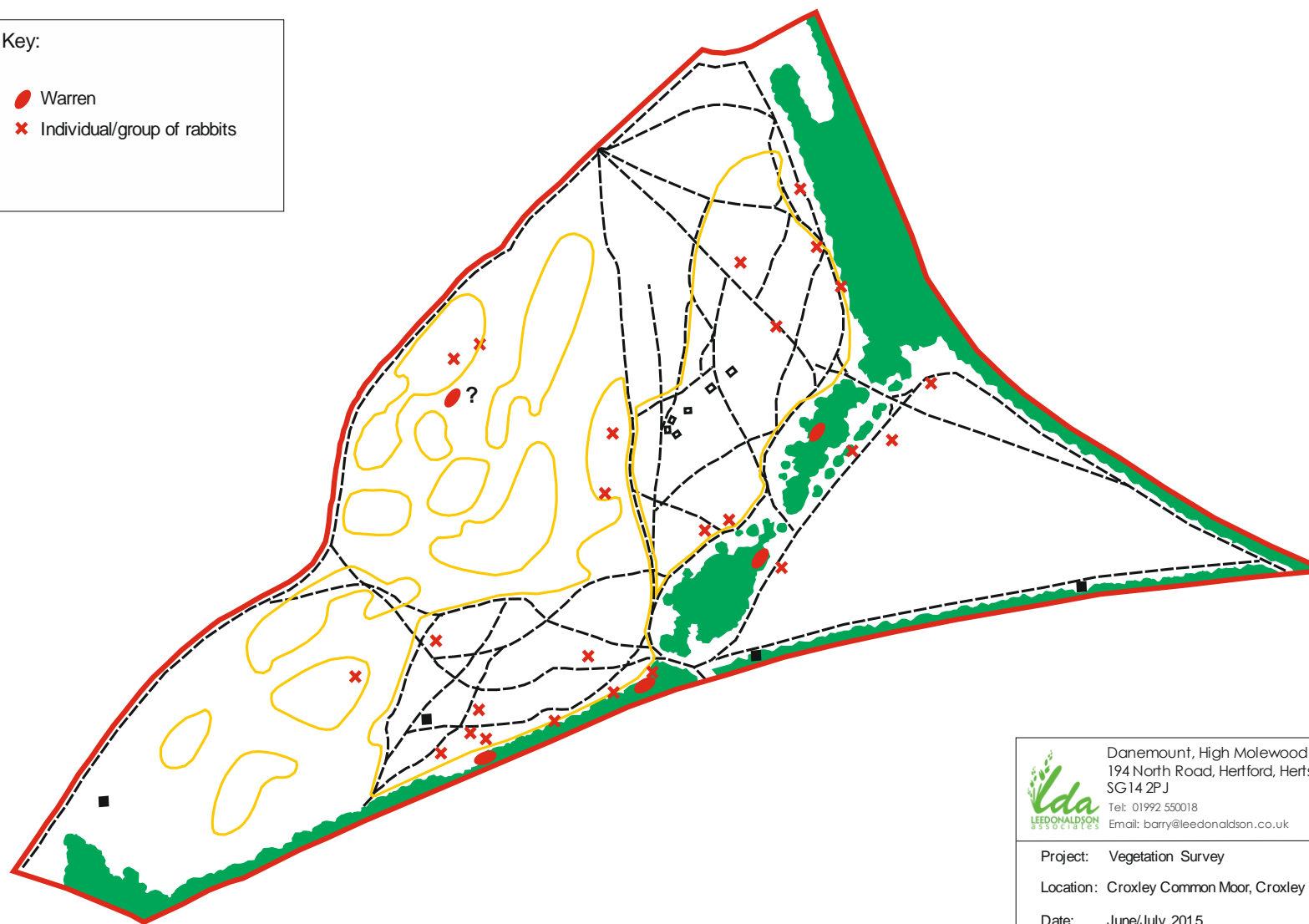



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	Project: Vegetation Survey Location: Croxley Common Moor, Croxley Green Date: June/July 2015 Title: Map 5. Scrub Distribution

### Map 6. Rabbit Distribution

Key:

- Warren
- × Individual/group of rabbits



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	Project: Vegetation Survey Location: Croxley Common Moor, Croxley Green Date: June/July 2015 Title: Map 6. Rabbit Distribution

**APPENDIX 2 - Plant Species Recorded on the Site**



## Plant Species Recorded on the Site

Scientific Name	Common Name	Overall Site DAFOR
<i>Acer campestre</i>	Field Maple	R
<b><i>Agrimonia eupatoria</i></b>	<b>Agrimony</b>	<b>R</b>
<b><i>Agrostis capillaris</i></b>	<b>Common Bent</b>	<b>F</b>
<i>Agrostis stolonifera</i>	Creeping Bent	R
<b><i>Aira praecox</i></b>	<b>Early Hair-grass</b>	<b>R</b>
<b><i>Ajuga reptans</i></b>	<b>Bugle</b>	<b>R</b>
<b><i>Alopecurus geniculatus</i></b>	<b>Marsh Foxtail</b>	<b>R</b>
<i>Alopecurus pratensis</i>	Meadow Foxtail	O
<i>Alnus glutinosa</i>	Alder	R
<b><i>Anacamptis pyramidalis</i>*</b>	<b>Pyramidal Orchid</b>	<b>R</b>
<i>Anagallis arvensis</i>	Scarlet Pimpernel	R
<b><i>Angelica sylvestris</i></b>	<b>Wild Angelica</b>	<b>R</b>
<b><i>Anthoxanthum odoratum</i></b>	<b>Sweet Vernal-grass</b>	<b>F</b>
<i>Apium nodiflorum</i>	Fool's-water-cress	LF
<i>Arctium minus</i>	Lesser Burdock	R
<i>Arrhenatherum elatius</i>	False Oat-grass	O
<i>Artemisia vulgaris</i>	Mugwort	O
<i>Bellis perennis</i>	Daisy	R
<i>Betonica officinalis</i>	Betony	R
<i>Betula pubescens</i>	Downy Birch	R
<i>Bromus hordeaceus</i> ssp. <i>Hordeaceus</i>	Soft-brome	O
<i>White Bryony</i>	White Bryony	R
<i>Buddleja davidii</i>	Butterfly-bush	R
<b><i>Calluna vulgaris</i>*</b>	<b>Heather</b>	<b>R-VLO</b>
<b><i>Caltha palustris</i></b>	<b>Marsh-marigold</b>	<b>LF</b>
<b><i>Campanula rotundifolia</i></b>	<b>Harebell</b>	<b>O</b>
<i>Capsella bursa-pastoris</i>	Shepherd's-purse	O
<i>Cardamine flexuosa</i>	Wavy Bitter-cress	R
<b><i>Cardamine pratensis</i></b>	<b>Lady's-smock</b>	<b>O</b>
<i>Carduus crispus</i>	Wetted Thistle	R
<i>Carduus nutans</i>	Musk Thistle	O
<i>Carex acutiformis</i>	Lesser Pond-sedge	O-LA
<b><i>Carex disticha</i>*</b>	<b>Brown Sedge</b>	<b>O</b>
<i>Carex hirta</i>	Hairy Sedge	O-LF
<b><i>Carex nigra</i>*</b>	<b>Common Sedge</b>	<b>O</b>
<i>Carex otrubae</i>	False Fox-sedge	R
<i>Cerastium fontanum</i>	Common Mouse-ear	R
<b><i>Centaurea nigra</i></b>	<b>Common Knapweed</b>	<b>R</b>
<i>Centaureum erythraea</i>	Common Centaury	R
<i>Chamerion angustifolium</i>	Rosebay Willowherb	R

Scientific Name	Common Name	Overall Site DAFOR
<i>Chenopodium bonus-henricus</i>	Good-King-Henry	R
<b><i>Cirsium acaule</i></b>	<b>Dwarf Thistle</b>	<b>R</b>
<i>Cirsium arvense</i>	Creeping Thistle	F
<b><i>Cirsium palustre</i></b>	<b>Marsh Thistle</b>	<b>O-LF</b>
<i>Cirsium vulgare</i>	Spear Thistle	O
<i>Clinopodium vulgare</i>	Wild Basil	R
<i>Conium maculatum</i>	Hemlock	R
<i>Convolvulus arvensis</i>	Field Bindweed	R
<b><i>Corylus avellana</i></b>	<b>Hazel</b>	<b>R</b>
<i>Crataegus monogyna</i>	Hawthorn	A
<i>Crepis capillaris</i>	Smooth Hawk's-beard	O
<b><i>Cynosurus cristatus</i></b>	<b>Crested Dog's-tail</b>	<b>O</b>
<i>Cytisus scoparius</i>	Broom	O-LA
<i>Dactylis glomerata</i>	Cock's-foot	F-A
<b><i>Danthonia decumbens</i>*</b>	<b>Heath-grass</b>	<b>R-VLF</b>
<i>Deschampsia cespitosa</i>	Tufted Hair-grass	O
<i>Epilobium hirsutum</i>	Great Willowherb	O-LA
<i>Epilobium montanum</i>	Broad-leaved Willowherb	R
<i>Epilobium parviflorum</i>	Hoary Willowherb	R
<i>Equisetum arvensis</i>	Field Horsetail	O
<b><i>Equisetum palustre</i></b>	<b>Marsh Horsetail</b>	<b>O-LF</b>
<i>Eupatorium cannabinum</i>	Hemp-agrimony	R
<b><i>Festuca ovina</i></b>	<b>Sheep's-fescue</b>	<b>F-LA</b>
<i>Festuca rubra</i>	Red Fescue	F-LA
<b><i>Filipendula ulmaria</i></b>	<b>Meadowsweet</b>	<b>LA</b>
<i>Fraxinus excelsior</i>	Ash	R
<i>Galeopsis tetrahit</i>	Common Hemp-nettle	R
<i>Galium aparine</i>	Cleavers	O
<i>Galium palustre</i>	Common Marsh-bedstraw	LA
<b><i>Galium saxatile</i></b>	<b>Heath Bedstraw</b>	<b>LF</b>
<b><i>Galium uliginosum</i>*</b>	<b>Fen Bedstraw</b>	<b>O-VLF</b>
<b><i>Galium verum</i></b>	<b>Lady's Bedstraw</b>	<b>F-A</b>
<b><i>Genista anglica</i>**</b>	<b>Petty Whin</b>	<b>R-VLF</b>
<b><i>Genista tinctoria</i>*</b>	<b>Dyer's Greenweed</b>	<b>O-LF</b>
<i>Geranium dissectum</i>	Cut-leaved Crane's-bill	O
<i>Geranium molle</i>	Dove's-foot Crane's-bill	R
<i>Geranium robertianum</i>	Herb-Robert	R
<i>Glyceria fluitans</i>	Floating Sweet-grass	VLF
<i>Glyceria maxima</i>	Reed Sweet-grass	R
<b><i>Helianthemum nummularium</i></b>	<b>Common Rock-rose</b>	<b>R</b>
<i>Heracleum sphondylium</i>	Hogweed	O
<i>Holcus lanatus</i>	Yorkshire-fog	F-A

Scientific Name	Common Name	Overall Site DAFOR
<i>Hordeum murinum</i>	Wall Barley	R
<i>Hypericum maculatum</i>	Imperforate St John's-wort	R
<i>Hypericum perforatum</i>	Perforate St John's-wort	O
<b><i>Hypericum tetrapterum</i></b>	<b>Square-stalked St John's-wort</b>	<b>O</b>
<i>Hypochaeris radicata</i>	Cat's-ear	O-LF
<i>Impatiens capensis</i>	Orange Balsam	R
<i>Ilex aquifolium</i>	Holly	R
<i>Iris pseudacorus</i>	Yellow Iris	O
<b><i>Juncus articulatus</i></b>	<b>Jointed Rush</b>	<b>O</b>
<i>Juncus conglomeratus</i>	Compact Rush	O
<i>Juncus effusus</i>	Soft-rush	F
<b><i>Knautia arvensis</i></b>	<b>Field Scabious</b>	<b>R</b>
<b><i>Koeleria macrantha</i>*</b>	<b>Crested Hair-grass</b>	<b>R</b>
<i>Lactuca serriola</i>	Prickly Lettuce	R
<b><i>Lathyrus pratensis</i></b>	<b>Meadow Vetchling</b>	<b>O</b>
<i>Leontodon autumnalis</i>	Autumn Hawkbit	R
<i>Lepidium heterophyllum</i>	Smith's Pepperwort	O
<i>Lepidium latifolium</i>	Dittander	R
<i>Linaria vulgaris</i>	Common Toadflax	R
<b><i>Linum catharticum</i></b>	<b>Fairy Flax</b>	<b>R</b>
<i>Lolium perenne</i>	Perennial Rye-grass	F
<b><i>Lotus corniculatus</i></b>	<b>Common Bird's-foot-trefoil</b>	<b>F</b>
<b><i>Lotus pedunculatus</i></b>	<b>Greater Bird's-foot-trefoil</b>	<b>LF</b>
<b><i>Luzula campestris</i></b>	<b>Field Wood-rush</b>	<b>F</b>
<i>Lycopus europaeus</i>	Gypsywort	<b>R-O</b>
<i>Lythrum salicaria</i>	Purple-loosestrife	<b>O-LF</b>
<i>Malus</i> sp.	Apple	R
<i>Malva sylvestris</i>	Common Mallow	R
<i>Matricaria discoidea</i>	Pineappleweed	R
<i>Medicago lupulina</i>	Black Medick	R
<i>Mentha aquatica</i>	Water Mint	LA
<i>Myosotis arvensis</i>	Field Forget-me-not	O
<i>Myosotis scorpioides</i>	Water Forget-me-not	O
<b><i>Nardus stricta</i>*</b>	<b>Mat-grass</b>	<b>R-O</b>
<i>Oenanthe crocata</i>	Hemlock Water-dropwort	R
<i>Persicaria hydropiper</i>	Water-pepper	O
<i>Persicaria maculosa</i>	Redshank	O
<i>Phleum bertolonii</i>	Smaller Cat's-tail	O
<i>Phleum pratense</i>	Timothy	R
<i>Plantago lanceolata</i>	Ribwort Plantain	O
<i>Plantago major</i>	Greater Plantain	O

Scientific Name	Common Name	Overall Site DAFOR
<b><i>Plantago media</i></b>	<b>Hoary Plantain</b>	<b>R</b>
<i>Poa annua</i>	Annual Meadow-grass	O
<i>Poa pratensis</i>	Smooth Meadow-grass	O
<i>Poa trivialis</i>	Rough Meadow-grass	F
<i>Polygonum aviculare</i>	Knotgrass	R
<i>Potentilla anserina</i>	Silverweed	O-LF
<b><i>Potentilla erecta</i>*</b>	<b>Upright Tormentil</b>	<b>O</b>
<i>Potentilla reptans</i>	Creeping Cinquefoil	O-LF
<i>Prunella vulgaris</i>	Selfheal	R
<i>Prunus spinosa</i>	Blackthorn	O-LA
<b><i>Pulicaria dysenterica</i></b>	<b>Common Fleabane</b>	<b>O-LF</b>
<i>Quercus robur</i>	Pedunculate Oak	R-LF
<b><i>Ranunculus acris</i></b>	<b>Meadow Buttercup</b>	<b>F</b>
<b><i>Ranunculus bulbosus</i></b>	<b>Bulbous Buttercup</b>	<b>R</b>
<i>Ranunculus flammula</i>	Lesser Spearwort	R-O
<i>Ranunculus repens</i>	Creeping Buttercup	F
<i>Reseda luteola</i>	Weld	R
<i>Rorippa amphibia</i>	Great Yellow-cress	R
<i>Rosa canina</i>	Dog Rose	F
<i>Rubus fruticosus</i> agg.	Bramble	O-LF
<b><i>Rumex acetosa</i></b>	<b>Common Sorrel</b>	<b>O</b>
<b><i>Rumex acetosella</i></b>	<b>Sheep's Sorrel</b>	<b>F-LA</b>
<i>Rumex conglomeratus</i>	Clustered Dock	O
<i>Rumex crispus</i>	Curled Dock	R-O
<i>Rumex hydrolapathum</i>	Water Dock	R
<i>Rumex obtusifolius</i>	Broad-leaved Dock	R
<i>Rumex sanguineus</i>	Wood Dock	R
<i>Salix caprea</i>	Goat Willow	O-LF
<i>Salix cinerea</i>	Grey Willow	O-LF
<i>Salix x fragilis</i>	Crack Willow	R
<i>Salix viminalis</i>	Osier	R
<i>Sambucus nigra</i>	Elder	R
<i>Scrophularia auriculata</i>	Water Figwort	O
<i>Scrophularia nodosa</i>	Common Figwort	R
<i>Scutellaria galericulata</i>	Skullcap	R
<i>Senecio jacobaea</i>	Common Ragwort	F
<i>Senecio sylvaticus</i>	Heath Groundsel	R
<b><i>Schedonorus (Festuca) pratensis</i></b>	<b>Meadow Fescue</b>	<b>O</b>
<i>Silene dioica</i>	Red Campion	R
<b><i>Silene (Lychnis) flos-cuculi</i></b>	<b>Ragged-Robin</b>	<b>R</b>
<i>Silene vulgaris</i>	Bladder Campion	R
<i>Sisymbrium officinale</i>	Hedge Mustard	R

Scientific Name	Common Name	Overall Site DAFOR
<i>Solanum dulcamara</i>	Bittersweet	R-O
<i>Sonchus arvensis</i>	Perennial Sow-thistle	R
<i>Sonchus asper</i>	Prickly Sow-thistle	R
<i>Sonchus oleraceus</i>	Smooth Sow-thistle	R
<i>Sparganium erectum</i>	Branched Bur-reed	R
<b><i>Stellaria graminea</i></b>	<b>Lesser Stitchwort</b>	<b>O-F</b>
<i>Stellaria holostea</i>	Greater Stitchwort	R
<i>Taraxacum officinale</i> agg.	Dandelion	O
<b><i>Teucrium scorodonia</i></b>	<b>Wood Sage</b>	<b>R</b>
<b><i>Thymus pulegioides</i>*</b>	<b>Large Thyme</b>	<b>R</b>
<i>Torilis japonica</i>	Upright Hedge-parsley	O
<i>Tragopogon pratensis</i>	Goat's-beard	R
<i>Trifolium dubium</i>	Lesser Trefoil	O
<i>Trifolium medium</i>	Zigzag Clover	R
<b><i>Trifolium pratense</i> var. <i>pratensis</i></b>	<b>Red Clover</b>	<b>O-LF</b>
<i>Trifolium repens</i>	White Clover	O
<i>Trisetum flavescens</i>	Yellow Oat-grass	R-O
<i>Typha latifolia</i>	Bulrush	R
<b><i>Ulex europaeus</i></b>	<b>Gorse</b>	<b>R-O</b>
<i>Urtica dioica</i>	Common Nettle	O-LF
<i>Valeriana officinalis</i>	Common Valerian	R
<i>Veronica beccabunga</i>	Brooklime	R
<b><i>Veronica chamaedrys</i></b>	<b>Germander Speedwell</b>	<b>R</b>
<i>Vicia cracca</i>	Tufted Vetch	R
<i>Vicia sativa</i>	Common Vetch	O

Notes:

Species in bold are County (Local) Wildlife Site plant indicator species.

Species which are currently thought to be uncommon in Hertfordshire, defined as known to occur in 50 or fewer 2x2 km squares, are marked \*.

Species which are either Nationally Threatened, Scarce or regarded as "Hertfordshire Rare" (occurring in 5 or fewer localities in the County) are marked \*\*.

**APPENDIX 3 - Faunal Species Recorded on the Site**

## Faunal Species Recorded on the Site

### Butterflies

Scientific Name	Common Name
<i>Aglais urticae</i>	Small Tortoiseshell
<i>Aphantopus hyperantus</i>	Ringlet
<i>Coenonympha pamphilus</i>	Small Heath
<i>Gonepteryx rhamni</i>	Brimstone
<i>Inachis io</i>	Peacock
<i>Maniola jurtina</i>	Meadow Brown
<i>Ochlodes sylvanus</i>	Large Skipper
<i>Pararge aegeria</i>	Speckled Wood
<i>Pieris brassicae</i>	Large White
<i>Pieris napi</i>	Green-veined White
<i>Polygonia c-album</i>	Comma
<i>Thymelicus lineola</i>	Essex Skipper
<i>Thymelicus sylvestris</i>	Small Skipper
<i>Tyria jacobaeae</i>	Cinnabar Moth
<i>Vanessa atalanta</i>	Red Admiral
<i>Vanessa cardui</i>	Painted Lady
<i>Zygaenia lonicerae</i>	Narrow-bordered Five-spot Burnet

### Dragonflies and Damselflies

Scientific Name	Common Name
<i>Aeshna grandis</i>	Brown Hawker
<i>Calopteryx splendens</i>	Banded Demoiselle
<i>Ischnura elegans</i>	Blue-tailed Damselfly

### Other Invertebrates

Scientific Name	Common Name
<i>Chorthippus parallelus</i>	Meadow Grasshopper
<i>Lasius flavus</i>	Yellow Meadow Ant
<i>Metrioptera roeselii</i>	Roesel's Bush-cricket

### Birds

Scientific Name	Common Name
<i>Erithacus rubecula</i>	European Robin
<i>Turdus merula</i>	Blackbird
<i>Columba palumbus</i>	Common Wood Pigeon
<i>Prunella modularis</i>	Dunnock
<i>Cyanistes caeruleus</i>	Blue Tit
<i>Passer domesticus</i>	House Sparrow
<i>Carduelis carduelis</i>	European Goldfinch
<i>Fringilla coelebs</i>	Chaffinch
<i>Corvus corone</i>	Carrion Crow
<i>Gallinula chloropus</i>	Common Moorhen

<i>Ardea cinerea</i>	Grey Heron
<i>Apus apus</i>	Swift
<i>Hirundo rustica</i>	Barn Swallow
<i>Pica pica</i>	Magpie
<i>Picus viridis</i>	Green Woodpecker
<i>Sturnus vulgaris</i>	Starling
<i>Sylvia communis</i>	Whitethroat
<i>Troglodytes troglodytes</i>	Wren
<i>Phylloscopus collybita</i>	Chiffchaff
<i>Corvus frugilegus</i>	Rook

### Mammals

Scientific Name	Common Name
<i>Oryctolagus cuniculus</i>	European Rabbit
<i>Talpa europaea</i>	European Mole
<i>Vulpes vulpes</i>	Red Fox



**APPENDIX 4 - Photosheets**

**Photosheets**

Photo 1. Petty Whin



Photo 2. Dryer's Greenweed



Photo 3. Extensive area of Dryer's Greenweed in Area A



Photo 4. Heather along former drain in Area B



Photo 5. Area C with Heather, Petty Whin, etc.



Photo 6. Betony with Dyer's Greenweed





Photo 7. Heath Grass



Photo 8. Mat Grass



Photo 9. Common Rockrose



Photo 10. Large Thyme



Photo 11. Pyramidal Orchid





Photo 12. Common Valerian



Photo 13. Smith's Pepperwort

