National Vegetation Classification (NVC) Survey 2014: Pixton Park, near Dulverton, Somerset

First published March 2022

Natural England Commissioned Report NECR382

www.gov.uk/natural-england

NATURAL ENGLAND

Natural England Commissioned Report NECR382

National Vegetation Classification (NVC) Survey 2014: Pixton Park, near Dulverton, Somerset

Dr Eleanor Hewins

Published March 2022

ISBN: 978-1-78354-802-6

Project details

This report should be cited as:

Hewins, E. National Vegetation Classification (NVC) Survey 2014: Pixton Park, near Dulverton, Somerset. *Natural England commissioned reports. Report number 382*

Natural England Project manager

Louise Riley

Contractor

Dr Eleanor Hewins

Hewins Ecology

Author

Dr Eleanor Hewins

Keywords

National Vegetation Classification, Pixton Park, NVC,Hewins Ecology

Further information

This report can be downloaded from the Natural England Access to Evidence Catalogue: **http://publications.naturalengland.org.uk/** . For information on Natural England publications contact the Natural England Enquiry Service on 0300 060 3900 or e-mail **enquiries@naturalengland.org.uk**.

Table of Contents

1 Executive summary

- A habitat survey was undertaken at Pixton Park in September 2014. This involved mapping of National Vegetation Classification (NVC) plant communities (supported by collection of quadrat data), compiling habitat descriptions and species lists (with target notes), and mapping areas considered to be Habitats of Principal Importance as listed on the Natural Environment and Rural Communities (NERC) Act 2006.
- The site supports a mixture of decidous woodland, conifer plantation, open parkland (some of which is deer-grazed) and pasture, with smaller amounts of pond, scrub, wetland and bracken habitat.
- Much of the site was provisionally mapped as the Wood-Pasture and Parkland Habitat of Principal Importance, based on the presence of open-grown-form veteran trees, including those now surrounded by dense younger woodland. However veteran trees were not mapped in detail, but are to be the subject of a dedicated survey in 2015, and this should be used to refine the boundaries, and check the classification, of this key habitat.
- The woodlands on site were divided into 'ash woodland' (W8 in the NVC), 'oak woodland' (W10) or 'beech woodland' (W12 and W14). The woodland canopy has sometimes been modified, with new plantings, particularly of Turkey oak.

- Much of the woodland was mapped as either Mixed Deciduous Woodland or Lowland Beech and Yew Woodland Habitats of Principal Importance. However, because the latter is probably derived from historic beech planting, it may not meet the criteria for priority habitat.
- A total of 17 Ancient Woodland Indicator species were recorded, suggesting a long-history of woodland (or wood-pasture) on the site.
- The grassland on site was largely semi-improved and species-poor, although with very occasional pockets where a number of species more indicative of semi-natural grassland occurred, or where bracken was abundant. The main grassland interest lay in the north of the site, in pasture classified as MG5 (*Cynosurus cristatus - Centaurea nigra* grassland) in the NVC, and in ungrazed grassland where MG5 grassland is transitional to a more rank MG1 (*Arrhenatherum elatius*) community. However the grassland did not contain a sufficient range of positive wildflower indicator species to be considered to be in favourable condition.
- A map of National Vegetation Classification (NVC) communities may be found in Appendix 1a, and a map of Habitats of Principal Importance may be found in Appendix 1b.

2 Introduction

Pixton Park, which lies within the Exmoor National Park near Dulverton, Somerset, is an 18th Century landscape park, referred to as a 'deer park' on the Ordnance Survey map of 1891, but containing remnants of earlier features. Today the site is a mixture of open grassland (some of which is still grazed by deer) and woodland (parts of which are thought to have developed relatively recently on former open wood-pasture). Further details on the site's history, and the results of other surveys, may be found in Alexander (2014).

A series of surveys has been commissioned at Pixton Park, the aim of which is to help assess the significance of the site for its wildlife habitats (particularly the parkland grassland and woodlands), invertebrates, veteran trees and lichens. The results will allow evaluation for possible SSSI status. The results of the vegetation survey are presented here.

3 Methodology

3.1 Field survey

Scope

Field survey took place in good weather on 14th, 16th and 20th September 2014.

Access permission was gained by Natural England. A few small areas were excluded from the survey: land where access permission had not been agreed; the formal gardens surrounding Pixton Park House; the garden area of The Stables; and the dog enclosure.
Two target notes (TN26 and TN66) lie in areas that did not have access permission at the time of the survey. These areas were surveyed remotely from adjacent tracks, but were subsequently visited by Natural England staff once access permission was obtained, and target notes updated accordingly.

Vegetation classification and mapping

A full National Vegetation Classification (NVC) survey was undertaken. Plant communities, as defined by Rodwell (1998a, *et seq*), were mapped on to hard copy aerial photographs overlaid with OS MasterMap data and national grid lines. Wherever possible, mapping was to sub-community level. Classifications were confirmed post-survey with a combination of TABLEFIT v.1.1 (Hill, 2011), and keys and descriptions in the NVC handbooks.

Particularly complex stands of mixed vegetation were mapped either as mosaics or transitional vegetation types. Several stands of vegetation not accommodated by the NVC were also mapped (for example, stands heavily dominated by beech plantings, and conifer plantations). The NVC map may be found in Appendix 1a.

Habitats were also classified as Habitats of Principal Importance as listed in Section 41 of the Natural Environment and Rural Communities (NERC) Act (2006), according to descriptions provided by BRIG (ed. Ant Maddock, 2008). A map of these habitats may be found in Appendix 1b.

A minimal mappable area of 1ha (approximately 1% of the total site area) was usually applied, although in some cases smaller areas of vegetation were mapped where they were felt to be significant.

Target notes

Target notes were used to note and describe local variations in species composition and other features of interest (including areas of vegetation communities too small to be mapped individually). In general, veteran trees were not noted, except in general habitat descriptions, as these are to be the subject of a dedicated survey in 2015. Target notes may be found in Appendix 2.

Species lists

Whole-vegetation community species lists (Appendix 3) were compiled, using DAFOR (D = Dominant, A = Abundant, F = Frequent, O = Occasional, R = Rare), with optional L (locally) and E (edge) prefixes. However, the list should not be considered fully comprehensive, as rarely-occuring or earlyflowering species may have been missed. For a small number of communities species lists were not compiled, for example when the area of a community was very small, or when the community was unlikely to contribute to the evaluation of the site.

It should also be noted that the survey was conducted in the autumn, and may have missed some early-flowering, particularly woodland species, some of which may be required to separate NVC subcommunities. This is discussed further in the results section.

Quadrats

An appropriate number of quadrats were recorded for the primary NVC types, and their locations mapped (using GPS where this was not prohibited by a dense tree canopy).

All higher plant species within each quadrat were recorded, and cover was assessed using Domin cover values, as follows:

Percentage cover	Domin value
91-100	10
76-90	9
51-75	8
34-50	7
26-33	6
11-25	5
4-10	4
<4 - many individuals	3
<4 - several individuals	2
<4 - few individuals	1

A digital photograph was taken of every quadrat. Quadrat data are presented in Appendices 4 and 5, together with the output from their analysis with TABLEFIT.

Condition assessment of grassland habitat

A condition assessment of the qualifying grassland habitat was made using Common Standards Monitoring (CSM) methods and forms (Jefferson & Robertson, 2000) using twenty condition assessment 'stops', the locations of which are shown on the map (Appendix 1). Condition assessment was not undertaken in woodland habitats, as this was not possible without agreed site-specific targets.

3.2 Reporting

Species nomenclature follows that on the Biological Records Centre (BRC) 'Plant Finder' website. To assist comprehensibility, this report uses common names, with scientific names shown only on first mention and in the appendices.

The report makes reference to records obtained from a 2014 data search from Somerset Environmental Records Centre (SERC).

Selected photographs have been used in the report to illustrate the findings.

3.3 Map Presentation

Digital mapping was carried out in MapInfo v.10 Geographical Information Software (GIS), and followed Natural England guidance, including snapping to OS MasterMap wherever possible. The map in Appendix 1 shows the field results overlaid onto a 1:10,000 scale raster base map.

4 Results

4.1 Summary of plant communities and Habitats of Principal Importance

The NVC plant communities mapped on the site are shown in Appendix 1a, summarised in Table 1 below, and discussed in turn the following sections.

Table 1 also shows which of these plant communtities can be considered Habitats of Principal Importance, as defined by BRIG (ed. Ant Maddock, 2008). A map showing these habitats is provided in Appendix 1b.

Appendix 1b shows large parts of the site have provisionally been mapped as the Wood-Pasture and Parkland Habitat of Principal Importance due to the presence of veteran trees. This habitat overlaps other habitats including broadleaved woodland where, although some glades do occur, the veteran trees are mostly surrounded by dense younger woodland which is believed to have developed since the former parkland and wood-pasture was abandoned. These areas therefore do not currently fully meet the definition for this habitat, but can be considered relict Wood-Pasture and Parkland due to their character and history. The distribution of veteran trees is to be the subject of a full veteran tree survey in early 2015, and provisional boundary of this habitat should be updated based on the findings of that survey.

The parts of the site which are dominated by beech (NVC W12 and W14 communities) have been tentatively classified as Lowland Beech and Yew Woodland Habitat of Principal Importance. However, they are almost certainly derived from historic beech planting in an area of previous ash/oak woodland or open deer pasture, and hence may not meet criteria for this habitat (although they may still qualify as relict Wood-Pasture and Parkland, based on veteran trees).

The English Priority Habitat Inventory (accessed via the MAGIC website, 2014) shows the majority of the site to be covered by an overlapping mixture of Wood-Pasture and Parkland, and Deciduous Woodland habitat, with the exception of the lower slopes of Pixton Hill. (Lowland Beech and Yew

Woodland is not separated from Lowland Mixed Deciduous Woodland on this inventory.) No Lowland Grassland habitat is included in the current National Inventory.

Table 1: Summary of habitats and vegetation communities and Habitats of Principal Importance at Pixton Park

Habitat	NVC Communities	Area (ha)	Habitat of Principal Importance
Grassland	MG6	15.98	n/a
	MG5	4.85	Lowland Meadows
	MG1/MG5	1.74	Close to Lowland Meadows
	MG1/MG5/disturbed	0.7	
	MG1	0.59	n/a
	sub-total	**23.9**	
Broadleaved woodland	W8	12.44	Lowland Mixed Deciduous Woodland
	W8c	0.68	
	W10	6.76	
	W10/W8	1.49	
	W10e	3.4	
	W12	0.94	?Lowland Beech and Yew Woodland
	W14	7.12	
	Broadleaved woodland - other	3.41	n/a
	Felled	1.38	n/a
	sub-total	**38.1**	
Mixed woodland	Broadleaved/conifer - other	1.48	n/a
Conifer woodland	Conifer	8.06	
Wetland	M23 (20%) + W25 (80%) with small amounts of tallherb vegetation	0.31	?Lowland Fens
Scrub and underscrub	W25	14.38	n/a
	W24	0.16	
	W21	1.95	
Other	Pond	0.29	requires further assessment
	Arable	1.01	n/a
	Excluded	7.95	
	SUB-TOTAL	**97.1**	
Areas with veteran trees	*Overlaps with above habitats*	73.7	Wood-Pasture and Parkland

4.1.1 Woodland

W8 *Fraxinus excelsior - Acer campestre - Mercurialis perennis* woodland

Approximately a third of the broadleaved woodland on site has been mapped as W8, and this is concentrated on the gentle to moderately steep west-facing slopes and the low-lying ground in the west of the site. This woodland is fairly variable, though has been defined by the presence of large amounts of dog's mercury (*Mercurialis perennis*) in the ground layer, with ash (*Fraxinus excelsior)* at least frequent in the canopy. Species such as bracken (*Pteridium aquilinum*), bluebell (*Hyacinthoides non-scripta*)[1] and bramble (*Rubus fruticosus*) are present, but are significantly less common than in other wooded areas. Wood-sedge *(Carex sylvatica*), remote sedge *(Carex remota*), herb-Robert (*Geranium robertianum*), false brome (*Brachypodium sylvaticum*) and wood avens (*Geum urbanum*) occur widely, but at low cover. Where the canopy is densest, the ground flora is sparser (notwithstanding the

[1] Assessed as well as possible from late season senescent stems

possibility of a higher cover of vernal species earlier in the year). In addition to ash, other broadleaved trees also occur, particularly beech *(Fagus sylvatica),* which attains local dominance (where the community tends to **W12 *Fagus sylvatica – Mercurialis perennis woodland*)**. Oaks *(*sessile oak *Quercus petrea,* pedunculate oak *Q. robur,* and the non-native Turkey oak *Q. cerris*), sycamore *(Acer pseudoplatanus*) and other trees are also present (full list in Appendix 3). The sub-canopy shrub layer is well developed in places, with hazel *(Corylus avellana*), hawthorn (*Crataegus monogyna*), and frequent young beech, as well as smaller amounts of holly *(Ilex aquifolium*) and elm *(Ulmus* sp.). Unusually, field maple (*Acer campestre*), a constant of W8 woodlands, was present, but very rarely.

A further small area of W8 has been mapped on the plateau in the east of the site (TN5). This is a variable, atypical mix of broadleaved trees, including sycamore*,* beech, ash, hazel, holly, hawthorn, oak (including locally frequent Turkey oak), with some glades and recently planted saplings. The distribution of dog's mercury is much more patchy than in the western W8 stands, indicating the modified and variable nature of this block of woodland.

The W8 woodland on site was not mapped to sub-community level, as this could not be done confidently due to the variable nature of the canopy and ground flora, and without better understanding the frequency of spring-flowering species. However, the majority of the area is probably best defined as **W8e (*Geranium robertianum* sub-community)**, though smaller areas of **W8d (*Hedera helix* subcommunity)** occur where heavily shaded, and **W8a (*Primula vulgaris - Glechoma hedereacea* subcommunity)** characteristics are shown in some parts. It is also possible that other sub-communities **W8b (*Anemone nemosa* sub-community)** and **W8f (*Allium ursinum* sub-community)** may occur, but it was not possible to confirm this so late in the season, although no evidence of the constant species (wood anemone, lesser celendine and ransoms) was seen.

Some other areas of ash/dog's mercury woodland tend towards a **W9a *Fraxinus excelsior - Sorbus aucuparia - Mercurialis perennis* woodland, typical sub-community** where ferns, particularly common male fern *(Dryopteris filix-mas*) and broad buckler-fern (*D. dilatata*) dominate locally in damper hollows or slopes. However, rowan (*Sorbus aucuparia*) – a constant for this community – was absent.

One small area of **W8c *Fraxinus excelsior - Acer campestre - Mercurialis perennis* woodland, *Deschampsia cespitosa* sub-community** was, however, readily defined and separately mapped. This occurs on damp low-lying ground around the pond in the west of the site. Here, tufted hair-grass (*Deschampsia cespitosa*) is prominent, whilst dog's mercury is far less frequent than in other W8 subcommunities. Bracken and other ferns also occurred more frequently. Hazel, hawthorn and birch *(Betula* sp.) were frequent in the sub-canopy. Additional non-woody species characteristic of damp soils occur here in small amounts, for example opposite-leaved golden-saxifrage (*Chrysosplenium oppositifolium*) and pendulous sedge (*Carex pendula*).

The age structure of the W8 woodland is varied, with significant numbers of large and degenerate veteran trees, particularly sweet chestnut (*Castanea sativa),* oaks and limes (*Tilia* sp.) scattered through much of the area (though not in the extreme southern tip of the site - Steart Wood). These appear to date from when the area was more open wood-pasture parkland. The sub-canopy layer is well developed in many places, with hazel coppice stools concentrated particularly in Steart Wood, and new regeneration present at low levels throughout, mainly in the form of ash seedlings.

Five quadrats were taken in the W8 community, as shown in Appendices 1 and 4. A species list for the community may be found in Appendix 3.

Plate 1 (Image 1617). Typical lower western slopes W8 woodland (Q7) © Hewins Ecology

W10 *Quercus robur - Pteridium aquilinum - Rubus fruticosus* woodland

Approximately a further third of the broadleaved woodland on the site, particularly that on the mid and upper slopes, and on the site plateau, has been mapped as W10 woodland, or transitional to it. However, these areas are highly variable, much more so than those mapped as W8, and they do not sit entirely neatly within the NVC. They have been separated from the former by a general lack of dog's mercury, and frequent bramble and bracken, with very locally frequent wood-sorrel *(Oxalis acetosa*) and bluebell. However the boundary between the two communities is not always clear-cut. Ash is present in the W10 canopy (and as seedlings), but less so than in the W8 areas, and oaks (including planted non-native Turkey oaks) are more prominent. Some areas contain abundant beech, but have been retained as W10, as the ground flora generally suggests they are derived from this community (e.g. TN12). Larger areas with dominant beech have been mapped as W12 or W14 (see following sections). The W10 areas, presumably due to being closer to the existing open parkland, have been modified in places, with historic and recent tree planting, and game rearing pens and feeders. These variations are indicated by target notes. A few areas retain an open woodland character, where dense bracken grows in canopy gaps (see TN8).

As in the W8 areas, scattered veteran trees occur, and where present these have a significant effect on the local ground flora.

Plate 2 (Image 1615). W10 woodland (Q6) © Hewins Ecology

While classification to a W10 sub-community has largely not been possible, one area of W10, on the western slopes north of Steart Wood (in the area of Q2), has, unusually for this site, evidence of a bluebell carpet, and hence this area has been classified as **W10e *Quercus robur* - *Pteridium aquilinum* - *Rubus fruticosus* woodland, *Acer pseudoplatanus* - *Oxalis acetosa* sub-community**.

The woodland within the series of deer enclosures was very difficult to place within the NVC, although it has been mapped as W10-derived. It is grazed by deer with the adjacent pasture, and comprises a mix of ash, beech, sessile oak and much Turkey oak, with an understorey of holly and hawthorn. Occasional larger trees (particularly conifers and oaks) occur too. The field layer is heavily grazed and supports a mix of bracken, grass, ground-ivy (*Glechoma hederacea*) and bare ground. The trees within the deer enclosure show evidence of much browsing and bark stripping.

Five quadrats were taken in the W8 community, as shown in Appendices 1 and 4. A species list for the community may be found in Appendix 3.

Plate 3 (Image 1497). Heavily deer-grazed woodland © Hewins Ecology

W14 *Fagus sylvatica – Rubus fruticosus* woodland

A large block of woodland in the north of the site is dominated by beech, together with scattered oak, sycamore, ash, lime and planted ornamentals. The understorey is mainly a mix of beech saplings and holly, though young Turkey oak is also locally abundant. The ground flora is locally dominated by ivy (where most shaded), and bramble, bracken, grasses and broad buckler-fern elsewhere.

While the vegetation may currently best match W14, it is likely that this woodland community is derived from historic beech planting in an area of previous W10 woodland or open deer pasture.

No quadrats or species lists were taken in this community.

Plate 4 (Image 1544). W14 beech woodland in the north of the site © Hewins Ecology

W12 *Fagus sylvatica - Merculialis perennis* woodland

Two very small areas of beech dominance in the far west of the site contain abundant dog's mercury, and hence are best classifed as W12.

There are no quadrats or species lists for these areas of woodland.

Broadleaved woodland – Other

Other broadleaved woodland on site is so variable or heavily modified that it was not sensible to map it to any particular NVC community. These areas are discussed in turn below.

The very northern boundary of the site is a narrow strip of woodland (TN26 and TN28). It is comprised of mature oak, beech and sweet chestnut with planted young sweet chestnut and a bracken understorey. The eastern boundary of the site (TN51) is a similar open woodland strip, but also including Turkey oak.

Woodland near TN14 has locally dominant Turkey oak, and woodland adjacent to the game feeding field was very modified and variable.

The large block of woodland at TN31 is composed of young, even-aged conifer, and birch, elm and grey willow *(Salix cinerea*). The ground flora is shaded and patchy, including abundant ferns *(Dryopteris* spp.), enchanter's-nightshade*,* and frequent herb-Robert, opposite-leaved goldensaxifrage, yellow pimpernel (*Lysimachia nemorum*) and remote sedge. Elsewhere there is dense litter and bare soil. A few large hulks of dead pollard/veterans occur, suggesting a broadleaved woodland or wood-pasture origin.

Conifer plantation

Approximately 8% of the site has been mapped as conifer plantation. Descriptions of individual stands are provided by target notes, but generally the canopy in these areas is dense, and the ground flora heavily shaded and sparse. Where it does exist, the ground flora of the conifer plantations is sometimes

calcifugous in character (with species such as wood-sorrel), possibly where the leaf litter has led to soil acidification, though elsewhere contains dog's mercury (a calcicole species).

Plate 5 (Image 1493). Typical mature conifer plantation with patchy ground layer © Hewins Ecology

4.1.2 Scrub, underscrub and bracken dominated communities

W21 *Crataegus monogyna - Hedera helix* scrub

One block of this scrub community has been mapped. The ground layer comprises a mix of common woodland plants (ground-ivy, herb-Robert, common male fern, enchanter's-nightshade, yellow pimpernel, bugle (*Ajuga reptans*) and wood millet (*Milium effusum*) and occasional dog's mercury), and, in more open areas, grasses, bracken and bramble.

No quadrats were taken in this community, but a species list may be found in Appendix 3.

Plate 6 (Image 1495). Hawthorn scrub © Hewins Ecology

W25 *Pteridium aquilinum - Rubus fruticosus* underscrub

Some parts of the site are dominated by bracken, mostly with bramble, and hence have been mapped as W25 underscrub. There are scattered trees in some parts. No quadrats were taken in this community, but a species list may be found in Appendix 3.

Plate 7 (Image 1614). Area of track-side W25 vegetation © Hewins Ecology

4.1.3 Ponds and wetlands

The site is largely dry and free-draining. However, two ponds were recorded on site: a small pond on the northern boundary (TN28); and a large pond in the low-lying woodland on the west of the site (TN34).

There is a significant area of bracken, rush and tall herb wetland vegetation occurs in the valley running below Pixton Park Stables (TN21). This is fed partly by springs within the deer enclosure (TN18). This area is probably best described as a mosaic/transition of **M23 *Juncus effusus/acutiflorus - Galium palustre* rush-pasture** and **W25 *Pteridium aquilinum - Rubus fruticosus* underscrub**, with additional small areas of tall-herb vegetation.

There is also another damp area in the deer enclosure (TN41), and very small patches of wetland vegetation occurred by the low-lying western pond (TN34) and in associated woodland ditches. Other ditches draining down the wooded western slopes of the site are dry and largely shaded and unvegetated.

A composite species list for the ponds and wetlands may be found in Appendix 3,

Plate 8 (Image 1512). Wetland in valley below Pixton Park Stables, showing bracken, rush and tallherb areas © Hewins Ecology

4.1.4 Grassland

MG6 *Lolium perenne - Cynosurus cristatus* grassland

A large proportion of the grassland on site is best classified as MG6, and is largely herb-poor and semi-improved in character. A species list is provided in Appendix 3. Some of this grassland appears to have been recently topped, and in a few places a thin layer of litter indicates stands of bracken were here

previously, though are now being managed. Very rarely do species more indicative of unimproved grassland, for example bird's-foot trefoil (*Lotus corniculatus*) or tormentil (*Potentilla erecta),* occur (e.g. TN1).

Within the series of deer enclosures the grassland is similar, though here it is heavily grazed, not topped. Bracken is locally abundant (though low in height), and gains locally dominance where the NVC community may be closer to U20.

Much of the MG6 grassland supports scattered trees, some of them veterans.

No quadrats were taken in this community, although a species list may be found in Appendix 3.

Plate 9 (Image 1498). Deer-grazed grassland, showing patches of bracken invasion and scattered trees © Hewins Ecology

MG1 *Arrhenatherum elatius* grassland/MG5 *Cynosurus cristatus* - *Centaurea nigra* grassland transition

Some marginal areas of the parkland have been mapped as MG1, or transitional between MG1 and MG5. These grasslands appear ungrazed (although anecdotal evidence suggests they may have been grazed in the past), and the sward varies between dense and tussocky to much finer and herb-rich, where the community is transitional to MG5 and lowland meadow species such as bird's-foot trefoil are locally abundant. A species list for this transitional community is provided in Appendix 3.

No quadrats were taken in this community, although a species list may be found in Appendix 3.

Plate 10 (Image 1549). Transitional MG1/MG5 grassland near shed, showing mosaic of rank and finer areas © Hewins Ecology

MG5 *Cynosurus cristatus* - *Centaurea nigra* grassland

Two parcels of MG5 pasture are to be found on moderately-sloping ground in the north of the site. The north-facing field was ungrazed at the time of survey, but appears to be grazed by horses at other times. It has a fairly lush structure (15cm at time of survey), and an estimated herb cover of 30%. Nearby, the west-facing slopes of the field adjacent to the Pixton Park House are currently grazed by horses, and hence the sward is shorter (only 8cm at the time of survey), although the species composition was very similar. Because these fields were of relatively low species diversity for MG5, they have not been classified to sub-community level. Four quadrats were taken in these fields (see Appendices 1 and 5).

An additional quadrat was taken in one further small area of species-rich grassland in the main park, where the MG6 gives way to a small area of more species-rich vegetation on shallow sloping soils. This small patch has been mapped as MG5, although it also shows some affinity to an acid grassland, possibly **U4 (*Festuca ovina* - *Agrostis capillaris* - *Galium saxatile* grassland)**, and may have been dominated by bracken in the past. A further quadrat was taken here (see Appendices 1 and 5).

A composite MG5 species list may be found in Appendix 3.

MG10 *Holcus lanatus* - *Juncus effusus* rush-pasture

A tiny patch of this community was mapped where soft rush (*Juncus effusus*) and jointed rush (*Juncus articulatus*) were concentrated in the open parkland (TN9).

Plate 11 (Image 1543) Horse-grazed MG5 grassland near Pixton Park House © Hewins Ecology

4.2 Grassland condition assessment

MG5 grassland forms part of the Lowland Meadow Habitat of Principal Importance, and a condition assessment for this grassland was undertaken using a 20-stop structured W-shaped walk across the fields (10 stops in each field - the location of these stops is shown on the Appendix 1a map). The assessment followed that laid out by Jefferson & Robertson (2000), and results are shown in Table 2 below. This shows that the MG5 Lowland Meadow may be considered to be in **unfavourable** condition, largely because it lacks a sufficient range and cover of grassland wildflower species. It is assumed that management of these fields is stable, and therefore the condition trend is most likely to be **no change**. If the fields are reverting from previous fertiliser or herbicide treatment, their condition may be **improving**, depending on the nature of the management by horse grazing.

Condition assessment stops were not taken in the MG1/MG5 areas, but a whole stand assessment suggest that they will also lack the diversity and frequency of positive indicator species to be in favourable condition.

Table 2: MG5 grassland condition assessment *(*denotes a mandatory attribute target)*

ATTRIBUTE	ESTIMATED VALUE	TARGET	OUTCOME	Comment
*Grass/herb ratio	30%	40-90% herbs	FAIL	too low
*Frequency of positive indicator species/taxa (wildflowers)	Bird's-foot trefoil – 9/20 Frequent Cat's-ear – 9/20 Frequent Yellow-rattle – 1/20 Rare (Stand also contains very small amounts of burnet saxifrage and tormentil.)	At least two species/taxa frequent and four occasional throughout the sward	FAIL	Not enough
*Frequency of negative indicator species/taxa	All present rare	No species/taxa more than occasional throughout the sward or singly or together more than 5% cover	PASS	

*Indicators of water-logging	None present	No species/taxa together or	PASS	
ATTRIBUTE	**ESTIMATED VALUE**	**TARGET**	**OUTCOME**	**Comment**
		singly covering more than 10% of the sward		
*Frequency and % cover er of all scrub and tree species, considered together	<1% and Rare	No more than 5% cover. N.B. If scrub/tree species in pastures are more than occasional throughout the sward but less than 5% cover, they are soon likely to become a problem if grazing levels are not sufficient or if scrub control is not being carried out	PASS	
Average height.	North-facing field: 15cm West-facing field: 8cm	5-15 cm (Upper target refers to pastures only)	PASS	Survey conducted late in season
Litter in a more or less continuous layer, distributed either in patches or in one larger area		Total extent no more than 25% of the sward	PASS	
Extent of bare ground (not rock) distributed through the sward, visible without disturbing the vgetation	<1%	No more than 5%	PASS	

4.3 Species

The following plant species on the SERC **Somerset County Notable Species** List (Fifth Edition) were recorded during the survey:

- Sessile oak
- Solomon's-seal
- Yellow-rattle

Additionally, bluebell is legally **Protected under the Wildlife and Countryside Act 1981**, and box is a species identified by the IUCN as being threatened or having a high risk of extinction, although it is likely to be a remnant from earlier ornamental plantings on this site.

A total of 17 **South-west Ancient Woodland Indicator (AWI) species** were also recorded:

- Bluebell
- Creeping soft-grass
- Field maple
- Hard-fern
- Holly
- Opposite-leaved golden-saxifrage
- Pendulous sedge
- Remote sedge
- Sessile oak
- Shield-fern (*Polystichum* sp.)seedling
- Solomon's-seal (NB: It is not clear whether this species has been planted on this site, or is a garden escape)
- Wood meadow-grass (*Poa nemoralis*)
- Wood millet (*Millium effusum*)
- Wood-sedge
- Wood-sorrel
- Yellow archangel (*Lamiastrum galeobdolon*)
- Yellow pimpernel

The site is not currently shown as Ancient Woodland on the MAGIC website (2014).
This site is a historic park, and contains several **non-native trees and plants**. In particular, Turkey oak and various conifer species dominate parts due to past planting. Scattered throughout the site are other non-native trees, many of which are veteran or mature (e.g. plane trees), present as a result of lanscape planting in the old park. The current areas of beech canopy are also almost certainly derived from old mature plantation, though the species is also regenerating well and is present in much of the young sub-canopy layer here and elsewhere. The new planting of broadleaved trees is still taking place, particularly in canopy gaps in wooded areas.

Himalayan balsam (*Impatiens glandulifera*) is an invasive non-native non-woody species, which forms a few very small patches on/near the site (see TN21, TN26 and TN46). This species could pose a threat to the nature conservation interest of the site if its spread is not controlled.

5 References

BRIG (Maddock, A.) (2008). UK Biodiversity Action Plan; Priority Habitat Descriptions. JNCC (Updated Dec 2011). http://jncc.defra.gov.uk/PDF/UKBAP_PriorityHabitatDesc-Rev2011.pdf

Hill, M.O. (2011). TABLEFIT version 1.1, for identification of vegetation types. Centre for Ecology and Hydrology.

Jefferson, R.G. & Robertson, H. J. (2000). Monitoring the condition of lowland grassland SSSIs I English Nature's rapid assessment method. *English Nature Research Report 315*. English Nature, Peterborough.

MAGIC website (2014). http://www.magic.gov.uk/MagicMap.aspx (Also available as a download from the Natural England website.)

Rodwell, J.S. (Ed.) (1998a). *British Plant Communities, Vol. 1: Woodlands and Scrub* Cambridge University Press, Cambridge.

Rodwell, J.S. (Ed.) (1998b). *British Plant Communities, Vol. 3: Grasslands and Montane Communities* Cambridge University Press, Cambridge.

Rose, F. (1999). Indicators of ancient woodland: The use of vascular plants in evaluating ancient woods for nature conservation. *British Wildlife*, April 1999, pp. 241-251.

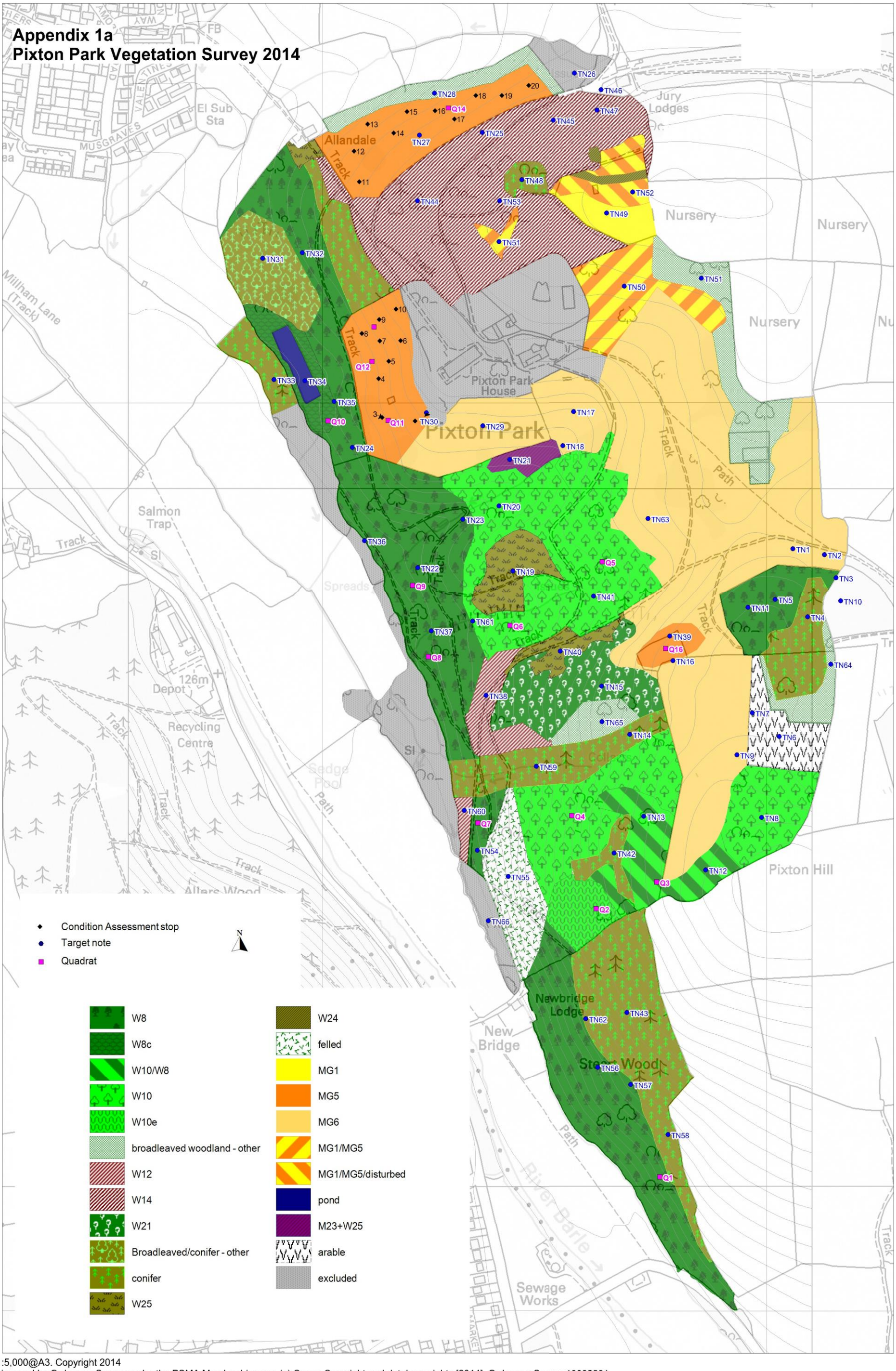
SERC code SS92/17/7 – 1987 survey obtained from Somerset Environmental Records Centre as part of a 2014 data search.

Biological Records Centre (BRC) Online Atlas of the British and Irish flora: http://www.brc.ac.uk/plantatlas/

Appendix 1a: Plant community map

[See separate 1:5,000 scale A3 map showing mapped NVC communities, target notes, quadrats and condition assessment stops]

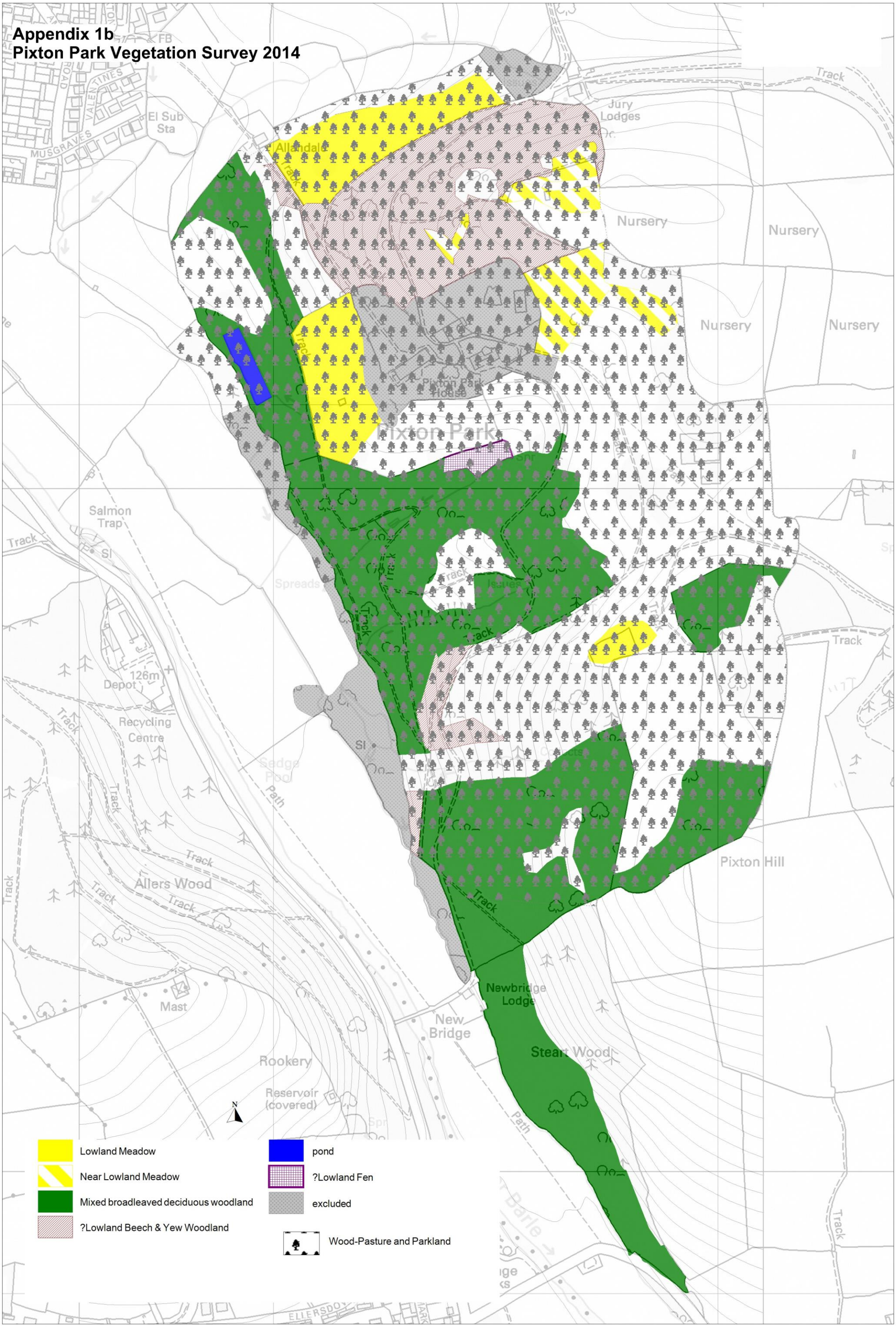
Appendix 1a
Pixton Park Vegetation Survey 2014



Appendix 1b: Plant community map

[See separate 1:5,000 scale A3 map showing mapped Habitats of Principal Importance]

Appendix 1b
Pixton Park Vegetation Survey 2014



Appendix 2: Target notes

CODE	DETAIL	IMAGE
TN1	Bird's-foot trefoil in a small area of finer grassland on shallower soil. In wider area of MG6.	-
TN2	Small area of cleared bramble and bracken (previous W25). Lots of litter and emerging weeds, including broad-leaved dock (*Rumex obtusifolius*) and hogweed (*Heracleum sphondylium*).	1477
TN3	Old boundary wall with mature beech.	1478
TN4	Conifer stand. Ground largely unvegetated, but also broad buckler-fern, wood-sorrel and dog's mercury (the last restricted to ground below the occasional broadleaved trees). Some rhododendron dominant locally.	1479
TN5	Heterogeneous broadleaved woodland. Sycamore, beech, hazel, holly, hawthorn, oak, ash, Turkey oak. Dog's mercury locally dominant. Ash regeneration particularly under beech canopy. Probably W8 derived.	1488, 1489
TN6	Arable fields planted with game-feeding crop, including chichory (*Cichorium intybus*) and *Brassica* spp.. Other species present include creeping thistle (*Cirsium arvense*), spear thistle (*Cirsium vulgare*), broadleaved dock, cat's-ear, scentless mayweed (*Tripleurospermum inodorum*), corn mint (*Mentha arvensis*), wild teasel (*Dipsacus fullonum*) etc.	1482, 1484
TN7	Line of young conifers.	1485
TN8	Fenced, ungrazed open woodland, with broken canopy. Canopy of scattered and clumped trees, including sessile oak, Turkey oak, mature birch and mature ash, with smaller amounts of hawthorn, hazel and conifer. Ground flora is mostly dense bracken and bramble (W25), with bluebell, common dog-violet *(Viola riviniana),* wood-sorrel and foxglove (*Digitalis purpurea*), except where heavily shaded where it is grassy in character. Small amounts of enchanter's-nightshade, remote sedge and ash seedlings. Mapped as W10.	1486
TN9	Tiny patch of **MG10 *Holcus lanatus* - *Juncus effusus* rush-pasture**, with soft rush (*Juncus effusus*) and jointed rush (*Juncus articulatus*).	-
TN10	Beyond site boundary: Even-age stand of sweet chestnut with abundant dog's mercury and occasional ash.	1488
TN11	Cluster of glades with dense bracken or grass. Young trees in tree guards (including cherry *Prunus* sp.).	1490
TN12	Unfenced woodland at the edge of the site. Mostly beech with some Turkey oak and sessile oak. Ground flora is very shaded beneath the beech, where ash regeneration and wood-sorrel occurs. Elsewhere, beneath the young and mature oaks, the ground flora comprises a mix of bracken and grasses, with bluebell, wood avens, ivy *Hedera helix*, herb-Robert and common dog-violet. Probably best described as W10-derived.	1491
TN13	Abundant hawthorn and elder (*Sambucus nigra)* along fence. Young planted oaks with tree guards. Also area of conifer and open glades with grass and very large veteran large beech in grassy glade.	1608, 1609
TN14	Conifer woodland. Ground flora space, comprising of locally abundant wood-sorrel and scattered dog's mercury, common figwort (*Scrophularia nodosa*) and yellow pimpernel. Turkey oaks along plantation boundary.	1492, 1493
TN15	Area of hawthorn scrub (mapped as W21), with occasional holly. Ground layer of ground-ivy, herb-Robert, common male fern, enchanter'snightshade, yellow pimpernel, bugle, wood millet and occasional dog's mercury. Some more open areas with grasses or bracken and bramble.	1495, 1496, 1610
TN16	Low boundary bank with bracken and scattered hawthorn.	1494

TN17	View of sheep-grazed field with scattered large oaks.	1501
TN18	Springs poached by deer, feeding into wetland below.	1502
TN19	Very dense bracken with abundant bramble and dense litter layer (W25).	-

CODE	DETAIL	IMAGE
	Also veteran sweet chestnut.	
TN20	Varied woodland on slope – part W8, part W10 in character.	1504
TN21	Varied wetland, with areas of **M23 *Juncus effusus/acutiflorus - Galium palustre* rush-pasture, W25** and tall herbs including Himalayan balsam, water mint *(Mentha aquatica),* bracken, meadowsweet (*(Filipendula ulmaria)*, common fleabane (*Pulicaria dysenterica)* and wild angelica (*Angelica sylvestris).*	1503, 1508, 1511, 1512
TN22	Beech becoming abundant on lower slopes (with some pine and sycamore).	1509
TN23	Damp track with opposite-leaved golden-saxifrage. Concentration of veteran sweet chestnuts.	1510
TN24	Local concentration of rhododendron.	-
TN25	Driveway avenue.	1538
TN26	Open woodland/W25 with mature/veteran trees (sweet chestnut and lime), a 'phoenix' elm and newly planted sweet chestnut. Dense bracken, with Himalayan balsam and wild angelica. Old boundary bank. (viewed remotely from drive).	1539
TN27	Mature sweet chestnut tree in field.	-
TN28	Northern site boundary is a strip of mature oak, beech, ash and sweet chestnut with planted young sweet chestnut and bracken understorey. Also a small shaded pond.	1546
TN29	Short horse-grazed MG6. Abundant perennial rye-grass (*Lolium perenne)* and crested dog's-tail *(Cynosurus cristatus*). Herb cover 1-5%, excluding white clover *(Trifolium repens*)*.* White clover cover 5%.	-
TN30	Trough, next to an area of mature Scots pine and beech.	-
TN31	Block of young even-aged conifer, birch, elm and willow. Patchy ground flora, including abundant broad buckler-fern, common male fern, enchanter's nightshade and frequent herb-Robert, opposite-leaved goldensaxifrage, yellow pimpernel and remote sedge. Also some heavily shaded unvegetated areas of field layer.	1515
TN32	Ditch with pendulous sedge (*Carex pendula*), mint *(Mentha* sp.) and opposite-leaved golden-saxifrage.	-
TN33	Dense mature conifer.	1520
TN34	Pond, shallow and muddy with emergent deadwood. Marginal vegetation includes bulrush (*Typha latifolia*) and reed canary-grass *(Phalaris arundinacea*). Adjacent very small partly-shaded patches of wetland vegetation with soft rush, water mint, lesser spearwort *(Ranunculus flammula),* meadowsweet*,* marsh bedstraw (*Galium palustre),* oppositeleaved golden-saxifrage, fool's-water-cress (*Apium nodiflorum)* and willow.	1517, 1518, 1519, 1521, 1522, 1523
TN35	A network of banked ditches with some damp woodland vegetation.	-

TN36	Broken (not stock-proof) fence.	-
TN37	Deep cut partially dry stream.	-
TN38	Heavily shading beech locally dominant (only approximately mapped).	-
TN39	Small area of finer grassland within wider block of MG6. Mapped as MG5, though transitional to acid grassland in character. Part of an area of bracken clearance, with 5-10% bracken litter cover. One quadrat taken.	-
TN40	Bracken dominated bank, with scattered trees (hawthorn, ash, beech and oak).	1614
TN41	Area of deer-poached damp ground with sparse soft rush and tufted hairgrass.	1613
TN42	Dense spruce with sparse ground flora.	-
TN43	Conifer plantation. Occasional understorey of hazel and birch. Ground	1553

CODE	DETAIL	IMAGE
	layer with some moss and lots of litter, or a mix of herb-Robert, broad buckler-fern, violets, common male fern, hard-fern, remote sedge, yellow pimpernel, wood-sorrel and honeysuckle *(Lonicera periclymenum*). Part of this area shown as Arable by a 1987 survey (SERC code SS92/17/7).	
TN44	Canopy of scattered mature beech, pine and oak. Understorey mainly young beech with smaller amounts of yew, sycamore, lime, holly and ornamentals. Ivy locally dominant in areas of heavy shade.	1544
TN45	Dense beech with oak and sycamore. Sparse ground flora.	1548
TN46	Patch of Himalayan balsam.	-
TN47	Less mature woodland with beech and oak (and ash), and abundant young Turkey oak and pedunculate oak. Saplings present in canopy gaps, including a mix of beech, ash, holly and birch. Ground flora characterised by locally abundant bramble and bracken, and broad buckler-fern.	1545
TN48	Small stand of larch.	-
TN49	Herb-poor MG1 grassland. Dense, tussocky and untopped.	1549, 1550
TN50	Transitional between MG1 and MG5. Some parts tussocky, other finer areas. See species list.	-
TN51	Scattered trees: Turkey oak, pedunculate oak and sweet chestnut. Partly fenced, with new plantings.	-
TN52	Shed area. Mosaic of MG1, some finer structured herb-rich areas (MG5) and disturbed ground.	-
TN53	Some small W25 patches scattered in canopy gaps.	-
TN54	Rhododendron locally abundant below canopy of young oak, ash and beech, with understorey of beech saplings, hazel and holly.	1552
TN55	Cleared area, except for remaining standards of open-grown oak and ash standards and tall birch. Probably rhododendron control. Lots of fallen deadwood of various sizes. Abundant ferns and regenerating rhododendron stumps.	1551
TN56	Open area with dense bracken and young planted trees with guards (sweet chestnut, cherry, oak, birch, ash).	1554, 1555
TN57	Vehicle turning area.	1556
TN58	Conifer with understorey of dog's mercury.	-
TN59	Dry unvegetated stream bed.	1559
TN60	Big limes and plane tree.	-

TN61	Sunken stream.	-
TN62	Solomon's-seal by track.	-
TN63	Deer-grazed grassland.	1498, 1499
TN64	Rhodendron locally dominant in shrub layer in game-rearing woods.	1487
TN65	Locally abundant Turkey oak.	-
TN66	Viewed from track as no access permission. Rhododendron dominating understory in places.	-

Appendix 3: Species lists (by NVC community)

DAFOR ratings: D = dominant, A = Abundant, F = Frequent, O = Occasional, R = Rare, (L) = Locally (frequent, abundant, dominant) Ancient Woodland Indicators in the south-west indicated by *.

AWI	Scientific name	Common name	W8	W8c	W10	W21	W25	MG5	MG1/ MG5	MG6	MG5/ U4	Wetland and pond
			Woodland			(Under)scrub		Grassland				
	Abies sp.	Fir	R									
*	*Acer campestre*	Field maple	R									
	Acer pseudoplatanus	Sycamore	O		O							
	Achillea millefolium	Yarrow						O		O		
	Agrostis capillaris	Common bent			R		O	A	A/LD	A		
	Agrostis stolonifera	Creeping bent						R	O	LF		F
	Ajuga reptans	Bugle	R	R		R	O					
	Angelica sylvestris	Wild angelica		R								O
	Anthoxanthum odoratum	Sweet vernal-grass						F	O	LF		
	Apium nodiflorum	Fool's-water-cress										F
	Arrhenatherum elatius	False oat-grass					O					
	Asplenium scolopendrium	Hart's-tongue	R									
	Betula sp.	Birch	R	R	O							
*	*Blechnum spicant*	Hard-fern	R		R							
	Brachypodium sylvaticum	False brome	R/LF		R							
	Buxus sempervirens	Box										
*	*Carex pendula*	Pendulous sedge		R								

*	*Carex remota*	Remote sedge	O	F	R		R					
	Carex sp.	Sedge						R				
*	*Carex sylvatica*	Wood-sedge	O	R	R							
	Castanea sativa	Sweet chestnut	O/LF		R							
	Cerastium fontanum	Common mouse-ear						R	R	O		
*	*Chrysosplenium oppositifolium*	Opposite-leaved golden-saxifrage		R								
	Circaea lutetiana	Enchanter's-nightshade	O	O	O	O	O					
	Cirsium arvense	Creeping thistle							R	O		
	Cirsium palustre	Marsh thistle					R	O	R	R	A	F
	Claytonia sibirica	Pink purslane	R									
	Corylus avellana	Hazel	LA	LA	LF		R					
	Cratagegus mongyna	Hawthorn	O	O	F	A	R/LF					O
	Cupressus × leylandii	Leyland cypress			R							
	Cynosurus cristatus	Crested dog's-tail						R		LA		
	Dadylis glomerata	Cock's-foot			R			O	A/LD	A	A	

AWI	Scientific name	Common name	W8	W8c	W10	W21	W25	MG5	MG1/ MG5	MG6	MG5/ U4	Wetland and pond
			Woodland			(Under)scrub		Grassland				
	Deschampsia cespitosa	Tufted hair-grass		A	R					R		O
	Digitalis purpurea	Foxglove	O		R							
	Dryopteris dilatata	Broad buckler-fern	R/LF	F	R							

	Dryopteris filix-mas	Common male fern	LF	A	O	F						
	Eupatorium cannabinum	Hemp agrimony	R									
	Fagus sylvatica	Beech	F/LD	A	F/LA							
	Festuca rubra	Red fescue						LA		A	A	
	Filipendula ulmaria	Meadowsweet		R			R	R				F
	Fraxinus excelsior	Ash	A	A	A							O
	Galium palustre	Marsh bedstraw										R
	Geranium robertianum	Herb-Robert	O	A	R	O	LF					
	Geum urbanum	Wood avens	F	F	R		O					
	Glechoma hederacea	Ground-ivy	LF	F	R	F	O				E	
	Hedera helix	Ivy	LF	A	F							
	Heracleum sphondylium	Hogweed						R	R			
	Impatiens glandulifera	Himalayan balsam		F								F
	Holcus lanatus	Yorkshire-fog						A	A	A	A	
*	*Holcus mollis*	Creeping soft-grass			O							
*	*Hyacinthoides non-scripta*	Bluebell	O?		LA							
	Hypochaeris radicata	Cat's-ear						A	R	R	LF	
*	*Ilex aquifolium*	Holly	R/O	R/LF	R	O						
	Impatiens glandulifera	Himalayan balsam	R	R	O							LA
	Juncus acutiflorus	Sharp-flowered rush								R		LF
	Juncus effusus	Soft rush	R		R				R/LF	R		F

*	*Lamium galeobdolon*	Yellow archangel	LF		R							
	Larix sp.	Larch	R									
	Leontodon autumnalis	Autumn hawkbit						R	O	O		
	Lolium perenne	Perennial rye-grass						LA		LA		
	Lonicera periclymenum	Honeysuckle			R							
	Lonicera sp.	*Lonicera* sp. (ornamental)			R							
	Lotus corniculatus	Bird's-foot trefoil						F/LA	A	R	LF	
	Lotus pedunculatus	Greater bird's-foot trefoil										O
	Luzula campestris	Field wood-rush						R				
*	*Lysimachia nemorum*	Yellow pimpernel	R		R	R						
	Mentha aquatica	Water mint		R								O
	Mercurialis perennis	Dog's mercury	F/LA/D	R	R							
*	*Milium effusum*	Wood millet				R						
	Mycelis muralis	Wall lettuce	R									
*	*Oxalis acetosa*	Wood-sorrel	R		LF							

AWI	**Scientific name**	**Common name**	**W8**	**W8c**	**W10**	**W21**	**W25**	**MG5**	**MG1/ MG5**	**MG6**	**MG5/ U4**	**Wetland and pond**
			Woodland			**(Under)scrub**		**Grassland**				
	Phalaris arundinacea	Reed canary-grass										O
	Picea sp.	Spruce	R									
	Pimpinella saxifraga	Burnet saxifrage						R				
	Pinus sp.	Pine	R	R								

	Plantago lanceolata	Ribwort plantain						A	F	F	F	
	Plantago major	Greater plantain								R		
	Plantanus sp.	Plane	R									
*	*Poa nemoralis*	Wood meadow-grass	R									
	Polygala serpyllifolia	Heath milkwort									R	
*	*Polygonatum biflorum*	Solomon's-seal	R									
*	*Polystichum* sp.	Shield-fern (seedling)	R									
	Potentilla anserina	Silverweed							R	R		
	Potentilla erecta	Tormentil						R	R/LF	R	R	
	Potentilla sterilis	Barren strawberry					R	R				
	Primula vulgaris	Primrose	R		R							
	Prunella vulgaris	Selfheal		R				A		O		
	Prunus sp.	Cherry	R									
	Prunus spinosa	Blackthorn	R									
	Pteridium aquilinum	Bracken	R/LF	A	F	A	D	R		LF/R	A (litter)	F/LD
	Pulicaria dysenterica	Common fleabane										F
	Quercus cerris	Turkey oak	R	R	R/LF							
	Quercus ilex	Holm oak	R		R							
*	*Quercus petrea*	Sessile oak	O	O/LF	O			R				
	Quercus robur	Pedunculate oak			A							
	Ranunculus acris	Meadow buttercup						O				

	Ranunculus flammula	Lesser spearwort										R
	Ranunculus repens	Creeping buttercup	R	R	R			A		O	O	
	Rhinanthus minor	Yellow-rattle						R				
	Rhododendron ponitcum	Rhododendron	R	R/LF	R							
	Rosa sp.	Rose	R	R								
	Rubus fruiticosus	Bramble	O/LF	A	F		A	R	R			
	Rumex acetosa	Common sorrel						O	R	O	R	O
	Rumex obtusifolius	Broadleaved-dock						R	F/LA			
	Salix cinerea	Grey willow		O					R			O
	Sambucus nigra	Elder	R									
	Scrophularia nodosa	Common figwort	R	R								
	Senecio jacobaea	Common ragwort						R	R			
	Silene dioica	Red campion	O		O							
	Stachys sylvatica	Hedge woundwort	R	F	R							

AWI	**Scientific name**	**Common name**	**W8**	**W8c**	**W10**	**W21**	**W25**	**MG5**	**MG1/ MG5**	**MG6**	**MG5/ U4**	**Wetland and pond**
			Woodland			**(Under)scrub**		**Grassland**				
	Stellaria graminea	Lesser stitchwort						R				
	Stellaria holostea	Greater stitchwort	R		R							
	Taraxacum officinale	Dandelion						O	O	O	F	
	Teucrium scolopendrium	Wood sage					R					
	Tilia sp.	Lime	R	R/LF								

	Trifolium pratense	Red clover						F	F	F		
	Trifolium repens	White clover						F		LF		
	Typha latifolia	Bulrush										R
	Ulex europaeus	Gorse			R							
	Ulmus sp.	Elm	R/LF		R							
	Urtica dioica	Nettle	R	LF				R	R			
	Veronica chamaedrys	Germander speedwell						R		O	O	
	Veronica montana	Wood speedwell	O	O	O							
	Viola riviniana	Dog-violet					O/LF				O	
Ancient Woodland Indicator Count (n=17)			**13**	**6**	**10**	**3**						

Appendix 4: Woodland NVC quadrat data

Domin scale: 10 = 91-100% cover, 9 = 76-90%, 8 = 51-75%, 7 = 24-50%, 6 = 26-33%, 5 = 11-25%, 4 = 4-10%, 3 = Many, 2 = Several, 1 = Few.
Constancy: V = 81-100% of samples, IV = 61-80%, III = 41-60%, II = 21-40%, I = 1-20% of samples.

Quadrat code	**Q1**	**Q7**	**Q8**	**Q9**	**Q10**	**ALL W8/9**	**Q2**	**Q3**	**Q4**	**Q5**	**Q6**	**W12/W10/ W8-derived**
Probable NVC type	W8e	W8a/e	W9a/e	W8e	W8c		W10	W12a/ W10/W8 derived	W10/W12a	Grazed W10 derived	W10 derived	
Slope	Steep/ moderate	Gentle	flat	flat	flat		Moderate	Gentle	Steep/ moderata	Gentle	Gentle	
Aspect	W	W	-	-	-		W	W	W	W	NW	
Photo number	1601, 1602, 1603	1617	1618	1619	1620		1606	1607	-	1612	1615	
Bare ground/litter	4	**7**	**6**	**5**	**3**		8	7	7	9	**7**	constancy
CANOPY (50m x 50m)												
Fraxinus excelsior	6	8	8	6	8	**V**		5	5	2	6	**IV**
Quercus robur	2				4	**II**	5	6	4	4	7	**V**
Castanea sativa	3		3			**II**					3	**I**
Acer pseudoplatanus				2		**I**	1		2			**II**
Ulmus sp.	4					**I**						
Fagus sylvatica		5				**I**		8	3			**II**
Crataegus monogyna	1					**I**						
Corylus avellana	7					**I**					1	**I**
Ilex aquifolium	1					**I**					3	**I**
Larix *sp.*	4					**I**						
Betula sp.								1			3	**II**
Quercus petrea							2					**I**
Quercus cerris										9	6	**II**

SUB-CANOPY (50m x 50m)												
Corylus avellana	5	5	2	7	6	**VI**	8	1	8			**III**
Crataegus monogyna		2	5	1	3	**IV**	3	1	3	3	4	**V**
Fagus sylvatica		1	2		4	**III**	2	3	5		2	**IV**
Acer campestre	1	1				**II**						
Betula sp.					3	**I**						
Sambucus nigra	2					**I**						
Ulmus sp.	5					**I**	1					**I**
Ilex aquifolium	3					**I**	3	3			3	**III**

Quadrat code	**Q1**	**Q7**	**Q8**	**Q9**	**Q10**	**ALL W8/9**	**Q2**	**Q3**	**Q4**	**Q5**	**Q6**	**W12/W10/ W8-derived**
Castanea sativa					1	**I**						
Fraxinus excelsior									2			**I**
Acer pseudoplatanus								2				**I**
Field layer (4m x 4m)												
Geum urbanum	3	3	3	3	2	**V**				4		**I**
Geranium robertianum	1	3	1		1	**IV**		3				**I**
Dryopteris filix-mas	3	1	5	1		**IV**	2		5			**II**
Mercurialis perenne	8	4		9	3	**IV**		1				**I**
Bracypodium sylvaticum		3	3		2	**III**		3				**I**
Carex sylvatica		2	2		4	**III**						
Veronica montana	2			1	1	**III**		1	3			**II**
Fraxinus excelsior	1	1	3			**II**	2	3	2	1	1	**V**

Carex remota		3			2	II			1			I
Circaea lutetiana		1	2			II			2	1		II
Dryopteris dilatata				1	2	II	1		2			II
Filipendula ulmaria		1			2	II						
Primula veris		2	2			II						
Pteridium aquilinum	2				3	II	2	4	7	4	5	V
Rubus fruticosus	3		2			II		4	4		3	III
Viola riviniana		1	3			II						
Lamium galeobdolon	3				1	II			2			I
Cardamine sp.		1				I						
Deschampsia cespitosa					6	I				1		I
Blechnum spicant			1			I						
					1	I					2	II
Hyacinthoides nonscripta	1					I	7					I
Juncus effusus					2	I						
Mycelis muralis			1			I						
Oxalis acetosa					1	I			1			I
Silene dioica	2					I						
Urtica dioica	1					I					3	I
Crataegus monogyna				1		I						
Acer pseudoplatanus							1	1				II
Agrostis capillaris										3		I

Quadrat code	Q1	Q7	Q8	Q9	Q10	ALL W8/9	Q2	Q3	Q4	Q5	Q6	W12/W10/ W8-derived
Fagus sylcatica								2				**I**
Dactylis glomerata								3				**I**
Hedera helix							1	7	1		3	**IV**
Holcus mollis							2				4	**II**
Ilex aquifolium											4	**I**

TABLEFIT OUTPUT FOR WOODLAND QUADRATS

Shows five best NVC matches, with each overall % Goodness of Fit (followed by Goodness of Fit for individual components. Generated by TABLEFIT software. TABLEFIT dictionary did not include Turkey oak, therefore this species was not included in the analysis for Quadrats Q5 and Q6. Note: TABLEFIT results should be used in combination with examination of the published descriptions and keys when determining vegetation type, particularly where Goodness of Fit values are low.

W8/9 Quadrats

Sample Q1 Parameters = Nobryo Domin Sp & c

C41.32 W 8 40% |100 71 0 1| Fra exc-Ace cam-Mer per (subcomms a-d)
C41.41 **W 8e 39%** |100 67 0 1| Fra exc-Ace cam-Mer per Geranium robert
C41.31 W 9a 36% | 81 70 0 1| Fra exc-Sor auc-Mer per Typical
C41.32 W 8a 34% | 91 60 0 0| Fra exc-Ace cam-Mer per Pri vul-Gle hed
C41.32 W 8d 31% | 99 51 0 0| Fra exc-Ace cam-Mer per Hedera helix

Sample Q7 Parameters = Nobryo Domin Sp & c
C41.31 W 9 40% | 88 77 0 1| Fra exc-Sor auc-Mer per
C41.32 W 8 37% | 94 66 0 0| Fra exc-Ace cam-Mer per (subcomms a-d)
C41.31 W 9a 37% | 77 80 0 1| Fra exc-Sor auc-Mer per Typical
C41.41 W 8g 36% | 75 79 0 0| Fra exc-Ace cam-Mer per Teucrium scorod
C41.32 W 8a 33% | 83 63 0 0| Fra exc-Ace cam-Mer per Pri vul-Gle hed

Sample Q8 Parameters = Nobryo Domin Sp & c

C41.32 W 8a 32% | 79 60 0 0| Fra exc-Ace cam-Mer per Pri vul-Gle hed
C41.32 W 8 30% | 77 58 0 0| Fra exc-Ace cam-Mer per (subcomms a-d)
C41.1311 W12a 30% | 84 54 0 0| Fagus syl-Merc per wood Mercur perennis

C41.32 W 8c 29% | 76 55 0 0| Fra exc-Ace cam-Mer per Descham cespit
C41.31 W 9a 26% | 59 64 0 0| Fra exc-Sor auc-Mer per Typical

Sample Q9 Parameters = Nobryo Domin Sp & c
*** Name not in dictionary *** drop fili
C41.41 W 8e 32% | 66 80 0 0| Fra exc-Ace cam-Mer per Geranium robert
C41.32 W 8 31% | 65 79 0 0| Fra exc-Ace cam-Mer per (subcomms a-d)
C41.31 W 9a 28% | 56 100 0 0| Fra exc-Sor auc-Mer per Typical
C41.233 W 8f 27% | 62 65 0 0| Fra exc-Ace cam-Mer per Allium ursinum
C41.32 W 8a 27% | 58 74 0 0| Fra exc-Ace cam-Mer per Pri vul-Gle hed

Sample Q10 Parameters = Nobryo Domin Sp & c
C41.32 W 8a 30% | 83 56 0 0| Fra exc-Ace cam-Mer per Pri vul-Gle hed
C41.32 W 8c 30% | 83 54 0 0| Fra exc-Ace cam-Mer per Descham cespit
C44.31 W 7c 28% | 73 55 0 0| Aln glu-Fra exc-Lys nem Descham cespit
C41.31 W 9 28% | 69 56 0 0| Fra exc-Sor auc-Mer per
C41.32 W 8 27% | 78 50 0 0| Fra exc-Ace cam-Mer per (subcomms a-d)

W8/9 Quadrats

Sample Q2 Parameters = Nobryo Domin Sp & c
C41.21 W10e 40% | 89 77 0 0| Que rob-Pte aqu-Rub fru Ace pse-Oxa ace
C41.41 W 8e 36% | 82 69 0 0| Fra exc-Ace cam-Mer per Geranium robert
C41.32 W 8 33% | 75 67 0 0| Fra exc-Ace cam-Mer per (subcomms a-d)
C41.1311 W12a 32% | 84 59 0 0| Fagus syl-Merc per wood Mercur perennis
C44.31 W 7c 32% | 71 68 0 0| Aln glu-Fra exc-Lys nem Descham cespit

Sample Q3 Parameters = Nobryo Domin Sp & c
C41.1311 W12a 42% |100 76 0 0| Fagus syl-Merc per wood Mercur perennis
C41.32 W 8 42% | 97 77 0 0| Fra exc-Ace cam-Mer per (subcomms a-d)
C41.41 W 8e 39% | 96 69 0 0| Fra exc-Ace cam-Mer per Geranium robert
C41.32 W 8d 35% | 93 62 0 0| Fra exc-Ace cam-Mer per Hedera helix
C41.32 W 8a 35% | 83 67 0 0| Fra exc-Ace cam-Mer per Pri vul-Gle hed

Sample Q4 Parameters = Nobryo Domin Sp & c
C41.1311 W12a 39% |100 68 0 0| Fagus syl-Merc per wood Mercur perennis
C44.31 W 7c 36% | 80 71 0 0| Aln glu-Fra exc-Lys nem Descham cespit
C41.21 W10e 33% | 89 59 0 0| Que rob-Pte aqu-Rub fru Ace pse-Oxa ace
C41.32 W 8 32% | 73 65 0 0| Fra exc-Ace cam-Mer per (subcomms a-d)

C41.32 W 8c 32% | 76 62 0 0| Fra exc-Ace cam-Mer per Descham cespit

Sample Q5 Parameters = Nobryo Domin Sp & c
*** Name not in dictionary *** quer cerr
C41.32 W 8c 26% | 55 81 0 0| Fra exc-Ace cam-Mer per Descham cespit
C41.32 W 8a 23% | 50 72 0 0| Fra exc-Ace cam-Mer per Pri vul-Gle hed C41.21 W10 21% | 58 49 0 0| Que rob-Pte aqu-Rub fru
C41.32 W 8d 19% | 47 56 0 0| Fra exc-Ace cam-Mer per Hedera helix
C41.32 W 8 19% | 45 61 0 0| Fra exc-Ace cam-Mer per (subcomms a-d)

Sample Q6 Parameters = Nobryo Domin Sp & c
C41.1311 W12a 35% | 88 64 0 0| Fagus syl-Merc per wood Mercur perennis
C41.32 W 8c 31% | 72 65 0 0| Fra exc-Ace cam-Mer per Descham cespit
C41.32 W 8a 31% | 70 67 0 0| Fra exc-Ace cam-Mer per Pri vul-Gle hed
C41.32 W 8d 31% | 75 61 0 0| Fra exc-Ace cam-Mer per Hedera helix
C41.32 W 8 31% | 68 68 0 0| Fra exc-Ace cam-Mer per (subcomms a-d)

Appendix 5: MG5 Grassland NVC quadrat data

Domin scale: 10 = 91-100% cover, 9 = 76-90%, 8 = 51-75%, 7 = 24-50%, 6 = 26-33%, 5 = 11-25%, 4 = 4-10%, 3 = Many, 2 = Several, 1 = Few.
Constancy: V = 81-100% of samples, IV = 61-80%, III = 41-60%, II = 21-40%, I = 1-20% of samples.

Quadrat code	**Q11**	**Q12**	**Q13**	**Q14**	**Q15**	**ALL MG5** 2m x 2m quadrats
Probable NVC type	MG5	MG5	MG5	MG5	MG5/U4	
Slope	gentle	gentle	gentle	gentle	gentle	
Aspect	W	W	W	N	NW	
Photo number	1540	1541	1542	1547	1611	
Sward height	8	8	8	15	6	
HERB COVER	40%	30% (+ 20% white clover)	10% (+ 40% white clover)	50%	20%	**constancy**
Agrostis capillaris	9	8	7	6	8	V
Festuca rubra	5	5	5	4	8	V
Lotus corniculatus	4	2	1	3	3	V
Plantago lanceolata	3	4	4	4	3	V
Taraxamum officinale	1	3	1	1	2	V
Anthoxanthum odoratum	4	4	3	3		IV
Hypochaeris radicata	2	3	2	4		IV
Leontodon autumnalis	1	1		1	1	IV
Trifolium repens	5	5	6		2	IV
Veronica chaemdrys	2	1	1	1		IV
Holcus lanatus	3	3	2	3		IV
Lolium perenne	3	2	1			III
Dactylis glomerata		1	2	1		III
Potentilla sterilis		1	1	2		III
Ranunculus repens	1	2		3		III
Agrostis stolonifera	2			1		II
Achillea millefolium			2			I

Cerastium fontanum				1		I
Cirsium palustre				1		I
Cynosurus cristatus			2			I
Hypochaeris radicata					3	I
Luzula campestris	1					I
Pimpinella saxifraga				1		I
Prunella vulgaris				1		I
Quadrat code	**Q11**	**Q12**	**Q13**	**Q14**	**Q15**	**ALL MG5**
Trifolium pratense	2					I

TABLEFIT OUTPUT FOR GRASSLAND QUADRATS

Shows five best NVC matches, with each overall % Goodness of Fit (followed by Goodness of Fit for individual components. Generated by TABLEFIT software. Note: TABLEFIT results should be used in combination with examination of the published descriptions and keys when determining vegetation type, particularly where Goodness of Fit values are low.

Sample Q11 Parameters = Nobryo Domin Sp & c
C38.112 MG 5 41% | 82 96 0 1| Cynos cris-Centaur nigr
C38.112 MG 5a 38% | 76 93 0 1| Cynos cris-Centaur nigr Lath pratensis
C35.12 U 4b 35% | 81 69 0 0| Fes ovi-Agr cap-Gal sax Hol lan-Tri rep
C38.112 MG 5b 33% | 67 83 0 1| Cynos cris-Centaur nigr Galium verum
C18.2 MC 9 31% | 91 54 0 0| Fest rubra-Holcu lanat

Sample Q12 Parameters = Nobryo Domin Sp & c
C38.112 MG 5 39% | 78 96 0 1| Cynos cris-Centaur nigr
C81 MG 7e 37% | 97 65 0 0| Lol pere verges & lawns Lol per-Pla lan
C38.112 MG 5a 37% | 74 97 0 1| Cynos cris-Centaur nigr Lath pratensis
C38.111 MG 6b 34% | 78 67 0 0| Lolium per-Cynos cris Anthox odorat
C35.12 U 4b 33% | 74 68 0 0| Fes ovi-Agr cap-Gal sax Hol lan-Tri rep

Sample Q13 Parameters = Nobryo Domin Sp & c
C38.112 MG 5 43% | 86 100 0 1| Cynos cris-Centaur nigr
C38.112 MG 5a 41% | 82 100 0 1| Cynos cris-Centaur nigr Lath pratensis

C38.111 MG 6a 40% |100 70 0 0| Lolium per-Cynos cris Typical
C38.111 MG 6 40% | 98 70 0 0| Lolium per-Cynos cris
C38.111 MG 6b 40% | 89 76 0 0| Lolium per-Cynos cris Anthox odorat

Sample Q14 Parameters = Nobryo Domin Sp & c
C38.112 MG 5 34% | 73 76 0 1| Cynos cris-Centaur nigr
C38.112 MG 5a 33% | 70 76 0 1| Cynos cris-Centaur nigr Lath pratensis
C35.12 U 4b 29% | 74 56 0 0| Fes ovi-Agr cap-Gal sax Hol lan-Tri rep
C38.112 MG 5b 27% | 62 67 0 0| Cynos cris-Centaur nigr Galium verum
C18.2 MC 9 27% | 82 48 0 0| Fest rubra-Holcu lanat

Sample Q15 Parameters = Nobryo Domin Sp & c
C35.22 U 1f 32% | 82 61 0 0| Fes ovi-Agr cap-Rum acl Hypoch radicata
C18.2 MC 9 31% | 65 78 0 0| Fest rubra-Holcu lanat
C18.2 MC 9a 29% | 61 75 0 0| Fest rubra-Holcu lanat Plantag marit C16.2211SD
8a 28% | 62 69 0 0| Fest rubra-Galium verum Typical
C18.2 MC 9c 26% | 54 84 0 0| Fest rubra-Holcu lanat Achill millef

Natural England is here to secure a healthy natural environment for people to enjoy, where wildlife is protected and England's traditional landscapes are safeguarded for future generations.

Natural England publications are available as accessible pdfs from www.gov.uk/natural-england.

Should an alternative format of this publication be required, please contact our enquiries line for more information: 0300 060 3900 or email enquiries@naturalengland.org.uk.

Catalogue code: NECR382

ISBN 978-1-78354-802-6

NATURAL ENGLAND