Land at Norbury Hill – An Ecological Evaluation 2021

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Part 2: Southern and Northern Compartments

Land owned by Brow Farm

This report was commissioned by Middle Marches Community Land Trust with funding from The Shropshire Hills Area of Outstanding Natural Beauty (AONB).

Shropshire Hills
Area of Outstanding Natural Beauty

Contents

1 Overview

1.1 Introduction

This ecological report is the second part of a wider survey covering an un-named tract of land to the east of Norbury Hill, in South Shropshire. Situated above Norbury village, it is located within the Shropshire Hills Area of Outstanding Natural Beauty, between Long Mynd Site of Special Scientific Interest and the Stiperstones National Nature Reserve. It falls within the 'Stepping Stones' Project area whilst its northern and central compartments are designated as a Local Wildlife Site.

Covering some 91ha the land rises from an altitude of 255m in the south to 400m in the north. Topographically, the eastern half of the land comprises a gently rising plateau whilst the western section forms a slope (in parts steep) down to the boundary stream. The stream eventually drains into the River East Onny. A public footpath runs along the eastern boundary but is not heavily used. In recent years all parts of the site have been grazed, to varying extents, by both cattle and sheep.

The land surveyed is divided into three compartments: Northern, Central and Southern. **This report covers the Northern and Southern Compartments.** The Central Compartment is presented separately.

Habitats were surveyed on regular visits between April and September 2021. Annotated maps were produced in line with 'Phase 1' criteria to show the key ecological features. A description of the habitats and key species is included in the report and a full list of the plant and animal species recorded on the site is given in the appendix.

A series of 'fixed–point' photographs were taken at vantage points across the site to allow visual changes to be tracked in future years.

An interactive map showing the habitats, fixed point photographs, and georeferenced photographs of key habitats and species can be viewed using the 'Land App™' programme, details of which are given in the appendix.

Aerial photograph (Bing Imagery) showing the compartments surveyed in 2021. This report covers the Northern and Southern Compartments.

The land app

Produced on Oct 3, 2021.

200 m
Scale 1:10000 (at A4)

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Ecological summary

The main areas of **ecological interest**, including U.K. Priority Habitats and Species[1], as well as birds listed on the U.K. Red List[2] are summarised below. **This summary covers all three compartments.**

- Much of the grassland has either been agriculturally improved or encroached by bracken. However, significant areas of **acid grassland** remain across the site and there is the potential to increase it. 'Lowland Dry Acid Grassland' is a Priority Habitat in the U.K. The grasslands support breeding skylark and common lizard, whilst wall butterflies can be found on rocky outcrops. All are U.K. Priority Species and skylark is on the UK Red List.

- The **wetlands** on the site are very diverse (particularly in the Northern Compartment) and could be considered under two different U.K. Priority Habitats ('Purple Moor-grass and Rush Pastures' and 'Upland Flushes, Fens, and Swamps'). Wetland species such as Devil's-bit scabious, bog asphodel, marsh cinquefoil, marsh lousewort, marsh valerian, lesser skullcap and marsh violet are present. The flushes in the central area are botanically less rich, with herb species at lower density. However, their proximity to the Northern Compartment, coupled with projected changes in management, suggests that there is the potential to increase in diversity here.

- **Gorse and hawthorn scrub** areas around the flushes and along the stream (particularly extensive in the Central Compartment) are important as they support a wide range of breeding birds, including particularly good numbers of linnet, as well as reed bunting, yellowhammer, and song thrush. All these birds are U.K. Priority Species and/or on the U.K. Red List. This habitat has the potential to extend further.

- Several small patches of **wet woodland** are present along the valley stream, particularly in the Southern Compartment where willow and alder are frequent. They have a diverse flora with species such as marsh valerian, meadow sweet, yellow pimpernel, water mint and marsh marigold. Wet woodland is a Priority Habitat in the U.K., and it has the potential to expand on the site.

- The **Small Pearl-bordered Fritillary butterfly** is a U.K. Priority Species. It has been recorded on several of the flushes in the recent past, but currently only appears to be breeding (in small numbers) in the Northern Compartment (where its food plant, marsh violet is most abundant). With appropriate management the food plant, and in turn the colony, could increase and spread back into former areas.

- **Curlews** breed close to Norbury Hill and are regularly seen feeding in the wetter areas of the Central and Northern Compartments during the breeding season. Other **uncommon or threatened birds** also use the site to feed/rest-up on passage to their breeding grounds, including ring ouzel and whinchat. Cuckoo was regularly heard and was seen on site. All these birds are U.K. Priority species and/or on the U.K. Red List.

[1] U.K. Priority habitats and species have been selected because they are internationally important, rapidly declining, or nationally rare. They are defined in Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 – Habitats and Species of Principal Importance in England.

[2] Red list species are those that are Globally Threatened according to IUCN criteria; those whose population or range has declined rapidly in recent years; and those that have declined historically and not shown a substantial recent recovery.

2 Geology and Soils.

The bedrock of the Northern Compartment is composed of sandstones and conglomerates of the Bayston-Oakswood Formation whilst interbedded mudstones, siltstones and sandstones of the slightly younger Bridges Formation underlie much of Brow Farm South. Both units are part of the Wentnor Group which forms a fluvial system deposited some 550 Ma ago during the Ediacaran Period of the Proterozoic Eon (PreCambrian).

Sediments of the Bridges Formation are well exposed in the Quarry (SO36989374) in Brow Farm South and are also present along the southern margin of the Brow Farm study area. Outcrops of the Bayston-Oakswood Formation are limited to small exposures on the steeper slopes, adjacent to the Central Compartment.

Away from the waterlogged flushes and valley bottom marsh the soils are best described a free-draining acidic loams. They generally have low natural fertility.

Quarry with Bridges Formation exposed

3 Ecological Assessment

Sitting either side of the Central Compartment (covered in a separate report) both these land parcels belong to Brow Farm, owned, and managed by the Jones family. They cover an area of 53ha (14ha in the south and 39ha in the north) which is farmed organically. Both compartments are grazed by cattle between April and September and later in the year by sheep. The livestock is regularly moved between sites. The two compartments are assessed together.

3.1 Grassland

The grasslands in both compartments were assessed to determine their type and condition using a well-established structured approach, as described in the appendix. This can easily be repeated to allow future changes in grassland quality to be measured. The frequency of all the plant species recorded on the structured walk, including grasses, is given in the appendix, along with other attributes of the grassland such as structure and frequency of positive and negative indicator species.

3.1.1 Poor semi-improved grassland

Much of the grassland, in both compartments, has been agriculturally improved and is best described as 'poor semi-improved grassland'. Historically, the farmer believes that the more accessible parts of the Northern Compartment have been limed, ploughed, and reseeded.

White clover and sweet vernal-grass

At the time of survey, the sward in the **Southern Compartment** was structurally diverse, tussocky in places, and with an open character. Smooth/spreading meadow-grass and perennial rye-grass dominated, but Yorkshire fog, sweet vernal-grass, rough meadow-grass, crested dog's-tail and red fescue were also frequent. It was moderately herb-rich, with white clover, dandelion, and common mouse-ear present throughout and with occasional germander speedwell, meadow buttercup and yarrow. More rarely, lesser trefoil, bulbous buttercup, common sorrel, field wood-rush, selfheal and autumn hawkbit were also noted.

In the **Northern Compartment** the sward was generally more uniformly short but was still relatively open with some tussocky areas. Here red fescue, common bent and smooth meadow-grass dominated, but perennial rye-grass, Yorkshire fog and sweet vernal grass were also frequent. The smooth meadow grass, *Poa pratensis*, which is one of the dominant grasses recorded, is believed to be predominantly *P. pratensis subsp. irrigata* (also known as spreading meadow grass). The herb content of the grassland was generally lower than that in the Southern Compartment, but with white clover still being abundant and the dominant herb species. Other herb species were similar to those noted for the Southern Compartment but were generally present at lower frequency. This

grassland is likely to have been grass heath in the past, as heathland species (heather and bilberry) are still present in the wetter, rush-pasture areas.

Poor semi-improved grassland and rush pasture

Breeding skylarks, a U.K. Priority species, were present and breeding in good numbers across both compartments, particularly in the Northern Compartment. The bilberry bumblebee was present in good numbers and was amongst several species of bumblebee feeding mainly on the white clover (here it is pictured on bramble). It is a localised and declining species, strongly associated with stands of bilberry, but which requires supporting flowery habitats during the summer months.

Bilberry bumblebee

There were several extensive patches of creeping thistle and nettle suggesting nutrient enrichment, possibly from supplementary feeding. These could be found around SO36899386 in the Southern Compartment, as well as in several areas (particularly around SO363951 and SO36509514) adjacent to the main flush in the Northern Compartment.

During the autumn months a wide range of grassland fungi can be seen across all the grasslands. Particularly striking are the range of waxcap fungi, including the distinctive parrot waxcap and blackening waxcap. Waxcap fungi are an indicator of old, undisturbed pastures.

Waxcap fungi

3.1.2 Semi –improved and unimproved acid grassland

On the steeper banks, in both the Southern and Northern Compartments, the grassland was more acidic comprising a mosaic of semi-improved and unimproved acid grassland – the latter falling into the 'U.K. Lowland Dry Acid Grassland' Priority Habitat.

Acid grassland with heath bedstraw

In the **Southern Compartment** dry acid grassland was quite widespread, in places associated with scattered bracken and gorse scrub. Patches of heath bedstraw and sheep's sorrel were extensive, often alongside harebell, bird's-foot trefoil, heath speedwell, mouse-ear-hawkweed and even a patch of lady's bedstraw. Finer-leaved grasses dominated in these areas, in particular red and sheep's fescue and wavy hair-grass. At the base of the slope (SO36899361) an area of scattered bracken has frequent pignut along with bugle, barren strawberry, and common catsear. Common dog-violet was present in good patches here, as well as amongst the acid grassland (SO36889396).

Heath speedwell

Betony

Harebell

In the **Northern Compartment** the better examples of acid grassland are restricted to the banks adjacent to the flushes. These have a similar range of species to those described above, but in addition betony was noted at SO36499523.

Yellow meadow ant anthills (typical of old undisturbed grasslands) are present in both Northern and Southern Compartments, and in both, the small heath butterfly (a U.K. Priory Species) abounds. Other grass feeding butterflies were also seen including meadow browns, ringlets, skippers, and gatekeepers. Small coppers, a declining species which feed on sorrels, were seen frequently in both May, August, and late September, suggesting 2 or possibly even 3 broods.

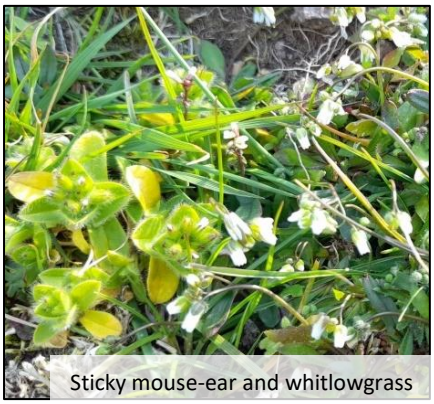

Yellow meadow anthills


Small copper

In late April, a male and female ring ouzel were seen feeding over a period of several days on the short grasslands around SO364950, as well as on adjacent land. This U.K. Priority and red listed species is not known to breed on the site but would have been stopping off to feed during migration.

3.1.3 Rock outcrops, quarry, boundary banks and walls

There are several small rocky outcrops in the **Southern Compartment** which support an interesting flora. As well as the acid grassland species, listed in section 3.1.2, other species such as parsley piert, wild thyme, sand spurrey, dove's-foot cranesbill, ladies bedstraw and squirrel-tail fescue are present. The diminutive spring ephemeral species, such as early hair-grass and common whitlowgrass, can be seen alongside sticky mouse-ear, and the tiny bird's-foot with its long pea like seed pods. Towards the southern end of the roadside boundary an old stone wall is topped with polypody fern.


Sticky mouse-ear and whitlowgrass


Parsely piert


Bird's-foot

These rich rocky habitats are poorly represented in the **Northern Compartment** although in both areas the boundary banks (stoned in places) have similar spring ephemeral species together with other species typical of dry acid grasslands (such as sheep sorrel, harebell, mouse-ear-hawkweed and bushy lichens).

The wall butterfly, which favours dry banks and breeds on various grasses, was seen using the site at SO36469516 and is a U.K. Priority Species. The widespread field grasshopper could be heard 'chirping' on all the dry banks.

Wheatears are often seen along the eastern boundary fence, and a young bird was noted at SO368949. It is believed that they are breeding in the rabbit burrows which are frequent along the boundary banks. A spotted flycatcher, a U.K. Priority and Red Listed species, was also noted here carrying food and was presumably breeding nearby.

3.1.4 Marshy grassland

The term 'marshy grassland' is used to describe areas of rushy grassland that is not obviously linked to a water course. There are several patches in the semi-improved grassland on the top (**Northern Compartment**) of the hill and is likely that attempts have been made to drain it in the past. It is relatively species-poor with frequent soft rush, tufted hair grass, marsh thistle and cuckooflower. Marsh foxtail is present around the edges and in the wetter areas bog stitchwort, creeping forget-me-not, greater bird's-foot-trefoil, and lesser spearwort can be seen. It provides a feeding and potential breeding area for curlew, a U.K. Priority species, which is seen regularly across the site during the breeding season. Such grassland also provides shelter and feeding areas for other over-wintering waders such as snipe and Jack snipe.

Cuckooflower in marshy grassland

3.2 Wetlands (including wet woodland and stream)

The wetland habitats on the site are the most significant habitat from an ecological perspective. As with many habitats on the upland fringes, they do not fit comfortably into the defined mire habitats and often form a mosaic or transition between different types. The vegetation is generally tall and rush-dominated and falls into the U.K. Priority Habitats 'Purple Moor Grass and Rush Pasture' (particularly in the upper reaches), although some areas could also be described under 'Upland Flushes, Fens and Swamps'. The priority status demonstrates their importance from a nature conservation perspective. Both compartments, north and south, contain very rich but different examples of wetland (loosely labelled as flushes), and are described separately.

3.2.1 Wetlands in Southern Compartment

The wetlands in this compartment are found at the base of the slope, parallel to the stream.

Ragged robin

Star sedge

A linear flush enters the area from the Central Compartment at SO36669401. Although heavily poached by cattle and appearing slightly degraded with possible attempts at drainage, it still holds a range of wetland species including greater bird's-foot-trefoil, ragged robin, cuckooflower, marsh bedstraw, creeping forget-me-not, bog stitchwort, lesser spearwort, and marsh willowherb. Sedges include oval sedge, star sedge and common cottongrass, whilst rushes include soft rush, jointed rush, sharp-flowered rush, and bulbous rush.

Diverse flush merging with wet woodland

A little further down, the flush widens and merges with wet woodland, another U.K. Priority Habitat. Here it becomes much more diverse and less impacted.

In addition to those species already listed, less common wetland plants can be found, including marsh speedwell, lesser skullcap, common valerian, marsh violet, fen bedstraw, square-stalked St. John's wort, water mint, angelica, and Devil's-bit scabious. Lady fern is frequent, and sedges include common yellow-sedge, remote, smooth-stalked, carnation, and common sedge. This patch of wetland is home to a Nationally Scarce wetland money spider *Erigonella ignobilis* and the scabious flowers were favoured by the impressive hoverfly *Sericomyia superbiens*, a large bumblebee mimic found in the uplands.

In the more wooded areas, meadowsweet, yellow pimpernel, opposite-leaved golden saxifrage, and broad bucker fern are present. Along the streamside marsh ragwort is present.


Water mint


Sericomyia superbiens © D. Williams


Marsh ragwort

3.2.2 Wetlands in the Northern Compartment

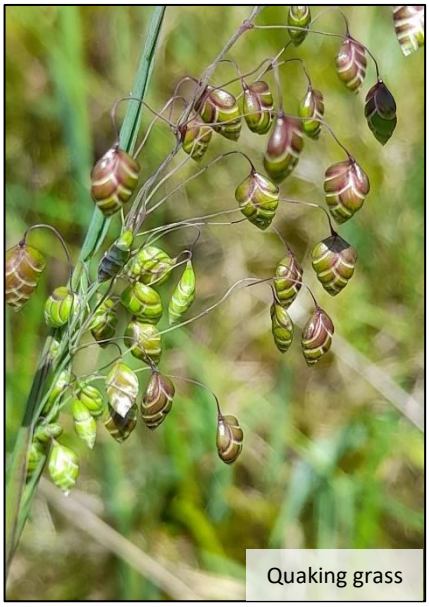
This compartment holds the most extensive and species-rich wetland of the site. Like the other wetlands, the vegetation is generally tall, dominated by sharp flowered rush, but also with soft rush and jointed rush. There are patches of tussocky grassland with both purple moor and tufted hair-grass, the latter often lining the edges of the flush. The spreading upper reaches of the flush are a classic example of 'Purple Moor Grass and Rush Pasture' with occasional heath and bilberry reflecting the area's heathland past.


Main flush

There is a truly excellent range of species throughout the flushes in this compartment. As well as those listed for the Southern Compartment (section 3.2.1), marsh violet, a declining species and key food plant for the small pearl-bordered fritillary, is frequent throughout the flush system (including in the often drier, more grassy, areas of the higher reaches).

The main confluence area (around SO36499521) is particularly diverse with frequent marsh cinquefoil as well as marsh lousewort, quaking grass, bog asphodel, water horsetail, bottle sedge and reed mace. Some of these species, such as the marsh lousewort are uncommon in the county and believed to be undergoing a marked and continuing decline. Both subspecies of heath wood-rush are also present – another local and declining species.


Marsh cinquefoil


Quaking grass


Bog asphodel

In the upper reaches there are patches of common cottongrass, hare's-tail cottongrass and sneezewort whilst around the slightly drier edges heath milkwort and lousewort (a much lower growing plant than the related, but much larger, marsh lousewort) can be found


Common cottongrass


Heath milkwort


Lousewort

At the base of the flush, in the far south-eastern corner of this compartment, a spring-fed bank has a different flora, with an extensive patch of devil's-bit scabious and bog pimpernel. The scabious is a key autumn nectar source for a range of insects especially bees and hoverflies.


Devil's-bit scabious


Ragged Robin


Bog pimpernell

In places, such as by watering holes and crossing points, poaching by cattle is extensive and has clearly caused some damage to the vegetation. However, over much of the wetland, lower levels of trampling may prove beneficial, with hoof prints creating microhabitats, exposing bare ground, and encouraging the spread of species such as marsh violet. Where open water is present, such as the drinking hole SO36449512, ivy-leaved crowfoot, common water starwort, and floating sweet-grass can be found.


Golden-ringed dragonfly


Burnet moth


Small pearl-bordered fritillary

Golden-ringed dragonflies patrol the running water throughout this compartment and the dark giant horsefly can often be spotted. Day-flying five-spot / narrow-bordered five-spot burnet moths (the abundance of greater bird's-foot trefoil in the area makes the latter species more likely) were seen in mid-July amongst the flush vegetation. The small pearl-bordered fritillary butterfly, a U.K. Priority Species, was also seen here feeding on ragged robin. The population, albeit small, is significant and is discussed further in section 4.

3.3 Hedgerows, scrub, woodland and trees

All boundaries were assessed. Their condition and composition are recorded in detail in the appendix. They are also shown on the 'Land App™'.

3.3.1 Hedgerows

At the road entrance to the **Southern Compartment**, an old trackway is lined on one side with a row of five mature ash trees which might have once extended further. The other side of the track, (the eastern boundary bank) is predominantly post and wire fence but has occasional relict trees from an old hedge-line (field maple, hawthorn, holly, and hazel,) and a stretch of a continuous but old and leggy hawthorns at the top end.

Line of ash trees

The road-side boundary in the Southern Compartment comprises an out-grown hedge with mature trees and shrubs. These include old hazel and ash trees, the latter occasionally with hollows, but with some showing signs of ash dieback.

The hedge extends along the western boundary, adjacent to the stream, in places on a raised and sometimes stoned bank. It is outgrown, often merging with the wet woodland. It is hazel-dominated with a mix of broad–leaved species, but worthy of note are two old, large-girthed common lime trees (one pictured opposite).

Lime tree

The boundary hedge which lies adjacent to the Central Compartment is very 'gappy' but has occasional hazel, gorse and crab apple present.

The old hawthorns in the hedge contain deadwood, rot-holes, and hollows, providing a home for nesting

redstart and a range of deadwood invertebrates. The hawthorn and crab apple blossom provide an essential spring nectar and pollen food source for many invertebrates (such as bees, flies and beetles). Longhorn beetles, soldier beetles, click beetles, garden chafers and weevils were particularly abundant on the blossom here in early June. The hawthorn berries provide a good food source for mammals and birds. Redwings were seen feeding here over the winter.

Crab apple blossom

In the Northern Compartment, the northernmost boundary is predominantly raised banks with post and wire fence (although occasional over-mature hawthorns, crab apples and beech trees are present). The beech trees along this boundary (including the small plantation) are worthy of note as they form the north-western limit of the well-known Linley Beeches. The Linley Beeches are a line of beech trees on top of Linley Hill (originally planted in about 1740 by Napoleonic soldiers for Robert More, owner of Linley Hall and a well-known botanist of the time).

The only recognisable, albeit largely defunct, hedge-line in the Northern Compartment lies along its western boundary. Out-with the property boundary fence it is hazel-dominated, but with mature ash, beech, blackthorn, downy birch, holly, hawthorn and willow.

3.3.2 Scrub, woodland, and trees

In the valley bottom of the **Southern Compartment** there is a diverse wet woodland, already described in section 3.2.1. As the trees spread up the bank, they become more scattered, with a drier woodland character. Here they are dominated by ash and sycamore, but also with crab apple, hawthorn, hazel, holly, pedunculate oak, rowan, and sessile oak.

Standing and fallen dead wood is present, and some of the trees have rot-holes and hollows, all of which are extremely important wildlife habitats and should be retained. Many invertebrates are dependent on wood-decay habitats, and birds, bats and mammals use rot-hollows for shelter and nesting. The understory is grazed and mostly grassy, but with patches of common dog violet, wood sorrel, lady fern and European gorse.

Standing dead-wood

Gorse scrub

Patches of gorse scrub, extensive in places and often mixed with elder, are scattered across the hillside in the Southern Compartment (providing an important nesting site for birds and a nectar and pollen source for invertebrates). Individual mature trees (most probably self-seeded) are also scattered across the hillside, comprising hawthorn, holly, rowan, and sessile oak.

There are no woodland areas in the **Northern Compartment**, but gorse scrub is present. The area around SO364948 is particularly rich in birdlife, with breeding linnets, stonechats, willow warblers and even song thrush. Green hairstreak butterflies can be seen around the gorse bushes (the larval foodplant) in May and June.

Gorse and willow scrub

In the Northern Compartment open-grown trees are largely restricted to the wet flushes, where occasional large mature grey and goat willows are a significant feature. Willow trees are an essential early nectar source for queen bumblebees emerging from hibernation, including the uncommon bilberry bumblebee.

4 Small Pearl-bordered Fritillary

The small pearl-bordered fritillary butterfly is a U.K. Priority Species which, although widespread in Scotland and Wales, has undergone a severe decline in England in recent years. There are only a few remaining breeding sites in the West Midlands, including several clustered around the Stiperstones area in South Shropshire (a particularly strong colony is established at the nearby Brook Vessons Nature Reserve). In Brook Vessons the larvae appear to have marsh violet (*Viola palustris*) as their main foodplant.

Small pearl-bordered fritillaries have long been known from the Norbury Hill region, with 33 individuals (maximum daily post-2000 count) being recorded from the current survey area on 24th June 2009 (data supplied by Butterfly Conservation). Most of the records fell into the Northern Compartment, but with some from the north-eastern corner of the Central Compartment (around SO365946).

Adult butterflies scatter their eggs on marsh violet in areas of wet grassland, seeming to prefer sheltered moist microhabitats such as in the hollows left by cattle hoofprints (pictured left). The caterpillars hatch after about two weeks and feed on the violet leaves. They then over-winter amongst the vegetation, and resume feeding the following spring (pupating in late April/May in vegetation near the violet).

The adults generally emerge from mid-May and remain active until early July. There is an occasional second brood in southern England, but it is not known from Shropshire.

As part of the survey a systematic search was made for marsh violet (and for the characteristic half-moon feeding patterns in the leaves). During the breeding season four visits were made during sunny weather to search for the adults. A map covering all three compartments shows the distribution of marsh violet and the location of adults recorded.

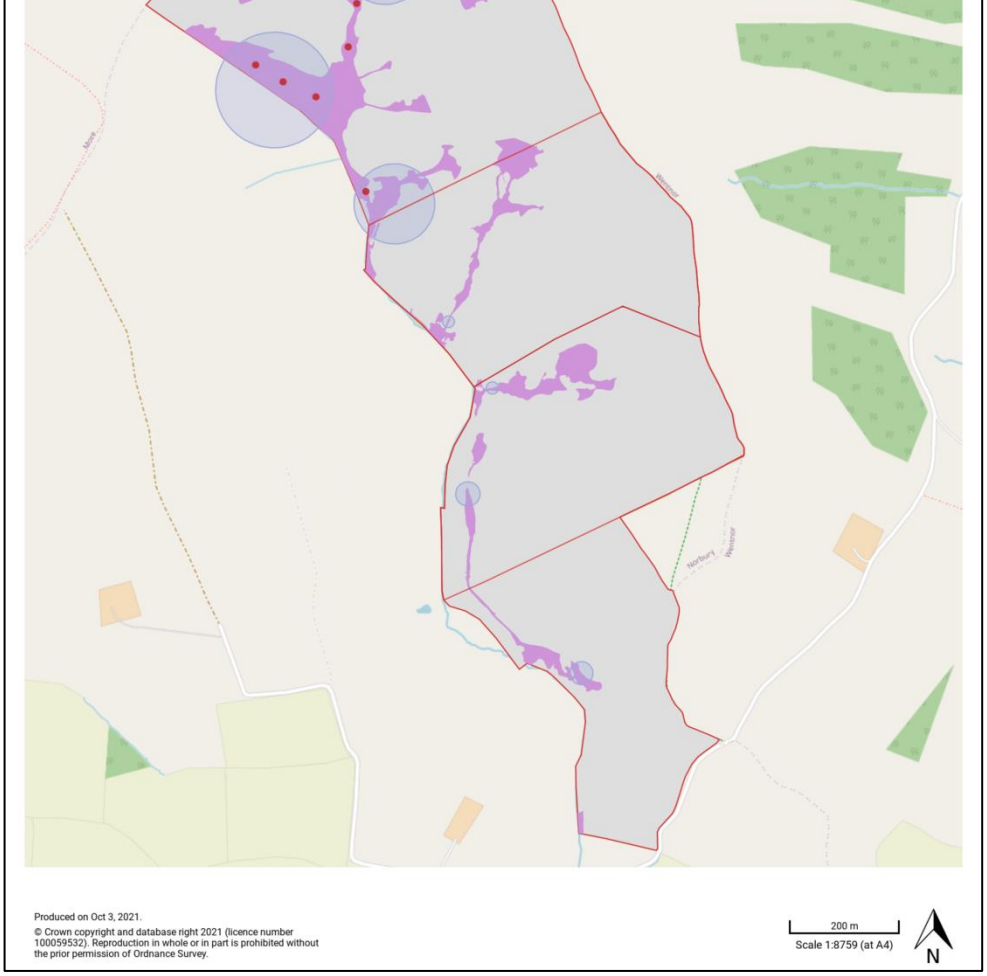
Marsh violet was abundant throughout the full extent of the flush system in the Northern Compartment, extending right up into the slightly drier areas on the plateau. In the Central Compartment marsh violet was much less common, with the most extensive patch scattered over an area of about 10x2m in the valley bottom flush around SO36659412 (often extending under the bracken). A few individual plants were recorded at the bottom of the main

flushes in this compartment, as well as a small patch in the north-western corner. Marsh violet was present (but restricted to a just few plants) in the Southern Compartment. No conclusive signs of feeding were seen on any of the leaves during the spring.

The first adult sighting was on 13/06/2021 and the latest observation, of 2 adults, was on 17/07/2021. The adults were only ever seen in low numbers with a maximum count of 5 seen at any one time on 22/06/2021. Although the number of sightings on that day was higher (up to 9), it was not possible to be certain that these were all separate individuals. All sightings were restricted to the Northern Compartment, predominantly along the length of the main flush (centred on SO364951), and on a side flush at SO362950. Here they were seen nectaring on ragged robin and marsh thistle.

Although marsh violet was plentiful throughout the Northern Compartment, there was only one area (around SO36659412) in the Central Compartment that seemed to have enough violet to potentially sustain breeding. Ideally, management would aim to increase the marsh violet areas in these central and southern flushes which could in turn help to support the expansion of the colony.

Map showing approximate positions of marsh fritillary adult sightings in 2021 (red dots) and densities of marsh violet (blue circles).



5 Appendices

5.1 Annotated Phase 1 Maps

The maps in this report were created using the 'landapp' (https://www.thelandapp.com/).

It is free to register and create projects within this app.

Using the app, Norbury Hill maps can be viewed or shared online (with named recipients); or they can be exported to other GIS systems. These data are scalable and may be displayed with different backgrounds (*e.g.,* satellite images or Ordinance Survey mapping).

'Openstreetmap' (https://www.openstreetmap.org/copyright) was selected as the base layer.

Layers may be turned on or off, as required. Viewing and manipulating the maps is free, except if Ordnance Survey data is accessed.

Additional data from the Norbury project is available through the app, including geo-referenced fixed-point photographs, habitat photographs, and plant photographs.

Southern Compartment

The land app

Steep and in places rocky acid grassland bank with scattered bracken and heath bedstraw beneath. Extensive patches of heath speedwell and mouse-ear hawkweed as well as tormentil and sheep's sorrel. Prominent sessile oak.

Mature gappy hedge with old hawthorns hosting breeding redstart. Valuable for invertebrates due to dead wood component and spring blossom.

Poor semi-improved grassland with good displays of brightly coloured waxcap fungi in the autumn.

Yellow meadow ant anthills amongst patchy acid grassland.

Flush, heavily poached in places but with ragged robin, star sedge and common cotton-grass.

Areas of gorse scrub with elder trees and occasional bramble and dog rose. Important for nesting birds and invertebrates.

Two large girth common lime trees. along old boundary - stoned in places

Wooded bank with standing and fallen deadwood, rot holes and hollows. Grassy understory with common dog violet, barren strawberry, and wood sorrel.

Diverse flush, merging with wet woodland with a good range of wetland species including Devil's-bit scabious, marsh violet, marsh speedwell, lesser skullcap, and square-stalked St John's-wort.

Line of planted old ash trees along track.

Wet woodland with frequent alder. Herb layer includes opposite-leaved golden saxifrage, meadow sweet, angelica, and yellow pimpernel.

Rocky outcrops with bird's-foot, heath and lady's bedstraw, sheep's sorrel, parsley piert, and dove's-foot cranesbill.

Heath bedstraw and pignut encroached by bracken.

Wall topped with polypody fern. Old boundary ash trees showing signs of ash dieback.

	Unimproved acid grassland
SI	Semi-improved acid grassland
SI	Poor semi-improved grassland
	Acid flush
	Dense scrub
	Semi-natural broad-leaved woodland
	Scattered bracken
	Dense bracken
Q	Quarry

50 m

Scale 1:3000 (at A3)

N

Northern Compartment

The land app

Extensive flush system with dominant sharp flowered rush and a widespread herb species including fen and marsh bedstraw, bog stitchwort, creeping forget-me-not, cuckoo flower, lesser spearwort, greater bird's-foot trefoil, marsh thistle and heath woodrush.

Purple moor -grass and rush pasture with frequent marsh violet and occasional heather and bilberry.

Stand of beeches adjacent to raised boundary bank.

Bank with acid grassland species including betony.

Tussocky flush with good patches of sneezewort, marsh violet and greater bird's-foot-trefoil.

Extremely diverse area of flush with uncommon wetland plants including marsh cinquefoil, marsh lousewort, bottle sedge, lesser skullcap, quaking grass, and a variety of small blue-green sedges.

Yellow meadow ant anthills

Boundary bank with abundant sheep's sorrel and frequent harebell and mouse-ear hawkweed.

Small pearl-boarded fritillary breeding in flushes.

Spring head with cotton grass and bog asphodel.

Banks of semi-improved acid grassland with patches of heath bedstraw and heath speedwell. Used in spring by feeding ring ouzel.

Wheatear likely to be nesting in rabbit holes along boundary bank.

Gorse scrub with green hairstreak butterfly and breeding linnet and stonechat.

Poor semi-improved grassland with abundant white clover and nectaring bilberry bumblebee.

Flushed boundary stream with marsh ragwort, lady fern, angelica, and common valerian. Patrolled by golden-ringed dragonflies.

Very diverse flush with banks of bog pimpernel and devil's-bit scabious.

	Unimproved acid grassland
SI	Semi-improved acid grassland
	Marshy grassland
SI	Poor semi-improved grassland
	Acid flush
	Dense scrub
	Broad-leaved plantation
	Scattered bracken

Produced on Oct 5, 2021.

100 m

Scale 1:3500 (at A3)

N

5.2 Grassland condition assessments

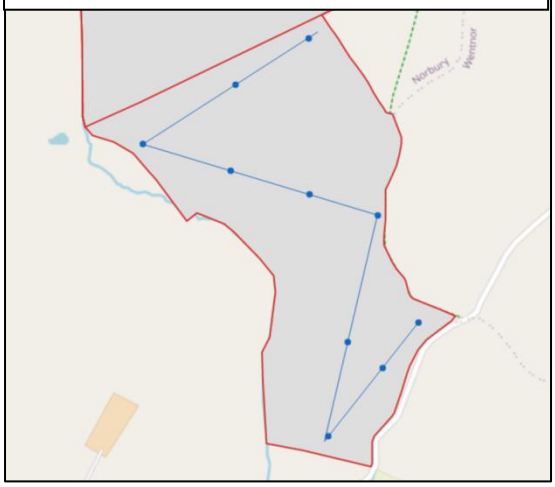
Grassland assessments were carried out on each main area of grassland (divided up by ownership and management unit). The method and interpretation followed a widely recognised 'rapid assessment technique', as detailed in Natural England's Farm Environment Plan (FEP) manual[3] and summarised by plantlife[4]. This involves a structured 'w' walk across each unit, with ten quadrats (each a metre square) analysed in *typical* areas of grassland, but excluding marsh. Although regularly spaced, the precise position of the quadrats is not important when repeating the survey. For each quadrat all herb and grass species are listed. Various aspects of the sward structure within the grassland unit are assessed, as well as the proportion of flowers to grasses (excluding negative indicators, white clover, and creeping buttercup). The cover of undesirable species, bracken, bare ground, and scrub are also recorded.

Plants are categorised as high-quality positive indicators (*i.e*. those species associated with U.K. priority habitats or local 'axiophytes'), medium-quality (*i.e.* those that were once common in U.K. grasslands, such as red clover and meadow buttercup, but are now less so due to agricultural intensification), ubiquitous species (*e.g.* dandelion and common mouse-ear) and negative indicators (*e.g.* creeping thistle, dock and nettle). Indicator species are classed as being **A**bundant, **F**requent, **O**ccasional, or **R**are, (known as DAFOR). Those plants seen on the structured walk that do not fall into a quadrat are noted as rare.

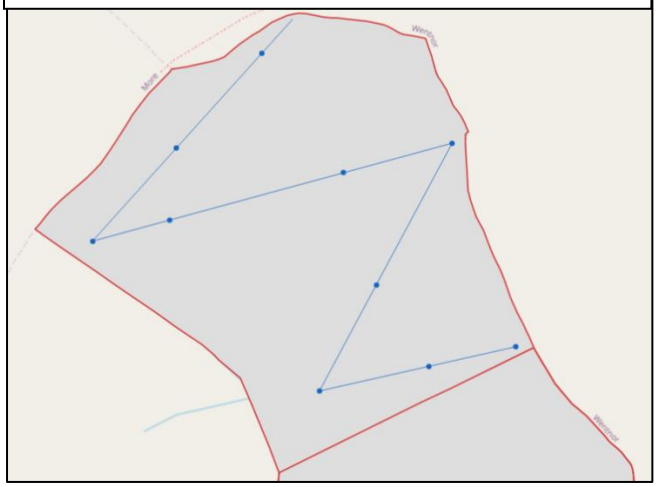
- **Abundant (A):** a species occurs in **8 or more stops** out of ten……or it's everywhere.
- **Frequent (F):** A species occurs in **between 5 and 8 stops** out of ten……or it can be found easily without much searching.
- **Occasional (O):** A species occurs in **three or four stops** out of ten……or it can be found quite quickly but with some searching.
- **Rare (R):** A species occurs in **two or less stops** out of ten……or is present but hard to find.

The maps below show the grassland areas assessed and approximate routes ('W' walks) taken.

Southern compartment (Brow Farm)



Northern compartment (Brow Farm)



[3] http://adlib.everysite.co.uk/resources/000/251/202/NE264.pdf
[4] http://www.magnificentmeadows.org.uk/assets/pdfs/How_to_identify_different_types_of_grassland.pdf

The resulting data is used to give an idea of the condition of the grassland and to categorise it as:

- **Species-rich (unimproved) grassland:** High wildlife value likely to contain uncommon species. Many species-rich grasslands qualify as **U.K. Priority Habitats**, which are considered the best and richest U.K. habitats.
- **Good semi-improved:** Agriculturally improved but diverse and with good wildlife value. High potential for restoration to species-rich grassland.
- **Poor semi-improved:** Agriculturally improved but with some diversity and wildlife value. May have some potential for restoration to species-rich grassland but likely to require intervention.
- **Improved grassland:** Agriculturally improved and species-poor with low potential for restoration to more diverse grassland without significant intervention.

The grassland tended to be a mixture of several of the above categories and this distribution is reflected in the maps and described in the main body of the report.

Date of survey: 12/6/2021		**Southern Compartment**	**Northern Compartment**
Composition: richness	Average number of species per m^2, including grasses	12	8.6
Composition: herb:grass	Herb: grass ratio (percentage cover of wildflowers)	14.1	9.3
Composition: positive indicators	Number of medium-quality indicators	9	6
	Frequency of medium-quality indicators	3O; 6R	1F; 5R
	Number of high-quality indicators	10	6
	Frequency of high-quality indicators	1O; 9R	1O; 5R
	Frequency of fine-leaved grasses [% stops]	50	80
Composition: negative indicators	Percentage cover of undesirables	0.5	0.5
	Percentage cover of dense bracken	10	0
Structure: grazing and management impacts	% Cover of scrub/shrub	10	0.5
	% Cover of extensive bare ground	0.5	0.5
	Are small areas of bare ground present within the sward - [Y/N]	y	y
	Average sward height [number]	15	7
	If grazed, are tussocks frequent?	y	y
	Frequency of flowering of herbs and grasses [%age stops]	90	100

Table showing the frequency of grasses and herbs recorded from 'w' walk quadrats

Compart-ment	Indicator Category	Species Name	DAFOR	Compart-ment	Indicator Category	Species Name	DAFOR
Northern	high	autumn hawkbit	R	Southern	high	autumn hawkbit	R
Northern	high	heath bedstraw	O	Southern	high	heath bedstraw	R
Northern	high	heath speedwell	R	Southern	high	heath speedwell	R
Northern	high	mouse-ear-hawkweed	R	Southern	high	mouse-ear-hawkweed	R
Northern	high	pignut	R	Southern	high	oval sedge	R
Northern	high	sheep's sorrel	R	Southern	high	parsley-piert	O
Northern	medium	bulbous buttercup	R	Southern	high	pignut	R
Northern	medium	common sorrel	R	Southern	high	sheep's sorrel	R
Northern	medium	cuckooflower	R	Southern	high	tormentil	R
Northern	medium	germander speedwell	R	Southern	high	wild thyme	R
Northern	medium	meadow buttercup	F	Southern	medium	bulbous buttercup	R
Northern	medium	yarrow	R	Southern	medium	common sorrel	R
Northern	negative	bracken	O	Southern	medium	field wood-rush	R
Northern	negative	common nettle	R	Southern	medium	germander speedwell	O
Northern	negative	creeping thistle	R	Southern	medium	lesser stitchwort	R
Northern	other	common mouse-ear	O	Southern	medium	lesser trefoil	R
Northern	other	dandelion	O	Southern	medium	meadow buttercup	O
Northern	other	European gorse	R	Southern	medium	selfheal	R
Northern	other	foxglove	R	Southern	medium	yarrow	O
Northern	other	spear thistle	O	Southern	negative	bracken	R
Northern	other	thyme-leaved speedwell	R	Southern	negative	common nettle	R
Northern	other	white clover	F	Southern	negative	creeping thistle	R
Northern	grass	common bent	F	Southern	other	common mouse-ear	F
Northern	grass	crested dog's tail	R	Southern	other	dandelion	A
Northern	grass	perennial rye-grass	O	Southern	other	European gorse	R
Northern	grass	red fescue	A	Southern	other	field speedwell	R
Northern	grass	rough meadow-grass	R	Southern	other	marsh thistle	R
Northern	grass	sheep's fescue	R	Southern	other	thyme-leaved speedwell	R
Northern	grass	smooth meadow grass	A	Southern	other	white clover	F
Northern	grass	sweet vernal grass	O	Southern	grass	cock's-foot	R
Northern	grass	tufted hair grass	R	Southern	grass	common bent	O
Northern	grass	Yorkshire fog	F	Southern	grass	creeping bent	O
				Southern	grass	crested dog's tail	F
				Southern	grass	mat grass	R
				Southern	grass	perennial rye-grass	A
				Southern	grass	red fescue	F
				Southern	grass	rough meadow-grass	F
				Southern	grass	sheep's fescue	R
				Southern	grass	smooth meadow grass	A
				Southern	grass	sweet vernal grass	O
				Southern	grass	Timothy	R
				Southern	grass	tufted hair grass	R
				Southern	grass	velvet bent	R
				Southern	grass	Yorkshire fog	F

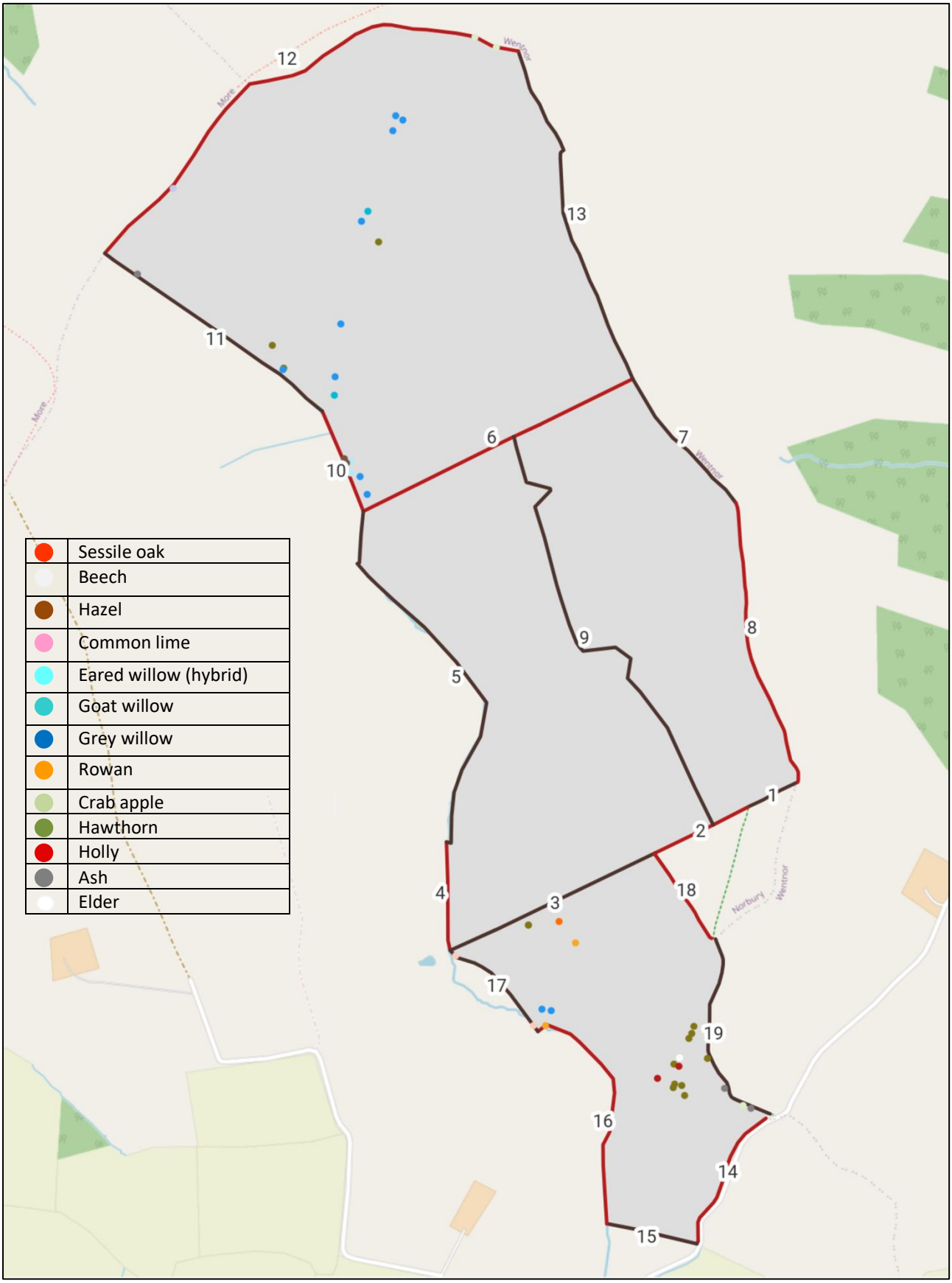
5.3 Hedgerow Assessments and Trees

All boundaries were recorded, and hedgerows assessed using a widely recognised approach (as detailed in Natural England's Farm Environment Plan (FEP) manual[5]) which captures their structure and diversity.

Boundary ref	Shape/ management	Av no. species / 30m	Woody species - dominant species underlined	Mature standards	Av. ht. (m)	Av. width (m)	% big gaps	Comments
1-2	Described in part 1 of report (Central Compartment)							
3	Hedge. Tall and leggy/ unmanaged	1	**Hawthorn**, crab apple, gorse, hazel, holly		6	5	60	On Brow Hill Farm side of boundary fence. Defunct. Heavily grazed.
4-5	Described in part 1 of report (Central Compartment)							
6	Post and wire fence							Evidence of low bank in NE.
7-9	Described in part 1 of report (Central Compartment)							
10	Hedge. Untrimmed / unmanaged	4	**Hazel, eared willow hybrid**, downy birch, gorse, hawthorn, holly		7	5	60	Outwith property boundary. Defunct in general although complete in northern section.
11	Hedge. Untrimmed /unmanaged	3	**Hazel**, blackthorn, downy birch, goat willow, gorse, grey willow, hawthorn	ash, beech	6	4	50	Mainly outwith property. Defunct with scattered mature trees in north-western section.
12	Post and wire fence							Defunct as a hedge since at least 1970. Now a fenced raised bank with a few planted beech and over-mature crab apples and hawthorns.
13	Post and wire fence							Defunct as a hedge since at least 1970. Now a fenced raised bank
14	Hedge. Outgrown /unmanaged	5	**Ash, blackthorn**, crab apple, dog rose, elder, field maple, hawthorn, holly, hazel, sycamore		12	9	0	Outwith property boundary. Mature trees and shrubs lining road. Stone wall south of bottom gate.
15	Hedge. Tall and leggy / unmanaged	2	**Hazel**, ash, blackthorn, hawthorn, holly	ash	10	7	20	Outwith property boundary. Gappy at base and largely defunct.
16	Hedge. Tall/unmanaged	3	**Alder, hazel, holly**, ash, crack willow, dog rose, gorse, guelder rose, hawthorn, rowan	sessile oak	10	N/A	0	Outwith property boundary. On raised bank in places. Gappy at base and merging with wet woodland.
17	Hedge. Tall/unmanaged	3	**Hazel**, ash, gorse, grey willow, hawthorn, holly, rowan	common lime	10	7	<5	On Brow Hill Farm side of boundary fence. Intact but gappy at base. On walled bank in places.
18	Hedge. Tall, leggy/ unmanaged	1	**Hawthorn**		6	4	<10	On Brow Hill Farm side of boundary fence. Gappy at base. Heavily grazed.
19	Post and wire fence		Field maple, hawthorn, holly, hazel					Defunct as a hedge. A few old specimens remain on raised bank.

[5] http://adlib.everysite.co.uk/resources/000/251/202/NE264.pdf

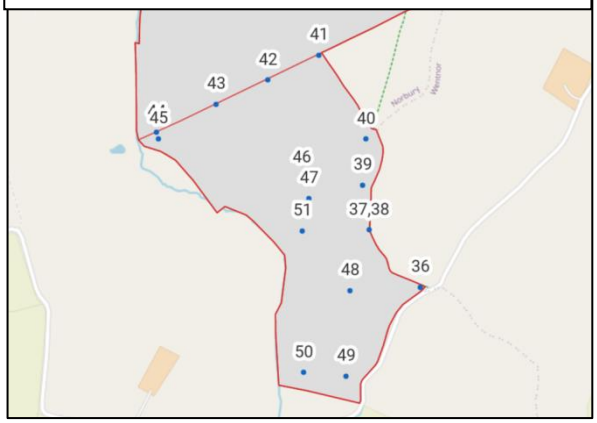
Map showing boundary reference numbers and the distribution of open grown trees (excluding woodlands and hedgerows).



5.4 Fixed point photographs

A series fixed point photographs were taken from strategic points across all compartments. The positions are recorded to allow them to be easily repeated to illustrate any gross changes. The georeferenced images can be viewed online using the 'landapp', and a high-resolution copy of each is also retained. The details of each image location and a contact sheet are shown below.

Southern Compartment (Brow Farm)



Northern Compartment (Brow Farm)

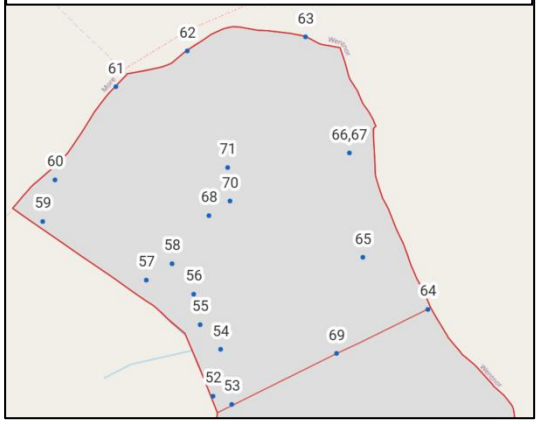
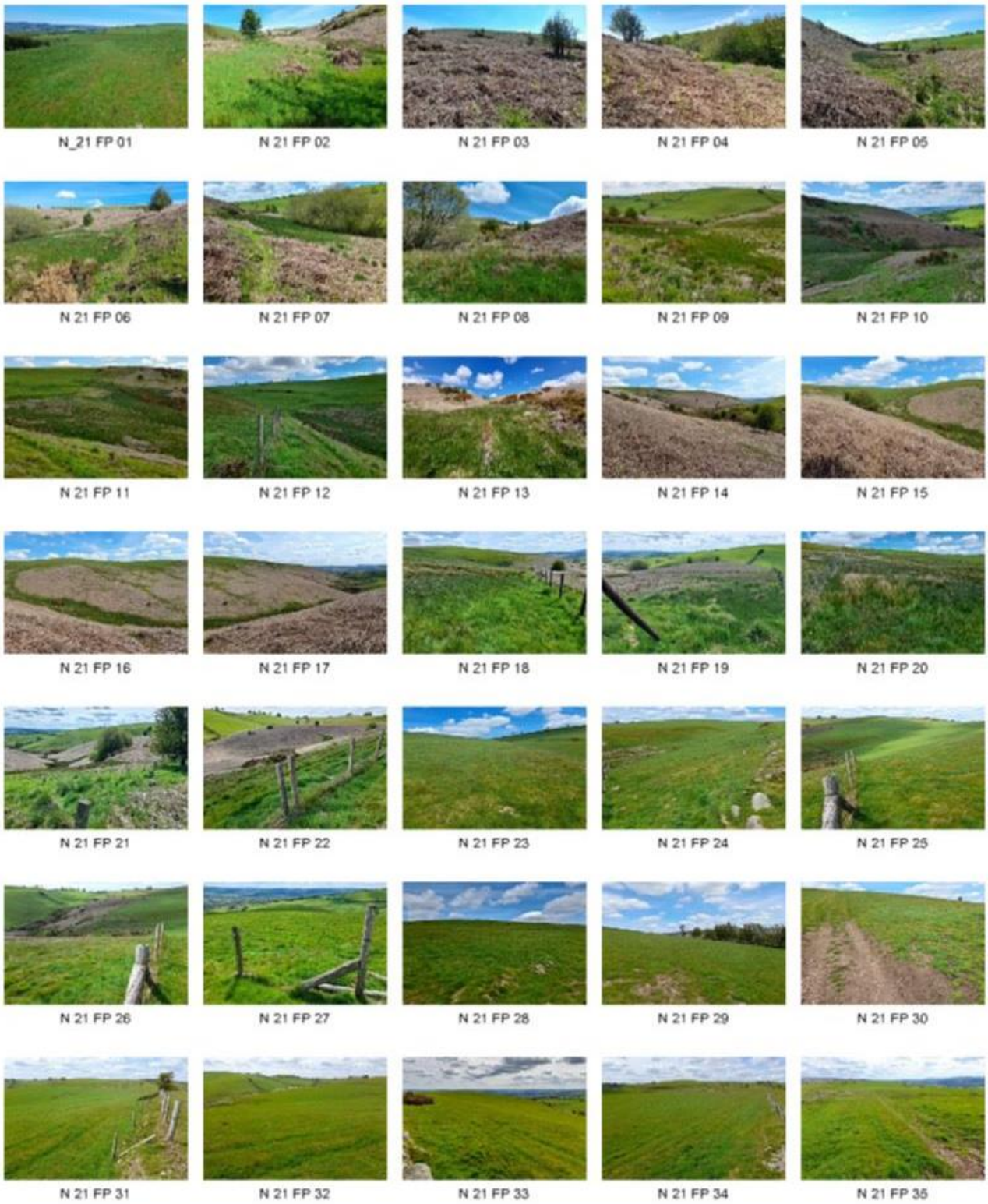


Photo	Location	Date	Orientation	Comment
N21 FP1-35	Details given in Part 1 of the report (Central Section)			
N 21 FP 36	SO37129372	14/06/2021	WSW	From gate
N 21 FP 37	SO37039383	14/06/2021	NNW	From hawthorn
N 21 FP 38	SO37039383	14/06/2021	N	From hawthorn
N 21 FP 39	SO37019391	14/06/2021	WNW	16 m from fence bend on break of slope
N 21 FP 40	SO37029399	14/06/2021	SW	On flat area at end of path
N 21 FP 41	SO36939414	14/06/2021	SE	Mid-gate
N 21 FP 42	SO36849410	14/06/2021	SSE	From fence
N 21 FP 43	SO36759405	14/06/2021	SW	From fence
N 21 FP 44	SO36649400	14/06/2021	ESE	Mid-gate
N 21 FP 45	SO36649399	14/06/2021	ENE	12m from gate
N 21 FP 46	SO36909392	14/06/2021	S	From gorse edge
N 21 FP 47	SO36929388	14/06/2021	WNW	From track at gorse edge
N 21 FP 48	SO36999372	14/06/2021	NNW	From track by quarry
N 21 FP 49	SO36999356	14/06/2021	NNE	From water trough
N 21 FP 50	SO36919357	14/06/2021	N	From outcrop
N 21 FP 51	SO36919382	14/06/2021	NW	From edge of wood
N 21 FP 52	SO36469474	14/06/2021	NE	From fence
N 21 FP 53	SO36509472	14/06/2021	NW	From strainer
N 21 FP 54	SO36479482	14/06/2021	NW	From gorse
N 21 FP 55	SO36449489	14/06/2021	N	By willow
N 21 FP 56	SO36429494	14/06/2021	E	
N 21 FP 57	SO36329498	14/06/2021	SE	By hawthorn
N 21 FP 58	SO36379501	14/06/2021	NE	From gorse
N 21 FP 59	SO36119509	14/06/2021	SE	10 m from ash
N 21 FP 60	SO36139518	14/06/2021	SE	20 m from fence
N 21 FP 61	SO36259536	14/06/2021	SE	From fence
N 21 FP 62	SO36409544	14/06/2021	ESE	From fence
N 21 FP 63	SO36659547	14/06/2021	SW	From crab apple
N 21 FP 64	SO36909491	14/06/2021	NNW	Mid-gate
N 21 FP 65	SO36779502	18/06/2021	N	From top of hill
N 21 FP 66	SO36749523	18/06/2021	NW	From high point
N 21 FP 67	SO36749523	18/06/2021	SSW	From high point
N 21 FP 68	SO36459511	18/06/2021	NNW	7 m from stream
N 21 FP 69	SO36719482	22/06/2021	NW	From fence boundary
N 21 FP 70	SO36499513	22/06/2021	S	From hawthorn
N 21 FP 71	SO36499520	22/06/2021	ESE	From confluence of flushes

Contact prints for fixed point photographs numbers 36-70



5.5 Species List

A full species list of plants and animals recorded during the survey (all compartments) is given below. Historic records that were not re-recorded in 2021 are noted in blue. Historic records that cannot be pin-pointed to the site (*e.g*. those with 4 figure grid references) are not included.

PLANTS AND FUNGI				
Scientific Name	**Common Name**		**Scientific Name**	**Common Name**
Ferns and Horsetails			*Carex remota*	remote sedge
Athyrium filix-femina	lady-fern		*Carex rostrata*	bottle sedge
Blechnum spicant	hard-fern		*Carex vesicaria*	bladder-sedge
Dryopteris carthusiana	narrow buckler-fern		*Cerastium fontanum*	common mouse-ear
Dryopteris dilatata	broad buckler-fern		*Cerastium glomeratum*	sticky mouse-ear
Dryopteris filix-mas agg.	male fern		*Ceratocapnos claviculata*	climbing corydalis
Equisetum fluviatile	water horsetail		*Chamaenerion angustifolium*	rosebay willowherb
Oreopteris limbosperma	lemon-scented fern		*Chrysosplenium oppositifolium*	opposite-leavd golden-saxifrage
Polypodium vulgare	common polypody		*Cirsium arvense*	creeping thistle
Pteridium aquilinum	bracken		*Cirsium palustre*	marsh thistle
			Cirsium vulgare	spear thistle
Flowering plants			*Conopodium majus*	pignut
Acer pseudoplatanus	sycamore		*Corylus avellana*	hazel
Achillea millefolium	yarrow		*Crataegus monogyna*	hawthorn
Achillea ptarmica	sneezewort		*Crepis capillaris*	smooth hawksbeard
Agrostis canina	velvet bent		*Cynosurus cristatus*	crested dog's-tail
Agrostis capillaris	common bent		*Cytisus scoparius*	broom
Agrostis stolonifera	creeping bent		*Dactylis glomerata*	cock's-foot
Aira praecox	early hairgrass		*Dactylorhiza fuchsii*	common spotted-orchid
Ajuga reptans	bugle		*Danthonia decumbens*	heath-grass
Alnus glutinosa	alder		*Deschampsia cespitosa*	tufted hair-grass
Alopecurus geniculatus	marsh foxtail		*Deschampsia flexuosa*	wavy hair-grass
Anagallis tenella	bog pimpernell		*Digitalis purpurea*	foxglove
Anemone nemorosa	wood anemone		*Drosera rotundifolia*	round-leaved sundew
Angelica sylvestris	wild angelica		*Epilobium hirsutum*	great willowherb
Anthoxanthum odoratum	sweet vernal-grass		*Epilobium obscurum*	short-fruited willowherb
Aphanes arvensis	parsley piert		*Epilobium palustre*	marsh willowherb
Arrhenatherum elatius	false oat grass		*Eriophorum angustifolium*	common cottongrass
Bellis perennis	daisy		*Eriophorum vaginatum*	hare's-tail cottongrass
Betula pubescens	downy birch		*Erophila verna*	common whitlowgrass
Briza media	quaking-grass		*Fagus sylvatica*	beech
Bromus hordeaceus	lesser soft-brome		*Festuca ovina agg.*	sheep's fescue
Callitriche stagnalis	common water-starwort		*Festuca rubra agg.*	red fescue
Calluna vulgaris	heather		*Filipendula ulmaria*	meadowsweet
Caltha palustris	marsh-marigold		*Fraxinus excelsior*	ash
Campanula rotundifolia	harebell		*Galium aparine*	cleavers
Cardamine flexuosa	wavy bittercress		*Galium palustre*	marsh-bedstraw
Cardamine hirsuta	hairy bittercress		*Galium saxatile*	heath bedstraw
Cardamine pratensis	cuckooflower		*Galium uliginosum*	fen bedstraw
Carex caryophyllea	spring-sedge		*Galium verum*	ladies bedstraw
Carex demissa	common yellow-sedge		*Geranium molle*	dove's-foot cranesbill
Carex echinata	star sedge		*Geranium robertianum*	herb-robert
Carex flacca	glaucous sedge		*Glechoma hederacea*	ground ivy
Carex hostiana	tawny sedge		*Glyceria declinata*	small sweet-grass
Carex laevigata	smooth stalked sedge		*Glyceria fluitans*	floating sweet-grass
Carex leporina	oval sedge		*Holcus lanatus*	Yorkshire-fog
Carex nigra	common sedge		*Holcus mollis*	creeping soft-grass
Carex panicea	carnation sedge		*Hyacinthoides non-scripta*	bluebell
Carex pilulifera	pill sedge		*Hydrocotyle vulgaris*	marsh pennywort
Carex pulicaris	flea sedge		*Hypericum tetrapterum*	square-stalked St John's-wort

……..PLANTS AND FUNGI continued				
Scientific Name	**Common Name**		**Scientific Name**	**Common Name**
Hypochaeris radicata	cat's-ear		*Rubus fruticosus*	bramble
Isolepis setacea	bristle club-rush		*Rumex acetosa*	common sorrel
Ilex aquifolium	holly		*Rumex acetosella*	sheep's sorrel
Juncus acutiflorus	sharp-flowered rush		*Rumex obtusifolius*	broad-leaved dock
Juncus articulatus	jointed rush		*Sagina procumbens*	procumbent pearlwort
Juncus bufonius agg.	toad rush		*Salix alba*	white willow
Juncus bulbosus	bulbous rush		*Stachys officinalis*	betony
Juncus conglomeratus	compact rush		*Stellaria alsine*	bog stitchwort
Juncus effusus	soft-rush		*Stellaria graminea*	lesser stitchwort
Juncus squarrosus	heath rush		*Stellaria holostea*	greater stitchwort
Leontodon autumnalis	autumnal hawkbit		*Stellaria media*	common chickweed
Lolium perenne	perennial rye-grass		*Succisa pratensis*	devil's-bit scabious
Lonicera periclymenum	honeysuckle		*Taraxacum officinale agg.*	dandelion
Lotus corniculatus	common bird's-foot-trefoil		*Thymus polytrichus*	wild thyme
Lotus pedunculatus	greater bird's-foot-trefoil		*Tilia x europaea*	common lime
Luzula campestris	field wood-rush		*Trifolium dubium*	lesser trefoil
Luzula multiflora	heath wood-rush		*Trifolium pratense*	red clover
L. multiflora ssp congesta	heath wood-rush		*Trifolium repens*	white clover
Malus sylvestris	crab apple		*Typha latifolia*	reed mace
Mentha aquatica	water mint		*Ulex europaeus*	European gorse
Moenchia erecta	upright chickweed		*Ulex gallii*	western gorse
Molinia caerulea	purple moor-grass		*Urtica dioica*	common nettle
Montia fontana	blinks		*Vaccinium myrtillus*	bilberry
Myosotis discolor	changing forget-me-not		*Valeriana dioica*	marsh valerian
Myosotis secunda	creeping forget-me-not		*Valeriana officinalis*	common valerian
Nardus stricta	mat-grass		*Veronica agrestis*	green field-speedwell
Narthecium ossifragum	bog asphodel		*Veronica arvensis*	wall speedwell
Ornithopus perpusillus	bird's-foot		*Veronica beccabunga*	brooklime
Oxalis acetosella	wood sorrel		*Veronica chamaedrys*	germander speedwell
Pedicularis palustris	marsh lousewort		*Veronica officinalis*	heath speedwell
Pedicularis sylvatica	lousewort		*Veronica persica*	common field speedwell
Phleum pratense	timothy		*Veronica scutellata*	marsh speedwell
Pilosella officinarum	mouse-ear-hawkweed		*Veronica serpyllifolia*	thyme-leaved speedwell
Plantago lanceolata	ribwort plantain		*Vicea sepium*	bush vetch
Poa angustifolia	narrow-leaved meadow-grass		*Viola lutea*	mountain pansy
Poa annua	annual meadow-grass		*Viola palustris*	marsh violet
Poa pratense subsp. irrigata	spreading meadow-grass		*Viola riviniana*	common dog violet
Poa trivialis	rough meadow-grass		*Vulpia bromoides*	squirrel-tail fescue
Polygala serpyllifolia	heath milkwort			
Potamogeton polygonifolious	pond weed		**Mosses and Liverworts**	
Potentilla anglica	trailing tormentil		*Calliergonella cuspidata*	pointed spear-moss
Potentilla erecta	tormentil		*Polytrichum commune*	common haircap
Potentilla palustris	marsh cinquefoil		*Rhytidiadelphus squarrosus*	springy turf-moss
Potentilla sterilis	barren strawberry		*Riccia sorocarpa*	common crystalwort
Prunella vulgaris	selfheal		*Schistostega pennata*	goblin gold
Prunus spinosa	blackthorn		*Scleropodium purum*	neat feather-moss
Quercus petraea	sessile oak		*Sphagnum fallax*	flat-topped bog-moss
Quercus robur	pedunculate oak		*Sphagnum palustre*	blunt-leaved bog-moss
Ranunculus acris	meadow buttercup		*Sphagnum papillosum*	papillose bog-moss
Ranunculus bulbosus	bulbous buttercup		*Sphagnum subnitens*	lustrous bog-moss
Ranunculus ficaria	lesser celandine			
Ranunculus flammula	lesser spearwort		**Fungi**	
Ranunculus hederaceus	ivy-leaved crowfoot		*Agaricus arvensis*	horse mushroom
Ranunculus omiophyllus	round-leaved crowfoot		*Agaricus campestris*	field mushroom
Ranunculus repens	creeping buttercup		*Armillaria mellea*	honey fungus
Rosa canina agg.	dog rose		*Clavulinopsis corniculata*	meadow coral

……..PLANTS AND FUNGI continued				
Scientific Name	**Common Name**		**Scientific Name**	**Common Name**
Clavulinopsis fusiformis	golden spindles		*hygrocybe psittacina*	parrot waxcap
Clitocybe nuda	wood blewit		*hygrocybe punicea*	crimson waxcap
Cordyceps militaris	scarlet caterpillar fungus		*Hygrocybe virginia*	snowy waxcap
Hygrocybe ceracea	butter waxcap		*Macrolepiota procera*	parasol
hygrocybe chlorophana	golden waxcap		*Protostropharia semiglobata*	dung roundhead
Hygrocybe conica	blackening waxcap		*Psilocybe semilanceata*	magic mushroom
Hygrocybe pratensis	meadow waxcap			

ANIMALS (Vertebrates)				
Scientific Name	**Common Name**		**Scientific Name**	**Common Name**
Amphibians			**Birds continued**	
Rana temporaria	frog		*Numenius arquata*	curlew
			Oenanthe oenanthe	wheatear
Birds			*Phasianus colchicus*	pheasant
Aegithalos caudatus	long-tailed tit		*Phoenicurus phoenicurus*	redstart
Alauda arvensis	skylark		*Phylloscopus collybita*	chiff chaff
Anas platyrhynchos	mallard		*Phylloscopus trochilus*	willow warbler
Anthus pratensis	meadow pipit		*Pica pica*	magpie
Apus apus	swift		*Picus viridis*	green woodpecker
Buteo buteo	buzzard		*Prunella modularis*	dunnock
Carduelis carduelis	gold finch		*Saxicola rubicola*	stonechat
Columba palumbus	woodpigeon		*Sturnus vulgaris*	starling
Corvus corax	raven		*Troglodytes troglodytes*	wren
Corvus corone	carrion crow		*Turdus iliacus*	redwing
Cuculus canorus	cuckoo		*Turdus merula*	blackbird
Curruca communis	whitethroat		*Turdus philomelos*	song thrush
Emberiza citrinella	yellowhammer		*Turdus torquatus*	ring ouzel
Emberiza schoeniclus	reed bunting			
Erithacus rubecula	robin		**Mammal**	
Falco tinnunculus	kestrel		*Lepus europaeus*	brown hare
Fringilla coelebs	chaffinch		*Meles meles*	badger (latrines)
Gallinago gallinago	snipe		*Microtus agrestis*	field vole
Garrulus glandarius	Jay		*Oryctolagus cuniculus*	rabbit
Hirundo rustica	swallow		*Talpa europaea*	mole (hill)
Linaria cannabina	linnet		*Vulpes vulpes*	red fox (scats)
Lymnocryptes minimus	Jack snipe			
Milvus milvus	red kite		**Reptile**	
Muscicapa striata	spotted flycatcher		*Zootoca vivipara*	common lizard

ANIMALS (Invertebrates)				
Scientific Name	**Common Name**		**Scientific Name**	**Common Name**
Arachnids - harvestman (Opiliones)			**Arachnids - spider (Araneae)**	
Dicranopalpus ramosus agg.	a harvestman		*Centromerita bicolor*	a money spider
Leiobunum rotundum	a harvestman		*Centromerita concinna*	a money spider
Paroligolophus agrestis	a harvestman		*Ceratinella brevipes*	a money spider
Phalangium opilio	a harvestman		*Erigonella hiemalis*	a money spider
			Erigonella ignobilis	a money spider [NS]
Arachnids - mites (Acari)			*Hypomma bituberculatum*	a money spider
Eriophyes laevis	alder leaf gall		*Kaestneria pullata*	a money spider
Araneus quadratus	four-spotted Orbweb spider		*Larinioides cornutus*	an orb web spider
Bathyphantes gracilis	a money spider		*Lophomma punctatum*	a money spider
Bolyphantes luteolus	a money spider		*Metellina segmentata s. str.*	a long-jawed orbweb spider

……ANIMALS (Invertebrates) continued

Scientific Name	Common Name
Arachnids - spider (Araneae) continued	
Neriene clathrata	a money spider
Neriene peltata	a money spider
Oedothorax gibbosus	a money spider
Oedothorax retusus	a money spider
Pachygnatha clercki	a long-jawed orbweb spider
Pachygnatha degeeri	a long-jawed orbweb spider
Palliduphantes pallidus	a money spider
Pelecopsis parallela	a money spider
Pisaura mirabilis	nursery web spider
Tenuiphantes tenuis	a money spider
Gastropod - slug (Stylommatophora)	
Arion flagellus	Durham slug
Insect - ants, bees & wasps (Hymenoptera)	
Andrena bicolor	a mining bee
Andrena cineraria	ashy mining bee
Andrena fulva	tawny mining bee
Andricus kollari	marble gall
Bombus hypnorum	tree bumblebee
Bombus lapidarius	red-tailed bumblebee
Bombus monticola	bilberry bumblebee
Bombus pascuorum	common carder bee
Bombus terrestris	buff-tailed bumblebee
Formica fusca	dusky ant
Lasius flavus	yellow meadow ant
Myrmica ruginodis	an ant
Myrmica scabrinodis	an ant
Vespula germanica	german wasp
Insect - barkfly (Psocoptera)	
Ectopsocus briggsi	a barkfly
Insect - beetle (Coleoptera)	
Abax parallelepipedus	a ground beetle
Agriotes pallidulus	a click beetle
Agriotes sputator	a click beetle
Amara tibialis	a ground beetle
Anaspis maculata	a false flower beetles
Andrion regensteinense	a weevil
Anoplotrupes stercorosus	woodland dor beetle
Anthonomus pedicularius	a weevil
Aphodius ater	a dung beetle
Aphodius contaminatus	a dung beetle
Athous haemorrhoidalis	a click beetle
Byturus tomentosus	raspberry beetle
Calodromius spilotus	a ground beetle
Cantharis flavilabris	a soldier beetle
Cantharis pellucida	a soldier beetle
Cantharis rustica	a soldier beetle
Ceratapion onopordi	A weevil
Coccinella septempunctata	7-spot ladybird
Crepidodera aurata	a flea beetle

Scientific Name	Common Name
Insect - beetle (Coleoptera) continued	
Crepidodera fulvicornis	a flea beetle
Ctenicera cuprea	a click beetle
Dalopius marginatus	a click beetle
Denticollis linearis	a click beetle
Elodes marginata	a marsh beetle
Exapion ulicis	gorse weevil
Exochomus quadripustulatus	pine ladybird
Grammoptera ruficornis	a longhorn beetle
Hylecoetus dermestoides	ship timber beetle
Ischnopterapion modestum	a weevil
Ischnopterapion virens	a weevil
Longitarsus flavicornis	a flea beetle
Melanotus castanipes	a click beetle
Nedyus quadrimaculatus	small nettle weevil
Neocoenorrhinus aequatus	a weevil
Otiorhynchus singularis	a weevil
Phyllopertha horticola	garden chafer
Propylea quattuordecimpunctata	14-spot ladybird
Prosternon tessellatum	a click beetle
Protapion fulvipes	white clover seed weevil
Protopirapion atratulum	a weevil
Pterostichus madidus	a ground beetle
Rhagium bifasciatum	two-banded longhorn beetle
Rhagonycha fulva	common red soldier beetle
Rhagonycha lignosa	a soldier beetle
Rhagonycha testacea	a soldier beetle
Sphaeroderma testaceum	a flea beetle
Stenus bimaculatus	a rove beetle
Stenus clavicornis	a rove beetle
Stenus flavipes	a rove beetle
Stenus fulvicornis	a rove beetle
Stenus subaeneus	a rove beetle
Tetrops praeustus	plum beetle
Trichosirocalus troglodytes	a weevil
Insect - butterflies & moths (Lepidoptera)	
Adela reaumurella	green longhorn moth
Aglais io	peacock
Aglais urticae	small tortoishell
Anthophila fabriciana	nettle-tap
Aphantopus hyperantus	ringlet
Arctia caja	garden tiger moth
Artogeia napi	green-veined white
Autographa gamma	silver-y
Boloria selene	small pearl-bordered fritillary
Callophrys rubi	green hairstreak
Coenonympha pamphilus	small heath
Colostygia pectinataria	green carpet
Deilephila elpenor	elephant hawk moth
Epinotia nisella	grey poplar bell
Euthrix potatoria	the drinker moth
Lasiommata megera	wall brown
Lycaena phlaeas	small copper
Lyonettia clerkella	apple Leaf Miner

……ANIMALS (Invertebrates) continued

Scientific Name	Common Name
Insect - butterflies & moths (Lepidoptera)	
Maniola jurtina	meadow brown
Ochlodes sylvanus	large skipper
Omphaloscelis lunosa	lunar underwing
Pararge aegeria	speckled wood
Petrophora chlorosata	brown siver-lines
Pieris brassicae	large white
Pieris rapae	small white
Polyommatus icarus	common blue
Pyronia tithonus	gatekeeper
Thymelicus lineola	Essex skipper
Thymelicus sylvestris	small skipper
Tyria jacobaeae	cinnabar moth
Vanessa atalanta	red admiral
Vanessa cardui	painted lady
Xanthorhoe montanata	silver-ground carpet
Zygaena trifolii/lonicerae	5-spot Burnet agg
Insect - dragonflies & damselflies (Odonata)	
Aeshna cyanea	southern hawker
Aeshna grandis	brown hawker
Aeshna juncea	common hawker
Calopteryx virgo	beautiful demoiselle
Coenagrion puella	azure blue damselfly
Cordulegaster boltonii	golden-ringed dragonfly
Enallagma cyathigerum	common blue damselfly
Pyrrhosoma nymphula	large red damselfy
Sympetrum striolatum	common darter
Insect - earwigs (Dermaptera); grasshoppers (Orthoptera)	
Chorthippus brunneus	field grasshopper
Chorthippus parallelus	meadow grasshopper
Omocestus viridulus	common green grasshopper
Tetrix undulata	common groundhopper
Insect - lacewing (Neuroptera); springtail (Collembola)	
Chrysoperla carnea	lacewing
Pogonognathellus longicornis	a springtail
Insect - true bug (Hemiptera)	
Anthocoris nemorum	common flower bug
Aphrophora alni	alder spittlebug
Arthaldeus pascuellus	a planthopper
Arytaina genistae	a psyllid
Capsus ater	a mirid bug
Cercopis vulnerata	red-and-black froghopper
Cicadella viridis	green leafhopper
Conomelus anceps	a planthopper
Conosanus obsoletus	a planthopper
Coreus marginatus	dock bug
Delphacodes venosus	a planthopper
Dictyonota strichnocera	a lacebug
Dolycoris baccarum	sloe bug
Eupteryx urticae	a planthopper

Scientific Name	Common Name
Insect - true bug (Hemiptera) continued	
Euscelis incisus	a planthopper
Euscelis lineolatus	a planthopper
Fagocyba cruenta	a planthopper
Florodelphax leptosoma	a planthopper
Lygus rugulipennis	tarnished plant bug
Muellerianella fairmairei	a planthopper
Nabis lineatus	reed damsel bug
Nabis rugosus	common damsel bug
Neottiglossa pusilla	small grass shieldbug
Palomena prasina	green shieldbug
Pantilius tunicatus	a mirid bug
common froghopper	*Philaenus spumarius*
Piezodorus lituratus	gorse shieldbug
Platycranus bicolor	a mirid bug
Psammotettix confinis	a planthopper
Psylla alni	a psyllid
Stenodema laevigata	a mirid bug
Trioza urticae	a psyllid
Insect - true fly (Diptera)	
Bibio marci	St Mark's fly
Bombylius major	dark-edged bee-fly
Campsicnemus curvipes	a dolichopid fly
Dasineura urticae	nettle leaf pouch gall
Episyrphus balteatus	marmalade fly
Erioconopa trivialis	a cranefly
Eristalis tenax	a hoverfly
Eupeodes luniger	a hoverfly
Geomyza tripunctata	a fly
Haematobosca stimulans	a fly
Haematopa pluvialis	notch-horned cleg
Helophilus pendulus	a hoverfly
Hybos femoratus	a fly
Hylemya vagans	a fly
Hylemya variata	a fly
Limonia nubeculosa	a cranefly
Lonchoptera furcata	a fly
Lotophila atra	a lesser dung fly
Molophilus obscurus	a cranefly
Phryxe nemea	a fly
Ptychoptera albimana	a cranefly
Scaptomyza pallida	a fly
Scathophaga stercoraria	yellow dung fly
Sericomyia silentis	a hoverfly
Sericomyia superbiens	a hoverfly
Sympycnus pulicarius	a fly
Tabanus sudeticus	dark giant horsefly
Tachina fera	a fly
Tipula luteipennis	a cranefly
Tipula maxima	giant dark cranefly
Tipula pagana	a cranefly
Tipula paludosa	a cranefly
Trichina clavipes	a fly
Tricyphona immaculata	a cranefly