

GRASSLAND SURVEYS 2009

OXFORD PONDS KYLOE HILLS

August & September 2009



Whin Sill Grassland on the crest of Ewe Hill

**by
Berwick Wildlife Group**

Contents

- 1) Acknowledgements
- 2) Aims of the surveys
- 3) Methodology
- 4) Description of sites
 - 1a. Oxford Farm Ponds West
 - 1b. Oxford Farm Ponds East
 - 2a. Kyloe Quarry
 - 2b. Kyloe Hills and Ewe Hill
- 5) Appendix 1. Species lists
 1. Oxford Farm W
 2. Oxford Farm E
 3. Kyloe Quarry
 4. Ewe Hill
- 6) Appendix 2. NVC sheets
 - Oxford Farm East 1 & 2
 - Ewe Hill 1 & 2

Acknowledgements.

We thank the Northumberland Wildlife Trust for suggesting which sites to visit and providing contact details for landowners. We are most grateful to Peter Brown and Hugh Leyland for readily giving permission to work on their land.

Particular thanks to the surveyors from Berwick Wildlife Group (Molly Hardie, Jenny Prince, Sally and John Rae, Fiona Aungier), and visiting ecologist Aileen Miller. Fiona Aungier wrote this report.

Janet Simkin has provided help with identification, and our report is unashamedly based on her (much more comprehensive and expert) report on the whin sill sites for the Northumberland Wildlife Trust in 2007.

Aims of the surveys

Unimproved and semi-improved grasslands are habitats very much under threat, affecting not only the constituent plants but the insects that depend upon them and their predators. For example, many of the UK's bumblebee species are in serious decline, mainly because of the reduction of suitable flower-rich habitat (Bumblebee Conservation Trust, 2010).

In 2007 the Northumberland Wildlife Trust carried out a comprehensive survey of the grasslands developed on the whin sill outcrops (Simkin, 2007). The whin sill is an intruded quartz-dolerite rock similar to basalt. The base-rich but nutrient poor soil developed on the whin outcrops supports a unique collection of plants but there has been "a considerable loss of conservation interest over the last 25 years. From nearly 100 sites only 20 key sites were identified as being of high conservation value" (Cox, 2009). However a few of the whin sites were not examined in detail in 2007, and other grasslands in the county, including possibly species-rich sites on limestone and on the coast, are also valuable and threatened. NWT suggested some grassland sites that BWG might check out.

These included:

1) Oxford Ponds (NU 005 467). This is fairly rough grassland developed around ponds formed when limestone has been extracted.

2) West Kyloe (NU 049 404). There are two main areas of whin out-crop. NWT & volunteers have cleared much scrub from the sites in winter 2008/09, "so vegetation maybe a bit on the sparse side but it would be really helpful to have a base line on which we can monitor progress".

Methodology.

We began with a general exploration of each site, during which a plant species list was compiled. If some relatively species-rich grassland was discovered, two 2m x 2m quadrats were studied using standard methodology developed for the National Vegetation Classification (NVC) (see Appendix 2). This work was carried out in late August and September, not an ideal time of year, particularly for the whin sill sites (where many of the more unusual plant species are bulbous or annuals so would not be visible in late summer). A further examination of the whin sites, including the recently-cleared areas, in spring 2010 is therefore planned. BWG does not have enough expertise to slot the not-always-standard vegetation discovered into the appropriate NVC habitat categories, but the data from the quadrats (Appendix 2) should enable others to do this.

1a. Oxford Farm Ponds West.

Grid Ref: NU 002 466

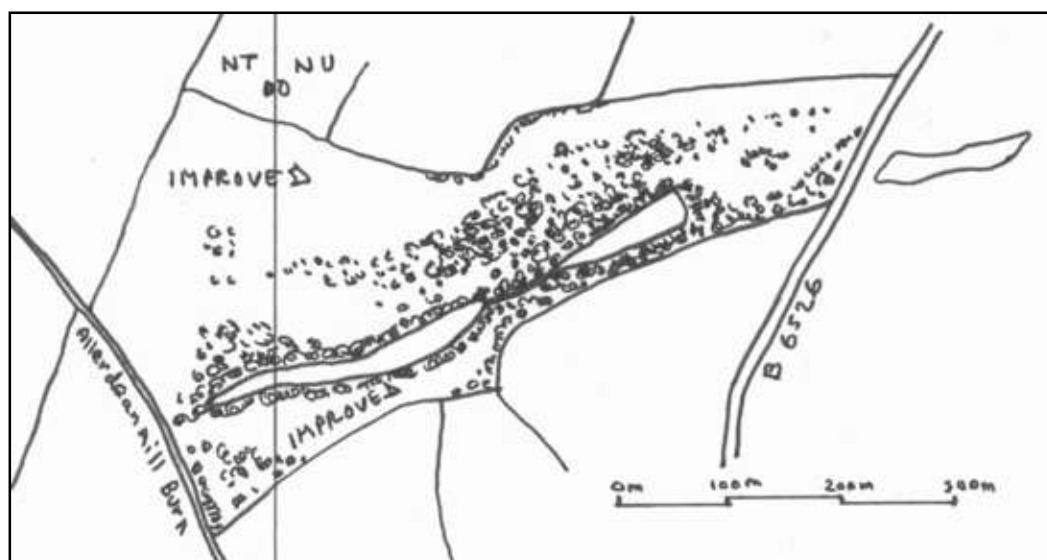
Altitude: 30m

Area surveyed: approx. 15 ha.

Type: Semi improved grassland on limestone and shale spoil

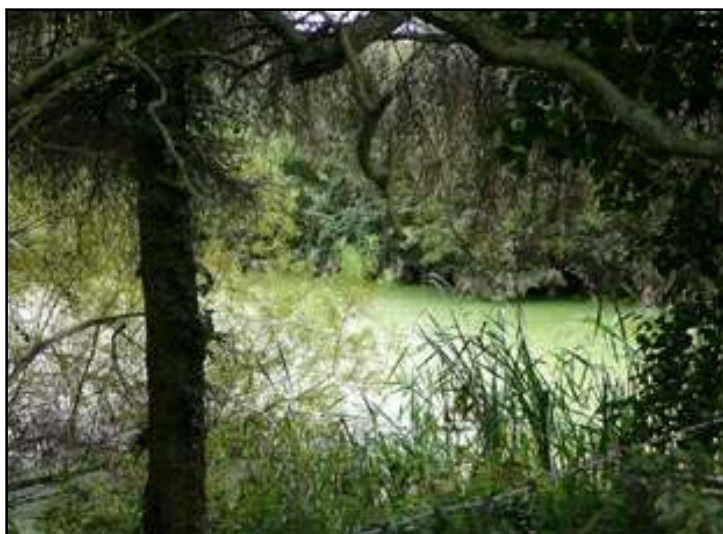
Access permission: Peter Brown (Oxford Farm).

Survey date: 28/08/2009



Sketch map 1. Oxford Farm Ponds West

The area (See Sketch map 1) consists of two long, narrow, steep-sided and overgrown ponds, occupying areas where the Oxford limestone has been extracted, and a surrounding more level area now used for grazing horses. The ponds are extremely difficult to access (fenced and with a dense surround of planted conifers, bramble, etc.) and were not approached. Except in the north west corner, which is relatively level improved grassland, the surroundings comprise a mosaic of small patches of grassland and dense scrub dominated by hawthorn.



One of the Oxford Farm West ponds



Scrub and grassland at Oxford Farm Ponds West.

This was presumably developed on spoil from the limestone workings. In a few small patches the spoil appears to be broken limestone giving thin, reddish, well-drained soils; but in most places the soil is a dark, heavy, clay developed on shale, which was probably removed from above the limestone and heaped beside the extraction pits.

The species found are listed in Table 1 in Appendix 1. Although there were some calcicolous plants (e.g. *Ononis repens*, Creeping Restharrow), often only one or a few plants of such species were encountered, the majority of the area being dominated by hawthorn scrub or neutral grassland, quite wet in places with, for example, *Cardamine pratensis*, Cuckooflower. The species list (104 spp.) is bulked up by planted trees around the ponds (e.g. *Picea sitchensis*, Sitka Spruce); by common woodland groundflora species established here (e.g. *Circaea lutetiana*, Enchanter's Nightshade); by "weedy" species found where intensive grazing and trampling has opened the sward (e.g. *Capsella bursa-pastoralis*, Shepherd's Purse); and the plants seen in the ponds themselves some of which appear to have been introduced (e.g. *Lagarosiphon major*, Curly Waterweed).

Semi-improved neutral grassland on heavy soil and with invading scrub is not particularly unusual in the locality (although it is most often found ungrazed and tussocky and in smaller patches). It was therefore not considered worth further study of the vegetation with quadrats.

1b. Oxford Farm Ponds East.

Grid Ref: NU 007 468

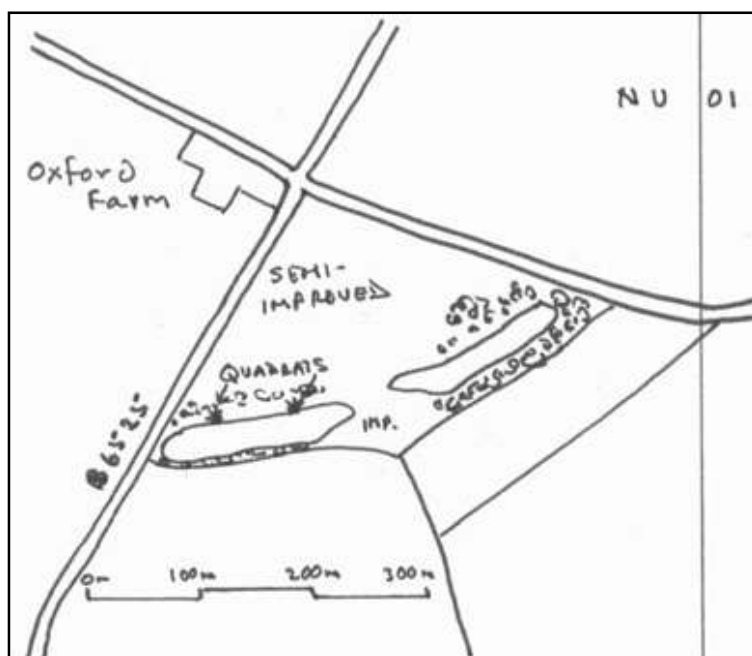
Altitude: 35m

Area surveyed: approx. 5 ha.

Type: Semi improved grassland on limestone and shale spoil and boulder clay.

Access permission: Peter Brown (Oxford Farm).

Survey date: 29/08/2009



Sketch map 2. Oxford Farm Ponds East

Sketch map 2 shows that again there are two long, narrow extraction pits in the Oxford Limestone which have now become ponds, but the banks are less steep than at the pits west of the road, and have not been fenced off (except for the south shore of the east pond). Also, the grazing animals in the field are sheep rather than horses, and the soil is better drained. As before, a substantial part of the site consists of fairly level improved and heavily grazed grassland, dominated by *Cynosurus*, *Dactylis*, *Agrostis* and *Lolium* (Crested Dog's-tail, Cocksfoot, Bent Grass and Rye Grass). However where the ground is sloped nearer the ponds the grassland has not been improved and is more species-rich.



Unimproved ground around the western edge of the eastern pond, Oxford Farm Ponds East.

The species encountered are listed in Table 2 in Appendix 1. The total number of species (61) is not as high as in the area west of the road but the habitat is less mixed.

There is a rough area of ground near the west end of the eastern pond with some more unusual species like *Briza media*, Quaking Grass.



Sunny calcareous bank on N side of western pond. Oxford Farm Ponds East.

On the N side of the western pond is a sunny and closely-grazed slope, protected from the main (improved) part of the field by a bank-top growth of hawthorn. This slope tends towards more calcareous grassland (with e.g. *Carex flacca*, Glaucous Sedge). Parts of this unimproved grassland have developed on dark, clay-rich soils over calcareous shale, whereas in other places thin reddish soils cover limestone outcrops or spoil.

Two 2 x 2 m. quadrats were examined in the most species-rich sections of this slope.

The NVC Record Sheets are shown in Appendix 2. The bank's vegetation does not appear (to me) to correspond to any particular NVC category, except possibly in the catch-all category of MG5 *Cynosurus cristatus-Centaurea nigra*, with elements of the *Galium verum* sub-community, (although *Galium verum* is not present).

The most species-rich areas of the field are vulnerable to scrub encroachment from the crest of the bank, although if the scrub were to be removed they would then be opened up to heavier grazing, fertiliser application and run-off from the improved part of the field. Currently the grazing (by sheep) is at about the right level to keep the scrub in check and the sward short without undue erosion of the bank.

2a. Kylloe Quarry.

Grid Ref: NU042404

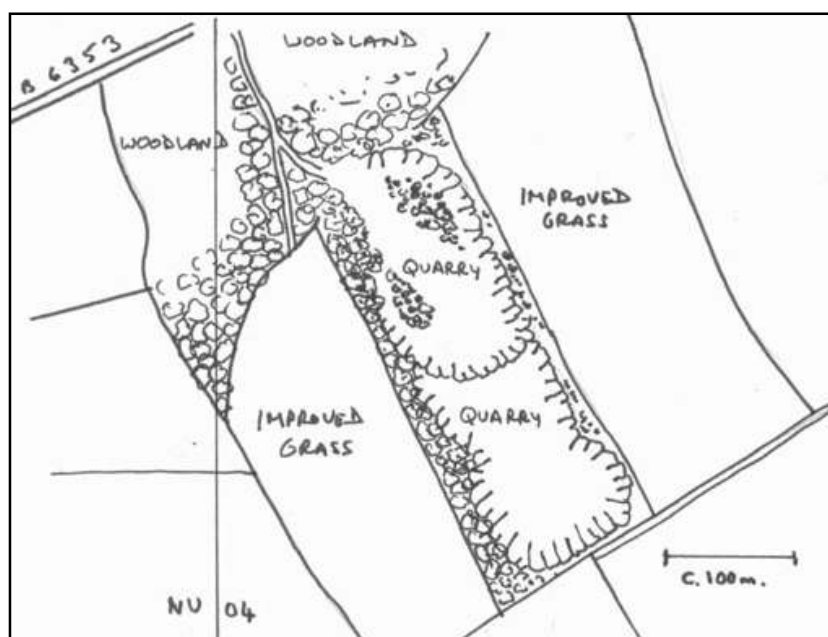
Altitude: 130m

Area surveyed: approx 6 ha

Type: Pioneer vegetation plus invading scrub on whinstone quarry spoil

Access permission:

Survey date: 30/08/2009



Sketch map 3. Kylloe Quarry

The floor of this abandoned whinstone quarry (on two levels) has been left relatively flat and compacted. To the north and west scrub is invading from existing woodland, and above the eastern slope ranker grass is developing. The quarry sides remain steep and unstable with plants establishing in cracks and fissures, and the floor is being colonised by pioneer species.



The lower part of Kylloe Quarry viewed from the upper section.



The floor of Kyles Quarry, with *Holcus* and *Fragaria vesca*

Although at present unmanaged, the quarry vegetation is heavily grazed by rabbits. Table 3 in Appendix 1 lists the 64 species of vascular plant found in the quarry. Not surprisingly there are many "weedy" pioneer species (e.g. *Anagallis arvensis*, Scarlet Pimpernel and *Chamerion angustifolium*, Rosebay Willowherb) and the invading scrub, although dominated by gorse and birch, is well mixed with species of *Rosa* (Rose), *Rubus* (Bramble) and *Prunus*

(Plum family) Other species are tolerant of dry places (e.g. *Aira caryophyllaea*, Silver Hair-grass). There are a surprising number of woodland species, such as *Galium odoratum*, Sweet Woodruff and *Mercurialis perennis*, Dog's Mercury invading from the woodland to west and north.

However no species characteristic of whin grassland were observed, so no quadrats were set up.

2b. Kylee Hills and Ewe Hill.

Grid Ref: NU045395

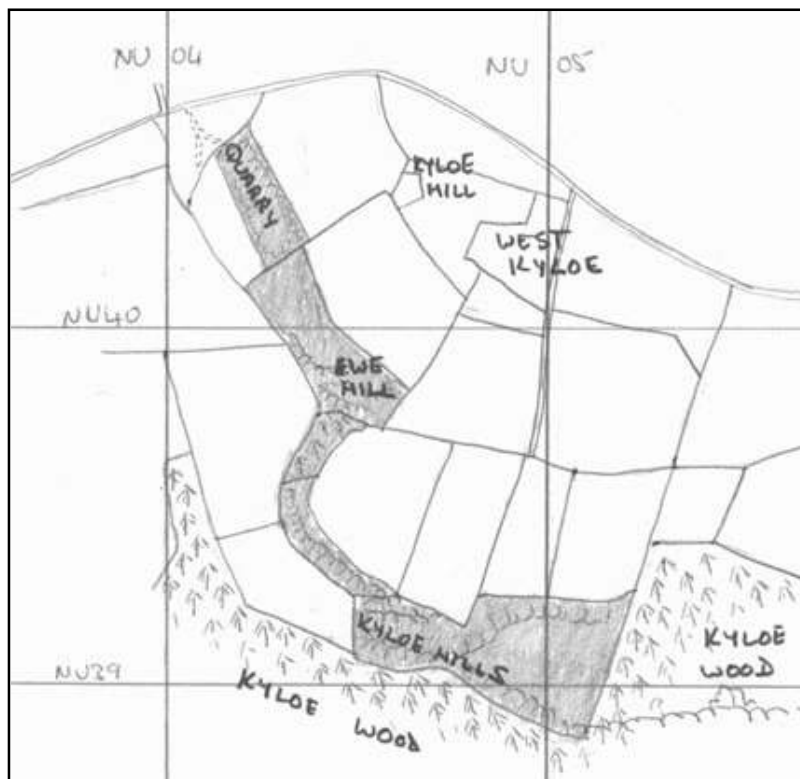
Altitude: up to c. 130 m

Area surveyed: approx 15 ha

Type: Grassland developed on outcrops of the whin sill. .

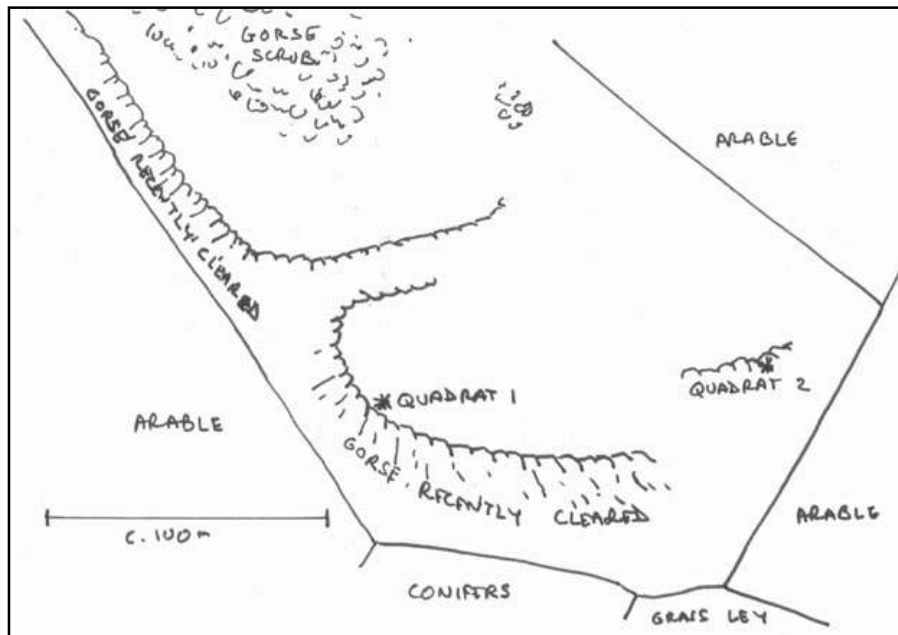
Access permission: Hugh Leyland (West Kylee Farm).

Survey date: 30/08/2009



Sketch map 4. Areas of the whin sill at Kylee with semi-natural vegetation

Sketch map 4 shows the main areas of whin sill outcrop north of Kylee Wood which still have some form of semi-natural vegetation. Kylee Quarry, although disturbed, is re-colonising naturally. Further south the steepest parts of the whin sill escarpment are usually abandoned and covered by gorse, while the more gently sloping areas are either forested or under semi-improved or unimproved grassland, mostly lightly grazed by cattle and rabbits. The species list (57 vascular plants) refers to all of this area within grid-square NU0439. By far the most "interesting" grassland was on Ewe Hill, where small rocky outcrops which are particularly heavily grazed by rabbits produce a short, open sward including some of the characteristic "whin sill" species (e.g. *Helianthemum nummularium*, Rock Rose).



Sketch map 5. Large-scale sketch of crest of Ewe Hill showing outcrops and position of quadrats.

On Ewe Hill some of the steep west- and south-facing slopes were cleared of gorse by NWT in winter 08/09. In September 2009 these were still almost bare, except for re-growth of gorse from the stumps and rosettes of *Senecio sylvaticus*, Heath Groundsel, particularly abundant at the north west of the area shown above. This area needs further examination.



Ewe Hill, quadrat 1

Above the steepest slopes are smaller rock outcrops separated by pockets of deeper soil. The area is grazed by cattle and rabbits, keeping taller vegetation in check. Two 2m x 2m quadrats were laid out on the thinnest soils, where grazing and drought had most reduced the height of the sward and allowed more unusual species a foothold. (positions shown on Sketch Map 5). The NVC record sheets for the quadrats are shown in Appendix 2.



Ewe Hill, quadrat 2

However it became obvious that other, perhaps more definitive, species might well have been showing much earlier in the year (minute unidentifiable seedlings of leguminous plants were present). Several annual legumes are characteristic of the whin silt grasslands, which are best examined in spring.

Further work.

We need to re-examine the quadrats in spring 2010, and also set up additional quadrats on the slopes that have been cleared of gorse as a base line for future assessment.

We hope also to examine some other grasslands in the locality, such as at Goswick and Tommy-the-Miller's field.

References.

Bumblebee Conservation Trust, 2010.

http://www.bumblebeeconservation.org/bumblebees_in_crisis.htm .

Cox, E., 2009. *Whats so special about whin grassland*, in Grassland Focus, Roebuck issue no 117, Northumberland Wildlife Trust.

Dony, J.G., Rob, C.M. & Perring, F.H.,1974. *English Names of Wild Flowers*. Butterworth & Co.

Simkin, J., 2007. *Whin Grassland Survey 2007*. Unpublished report for Northumberland Wildlife Trust.

Stace, C., 1997. *New Flora of the British Isles*, Second Edition. Cambridge University Press.

Rodwell, J.S. (Ed),1992. *British Plant Communities, Vol. 3 Grassland and montane communities*. Cambridge University Press.

Rodwell, J.S. (Ed), 2000. *British Plant Communities, Vol. 5 Maritime communities and vegetation of open habitats*. Cambridge University Press.

Appendix 1 Species lists

Table 1

Higher plant species list for Oxford Ponds West NU002465 28/08/2009

Latin Name	English Name	Latin Name	English Name
<i>Acer pseudoplatanus</i>	Sycamore	<i>Lathyrus pratensis</i>	Meadow Vetchling
<i>Achillea millefolium</i>	Yarrow	<i>Lemna minor</i>	Common Duckweed
<i>Aegopodium podagraria</i>	Ground Elder	<i>Leontodon autumnalis</i>	Autumnal Hawkbit
<i>Agrimonia eupatoria</i>	Agrimony	<i>Linum catharticum</i>	Fairy Flax
<i>Agrostis stolonifera</i>	Creeping Bent	<i>Lolium perenne</i>	Perennial Rye-grass
<i>Alisma plantago-aquatica</i>	Water-plantain	<i>Lonicera periclymenum</i>	Honeysuckle
<i>Alnus glutinosa</i>	Alder	<i>Lotus corniculatus</i>	Bird's-foot Trefoil
<i>Alopecurus geniculatus</i>	Marsh Foxtail	<i>Lythrum salicaria</i>	Purple Loosestrife
<i>Angelica sylvestris</i>	Wild Angelica	<i>Matricaria discoidea</i>	Pineappleweed
<i>Anisantha sterilis</i>	Barren Brome	<i>Medicago lupulina</i>	Black Medic
<i>Arctium minus</i>	Lesser Burdock	<i>Myosotis arvensis</i>	Field Forget-me-not
<i>Arrhenatherum elatius</i>	False Oat-grass	<i>Myosotis laxa</i>	Tufted Forget-me-not
<i>Campanula rotundifolia</i>	Harebell	<i>Odontites verna</i>	Red Bartsia
<i>Capsella bursa-pastoris</i>	Shepherd's Purse	<i>Ononis repens</i>	Creeping Restharrow
<i>Cardamine pratensis</i>	Cuckooflower	<i>Phalaris arundinacea</i>	Reed Canary-grass
<i>Carduus acanthoides</i>	Wetted Thistle	<i>Phleum pratense sens.lat.</i>	Timothy
<i>Carex hirta</i>	Hairy Sedge	<i>Picea sitchensis</i>	Sitka Spruce
<i>Centaurea nigra</i>	Common Knapweed	<i>Plantago lanceolata</i>	Ribwort Plantain
<i>Cerastium fontanum</i>	Common Mouse-ear	<i>Plantago major</i>	Greater Plantain
<i>Circaea lutetiana</i>	Enchanter's Nightshade	<i>Poa annua</i>	Annual Meadow-grass
<i>Cirsium arvense</i>	Creeping Thistle	<i>Polygonum aviculare agg.</i>	Knotgrass
<i>Cirsium vulgare</i>	Spear Thistle	<i>Potentilla reptans</i>	Creeping cinquefoil
<i>Crataegus monogyna</i>	Hawthorn	<i>Primula vulgaris</i>	Primrose
<i>Crepis capillaris</i>	Smooth Hawksbeard	<i>Prunella vulgaris</i>	Self Heal
<i>Cruciata laevipes</i>	Crosswort	<i>Ranunculus acris</i>	Meadow Buttercup
<i>Dactylis glomerata</i>	Cocksfoot	<i>Ranunculus repens</i>	Creeping Buttercup
<i>Deschampsia cespitosa</i>	Tufted Hair-grass	<i>Rorippa nasturtium-aquaticum</i>	Water Cress
<i>Dryopteris filix-mas</i>	Male Fern	<i>Rosa canina agg.</i>	Dog Rose
<i>Epilobium hirsutum</i>	Great Willowherb	<i>Rubus fruticosus agg.</i>	Bramble
<i>Epilobium montanum</i>	Broad-leaved Willowherb	<i>Rumex sanguineus</i>	Wood Dock
<i>Epilobium palustre</i>	Marsh Willowherb	<i>Sambucus nigra</i>	Elder
<i>Equisetum arvense</i>	Field Horsetail	<i>Senecio jacobaea</i>	Common Ragwort
<i>Euphrasia agg.</i>	Eyebright	<i>Silene dioica</i>	Red Campion
<i>Festuca ovina agg.</i>	Sheep's Fescue	<i>Sonchus asper</i>	Prickly Sow-thistle
<i>Festuca pratensis</i>	Meadow Fescue	<i>Stachys sylvatica</i>	Hedge Woundwort
<i>Festuca rubra agg.</i>	Red Fescue	<i>Stellaria media</i>	Common Chickweed
<i>Filipendula ulmaria</i>	Meadowsweet	<i>Symphytum tuberosum</i>	Tuberous Comfrey
<i>Fraxinus excelsior</i>	Ash	<i>Torilis japonica</i>	Upright Hedge-parsley
<i>Galium aparine</i>	Cleavers	<i>Trifolium campestre</i>	Hop Trefoil
<i>Galium verum</i>	Lady's Bedstraw	<i>Trifolium pratense</i>	Red Clover
<i>Geranium dissectum</i>	Cut-leaved Crane's-bill	<i>Trifolium repens</i>	White Clover
<i>Geranium molle</i>	Doves-foot Crane's-bill	<i>Trisetum flavescens</i>	Yellow Oat-grass
<i>Geranium robertianum</i>	Herb Robert	<i>Tussilago farfara</i>	Coltsfoot
<i>Geum urbanum</i>	Wood Avens	<i>Typha latifolia</i>	Bulrush
<i>Hedera helix</i>	Ivy	<i>Ulex europaeus</i>	Gorse
<i>Heracleum sphondylium</i>	Hogweed	<i>Urtica dioica</i>	Stinging Nettle
<i>Holcus lanatus</i>	Yorkshire Fog	<i>Veronica beccabunga</i>	Brooklime
<i>Juncus articulatus</i>	Jointed Rush	<i>Veronica chamaedrys</i>	Germander Speedwell
<i>Juncus bufonius agg.</i>	Toad Rush	<i>Veronica persica</i>	Common Field-speedwell
<i>Lamium album</i>	White Deadnettle	<i>Vicia sativa</i>	Common Vetch
<i>Lagarosiphon major</i>	Curly Waterweed	<i>Vicia sepium</i>	Bush Vetch
<i>Lapsana communis</i>	Nipplewort	<i>Viola riviniana</i>	Common Dog-violet

Table 2
Higher plant species list for Oxford Ponds E NU007468 29/08/2009

Latin Name	English Name	Latin Name	English Name
<i>Acer pseudoplatanus</i>	Sycamore	<i>Leontodon autumnalis</i>	Autumnal Hawkbit
<i>Achillea millefolium</i>	Yarrow	<i>Linum catharticum</i>	Fairly Flax
<i>Agrostis capillaris</i>	Common Bent	<i>Lolium perenne</i>	Perennial Rye-grass
<i>Agrostis stolonifera</i>	Creeping Bent	<i>Lotus corniculatus</i>	Birds-foot Trefoil
<i>Alisma plantago-aquatica</i>	Water Plantain	<i>Medicago lupulina</i>	Black Medic
<i>Anthriscus sylvestris</i>	Cow Parsley	<i>Myosotis laxa</i>	Tufted Forget-me-not
<i>Arrhenatherum elatius</i>	False Oat-grass	<i>Pilosella officinarum</i>	Mouse-ear Hawkweed
<i>Bellis perennis</i>	Daisy	<i>Plantago lanceolata</i>	Ribwort Plantain
<i>Briza media</i>	Quaking Grass	<i>Plantago major</i>	Great Plantain
<i>Cardamine pratensis</i>	Cuckooflower	<i>Pramogeton natans</i>	Broad-leaved Pondweed
<i>Carex flacca</i>	Glaucous Sedge	<i>Ranunculus vulgaris</i>	Self Heal
<i>Centaurea nigra</i>	Common Knapweed	<i>Ranunculus acris</i>	Meadow Buttercup
<i>Cerastium fontanum</i>	Common Mouse-ear	<i>Ranunculus repens</i>	Creeping Buttercup
<i>Cirsium arvense</i>	Creeping Thistle	<i>Rorippa nasturtium-aquaticum</i>	Watercress
<i>Cirsium vulgare</i>	Spear Thistle	agg.	
<i>Crataegus monogyna</i>	Hawthorn	<i>Rosa canina</i>	Dog Rose
<i>Crepis capillaris</i>	Smooth Hawksbeard	agg.	
<i>Cynosurus cristatus</i>	Crested Dog's-tail	<i>Rubus fruticosus</i>	Bramble
<i>Dactylis glomerata</i>	Cocksfoot	agg.	
<i>Eleocharis palustris</i>	Common Spike-rush	<i>Rumex obtusifolius</i>	Broad-leaved Dock
<i>Epilobium hirsutum</i>	Great Willowherb	<i>Rumex sanguineus</i>	Wood Dock
<i>Epilobium palustre</i>	Marsh Willowherb	<i>Sambucus nigra</i>	Elder
<i>Equisetum arvense</i>	Field Horsetail	<i>Sencio jacobea</i>	Common Ragwort
<i>Festuca ovina</i>	Sheep's Fescue	<i>Solanum dulcamara</i>	Bittersweet
<i>Festuca rubra</i>	Red Fescue	<i>Sparganium erectum</i>	Branched Bur-reed
<i>Geranium molle</i>	Dove's-foot Crane's-bill	<i>Taraxacum officinale</i>	Dandelion
<i>Heracleum sphondylium</i>	Hogweed	agg.	
<i>Hippuris vulgaris</i>	Mare's-tail	<i>Torilis japonica</i>	Upright Hedge-parsley
<i>Holcus lanatus</i>	Yorkshire Fog	<i>Trifolium pratense</i>	Red Clover
<i>Juncus articulatus</i>	Jointed Rush	<i>Trifolium repens</i>	White Clover
<i>Juncus inflexus</i>	Hard Rush	<i>Trisetum flavescens</i>	Yellow Oat-grass
		<i>Typha latifolia</i>	Bulrush
		<i>Ulex europaeus</i>	Gorse
		<i>Urtica dioica</i>	Stinging Nettle

Table 3
Higher plant species list for Kylloe Quarry NU042404 30/08/2009

Latin Name	English Name	Latin Name	English Name
<i>Acer pseudoplatanus</i>	Sycamore	<i>Holcus lanatus</i>	Yorkshire Fog
<i>Agrimonia eupatoria</i>	Agrimony	<i>Hyacinthoides non-scripta</i>	Bluebell
<i>Agrostis capillaris</i>	Common Bent	<i>Hypericum perforatum</i>	Perforate St. John's-wort
<i>Agrostis stolonifera</i>	Creeping Bent	<i>Leontodon autumnalis</i>	Autumnal Hawkbit
<i>Aira caryophylla</i>	Silver Hair-grass	<i>Linum catharticum</i>	Fairy Flax
<i>Anagallis arvensis</i>	Scarlet Pimpernel	<i>Lonicera periclymenum</i>	Honeysuckle
<i>Arctium minus</i>	Lesser Burdock	<i>Lotus corniculatus</i>	Bird's-foot Trefoil
<i>Arrhenatherum elatius</i>	False Oat-grass	<i>Medicago lupulina</i>	Black Medic
<i>Bellis perennis</i>	Daisy	<i>Mercurialis perennis</i>	Dog's Mercury
<i>Betula pendula</i>	Silver Birch	<i>Pilosella officinarum</i>	Mouse-ear Hawkweed
<i>Brachypodium sylvaticum</i>	False Brome	<i>Plantago lanceolata</i>	Ribwort Plantain
<i>Calystegia sepium</i>	Hedge Bindweed	<i>Prunella vulgaris</i>	Self Heal
<i>Campanula rotundifolia</i>	Harebell	<i>Prunus spinosa</i>	Blackthorn
<i>Centaurea nigra</i>	Common Knapweed	<i>Pteridium aquilinum</i>	Bracken
<i>Cerastium fontanum</i>	Common Mouse-ear	<i>Ranunculus repens</i>	Creeping Buttercup
<i>Chamerion angustifolium</i>	Rose-bay Willowherb	<i>Rosa canina agg.</i>	Dog Rose
<i>Cirsium arvense</i>	Creeping Thistle	<i>Rubus fruticosus agg.</i>	Bramble
<i>Crataegus monogyna</i>	Hawthorn	<i>Sagina procumbens</i>	Procumbent Pearlwort
<i>Crepis capillaris</i>	Smooth Hawksbeard	<i>Sambucus nigra</i>	Elder
<i>Cruciata laevipes</i>	Crosswort	<i>Senecio jacobaea</i>	Common Ragwort
<i>Cynosurus cristatus</i>	Crested Dog's-tail	<i>Sherardia arvensis</i>	Field Madder
<i>Cytisus scoparius</i>	Broom	<i>Teucrium scorodonia</i>	Wood Sage
<i>Dactylis glomerata</i>	Cocksfoot	<i>Torilis japonica</i>	Upright Hedge-parsley
<i>Deschampsia caespitosa</i>	Tufted Hair-grass	<i>Trifolium pratense</i>	Red Clover
<i>Epilobium montanum</i>	Broad-leaved Willowherb	<i>Trifolium repens</i>	White Clover
<i>Euphrasia agg.</i>	Eyebright	<i>Ulex europaeus</i>	Gorse
<i>Festuca rubra agg.</i>	Red Fescue	<i>Urtica dioica</i>	Stinging Nettle
<i>Fragaria vesca</i>	Wild Strawberry	<i>Veronica officinalis</i>	Heath Speedwell
<i>Fraxinus excelsior</i>	Ash	<i>Veronica persica</i>	Common Field-speedwell
<i>Galium odoratum</i>	Woodruff	<i>Vicia cracca</i>	Tufted Vetch
<i>Galium verum</i>	Lady's Bedstraw	<i>Vicia hirsuta</i>	Hairy Tare
<i>Geranium pratense</i>	Meadow Crane's-bill	<i>Viola riviniana</i>	Common Dog-violet

Table 4
Higher plant species list for Kylloe Hills NU045345 30/08/2009

Latin Name	English Name	Latin Name	English Name
<i>Achillea millefolium</i>	Yarrow	<i>Koeleria macrantha</i>	Crested Hair-grass
<i>Agrostis capillaris</i>	Common Bent	<i>Leontodon hispidus</i>	Rough Hawkbit
<i>Aira praecox</i>	Early Hair-grass	<i>Lolium perenne</i>	Perennial Rye-grass
<i>Anthoxanthum odoratum</i>	Sweet Vernal-grass	<i>Lotus corniculatus</i>	Bird's-foot Trefoil
<i>Aphanes arvensis agg.</i>	Parsley-piert	<i>Phleum pratense sens.lat.</i>	Timothy
<i>Bellis perennis</i>	Daisy	<i>Pilosella officinarum</i>	Mouse-ear Hawkweed
<i>Bromus hordeaceus</i>	Soft Brome	<i>Plantago lanceolata</i>	Ribwort Plantain
<i>Campanula rotundifolia</i>	Harebell	<i>Plantago major</i>	Great Plantain
<i>Cerastium fontanum</i>	Common Mouse-ear	<i>Poa annua</i>	Annual Meadow-grass
<i>Cirsium arvense</i>	Creeping Thistle	<i>Potentilla anserina</i>	Silverweed
<i>Cirsium palustre</i>	Marsh Thistle	<i>Pteridium aquilinum</i>	Bracken
<i>Crepis capillaris</i>	Smooth Hawksbeard	<i>Ranunculus acris</i>	Meadow Buttercup
<i>Cynosurus cristatus</i>	Crested Dog's-tail	<i>Ranunculus repens</i>	Creeping Buttercup
<i>Dactylis glomerata</i>	Cocksfoot	<i>Rumex acetosa</i>	Common Sorrel
<i>Digitalis purpurea</i>	Foxglove	<i>Rumex acetosella</i>	Sheep's Sorrel
<i>Erica cinerea</i>	Bell Heather	<i>Sedum acre</i>	Biting Stonecrop
<i>Euphrasia</i>	Eyebright	<i>Senecio jacobaea</i>	Common Ragwort
<i>Festuca ovina agg.</i>	Sheep's Fescue	<i>Senecio sylvaticus</i>	Heath Groundsel
<i>Festuca rubra agg.</i>	Red Fescue	<i>Taraxacum</i>	Dandelion
<i>Galeopsis tetrahit agg.</i>	Common Hemp-nettle	<i>Teucrium scorodonia</i>	Wood Sage
<i>Galium saxatile</i>	Heath Bedstraw	<i>Thymus polytrichus</i>	Wild Thyme
<i>Galium verum</i>	Lady's Bedstraw	<i>Trifolium pratense</i>	Red Clover
<i>Geranium molle</i>	Dove's-foot Crane's-bill	<i>Trifolium repens</i>	White Clover
<i>Geranium pratense</i>	Meadow Crane's-bill	<i>Ulex europaeus</i>	Gorse
<i>Gnaphalium uliginosum</i>	Marsh Cudweed	<i>Urtica dioica</i>	Stinging Nettle
<i>Helianthemum nummularium</i>	Rock Rose	<i>Veronica chamaedrys</i>	Germander Speedwell
<i>Holcus lanatus</i>	Yorkshire Fog	<i>Veronica officinalis</i>	Heath Speedwell
<i>Holcus mollis</i>	Creeping Soft-grass	<i>Viola riviniana</i>	Dog Violet
<i>Juncus conglomeratus</i>	Compact Rush		

Appendix 2. Quadrats for National Vegetation Classification.

Instructions

1) Sample location. No more throwing the quadrats over your left shoulder! Make sure all samples are within homogeneous stands of vegetation, without atypical features. First look at the vegetation, and without getting down to species identification decide on number of stands and boundaries. For each:

2) Choose sample shape and size. Square is traditional (although not essential). Sizes recommended are:

Woodland canopy, woodland shrubs and sparse scrub	50 x 50 m
Dense scrub, tall woodland field layer, tall herbaceous	10 x 10 m
Short woodland field layer, tall herbaceous, heaths	4 x 4 m
Short herbaceous, dwarf shrub heaths	2 x 2 m
Linear vegetation, e.g. streams, walls, hedge bottoms	10 m strip
Hedge shrubs	30 m strip

3) Complete sample card boxes:

Location	e.g. Field name, nearest map name, county.
Grid ref	10 fig if poss.
Region	Watsonian vice-county, e.g. Cheviot, VC68.
Author	You
Sample no	1, 2.....
Altitude	e.g. 14 m (from GPS or map)
Slope, Aspect	Measure in °, with clinometer and compass
Soil depth	Push in a stick
Stand area, sample area	Both in metres.
Layers	Height in metres of vegetation, or vegetation layers
Cover	Of layers, individually.
Geology	As on maps, but check on ground if poss.

4) Describe site and vegetation briefly, sketches and sketch maps if appropriate, include topography, drainage, layering, zonation, mosaics, succession, management.

5) Species list. Record bryophytes and macro-lichens if possible. If vegetation layered make lists for each layer. Score each species using the Domin Scale for cover and abundance. List additional species outside quadrat.

6) Soil. If possible dig a small pit, sketch profile, measure pH, record physical properties.

Assessment of Abundance

DOMIN scale

10	91-100%
9	76-90%
8	51-75%
7	34-50%
6	26-33%
5	11-25%
4	4-10%
3	10+ individuals
2	4 – 10 individuals
1	1 – 3 individuals

DAFOR scale

Dominant
Abundant
Frequent
Occasional
Rare

NB **Frequency** is how often a species is encountered in the group of quadrats. Abundance and frequency should be viewed in combination, e.g. high frequency, low cover, means lots of little individuals everywhere, whereas infrequent species can occur abundantly where they do appear, meaning occasional large clumps.

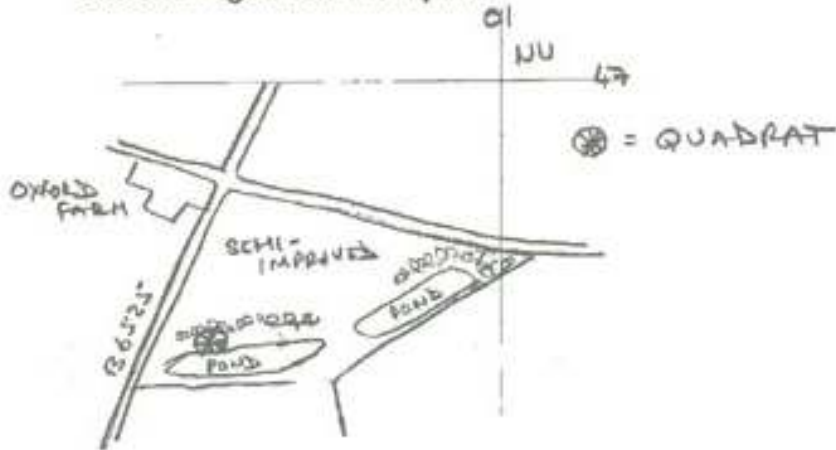
NVC record sheet

NU00562

Location Oxford Farm Pond 2 E Grid ref. 46693

Region 68 Author B.W.G.

Site and vegetation description



Sheep-grazed field around Oxford farm Pond east of B6525. Most of grassland improved, quadrats on unimproved south-facing bank to N. of western pond. Grazed by sheep. Very near pond.

Date 29/08/2009	Sample no. 1
Altitude 27m	Slope 25°
Aspect 140°	Soil depth 20 cm
Stand area 100m x 3 m	Sample area 2 m x 2 m
Layers: mean height 0.05m m m m	
Layers: cover 90 % % % %	
Geology Calcareous shale Lower Carboniferous Middle Limestone Group	

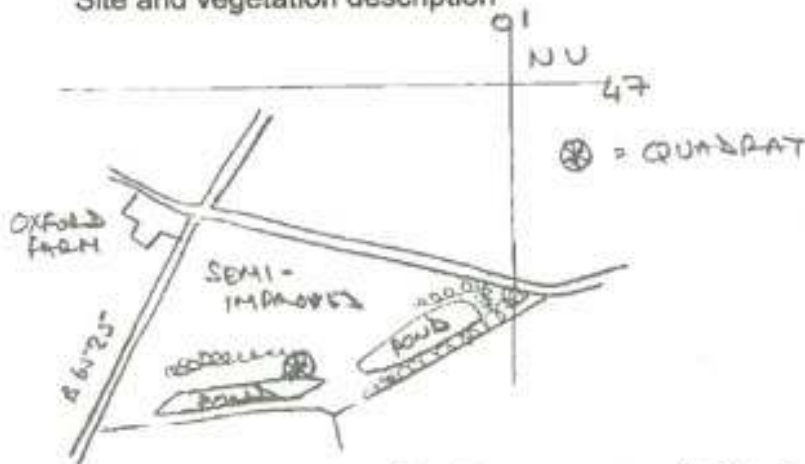
Species list	Domin score	Domin score	Soil profile
Bare rock	1	<i>Achillea millefolium</i> 1	<p>20cm SHALE</p>
Bare soil	4	<i>Carex flacca</i> 1	
<i>Agrostis capillaris</i>	5	<i>Pilosella officinarum</i> 1	<p>Brown earth, quite heavy, calcareous.</p>
<i>Dactylis glomerata</i>	3		
<i>Briza media</i>	4		
<i>Lolium perenne</i>	3		
<i>Festuca rubra</i> agg.	4		
<i>Cynosurus cristatus</i>	3		
<i>Trisetum flavescens</i>	2		
<i>Agrostis stolonifera</i>	2		
<i>Trifolium repens</i>	4		
<i>Leontodon autumnalis</i>	4		
<i>Centaurea nigra</i>	4		
<i>Linum catharticum</i>	4		
<i>Plantago lanceolata</i>	3		
<i>Taraxacum</i> agg.	1		
<i>Bellis perennis</i>	1		
<i>Medicago lupulina</i>	3		
<i>Senecio jacobea</i>	1		
		Species outside quadrat See separate list	

NVC record sheet.

Location Oxford Farm Ponds East NU 00643
Grid ref. 46698

Region 68 Author BWC

Site and vegetation description



Sheep-grazed field around Oxford Farm Ponds east of B 6525. Most of grassland is improved. Quadrat on unimproved south-facing bank to N of western pond. Grazed by sheep. Near pond edge.

Date _____ Sample no. 2

Altitude 29 m Slope 25°

Aspect 150° Soil depth 30 cm

Stand area 100 m x 3 m Sample area 2 m x 2 m

Layers: mean height 0.15 m m m m

Layers: cover 85 % % % %

Geology Limestone rubble (Oxford Limestone). Lower Carb. Middle Limestone Group

Species list

Domin score

Bare rock	0
Bare soil	4
<i>Dactylis glomerata</i>	4
<i>Agrostis capillaris</i>	5
<i>Festuca rubra</i>	6
<i>Trisetum flavescens</i>	4
<i>Agrostis stolonifera</i>	3
<i>Carex flacca</i>	4
<i>Leontodon autumnalis</i>	4
<i>Bellis perennis</i>	3
<i>Senecio jacobea</i>	3
<i>Tribium pratense</i>	1
<i>Linum catharticum</i>	3
<i>Prunella vulgaris</i>	3
<i>Plantago lanceolata</i>	2
<i>Pimpinella saxifraga</i>	1
<i>Lotus corniculatus</i>	2

Domin score

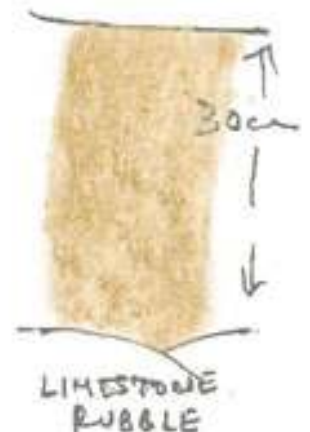
<i>Centaurea nigra</i>	1
<i>Pilosella officinarum</i>	2
<i>Medicago lupulina</i>	1
<i>Ranunculus acris</i>	1
<i>Stemodia arvensis</i>	1

Species outside quadrat

See separate list.

Soil profile

More of a brown earth than a rendzina



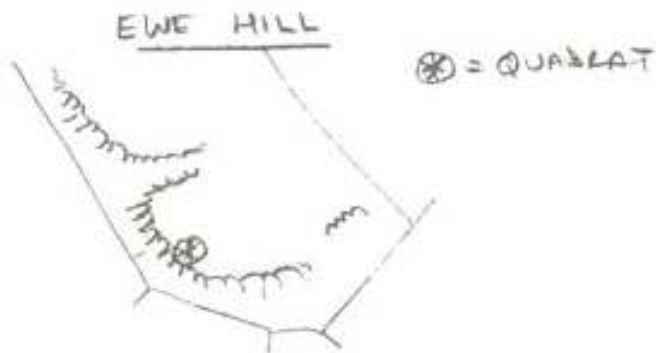
NVC record sheet.

Location Ewe Hill ①

NU 04401
Grid ref. 39874

Region 68 Author BWG

Site and vegetation description



Unimproved grassland on white silt outcrop. Grazed by cattle and rabbits. Scrub invading some areas. Quadrat on edge of steep slope, now cleared of gorse.

Date 14/09/09	Sample no. 1
Altitude 128m	Slope 25°
Aspect SSW°	Soil depth 0-5 cm
Stand area 20 m x 1 m	Sample area 4 m x 1 m
Layers: mean height 0-65 m m m m	
Layers: cover 80 % % % %	
Geology White silt - Quartz-dolerite intruded into Lower Carboniferous.	

Species list

Domin score

Bare rock	4
Bare soil	4
Plantago lanceolata	6
Achillea millefolium	4
Galium verum	3
Senecio jacobea	2
Sedum acre	4
Gemnasium molle	4
Festuca ovina agg	4
Cerastium fontanum	1
Panicum repens	1
Cirsium arvense	1
Taraxacum agg	1
Dactylis glomerata	4
Aegrotis capillaris	4
Trifolium repens	1
Galium saxatile	1

Domin score

Poa annua	1
Mosses	2
Lichens (on stones & soil)	3
(includes Peltigera canina)	
Identified by Janet Simkin	
Species outside quadrat	
Helianthemum nummularium	
Thymus ptychicus	
Bromus hordeaceus	
ssp. hordeaceus	
Aira praecox	

Soil profile

Thin, humus-rich brown earth



NVC record sheet.

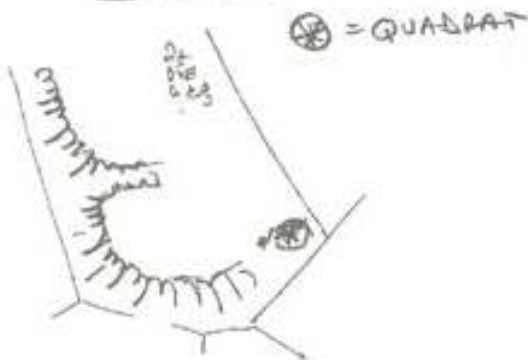
Location Ewe Hill (2)

NU 04527
Grid ref. 39876

Region 68 Author BWG

Site and vegetation description

EWE HILL



Unimproved grassland on thin soil outcrop.
Grazed by cattle & rabbits. Scrub invading some areas. Quadrat near creek at relatively gentle slope below small isolated outcrop

Date 14/09/09 Sample no. 2

Altitude 112m Slope 35°

Aspect SSE° Soil depth 0-5 cm

Stand area 5 m x 10 m Sample area 2 m x 2 m

Layers: mean height 0.03 m m m m

Layers: cover 75 % % % %

Geology
Thin soil
Quartz dolomite intruded into lower Carboniferous

Species list Domin score

- Bare rock 5
- Bare soil 4
- Festuca ovina 4
- Plantago lanceolata 5
- Thymus polytrichus 4
- Helianthemum ^{nummularium} 4
- Galium verum 4
- Sedum acre 4
- Geranium molle 2
- Agrostis capillaris 2
- ? Trifolium spp (unidentified seedling) 1
- Achillea millefolium 2
- Trifolium repens 1

Domin score

- Moss 4
- Lichens - only on stones/rocks

Species outside quadrat

- Taraxacum spp.

Soil profile

