

**FLOWER-RICH ROAD VERGES**  
**near**  
**Berwick upon Tweed**

**A report by**  
**Berwick Wildlife Group**  
**August 2006**

## **Summary**

- 1) In July 2005 Berwick Wildlife Group were alerted, by Mrs Pannell, Chief Executive of Berwick-upon-Tweed Borough Council, to the presence of a number of flower-rich road verges in the locality – primarily those containing species of orchid. In 2006 four areas were examined in detail.**
- 2) These were all developed on damp neutral soils, and contained a particularly wide range of species, including several which are declining in this arable area. They are therefore valuable sites for conservation and are also extremely attractive.**
- 3) They are vulnerable to damage from agricultural fertilisers, inappropriate cutting regimes and mechanical disturbance.**
- 4) It is recommended that they are identified and their importance notified to all those who might affect them or have an interest in them – local landowners and occupiers, Highway authorities, utilities providers, statutory and voluntary wildlife bodies, and local people.**
- 5) To maintain the rich and varied flora continued cutting is essential, but alterations to the cutting regime (a slightly later cut, occasional full-width cuts, and perhaps raking off cuttings) would be beneficial.**
- 6) Further survey of verges throughout the County, to identify other botanically important sites, could be undertaken.**

## **Survey participants**

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## **Introduction.**

In July 2005 Berwick Wildlife Group were alerted, by Mrs Pannell, Chief Executive of Berwick-upon-Tweed Borough Council, to the presence of a number of flower-rich road verges in the locality – primarily those containing species of orchid.

Last year there was only time to examine one verge before the orchids were over and the verges cut. Berwick Wildlife Group therefore arranged a further survey of "good" verges in the area over three evenings in June and July 2006. It being too dangerous to allow a Group visit to verges on the A1 (although there are several places there where orchids regularly flower), the areas selected were:

- 1) The wide verge near Berrington, on the B 6525 Berwick – Wooler road at approx NU 000 434, which was examined in 2005 and deserved more detailed study. There are two other interesting areas of verge adjacent, which were examined in 2005 but not 2006.
- 2) Two sections of verge on the unclassified road between Bar Moor and Roughting Linn, between NT 984 368 (area 2) and NT 989 376 (area 1).
- 3) A section of verge on the unclassified road west of Kylvie Woods, between NU 035 380 and NU 037 377.
- 4) A small unfenced area, shaded by trees, used as an informal lay-by, where the unclassified road north from Lowick Mill crosses Lickar Dean at NU 018 420.

Location maps are given in Appendix 1.

## **Method of study.**

At the Berrington verges, which are broad and varied, vegetation was recorded using appropriately-sized quadrats (2m x 2m for low vegetation, 4m x 4m for taller areas) and the Domin scale of cover and abundance (See Appendix 6). This is the method recommended for identifying the type of vegetation according to the current classification of British Plant Communities (Rodwell, 1991, 1992). This was difficult to do on the other verges, which were narrow and with a mosaic of plant communities, so simple species-lists were made.

## **Results.**

The Domin scores for the Berrington verge are shown in Appendix 2, and lists for the other 3 areas are in Appendices 3-4.

### Berrington Verges.

41 species of flowering plant were recorded on 22<sup>nd</sup> June 2006. Despite being physically close, the 3 quadrats each appear to represent a different vegetation type of the National Vegetation Classification (Rodwell, 1991; Rodwell, 1992) – indeed they are noticeably distinct on the ground.

Quadrat 1 keys out as MG5 (Mesotrophic Grassland type 5), *Cynosurus cristatus-Centaurea nigra* grassland, (Crested-dogstail Grass-Hardheads grassland) , "a typical grassland of grazed hay-meadows treated in the traditional fashion of circumneutral brown soils throughout the lowlands of Britain. It is becoming increasingly rare as a result of agricultural improvement but is still widespread in farm fields, with more fragmentary stands in churchyards, on road verges, railway embankments and lawns and in disused quarries" (Rodwell, 1992).

Quadrat 2 is dominated by Meadowsweet, *Filipendula ulmaria*. It is at the back of the verge, seldom or never cut, and not a grassland type, but M27 (Marsh type 27) *Filipendula ulmaria-Angelica sylvestris* mire (Meadowsweet-Wild Angelica mire). M27 is "typically found where moist, reasonably rich, circumneutral soils occur in situations protected from grazing. It is to be seen throughout the lowlands of Britain" occurring by streams and in flushes and "widely in artificial habitats, as along dykes and roadside ditches". Although widespread, "in many places, draining and grazing have reduced this vegetation to small remnants" (Rodwell, 1991).

The final quadrat on this verge (3) is more problematical to assign to a typical vegetation type, but seems intermediate between the MG5 of the first quadrat (with plentiful Hardheads) and another, the MG10 (Mesotrophic Grassland type 10), *Holcus lanatus-Juncus effusus* (Yorkshire Fog-Soft Rush) rush-pasture. "The *Holco-Juncetum* is characteristic of permanently moist soils over a wide range of oligotrophic and mesotrophic mineral soils of varying pH throughout the British lowlands and upland fringes. It is generally grazed.....but it is also common on abandoned agricultural land, on damp verges, in ditches..." (Rodwell, 1992).

Rodwell goes on to explain how this Rush-dominated MG10 community has affinities with both the Hardheads-dominated MG5 and the Meadowsweet-dominated M27. They are all dependent on similar types of soil, transition between them being driven by the amount of grazing (or cutting) they receive.

On nearby verges are other flower-rich vegetation stands. A plant-list of the verges here (made in 2005, Appendix 5) including a section of verge on the B6525 on the opposite (west) side of the road and a few metres further south and a section with dryer soils on the adjacent part of the minor road to Berrington Lough, shows a total of 74 species. The more detailed examination within the quadrats in 2006 brought the species total up to 79.

This is more species than the average of 59.3 species per 100 m of "species-rich" verge recorded in Lancashire by Greenwood (in 2000) and each 2m x 2m or 4m x 4m quadrat holds more species than the average of 15.34 species for 10m x 1m plots in infertile (poor soils and therefore species-rich) grassland verges surveyed by the DETR in 1998 (Haines-Young *et al* 2000).

#### Roughting Linn verges.

These are far more difficult to classify. They contain elements of all the above vegetation types – patches dominated by Meadowsweet (M27), by rushes (MG10) and more open grassland with many herbs (MG5), but elements of other habitats are also there – with Marsh Bedstraw and a variety of Rushes (marsh), Quaking Grass (calcareous grassland) , False Oat-grass and Hogweed (characteristic of typical road verges), Tormentil (acid grassland), Heather (dwarf shrub heath)and so on. (Plant Attributes, Hill, Preston and Roy, 2004)

This astonishing variety of habitat types in such a small area adds greatly to the floristic richness and attractive appearance of the verges, and brings a species total of 75, well above the national average for infertile grassland verges (Haines-Young, 2000). The large number of Northern Marsh Orchids, the Twayblade and the Ox-eye Daisy are particularly striking.

#### Kyloe verge.

The Kyloe verge is another mini-mosaic of habitats, again with areas dominated by rushes and Meadowsweet, with elements of other floras and a wide variety of plants (59), although it is perhaps less spectacular than the other two verges. It is much narrower, too, and overshadowed (although probably protected from spray-drift) by Kyloe Wood, but this "good" verge is on the sunny south-west side of the Wood.

#### Lickar Dean.

This area is not a verge as such, but a tiny (15m x 8m) informal lay-by at the edge of a minute patch of damp scrubby woodland. It conforms to no vegetation "type", but contains numerous Common Spotted Orchids and a number of more attractive verge species like Agrimony and Perforate St Johns-wort, plants of damp neutral soils (Water Avens, Wild Angelica) and the grass Meadow Fescue (*Festuca pratensis*) which is decreasing nationally because it is unable to compete with more aggressive grasses (Braithwaite, *et al*, 2006). The trampling effect resulting from use for parking and the light shade is keeping much of this flora from being swamped by vigorous grasses, but shade (particularly from the planted Oak and Horse Chestnut) will soon be too dense for most of the plants. In mid-summer the patch was most attractive, a rapid assessment logging 41 species on 6<sup>th</sup> July, but a visit on 11<sup>th</sup> August revealed an old washing machine and other litter. This tiny site needs constant care, perhaps through a parish council initiative?

### **Discussion.**

There are nearly 500,000 hectares of "transport features" – roads, railways, tracks and their verges in rural areas – in Great Britain (Haines-Young *et al*, 2000). Considering only roadside verges, the same authors characterised the majority of such plots as consisting of "tall grass and herb" (as on the Berrington verge), "infertile grassland" (as at the Roughting Linn and Kyloe verges) and "fertile grassland" – the majority of verges in the Berwick area, and indeed much of lowland Britain. The fertile verges are dominated by False Oat-grass and Cocksfoot with only a few herbaceous species, notably umbellifers like Cow Parsley and Hogweed, some variations including dense stands of Nettles, Rose-bay Willowherb, and Meadowsweet where drainage is impeded.

There has long been an impression that rural road verges are now much less colourful than they were 20 or so years ago (Braithwaite *et al*, 2006). This is borne out by the few systematic studies, e.g. Haines-Young *et al* (2000) showed that species richness had declined in verges in England and Wales between 1990 and 1998, and Greenwood (2000) found similar declines in Lancashire between 1972 and 2000. There is similar general agreement among ecologists that this is unfortunate. "The implication of increasing nutrient levels and local reductions in species-richness in some infertile grassland verges is a particular cause of concern. Such roadside verges are an important refuge for unimproved grassland species in intensively

farmed landscapes. The losses in diversity in tall grass and herb and fertile grassland verges were also associated with reductions in the availability of food plants for butterfly larvae" (and, presumably, other invertebrates) (Haines-Young *et al*, 2000).

A number of factors have been blamed for this loss of diversity (Parr and Way, 1988, Truscott *et al* 2005): changes in cutting regime, non-removal of cuttings, increase in nitrates and ammonia from traffic fumes, fertiliser from agricultural spray-drift, pesticide contamination, run-off or splash of de-icing salt from road verges, atmospheric deposition of oxides of nitrogen and sulphur, and weather conditions (Dunnett *et al*, 1998).

On rural roads in our area decreased cutting and increased soil fertility from agricultural operations and traffic are probably the most important factors driving decrease in species richness, in most cases agricultural enrichment being more important than the sparse traffic. Indeed I suspect (although I have no direct proof) that these comparatively rare floristically-rich verges result from protection from agricultural chemicals – the Berrington verges being screened by tall, thick hedgerows and a line of trees, the Roughting Linn verges not subject to spraying because the moorland and woodland adjacent is not intensively managed, and the Kylloe Woods protecting the verge (the verge on the other side of the Kylloe road, next to an arable field, is not so species-rich). All these flower-rich verges are also on damp soils (which will to some extent suppress the aggressive grasses, although where damp soils are nutrient-rich species such as Great Willowherb or dense stands of Meadowsweet or Stinging Nettle will take over – Rodwell 1992).

The final necessity for floristic richness on these verges is a sympathetic mowing regime. A comprehensive study by Parr and Way (1988) tested differing mowing regimes against species richness on a number of verges. Frequent cutting (5 times a year) encourages grasses at the expense of herbs, but species richness was lowest on the completely uncut plots (as tough tall grass overtopped the smaller plants).

Two cuts per annum gave greatest species diversity. The timing of cutting was also considered important, some species being particularly sensitive to an early cut (May). Raking off the cut grass also increased species richness, perhaps not only because of the reduction in nutrients that results, but because a dense covering of cut grass will smother underlying plants and prevent seedling establishment.

### **Evaluation. How important are these verges?**

We had been told of the Berrington verges, and by adapting local travelling in June to cover different rural roads I discovered the Roughting Linn verges. The Kylloe verge was found by Sue Maddox. However, species-rich verges are obviously very unusual in this area.

In botanical terms (and terms of habitat for other species) species-rich verges are valuable. "They provide analogues of meadow or pasture according to the mowing regime" (Swan, 1993). I happened to survey one of the tetrads (2km x 2km survey areas) adjacent to the Berrington verges for the Botanical Society of the British Isles' survey of Change in the British Flora (Braithwaite *et al*, 2006) and recorded loss of several plant species between 1987 and 2003/04 in this square, predominantly species of pastureland and wet grassland, including Cuckoo Flower which is present

on the Berrington verge. The survey of Change showed that Cuckoo Flower is declining nationally, as are many other species found on the three verges such as Wild Angelica, Marsh Thistle, Yellow Rattle, Hemp Agrimony, Twayblade and Marsh Valerian (Braithwaite *et al* 2006).

Flower-rich verges are very attractive, noticed by local people and passers-by. This year the Berrington verges were cut before most of the flowers had appeared (and the Common Spotted Orchids suffered badly in the dry weather), but in 2005 they were truly spectacular. When I was examining them a passer-by stopped her car, questioned me closely as to my interest in the area, and urged me to keep it a secret to protect the flowers. The Roughting Linn and Kyloe verges are also extremely colourful, but this year they were cut at the beginning of the main flowering season.

### **Recommendations.**

Of the factors affecting vegetation of these rural verges in the lowlands, nitrogen enrichment (particularly spray-drift from agricultural operations) and unsympathetic cutting seem to be the main dangers, although physical disturbance (utility excavations, parking of heavy machinery, temporary storage of spoil or construction materials), or changes in local land drainage could be catastrophic. Protection therefore requires:

1) Identification of these verges as being "special" and their presence notified to all who might affect them or have an interest in them. Particular attention should be given to contacting users of nearby fields to protect the verges from fertiliser and herbicide, and Highway Authorities and utilities providers and their contractors to make sure none are physically damaged. Statutory and voluntary wildlife bodies, parish councils and local people can keep a watching brief if they know of the importance of the verges, and could identify other valuable areas.

2). The verges appear to be cut once a year, the width of the cut varying considerably year by year. This is probably enough for survival of interesting plants on the Kyloe and Roughting Linn verges, but parts of the Berrington verge are becoming overgrown. Also at Berrington, oak trees have been planted on the verge, native species of great value to wildlife and no doubt planted with the best of intentions, but they will eventually cause change in the verge flora by shading. (This could be beneficial in the short term - the Lickar Dean area is already shaded but many attractive species, notably the Common Spotted Orchid, seem able to survive and more rampant species are suppressed – although eventually the shade will overwhelm the species-rich flora).

As part of its Biodiversity Action Plan Cumbria County Council has set out to manage its verge cutting in an environmentally friendly way, working with Cumbria Wildlife Trust to produce a particularly clear plan for cutting verges to promote wildlife (Cumbria Wildlife Trust website 2006).

Their regime is:

- Flower-rich verges are generally cut later in the year
- Other types of verge may need an earlier cut

- Every four years, a full width cut is made late in the year to prevent woody weeds and saplings growing, as these would shade out more delicate flowers
- The 650 Special Verges have their cuttings removed to reduce fertility and so encourage a greater diversity of wildflowers
- In order to maintain a safe and wildlife-rich road network, contractors work from maps showing which verges to cut and when. The County Council assess the work and revises cutting times if necessary.

In terms of the three Northumberland verges examined, this plan could be put into operation. If the verges are cut two or three weeks later (late July or early August) the main flowering season will be over, seed will be set and people will be able to admire the colourful plants. (Local people should be told first, or there will be complaints of "untidiness" – maybe temporary roadside notices and contact with Parish Councils?).

The front swathe of the verges must continue to be cut at least once but no more than twice a year to suppress the more vigorous vegetation as well as for road safety. Preferably most flowers should be allowed to set seed before cutting, but the plants at the back of the verge which are seldom cut are probably an adequate seed source. It would be beneficial to rake off cut grass, to reduce fertility, prevent smothering and create spaces for seedlings. As is carried out in Cumbria, a two- or four-year rotation of full width cutting, combined with raking off the long cut grass, would be appropriate for the Roughing Linn verges. At Berrington occasional cutting further back is desirable but the site is complex and would need special consideration, and at Kyloe the verges are narrow but shrubs and a ditch make a complete cut difficult.

The orchid-rich areas beside the A1 which were notified to us but which we did not visit could also benefit from survey and management (sympathetic cutting regimes). They are listed in Appendix 7.

### **Taking it further.**

If there are three areas of "good" verges on rural roads immediately south of Berwick, are there others in other parts of the County? Do any have any sort of protection? Have any been identified in surveys? Could a special survey be implemented and protection measures put in place for species-rich verges? Might this sort of project be suited to "citizen science", involving co-operation between local people, farmers, Highway authorities and wildlife bodies?

Such surveys have been undertaken in many other parts of the country with funding from a variety of sources, e.g. in Cumbria, Durham, Lincolnshire, Cheshire, Cambridgeshire and Carmarthenshire. See, for example:

- [www.wildlifetrust.org.uk/cumbria/Surveys/Roadside%20Verges%20Who%20Looks%20After%20Our%20Verges.htm](http://www.wildlifetrust.org.uk/cumbria/Surveys/Roadside%20Verges%20Who%20Looks%20After%20Our%20Verges.htm)
- [www.cheshire-biodiversity.org.uk/habitat-rverges.htm](http://www.cheshire-biodiversity.org.uk/habitat-rverges.htm) .
- [www.lincsbap.org/habitats/actionplan.php?hap=fg4](http://www.lincsbap.org/habitats/actionplan.php?hap=fg4)

Such a survey would be very valuable in Northumberland, perhaps starting with just part of this large county.

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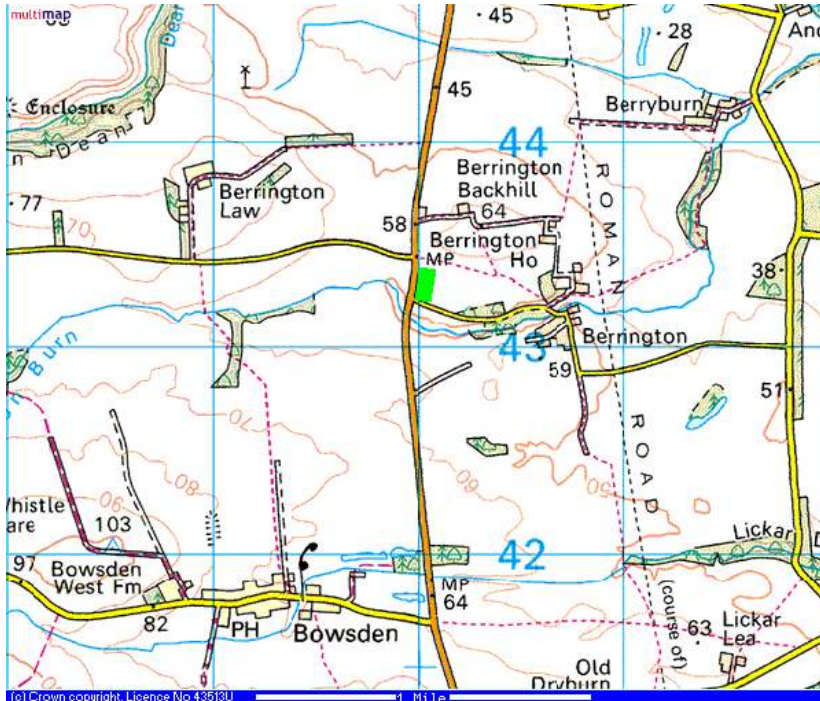
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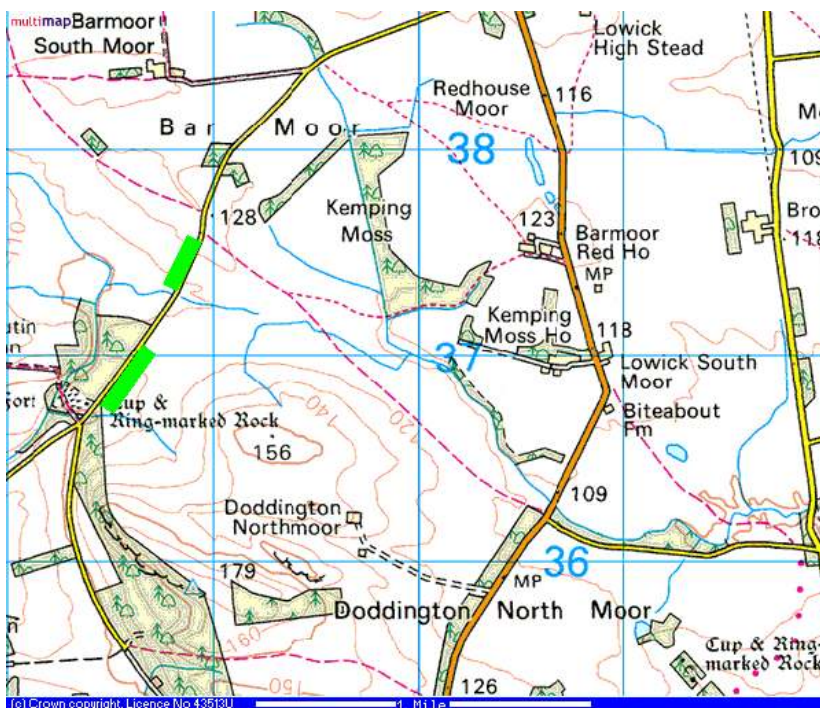
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**Appendix 1**  
**Maps showing areas of verge examined.**

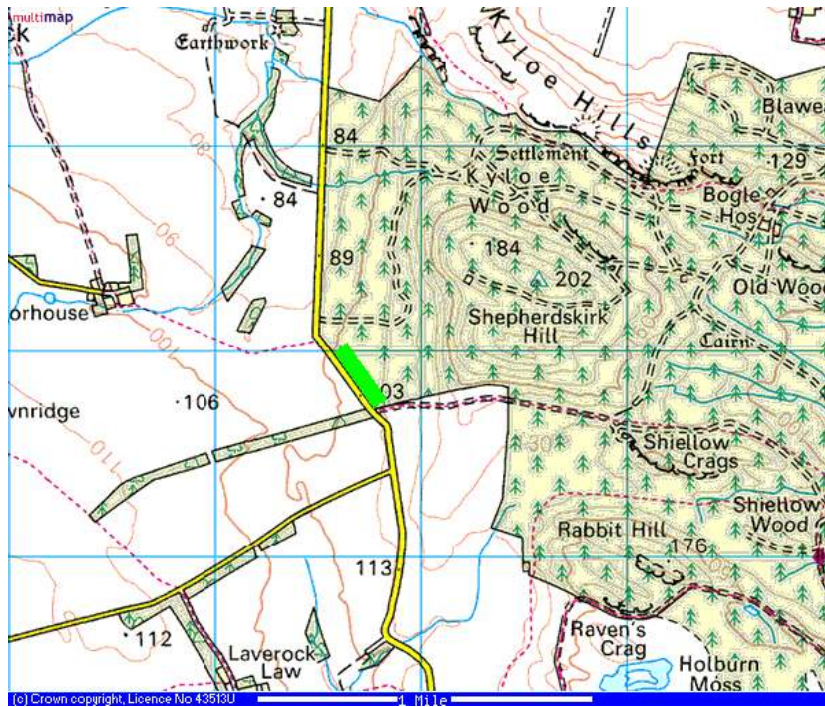
**Berrington : NU 000 434**



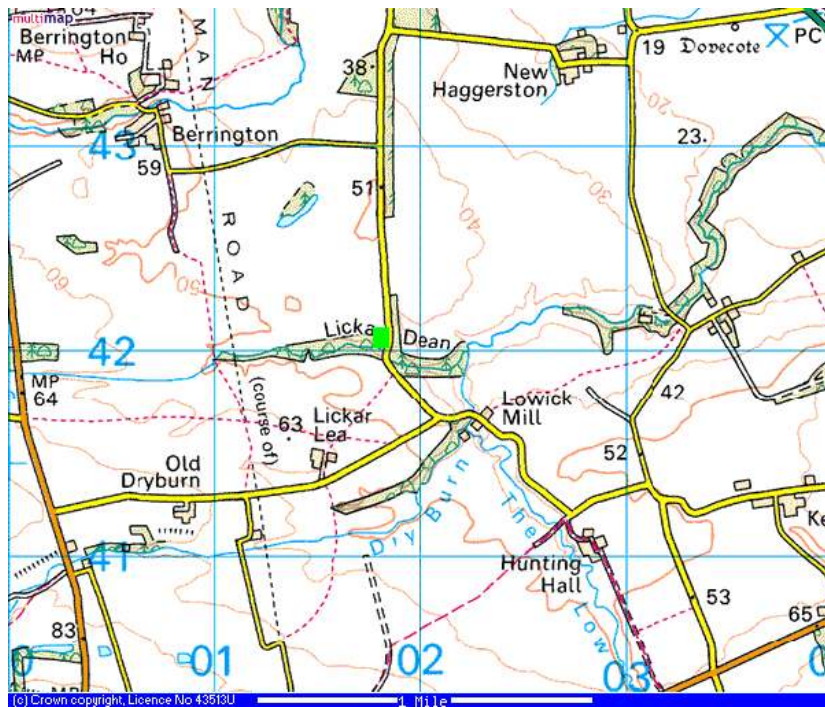
**Roughting Linn NT 984 368 and NT 989 376**



**Kyloe NU 035 380 to NU 037 377**



**Lickar Dean NU 018 420**



**Appendix 2**

**Verges Survey 2006**  
**Berrinton verge. NU 000 434. 22/06/2006**

		Quad 1*	Quad 2 *	Quad 3 *	
Achillea millefolium	Yarrow			2	
Angelica sylvestris	Wild Angelica	3		5	
Anthoxanthum odoratum	Sweet Vernal-grass	4	2		
Anthriscus sylvestris	Cow Parsley		1		
Cardamine pratensis	Cuckoo Flower	2			
Carex flacca	Glaucous Sedge	3			
Centaurea nigra	Hardheads	5	5	5	
Cerastium fontanum	Common Mouse-ear	2		3	
Cirsium palustre	Marsh Thistle		2	OQ	
Cirsium vulgare	Spear Thistle	1			
Crataegus monogyna	Hawthorn			1	
Cynosurus cristatus	Crested Dogs-tail	2			
Dactylorhiza fuchsii	Common Spotted Orchid	3	3	2	
Deschampsia cespitosa	Tufted Hair-grass		2		
Epilobium montanum	Broad-leaved Willowherb		2		
Festuca rubra	Red Fescue	4	4	2	
Filipendula ulmaria	Meadowsweet	4	8		
Fraxinus excelsior	Ash			3	
Galium aparine	Goosegrass				
Geum rivale	Water Avens		4		
Heracleum sphondylium	Hogweed			2	
Holcus lanatus	Yorkshire Fog	4	2	5	
Juncus effusus	Compact Rush	2	4	8	
Lathyrus pratensis	Meadow Vetchling	4	5	4	
Lychnis flos-cuculi	Ragged Robin	4	5		
Plantago lanceolata	Ribwort Plantain	3	2		
Poa pratensis	Smooth Meadow-grass		1		
Potentilla anserina	Silverweed			OQ	
Prunella vulgaris	Self Heal	3			
Ranunculus acris	Meadow Buttercup	4		5	
Ranunculus repens	Creeping Buttercup	4		2	
Rhinanthus minor	Yellow Rattle	4		1	
Rosa sp.	Rose	1		1	
Rumex acetosa	Sorrel	2	4	5	
Senecio jacobea	Ragwort	3		5	
Stellaria graminea	Lesser Stitchwort			4	
Taraxacum agg.	Dandelion	1			
Trifolium pratense	Red Clover	4			
Valeriana officinalis	Common Valerian			3	
Veronica chamaedrys	Germander Speedwell	1	1		
Vicea cracca	Tufted Vetch			4	
<b>No. of species</b>		<b>41</b>	<b>26</b>	<b>18</b>	<b>23</b>

\*

Quadrat 1 - N side of Berrington Road, short veg. 2m x 2m    MG5            M27    MG5/MG10

Quadrat 2 - N side of Berrington Road, longer veg. 4m x 4m

Quadrat 3 - S side of Berrington Road, longer veg. 4m x 4m

OQ = Outside Quadrat

### Appendix 3

#### Verges Survey 2006 Roughing Linn verges. NT 989 376 & NT 984 368. 29/06/2006

		Area 1 *	Area 2 *
<i>Achillea millefolium</i>	Yarrow	x	
<i>Agrimonia eupatoria</i>	Agrimony	x	x
<i>Agrostis stolonifera</i>	Creeping Bent	x	x
<i>Angelica sylvestris</i>	Angelica		x
<i>Anthoxanthum odoratum</i>	Sweet Vernal-grass	x	x
<i>Anthriscus sylvestris</i>	Cow Parsley	x	x
<i>Arrhenatherum elatius</i>	False Oat-grass	x	x
<i>Briza media</i>	Quaking-grass	x	
<i>Calluna vulgaris</i>	Heather	x	x
<i>Carex flacca</i>	Glaucous Sedge	x	
<i>Carex otrubae</i>	False Fox-sedge		x
<i>Centaurea nigra</i>	Hardheads	x	x
<i>Cerastium fontanum</i>	Common Mouse-ear	x	x
<i>Chamerion angustifolium</i>	Rosebay Willowherb		x
<i>Cirsium arvense</i>	Creeping Thistle	x	
<i>Cirsium palustre</i>	Marsh Thistle		x
<i>Crataegus monogyna</i>	Hawthorn	x	x
<i>Cruciata laevipes</i>	Crosswort	x	x
<i>Dactylis glomerata</i>	Cocksfoot	x	x
<i>Dactylorhiza purpurella</i>	Northern Marsh Orchid	x	x
<i>Deschampsia cespitosa</i>	Tufted Hair-grass	x	x
<i>Dryopteris felix-mas</i>	Male Fern	x	x
<i>Equisetum arvense</i>	Common Horsetail		x
<i>Festuca rubra</i>	Red Fescue	x	
<i>Filipendula ulmaria</i>	Meadowsweet		x
<i>Galium aparine</i>	Goosegrass	x	
<i>Galium palustre</i>	Marsh Bedstraw		x
<i>Galium saxatile</i>	Heath Bedstraw	x	x
<i>Galium verum</i>	Ladies Bedstraw	x	
<i>Geum rivale</i>	Water Avens	x	x
<i>Heracleum sphondylium</i>	Hogweed	x	x
<i>Holcus lanatus</i>	Yorkshire Fog	x	x
<i>Hypericum perforatum</i>	Perforate St. John'swort	x	
<i>Juncus acutiflorus</i>	Sharp-flowered Rush		x
<i>Juncus bufonius</i>	Toad Rush		x
<i>Juncus effusus</i>	Soft Rush	x	
<i>Juncus inflexus</i>	Hard Rush		x
<i>Lamium album</i>	White Dead-nettle		x
<i>Lathyrus pratensis</i>	Meadow Vetchling	x	x
<i>Leucanthemum vulgare</i>	Ox-eye Daisy		x
<i>Listera ovata</i>	Twayblade	x	x
<i>Lolium perenne</i>	Rye Grass	x	
<i>Lonicera periclymenum</i>	Honeysuckle		x
<i>Lotus corniculatus</i>	Birdsfoot Trefoil	x	x
<i>Lotus pedunculatus</i>	Greater Birdsfoot Trefoil		x
<i>Myosotis arvensis</i>	Field Forget-me-not	x	
<i>Phleum pratense</i>	Timothy	x	
<i>Plantago lanceolata</i>	Ribwort Plantain	x	x

<i>Poa trivialis</i>	Rough-stalked Meadow-grass	x	
<i>Potentilla anserina</i>	Silverweed	x	x
<i>Potentilla erecta</i>	Tormentil	x	
<i>Prunella vulgaris</i>	Self Heal	x	
<i>Pteridium aquilinum</i>	Bracken	x	
<i>Ranunculus acris</i>	Meadow Buttercup	x	x
<i>Ranunculus repens</i>	Creeping Buttercup	x	x
<i>Rhinanthus minor</i>	Yellow Rattle	x	x
<i>Rosa sp.</i>	Rose	x	x
<i>Rubus fruticosus</i>	Bramble	x	
<i>Rumex acetosa</i>	Sorrel	x	x
<i>Salix aurita</i>	Eared Sallow		x
<i>Sambucus nigra</i>	Elder	x	
<i>Sonchus asper</i>	Prickly Sow-thistle	x	
<i>Stachys sylvatica</i>	Hedge Woundwort	x	x
<i>Stellaria uliginosa</i>	Bog Stitchwort		x
<i>Trifolium pratense</i>	Red Clover	x	
<i>Trifolium repens</i>	White Clover	x	
<i>Trisetum flavescens</i>	Yellow Oat-grass		x
<i>Ulex europea</i>	Gorse	x	
<i>Urtica dioica</i>	Stinging Nettle	x	x
<i>Valeriana officinalis</i>	Common Valerian	x	x
<i>Veronica chamaedrys</i>	Germander Speedwell	x	x
<i>Vicia cracca</i>	Tufted Vetch	x	x
<i>Vicia sativa</i>	Common Vetch	x	
<i>Vicia sepium</i>	Bush Vetch	x	
<i>Viola riviniana</i>	Dog Violet	x	x

<b>Total no. species</b>	<b>75</b>	<b>58</b>	<b>51</b>
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Area 1. NT 989 376. Both sides of road by moorland.

Area 2. NT 984 368. By woodland and moorland - ditches.

Appendix 4

Verges Survey 2006  
Kylloe NU 035 380 and Lickar Dean NU 018 420. 06/07/2006

		Kylloe*	Lickar*
<i>Acer campestre</i>	Field Maple	x	
<i>Achillea ptarmica</i>	Sneezewort	x	
<i>Aesculus hippocastanum</i>	Horse Chestnut		x
<i>Agrimonia eupatoria</i>	Agrimony	x	x
<i>Agrostis canina</i>	Brown Bent		x
<i>Alchemilla glabra</i>	Lady's Mantle	x	
<i>Angelica sylvestris</i>	Wild Angelica		x
<i>Anisantha sterilis</i>	Barren Brome	x	
<i>Anthriscus sylvestris</i>	Cow Parsley	x	
<i>Arrhenatherum elatius</i>	False Oat Grass	x	x
<i>Brachypodium sylvaticum</i>	False Brome	x	
<i>Carex flacca</i>	Glaucous Sedge	x	x
<i>Centaurea nigra</i>	Hardheads	x	x
<i>Cerastium fontanum</i>	Common Mouse-ear	x	
<i>Chamerion angustifolium</i>	Rosebay Willowherb	x	
<i>Cirsium arvense</i>	Creeping Thistle	x	
<i>Cirsium palustre</i>	Marsh Thistle	x	
<i>Crataegus monogyna</i>	Hawthorn	x	x
<i>Cruciata laevipes</i>	Crosswort	x	x
<i>Cynosurus cristatus</i>	Crested Dogs-tail		x
<i>Cytisus scoparius</i>	Broom		x
<i>Dactylis glomerata</i>	Cocks-foot	x	x
<i>Dactylorhiza fuchsii</i>	Common Spotted Orchid	x	x
<i>Deschampsia cespitosa</i>	Tufted Hair-grass	x	x
<i>Dryopteris felix-mas</i>	Male Fern	x	
<i>Elytrigia repens</i>	Couch	x	
<i>Epilobium montanum</i>	Broad-leaved Willowherb		x
<i>Equisetum arvense</i>	Common Horsetail	x	
<i>Festuca pratensis</i>	Meadow Fescue	x	x
<i>Festuca rubra</i>	Red Fescue		x
<i>Filipendula ulmaria</i>	Meadowsweet	x	x
<i>Fraxinus excelsior</i>	Ash	x	
<i>Galium aparine</i>	Goosegrass	x	x
<i>Galium palustre</i>	Marsh Bedstraw	x	
<i>Geranium robertianum</i>	Herb Robert		x
<i>Geum rivale</i>	Water Avens	x	x
<i>Heracleum sphondylium</i>	Hogweed	x	x
<i>Holcus lanatus</i>	Yorkshire Fog	x	x
<i>Holcus mollis</i>	Creeping Softgrass	x	
<i>Hypericum perforatum</i>	Perforate St John'swort		x
<i>Juncus acutiflorus</i>	Sharp-flowered Rush	x	
<i>Juncus conglomeratus</i>	Compact Rush	x	
<i>Juncus inflexus</i>	Hard Rush	x	
<i>Lamium album</i>	White deadnettle	x	
<i>Lathyrus pratensis</i>	Meadow Vetchling	x	x
<i>Lolium perenne</i>	Rye Grass	x	
<i>Lotus pedunculatus</i>	Greater Birdsfoot Trefoil	x	
<i>Matricaria discoidea</i>	Pineappleweed	x	

<i>Medicago lupulina</i>	Black Medick		x
<i>Phleum pratensis</i>	Timothy		x
<i>Plantago lanceolata</i>	Ribwort Plantain		x
<i>Plantago major</i>	Great Plantain	x	x
<i>Poa annua</i>	Annual Meadow-grass	x	
<i>Poa trivialis</i>	Rough Meadow-grass	x	
<i>Potentilla anserina</i>	Silverweed	x	x
<i>Potentilla erecta</i>	Tormentil	x	
<i>Prunella vulgaris</i>	Self Heal		x
<i>Prunus spinosa</i>	Blackthorn		x
<i>Quercus robor</i>	Pedunculate Oak		x
<i>Ranunculus acris</i>	Meadow Buttercup	x	
<i>Rhinanthus minor</i>	Yellow Rattle	x	
<i>Rosa canina</i>	Dog Rose	x	
<i>Rubus fruticosus</i>	Bramble	x	x
<i>Rumex acetosa</i>	Sorrel	x	
<i>Rumex crispus</i>	Curled Dock		x
<i>Salix aurita</i>	Eared Sallow	x	
<i>Senecio jacobea</i>	Ragwort		x
<i>Silene dioica</i>	Red Campion		x
<i>Sonchus asper</i>	Prickly Sow-thistle	x	
<i>Stachys sylvatica</i>	Hedge Woundwort	x	
<i>Stellaria graminea</i>	Lesser Stitchwort	x	
<i>Taraxacum agg.</i>	Dandelion	x	
<i>Trifolium pratense</i>	Red Clover		x
<i>Trifolium repens</i>	White Clover	x	x
<i>Trisetum flavescens</i>	Yellow Oatgrass	x	
<i>Tussilago farfara</i>	Coltsfoot	x	
<i>Ulex europea</i>	Gorse		x
<i>Urtica dioica</i>	Stinging Nettle	x	
<i>Veronica chamaedrys</i>	Germander Speedwell		x
<i>Vicia cracca</i>	Tufted Vetch	x	x
<i>Vicia sepium</i>	Bush Vetch	x	

<b>Total no. species</b>	<b>81</b>	<b>59</b>	<b>41</b>
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Area 1. Kylloe, verge by wood. NU 035 380

Area 2. Lickar Dean. "Lay-by" NU 018 420

**Appendix 5**

**Preliminary verge survey at Berrington, July 2005**

**B6525 West (NT 999 431), East (NU000 432) and Lough lane (NT 997 434)**

21/07/2005

<i>Achillea millefolium</i>	Yarrow
<i>Agrimonia eupatoria</i>	Agrimony
<i>Agrostis canina</i>	Bent Grass
<i>Agrostis stolonifera</i>	Creeping Bent Grass
<i>Angelica sylvestris</i>	Wild Angelica
<i>Anthoxanthum odoratum</i>	Sweet Vernal Grass
<i>Anthriscus sylvestris</i>	Cow Parsley
<i>Arrhenatherum elatius</i>	False Oat Grass
<i>Cardamine pratensis</i>	Cuckoo Flower
<i>Centaurea nigra</i>	Hardheads
<i>Cerastium fontanum</i>	Common Mouse-ear
<i>Chamerion angustifolium</i>	Rosebay Willowherb
<i>Cirsium arvense</i>	Creeping Thistle
<i>Cirsium palustre</i>	Marsh Thistle
<i>Cirsium vulgare</i>	Spear Thistle
<i>Crataegus monogyna</i>	Hawthorn
<i>Cruciata laevipes</i>	Crosswort
<i>Cynosurus cristatus</i>	Crested Dogstail Grass
<i>Dactylis glomerata</i>	Cocksfoot
<i>Dactylorhiza fuchsii</i>	Common Spotted Orchid
<i>Deschampsia cespitosa</i>	Tufted Hair Grass
<i>Elytrigia repens</i>	Couch Grass
<i>Epilobium hirsutum</i>	Great Willowherb
<i>Epilobium montanum</i>	Broadleaved Willowherb
<i>Festuca rubra</i>	Red Fescue Grass
<i>Filipendula ulmaria</i>	Meadowsweet
<i>Galium aparine</i>	Goosegrass
<i>Galium verum</i>	Ladies Bedstraw
<i>Geranium dissectum</i>	Cutleaved Cranesbill
<i>Geranium pratense</i>	Meadow Cranesbill
<i>Geranium robertianum</i>	Herb Robert
<i>Geum rivale</i>	Water Avens
<i>Hedera helix</i>	Ivy
<i>Heracleum sphondylium</i>	Hogweed
<i>Holcus lanatus</i>	Yorkshire Fog Grass
<i>Juncus effusus</i>	Soft Rush
<i>Lathyrus pratensis</i>	Meadow Vetchling
<i>Lolium perenne</i>	Rye Grass
<i>Lotus corniculatus</i>	Birdsfoot Trefoil
<i>Lychnis flos-cuculi</i>	Ragged Robin
<i>Medicago lupulina</i>	Black Medick
<i>Myosotis arvensis</i>	Field Forget-me-not
<i>Odontites verna</i>	Red Bartsia
<i>Phalaris arundinacea</i>	Reed Canary Grass
<i>Phleum pratense</i>	Timothy Grass
<i>Plantago lanceolata</i>	Ribwort Plantain
<i>Potentilla anserina</i>	Silverweed
<i>Potentilla reptans</i>	Creeping Cinquefoil

<i>Prunella vulgaris</i>	Self Heal
<i>Prunus spinosa</i>	Blackthorn
<i>Ranunculus repens</i>	Creeping Buttercup
<i>Rhinanthus minor</i>	Yellow Rattle
<i>Rosa</i> sp.	Rose
<i>Rubus fruticosus</i>	Bramble
<i>Rumex acetosa</i>	Common Sorrel
<i>Rumex</i> sp	Dock
<i>Salix aurita</i>	Eared Willow
<i>Sambucus nigra</i>	Elder
<i>Senecio jacobaea</i>	Ragwort
<i>Silene dioica</i>	Red Campion
<i>Stachys sylvatica</i>	Hedge Woundwort
<i>Stellaria graminea</i>	Lesser Stitchwort
<i>Torilus japonica</i>	Upright Hedge Parsley
<i>Tragopogon pratensis</i>	Goatsbeard
<i>Trifolium pratense</i>	Red Clover
<i>Trifolium repens</i>	White Clover
<i>Trisetum flavescens</i>	Yellow Oat Grass
<i>Tussilago farfara</i>	Coltsfoot
<i>Ulex europaeus</i>	Gorse
<i>Urtica dioica</i>	Nettle
<i>Valeriana officinalis</i>	Common Valerian
<i>Veronica chamaedrys</i>	Germander Speedwell
<i>Vicea cracca</i>	Tufted Vetch
<i>Vicea sativa</i>	Common Vetch
<b>Total no. of species</b>	<b>73</b>

## Appendix 6

### Assessment of plant abundance

The Domin scale of cover and abundance, originally derived by E. Dahl and E. Hadac in 1941, is a standard method of assessing vegetation used by many botanists and essential for identifying plant communities using Rodwell's classification. Cover is assessed by eye, for each species, as a vertical projection onto the ground of all the live, above-ground parts of the plants in the quadrat (Rodwell, 1992). The plants usually overlap each other, so the total is very usually equivalent to well over 100%.

### Domin scale

<u>Percentage cover</u>	<u>Domin number</u>
91-100%	10
76-90%	9
51-75%	8
34-50%	7
26-33%	6
11-25%	5
4-10%	4
< 4%, 10+ individuals	3
<4%, 4 – 10 individuals	2
<4%, 1 – 3 individuals	1

## Appendix 7

### Orchid-rich verges beside the A1

1) NU 000 506. West side of cutting on old A1 just south of Berwick (near cemetery). Northern Marsh Orchids. Cutting is already timed by Berwick Borough Council until after the orchids have flowered and set seed, but in some years long cut grass is left on the verge – it would benefit the orchids if it were raked off.

2) NU 000496. West side of south end of Berwick bypass, small patch at foot of bank beside road. Northern Marsh Orchids. Flowered well 2006. Slightly later verge cutting, ideally with raking-off, would benefit.

3) NU 132 301. South side of Purdy's Lodge development and north-facing slope of Adderstone road. Common Spotted Orchids. These are growing in new cuttings, where nutrient-poor subsoil is excellent for the development of flower-rich areas, but the smaller plants may soon be overwhelmed by vigorous grasses. A sympathetic cutting and raking regime would preserve them.