ANNEX 1

Pen Portraits (Including Site List)

1. PEN PORTRAITS

1.1 This annex presents the pen portraits for each site surveyed in 2012. These include:

- Field description at the time of survey;
- NVC vegetation community and quality assessment;
- Comparison with past datasets where available.

1.2 A full list of sites covered by the 2012 survey is presented in Table 1.

Descriptive Statistics

1.3 A range of metrics were calculated for each site using both the 2012 field survey data and the available historic data. These included the calculation of average species richness, average Grazing Suited Species Score and the average Nutrient Availability Suited Species Scores (see below) across each quadrat for each site. In addition, the change in species richness between the baseline year (see Table 1) and 2012 was also calculated.

1.4 In order to investigate the changing status of the hay meadow sites, one-way Analysis of Variance, where datasets showed a normal distribution (confirmed using the one-sample Kolmogorov-Smirnov test), were employed to look at whether significant differences occur between HLS groups HK6 (species-rich semi natural grassland sites) and HK7 (restoration of species-rich grassland sites); ELS tiers 1B (meadows, pastures and allotments) and 2A (herb-rich meadows); ELS agreement years; and finally comparisons between the subset of new sites surveyed in 2012 and all other sites. Where data were not determined to be normally distributed, the non-parametric Kruskall-Wallis test was applied instead.

Suited Species Scores

1.5 Average grazing and nutrient availability suited species scores were calculated for each site in each year using information provided from http://www.suitedspecies.com. These average values provide a measure of the dominance (or otherwise) of species suited to either high levels of grazing intensity or high nutrient availability and can, therefore, be used as a direct measure of management changes for suites of sites. For example, changes in a grazing regime as a result of management prescriptions through agri-environment schemes, such as a reduction in grazing intensity, would ideally be represented as a decrease in the average grazing suited species score for a site through time as the proportion of these species declines. A suited species score, therefore, provides a quantitative measure that is directly related to the management objectives of any given site. For each site, a suited species score was calculated as the average score of all species present in the sample (where each species has a score of -1, 0 or +1). These data were analysed in relation to overall trends across all sites, and also to inform the interpretation of temporal changes in vegetation for each site individually.

TABLE 1 SITE LIST

	Agreement No.	Parcel	Area	Derivation	Last Surveyed	HK18
602	AG00329886	8488	Weardale	NEW SITE		No?
603	AG00392145	3750	Teesdale	Validation Site 19	2002	Yes
604	AG00339536	2744	Teesdale	Validation Site 42	2002	Yes
605	AG00357873	4690	Lunedale	Indicative Site 403	2002	Yes
606	AG00357873	1989	Lunedale	Indicative Site 395		Yes
607	AG00350436	5419	Crosby Garrett	NEW SITE		Yes
608	AG00299537	6597	Ravenstonedale	NEW SITE		Yes
609	AG00343686	8195	Mallerstang	Indicative Site 379		Yes
610	AG00328759	9889	Mossdale/Mallerstang	Indicative Site 372		No
611	AG00393673	5440	Swaledale	Validation Site 63	2002	[Yes]
612	AG00393673	4552	Swaledale	Validation Site 64	2002	[Yes]
613	AG00382294	6572	Swaledale	Indicative Site 164	2002	No?
614	AG00382294	7361	Swaledale	Indicative Site 165		No?
615	AG00387931	8142	Swaledale	Indicative Site 114	2002	No
616	AG00395246	9704	Swaledale	Indicative Site 117		Yes
617	AG00382646	8139	Swaledale	NEW SITE		Yes
618	AG00333414	8724	Swaledale	NEW SITE		No
619	AG00317062	1464	Dentdale	Indicative Site 197		Yes
620	AG00355031	1227	Wensleydale	NEW SITE		Yes
621	AG00392718	3399	Raydale	Indicative Site 334	2002	Yes
622	AG00392718	3512	Raydale	Indicative Site 337	2002	Yes
623	AG00320227	3637	Waldendale	Indicative Site 240		
624	AG00329343	7226	Bishopdale	NEW SITE		Yes
625	AG00383494	8504	Coverdale	Indicative Site 322	2002	Yes
626	AG00384249	8113	Langstrothdale	Indicative Site 316		Yes
627	AG00384174	4153	Langstrothdale	NEW SITE		Yes
628	AG00384289	4992	Langstrothdale	Indicative Site 306		Yes
629	AG00327812	2705	Wharfdale	Indicative Site 291	2002	Yes
630	AG00353038	7194	Wharfdale	Indicative Site	2002	Yes

	Agreement No.	Parcel	Area	Derivation	Last Surveyed	HK18
				297		
631	AG00342114	3474	Wharfdale	Validation Site 2	2002	Yes
632	AG00329343	5523	Wharfdale	NEW SITE		Yes
HK7 Sample						
701	AG00346696	4448	Tynedale	Indicative Site 459	2002	Yes
702	AG00327303	4413	Tynedale	N/A		No?
703	AG00325757	8827	Tynedale	N/A		Yes
704	AG00314312	2082	East Allendale	Indicative Site 419		Yes
705	AG00316218	7492	East Allendale	Indicative Site 411		Yes
706	AG00316218	0539	East Allendale	Indicative Site 416		Yes
707	AG00332218	4967	West Allendale	Indicative Site 432		Yes
708	AG00332218	1847	West Allendale	N/A		Yes
709	AG00305675	8921	West Allendale	N/A		Yes
710	AG00319444	0312	Weardale	Indicative Site 42	2002	Yes
711	AG00326038	7417	Weardale	Indicative Site 23		No
712	AG00368432	8280	Weardale	Indicative Site 14	2002	Yes
713	AG00350658	5156	Weardale	N/A		Yes
714	AG00314286	5114	Weardale	N/A		Yes
715	AG00384544	8686	Weardale	Indicative Site 9		Yes
716	AG00351866	2777	Teesdale	Indicative Site 82	2002	Yes
717	AG00339536	3723	Teesdale	Validation Site 46	2002	Yes
718	AG00385387	5710	Teesdale	Indicative Site 65	2002	Yes
719	AG00342702	2915	Teesdale	Indicative Site 50	2002	No
720	AG00349469	2858	Teesdale	Validation Site 27		No
721	AG00349469	5541	Teesdale	Indicative Site 70	2002	No
722	AG00297236	2806	Teesdale	Indicative Site 79	2002	Yes
723	AG00297236	7906	Teesdale	Indicative Site 68	2002	Yes
724	AG00365892	0227	Teesdale	Indicative Site 60	2002	Yes
725	AG00346136	5350	Teesdale	Indicative Site 101	2002	Yes
726	AG00311099	7435	Teesdale	Indicative Site 54	2002	Yes
727	AG00325920	6733	Teesdale	Validation Site 21	2002	Yes
728	AG00310733	9306	Teesdale	Indicative Site 52	2002	Yes
729	AG00309290	3718	Teesdale	Validation Site 16		Yes
730	AG00309290	6122	Teesdale	Indicative Site 49	2002	Yes
731	AG00309290	7137	Teesdale	Validation Site 17		Yes

	Agreement No.	Parcel	Area	Derivation	Last Surveyed	HK18
732	AG00342701	2049	Teesdale	Validation Site 20		No
733	AG00342701	2937	Teesdale	Indicative Site 53	2002	No
734	AG00331070	2787	Teesdale	Indicative Site 75	2002	Yes
735	AG00324134	8827	Teesdale	Indicative Site 59	2002	Yes
736	AG00352809	5624	Teesdale	NEW SITE		Yes
737	AG00310738	1140	Teesdale	NEW SITE		Yes
738	AG00329667	4306	Teesdale	NEW SITE		Yes
739	AG00370166	7886	Baldersdale	NEW SITE		Yes
740	AG00326431	1330	Ravenstonedale	NEW SITE		Yes
741	AG00326431	7674	Ravenstonedale	NEW SITE		Yes
742	AG00301280	2337	Arkengarthdale	Indicative Site 162	2002	Yes
743	AG00384892	9493	Arkengarthdale	NEW SITE		Yes
744	AG00335499	9174	Swaledale	Indicative Site 194		Yes
745	AG00398621	5231	Swaledale	Validation Site 60		Yes
746	AG00383970	7763	Swaledale	Indicative Site 131	2002	Yes
747	AG00387806	4075	Swaledale	Indicative Site 157	2002	Yes
748	AG00323063	4580	Rawthey	NEW SITE		Yes
749	AG00364280	1485	Mallerstang	Indicative Site 382		Yes
750	AG00327158	8042	Dentdale	Indicative Site 212	2002	No
751	AG00327158	3080	Dentdale	Indicative Site 210	2002	Yes
752	AG00327158	5544	Dentdale	Indicative Site 215	2002	Yes
753	AG00326430	0245	Dentdale	Indicative Site 211	2002	Yes
754	AG00316711	1507	Dentdale	Indicative Site 216	2002	Yes
755	AG00312918	3964	Wensleydale	Indicative Site 352		Yes
756	AG00383494	1936	Coverdale	Indicative Site 324	2002	Yes
757	AG00383364	1468	Langstrothdale	Indicative Site 304	2002	Yes
758	AG00329361	6666	Wharfdale	Indicative Site 259	2002	No
759	AG00329361	8752	Wharfdale	Indicative Site 258	2002	No
760	AG00329361	9958	Wharfdale	Indicative Site 253	2002	No
761	AG00329361	9370	Wharfdale	Indicative Site 254		No
762	AG00340058	5817	Wharfdale	Indicative Site	2002	Yes

	Agreement No.	Parcel	Area	Derivation	Last Surveyed	HK18
				274		
763	AG00340058	7514	Wharfdale	Indicative Site 273	2002	Yes
764	AG00353038	9513	Wharfdale	Indicative Site 281	2002	Yes
765	AG00353038	4945	Wharfdale	Indicative Site 289		Yes
766	AG00325304	3002	Wharfdale	Indicative Site 299		Yes
767	AG00325304	0370	Wharfdale	Indicative Site 298	2002	Yes
768	AG00323975	9045	Ribblesdale	NEW SITE		Yes
769	AG00373670	3694	Lunedale	NEW SITE		Yes
770	AG00331481	5783	Teesdale	NEW SITE		?
771	AG00390281	0585	Teesdale	NEW SITE		
772	AG00390281	8983	Teesdale	NEW SITE		
773	AG00390281	5479	Teesdale	Indicative Site 74		
774	AG00383971	3795	Teesdale	NEW SITE		

Site:	**602**
Area	**Weardale**
HLS options + supplements	**HK6**
Former ESA tier	**1B**

This site is situated to the west of Wearhead, at an elevation of 410m. The field comprises a south-east facing valley-side of moderate slope. There are two steeply sloping gullies at the edges of the field; the larger gully runs along the northern edge of the field with a smaller one along its western edge.

Excepting the vegetation within the gullies along the edges of the field, the sward was fairly uniform and of short stature for mid-July (2012). Grass cover comprises mainly *Anthoxanthum odoratum, Cynosurus cristatus* and *Lolium* perenne. Herb cover is relatively high (45%) with *Ranunculus repens* and, in particular, *Caltha palustris* the most abundant species. Other upland hay meadow axiophytes were of low cover, but included constant *Euphrasia officinalis agg.* and *Leontodon autumnalis* with scattered *Rhinanthus minor, Carex nigra* and *Achillea ptarmica*.

Two gullies at the northern edge of the field provide additional typical upland hay meadow axiophytes, which may indicate the composition of the vegetation within the field prior to improvement. These include *Conopodium majus*, *Alchemilla glabra, Linum catharticum*, *Briza media*, *Lathyrus pratensis, Leontodon hispidus, Alchemilla xanthochlora, Centaurea nigra, Filipendula ulmaria and Avenula pubescens*.

The site shows strong affinities to MG8 (61.8) and to MG6b (59.5). The low frequency and abundance of axiophytes additional to *Caltha* suggests a good fit with O'Reilly's (2011) M8o variant. This places it within the semi-improved category, roughly in the middle of the MG8 spectrum. The field contains a small but significant area of unimproved grassland (not sampled) within the two gullies.

No past data exist for this site.

SOILS	
Texture	Sandy loam
pH	6.7
Olsens P	14
Total N	0.69
K	156

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Achillea ptarmica	0	2	0	Aste	7	7	5	3	1	-1
Agrostis capillaris	3	0	5	Poac	6	5	4	4	0	0
Agrostis stolonifera	25	0	0	Poac	7	6	7	6	0	1
Alopecurus geniculatus	3	1	0	Poac	8	7	6	6	0	1
Alopecurus pratensis	0	0	1	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	15	20	5	Poac	7	6	4	3	0	-1
Bellis perennis	3	3	0	Aste	8	5	6	4	1	0
Bromus hordeaceus	0	20	3	Poac	8	4	7	4	0	1
Caltha palustris	25	25	30	Ranu	7	9	6	4	0	-1
Carex nigra	3	0	0	Cype	7	8	4	2	0	-1
Cerastium fontanum	1	1	1	Cary	7	5	5	4	1	0
Cerastium glomeratum	3	1	1	Cary	7	5	6	5	1	0
Cynosurus cristatus	5	20	10	Poac	7	5	6	4	0	0
Euphrasia officinalis agg.	3	3	3	Scro	8	5	5	3	0	-1
Festuca pratensis	1	0	0	Poac	7	6	6	6	0	0
Festuca rubra	3	0	5	Poac	8	5	6	5	-1	0
Holcus lanatus	3	3	5	Poac	7	6	6	5	0	0
Leontodon autumnalis	3	2	3	Aste	8	6	6	4	1	0
Lolium perenne	15	20	25	Poac	8	5	6	6	0	0
Montia fontana	3	3	2	Port	7	9	5	3	1	-1
Myosotis discolor	1	1	1	Bora	7	5	5	3	1	-1
Phleum pratense	0	1	2	Poac	8	5	7	6	1	0
Plantago lanceolata	0	0	2	Plan	7	5	6	4	1	0
Poa trivialis	5	3	5	Poac	7	6	6	6	0	0
Ranunculus acris	3	3	3	Ranu	7	6	6	4	1	0
Ranunculus repens	10	10	10	Ranu	6	7	6	7	0	1
Rhinanthus minor	0	1	1	Scro	7	5	6	4	0	0
Rumex acetosa	5	3	3	Poly	7	5	5	4	0	0
Taraxacum agg.	0	0	1	Aste	7	5	7	6	1	0
Trifolium pratense	1	3	2	Faba	7	5	7	5	1	0
Trifolium repens	3	5	5	Faba	7	5	6	6	0	0
Veronica serpyllifolia	1	0	0	Scro	7	5	6	5	-1	0

SUMMARY	
Total	32.00
Grass	13.00
Sedge	1.00
Rush	0.00
Forb	18.00
Herb cover	46%
LIGHT L	
Average	7.19
Min	6.00
Max	8.00
MOISTURE F	
Average	5.72
Min	4.00
Max	9.00
REACTION R	
Average	5.78
Min	4.00
Max	7.00
NITROGEN N	
Average	4.63
Min	2.00
Max	7.00
GRAZING GI	
Average	0.31
NUTRIENTS NI	
Average	-0.09

Site:	**603**
Area	**Teesdale**
HLS options + supplements	**HK6, HK18**
Former ESA tier	**1B**

This site is situated south of the River Tees, near Holwick, at an elevation of 280m. The field slopes gently north-north-east and includes occasional wet areas, particularly on its eastern edge.

Grass cover comprises abundant *Agrostis capillaris*, *Cynosurus cristatus*, *Anthoxanthum odoratum* and *Festuca rubra* as well as *Dactylis glomerata*, *Trisetum flavescens* and *Lolium perenne*, with rare *Avenula pratensis*. The sward is herb-rich, with a wide range of upland hay meadow axiophytes present including constant to frequent *Conopodium majus*, *Euphrasia officinalis agg.*, *Rhinanthus minor*, *Sanguisorba officinalis* and *Leontodon autumnalis* and frequent to occasional *Geranium sylvaticum*, *Lathyrus pratensis*, *Centaurea nigra* and *Filipendula ulmaria*. The northern edge of the field was very species-rich with flowering *Cirsium heterophyllum*, *Symphytum officinale*, *Dactylorhiza sp*, *Potentilla erecta*, *Lathyrus pratensis*, *Galium verum*, *Rhinanthus minor*, *Conopodium majus*, and *Geranium sylvaticum*. Negative species are generally over low cover, with *Heracleum sphondylium* the most frequent together with occasional to rare examples of *Cirsium vulgare*, *Senecio jacobaea*, *Rumex crispus* and *R. obtusifolius*. The western edge of the field supports abundant negative indicator species including *Anthriscus sylvestris*, *Cirsium vulgare*, *C. arvense* and *Senecio jacobaea* amongst a dense grass sward of *Dactylis glomerata*. Remaining edges support a few negative species and a denser grass sward.

The site shows strong affinities to the MG3 community, with MG3a being the strongest match (71.5). This is supported by the quite widespread presence of the MG3 differential *Geranium sylvaticum*, albeit at low abundance. Although *Alchemilla* is rare the field is considered to be a good fit to this sub-community. The field edges also have an MG3b flavour in places, with *Filipendula ulmaria*, *Cirsium heterophyllum* and *G. sylvaticum* and hint at what it may have been like prior to improvement. The site is considered to be a very rich example of a semi-improved hay meadow. It is likely the cover of positive indicators, such as *Rhinanthus minor*, *Geranium sylvaticum* and *Leontodon hispidus* while generally low at present, will improve with ongoing favourable management.

Six years of data were available for analysis, with the baseline set as 1987. Overall, species richness per 1x1m quadrat was seen to increase from 21.2 (1987) to 24.7 (2012), a 16.3% positive change. The proportion of grazing tolerant species declined slightly, with a decline in the average Grazing Suited Species Scores from 0.33 (1987) and 0.27 (2012), although the bias remains towards those species tolerant to higher levels of grazing (positive average Suited Species Scores). The proportion of nutrient tolerant species increased slightly, with average Nutrient Availability Suited Species Scores showing a decrease from -0.06 (1987) to -0.17 (2012). In combination with the increased species richness, this indicates a possible improvement in the quality of the sward through time. Considering the ordination plot (Annex II), despite an unexplained perturbation event (possibly fertiliser or reseeding) between 1990 and 1992, the vegetation community appears to include a greater representation of axiophytes (*Centaurea nigra* and *Anthoxanthum odoratum*), both of which are positive indicators of upland hay meadow sites. The farmer questionnaire suggests that lime has never been used at this site, only a light dressing of well rotted farmyard manure, and inorganic fertiliser has not been used for 30+ years. Yield is static.

SOILS	
Texture	Sandy loam
pH	5.7
Olsens P	14
Total N	0.62
K	135

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	20	7	5	Poac	6	5	4	4	0	0
Alopecurus pratensis	0	0	3	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	15	13	20	Poac	7	6	4	3	0	-1
Avenula pubescens	1	1	0	Poac	7	4	7	3	1	-1
Bellis perennis	1	1	3	Aste	8	5	6	4	1	0
Cerastium fontanum	0	1	1	Cary	7	5	5	4	1	0
Conopodium majus	5	2	1	Apia	6	5	5	5	0	-1
Cynosurus cristatus	15	15	20	Poac	7	5	6	4	0	0
Dactylis glomerata	3	1	3	Poac	7	5	7	6	0	0
Euphrasia officinalis agg.	5	25	3	Scro	8	5	5	3	0	-1
Festuca rubra	10	15	5	Poac	8	5	6	5	-1	0
Geranium sylvaticum	0	2	3	Gera	6	5	6	5	0	0
Holcus lanatus	0	15	20	Poac	7	6	6	5	0	0
Lathyrus pratensis	3	2	3	Faba	7	6	6	5	1	0
Leontodon autumnalis	0	0	2	Aste	8	6	6	4	1	0
Leontodon hispidus	2	2	0	Aste	8	4	7	3	0	-1
Lolium perenne	2	0	5	Poac	8	5	6	6	0	0
Myosotis discolor	0	1	0	Bora	7	5	5	3	1	-1
Phleum pratense	0	2	1	Poac	8	5	7	6	1	0
Plantago lanceolata	12	17	7	Plan	7	5	6	4	1	0
Poa trivialis	3	0	0	Poac	7	6	6	6	0	0
Ranunculus acris	1	2	7	Ranu	7	6	6	4	1	0
Ranunculus bulbosus	5	1	0	Ranu	7	4	7	4	0	0
Ranunculus repens	0	0	3	Ranu	6	7	6	7	0	1
Rhinanthus minor	0	1	3	Scro	7	5	6	4	0	0
Rumex acetosa	5	2	3	Poly	7	5	5	4	0	0
Sanguisorba officinalis	3	0	7	Rosa	7	7	6	5	0	0
Senecio jacobaea	1	0	0	Aste	7	4	6	4	0	1
Trifolium pratense	5	5	0	Faba	7	5	7	5	1	0
Trifolium repens	3	4	3	Faba	7	5	6	6	0	0
Trisetum flavescens	3	3	1	Poac	7	4	7	4	0	0
Veronica chamaedrys	0	1	0	Scro	6	5	6	5	1	-1
Vicia cracca	3	0	0	Faba	7	6	7	5	0	0

SUMMARY	
Total	33.00
Grass	12.00
Sedge	0.00
Rush	0.00
Forb	21.00
Herb cover	43%
LIGHT L	
Average	7.06
Min	6.00
Max	8.00
MOISTURE F	
Average	5.18
Min	4.00
Max	7.00
REACTION R	
Average	5.97
Min	4.00
Max	7.00
NITROGEN N	
Average	4.61
Min	3.00
Max	7.00
GRAZING GI	
Average	0.30
NUTRIENTS NI	
Average	-0.15

Site:	**604**
Area	**Teesdale**
HLS options + supplements	**HK6, HK18**
Former ESA tier	**1B**

This site is situated on a steep, south-facing, slope (1:6 to the north and 1:4 over the southern half) to the north of the River Tees at an elevation of 275m. A stream runs down the eastern edge of the field. The meadow is part of the Middle Side & Stonygill Meadows Site of Special Scientific Interest.

The field comprises a large meadow with a fine species-rich flora. It can be divided into two halves, each with differing slopes. The steeper southern half is richer, and with a higher cover of MG3 indicators including frequent *Geranium sylvaticum*, *Conopodium majus*, *Alchemilla xanthochlora*, *A. filicaulis vestita, A. glabra* and *Sanguisorba officinalis*. *Anthoxanthum odoratum*, *Cynosurus cristatus* and *Festuca rubra* are the main grass species, with *Dactylis glomerata* abundant in places.

The unimproved streamside vegetation adds further axiophytes including *Filipendula ulmaria*, *Cirsium heterophyllum*, *Geum rivale*, *Geranium sylvaticum*, and, on the edges of the stream bank *Helictotrichon pubescens*, *Stachys officinalis*, *Lotus corniculatus*, *Potentilla erecta*, *Succisa pratensis*, *Centaurea nigra*, *Ajuga reptans* and *Trifolium medium.* The stream is also lightly wooded with *Crataegus monogyna* and *Salix cinerea*.

The site shows strong affinities to the MG3 community, with MG3a being the strongest match (71.5), but also to MG3b (63.6) and, to a lesser extent MG6b (59.4). The MG3 affinities are supported by the widespread presence of the MG3 differential *Geranium* sylvaticum, which reaches 10% in 1 of the quadrats, and the preferentials *Alchemilla glabra, A. filicaulis vestita, A. xanthochlora* and *Sanguisorba officinalis*, the latter exceeding 10% cover in two samples. The site is classed as semi-improved, but is considered to be right at the upper limit of this category. The strong MG3b affinities of the streamside vegetation hint at which species may have been lost through improvement.

Three years of data were available for analysis, with the baseline set at 1987. Overall, species richness per 1x1m quadrat increased over the period, from 23.6 (1987) to 26.7 (2012), peaking at 29.4 (1990). The proportional representation of grazing tolerant species increased greatly, as shown by an increasing average Grazing Suited Species Score from 0.29 (1987) to a peak of 0.42 (1990). Subsequently, however, this proportion declined to slightly below that of 1987 with an average Grazing Suited Species Score of 0.27 (2012). The proportion of nutrient tolerant species remained low throughout the period, but were seen to increase slightly from -0.06 (1987) to -0.13 (2012). Considering the ordination plot (Annex II), the error bars for 1987 were wide and encompass all the variability seen in subsequent years, suggesting little overall change in community composition. However, error bars for 1990 and 2012 become ever smaller suggesting some homogenisation of the vegetation. It should be noted that this effect cannot be explained by wide variation in sampling intensity as the 1987 and 1990 datasets included only 5 quadrats, with 3 in 2012. The farmer questionnaire suggests that prior to the past 5 years, the land was managed by the predecessor for 4 decades. The current farmer believes no fertiliser or lime has ever been added, only farmyard manure.

SOILS	
Texture	Sandy loam
pH	5.9
Olsens P	9
Total N	0.63
K	142

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	15	5	0	Poac	6	5	4	4	0	0
Alchemilla glabra	2	0	0	Rosa	7	6	6	4	0	0
Alchemilla xanthochlora	2	5	5	Rosa	6	5	6	4	1	0
Anthoxanthum odoratum	15	15	10	Poac	7	6	4	3	0	-1
Arrhenatherum elatius	0	1	0	Poac	7	5	7	7	-1	0
Bromus hordeaceus	0	0	3	Poac	8	4	7	4	0	1
Centaurea nigra	0	1	0	Aste	7	5	6	5	1	-1
Cerastium fontanum	2	3	1	Cary	7	5	5	4	1	0
Conopodium majus	2	2	0	Apia	6	5	5	5	0	-1
Cynosurus cristatus	15	10	5	Poac	7	5	6	4	0	0
Dactylis glomerata	2	5	2	Poac	7	5	7	6	0	0
Euphrasia officinalis agg.	3	3	0	Scro	8	5	5	3	0	-1
Festuca rubra	15	10	0	Poac	8	5	6	5	-1	0
Filipendula ulmaria	0	0	10	Rosa	7	8	6	5	-1	0
Geranium sylvaticum	2	2	10	Gera	6	5	6	5	0	0
Heracleum sphondylium	0	0	3	Apia	7	5	7	7	0	1
Holcus lanatus	8	15	15	Poac	7	6	6	5	0	0
Hypochaeris radicata	2	1	0	Aste	8	4	5	3	0	-1
Lathyrus pratensis	0	0	3	Faba	7	6	6	5	1	0
Leontodon autumnalis	0	3	2	Aste	8	6	6	4	1	0
Lolium perenne	2	15	0	Poac	8	5	6	6	0	0
Luzula campestris	2	2	0	Junc	7	4	5	2	1	-1
Myosotis discolor	1	1	2	Bora	7	5	5	3	1	-1
Phleum pratense	0	10	1	Poac	8	5	7	6	1	0
Plantago lanceolata	12	0	5	Plan	7	5	6	4	1	0
Poa trivialis	1	5	5	Poac	7	6	6	6	0	0
Prunella vulgaris	0	3	2	Lami	7	5	6	4	0	0
Ranunculus acris	3	3	5	Ranu	7	6	6	4	1	0
Ranunculus bulbosus	0	2	0	Ranu	7	4	7	4	0	0
Ranunculus repens	0	1	3	Ranu	6	7	6	7	0	1
Rhinanthus minor	2	3	2	Scro	7	5	6	4	0	0
Rumex acetosa	2	5	3	Poly	7	5	5	4	0	0
Sanguisorba officinalis	10	5	10	Rosa	7	7	6	5	0	0
Taraxacum agg.	0	1	0	Aste	7	5	7	6	1	0
Trifolium dubium	2	2	0	Faba	7	4	6	5	0	0
Trifolium pratense	4	5	0	Faba	7	5	7	5	1	0
Trifolium repens	0	3	0	Faba	7	5	6	6	0	0
Trisetum flavescens	1	5	2	Poac	7	4	7	4	0	0

SUMMARY	
Total	38.00
Grass	12.00
Sedge	0.00
Rush	1.00
Forb	25.00
Herb cover	44%
LIGHT L	
Average	7.05
Min	6.00
Max	8.00
MOISTURE F	
Average	5.21
Min	4.00
Max	8.00
REACTION R	
Average	5.95
Min	4.00
Max	7.00
NITROGEN N	
Average	4.66
Min	2.00
Max	7.00
GRAZING GI	
Average	0.24
NUTRIENTS NI	
Average	-0.11

Site:	**605**
Area	**Lunedale**
HLS options + supplements	**HK6, HK18**
Former ESA tier	**1B**

The site is in a wild and remote location adjacent to the River Lune, to the east of Grains o' th' Beck in Lunedale, at an elevation of around 360m. This large field has a high degree of heterogeneity and includes both steeply sloping banks with unmown vegetation in addition to the hay meadow feature. It can be divided into several sections, relating to angle of slope, each with differing flora, of varied interest from moderate through to high and species-rich. The field is part of Grains o' th' Beck Meadows Site of Special Scientific Interest.

The valley floor (sampled by the RCA stops 1 to 10) is of moderate interest and comprises both dry and wet ground with subtly different plant communities. It is mown regularly excepting several very wet patches. The drier areas comprise *Agrostis capillaris, Anthoxanthum odoratum* and *Holcus lanatus* dominated swards with abundant *Ranunculus repens*. Typical upland hay meadow axiophytes include constant *Rhinanthus minor, Euphrasia officinalis agg., Leontodon autumnalis* and, more locally *Conopodium majus,* but none attain high cover. The wetter areas have constant *Caltha palustris* and *Carex nigra* with frequent *R. minor, E. officinalis agg.* and *Leontodon autumnalis*. A very wet *Juncus acutiflorus* dominated area at the foot of the steep bank, which includes *Filipendula ulmaria*, *Lychnis flos-cuculi* and *Crepis paludosa* and *Dactylorhiza purpurella.*

A steep bank separates the upper and lower meadows. The slope angle is too steep for mechanised mowing and has been thus protected from improvement - this feature is consequently very species-rich. It comprises several distinct vegetation types including: (i) damp acid grassland with abundant *Potentilla erecta*, also *Galium saxatile*, *Festuca ovina* and *Pedicularis sylvatica*; (ii) damp neutral to calcareous grassland with *Lotus corniculatus*; (iii) moist mineral-flushed grassland with *Cirsium heterophyllum*, *Geranium sylvaticum, Trifolium medium* and the northern-montane *Persicaria vivipara*; (iv) taller mesotrophic grassland, and; (v) Species-rich *Juncus acutiflorus* dominated with *Dactylorhiza purpurella*, *Angelica sylvestris*, *Achillea ptarmica*, *Succisa pratensis* and *Crepis paludosa*.

To the north, above the bank, the less steeply sloping and very damp ground supports a form of *Caltha palustris* dominated vegetation with abundant *Juncus acutiflorus*. This is a much more species-rich form than that found in a similar position within the adjacent site (606) and on the valley floor below (see RCA stops 11 to 20). Hay meadow axiophytes include constant *C. palustris*, *Carex nigra, R. minor* and *E. officinalis agg*. with frequent *Filipendula ulmaria* and *Leontodon autumnalis*. Additional species are scattered, but include *Dactylorhiza purpurella*, *Succisa pratensis*, *Lychnis flos-cuculi, Lathyrus pratensis* and *Myosotis laxa*. The variable gradient and wetness of this area, probably dictate how frequently, and how extensively it is mown.

The drier areas of the lower part of the site show strong affinities to MG6b (63.3). These are considered to fit within O'Reilly's (2011) MG6b-ii category, due to the presence, but low abundance, of the more general upland hay meadow axiophytes. The *Caltha* dominated areas here fit within the comparable MG8o category. These areas are thus classified as being semi-improved grassland of average quality. The upper meadow shows strong affinities to MG8 (60.9). The abundance of typical axiophytes suggests a good fit with MG8+, placing it at the richer end of the semi-improved category. The unmown banks in the middle and at the top of the field are almost certainly unimproved and probably contain some areas of M8n and MG3c.

A total of 4 years data were available for analysis, with the baseline set as 1992. Overall, species richness per 1x1m quadrat was seen to peak and then decline over this period from 24.6 (1992) to 21.7 (2012) peaking at 33.3 in 2002. The proportion of grazing tolerant species increased slightly but steadily, as reflected in an increase in average Grazing Suited Species Score from 0.24 (1992) to 0.31 (2012). The proportion of nutrient tolerant species decreased slightly over this same period, with average Nutrient Availability Suited Species Scores decreasing from -0.21 to -0.12 over the same period. Considering the ordination plots (Annex II), wide error bars in 1992 encompass all the variability shown in subsequent years, but part of the original variety may have been due to slightly greater sampling intensity on this highly variable and species-rich field in earlier years (5 as opposed to 3 quadrats were taken). Management information indicates that the farmer endeavours to cut for hay every year, rather then silage, and has not used inorganic fertiliser for over 10 years.

SOILS	
Texture	Sandy loam
pH	5.7
Olsens P	10
Total N	0.46
K	174

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	0	25	25	Poac	6	5	4	4	0	0
Agrostis stolonifera	50	0	0	Poac	7	6	7	6	0	1
Alopecurus geniculatus	0	0	3	Poac	8	7	6	6	0	1
Alopecurus pratensis	5	3	0	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	5	10	10	Poac	7	6	4	3	0	-1
Bellis perennis	2	2	2	Aste	8	5	6	4	1	0
Caltha palustris	0	0	4	Ranu	7	9	6	4	0	-1
Carex nigra	0	0	3	Cype	7	8	4	2	0	-1
Cerastium fontanum	3	2	2	Cary	7	5	5	4	1	0
Cerastium glomeratum	3	0	0	Cary	7	5	6	5	1	0
Conopodium majus	0	3	0	Apia	6	5	5	5	0	-1
Cynosurus cristatus	5	3	2	Poac	7	5	6	4	0	0
Deschampsia cespitosa	0	0	2	Poac	6	6	5	4	0	0
Euphrasia officinalis agg.	1	0	1	Scro	8	5	5	3	0	-1
Festuca rubra	3	2	8	Poac	8	5	6	5	-1	0
Holcus lanatus	3	10	2	Poac	7	6	6	5	0	0
Lathyrus pratensis	0	1	0	Faba	7	6	6	5	1	0
Leontodon autumnalis	1	2	3	Aste	8	6	6	4	1	0
Leontodon hispidus	0	3	0	Aste	8	4	7	3	0	-1
Lolium perenne	5	2	0	Poac	8	5	6	6	0	0
Myosotis discolor	0	1	1	Bora	7	5	5	3	1	-1
Phleum pratense	0	1	0	Poac	8	5	7	6	1	0
Plantago lanceolata	3	0	0	Plan	7	5	6	4	1	0
Poa trivialis	8	5	4	Poac	7	6	6	6	0	0
Ranunculus acris	3	2	6	Ranu	7	6	6	4	1	0
Ranunculus repens	20	25	30	Ranu	6	7	6	7	0	1
Rhinanthus minor	2	1	1	Scro	7	5	6	4	0	0
Rumex acetosa	5	20	6	Poly	7	5	5	4	0	0
Taraxacum agg.	0	0	2	Aste	7	5	7	6	1	0
Trifolium pratense	0	3	2	Faba	7	5	7	5	1	0
Trifolium repens	4	2	3	Faba	7	5	6	6	0	0
Veronica chamaedrys	2	2	0	Scro	6	5	6	5	1	-1

SUMMARY	
Total	32.00
Grass	12.00
Sedge	1.00
Rush	0.00
Forb	19.00
Herb cover	47%
LIGHT L	
Average	7.09
Min	6.00
Max	8.00
MOISTURE F	
Average	5.56
Min	4.00
Max	9.00
REACTION R	
Average	5.78
Min	4.00
Max	7.00
NITROGEN N	
Average	4.66
Min	2.00
Max	7.00
GRAZING GI	
Average	0.34
NUTRIENTS NI	
Average	-0.16

Site:	**606**
Area	**Lunedale**
HLS options + supplements	**HK6, HK18**
Former ESA tier	**1B**

The site is in a wild and remote location adjacent to the River Lune, to the east of Grains o' th' Beck in Lunedale, at an elevation of around 360m. This large field has a high degree of heterogeneity and includes a steeply sloping bank with unmown vegetation in addition to the hay meadow feature. It can be divided into several sections, relating to angle of slope, each with differing flora, of varied interest from moderate through to high and species-rich. The field is part of Grains o' th' Beck Meadows Site of Special Scientific Interest.

The lower part of the site, adjacent to the River Lune, comprises a flat river terrace with *Cynosurus cristatus, Anthoxanthum odoratum*, *Caltha palustris, Ranunculus repens*, *R. acris* and *Trifolium repens.* In addition to *Caltha,* typical upland hay meadow axiophytes include constant *Euphrasia officinalis agg., Filipendula ulmaria* and *Rhinanthus minor* with frequent to occasional *Conopodium majus, Lathyrus pratensis, Leontodon autumnalis* and *L. hispidus*. Rarer species include *Cirsium heterophyllum* and *Geranium sylvaticum* and *Persicaria bistorta*. The western edge of the field exhibits further evidence of nutrient enrichment, combined with a lack of cutting, with *Urtica dioica*, *Rumex obtusifolius* but also *G. sylvaticum*, *F. ulmaria* and *C. heterophyllum*. The wet low-lying area to the north is transitional to MG8 with *Juncus acutiflorus*, *F. ulmaria*, *P. bistorta*, *L. pratensis* and *Caltha palustris*.

The upper meadow has constant *C. palustris*, *F. ulmaria E. officinalis agg.* and *R. minor*, but is characterised by an abundance of *Ranunculus repens*. Grasses include *Cynosurus cristatus*, *Alopecurus pratensis*, *Festuca rubra* and *Lolium perenne*. Further species include *Cardamine pratensis*, *Myosotis discolor*, *Myosotis laxa*, *Trifolium repens*, *Bellis perennis* and *Prunella vulgaris*. A juvenile curlew was present here in 2012, sitting tight during a rain storm.

The bank separating the two meadows is outstanding. At the eastern end of the field it supports abundant *Trollius europaeus* together with *G. sylvaticum*, *Trifolium medium* and *C. heterophyllum*. The central and western areas support both calcifugous species, including *Molinia caerulea*, *Potentilla erecta* and *Dactylis maculata,* together with strict calcicoles including *Persicaria vivipara* and *Gymnadenia conopsea s.l.*

The mown areas of the site show strong affinities to MG8 (70.6). High cover of *R. repens* and *T. repens* with generally low cover axiophytes suggests a good fit to O'Reilly's (2011) MG8o category. The site is therefore categorised as semi-improved and of average quality. Nevertheless, the field contains a significant area of unimproved grassland on the steep bank.

Three years of data were available for analysis, with the baseline set as 1992. Overall, high species richness per 1x1m quadrat of near 30 (1992 and 1995) was seen to decrease to 22.3 (2012), a 23.5% negative change. The proportion of grazing tolerant species declined over this time period, as shown by a declined in the average Grazing Suited Species Scores from 0.28 (1992) to 0.18 (2012). Coupled with the decrease in overall species richness, this may indicate a slight improvement in the quality of the site as less desirable species have been lost from the sward. The proportion of nutrient tolerant species remained largely static at -0.17 over this same period. Considering the ordination plot (Annex II), the error bars for 1992 encompass the variability shown in subsequent years, indicating that limited change has occurred in terms of the vegetation community composition through time. Management information indicates that the

farmer endeavours to cut for hay every year, rather then silage, and has not used inorganic fertiliser for over 10 years.

SOILS	
Texture	Sandy loam
pH	6.1
Olsens P	12
Total N	0.54
K	152

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	0	7	0	Poac	6	5	4	4	0	0
Agrostis stolonifera	0	0	3	Poac	7	6	7	6	0	1
Alopecurus geniculatus	14	0	0	Poac	8	7	6	6	0	1
Anthoxanthum odoratum	7	7	10	Poac	7	6	4	3	0	-1
Bellis perennis	2	3	0	Aste	8	5	6	4	1	0
Caltha palustris	27	7	25	Ranu	7	9	6	4	0	-1
Cardamine pratensis	3	0	0	Bras	7	8	5	4	0	0
Carex nigra	8	4	15	Cype	7	8	4	2	0	-1
Cerastium fontanum	0	2	2	Cary	7	5	5	4	1	0
Cerastium glomeratum	0	2	0	Cary	7	5	6	5	1	0
Cynosurus cristatus	14	7	15	Poac	7	5	6	4	0	0
Dactylorhiza purpurella	0	0	1	Orch	8	8	7	2	0	-1
Euphrasia officinalis agg.	0	3	2	Scro	8	5	5	3	0	-1
Festuca pratensis	0	2	0	Poac	7	6	6	6	0	0
Festuca rubra	4	7	3	Poac	8	5	6	5	-1	0
Filipendula ulmaria	2	0	8	Rosa	7	8	6	5	-1	0
Holcus lanatus	6	7	3	Poac	7	6	6	5	0	0
Juncus acutiflorus	4	5	0	Junc	8	8	4	2	0	-1
Leontodon autumnalis	2	2	3	Aste	8	6	6	4	1	0
Lolium perenne	3	7	3	Poac	8	5	6	6	0	0
Montia fontana	1	3	0	Port	7	9	5	3	1	-1
Myosotis discolor	0	2	0	Bora	7	5	5	3	1	-1
Plantago lanceolata	0	1	3	Plan	7	5	6	4	1	0
Poa trivialis	6	7	6	Poac	7	6	6	6	0	0
Prunella vulgaris	0	0	3	Lami	7	5	6	4	0	0
Ranunculus acris	2	14	4	Ranu	7	6	6	4	1	0
Ranunculus repens	15	23	8	Ranu	6	7	6	7	0	1
Rhinanthus minor	0	2	2	Scro	7	5	6	4	0	0
Rumex acetosa	0	2	3	Poly	7	5	5	4	0	0
Sagina procumbens	0	2	0	Cary	7	6	6	5	0	0
Trifolium pratense	0	2	5	Faba	7	5	7	5	1	0
Trifolium repens	38	21	3	Faba	7	5	6	6	0	0

SUMMARY	
Total	32.00
Grass	10.00
Sedge	1.00
Rush	1.00
Forb	20.00
Herb cover	58%
LIGHT L	
Average	7.19
Min	6.00
Max	8.00
MOISTURE F	
Average	6.09
Min	5.00
Max	9.00
REACTION R	
Average	5.66
Min	4.00
Max	7.00
NITROGEN N	
Average	4.34
Min	2.00
Max	7.00
GRAZING GI	
Average	0.22
NUTRIENTS NI	
Average	-0.16

Site:	**607**
Area	**Little Asby, Crosby Garrett**
HLS options + supplements	**HK6, HK18**
Former ESA tier	**No data**

This site is located to the north-east of Little Asby at an elevation of 280m. The field slopes steadily eastwards, steepening to a gradient of 1:6 at its eastern edge. The site is part of Town End Meadows (Little Asby) Site of Special Scientific Interest. On the basis of the G09 feature alone (i.e. disregarding species-rich banks found in other fields), this was one of the best hay meadows visited by the 2012 survey.

This is an excellent field with an unusually high frequency of *Leucanthemum vulgare* and *Centaurea nigra* (both more or less constant). Further strong affinities to MG3 include; constant *Conopodium majus* and *Rhinanthus minor*; frequent *Sanguisorba officinalis* and *Euphrasia officinalis agg*.; and occasional to rare *Geranium sylvaticum, Leontodon autumnalis, L. hispidus, Lathyrus pratensis, Lotus corniculatus* and *Alchemilla glabra*. Negative indicators were restricted to *Heracleum sphondylium* and *Anthriscus sylvestris,* which were frequent to occasional, but generally of low cover. The eastern edge of the field also supports a flora typical of calcareous grassland, including *Origanum vulgare*, *Stachys officinalis*, *Lotus corniculatus* and *Geranium sanguineum,* while the northern edge has strong MG3b affinities with tall *Filipendula ulmaria*, *S. officinalis* and *G. sylvaticum*.

The site shows strong affinities to MG3a (68.8) but less significantly to MG3b (60.5). However, the site has been ascribed to MG3b for the following reasons. Firstly, although the site does contain some *Lolium perenne* and *Bromus hordeaceus* (MG3a preferentials as per *Rodwell 1992*) and quite frequent *H. sphondylium* (MG3a preferential as per *O'Reilly 2011*) they never reach high levels of cover. Secondly there is such a diverse range of positive indicators including constant *Leucanthemum vulgare* and high frequency, and sometimes high cover, of *Centaurea nigra, Sanguisorba officinalis* and *Geranium sylvaticum*. The meadow is, therefore, considered to be unimproved and is of very high conservation significance.

No past data exist for this site.

SOILS	
Texture	Sandy loam
pH	6.3
Olsens P	7
Total N	0.62
K	140

Penny Anderson Associates Ltd
CONSULTANT ECOLOGISTS

NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	3	2	2	Poac	6	5	4	4	0	0
Alchemilla glabra	1	0	0	Rosa	7	6	6	4	0	0
Anthoxanthum odoratum	15	15	15	Poac	7	6	4	3	0	-1
Anthriscus sylvestris	0	2	0	Apia	6	5	7	7	-1	1
Betonica officinalis	0	0	1	Lami	7	5	5	3	1	-1
Bromus hordeaceus	0	0	3	Poac	8	4	7	4	0	1
Carex ovalis	0	0	2	Cype	7	7	5	4	0	-1
Centaurea nigra	0	3	0	Aste	7	5	6	5	1	-1
Cerastium fontanum	<4	2	0	Cary	7	5	5	4	1	0
Conopodium majus	13	2	7	Apia	6	5	5	5	0	-1
Cynosurus cristatus	16	15	25	Poac	7	5	6	4	0	0
Dactylis glomerata	0	1	2	Poac	7	5	7	6	0	0
Euphrasia officinalis agg.	1	0	0	Scro	8	5	5	3	0	-1
Festuca rubra	20	15	15	Poac	8	5	6	5	-1	0
Geranium sylvaticum	1	5	0	Gera	6	5	6	5	0	0
Heracleum sphondylium	1	1	1	Apia	7	5	7	7	0	1
Holcus lanatus	5	3	3	Poac	7	6	6	5	0	0
Lathyrus pratensis	2	0	2	Faba	7	6	6	5	1	0
Leucanthemum vulgare	3	2	7	Aste	8	4	7	4	1	0
Lolium perenne	3	5	5	Poac	8	5	6	6	0	0
Luzula campestris	1	0	0	Junc	7	4	5	2	1	-1
Myosotis discolor	1	0	1	Bora	7	5	5	3	1	-1
Plantago lanceolata	20	8	0	Plan	7	5	6	4	1	0
Poa trivialis	4	2	5	Poac	7	6	6	6	0	0
Prunella vulgaris	0	2	1	Lami	7	5	6	4	0	0
Ranunculus acris	3	12	5	Ranu	7	6	6	4	1	0
Ranunculus bulbosus	2	2	0	Ranu	7	4	7	4	0	0
Rhinanthus minor	0	3	24	Scro	7	5	6	4	0	0
Rumex acetosa	12	5	4	Poly	7	5	5	4	0	0
Sanguisorba officinalis	45	0	10	Rosa	7	7	6	5	0	0
Trifolium dubium	2	5	2	Faba	7	4	6	5	0	0
Trifolium pratense	5	5	3	Faba	7	5	7	5	1	0
Trifolium repens	2	3	3	Faba	7	5	6	6	0	0
Trisetum flavescens	4	5	5	Poac	7	4	7	4	0	0
Veronica chamaedrys	0	0	2	Scro	6	5	6	5	1	-1

SUMMARY	
Total	35.00
Grass	10.00
Sedge	1.00
Rush	1.00
Forb	23.00
Herb cover	54%
LIGHT L	
Average	7.00
Min	6.00
Max	8.00
MOISTURE F	
Average	5.11
Min	4.00
Max	7.00
REACTION R	
Average	5.89
Min	4.00
Max	7.00
NITROGEN N	
Average	4.51
Min	2.00
Max	7.00
GRAZING GI	
Average	0.26
NUTRIENTS NI	
Average	-0.17

Site:	**608**
Area	**Ravenstonedale**
HLS options + supplements	**HK6, HK18**
Former ESA tier	**No data**

This field is known as Wye Garth. It is situated to the south of Ravenstonedale, at an elevation of 280m. It consists of a gently sloping hollow which blends with a south westerly aspect. The field has two distinctive communities. The northern and eastern two thirds of the meadow comprises moist ground, whilst the southern and western third is more elevated and freely draining

The damper area of the meadow is characterised abundant *Leontodon autumnalis* and *Trifolium pratense* with frequent *Caltha palustris*. The drier area is on a gentle east-northeast facing slope and is characterised by the absence of *C. palustris* and occasional *Geranium sylvaticum* and *Conopodium majus*. Despite the fundamental differences between the two areas they share roughly the same set of upland hay meadow axiophytes including constant Euphrasia *officinalis agg.*, *Rhinanthus minor, Sanguisorba officinalis* and *Leontodon autumnalis*. The damper area also includes scattered *Leontodon hispidus, Alchemilla glabra, A. xanthochlora* and *Filipendula ulmaria*. Negative species are infrequent and restricted to *Anthriscus sylvestris* and *Rumex obtusifolius*.

The damper north-eastern area of the meadow shows strong affinities to MG8 (64.3). The vegetation is a good fit to O'Reilly's (2011) MG8+ variant due to the high frequency of positive indicator species. The drier south-western portion shows strong affinities to MG3a (67.0). The high frequency and cover of axiophytes and low frequency of improvement indicators such as *Lolium perenne* and *Rumex spp.* together with the relatively high pH and low phosphorous content of the soil suggests that major improvement of the field has never been attempted. The meadow is therefore categorised as unimproved.

No past data exist for this site.

SOILS	
Texture	Sandy loam
pH	6.3
Olsens P	7
Total N	0.62
K	140

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	0	2	3	Poac	6	5	4	4	0	0
Alchemilla glabra	0	2	0	Rosa	7	6	6	4	0	0
Alopecurus pratensis	0	2	0	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	20	15	15	Poac	7	6	4	3	0	-1
Caltha palustris	4	2	0	Ranu	7	9	6	4	0	-1
Centaurea nigra	0	2	0	Aste	7	5	6	5	1	-1
Cerastium fontanum	2	2	2	Cary	7	5	5	4	1	0
Conopodium majus	0	0	3	Apia	6	5	5	5	0	-1
Cynosurus cristatus	15	10	10	Poac	7	5	6	4	0	0
Dactylis glomerata	0	0	2	Poac	7	5	7	6	0	0
Euphrasia officinalis agg.	2	4	1	Scro	8	5	5	3	0	-1
Filipendula ulmaria	0	8	0	Rosa	7	8	6	5	-1	0
Geranium sylvaticum	0	0	22	Gera	6	5	6	5	0	0
Holcus lanatus	15	10	3	Poac	7	6	6	5	0	0
Leontodon autumnalis	10	8	4	Aste	8	6	6	4	1	0
Lolium perenne	3	3	2	Poac	8	5	6	6	0	0
Plantago lanceolata	2	2	2	Plan	7	5	6	4	1	0
Poa trivialis	3	3	3	Poac	7	6	6	6	0	0
Ranunculus acris	15	10	10	Ranu	7	6	6	4	1	0
Ranunculus repens	4	10	4	Ranu	6	7	6	7	0	1
Rhinanthus minor	3	3	4	Scro	7	5	6	4	0	0
Rumex acetosa	4	0	2	Poly	7	5	5	4	0	0
Sanguisorba officinalis	5	12	10	Rosa	7	7	6	5	0	0
Taraxacum agg.	1	0	1	Aste	7	5	7	6	1	0
Trifolium pratense	10	15	18	Faba	7	5	7	5	1	0
Trifolium repens	2	8	5	Faba	7	5	6	6	0	0

SUMMARY	
Total	26.00
Grass	8.00
Sedge	0.00
Rush	0.00
Forb	18.00
Herb cover	66%
LIGHT L	
Average	6.96
Min	6.00
Max	8.00
MOISTURE F	
Average	5.65
Min	5.00
Max	9.00
REACTION R	
Average	5.81
Min	4.00
Max	7.00
NITROGEN N	
Average	4.81
Min	3.00
Max	7.00
GRAZING GI	
Average	0.23
NUTRIENTS NI	
Average	-0.15

Site:	**609**
Area	**Mallerstang**
HLS options + supplements	**HK6, HK18**
Former ESA tier	**2A**

This site lies to the east of the River Eden in the middle of the Mallerstang valley, at an elevation of 310m. The field slopes gently to the north-west in the south and is flat to the north.

The southern half of the meadow supports *Caltha palustris, Succisa pratensis, Lathyrus pratensis, Leontodon autumnalis* and *Filipendula ulmaria*. The northern half of the meadow is relatively flat and is wetter with *Juncus effusus, J. acutiflorus, Caltha palustris* and sedge beds including *Carex nigra, C. disticha* and *C. echinata*. However, numerous scrapes and pools have been created here recently (which is a shame given the quality of the meadow). The northern and southern edges of the field have occasional *Urtica dioica, Anthriscus sylvestris, Heracleum sphondylium* and *Rumex obtusifolius* but within the field negative species were infrequent.

The site shows strong affinities to MG8 (56.3) and also to some mire communities in the wetter areas of the site (e.g. the presence of *Carex echinata*), although the bulk of the vegetation is distinctly mesotrophic. The frequency of *C. palustris* and other moisture-loving axiophytes, and the low level of negative species, suggests a good fit to O'Reilly's (2011) MG8+ variant. The site is tentatively classed as an unimproved upland hay meadow.

A total of 3 years of data were available for analysis, with the baseline year set as 1992. Overall, species richness per 1x1m quadrat declined slightly from 22 (1992) to 20.7 (2012). The proportion of grazing tolerant species increased very slightly over the same period, with average Grazing Suited Species Scores declining from 0.32 to 0.25, although the bias remains towards those species suited to higher levels of grazing (positive Grazing Suited Species Scores). The proportion of nutrient tolerant species decreased steadily, with average Nutrient Availability Suite Species Scores decreasing from -0.07 (1992) to -0.4 (2012), indicating a possible response to some improvement measure in the intervening years as the dominance of nutrient tolerant species is reduced in favour of stress tolerant species. Considering the ordination plot (Annex II), error bars for 1992 encompass all the variability seen in subsequent years, but slight movement in the data is seen toward the top left quadrant of the graph, together with a slight increase in homogeneity (indicated by smaller error bars). Management information indicates little change over past 20 years, although fertiliser was applied some years ago which might tie-in with the increase in nutrient tolerant species score for the site.

SOILS	
Texture	Sandy Loam
pH	5.2
Olsens P	12
Total N	0.74
K	149

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	5	5	0	Poac	6	5	4	4	0	0
Ajuga reptans	1	0	0	Lami	5	7	5	5	0	0
Anthoxanthum odoratum	10	5	0	Poac	7	6	4	3	0	-1
Caltha palustris	2	2	15	Ranu	7	9	6	4	0	-1
Carex disticha	0	0	25	Cype	7	8	6	4	1	0
Carex echinata	0	5	25	Cype	8	8	3	2	0	-1
Carex nigra	1	15	0	Cype	7	8	4	2	0	-1
Carex panicea	0	15	0	Cype	8	8	4	2	1	-1
Cerastium fontanum	2	1	0	Cary	7	5	5	4	1	0
Conopodium majus	1	0	0	Apia	6	5	5	5	0	-1
Cynosurus cristatus	2	2	3	Poac	7	5	6	4	0	0
Deschampsia cespitosa	2	5	1	Poac	6	6	5	4	0	0
Epilobium tetragonum	0	0	3	Onag	6	7	5	5	-1	0
Festuca rubra	20	10	0	Poac	8	5	6	5	-1	0
Filipendula ulmaria	0	0	15	Rosa	7	8	6	5	-1	0
Holcus lanatus	10	10	5	Poac	7	6	6	5	0	0
Juncus acutiflorus	25	5	0	Junc	8	8	4	2	0	-1
Juncus articulatus	0	0	10	Junc	8	9	6	3	1	-1
Juncus effusus	0	10	0	Junc	7	7	4	4	1	0
Leontodon autumnalis	0	2	0	Aste	8	6	6	4	1	0
Luzula campestris	1	2	0	Junc	7	4	5	2	1	-1
Myosotis discolor	1	1	2	Bora	7	5	5	3	1	-1
Poa annua	0	1	0	Poac	7	5	6	7	0	1
Poa trivialis	1	4	5	Poac	7	6	6	6	0	0
Potentilla erecta	2	2	2	Rosa	7	7	3	2	1	-1
Ranunculus acris	5	10	3	Ranu	7	6	6	4	1	0
Ranunculus repens	2	0	0	Ranu	6	7	6	7	0	1
Rhinanthus minor	0	1	0	Scro	7	5	6	4	0	0
Rumex acetosa	10	5	5	Poly	7	5	5	4	0	0
Succisa pratensis	10	5	0	Dips	7	7	5	2	1	-1
Trifolium repens	0	0	2	Faba	7	5	6	6	0	0
Viola palustris	0	1	1	Viol	7	9	3	2	0	-1

SUMMARY	
Total	32.00
Grass	8.00
Sedge	4.00
Rush	4.00
Forb	16.00
Herb cover	32%
LIGHT L	
Average	6.97
Min	5.00
Max	8.00
MOISTURE F	
Average	6.47
Min	4.00
Max	9.00
REACTION R	
Average	5.06
Min	3.00
Max	6.00
NITROGEN N	
Average	3.91
Min	2.00
Max	7.00
GRAZING GI	
Average	0.25
NUTRIENTS NI	
Average	-0.34

Site:	**610**
Area	**Mallerstang / Garsdale**
HLS options + supplements	**HK6**
Former ESA tier	**1B**

This site lies to the north of Garsdale Head, at an elevation of 350m, on the south-west facing slopes below Abbottside Common. The field slopes southwards with a gentle undulating gradient. A stream issues from the adjacent field to the north and runs southwards through the eastern part of the field, being joined for a short way by Johnston Gill, before bending westwards through the southern part of the field. The field comprises two parts; a large western area, which is mown for hay, and a smaller area to the east of the stream, which does not appear to be cut regularly. This area contains few upland hay meadow indicators and supports negative species e.g. *Juncus effusus* and *Rumex obtusifolius*.

In the western part of the field the sward has a varied grass component, with abundant *Alopecurus pratensis*, *Cynosurus cristatus* and *Agrostis capillaris*; frequent *Holcus lanatus*, *Lolium perenne* and *Deschampsia cespitosa* and occasional *Alopecurus geniculatus* and *Festuca rubra*. Upland hay meadow indicator species include frequent *Caltha palustris* and constant *Euphrasia officinalis agg.*, *Leontodon autumnalis* and *Rhinanthus minor*. Other axiophytes are occasional to rare, including *Conopodium majus,* in the north-eastern part of the field, and a single record of *Lathyrus pratensis*. Negative included *Rumex obtusifolius* and *Cirsium arvense,* but these were were rare and of low cover.

The site shows strong affinities to both MG8 (62.8) and MG6b (62.5) but the presence of *Caltha* places is it in the MG8 category. The relatively low cover of axiophytes, abundance of *Lolium perenne, Ranunculus repens* and *Trifolium repens* and presence of *Juncus spp.* suggests a good fit to O'Reilly's (2011) MG8o variant. The site is therefore classified as being semi-improved and of average quality within this category.

Three years of data were available for analysis, with the baseline set as 1992. Overall, species richness per 1x1m quadrat remained fairly constant at just over 23 species in 1987 and 2012, with a small peak at 28 in 1995. The proportion of grazing tolerant species declined slightly over this period, as indicated by decreased average Grazing Suite Species Scores from 0.40 (1992) to 0.28 (2012). The proportion of nutrient tolerant species changed little over the period, with average Nutrient Availability Suited Species Scores showing no change at -0.08. Considering the ordination plot (Annex II), wide error bars in 1992 encompass all the variability shown in subsequent years. Although the site appears to have changed little, the sward appears to be becoming more homogeneous, with fewer grazing tolerant species, as suggested by small error bars and lower average Grazing Suited Species Scores in 2012 as compared with the 1992 baseline. Management information suggests little management change over past 25 years apart from the use of 20:10:10 NPK fertiliser under the pervious ESA agreement. This practise has now ceased in HLS, but lower yields are reported, due in part to poor weather.

SOILS	
Texture	Sandy Loam
pH	5.3
Olsens P	17
Total N	0.76
K	140

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	10	10	5	Poac	6	5	4	4	0	0
Alopecurus geniculatus	2	5	2	Poac	8	7	6	6	0	1
Anthoxanthum odoratum	15	15	10	Poac	7	6	4	3	0	-1
Bellis perennis	2	3	2	Aste	8	5	6	4	1	0
Bromus hordeaceus	0	5	2	Poac	8	4	7	4	0	1
Caltha palustris	2	0	5	Ranu	7	9	6	4	0	-1
Carex nigra	0	0	5	Cype	7	8	4	2	0	-1
Cerastium fontanum	1	1	1	Cary	7	5	5	4	1	0
Cynosurus cristatus	7	5	15	Poac	7	5	6	4	0	0
Deschampsia cespitosa	0	0	1	Poac	6	6	5	4	0	0
Euphrasia officinalis agg.	5	3	5	Scro	8	5	5	3	0	-1
Festuca rubra	10	10	3	Poac	8	5	6	5	-1	0
Holcus lanatus	5	5	2	Poac	7	6	6	5	0	0
Holcus mollis	1	0	0	Poac	6	6	3	3	1	0
Juncus acutiflorus	0	0	2	Junc	8	8	4	2	0	-1
Leontodon autumnalis	5	2	3	Aste	8	6	6	4	1	0
Lolium perenne	10	5	0	Poac	8	5	6	6	0	0
Myosotis discolor	1	1	1	Bora	7	5	5	3	1	-1
Phleum pratense	0	1	0	Poac	8	5	7	6	1	0
Plantago lanceolata	2	15	3	Plan	7	5	6	4	1	0
Poa trivialis	2	3	2	Poac	7	6	6	6	0	0
Prunella vulgaris	5	3	2	Lami	7	5	6	4	0	0
Ranunculus acris	15	10	5	Ranu	7	6	6	4	1	0
Ranunculus repens	5	5	0	Ranu	6	7	6	7	0	1
Rhinanthus minor	3	3	5	Scro	7	5	6	4	0	0
Rumex acetosa	3	5	3	Poly	7	5	5	4	0	0
Taraxacum agg.	1	1	0	Aste	7	5	7	6	1	0
Trifolium dubium	0	0	3	Faba	7	4	6	5	0	0
Trifolium pratense	0	0	20	Faba	7	5	7	5	1	0
Trifolium repens	5	3	5	Faba	7	5	6	6	0	0

SUMMARY	
Total	30.00
Grass	12.00
Sedge	1.00
Rush	1.00
Forb	16.00
Herb cover	50%
LIGHT L	
Average	7.17
Min	6.00
Max	8.00
MOISTURE F	
Average	5.63
Min	4.00
Max	9.00
REACTION R	
Average	5.60
Min	3.00
Max	7.00
NITROGEN N	
Average	4.37
Min	2.00
Max	7.00
GRAZING GI	
Average	0.30
NUTRIENTS NI	
Average	-0.10

Site:	**611**
Area	**Swaledale**
HLS options + supplements	**HK6, HK18**
Former ESA tier	**2A**

The site lies to the north-west of Muker, at an elevation of 360m. The field comprises a south-east facing and gently undulating slope.

The sward is relatively homogenous and principally comprised of *Anthoxanthum odoratum*, *Conopodium majus*, *Festuca rubra*, *Plantago lanceolata*, *Rumex acetosa*, *Trifolium pratense* and abundant *Ranunculus acris*. Patches of *Carex panicea, C. flacca, C. nigra* and *C. caryophyllea* occur, but the main interest feature is the hay meadow and its compliment of typical plant species. These include constant *C. majus*, *Rhinanthus minor* and *Euphrasia officinalis agg.*; frequent *Leontodon autumnalis* and local *Anemone nemorosa*, *Lotus corniculatus* and *Lathyrus pratensis*. There is one large patch of *Caltha palustris* at the northern end of the field. Field edges support shade bearing species including *Mercurialis perennis*, *Urtica dioica* and *Filipendula ulmaria,* as is frequent in many northern meadows. Much of the north-eastern boundary has *Succisa pratensis*, *Potentilla erecta* and *A. nemorosa*.

MATCH analysis showed strong affinities to the typical MG3 community (61.4), MG5a (59.3) and MG3a (58.1). However, the general lack of MG3 differential / preferential species (e.g. *Geranium sylvaticum* and *Alchemilla* spp.) aside from *Anemone* nemorosa suggests the vegetation would be a better fit to O'Reilly's (2011) MG6b-iii variant. The site is therefore considered to be semi-improved, but of high quality within this category.

Six years data were available for analysis, with the baseline set at 1987. Overall, species richness per 1x1m quadrat increased from 21.3 (1987) to 24.1 (1995) and then decreased slightly to 19.7 (2012). The proportion of grazing tolerant species largely remained constant, with average Grazing Suited Species Scores of 0.35 in 1987 and 0.39 in 1995, with a subsequent decrease in 2012 to 0.21.. The proportion of nutrient tolerant species declined, with average Nutrient Availability Suited Species Scores decreasing from -0.11 (1987) to -0.27 (2012). Coupled with the decrease in the proportion of grazing suited species (grazing tolerant species), this suggests an improvement in sward quality. Considering the ordination plot (Annex II), wide error bars in 1992 encompass most of the variability shown in subsequent years, and the site appears to have changed little from the original 1987 baseline condition. Management information suggests lime never applied, but light farmyard manure only annually for past 10 years.

SOILS	
pH	5.5
Olsens P	9
Total N	0.57
K	179
Texture	Sandy loam

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	0	15	15	Poac	6	5	4	4	0	0
Ajuga reptans	0	2	0	Lami	5	7	5	5	0	0
Anthoxanthum odoratum	45	50	20	Poac	7	6	4	3	0	-1
Avenula pratensis	0	0	2	Poac	7	4	7	2	0	-1
Cardamine pratensis	3	0	0	Bras	7	8	5	4	0	0
Carex caryophyllea	0	0	1	Cype	7	4	7	2	-1	-1
Carex nigra	10	0	0	Cype	7	8	4	2	0	-1
Conopodium majus	0	2	1	Apia	6	5	5	5	0	-1
Cynosurus cristatus	10	2	6	Poac	7	5	6	4	0	0
Dactylis glomerata	0	2	0	Poac	7	5	7	6	0	0
Deschampsia cespitosa	2	0	2	Poac	6	6	5	4	0	0
Euphrasia officinalis agg.	0	2	1	Scro	8	5	5	3	0	-1
Festuca rubra	5	10	22	Poac	8	5	6	5	-1	0
Holcus lanatus	10	5	8	Poac	7	6	6	5	0	0
Hypochaeris radicata	1	0	2	Aste	8	4	5	3	0	-1
Lathyrus pratensis	0	1	0	Faba	7	6	6	5	1	0
Leontodon autumnalis	1	0	0	Aste	8	6	6	4	1	0
Luzula campestris	3	3	1	Junc	7	4	5	2	1	-1
Myosotis discolor	0	2	0	Bora	7	5	5	3	1	-1
Plantago lanceolata	3	8	15	Plan	7	5	6	4	1	0
Poa trivialis	<4	0	0	Poac	7	6	6	6	0	0
Prunella vulgaris	0	2	2	Lami	7	5	6	4	0	0
Ranunculus acris	5	4	13	Ranu	7	6	6	4	1	0
Ranunculus bulbosus	0	0	4	Ranu	7	4	7	4	0	0
Ranunculus ficaria	0	1	0	Ranu	6	6	6	6	0	0
Ranunculus repens	3	0	0	Ranu	6	7	6	7	0	1
Rhinanthus minor	0	3	2	Scro	7	5	6	4	0	0
Rumex acetosa	5	4	2	Poly	7	5	5	4	0	0
Trifolium pratense	5	4	3	Faba	7	5	7	5	1	0
Trifolium repens	3	0	2	Faba	7	5	6	6	0	0
Trisetum flavescens	0	2	0	Poac	7	4	7	4	0	0
Veronica chamaedrys	1	0	0	Scro	6	5	6	5	1	-1

SUMMARY	
Total	32.00
Grass	10.00
Sedge	2.00
Rush	1.00
Forb	19.00
Herb cover	31%
LIGHT L	
Average	6.88
Min	5.00
Max	8.00
MOISTURE F	
Average	5.38
Min	4.00
Max	8.00
REACTION R	
Average	5.72
Min	4.00
Max	7.00
NITROGEN N	
Average	4.19
Min	2.00
Max	7.00
GRAZING GI	
Average	0.19
NUTRIENTS NI	
Average	-0.28

Site:	**612**
Area	**Swaledale**
HLS options + supplements	**HK6, HK18**
Former ESA tier	**2A**

The site lies to the north of Muker, at an elevation of 370m. The field comprises a an east facing and gently undulating slope,

The field is fairly homogeneous with *Anthoxanthum odoratum, Agrostis capillaris* and *Festuca rubra* providing most of the grass cover throughout. The most frequent typical northern hay meadow axiophytes are *Euphrasia officinalis agg.*, *Rhinanthus major* (constant) and *Conopodium majus* (frequent). Scattered species include *Anemone nemorosa, Ajuga reptans, Filipendula ulmaria, Lathyrus pratensis* and *Leontodon autumnalis.* Field walls comprise a mixture of gritstone and limestone and influence the diverse field edge flora, which includes *Anemone nemorosa*, *Hyacinthoides non-scripta, Dryopteris* sp.*, Succisa pratensis, Galium saxatile, Cirsium heterophyllum, F. ulmaria, Potentilla erecta Centaurea nigra* (occasional) and *Geranium sylvaticum* (rare). However, these desirable species do not occur regularly throughout the sward. Local small *Caltha palustris* patches are associated with *Carex nigra* and *C. caryophyllea.* Few negative species were recorded, except for *Heracleum sphondylium,* which was rare in the sward.

The site shows strong affinities to MG6b (61.4) and to MG3a (59.5). The presence of a range of general axiophytes but lack of MG3 differential / preferential species (e.g. *Geranium sylvaticum* and *Alchemilla* spp.) suggests the vegetation would be a good fit to O'Reilly's (2011) MG6b-iii variant. The site is therefore considered to be semi-improved, but of relatively high quality within this category. The field edges are notable for their compliment of MG3 species and perhaps hint at the composition of the vegetation prior to improvement.

Six years of data were available for analysis, with the baseline set as 1987. In 1987 and 1988 quadrats were very variable with richness scores of 15.9 species per 1x1m quadrat. 2002 and 2012 were more uniform with richness of 17 species per quadrat. Species richness peaked in 2002 at 22.7 species per quadrat. A decrease in the average Grazing Suited Species Score was observed between 1987 (0.35) and 2012 (0.24), suggesting numbers of grazing tolerant species have decreased. A peak in nutrient tolerant species in 1993 (average Nutrient Availability Suited Species Score of -0.56) may indicate fertiliser inputs preceding that survey, but otherwise the spectrum of species remains similar throughout the survey years. Considering the ordination plot (Annex II), small error bars for 2002 and 2012 indicate increased homogeneity across the field, with a slight reduction in grazing tolerant species suggesting a slight improvement in overall quality.

SOILS	
Texture	Sandy loam
pH	5.1
Olsens P	9
Total N	0.47
K	161

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	30	5	4	Poac	6	5	4	4	0	0
Anthoxanthum odoratum	40	15	20	Poac	7	6	4	3	0	-1
Avenula pubescens	0	5	1	Poac	7	4	7	3	1	-1
Cerastium fontanum	2	1	1	Cary	7	5	5	4	1	0
Conopodium majus	1	5	3	Apia	6	5	5	5	0	-1
Cynosurus cristatus	5	7	4	Poac	7	5	6	4	0	0
Dactylis glomerata	0	0	2	Poac	7	5	7	6	0	0
Deschampsia cespitosa	0	0	1	Poac	6	6	5	4	0	0
Euphrasia officinalis agg.	3	3	1	Scro	8	5	5	3	0	-1
Festuca rubra	5	30	22	Poac	8	5	6	5	-1	0
Holcus lanatus	5	5	20	Poac	7	6	6	5	0	0
Lathyrus pratensis	0	1	0	Faba	7	6	6	5	1	0
Leontodon autumnalis	2	0	0	Aste	8	6	6	4	1	0
Luzula campestris	2	3	3	Junc	7	4	5	2	1	-1
Plantago lanceolata	5	15	20	Plan	7	5	6	4	1	0
Poa trivialis	0	3	4	Poac	7	6	6	6	0	0
Prunella vulgaris	1	2	0	Lami	7	5	6	4	0	0
Ranunculus acris	6	3	4	Ranu	7	6	6	4	1	0
Ranunculus bulbosus	2	4	7	Ranu	7	4	7	4	0	0
Ranunculus repens	0	2	0	Ranu	6	7	6	7	0	1
Rhinanthus minor	3	4	0	Scro	7	5	6	4	0	0
Rumex acetosa	3	4	0	Poly	7	5	5	4	0	0
Rumex crispus	0	0	3	Poly	8	6	7	6	0	1
Trifolium pratense	4	5	10	Faba	7	5	7	5	1	0
Trifolium repens	2	3	3	Faba	7	5	6	6	0	0
Veronica chamaedrys	0	0	2	Scro	6	5	6	5	1	-1

SUMMARY	
Total	26.00
Grass	9.00
Sedge	0.00
Rush	1.00
Forb	16.00
Herb cover	37%
LIGHT L	
Average	6.96
Min	6.00
Max	8.00
MOISTURE F	
Average	5.27
Min	4.00
Max	7.00
REACTION R	
Average	5.81
Min	4.00
Max	7.00
NITROGEN N	
Average	4.46
Min	2.00
Max	7.00
GRAZING GI	
Average	0.31
NUTRIENTS NI	
Average	-0.15

Site:	**613**
Area	**Swaledale**
HLS options + supplements	**HK6**
Former ESA tier	**1B**

This site lies adjacent to the Haverdale Beck, east of Crackpot in Swaledale at an elevation of 280m. The field has a north-westerly aspect and comprises an even, but undulating, slope.

The sward is dominated by *Anthoxanthum odoratum,* with frequent *Cynosurus cristatus*, *Holcus lanatus* and *Festuca rubra*. Of the typical upland hay meadow axiophytes, only *Rhinanthus minor* is constant throughout the sward although *Filipendula ulmaria* is frequent and *Lathyrus pratensis*, *Anemone nemorosa, Centaurea nigra, Conopodium majus, Euphrasia officinalis agg.* and *Leontodon autumnalis* are all occasional. A small flush on the eastern boundary supports *Cirsium heterophyllum*, *Dactylorhiza fuchsii*, *Succisa pratensis*, *Geranium sylvaticum*, *Cardamine pratensis* and *Lotus pedunculatus*. Negative indicators were primarily confined to the edges of the field with occasional *Rumex obtusifolius* and *R. crispus* within the sward. Rabbits graze the field year-round (animals, droppings and scrapes present). The *F. ulmaria* component of the sward does not look likely to flower before the mid-July cutting date and may benefit from later cutting in some years to increase vigour and cover. This may also benefit other late flowering species such as *Succisa pratensis* and *Centaurea nigra*.

MATCH analysis shows strong affinities to MG3a (62.9) and to MG6b (62.1). The presence of a range of general axiophytes but lack of MG3 differential / preferential species (e.g. *Geranium sylvaticum* and *Alchemilla* spp.), aside from scattered *Anemone nemorosa* and one record of *Alchemilla,* suggests the vegetation would be a better fit to O'Reilly's (2011) MG6b-iii variant. The site is therefore considered to be semi-improved, but of high quality within this category.

Six years of past data were available, with the baseline year set at 1987. Quadrats in 1987 were the most variable with total richness of 19.4, this then peaked at 30.6 (1995) and declined to 23 (2012), also reflecting increases in homogeneity. The proportion of grazing suited species remained constant across the study as did nutrient tolerant species – therefore no impact on vegetation from changes in nutrient levels and grazing intensity across the period was evident. Considering the ordination plots, no directional change in species composition was observed from the original 1987 baseline condition.

SOILS	
Texture	Sandy loam
pH	5.6
Olsens P	9
Total N	0.6
K	128

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	0	0	5	Poac	6	5	4	4	0	0
Agrostis stolonifera	0	5	0	Poac	7	6	7	6	0	1
Ajuga reptans	1	1	0	Lami	5	7	5	5	0	0
Alchemilla glabra	0	1	0	Rosa	7	6	6	4	0	0
Anthoxanthum odoratum	30	25	20	Poac	7	6	4	3	0	-1
Bellis perennis	3	3	3	Aste	8	5	6	4	1	0
Caltha palustris	0	7	0	Ranu	7	9	6	4	0	-1
Cardamine pratensis	0	1	0	Bras	7	8	5	4	0	0
Carex hirta	3	3	0	Cype	7	7	7	6	0	0
Centaurea nigra	0	1	0	Aste	7	5	6	5	1	-1
Cerastium fontanum	3	3	3	Cary	7	5	5	4	1	0
Cynosurus cristatus	10	15	20	Poac	7	5	6	4	0	0
Dactylis glomerata	0	0	3	Poac	7	5	7	6	0	0
Festuca rubra	15	15	5	Poac	8	5	6	5	-1	0
Filipendula ulmaria	3	3	1	Rosa	7	8	6	5	-1	0
Holcus lanatus	10	10	10	Poac	7	6	6	5	0	0
Hypochaeris radicata	3	0	1	Aste	8	4	5	3	0	-1
Juncus effusus	0	2	0	Junc	7	7	4	4	1	0
Lathyrus pratensis	1	2	0	Faba	7	6	6	5	1	0
Lolium perenne	0	5	20	Poac	8	5	6	6	0	0
Luzula campestris	2	0	1	Junc	7	4	5	2	1	-1
Myosotis discolor	3	3	2	Bora	7	5	5	3	1	-1
Plantago lanceolata	10	5	5	Plan	7	5	6	4	1	0
Poa trivialis	10	5	3	Poac	7	6	6	6	0	0
Prunella vulgaris	0	3	0	Lami	7	5	6	4	0	0
Ranunculus acris	5	7	5	Ranu	7	6	6	4	1	0
Ranunculus bulbosus	0	0	1	Ranu	7	4	7	4	0	0
Ranunculus repens	10	7	0	Ranu	6	7	6	7	0	1
Rhinanthus minor	2	0	1	Scro	7	5	6	4	0	0
Rumex acetosa	5	4	10	Poly	7	5	5	4	0	0
Taraxacum agg.	0	3	0	Aste	7	5	7	6	1	0
Trifolium pratense	3	0	1	Faba	7	5	7	5	1	0
Trifolium repens	3	3	5	Faba	7	5	6	6	0	0
Veronica serpyllifolia	0	0	2	Scro	7	5	6	5	-1	0

SUMMARY	
Total	34.00
Grass	9.00
Sedge	1.00
Rush	2.00
Forb	22.00
Herb cover	38%
LIGHT L	
Average	7.00
Min	5.00
Max	8.00
MOISTURE F	
Average	5.65
Min	4.00
Max	9.00
REACTION R	
Average	5.79
Min	4.00
Max	7.00
NITROGEN N	
Average	4.59
Min	2.00
Max	7.00
GRAZING GI	
Average	0.24
NUTRIENTS NI	
Average	-0.12

Site:	**614**
Area	**Swaledale**
HLS options + supplements	**HK6**
Former ESA tier	**1B**

This site lies adjacent to Site 613, east of Crackpot, in Swaledale at an elevation of 300m. The field has a north-westerly aspect and comprises an even, but undulating, slope.

The field supports a homogenous, grass dominated, sward with *Anthoxanthum odoratum*, *Cynosurus cristatus*, *Holcus lanatus* and *Lolium perenne* as the dominant species. Of the typical upland hay meadow species *Rhinanthus minor* is constant throughout the sward and *Filipendula ulmaria, Centaurea nigra, Lathyrus pratensis, Alchemilla glabra* and *Leontodon autumnalis* are frequent to occasional. *Conopodium majus* is locally frequent and there are localised examples of *Cirsium heterophyllum*, *Succisa pratensis* and *Equisetum sylvaticum* within a flushed area at the north-eastern edge of the field. Edges also held negative indicators, including *Rumex obtusifolius*, *Rumex crispus* and *Urtica dioica* although they were generally restricted to these locations. As in Site 613, numerous rabbits were flushed and lots of evidence of long-term presence (droppings and scrapes) was noted. The *F. ulmaria* component of the sward does not look likely to flower before the mid-July cutting date and may benefit from later cutting in some years to increase vigour and cover. This may also benefit other late flowering species such as *Succisa* and *Centaurea nigra*.

MATCH analysis shows strong affinities to MG3a (63.0) and MG6b (62.8). The site is very similar to 613 but does include at least some occasional to frequent MG3 preferentials (e.g. *Alchemilla glabra* and *Centaurea nigra*). The general lack of differential species (*Geranium sylvaticum* was recorded in one location), however, suggests this meadow is right on the cusp between MG3a and O'Reilly's (2011) MG6b-iii variant although it may lack the herb-richness (32%) indicative of the former. In either case the field would be considered semi-improved, but of high quality within this category.

A total of 6 years of data were available for analysis, with the baseline set at 1987. Overall, species richness increased slightly from 24.6 species per 1x1m quadrat (1987), peaking at 29 (1995), to 25.7 (2012). The proportion of grazing tolerant species declined, as evidenced by a decrease in average Grazing Suited Species Scores from 0.37 (1987) to 0.28 (2012). The proportion of nutrient tolerant species recorded, however, increased slightly from -0.22 to -0.15 over the same period. Considering the ordination plots (Annex II), all the data for subsequent years falls largely within the variability observed for the 1987 baseline, and the graph appears to cycle around largely similar vegetation assemblages. The farmer questionnaire indicates that the site management does not seem to have changed much in the past 30 years, but the site has received NPK fertiliser under ESA Tier 1 and weed spot treatment has taken place. The farmer reports that the field supports fewer flowers and more moss in recent years, and although the data suggests some positive changes, this would fit with the description. Site may benefit from later cutting dates in some years to allow hay meadow herbs to flower and set seed, e.g. *F. ulmaria*.

SOILS	
Texture	Sandy loam
pH	5.6
Olsens P	9
Total N	0.67
K	146

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Achillea ptarmica	0	0	2	Aste	7	7	5	3	1	-1
Agrostis capillaris	3	20	5	Poac	6	5	4	4	0	0
Alchemilla glabra	0	1	1	Rosa	7	6	6	4	0	0
Anthoxanthum odoratum	20	20	20	Poac	7	6	4	3	0	-1
Bellis perennis	5	5	3	Aste	8	5	6	4	1	0
Bromus hordeaceus	2	1	0	Poac	8	4	7	4	0	1
Carex nigra	0	0	7	Cype	7	8	4	2	0	-1
Centaurea nigra	3	2	0	Aste	7	5	6	5	1	-1
Cerastium fontanum	3	3	1	Cary	7	5	5	4	1	0
Cynosurus cristatus	15	10	10	Poac	7	5	6	4	0	0
Dactylis glomerata	0	0	1	Poac	7	5	7	6	0	0
Euphrasia officinalis agg.	2	0	0	Scro	8	5	5	3	0	-1
Festuca rubra	5	10	20	Poac	8	5	6	5	-1	0
Filipendula ulmaria	2	1	0	Rosa	7	8	6	5	-1	0
Holcus lanatus	20	20	20	Poac	7	6	6	5	0	0
Juncus acutiflorus	0	0	1	Junc	8	8	4	2	0	-1
Leontodon autumnalis	0	0	1	Aste	8	6	6	4	1	0
Leontodon hispidus	0	0	1	Aste	8	4	7	3	0	-1
Lolium perenne	15	3	5	Poac	8	5	6	6	0	0
Luzula campestris	0	3	1	Junc	7	4	5	2	1	-1
Myosotis discolor	2	3	3	Bora	7	5	5	3	1	-1
Phleum pratense	3	2	0	Poac	8	5	7	6	1	0
Plantago lanceolata	0	3	3	Plan	7	5	6	4	1	0
Poa pratensis	5	0	0	Poac	7	5	6	5	0	0
Poa trivialis	0	3	3	Poac	7	6	6	6	0	0
Prunella vulgaris	1	0	3	Lami	7	5	6	4	0	0
Ranunculus acris	6	5	5	Ranu	7	6	6	4	1	0
Ranunculus repens	4	0	0	Ranu	6	7	6	7	0	1
Rhinanthus minor	3	2	3	Scro	7	5	6	4	0	0
Rumex acetosa	5	10	5	Poly	7	5	5	4	0	0
Taraxacum agg.	2	1	3	Aste	7	5	7	6	1	0
Trifolium pratense	3	3	2	Faba	7	5	7	5	1	0
Trifolium repens	3	5	3	Faba	7	5	6	6	0	0
Trisetum flavescens	0	0	1	Poac	7	4	7	4	0	0
Veronica serpyllifolia	3	1	0	Scro	7	5	6	5	-1	0

SUMMARY	
Total	35.00
Grass	12.00
Sedge	1.00
Rush	2.00
Forb	20.00
Herb cover	32%
LIGHT L	
Average	7.20
Min	6.00
Max	8.00
MOISTURE F	
Average	5.43
Min	4.00
Max	8.00
REACTION R	
Average	5.80
Min	4.00
Max	7.00
NITROGEN N	
Average	4.31
Min	2.00
Max	7.00
GRAZING GI	
Average	0.26
NUTRIENTS NI	
Average	-0.20

Site:	**615**
Area	**Swaledale**
HLS options + supplements	**HK6**
Former ESA tier	**1B**

This site lies to the south-west of Angram, at an elevation of 350m. The field comprises a south-east facing gently sloping field featuring two distinct hay meadow vegetation types.

The wetter ground is characterised by vegetation with *Juncus acutiflorus* and *Caltha palustris* and other associates typical of moist soils such as *Carex nigra, Achillea ptarmica,, Ajuga reptans,* and *Lychnis flos-cuculi* along with high bryophyte cover (up to 50% in some places). Drier ground has abundant *Conopodium majus* while *Rhinanthus minor* occurs across the whole field. Scattered species include *Potentilla erecta*, *Hypochaeris radicata*, *Stellaria alsine*, *Ajuga reptans*, *Centaurea nigra* and *Cardamine pratensis*. The field edges show evidence of nutrient enrichment through the presence of more lush grass growth and *Urtica dioica* and *Rumex acetosa*, and are not especially diverse. Negative species within the field are mainly *Juncus effusus*, which also borders the stream at the northern edge, at low cover, and *Rumex obtusifolius* around the barn and field gateways. The roadside verge outside the site supports *Alchemilla glabra, Avenula pubescens, Ajuga reptans, Caltha palustris* and *Centaurea nigra*.

Overall the site shows strong affinities to MG6b (65.5), MG8 (64.2) and MG3a (64.0). Due to the relatively low frequency an cover of axiophytes he drier community is considered a good fit within O'Reilly's (2011) MG6b-ii variant, while the wetter community is considered to be MG8o. The site is therefore classified as being semi-improved and of average quality within this category.

Six years of data were available overall, with the baseline set at 1987. In 1987, variability across 5 quadrats was high with total richness of 17.8, decreasing 13 2012. The proportion of grazing tolerant species decreased between 1987 and 2012, as evidenced by a decreasing average Grazing Suited Species Score from 0.36 to 0.10, suggesting that the overall increase in species richness may correspond to increasing diversity resulting from a loss of dominant, grazing tolerant species. In addition, also considered a positive indication of an improving sward, average Nutrient Availability Suited Species Scores decreased from -0.05 to -0.23, demonstrating an increased proportion of stress tolerant species. Considering the ordination plot, although some changes are evident from the original 1987 baseline, the quadrats sampled in 2012 fall within the limits of variation observed for all other years suggesting no clear alteration in community composition over time. In terms of site management, the farmer questionnaire indicates that the site has received spot-treatment for weeds, which may explain the reduction in both nutrient and grazing tolerant species through time.

SOILS	
Soils	Sandy loam
pH	5.1
Olsens P	14
Total N	0.74
K	143

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Consultant Ecologists

NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	5	3	15	Poac	6	5	4	4	0	0
Alopecurus pratensis	3	0	0	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	15	20	20	Poac	7	6	4	3	0	-1
Bellis perennis	0	0	1	Aste	8	5	6	4	1	0
Caltha palustris	0	5	0	Ranu	7	9	6	4	0	-1
Cardamine pratensis	1	1	0	Bras	7	8	5	4	0	0
Carex nigra	0	15	0	Cype	7	8	4	2	0	-1
Cerastium fontanum	2	1	0	Cary	7	5	5	4	1	0
Conopodium majus	5	0	2	Apia	6	5	5	5	0	-1
Cynosurus cristatus	0	5	5	Poac	7	5	6	4	0	0
Dactylis glomerata	3	0	0	Poac	7	5	7	6	0	0
Deschampsia cespitosa	0	7	0	Poac	6	6	5	4	0	0
Festuca rubra	10	10	30	Poac	8	5	6	5	-1	0
Holcus lanatus	15	15	5	Poac	7	6	6	5	0	0
Juncus acutiflorus	0	0	2	Junc	8	8	4	2	0	-1
Leontodon autumnalis	0	2	0	Aste	8	6	6	4	1	0
Luzula campestris	0	0	5	Junc	7	4	5	2	1	-1
Myosotis discolor	0	1	2	Bora	7	5	5	3	1	-1
Plantago lanceolata	0	0	5	Plan	7	5	6	4	1	0
Poa trivialis	10	3	3	Poac	7	6	6	6	0	0
Prunella vulgaris	0	0	1	Lami	7	5	6	4	0	0
Ranunculus acris	5	15	8	Ranu	7	6	6	4	1	0
Ranunculus repens	10	3	0	Ranu	6	7	6	7	0	1
Rhinanthus minor	2	0	0	Scro	7	5	6	4	0	0
Rumex acetosa	30	15	0	Poly	7	5	5	4	0	0
Taraxacum agg.	0	0	1	Aste	7	5	7	6	1	0
Trifolium repens	0	2	5	Faba	7	5	6	6	0	0
Trisetum flavescens	0	0	1	Poac	7	4	7	4	0	0

SUMMARY	
Total	28.00
Grass	10.00
Sedge	1.00
Rush	2.00
Forb	15.00
Herb cover	36%
LIGHT L	
Average	7.00
Min	6.00
Max	8.00
MOISTURE F	
Average	5.68
Min	4.00
Max	9.00
REACTION R	
Average	5.57
Min	4.00
Max	7.00
NITROGEN N	
Average	4.32
Min	2.00
Max	7.00
GRAZING GI	
Average	0.25
NUTRIENTS NI	
Average	-0.21

Site:	**616**
Area	**Swaledale**
HLS options + supplements	**HK6, HK18**
Former ESA tier	**1B**

This site is located at Moor Close, adjacent to Thwaite Beck on the western edge of Swaledale, at an elevation of 370m. The field has a southerly aspect and a steepening slope toward Thwaite beck. Due to the steepness of the slope above the beck, and the stream on the eastern edge of the site, it is likely that only about three-quarters of the field are mown regularly. The vegetation of the site is quite complex, with wetter upper part mixing intimately with drier areas further down the slope. Directly above the beck is a small bank with species-rich acidic grassland. Overall it is an interesting and diverse site, rich in sedges, including *Carex*: *caryophyllea, panicea, flacca, leporina, nigra, pallescens* and *pilulifera*. The site forms part of Mallerstang-Swaledale Head Site of Special Scientific Interest.

The upper part of the field is a mix of *Juncus acutiflorus//Carex spp.* and *Anthoxanthum odoratum/Cynosurus cristatus* dominated vegetation. Typical upland hay meadow axiophytes are found throughout the vegetation, with *Succisa pratensis, Conopodium majus, Euphrasia officinalis agg., Carex spp.* and *Potentilla erecta* particularly prominent. Drier ground seems to be favoured by *Centaurea nigra* and *Lotus corniculatus,* while the wettest areas have *Cirsium palustre* and *Caltha palustris*. Edges of the site support *Filipendula ulmaria, Ranunculus repens, Juncus effusus* and *Angelica sylvestris*. A stream running down the eastern edge of the field is lined with *Caltha* palustris and *F.* ulmaria. There are few negative indicators although *Cirsium palustre* is frequent.

The steep bank to the south of the field has a range of calcifuges, including *Nardus stricta, Lathyrus linifolius, Molinia caerulea, Carex pallescens, Carex panicea, Galium saxatile* and *Pedicularis sylvatica*. However, presumably due to constant nutrient flushing, calcicolous vegetation is also present, including *Avenula pubescens, Carex caryophyllea, Briza media* and *Carex flacca*. A *Juncus acutiflorus* dominated area at the bottom of the slope holds a good population of *Dactylorhiza maculata*. The field had been recently grazed (mid-June 2012), but no stock were present at the time of the visit.

MATCH analysis of the samples collected proved inconclusive, showing affinities to many communities including MG5c (53.4), U4b (53.0), MG3 (50.7), MG6b (46.3) and M23a (46.1). The species rich grassland on the lower bank (not sampled) may approximate to U4c. Likewise it is difficult to say whether the field has been improved. The rather low herb cover and patchy occurrence of some axiophytes hints that attempts may have been made in the past, but the steep slope and constant water movement probably leached added nutrients quickly. The field is therefore tentatively classified as unimproved.

Six years of past data were available for analysis, with the baseline year set as 1987. Overall, species richness increased slightly from 20.6 (1987), with a peak of 25.3 (2002), to 21.7 (2012). The proportion of grazing tolerant species declined slightly, with average Grazing Suited Species Scores decreasing from 0.38 (1987) to 0.24 (2012). Average Nutrient Availability Suited Species Scores were higher than at many other sites in the dataset and decreased from -0.45 (1987) to -0.55 (2012), suggesting an increase in stress tolerant species. Coupled with the increased species richness, the changes in Grazing and Nutrient Availability Suited Species Scores indicate a positive change to the overall community composition of the site. No ordination plot was created for this site as scores for a single axis only were computed. This indicates that the variability within the date was not able to be explained by further ordination

axes (axis 1 explained 46% of the overall variation within the data set), most likely due to the high proportion of rare species within the dataset relative to the total numbers of species.

The farmer questionnaire indicates that the site has always been managed for hay (or haylage in some years). Lime has not been added for 20 years plus, since before fertilised additions ceased in the 1990s, and now only farmyard manure is used but grass is not so productive nowadays.

SOILS	
Texture	Sandy loam
pH	5.2
Olsens P	12
Total N	0.75
K	182

Penny Anderson Associates Ltd
CONSULTANT ECOLOGISTS

NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Achillea ptarmica	0	2	0	Aste	7	7	5	3	1	-1
Agrostis canina	0	0	2	Poac	7	6	3	3	0	-1
Agrostis capillaris	30	18	5	Poac	6	5	4	4	0	0
Anthoxanthum odoratum	20	18	6	Poac	7	6	4	3	0	-1
Caltha palustris	0	0	3	Ranu	7	9	6	4	0	-1
Cardamine pratensis	0	0	2	Bras	7	8	5	4	0	0
Carex caryophyllea	2	1	0	Cype	7	4	7	2	-1	-1
Carex nigra	10	3	3	Cype	7	8	4	2	0	-1
Carex ovalis	0	0	3	Cype	7	7	5	4	0	-1
Carex pallescens	0	2	0	Cype	6	6	5	4	0	-1
Carex panicea	0	0	3	Cype	8	8	4	2	1	-1
Carex pilulifera	0	3	0	Cype	7	5	3	2	0	-1
Centaurea nigra	1	2	0	Aste	7	5	6	5	1	-1
Cerastium fontanum	1	2	0	Cary	7	5	5	4	1	0
Cirsium palustre	1	0	0	Aste	7	8	5	4	-1	0
Conopodium majus	1	3	0	Apia	6	5	5	5	0	-1
Cynosurus cristatus	0	0	5	Poac	7	5	6	4	0	0
Deschampsia cespitosa	2	0	0	Poac	6	6	5	4	0	0
Euphrasia officinalis agg.	3	0	3	Scro	8	5	5	3	0	-1
Festuca rubra	15	20	6	Poac	8	5	6	5	-1	0
Holcus lanatus	2	15	3	Poac	7	6	6	5	0	0
Juncus acutiflorus	5	0	23	Junc	8	8	4	2	0	-1
Juncus conglomeratus	0	2	0	Junc	7	7	4	3	-1	-1
Juncus effusus	0	3	0	Junc	7	7	4	4	1	0
Juncus squarrosus	1	0	2	Junc	7	7	2	2	1	-1
Leontodon autumnalis	0	0	2	Aste	8	6	6	4	1	0
Lotus corniculatus	5	0	0	Faba	7	4	6	2	0	-1
Luzula campestris	0	3	1	Junc	7	4	5	2	1	-1
Myosotis discolor	0	0	2	Bora	7	5	5	3	1	-1
Plantago lanceolata	0	3	0	Plan	7	5	6	4	1	0
Potentilla erecta	5	7	1	Rosa	7	7	3	2	1	-1
Prunella vulgaris	0	0	1	Lami	7	5	6	4	0	0
Ranunculus acris	1	2	15	Ranu	7	6	6	4	1	0
Ranunculus flammula	0	0	2	Ranu	7	9	5	3	0	-1
Ranunculus repens	4	0	0	Ranu	6	7	6	7	0	1
Rumex acetosa	2	2	0	Poly	7	5	5	4	0	0
Succisa pratensis	3	5	2	Dips	7	7	5	2	1	-1
Trifolium repens	5	5	15	Faba	7	5	6	6	0	0

SUMMARY	
Total	38.00
Grass	7.00
Sedge	6.00
Rush	5.00
Forb	20.00
Herb cover	32%
LIGHT L	
Average	7.00
Min	6.00
Max	8.00
MOISTURE F	
Average	6.13
Min	4.00
Max	9.00
REACTION R	
Average	4.95
Min	2.00
Max	7.00
NITROGEN N	
Average	3.53
Min	2.00
Max	7.00
GRAZING GI	
Average	0.24
NUTRIENTS NI	
Average	-0.55

Site:	**617**
Area	**Swaledale**
HLS options + supplements	**HK6, HK18**
Former ESA tier	**1B**

This site lies to the north-west of Keld at an elevation of 330m. The field comprises a steep north-facing slope subtended by an undulating, but technically flat, lower lying area above the river Swale. It is a diverse site, in terms of both topography and hydrology with a resulting diversity of vegetation types.

The mown area of the site lies 10m below the B6270 and consists of two obviously different vegetation types; the drier rises and small banks support *Anthoxanthum odoratum, Festuca rubra, Agrostis capillaris, Conopodium majus, Rumex acetosa*, and less frequently, *Geranium sylvaticum, Centaurea nigra* and *Leontodon hispidus*. In the lower lying, damper areas, *Caltha palustris, Ranunculus repens, Filipendula ulmaria and Lotus pedunculatus* are abundant. These vegetation types grade into one another throughout. The edges of the lower area include the woodland field-layer species *Hyacinthoides non-scripta* and *Geranium sylvaticum*.

While the hay meadow is of value, the main area of botanical interest, is the steep, north-facing bank below the road, and to a lesser extent several smaller banks within the field, which support an excellent flora. The prominent species are *Equisetum sylvaticum, Cirsium heterophyllum* (two very large patches)*, Conopodium majus, Geranium sylvaticum, Filipendula ulmaria, Centaurea nigra, Caltha palustris, Primula vulgaris, Geum rivale, Avenula pubescens, Briza media, Neottia ovata, Lotus corniculatus, Cruciata laevipes, Anemone nemorosa, Vaccinium myrtillus and Potentilla erecta*. A flushed area, some of which is included in the G09 feature, and dominated by *Juncus acutiflorus,* includes *Dactylorhiza purpurella* and *Crepis paludosa*. The bank is grazed by rabbits which probably, in combination with aftermath grazing and leaching, prevent rankness from developing. Negative indicators are generally sparse and limited to rare *Rumex crispus* in the field and *Anthriscus sylvestris* adjacent to the road. Some recent spot treatment of docks was evident within the field.

MATCH analysis suggests that the lower lying areas have strong affinities to MG8 (56.6) and are considered to conform to O'Reilly's (2011) MG8o variant. The drier mounds and banks show affinities to both MG6b (60.2) and MG3a (58.1) and are considered overall to conform to M6b-iii (although some areas are very close to MG3a). The site is therefore considered to be semi-improved, but of high quality within this category. Although unmown, a large area of the field comprises unimproved grassland of very high value.

No previous survey data exist for this site.

SOILS	
Texture	Sandy loam
pH	5.4
Olsens P	13
Total N	0.67
K	175

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CONSULTANT ECOLOGISTS

NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Achillea millefolium	0	0	2	Aste	7	5	6	4	0	0
Agrostis capillaris	15	17	11	Poac	6	5	4	4	0	0
Agrostis stolonifera	10	0	0	Poac	7	6	7	6	0	1
Anthoxanthum odoratum	20	6	11	Poac	7	6	4	3	0	-1
Bellis perennis	2	2	7	Aste	8	5	6	4	1	0
Bromus hordeaceus	0	0	2	Poac	8	4	7	4	0	1
Caltha palustris	10	4	0	Ranu	7	9	6	4	0	-1
Cardamine pratensis	1	2	0	Bras	7	8	5	4	0	0
Carex nigra	5	0	0	Cype	7	8	4	2	0	-1
Cerastium fontanum	2	0	0	Cary	7	5	5	4	1	0
Conopodium majus	0	0	4	Apia	6	5	5	5	0	-1
Cynosurus cristatus	0	0	9	Poac	7	5	6	4	0	0
Dactylis glomerata	0	2	1	Poac	7	5	7	6	0	0
Festuca pratensis	0	2	0	Poac	7	6	6	6	0	0
Festuca rubra	2	26	15	Poac	8	5	6	5	-1	0
Filipendula ulmaria	2	0	0	Rosa	7	8	6	5	-1	0
Holcus lanatus	5	8	12	Poac	7	6	6	5	0	0
Lathyrus pratensis	3	2	0	Faba	7	6	6	5	1	0
Leontodon autumnalis	0	0	1	Aste	8	6	6	4	1	0
Leontodon hispidus	0	0	1	Aste	8	4	7	3	0	-1
Lolium multiflorum	1	0	0	Poac	7	5	7	7	0	0
Lolium perenne	0	0	5	Poac	8	5	6	6	0	0
Montia fontana	3	0	0	Port	7	9	5	3	1	-1
Myosotis discolor	3	2	1	Bora	7	5	5	3	1	-1
Plantago lanceolata	0	0	18	Plan	7	5	6	4	1	0
Poa pratensis	0	2	0	Poac	7	5	6	5	0	0
Poa trivialis	15	5	0	Poac	7	6	6	6	0	0
Ranunculus acris	10	11	5	Ranu	7	6	6	4	1	0
Ranunculus bulbosus	0	0	2	Ranu	7	4	7	4	0	0
Ranunculus ficaria	0	2	0	Ranu	6	6	6	6	0	0
Ranunculus repens	10	11	0	Ranu	6	7	6	7	0	1
Rumex acetosa	3	8	15	Poly	7	5	5	4	0	0
Taraxacum agg.	0	2	0	Aste	7	5	7	6	1	0
Trifolium pratense	3	2	20	Faba	7	5	7	5	1	0
Trifolium repens	5	5	3	Faba	7	5	6	6	0	0
Veronica chamaedrys	0	1	1	Scro	6	5	6	5	1	-1

SUMMARY	
Total	36.00
Grass	13.00
Sedge	1.00
Rush	0.00
Forb	22.00
Herb cover	48%
LIGHT L	
Average	7.03
Min	6.00
Max	8.00
MOISTURE F	
Average	5.69
Min	4.00
Max	9.00
REACTION R	
Average	5.89
Min	4.00
Max	7.00
NITROGEN N	
Average	4.67
Min	2.00
Max	7.00
GRAZING GI	
Average	0.25
NUTRIENTS NI	
Average	-0.14

Site:	**618**
Area	**Swaledale**
HLS options + supplements	**HK6**
Former ESA tier	**1B**

This site lies to the north of Turnip House, to the west of Feetham, at an elevation of 340m. The field comprises a long undulating, south-facing, slope with seeps and issues in several places.

The grass sward is variable but predominantly comprised of *Holcus lanatus*, *Lolium perenne* and *Anthoxanthum odoratum* and also widespread *Cynosurus cristatus*, *Dactylis glomerata* and *Festuca rubra*. Of the typical upland hay meadow species *Alchemilla glabra, Euphrasia officinalis agg.*, *Filipendula ulmaria*, *Conopodium majus*, *Rhinanthus minor* and *Leontodon autumnalis* are constant to frequent. Less abundant are *Centaurea nigra* and *Geranium sylvaticum* (on the northern edge only). *Caltha palustris* is present along some of the seepage lines. *Heracleum sphondylium* is occasional but other negative including *Rumex obtusifolius* and *Rumex crispus* and *Anthriscus sylvestris* are confined to the field edges. Evidence of long-term occupation by rabbits was noted within the field.

The site shows strong affinities to MG3a (66.5) and, to a lesser degree MG6b (60.5). Although *Alchemilla spp.* are frequent, the general lack of differential species (*Geranium sylvaticum* was recorded in one location), suggests this meadow is right on the cusp between MG3a and O'Reilly's (2011) MG6b-iii variant. The site is therefore considered to be semi-improved, but of high quality within this category.

No previous survey data exist for this site.

SOILS	
Texture	Sandy loam
pH	5.9
Olsens P	10
Total N	0.64
K	175

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CONSULTANT ECOLOGISTS

NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	3	0	0	Poac	6	5	4	4	0	0
Alchemilla glabra	0	0	5	Rosa	7	6	6	4	0	0
Alopecurus geniculatus	0	1	0	Poac	8	7	6	6	0	1
Anthoxanthum odoratum	5	5	20	Poac	7	6	4	3	0	-1
Bellis perennis	3	3	3	Aste	8	5	6	4	1	0
Bromus hordeaceus	15	5	5	Poac	8	4	7	4	0	1
Centaurea nigra	2	0	0	Aste	7	5	6	5	1	-1
Cerastium fontanum	3	3	2	Cary	7	5	5	4	1	0
Conopodium majus	3	0	0	Apia	6	5	5	5	0	-1
Cynosurus cristatus	3	5	3	Poac	7	5	6	4	0	0
Dactylis glomerata	3	0	1	Poac	7	5	7	6	0	0
Euphrasia officinalis agg.	1	1	3	Scro	8	5	5	3	0	-1
Festuca rubra	5	5	5	Poac	8	5	6	5	-1	0
Filipendula ulmaria	0	10	1	Rosa	7	8	6	5	-1	0
Heracleum sphondylium	1	0	0	Apia	7	5	7	7	0	1
Holcus lanatus	20	20	20	Poac	7	6	6	5	0	0
Lathyrus pratensis	0	1	0	Faba	7	6	6	5	1	0
Leontodon autumnalis	0	0	2	Aste	8	6	6	4	1	0
Lolium perenne	20	20	20	Poac	8	5	6	6	0	0
Myosotis discolor	1	1	2	Bora	7	5	5	3	1	-1
Plantago lanceolata	10	10	10	Plan	7	5	6	4	1	0
Poa trivialis	3	3	3	Poac	7	6	6	6	0	0
Ranunculus acris	10	5	5	Ranu	7	6	6	4	1	0
Ranunculus bulbosus	3	2	0	Ranu	7	4	7	4	0	0
Ranunculus ficaria	0	0	1	Ranu	6	6	6	6	0	0
Ranunculus repens	1	1	0	Ranu	6	7	6	7	0	1
Rhinanthus minor	3	3	3	Scro	7	5	6	4	0	0
Rumex acetosa	5	3	5	Poly	7	5	5	4	0	0
Taraxacum agg.	1	2	1	Aste	7	5	7	6	1	0
Trifolium pratense	10	5	5	Faba	7	5	7	5	1	0
Trifolium repens	5	3	3	Faba	7	5	6	6	0	0
Trisetum flavescens	2	0	0	Poac	7	4	7	4	0	0
Veronica chamaedrys	3	0	0	Scro	6	5	6	5	1	-1
Veronica serpyllifolia	1	0	2	Scro	7	5	6	5	-1	0

SUMMARY	
Total	34.00
Grass	11.00
Sedge	0.00
Rush	0.00
Forb	23.00
Herb cover	44%
LIGHT L	
Average	7.06
Min	6.00
Max	8.00
MOISTURE F	
Average	5.35
Min	4.00
Max	8.00
REACTION R	
Average	5.94
Min	4.00
Max	7.00
NITROGEN N	
Average	4.76
Min	3.00
Max	7.00
GRAZING GI	
Average	0.24
NUTRIENTS NI	
Average	-0.06

Site:	**619**
Area	**Dentdale**
HLS options + supplements	**HK6**
Former ESA tier	**2A**

This site is located to the south of Cowgill, at an elevation of 280m. The field comprises a gentle valley-side slope with occasional steep banks and several different aspects (overall north-east).

About 85% of the mowable area of the field is floristically quite homogenous *Caltha palustris – Cynosurus cristatus* grassland, with constant *C. palustris*, *Euphrasia officinalis agg.*, *Leontodon autumnalis* and *Rhinanthus minor*. In contrast to many *Caltha* fields it has quite a diverse range of axiophytes, including frequent *Dactylorhiza fuchsii* and an individual *Gymnadenia conopsea*. In the wettest areas of the *Caltha-Cynosurus* grassland, *Juncus acutiflorus* is frequent and the fen species *Galium palustre* and *Lotus pedunculatus* appear with *Filipendula ulmaria*, *Dactylorhiza fuchsii* and *Crepis paludosa.* The remaining area of the meadow is relatively species-rich *Cynosurus* grassland, floristically similar to the other parts of the field, but without *Caltha* or *Carex nigra*, and with the addition of frequent *Centaurea nigra* and occasional *Lathyrus pratensis* and *Conopodium majus*.

The several steep banks have both moist (flushed) and dry parts, adding numerous other axiophytes including *Stachys officinalis*, *Briza media*, *Alchemilla glabra*, *Alchemilla xanthochlora*, *Valeriana dioica*, *Succisa pratensis*, *Lathyrus linifolius* and *Crepis paludosa*.

The site shows strong affinities to MG6b (61.5), MG8 (60.3) and, to MG3a (57.4). The frequency of *C. palustris* and other moisture-loving axiophytes, and the low level of negative species, suggests a good fit to O'Reilly's (2011) MG8+ variant. The field is classed as a high value semi-improved meadow. A significant area of the field is unmown and comprises unimproved grassland of very high value.

A total of five years of data were available for analysis, with the baseline set at 1987. Overall, species richness has increased significantly from 16.2 (1987) to 25 (2012), a change of 54.3%. The proportion of grazing tolerant species has remained largely constant, with an average Grazing Suited Species Score of 0.3. The proportion of nutrient tolerant species declined substantially, with average Nutrient Availability Suited Species Scores decreasing from 0.03 (1987) to -0.04 (2012). Coupled with the increased species richness, it is considered that this represents a positive change to the quality of this site, with an overall decline in less desirable nutrient tolerant species.

Considering the ordination plot (Annex II), quadrat variability in all years lies within that observed for 1987, and the site seems to have remained largely similar over the period to 2012. The farmer questionnaire revealed that management under ESA Tier 2a has included liming 4 or 5 years ago, and the site entered HLS in 2010, so a reduction in nutrient tolerant species may reflect the cessation NPK fertiliser use at this time. Farmer has noted a gradual increase in flower abundance.

SOILS	
Texture	Sandy loam
pH	5.4
Olsens P	17
Total N	0.81
K	183

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CONSULTANT ECOLOGISTS

NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	0	8	3	Poac	6	5	4	4	0	0
Alopecurus geniculatus	2	9	10	Poac	8	7	6	6	0	1
Alopecurus pratensis	0	1	0	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	6	8	7	Poac	7	6	4	3	0	-1
Bellis perennis	3	2	2	Aste	8	5	6	4	1	0
Bromus hordeaceus	3	2	3	Poac	8	4	7	4	0	1
Caltha palustris	42	0	0	Ranu	7	9	6	4	0	-1
Carex nigra	0	0	3	Cype	7	8	4	2	0	-1
Cerastium fontanum	2	1	2	Cary	7	5	5	4	1	0
Cynosurus cristatus	6	8	12	Poac	7	5	6	4	0	0
Euphrasia officinalis agg.	3	3	8	Scro	8	5	5	3	0	-1
Festuca rubra	3	15	3	Poac	8	5	6	5	-1	0
Holcus lanatus	28	7	20	Poac	7	6	6	5	0	0
Juncus acutiflorus	2	0	0	Junc	8	8	4	2	0	-1
Leontodon autumnalis	3	5	4	Aste	8	6	6	4	1	0
Lolium perenne	3	7	11	Poac	8	5	6	6	0	0
Montia fontana	0	1	2	Port	7	9	5	3	1	-1
Myosotis discolor	0	2	1	Bora	7	5	5	3	1	-1
Plantago lanceolata	2	3	2	Plan	7	5	6	4	1	0
Poa annua	1	0	0	Poac	7	5	6	7	0	1
Poa trivialis	6	6	3	Poac	7	6	6	6	0	0
Prunella vulgaris	2	0	2	Lami	7	5	6	4	0	0
Ranunculus acris	5	5	2	Ranu	7	6	6	4	1	0
Ranunculus repens	5	22	17	Ranu	6	7	6	7	0	1
Rhinanthus minor	4	7	12	Scro	7	5	6	4	0	0
Rumex acetosa	3	12	3	Poly	7	5	5	4	0	0
Taraxacum agg.	1	0	0	Aste	7	5	7	6	1	0
Trifolium pratense	10	6	13	Faba	7	5	7	5	1	0
Trifolium repens	4	16	18	Faba	7	5	6	6	0	0
Trisetum flavescens	1	0	0	Poac	7	4	7	4	0	0

SUMMARY	
Total	30.00
Grass	12.00
Sedge	1.00
Rush	1.00
Forb	16.00
LIGHT L	
Average	7.20
Min	6.00
Max	8.00
MOISTURE F	
Average	5.70
Min	4.00
Max	9.00
REACTION R	
Average	5.70
Min	4.00
Max	7.00
NITROGEN N	
Average	4.47
Min	2.00
Max	7.00
GRAZING GI	
Average	0.27
NUTRIENTS NI	
Average	-0.10

Site:	**620**
Area	**Wensleydale**
HLS options + supplements	**HK6, HK18**
Former ESA tier	**1B**

This site lies to the west of Sedbusk at an elevation of 300m. The field lies on a south-facing slope, which steepens (1:2) to the north and is shallow to the south.

The field appears to have been quite uniformly improved and is dominated by *Lolium perenne*, *Cynosurus cristatus* and *Rumex acetosa* with *Ranunculus acris* and *Ranunculus repens*. *Anthriscus sylvestris* attains quite high cover and *Rumex* species are higher than usual for other hay meadows in this area. Species typical of unimproved meadows include *Rhinanthus minor*, *Filipendula ulmaria*, *Myosotis discolor* and *Conopodium majus*, although none are more than occasional. One flowering plant of *Geranium sylvaticum* was found in the centre of the field. The northern part of the field is less frequently cut but also less improved; *Conopodium* is more frequent here but *Arrhenatherum elatius* appears to be increasing and the area is becoming rank.

The site shows strong affinities to MG6b (64.5) and MG6a (59.8) but also to MG3a (62.2). In the context of O'Reilly's (2011) classification the site would be regarded as MG6-i, placing it at the improved end of the MG6b spectrum. The site is categorised as semi-improved as it has a few characteristic species of unimproved upland hay meadows but also has strong affinities to more improved stands.

No previous data exist for this site.

SOILS	
Texture	Sandy loam
pH	5.6
Olsens P	19
Total N	0.84
K	159

Penny Anderson Associates Ltd
Consultant Ecologists

NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	0	11	2	Poac	6	5	4	4	0	0
Alopecurus geniculatus	10	0	0	Poac	8	7	6	6	0	1
Alopecurus pratensis	0	0	2	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	0	11	10	Poac	7	6	4	3	0	-1
Anthriscus sylvestris	2	4	0	Apia	6	5	7	7	-1	1
Arrhenatherum elatius	0	1	0	Poac	7	5	7	7	-1	0
Avenula pratensis	0	0	2	Poac	7	4	7	2	0	-1
Bellis perennis	3	1	3	Aste	8	5	6	4	1	0
Bromus hordeaceus	1	3	1	Poac	8	4	7	4	0	1
Cerastium fontanum	3	2	2	Cary	7	5	5	4	1	0
Cynosurus cristatus	3	11	10	Poac	7	5	6	4	0	0
Dactylis glomerata	0	2	0	Poac	7	5	7	6	0	0
Festuca rubra	0	11	5	Poac	8	5	6	5	-1	0
Filipendula ulmaria	1	0	0	Rosa	7	8	6	5	-1	0
Holcus lanatus	20	9	10	Poac	7	6	6	5	0	0
Leontodon autumnalis	1	0	0	Aste	8	6	6	4	1	0
Lolium perenne	40	9	40	Poac	8	5	6	6	0	0
Myosotis discolor	1	0	3	Bora	7	5	5	3	1	-1
Phleum pratense	0	1	2	Poac	8	5	7	6	1	0
Poa trivialis	30	6	10	Poac	7	6	6	6	0	0
Ranunculus acris	10	20	15	Ranu	7	6	6	4	1	0
Ranunculus ficaria	0	1	0	Ranu	6	6	6	6	0	0
Ranunculus repens	10	20	4	Ranu	6	7	6	7	0	1
Rhinanthus minor	1	2	0	Scro	7	5	6	4	0	0
Rumex acetosa	10	20	5	Poly	7	5	5	4	0	0
Taraxacum agg.	3	0	2	Aste	7	5	7	6	1	0
Trifolium repens	5	1	3	Faba	7	5	6	6	0	0
Veronica serpyllifolia	1	0	0	Scro	7	5	6	5	-1	0

SUMMARY	
Total	28.00
Grass	14.00
Sedge	0.00
Rush	0.00
Forb	14.00
Herb cover	53%
LIGHT L	
Average	7.11
Min	6.00
Max	8.00
MOISTURE F	
Average	5.39
Min	4.00
Max	8.00
REACTION R	
Average	6.00
Min	4.00
Max	7.00
NITROGEN N	
Average	5.00
Min	2.00
Max	7.00
GRAZING GI	
Average	0.07
NUTRIENTS NI	
Average	0.04

Site:	**621**
Area	**Raydale**
HLS options + supplements	**HK6, HK18**
Former ESA tier	**1B**

This field lies to the west of Stalling Busk at an elevation of 290m in Raydale. The field has a westerly aspect and slopes steadily (1:4 at the steepest) to the east, with a shallower slope at its western edge. The site lies immediately adjacent to SSSI land.

The sward is quite productive, in terms of biomass, and has probably undergone some improvement in the past. Grass species comprise abundant *Cynosurus cristatus* with *Anthoxanthum odoratum* perhaps a little less frequent than in similar meadows in the area, together with some agricultural grasses including *Phleum pratense*, *Alopecurus pratensis* and *Lolium perenne* at low frequency. Of the typical species of upland meadows, *Rhinanthus minor,* is more or less constant and *Leontodon autumnalis* and *Conopodium majus* are frequent, the latter being abundant at the edges of the field. *Geranium sylvaticum* is also present along the eastern edge. Some parts of the slope have occasional *Caltha palustris* and *Juncus effusus* with *Carex leporina*/*C. nigra*. Other species (rare to occasional) include *Ajuga reptans*, *Leontodon hispidus*. Most negative indicators (*Rumex* species and *Urtica dioica*) at the southeast edge of the field. *Euphrasia officinalis agg.* is notable by its absence.

The site shows strong affinities to MG6b (65.4) and MG8 (62.9) and to MG3a (62.2). In the context of O'Reilly's (2011) classification the site would be regarded as MG6-iii, placing it at the less improved end of the MG6b spectrum. The site is therefore categorised as semi-improved as, although it is grass-dominated, a number of characteristic species of unimproved upland hay meadows attain high frequency but are generally of low cover.

Four years of data were available for analysis, with the baseline year set as 1992. Overall, species richness per 1x1m quadrat was seen to increase from 20.6 (1992) to 24.7(2012), a 19.74% change. Although highly variable, the proportion of grazing tolerant species decreased slightly despite a peak in 1995, with average Grazing Suited Species Scores decreasing from 0.32 (1992) to 0.26 (2012). A steady slight decrease in the average Nutrient Availability Suited Species Scores (which remain low) was seen, from -0.05 (1992) to -0.14 (2012), indicates an increased proportion of stress tolerant species within the sward. Considering the ordination plot (Annex II), error bars for 1992 encompass the variability shown in subsequent years, indicating that limited community-level change has occurred. A slight narrowing of later error bars suggests that vegetation is becoming more homogeneous. Management information provided indicates that rushes were cut in 2012, but not in recent wet years. Also, regular floods and runoff from other fields may bring in material, although no lime, manure or fertiliser has been added in the past 15 years of management. Marsh ragwort is being controlled through sheep grazing. Overall, the increase in species richness seems the most significant change, which, coupled with the slight changes in grazing and nutrient tolerant species, is positive and may herald a trend to more diverse hay meadow vegetation.

SOILS	
Texture	Sandy loam
pH	5.0
Olsens P	16
Total N	0.51
K	158

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	30	13	0	Poac	6	5	4	4	0	0
Anthoxanthum odoratum	7	13	5	Poac	7	6	4	3	0	-1
Bellis perennis	3	2	3	Aste	8	5	6	4	1	0
Caltha palustris	0	0	5	Ranu	7	9	6	4	0	-1
Cardamine pratensis	1	0	0	Bras	7	8	5	4	0	0
Carex nigra	0	0	16	Cype	7	8	4	2	0	-1
Cerastium fontanum	2	2	1	Cary	7	5	5	4	1	0
Cerastium glomeratum	0	0	1	Cary	7	5	6	5	1	0
Conopodium majus	0	2	0	Apia	6	5	5	5	0	-1
Cynosurus cristatus	20	13	8	Poac	7	5	6	4	0	0
Dactylis glomerata	2	0	0	Poac	7	5	7	6	0	0
Deschampsia cespitosa	0	1	0	Poac	6	6	5	4	0	0
Festuca rubra	5	13	5	Poac	8	5	6	5	-1	0
Holcus lanatus	1	11	7	Poac	7	6	6	5	0	0
Hypochaeris radicata	0	4	2	Aste	8	4	5	3	0	-1
Leontodon autumnalis	2	2	3	Aste	8	6	6	4	1	0
Leontodon hispidus	3	0	0	Aste	8	4	7	3	0	-1
Lolium perenne	5	2	2	Poac	8	5	6	6	0	0
Luzula campestris	0	1	0	Junc	7	4	5	2	1	-1
Montia fontana	0	0	2	Port	7	9	5	3	1	-1
Myosotis discolor	1	0	1	Bora	7	5	5	3	1	-1
Phleum pratense	2	0	0	Poac	8	5	7	6	1	0
Plantago lanceolata	7	13	0	Plan	7	5	6	4	1	0
Poa pratensis	2	0	0	Poac	7	5	6	5	0	0
Poa trivialis	12	5	6	Poac	7	6	6	6	0	0
Prunella vulgaris	0	0	3	Lami	7	5	6	4	0	0
Ranunculus acris	5	3	12	Ranu	7	6	6	4	1	0
Ranunculus ficaria	0	0	2	Ranu	6	6	6	6	0	0
Ranunculus repens	2	1	12	Ranu	6	7	6	7	0	1
Rhinanthus minor	1	0	1	Scro	7	5	6	4	0	0
Rumex acetosa	3	4	2	Poly	7	5	5	4	0	0
Sagina procumbens	0	0	1	Cary	7	6	6	5	0	0
Taraxacum agg.	1	0	0	Aste	7	5	7	6	1	0
Trifolium dubium	2	2	2	Faba	7	4	6	5	0	0
Trifolium pratense	6	2	3	Faba	7	5	7	5	1	0
Trifolium repens	2	6	1	Faba	7	5	6	6	0	0
Veronica serpyllifolia	1	0	1	Scro	7	5	6	5	-1	0

SUMMARY	
Total	37.00
Grass	11.00
Sedge	1.00
Rush	1.00
Forb	24.00
Herb rich	41%
LIGHT L	
Average	7.05
Min	6.00
Max	8.00
MOISTURE F	
Average	5.54
Min	4.00
Max	9.00
REACTION R	
Average	5.73
Min	4.00
Max	7.00
NITROGEN N	
Average	4.46
Min	2.00
Max	7.00
GRAZING GI	
Average	0.27
NUTRIENTS NI	
Average	-0.22

Site:	**622**
Area	**Raydale**
HLS options + supplements	**HK6, HK18**
Former ESA tier	**1B**

This site lies to the west of Stalling Busk, at an elevation of 270m. The field has a westerly aspect and is situated on an undulating slope (1:3 at the steepest). In addition to the drier hay meadow community is a bank, which is probably unmown due to its steepness.

The field is similar to site 621. Grass cover comprises *Lolium perenne* and *Alopecurus pratensis* with *Anthoxanthum odoratum*. Of the typical upland hay meadow species, *Rhinanthus minor* attains an almost constant presence in the sward (but with cover generally low in any given area). Other positive indicators are numerous, but no more than occasional, and comprise *Conopodium majus, Filipendula ulmaria, Leontodon autumnalis, L. hispidus, Lathyrus pratensis, Caltha palustris, Carex nigra* and *Potentilla erecta*. The steep bank supports *P. erecta*, *C. majus*, *Festuca rubra*, *Deschampsia cespitosa*, *L. pratensis*, *Sanguisorba officinalis*, *Avenula pubescens*, *L. hispidus* and *Anemone nemorosa*. A flushed bank in the northern corner of the field is less steep, and is probably mown regularly, and includes *F. ulmaria* and *Geranium sylvaticum* with *Dactylorhiza purpurella*, *Crepis paludosa*, *Lychnis flos-cuculi*, *L. pratensis*, *C. nigra*, *Equisetum palustre* and *A. pubescens*. Negative indicators consist of *Rumex* species and *Urtica dioica*, although these are concentrated around the barn on the southwest edge of the field. Old silage bales are also stored here.

The site shows strong affinities to MG6b (59.8) and also to MG3a (59.9) but is probably too sparse in indicator species to be included in the latter category. The presence of *Caltha* also hints at affinities to MG8 (53.0). In the context of O'Reilly's (2011) classification the site would be regarded as MG6b-iii, placing it at the less improved end of the MG6b classification. The field is classed as a high value semi-improved meadow and the species-rich banks are regarded as unimproved.

Four years of data were available for analysis, with the baseline set as 1992. Overall, species richness per 1x1m quadrat decreased from 24.8 (1992) to 19 (2012), a 23.39% change. The proportional representation of grazing tolerant species increased, with average Grazing Suited Species Scores increasing from 0.03 (1992) to 0.32 (2012). Similarly, a slight increase in average Nutrient Availability Suited Species Scores over the same period was seen, from -0.14 to -0.09. In combination with decreased species richness, this would indicate a negative change for the site since the 1987 baseline year, with an increase in both grazing and nutrient tolerant species. Considering the ordination plots (Annex II), error bars for 1992 encompass the variability shown in subsequent years and all datasets seem very similar with a slight homogenisation over time indicated by slightly constricted error bars in subsequent years. Management information provided indicates that rushes were cut in 2012, but not in recent wet years. Also, although no lime or fertiliser has been added apart from farmyard manure in the past 15 years of management, yields which have declined are now stabilising at this field.

SOILS	
Texture	Sandy loam
pH	4.9
Olsens P	19
Total N	0.47
K	141

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	35	30	15	Poac	6	5	4	4	0	0
Alopecurus pratensis	2	0	0	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	7	20	13	Poac	7	6	4	3	0	-1
Bellis perennis	2	2	0	Aste	8	5	6	4	1	0
Cerastium fontanum	2	1	0	Cary	7	5	5	4	1	0
Cerastium glomeratum	1	1	0	Cary	7	5	6	5	1	0
Conopodium majus	0	1	2	Apia	6	5	5	5	0	-1
Cynosurus cristatus	8	10	8	Poac	7	5	6	4	0	0
Dactylis glomerata	0	1	0	Poac	7	5	7	6	0	0
Deschampsia cespitosa	0	0	27	Poac	6	6	5	4	0	0
Equisetum arvense	0	0	1	Equi	7	6	6	6	0	0
Geranium sylvaticum	0	0	4	Gera	6	5	6	5	0	0
Holcus lanatus	15	5	10	Poac	7	6	6	5	0	0
Hypochaeris radicata	1	2	0	Aste	8	4	5	3	0	-1
Lathyrus pratensis	0	0	3	Faba	7	6	6	5	1	0
Leontodon autumnalis	2	1	0	Aste	8	6	6	4	1	0
Lolium perenne	3	5	0	Poac	8	5	6	6	0	0
Myosotis discolor	2	1	0	Bora	7	5	5	3	1	-1
Plantago lanceolata	3	5	0	Plan	7	5	6	4	1	0
Poa annua	2	1	0	Poac	7	5	6	7	0	1
Poa trivialis	20	10	4	Poac	7	6	6	6	0	0
Potentilla erecta	0	0	2	Rosa	7	7	3	2	1	-1
Ranunculus acris	3	5	4	Ranu	7	6	6	4	1	0
Ranunculus ficaria	0	0	2	Ranu	6	6	6	6	0	0
Ranunculus repens	20	5	3	Ranu	6	7	6	7	0	1
Rhinanthus minor	3	0	0	Scro	7	5	6	4	0	0
Rumex acetosa	20	0	16	Poly	7	5	5	4	0	0
Trifolium dubium	15	3	0	Faba	7	4	6	5	0	0
Trifolium pratense	12	3	0	Faba	7	5	7	5	1	0
Trifolium repens	2	0	0	Faba	7	5	6	6	0	0

SUMMARY	
Total	30.00
Grass	10.00
Sedge	0.00
Rush	0.00
Forb	20.00
Herb cover	38%
LIGHT L	
Average	6.93
Min	6.00
Max	8.00
MOISTURE F	
Average	5.37
Min	4.00
Max	7.00
REACTION R	
Average	5.63
Min	3.00
Max	7.00
NITROGEN N	
Average	4.77
Min	2.00
Max	7.00
GRAZING GI	
Average	0.33
NUTRIENTS NI	
Average	-0.10

Site:	**623**
Area	**Waldendale**
HLS options + supplements	**HK6**
Former ESA tier	**2A**

This site lies to the south-west of Walden at an elevation of 330m. The field has a gentle to moderate slope and a south-easterly aspect.

The sward, although only of average species-richness, features constant *Rhinanthus minor*, *Euphrasia officinalis agg.*, *Conopodium majus*, and *Leontodon autumnalis*. *Anthriscus sylvestris* is present in the rougher areas of the field, but not in significant quantities. The small bank at the western edge of the field supports *Centaurea* nigra and *Filipendula ulmaria* (at its only location in the field). The western quarter of the field, below the road, is more grass-dominated, possibly due to targeted muck-spreading, with abundant *Bromus hordeaceus*, *Lolium perenne*, *Cynosurus cristatus* and *Alopecurus pratensis*. Elsewhere *Anthoxanthum odoratum* dominates, with varying proportions of the aforementioned species.

The site shows strong affinities to MG3a (70.0) and also to MG6b (66.3). In the context of O'Reilly's (2011) classification the site would not be regarded as MG3a due to the absence of differential / preferential species such as *Geranium sylvaticum* and *Alchemilla* spp. However, as herbs in general account for quite high cover, and a number of characteristic species of unimproved upland hay meadows attain high frequency (although are generally of low cover), the field is probably best regarded as MG6b-iii. It is therefore considered to be high value semi-improved grassland.

Given that only two years worth of survey information are available, no estimation of community-level changes can be carried out. Nevertheless, it can be seen that the total species richness has remained static at around 24 species between the two survey years. Additionally, the average Grazing Suited Species Score for 2012 is lower than that for the initial baseline year, whereas the average Nutrient Availability Suited Species Score is broadly similar.

SOILS	
Texture	Sandy loam
pH	6
Olsens P	12
Total N	0.58
K	142

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	3	20	10	Poac	6	5	4	4	0	0
Ajuga reptans	0	1	0	Lami	5	7	5	5	0	0
Anthoxanthum odoratum	7	20	15	Poac	7	6	4	3	0	-1
Anthriscus sylvestris	2	0	3	Apia	6	5	7	7	-1	1
Bellis perennis	2	2	0	Aste	8	5	6	4	1	0
Bromus hordeaceus	15	0	2	Poac	8	4	7	4	0	1
Cardamine pratensis	1	0	2	Bras	7	8	5	4	0	0
Cerastium fontanum	2	3	3	Cary	7	5	5	4	1	0
Conopodium majus	3	3	3	Apia	6	5	5	5	0	-1
Cynosurus cristatus	5	5	10	Poac	7	5	6	4	0	0
Dactylis glomerata	3	0	2	Poac	7	5	7	6	0	0
Euphrasia officinalis agg.	2	3	3	Scro	8	5	5	3	0	-1
Festuca rubra	5	5	5	Poac	8	5	6	5	-1	0
Heracleum sphondylium	0	0	2	Apia	7	5	7	7	0	1
Holcus lanatus	7	5	10	Poac	7	6	6	5	0	0
Hypochaeris radicata	0	10	0	Aste	8	4	5	3	0	-1
Leontodon autumnalis	4	3	0	Aste	8	6	6	4	1	0
Lolium perenne	10	0	10	Poac	8	5	6	6	0	0
Myosotis discolor	0	2	0	Bora	7	5	5	3	1	-1
Phleum pratense	4	0	0	Poac	8	5	7	6	1	0
Plantago lanceolata	20	20	20	Plan	7	5	6	4	1	0
Poa pratensis	0	1	0	Poac	7	5	6	5	0	0
Poa trivialis	3	5	5	Poac	7	6	6	6	0	0
Ranunculus acris	12	6	6	Ranu	7	6	6	4	1	0
Ranunculus bulbosus	2	4	4	Ranu	7	4	7	4	0	0
Rhinanthus minor	3	3	3	Scro	7	5	6	4	0	0
Rumex acetosa	5	3	10	Poly	7	5	5	4	0	0
Taraxacum agg.	2	2	2	Aste	7	5	7	6	1	0
Trifolium dubium	0	3	0	Faba	7	4	6	5	0	0
Trifolium pratense	10	5	5	Faba	7	5	7	5	1	0
Trifolium repens	3	5	3	Faba	7	5	6	6	0	0

SUMMARY	
Total	31.00
Grass	11.00
Sedge	0.00
Rush	0.00
Forb	20.00
Herb cover	53%
LIGHT L	
Average	7.10
Min	5.00
Max	8.00
MOISTURE F	
Average	5.19
Min	4.00
Max	8.00
REACTION R	
Average	5.87
Min	4.00
Max	7.00
NITROGEN N	
Average	4.68
Min	3.00
Max	7.00
GRAZING GI	
Average	0.23
NUTRIENTS NI	
Average	-0.06

Site:	**624**
Area	**Bishopdale**
HLS options + supplements	**HK6, HK18**
Former ESA tier	**1B**

This site lies at the head of Bishopdale at an elevation of 340m. The field comprises a gentle north-west facing convex slope with numerous grooves which may be old field drains.

The flora of the field indicates an elevated soil moisture regime and includes frequent *Caltha palustris* and *Carex nigra*, within flushed areas, together with constant *Euphrasia officinalis agg.* Other typical upland haymeadow species are restricted to *Alchemilla glabra, Conopodium majus* and *Lotus corniculatus*, all rare to occasional, and, along a ditch bank at the northern edge of the field *Centaurea nigra* and *Crepis paludosa*. A few patches of *Juncus spp.* are present (mostly *J. acutiflorus*), together with *Ranunculus repens*.

The site shows strong affinities to MG8 (63.3) and also to MG6b (62.3) and, less significantly to MG3a (58.1). In the context of O'Reilly's (2011) classification the site would not be regarded as MG3a due to the absence of differential / preferential species such as *Geranium sylvaticum* and *Alchemilla* spp., As *Caltha* is no more than occasional, and restricted to certain areas, the field is probably best regarded as an MG6 sward. Its relatively herb-richness, and presence of a reasonable compliment of axiophytes, including a little *Caltha*, suggests MG6b-iii with patches of MG8o. It is therefore considered to be high value semi-improved grassland.

No previous survey data exist for this site.

SOILS	
Texture	Sandy loam
pH	5.2
Olsens P	12
Total N	0.80
K	239

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	10	3	5	Poac	6	5	4	4	0	0
Alchemilla glabra	0	1	0	Rosa	7	6	6	4	0	0
Anthoxanthum odoratum	10	15	12	Poac	7	6	4	3	0	-1
Bellis perennis	2	0	1	Aste	8	5	6	4	1	0
Caltha palustris	0	1	0	Ranu	7	9	6	4	0	-1
Cardamine pratensis	2	1	2	Bras	7	8	5	4	0	0
Carex nigra	3	5	3	Cype	7	8	4	2	0	-1
Cerastium fontanum	1	1	1	Cary	7	5	5	4	1	0
Cynosurus cristatus	1	2	0	Poac	7	5	6	4	0	0
Deschampsia cespitosa	0	0	1	Poac	6	6	5	4	0	0
Euphrasia officinalis agg.	3	3	3	Scro	8	5	5	3	0	-1
Festuca rubra	15	15	18	Poac	8	5	6	5	-1	0
Holcus lanatus	10	2	7	Poac	7	6	6	5	0	0
Juncus effusus	0	0	2	Junc	7	7	4	4	1	0
Lathyrus pratensis	0	0	1	Faba	7	6	6	5	1	0
Leontodon autumnalis	3	6	3	Aste	8	6	6	4	1	0
Lolium perenne	2	0	2	Poac	8	5	6	6	0	0
Luzula campestris	2	1	2	Junc	7	4	5	2	1	-1
Myosotis discolor	0	0	1	Bora	7	5	5	3	1	-1
Plantago lanceolata	1	1	0	Plan	7	5	6	4	1	0
Poa trivialis	2	2	2	Poac	7	6	6	6	0	0
Prunella vulgaris	0	1	0	Lami	7	5	6	4	0	0
Ranunculus acris	20	25	15	Ranu	7	6	6	4	1	0
Ranunculus repens	15	5	5	Ranu	6	7	6	7	0	1
Rumex acetosa	12	2	5	Poly	7	5	5	4	0	0
Sagina procumbens	0	2	0	Cary	7	6	6	5	0	0
Taraxacum agg.	2	0	2	Aste	7	5	7	6	1	0
Trifolium repens	3	3	7	Faba	7	5	6	6	0	0
Veronica arvensis	0	0	1	Scro	8	4	6	5	1	0
Veronica chamaedrys	1	0	0	Scro	6	5	6	5	1	-1

SUMMARY	
Total	30.00
Grass	8.00
Sedge	1.00
Rush	2.00
Forb	19.00
Herb cover	52%
LIGHT L	
Average	7.07
Min	6.00
Max	8.00
MOISTURE F	
Average	5.70
Min	4.00
Max	9.00
REACTION R	
Average	5.53
Min	4.00
Max	7.00
NITROGEN N	
Average	4.33
Min	2.00
Max	7.00
GRAZING GI	
Average	0.37
NUTRIENTS NI	
Average	-0.20

Site:	**625**
Area	**Coverdale**
HLS options + supplements	**HK6, HK18**
Former ESA tier	**2A**

This site lies to the south of the River Cover, east of Braidley, at an elevation of 255m. The field lies on roughly level ground and is sheltered by trees.

The sward is uniform and dominated by a mix of grasses including *Anthoxanthum odoratum, Holcus lanatus, Festuca rubra* and *Cynosurus cristatus*. The field is relatively herb-rich however most of the cover is provided by *Plantago lanceolata, Trifolium pratense* and *Ranunculus acris*. Of the typical upland hay meadow indicators, only *Conopodium majus* and *Rhinanthus minor* are frequent, (but neither attains high levels of cover) and *Leontodon autumnalis* and *Euphrasia officinalis agg.* are present at low frequency and cover. The field edges are poorer, with tall grasses such as *Alopecurus pratensis* and some negative indicators, including *Rumex obtusifolius, Cirsium arvense* and *Heracleum sphondylium*, which were also present at low frequency within the sward, particularly along the footpath. The river bank, outside the field boundary, supports *Centaurea nigra, Ajuga reptans* and *Hyacinthoides non-scripta*, hinting the field may once have been richer in axiophytes.

The site shows strong affinities to MG6b (65.4) and also to MG3a (62.8). In the context of O'Reilly's (2011) classification the site would not be regarded as MG3a due to the absence of differential / preferential species, such as *Geranium sylvaticum* and *Alchemilla* spp., and is therefore probably best regarded as an MG6 sward. The herb-richness and presence of a good compliment of axiophytes, suggests MG6b-iii, which places the site within the semi-improved category but at the less improved end of the MG6b classification. It is therefore considered to be high value semi-improved grassland.

Four years of data were available for analysis, with the baseline set at 1992. Overall, species richness per 1x1m quadrat decreased slightly from 18.2 (1992) to 16.7 (2012). The proportion of grazing tolerant species declined over the period, with average Grazing Suited Species Scores declining from 0.40 (1995) to 0.20 (2012). A slight decrease in nutrient tolerant species is reflected by decreasing average Nutrient Suited Species Scores (which remain low) from -0.01 (1992) to -0.2 (2012). In combination with a decreased species richness, the reduction in the dominance of both grazing and nutrient tolerant species is likely a positive indication of improvements to the site. Further survey years are needed to ascertain whether, following the loss of less desirable species, overall species richness will increase. Considering the ordination plots (Annex II), wide error bars for 1992 fully encompass the variability shown in the 1995 and 2002 datasets. However, the 2012 bars lie partly outside and suggest a slight move toward some hay meadow axiophytes and grassland species such as *C. majus, A. odoratum, Ranunculus bulbosus* and *T. pratense*. The average quadrat data point for 2012 also moves away from grasses more indicative of improvement such as *L. perenne, B. hordeaceus, Poa trivialis and Dactylis glomerata*. Management information provided suggest little change over the past 30 plus years, with a light dressing of farmyard manure applied every 3 or 4 years and no other additions or improvements.

SOILS	
Texture	Sandy loam
pH	5.4
Olsens P	9
Total N	0.53
K	117

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis canina	0	3	0	Poac	7	6	3	3	0	-1
Agrostis capillaris	0	0	2	Poac	6	5	4	4	0	0
Anthoxanthum odoratum	30	15	15	Poac	7	6	4	3	0	-1
Cardamine pratensis	3	0	0	Bras	7	8	5	4	0	0
Cerastium fontanum	3	2	1	Cary	7	5	5	4	1	0
Conopodium majus	5	2	3	Apia	6	5	5	5	0	-1
Cynosurus cristatus	25	25	12	Poac	7	5	6	4	0	0
Dactylis glomerata	3	1	0	Poac	7	5	7	6	0	0
Euphrasia officinalis agg.	0	0	1	Scro	8	5	5	3	0	-1
Festuca rubra	10	15	15	Poac	8	5	6	5	-1	0
Holcus lanatus	10	15	15	Poac	7	6	6	5	0	0
Lolium perenne	0	1	1	Poac	8	5	6	6	0	0
Plantago lanceolata	25	10	15	Plan	7	5	6	4	1	0
Poa trivialis	0	3	2	Poac	7	6	6	6	0	0
Prunella vulgaris	0	0	1	Lami	7	5	6	4	0	0
Ranunculus acris	10	3	4	Ranu	7	6	6	4	1	0
Ranunculus bulbosus	3	0	0	Ranu	7	4	7	4	0	0
Rhinanthus minor	3	1	2	Scro	7	5	6	4	0	0
Rumex acetosa	5	7	5	Poly	7	5	5	4	0	0
Trifolium dubium	0	0	1	Faba	7	4	6	5	0	0
Trifolium pratense	5	10	20	Faba	7	5	7	5	1	0
Trifolium repens	3	2	3	Faba	7	5	6	6	0	0
Veronica chamaedrys	0	0	2	Scro	6	5	6	5	1	-1

SUMMARY	
Total	23.00
Grass	9.00
Sedge	0.00
Rush	0.00
Forb	14.00
Herb cover	43%
LIGHT L	
Average	7.00
Min	6.00
Max	8.00
MOISTURE F	
Average	5.26
Min	4.00
Max	8.00
REACTION R	
Average	5.61
Min	3.00
Max	7.00
NITROGEN N	
Average	4.48
Min	3.00
Max	6.00
GRAZING GI	
Average	0.17
NUTRIENTS NI	
Average	-0.22

Site:	**626**
Area	**Langstrothdale**
HLS options + supplements	**HK6, HK18**
Former ESA tier	**2A**

This site lies to the north-west of Oughtershaw, at an elevation of 400m. The field comprises a steep, south-facing slope with several wet runnels.

The field supports a homogenous mesotrophic grassland sward, with quite a high cover of *Juncus acutiflorus*, which may be increasing in general across the region due to a range of factors (Bradshaw 2012). Typical upland hay meadow indicators include constant *Rhinanthus minor* and frequent *Alchemilla spp.* (both *A. glabra* and *A. xanthochlora*), *Euphrasia officinalis agg.*, *Leontodon hispidus* and *Carex spp.* (including *C. flacca, C. nigra* and *C. panicea*). Occasional to rare species included *Potentilla erecta,* and *Caltha palustris*. Thinner, slightly leached, soils on more steeply sloping part of the field support *Avenula pubescens* and *Festuca ovina* with abundant *L. hispidus, E. officinalis* and *R. minor*. The northern part of the field is steeply-sloping and unmown; it supports species-rich acidic grassland with high bryophyte cover and *Succisa pratensis, Lotus corniculatus, P. erecta* and *C. majus*.

The vegetation shows strong affinities to MG8 (67.8), despite a lack of *C. palustris*, and, less significantly, to MG6b (61.5) and MG3a (60.9). Due to the increased frequency of moisture-loving species here, coupled with the frequency, but low cover, of general upland hay-meadow axiophytes, which include *Alchemilla spp.*, this field is perhaps best regarded as an intermediate between all three of these communities. It is thus categorised as a high value semi-improved meadow with strong affinities to both MG8 and MG3a.

Five years of data were available for analysis, with the baseline year set as 1987. Overall, species richness per 1x1m quadrat remained broadly similar throughout the period, at 18.8 (1987) and 17.8 (2012). The proportion of grazing tolerant species declined over the period, with average Grazing Suited Species Scores decreasing from 0.36 to 0.19. A slight increase in nutrient tolerant species dominance occurred over the same years, with average Nutrient Availability Suited Species Scores increasing from -0.27 to -0.17. Considering the ordination plot (Annex II), error bars for 1987 hardly overlap with those for 2012 suggesting some clear community-level change away from the 1987 baseline. The direction of change appears to be toward some axiophytes (e.g. *R. minor, L. autumnalis*) and away from others (e.g. *C. majus*) as well as the rush *J. effusus*. The narrowing of 2012 error bars suggests that vegetation is becoming more homogeneous, but may also reflect a reduction in sampling effort over the period from 5 to 3 quadrats. No change in management was reported; lime and inorganic fertiliser have not been used in past 14 years of management, only farmyard manure as available; the field is very wet and rushes have been more abundant recently. It is possible that the current years' data reflect the effects of a series of recent wet summers on the vegetation, which overall, retains a high quality hay meadow flora.

SOILS	
Texture	Sandy loam
pH	5.2
Olsens P	10
Total N	0.55
K	174

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	3	3	2	Poac	6	5	4	4	0	0
Alchemilla glabra	0	2	0	Rosa	7	6	6	4	0	0
Anthoxanthum odoratum	10	20	3	Poac	7	6	4	3	0	-1
Bellis perennis	2	3	0	Aste	8	5	6	4	1	0
Cardamine pratensis	1	3	0	Bras	7	8	5	4	0	0
Carex flacca	2	3	0	Cype	7	5	6	2	0	-1
Carex nigra	0	0	2	Cype	7	8	4	2	0	-1
Cerastium fontanum	3	3	1	Cary	7	5	5	4	1	0
Cynosurus cristatus	20	20	3	Poac	7	5	6	4	0	0
Euphrasia officinalis agg.	2	3	2	Scro	8	5	5	3	0	-1
Festuca pratensis	0	0	2	Poac	7	6	6	6	0	0
Festuca rubra	12	10	10	Poac	8	5	6	5	-1	0
Holcus lanatus	8	20	15	Poac	7	6	6	5	0	0
Juncus acutiflorus	0	15	6	Junc	8	8	4	2	0	-1
Leontodon autumnalis	0	3	2	Aste	8	6	6	4	1	0
Leontodon hispidus	0	1	0	Aste	8	4	7	3	0	-1
Lolium perenne	10	0	1	Poac	8	5	6	6	0	0
Myosotis discolor	0	0	1	Bora	7	5	5	3	1	-1
Plantago lanceolata	5	10	3	Plan	7	5	6	4	1	0
Poa trivialis	10	3	2	Poac	7	6	6	6	0	0
Prunella vulgaris	0	2	0	Lami	7	5	6	4	0	0
Ranunculus acris	15	20	3	Ranu	7	6	6	4	1	0
Ranunculus repens	3	0	20	Ranu	6	7	6	7	0	1
Rhinanthus minor	4	3	5	Scro	7	5	6	4	0	0
Rumex acetosa	5	3	2	Poly	7	5	5	4	0	0
Trifolium pratense	2	5	2	Faba	7	5	7	5	1	0
Trifolium repens	4	0	12	Faba	7	5	6	6	0	0

SUMMARY	
Total	27.00
Grass	8.00
Sedge	2.00
Rush	1.00
Forb	16.00
Herb cover	43%
LIGHT L	
Average	7.19
Min	6.00
Max	8.00
MOISTURE F	
Average	5.63
Min	4.00
Max	8.00
REACTION R	
Average	5.59
Min	4.00
Max	7.00
NITROGEN N	
Average	4.15
Min	2.00
Max	7.00
GRAZING GI	
Average	0.22
NUTRIENTS NI	
Average	-0.22

Site:	**627**
Area	**Langstrothdale**
HLS options + supplements	**HK6, HK18**
Former ESA tier	**1B**

This site lies in a remote part of Langstrothdale, west of Yockenthwaite and Beckermonds at an elevation of 370m. The site is open and consists of a complex arrangement of habitats spread over two small hills and adjacent lower-lying wetland. The hay meadow feature comprises approximately the majority of the total area of the site and includes grasslands on the shallower aspects of the hills and intervening ground. It is part of Greenfield Meadow Site of Special Scientific Interest.

The main hay meadow community consists of *Anthoxanthum odoratum*, and *Cynosurus cristatus* with *Rhinanthus minor*, *Euphrasia officinalis agg.* and *Alchemilla glabra* all frequent. In places, *Caltha palustris* is frequent, forming a different vegetation community including *Saxifraga granulata*, *Geum rivale* and a range of small blue-green sedges including *Carex flacca, C. panicea* and *C. nigra* (although mainly the latter). Less frequent within the drier areas are *Leontodon hispidus* and *L. autumnalis* and in the wetter areas *Valeriana dioica, Crepis paludosa* and *Lychnis flos-cuculi*. One large patch of *Cirsium heterophyllum* occurs within the meadow. Negative indicator species are largely absent, but a roll of wire has been discarded in one location.

In the northern corner of the site is a very valuable series of swamp/flush communities supporting a wide range of axiophytes (see accompanying map) including *Trollius europaeus*, *Crepis paludosa*, *Menyanthes trifoliata, Primula farinosa, Cochlearia pyrenaica* and *Pinguicula vulgaris* amongst other species. Also here are areas of acidic grassland with *Molinia caerulea* and *Potentilla erecta*.

The meadow shows strong affinities to MG6b (63.2) and MG3a (62.8). As it completely lacks *Geranium sylvaticum,* and has low cover of *Alchemilla,* it probably fits best into the former sub-community. High herb-richness (45%) and presence of a good compliment of axiophytes, suggests MG6b-iii (O'Reilly 2011), which places the meadow within the semi-improved category but at the less improved end of the MG6b spectrum. It should be noted, however, the semi-improved designation does not do justice to the site as a whole. There are significant areas of unimproved grassland here that outside of the hay meadow feature, but part of the same management unit. The *Caltha* dominated patch at the north-east corner of the site very rich and would probably equate to O'Reilly's unimproved MG8n category. It is unclear how frequently, if at all, this area is mown.

No previous data exist for this site.

SOILS	
Texture	Sandy loam
pH	5.5
Olsens P	12
Total N	0.96
K	172

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CONSULTANT ECOLOGISTS

NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Achillea millefolium	0	0	3	Aste	7	5	6	4	0	0
Achillea ptarmica	2	0	0	Aste	7	7	5	3	1	-1
Agrostis capillaris	8	2	2	Poac	6	5	4	4	0	0
Alchemilla glabra	1	4	0	Rosa	7	6	6	4	0	0
Alopecurus pratensis	1	4	0	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	10	7	30	Poac	7	6	4	3	0	-1
Anthriscus sylvestris	0	0	1	Apia	6	5	7	7	-1	1
Avenula pratensis	0	3	0	Poac	7	4	7	2	0	-1
Avenula pubescens	2	2	1	Poac	7	4	7	3	1	-1
Bellis perennis	2	2	3	Aste	8	5	6	4	1	0
Bromus hordeaceus	0	0	1	Poac	8	4	7	4	0	1
Cardamine pratensis	1	0	0	Bras	7	8	5	4	0	0
Centaurea nigra	0	0	2	Aste	7	5	6	5	1	-1
Cerastium fontanum	1	3	1	Cary	7	5	5	4	1	0
Conopodium majus	1	0	2	Apia	6	5	5	5	0	-1
Crepis paludosa	0	2	0	Aste	6	7	6	4	0	0
Cynosurus cristatus	12	20	30	Poac	7	5	6	4	0	0
Dactylis glomerata	0	0	3	Poac	7	5	7	6	0	0
Euphrasia officinalis agg.	2	1	5	Scro	8	5	5	3	0	-1
Festuca rubra	15	20	3	Poac	8	5	6	5	-1	0
Holcus lanatus	5	5	3	Poac	7	6	6	5	0	0
Leontodon autumnalis	1	0	0	Aste	8	6	6	4	1	0
Lolium perenne	0	4	0	Poac	8	5	6	6	0	0
Luzula campestris	1	0	2	Junc	7	4	5	2	1	-1
Myosotis discolor	2	2	1	Bora	7	5	5	3	1	-1
Phleum pratense	2	0	0	Poac	8	5	7	6	1	0
Plantago lanceolata	0	4	25	Plan	7	5	6	4	1	0
Poa trivialis	0	0	3	Poac	7	6	6	6	0	0
Prunella vulgaris	0	0	1	Lami	7	5	6	4	0	0
Ranunculus acris	5	20	0	Ranu	7	6	6	4	1	0
Ranunculus repens	5	3	0	Ranu	6	7	6	7	0	1
Rhinanthus minor	5	3	3	Scro	7	5	6	4	0	0
Rumex acetosa	4	4	3	Poly	7	5	5	4	0	0
Saxifraga granulata	2	4	0	Saxi	8	5	6	4	0	0
Taraxacum agg.	2	1	1	Aste	7	5	7	6	1	0
Trifolium pratense	2	2	5	Faba	7	5	7	5	1	0
Trifolium repens	2	3	5	Faba	7	5	6	6	0	0
Veronica chamaedrys	1	2	0	Scro	6	5	6	5	1	-1

SUMMARY	
Total	38.00
Grass	13.00
Sedge	0.00
Rush	1.00
Forb	24.00
Herb cover	45%
LIGHT L	
Average	7.05
Min	6.00
Max	8.00
MOISTURE F	
Average	5.29
Min	4.00
Max	8.00
REACTION R	
Average	5.89
Min	4.00
Max	7.00
NITROGEN N	
Average	4.47
Min	2.00
Max	7.00
GRAZING GI	
Average	0.32
NUTRIENTS NI	
Average	-0.18

Site:	**628**
Area	**Langstrothdale**
HLS options + supplements	**HK6, HK18**
Former ESA tier	**2A**

This site lies to the north-west of Yockenthwaite, at an elevation of 300m. The field has a north-easterly aspect and a moderate slope toward the River Wharfe, which lies to the north. The northern fifth of the field is too steep to mow, and the underlying rock outcrops occasionally.

The sward is relatively homogeneous, with pockets of richer and poorer vegetation distributed on small rises and in hollows respectively. Of the typical upland hay meadow axiophytes, *Conopodium majus* is almost constant and *Euphrasia officinalis agg., Rhinanthus minor* and *Filipendula ulmaria* are very frequent. Other, more scattered, species include *Leontodon autumnalis, Centaurea nigra, Geum rivale, Alchemilla xanthochlora, Lathyrus pratensis* and *Sanguisorba officinalis*. A small ditch to the south supports *Caltha palustris*, and *Carex flacca* and *Mercurialis perennis* occurs amongst the more vigorous vegetation at the field edges. Negative indicators are few within the field, but the edges have patches of *Urtica dioica* and the track edges support *Cirsium vulgare* and *Rumex obtusifolius*.

The steep slope with rock outcrops to the north of the field is to the benefit of the overall flora, as it has not been improved and therefore holds both a greater range and higher cover axiophytes than the hay meadow, including *Primula veris, Geum rivale, Plantago media* and *Galium verum*.

The site shows strong affinities to MG3a (64.1) and MG6b (62.2). As with many of the less improved meadows visited in the 2012 survey, their relatively high herb richness (in this case 40%), a good compliment of the more generalist (in terms of their allegiance to particular communities) axiophytes and a complete lack of *Geranium sylvaticum,* together with low cover of *Alchemilla,* probably accords well with O'Reilly's (2011) MG6b-iii variant. This places the meadow within the semi-improved category but at the less improved end of the MG6b spectrum. The unimproved species-rich bank at the northern edge of the field was not sampled in detail.

Four years of data were available for analysis, with the baseline year set as 1987. Overall, species richness per 1x1m quadrat was seen to increase from 21 (1987) to 24 (2012), a 14.29% change. The proportion of grazing tolerant species declined over this period, with average Grazing Suited Species Scores declining from 0.48 (1987) to 0.24 (2012). A decrease in nutrient tolerant species was also seen, with average Nutrient Availability Suited Species Scores decreasing from -0.11 (1987) to -0.30 (2012). Coupled with the increased species richness, the decreased dominance of both grazing and nutrient tolerant species suggests some improvement in sward quality through time. Considering the ordination plot (Annex II), error bars for 1987 do not encompass all the variability shown in the 2012 data demonstrating a possible directional change in vegetation composition for the site. All previous datasets to 2012 do, however, fit within the variability of the baseline. Management has not included lime, but FYM annually but no inorganic fertiliser in past 5 years (since managed it), but yields seen to increase due to better grazing management. Because of the change in manager since the past survey (1995) so we do not know what took place before this. However, the vegetation appears to be moving slightly in a positive direction toward increased diversity and stress-tolerant species.

SOILS	
Texture	Sandy loam
pH	5.5
Olsens P	7
Total N	0.93
K	141

Penny Anderson Associates Ltd
CONSULTANT ECOLOGISTS

NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Achillea millefolium	2	0	0	Aste	7	5	6	4	0	0
Agrostis capillaris	4	3	4	Poac	6	5	4	4	0	0
Ajuga reptans	4	0	1	Lami	5	7	5	5	0	0
Alchemilla xanthochlora	3	0	0	Rosa	6	5	6	4	1	0
Anthoxanthum odoratum	20	25	10	Poac	7	6	4	3	0	-1
Avenula pubescens	2	0	0	Poac	7	4	7	3	1	-1
Bellis perennis	0	1	0	Aste	8	5	6	4	1	0
Briza media	2	0	0	Poac	8	5	7	3	1	-1
Cardamine pratensis	0	0	1	Bras	7	8	5	4	0	0
Carex caryophyllea	2	0	0	Cype	7	4	7	2	-1	-1
Centaurea nigra	0	0	1	Aste	7	5	6	5	1	-1
Cerastium fontanum	1	3	0	Cary	7	5	5	4	1	0
Conopodium majus	3	1	5	Apia	6	5	5	5	0	-1
Cynosurus cristatus	2	0	0	Poac	7	5	6	4	0	0
Dactylis glomerata	30	5	2	Poac	7	5	7	6	0	0
Deschampsia cespitosa	4	0	0	Poac	6	6	5	4	0	0
Euphrasia officinalis agg.	2	3	2	Scro	8	5	5	3	0	-1
Festuca pratensis	0	1	0	Poac	7	6	6	6	0	0
Festuca rubra	15	5	22	Poac	8	5	6	5	-1	0
Geum rivale	2	0	0	Rosa	6	7	6	4	-1	-1
Holcus lanatus	0	20	10	Poac	7	6	6	5	0	0
Hypochaeris radicata	1	0	1	Aste	8	4	5	3	0	-1
Leontodon autumnalis	0	10	1	Aste	8	6	6	4	1	0
Leontodon hispidus	5	0	0	Aste	8	4	7	3	0	-1
Lolium multiflorum	1	0	0	Poac	7	5	7	7	0	0
Lolium perenne	0	20	0	Poac	8	5	6	6	0	0
Lotus corniculatus	4	0	0	Faba	7	4	6	2	0	-1
Luzula campestris	2	3	3	Junc	7	4	5	2	1	-1
Montia fontana	0	2	0	Port	7	9	5	3	1	-1
Phleum pratense	0	1	0	Poac	8	5	7	6	1	0
Plantago lanceolata	4	10	15	Plan	7	5	6	4	1	0
Plantago media	1	0	0	Plan	8	4	7	3	0	-1
Poa pratensis	0	2	0	Poac	7	5	6	5	0	0
Poa trivialis	0	3	0	Poac	7	6	6	6	0	0
Potentilla erecta	2	0	0	Rosa	7	7	3	2	1	-1
Prunella vulgaris	3	0	1	Lami	7	5	6	4	0	0
Ranunculus acris	0	6	2	Ranu	7	6	6	4	1	0
Ranunculus repens	0	4	1	Ranu	6	7	6	7	0	1
Rhinanthus minor	0	2	2	Scro	7	5	6	4	0	0
Rumex acetosa	0	3	2	Poly	7	5	5	4	0	0
Trifolium pratense	4	0	0	Faba	7	5	7	5	1	0
Trifolium repens	3	5	15	Faba	7	5	6	6	0	0
Trisetum flavescens	0	0	1	Poac	7	4	7	4	0	0
Veronica chamaedrys	4	0	0	Scro	6	5	6	5	1	-1

SUMMARY	
Total	44.00
Grass	16.00
Sedge	1.00
Rush	1.00
Forb	26.00
Herb cover	40%
LIGHT L	
Average	7.02
Min	5.00
Max	8.00
MOISTURE F	
Average	5.32
Min	4.00
Max	9.00
REACTION R	
Average	5.84
Min	3.00
Max	7.00
NITROGEN N	
Average	4.23
Min	2.00
Max	7.00
GRAZING GI	
Average	0.27
NUTRIENTS NI	
Average	-0.34

Site:	**629**
Area	**Littondale**
HLS options + supplements	**HK6, HK18**
Former ESA tier	**1B**

This site lies just to the north of the village of Arncliffe, on a bend in the River Skirfare, at an elevation of 220m. The field is relatively flat, with an open aspect, except for a steep north-facing bank adjacent to the Littondale road. A well-used footpath crosses the southern margin of the site.

The field supports a grass-dominated sward with *Cynosurus cristatus, Lolium perenne, Agrostis capillaris, Holcus lanatus* and *Poa trivialis*. Herb cover is quite high (35%) but is comprised mainly of *Ranunculus acris, R. repens* and *Trifolium repens*. None of the typical upland haymeadow axiophytes are frequent, although the field does support occasional to rare *Lathyrus pratensis, Leontodon autumnalis*, *Rhinanthus minor* and *Conopodium majus.* Negative indicators within the field are restricted to occasional *Anthriscus sylvestris*, but the edges hold *Rumex obtusifolius, Cirsium arvense, Galium aparine, Myrrhis odorata* and *Urtica dioica*. *Geranium pratense* provides a blaze of colour at the north-western edge of the meadow.

The site shows strong affinities to MG6b (67.7) and, although it shows quite strong signs of improvement, to MG3a (63.3) also. This field represents a lower level of quality than most within the HK6 option. Indeed, herb cover of 35% and the low number, and cover, of typical upland hay meadow axiophytes suggest a good fit with O'Reilly's (2011) MG6b-ii variant. This places the meadow within the middle of the semi-improved category.

Four years of data were available for analysis, with the baseline set at 1992. Species richness per 1x1m quadrat was seen to decrease slightly from 22 (1992) to 20.7 (2012). The proportion of grazing tolerant species decreased strongly from 0.44 (1995) to 0.19 (2012). Conversely, the proportion of nutrient tolerant species increased very slightly from -0.04 (1992) to -0.03 (2012). Considering the ordination plots (Annex II), error bars for 1992 encompass the variability shown across all subsequent years, indicating that little or no change has occurred. No management information was provided.

SOILS	
Texture	Sandy loam
pH	5.9
Olsens P	12
Total N	0.5
K	110

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	18	10	12	Poac	6	5	4	4	0	0
Anthoxanthum odoratum	2	2	2	Poac	7	6	4	3	0	-1
Arrhenatherum elatius	1	2	2	Poac	7	5	7	7	-1	0
Bellis perennis	0	0	1	Aste	8	5	6	4	1	0
Bromus hordeaceus	3	5	2	Poac	8	4	7	4	0	1
Cardamine pratensis	0	1	1	Bras	7	8	5	4	0	0
Cerastium fontanum	2	3	0	Cary	7	5	5	4	1	0
Cynosurus cristatus	18	24	20	Poac	7	5	6	4	0	0
Dactylis glomerata	2	8	3	Poac	7	5	7	6	0	0
Festuca rubra	0	0	26	Poac	8	5	6	5	-1	0
Holcus lanatus	20	5	16	Poac	7	6	6	5	0	0
Leontodon autumnalis	0	1	1	Aste	8	6	6	4	1	0
Lolium perenne	17	20	12	Poac	8	5	6	6	0	0
Luzula campestris	0	1	0	Junc	7	4	5	2	1	-1
Plantago lanceolata	0	1	2	Plan	7	5	6	4	1	0
Poa trivialis	17	7	16	Poac	7	6	6	6	0	0
Ranunculus acris	15	24	24	Ranu	7	6	6	4	1	0
Ranunculus bulbosus	0	1	1	Ranu	7	4	7	4	0	0
Ranunculus repens	13	1	0	Ranu	6	7	6	7	0	1
Rumex acetosa	4	8	15	Poly	7	5	5	4	0	0
Trifolium pratense	2	8	2	Faba	7	5	7	5	1	0
Trifolium repens	5	16	2	Faba	7	5	6	6	0	0
Trisetum flavescens	3	3	2	Poac	7	4	7	4	0	0
Veronica chamaedrys	4	3	2	Scro	6	5	6	5	1	-1
Veronica serpyllifolia	0	0	3	Scro	7	5	6	5	-1	0

SUMMARY	
Total	25.00
Grass	11.00
Sedge	0.00
Rush	1.00
Forb	13.00
Herb cover	36%
LIGHT L	
Average	7.08
Min	6.00
Max	8.00
MOISTURE F	
Average	5.24
Min	4.00
Max	8.00
REACTION R	
Average	5.92
Min	4.00
Max	7.00
NITROGEN N	
Average	4.64
Min	2.00
Max	7.00
GRAZING GI	
Average	0.20
NUTRIENTS NI	
Average	-0.04

Site:	**630**
Area	**Littondale**
HLS options + supplements	**HK6, HK18**
Former ESA tier	**2A**

This site lies at the head of Littondale, to the north-west of Foxup, at an elevation of 370m. The field slopes steeply at its western edge and then more gently, to the south east, and has a slightly undulating topography. Heavy FYM cover was present at the time of the (late May) 2012 survey.

The sward is grass dominated, with *Anthoxanthum odoratum, Festuca rubra* and *Poa trivialis* attaining high cover throughout, with a significant contribution by *Dactylis glomerata* in some places. Herbs provide moderate cover (35%), mostly through *Ranunculus spp*., *Plantago lanceolata, Rumex acetosa* and *Trifolium pratense*. Of the typical upland hay meadow axiophytes only *Rhinanthus minor* is constant, although it provides generally low cover. Other species are no more than occasional, but include *Geranium sylvaticum*, *Centaurea nigra, Sanguisorba officinalis* and *Conopodium majus*. Unlike many meadows in the Wharfedale and Littondale area, *Euphrasia officinalis agg.* is sparse here, and *Alchemilla spp.* were not recorded at all. The rock outcrop close to the eastern edge of the field supports tall herbs such as *Filipendula ulmaria*, *Cirsium heterophyllum, Mercurialis perennis* and *Heracleum sphondylium*. Other than *Anthriscus sylvestris*, which is occasional within the sward, negative indicators are restricted to the field edges, these include *Urtica dioica* and *Rumex obtusifolius*.

MATCH analysis shows a strong affinity to MG3a (73.7) and, less significantly, to MG6b (65.0). However, examination of the floristic tables for these communities suggests the vegetation is right on the cusp between O'Reilly's (2011) MG6-iii variant and MG3a. A relatively low herb cover of 35% and the low cover of typical hay meadow axiophytes suggest a good fit with the former, while the presence of *Geranium sylvaticum* and *Sanguisorba officinalis*, albeit at low cover, suggest the latter. It is probably the case that the field is, in fact, a patchy mix of these two communities. It has been tentatively placed within the MG3a category with a view to it improving under the HK6 and HK18 prescriptions. The meadow is considered to be semi-improved, but of high quality within this category.

Four years of data were available for analysis, with the baseline set at 1992. Overall, species richness per 1x1m quadrat decreased substantially from 26.2 (1992) to 18.7 (2012). The proportion of grazing tolerant species decreased over this same period, with average Grazing Suited Species Scores decreasing from 0.34 (1995) to 0.21 (2012). The proportion of nutrient tolerant species increased very slightly from -0.08 (1992) to -0.05 (2012). No ordination plot was created for this site as scores for a single axis only were computed. This indicates that the variability within the date was not able to be explained by further ordination axes (axis 1 explained 46% of the overall variation within the data set), most likely due to the high proportion of rare species within the dataset relative to the total numbers of species. The farmer questionnaire indicates that lime has not been added for 30 years or so, and fertiliser use ceased at this time also - now only farmyard manure is applied annually. Fewer flowers were noted in fields by farmers.

SOILS	
Texture	Sandy loam
pH	5.5
Olsens P	9
Total N	0.8
K	208

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Achillea millefolium	1	0	0	Aste	7	5	6	4	0	0
Agrostis capillaris	10	5	3	Poac	6	5	4	4	0	0
Alopecurus pratensis	0	15	0	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	20	20	10	Poac	7	6	4	3	0	-1
Anthriscus sylvestris	2	0	0	Apia	6	5	7	7	-1	1
Arrhenatherum elatius	1	7	0	Poac	7	5	7	7	-1	0
Bellis perennis	3	2	0	Aste	8	5	6	4	1	0
Cardamine pratensis	1	0	0	Bras	7	8	5	4	0	0
Carex flacca	0	0	2	Cype	7	5	6	2	0	-1
Centaurea nigra	0	0	2	Aste	7	5	6	5	1	-1
Cerastium fontanum	0	5	2	Cary	7	5	5	4	1	0
Cerastium glomeratum	1	0	0	Cary	7	5	6	5	1	0
Conopodium majus	3	0	0	Apia	6	5	5	5	0	-1
Cynosurus cristatus	5	2	5	Poac	7	5	6	4	0	0
Dactylis glomerata	20	0	2	Poac	7	5	7	6	0	0
Deschampsia cespitosa	3	0	0	Poac	6	6	5	4	0	0
Euphrasia officinalis agg.	0	0	3	Scro	8	5	5	3	0	-1
Festuca rubra	5	8	20	Poac	8	5	6	5	-1	0
Geranium sylvaticum	1	0	0	Gera	6	5	6	5	0	0
Heracleum sphondylium	5	0	0	Apia	7	5	7	7	0	1
Holcus lanatus	0	0	2	Poac	7	6	6	5	0	0
Koeleria macrantha	1	0	0	Poac	8	4	7	2	-1	-1
Lathyrus pratensis	3	0	1	Faba	7	6	6	5	1	0
Leontodon autumnalis	0	0	1	Aste	8	6	6	4	1	0
Lolium perenne	2	2	7	Poac	8	5	6	6	0	0
Luzula campestris	0	0	2	Junc	7	4	5	2	1	-1
Myosotis discolor	0	0	1	Bora	7	5	5	3	1	-1
Phleum pratense	0	0	7	Poac	8	5	7	6	1	0
Plantago lanceolata	5	5	7	Plan	7	5	6	4	1	0
Poa pratensis	1	0	0	Poac	7	5	6	5	0	0
Poa trivialis	10	10	5	Poac	7	6	6	6	0	0
Prunella vulgaris	0	0	2	Lami	7	5	6	4	0	0
Ranunculus acris	5	5	15	Ranu	7	6	6	4	1	0
Ranunculus bulbosus	5	0	0	Ranu	7	4	7	4	0	0
Ranunculus repens	0	15	0	Ranu	6	7	6	7	0	1
Rhinanthus minor	5	3	3	Scro	7	5	6	4	0	0
Rumex acetosa	5	5	2	Poly	7	5	5	4	0	0
Sanguisorba officinalis	1	0	2	Rosa	7	7	6	5	0	0
Taraxacum agg.	0	2	1	Aste	7	5	7	6	1	0
Trifolium dubium	0	1	1	Faba	7	4	6	5	0	0
Trifolium pratense	5	0	5	Faba	7	5	7	5	1	0
Trifolium repens	3	3	2	Faba	7	5	6	6	0	0
Veronica arvensis	0	2	0	Scro	8	4	6	5	1	0

SUMMARY	
Total	43.00
Grass	14.00
Sedge	1.00
Rush	1.00
Forb	27.00
Herb cover	42%
LIGHT L	
Average	7.05
Min	6.00
Max	8.00
MOISTURE F	
Average	5.21
Min	4.00
Max	8.00
REACTION R	
Average	5.93
Min	4.00
Max	7.00
NITROGEN N	
Average	4.70
Min	2.00
Max	7.00
GRAZING GI	
Average	0.23
NUTRIENTS NI	
Average	-0.12

Site:	**631**
Area	**Wharfedale**
HLS options + supplements	**HK6, HK18**
Former ESA tier	**2A**

This site is located in the heart of Upper Wharfedale, to the east of The River between Starbotton and Buckden, at an elevation of 220m. The field is relatively flat with an open aspect, and only a slight slope to the river. This field and that adjacent to it are managed as one unit and were still being grazed by sheep at time of the 2012 survey (late May)

The sward is homogeneous and dominated by grasses including *Agrostis capillaris, Anthoxanthum odoratum, Festuca rubra, Holcus lanatus* and *Poa trivialis*. Overall herb cover is low, relative to other HK6 meadows surveyed in 2012, with *Ranunculus repens, Rumex acetosa* and *Trifolium repens* the most numerous species. Typical upland haymeadow axiophytes included frequent to occasional *Conopodium majus, Centaurea nigra, Lathyrus pratensis* and *Filipendula ulmaria* with rare *Leontodon autumnalis* and *Rhinanthus minor*.

Match analysis shows strong affinities to MG3a (68.0), but the field lacks any strong preferential or differential species for this community and therefore is considered a better fit to MG6b (64.3). A low cover (21%) of mainly generalist herbs suggests O'Reilly's (2011) MG6b-ii variant but, due to the presence of a range of axiophytes preferential to MG6b-iii, the site is tentatively ascribed to the latter category. The meadow is considered to be semi-improved and of above average quality within this category.

A total of six years of data were available for analysis, with the baseline set as 1987. Overall, species richness declined from 24.1 (1987) to 20 (2012). The proportion of grazing tolerant species also declined over this same time period, with average Grazing Suited Species Scores decreasing from 0.35 (1987) to 0.20 (2012). The proportion of nutrient tolerant species recorded also declined, with average Nutrient Availability Suited Species Scores for the site decreasing from 0.02 to -0.17 over the same period. Thus, the observed decline in species richness may reflect a positive change for the site in relation to the loss of less desirable grazing and nutrient tolerant species.

Considering the ordination plots (Annex II), the variability across all quadrats sampled in 1987 encompasses all variability for subsequent survey years, although a constriction in error bars is seen in later years suggesting increasing homogeneity in the sward. This observation fits with toe description of the site and is only partly explained by the decrease in sampling effort from 8 quadrats (1987 & 1990) to 5 and then 3 (2012).

No farmer questionnaire was returned for this site.

SOILS	
Texture	Loamy sand
pH	5.7
Olsens P	10
Total N	0.47
K	131

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	3	10	5	Poac	6	5	4	4	0	0
Alopecurus pratensis	2	0	0	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	3	30	15	Poac	7	6	4	3	0	-1
Arrhenatherum elatius	0	1	0	Poac	7	5	7	7	-1	0
Briza media	0	0	1	Poac	8	5	7	3	1	-1
Cardamine pratensis	2	0	0	Bras	7	8	5	4	0	0
Cerastium fontanum	2	0	0	Cary	7	5	5	4	1	0
Conopodium majus	1	3	0	Apia	6	5	5	5	0	-1
Cynosurus cristatus	0	5	1	Poac	7	5	6	4	0	0
Dactylis glomerata	2	10	2	Poac	7	5	7	6	0	0
Equisetum arvense	0	0	1	Equi	7	6	6	6	0	0
Festuca rubra	50	30	5	Poac	8	5	6	5	-1	0
Filipendula ulmaria	0	0	2	Rosa	7	8	6	5	-1	0
Holcus lanatus	8	10	35	Poac	7	6	6	5	0	0
Hypochaeris radicata	1	1	0	Aste	8	4	5	3	0	-1
Lathyrus pratensis	2	3	1	Faba	7	6	6	5	1	0
Leontodon autumnalis	0	0	1	Aste	8	6	6	4	1	0
Lolium perenne	0	3	5	Poac	8	5	6	6	0	0
Luzula campestris	2	3	1	Junc	7	4	5	2	1	-1
Plantago lanceolata	1	2	7	Plan	7	5	6	4	1	0
Poa trivialis	15	3	15	Poac	7	6	6	6	0	0
Ranunculus acris	5	3	5	Ranu	7	6	6	4	1	0
Ranunculus repens	1	0	0	Ranu	6	7	6	7	0	1
Rhinanthus minor	1	1	0	Scro	7	5	6	4	0	0
Rumex acetosa	3	3	5	Poly	7	5	5	4	0	0
Trifolium pratense	1	1	5	Faba	7	5	7	5	1	0
Trifolium repens	0	3	3	Faba	7	5	6	6	0	0
Trisetum flavescens	0	0	1	Poac	7	4	7	4	0	0
Veronica serpyllifolia	2	0	0	Scro	7	5	6	5	-1	0

SUMMARY	
Total	29.00
Grass	12.00
Sedge	0.00
Rush	1.00
Forb	16.00
Herb cover	21%
LIGHT L	
Average	7.07
Min	6.00
Max	8.00
MOISTURE F	
Average	5.41
Min	4.00
Max	8.00
REACTION R	
Average	5.83
Min	4.00
Max	7.00
NITROGEN N	
Average	4.72
Min	2.00
Max	7.00
GRAZING GI	
Average	0.14
NUTRIENTS NI	
Average	-0.14

Site:	**632**
Area	**Wharfedale**
HLS options + supplements	**HK6, HK18**
Former ESA tier	**2A**

This site is located at the head of Wharfedale, to the north-west of Buckden, at an elevation of 250m. The field slopes generally to the south-west, however, several banks of different angles, aspects and moisture regimes create very varied vegetation.

The majority of the mown hay meadow occurs on the gentler slopes, and is grass dominated, with *Anthoxanthum odoratum, Cynosurus cristatus, Holcus lanatus* and *Lolium perenne*. Herb cover is relatively high (44%) but is accounted for mainly by *Plantago lanceolata, Ranunculus acris* and *Trifolium repens*. Typical upland hay meadow axiophytes in this area included *Centaurea nigra*, *Conopodium majus, Euphrasia officinalis agg., Leontodon autumnalis* and *Rhinanthus minor* at low abundance. The shallower mown banks, where samples were not taken, are considered to represent a less improved variant of the community and include occasional *Lathyrus pratensis, Leontodon hispidus, Potentilla erecta, Ajuga reptans* and, rarely, *Alchemilla glabra* and *Alchemilla filicaulis vestita* in addition to the aforementioned axiophytes. Small wet areas represent another community entirely, and add further interest, with *Caltha palustris, Geum rivale, Dactylorhiza sp., Valeriana dioica* and *Filipendula ulmaria*. In terms of negative species, the mown area supports *Cirsium arvense* at low frequency

The slope of the field steepens towards its south-western edge, beyond an angle suitable for mowing, and a further steep bank occurs along a spring line in the western part of the field. Although outside the G09 feature, these banks add significantly to the habitat diversity and species richness within the site and include, most notably, *Briza media*, *Avenula pratensis, Carex flacca*, *Cirsium heterophyllum*, *Primula farinosa*, *Succisa pratensis* and *Pimpinella saxifraga*.

The sampled area shows strong affinities to MG6b (72.7) and, less significantly, to MG3a (68.8). The relatively high herb cover and good range of axiophytes at low cover suggest a good fit to O'Reilly's (2011) M6b-iii variant. Although not sampled, it is considered likely the steeper mown banks are between MG6b-iii and MG3a. The small species-rich wet areas appear to fit to MG8n, the richest variant of this community.

No previous data exist for this site.

SOILS	
Texture	Sandy loam
pH	5.8
Olsens P	7
Total N	0.6
K	165

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	5	1	5	Poac	6	5	4	4	0	0
Anthoxanthum odoratum	15	25	25	Poac	7	6	4	3	0	-1
Bellis perennis	2	2	0	Aste	8	5	6	4	1	0
Bromus hordeaceus	0	4	0	Poac	8	4	7	4	0	1
Centaurea nigra	2	0	0	Aste	7	5	6	5	1	-1
Cerastium fontanum	2	1	1	Cary	7	5	5	4	1	0
Conopodium majus	0	0	3	Apia	6	5	5	5	0	-1
Cynosurus cristatus	10	10	10	Poac	7	5	6	4	0	0
Dactylis glomerata	0	0	2	Poac	7	5	7	6	0	0
Euphrasia officinalis agg.	2	1	0	Scro	8	5	5	3	0	-1
Festuca rubra	5	0	9	Poac	8	5	6	5	-1	0
Holcus lanatus	20	20	15	Poac	7	6	6	5	0	0
Lathyrus pratensis	0	0	2	Faba	7	6	6	5	1	0
Leontodon autumnalis	2	0	1	Aste	8	6	6	4	1	0
Lolium perenne	15	25	3	Poac	8	5	6	6	0	0
Luzula campestris	2	0	0	Junc	7	4	5	2	1	-1
Myosotis discolor	0	0	1	Bora	7	5	5	3	1	-1
Plantago lanceolata	12	4	18	Plan	7	5	6	4	1	0
Poa trivialis	5	5	5	Poac	7	6	6	6	0	0
Prunella vulgaris	1	0	0	Lami	7	5	6	4	0	0
Ranunculus acris	12	3	2	Ranu	7	6	6	4	1	0
Ranunculus bulbosus	2	0	2	Ranu	7	4	7	4	0	0
Ranunculus repens	0	4	0	Ranu	6	7	6	7	0	1
Rhinanthus minor	2	0	3	Scro	7	5	6	4	0	0
Rumex acetosa	5	5	3	Poly	7	5	5	4	0	0
Taraxacum agg.	0	1	0	Aste	7	5	7	6	1	0
Trifolium pratense	3	2	2	Faba	7	5	7	5	1	0
Trifolium repens	37	15	25	Faba	7	5	6	6	0	0
Trisetum flavescens	0	0	1	Poac	7	4	7	4	0	0
Veronica chamaedrys	1	0	0	Scro	6	5	6	5	1	-1

SUMMARY	
Total	30.00
Grass	10.00
Sedge	0.00
Rush	1.00
Forb	19.00
Herb cover	43%
LIGHT L	
Average	7.07
Min	6.00
Max	8.00
MOISTURE F	
Average	5.13
Min	4.00
Max	7.00
REACTION R	
Average	5.87
Min	4.00
Max	7.00
NITROGEN N	
Average	4.50
Min	2.00
Max	7.00
GRAZING GI	
Average	0.37
NUTRIENTS NI	
Average	-0.17

Site:	**701**
Area	**South Tynedale**
HLS options + supplements	**HK7 HK18**
Former ESA tier	**2B**

This site lies to the south of Alston, adjacent to the River South Tyne, at an elevation of 290m. The field comprises a gentle east facing slope.

The western half of the field contains a dense grass-dominated sward with few axiophytes. Negative indicator species, including *Rumex obtusifolius*, *Urtica dioica*, and *Heracleum sphondylium,* occur across the western half of the field, but are concentrated around the gateway and along the boundaries of the field, particularly around an area used to store bales on the northern boundary. The eastern half of the field has a more open grass sward and *Filipendula ulmaria* and *Sanguisorba officinalis* are constant here, together with frequent *Rhinanthus minor* and occasional *Geranium sylvaticum, Alchemilla sp.*, *Leontodon autumnalis* and *Lathyrus pratensis*. Negative indicators are rare here.

The western part of the field shows strong affinities to MG7d (63.9) due to the dominance of grasses and low cover (15%) and paucity of axiophytes. The eastern part shows strong affinities to MG3a (61.3) and MG6b (55.9). The presence of occasional *G. sylvaticum, Alchemilla* and *S. officinalis* suggests the vegetation fits best into the former category. The field is thus considered to contain both improved grassland of low quality and semi-improved grassland of high quality and is a very good candidate for restoration to MG3b.

Five years of vegetation survey data were available for analysis, with the baseline set at 1992. Overall, species richness declined from 20.2 (1992) to 13.3 (2012), representing a 34.2% decline. Species tolerant of grazing also decreased, from an average Grazing Suited Species Score of 0.3 (2992) to 0.1 (2012). This suggests that the decline in species richness may be attributed, at least in part, to the loss of those species tolerant to high levels of grazing. The proportion of nutrient tolerant species, however, increased, from -0.01 (tending towards a higher proportion of stress tolerant species) to 0.01 (tending towards a high proportion of nutrient tolerant species) over the same period, with a peak of 0.05 in 2002. Looking at the ordination (DCA) plot for the site (see Annex II), the error bars from 1992 were quite small, indicating a fairly homogeneous vegetation structure across the sample quadrats, but variability in all later years extends beyond these despite sampling intensity declining from 5 quadrats in 1992 to 3 in 2012. Although there is a high degree of overlap in terms of species composition, some directional community changes do appear to have occurred at this site since 1992, and the movement seen in the DCA plot may reflect the findings in the current (2012) survey that part of the site was now being used to store bales and contained improved *Lolium* grassland. The management information reports little change in management at the site and asserts that only farmyard manure has been applied in the past 20 years, so this would not explain the changes seen at this site. It is considered more likely that the impact is from added disturbance and nutrient leaching from stored bales. As restoration potential exists at this site, an alternative storage arrangement should be reached to ensure that the remaining value of the field is not lost.

SOILS	
Texture	Sandy loam
pH	5.7
Olsens P	15
Total N	0.51
K	222

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CONSULTANT ECOLOGISTS

NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	15	0	20	Poac	6	5	4	4	0	0
Alchemilla glabra	0	0	2	Rosa	7	6	6	4	0	0
Alopecurus pratensis	5	5	0	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	2	3	15	Poac	7	6	4	3	0	-1
Arrhenatherum elatius	10	15	0	Poac	7	5	7	7	-1	0
Bellis perennis	0	0	2	Aste	8	5	6	4	1	0
Bromus hordeaceus	0	2	0	Poac	8	4	7	4	0	1
Cerastium fontanum	0	1	2	Cary	7	5	5	4	1	0
Cynosurus cristatus	0	0	10	Poac	7	5	6	4	0	0
Dactylis glomerata	10	10	0	Poac	7	5	7	6	0	0
Festuca rubra	0	0	3	Poac	8	5	6	5	-1	0
Holcus lanatus	10	30	20	Poac	7	6	6	5	0	0
Lathyrus pratensis	0	0	3	Faba	7	6	6	5	1	0
Lolium perenne	10	15	0	Poac	8	5	6	6	0	0
Myosotis discolor	0	0	2	Bora	7	5	5	3	1	-1
Plantago lanceolata	0	0	5	Plan	7	5	6	4	1	0
Poa trivialis	20	15	10	Poac	7	6	6	6	0	0
Ranunculus acris	0	2	5	Ranu	7	6	6	4	1	0
Ranunculus repens	15	5	5	Ranu	6	7	6	7	0	1
Rhinanthus minor	0	0	3	Scro	7	5	6	4	0	0
Rumex acetosa	5	4	5	Poly	7	5	5	4	0	0
Taraxacum agg.	0	0	2	Aste	7	5	7	6	1	0
Trisetum flavescens	0	0	5	Poac	7	4	7	4	0	0

SUMMARY	
Total	23.00
Grass	12.00
Sedge	0.00
Rush	0.00
Forb	11.00
Herb cover	21%
LIGHT L	
Average	7.09
Min	6.00
Max	8.00
MOISTURE F	
Average	5.26
Min	4.00
Max	7.00
REACTION R	
Average	5.91
Min	4.00
Max	7.00
NITROGEN N	
Average	4.78
Min	3.00
Max	7.00
GRAZING GI	
Average	0.22
NUTRIENTS NI	
Average	0.00

Site:	**702**
Area	**South Tynedale**
HLS options + supplements	**HK7**
Former ESA tier	**1B**

This site is located at the edge of Garrigill, to the south-east of Alston, at an altitude of 360m. The field comprises, gentle, east-facing slope.

The sward is grass-dominated with abundant *Holcus lanatus, Lolium perenne*, and *Festuca rubra* and *Anthoxanthum odoratum*. Of the typical upland hay meadow axiophytes only *Rhinanthus minor* is constant. However, a good range of other species do occur at lower frequency including frequent *Leontodon autumnalis* and occasional to rare *Filipendula ulmaria, Geranium sylvaticum, Conopodium majus, Alchemilla glabra* and *Lathyrus pratensis*. *Caltha palustris* is very local within the field. Negative species are especially frequent at the field boundaries where there are some large stands of, *Cirsium vulgare, Urtica dioica, Rumex obtusifolius* and *Anthriscus sylvestris*. The latter two species, with the addition of *Rumex crispus* were also occasional within the field.

The site shows affinities to MG8 (64.5), MG6b (58.3) and MG3a (57.8). Due to the presence of occasional *Geranium sylvaticum* and *Alchemilla glabra* the vegetation is considered to fit best into the latter community, although it is quite a species-poor example. It is thus considered to be semi-improved but is of average to high quality within this category and is a very good candidate for restoration to MG3b.

No previous data are available for this site.

No management information has been provided for this site.

SOILS	
Texture	Loamy sand
pH	5.7
Olsens P	22
Total N	0.69
K	137

Penny Anderson Associates Ltd
Consultant Ecologists

NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	0	2	0	Poac	6	5	4	4	0	0
Alchemilla glabra	0	0	3	Rosa	7	6	6	4	0	0
Anthoxanthum odoratum	10	10	10	Poac	7	6	4	3	0	-1
Anthriscus sylvestris	1	2	1	Apia	6	5	7	7	-1	1
Bellis perennis	3	0	1	Aste	8	5	6	4	1	0
Bromus hordeaceus	3	0	2	Poac	8	4	7	4	0	1
Caltha palustris	0	0	5	Ranu	7	9	6	4	0	-1
Cardamine pratensis	2	0	0	Bras	7	8	5	4	0	0
Cerastium fontanum	0	1	2	Cary	7	5	5	4	1	0
Dactylis glomerata	1	0	0	Poac	7	5	7	6	0	0
Festuca rubra	10	25	3	Poac	8	5	6	5	-1	0
Filipendula ulmaria	0	15	0	Rosa	7	8	6	5	-1	0
Holcus lanatus	30	20	35	Poac	7	6	6	5	0	0
Leontodon autumnalis	3	5	5	Aste	8	6	6	4	1	0
Lolium perenne	10	5	20	Poac	8	5	6	6	0	0
Myosotis discolor	0	1	2	Bora	7	5	5	3	1	-1
Poa trivialis	0	2	5	Poac	7	6	6	6	0	0
Ranunculus acris	25	10	15	Ranu	7	6	6	4	1	0
Ranunculus repens	10	10	0	Ranu	6	7	6	7	0	1
Rhinanthus minor	2	2	3	Scro	7	5	6	4	0	0
Rumex acetosa	3	2	5	Poly	7	5	5	4	0	0
Taraxacum agg.	0	2	2	Aste	7	5	7	6	1	0
Trifolium pratense	0	3	3	Faba	7	5	7	5	1	0
Trifolium repens	0	2	0	Faba	7	5	6	6	0	0
Veronica chamaedrys	2	0	0	Scro	6	5	6	5	1	-1

SUMMARY	
Total	25.00
Grass	8.00
Sedge	0.00
Rush	0.00
Forb	17.00
Herb cover	43%
LIGHT L	
Average	7.04
Min	6.00
Max	8.00
MOISTURE F	
Average	5.68
Min	4.00
Max	9.00
REACTION R	
Average	5.88
Min	4.00
Max	7.00
NITROGEN N	
Average	4.76
Min	3.00
Max	7.00
GRAZING GI	
Average	0.20
NUTRIENTS NI	
Average	-0.04

Site:	**703**
Area	**South Tynedale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**1B**

This site lies to the west of the River South Tyne, south of Tyne Head, at an elevation of 440m. The field to the south of the track is large and has a gentle east-facing slope. The area to the north of the track has a slightly steeper north-east facing slope and is bounded by a shallow wooded stream to the west.

The meadow is quite homogeneous and characterised by constant *Caltha palustris* within a grassy sward including *Agrostis capillaris, Anthoxanthum odoratum, Holcus lanatus* and *Poa trivialis* with *Ranunculus acris, R. repens, Rumex acetosa* and *Trifolium pratense*. Typical upland hay meadow axiophytes were scattered but included occasional to rare *Conopodium majus, Filipendula ulmaria, Rhinanthus minor and Leontodon autumnalis*. Negative indicators were concentrated to the north of the track and included frequent *Rumex obtusifolius* and a small amount of *Rumex crispus*.

The steep, wet bank and fen west of the stream in the northern part of the site is very species-rich with *Cirsium heterophyllum*, *Trollius europaeus*, *Geum rivale*, *Crepis paludosa*, *Valeriana dioica*, *Alchemilla glabra*, *Briza media*, *Succisa pratensis*, *Angelica sylvestris*, *Dactylorhiza fuchsii*, *Geranium sylvaticum*, *Equisetum palustre*.

The site shows affinities to MG8 (56.1) and is considered to be a good fit to O'Reilly's (2011) MG8- variant of the community. The field is therefore considered to be relatively low quality semi-improved grassland. The species-rich bank to the north-west of the stream is considered to be unimproved and of high quality.

No previous data are available for analysis.

SOILS	
Texture	Sandy loam
pH	6.1
Olsens P	27
Total N	0.82
K	182

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Consultant Ecologists

NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	0	5	10	Poac	6	5	4	4	0	0
Agrostis stolonifera	0	5	1	Poac	7	6	7	6	0	1
Alopecurus geniculatus	1	3	0	Poac	8	7	6	6	0	1
Alopecurus pratensis	5	5	3	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	15	10	15	Poac	7	6	4	3	0	-1
Bellis perennis	0	3	2	Aste	8	5	6	4	1	0
Bromus hordeaceus	0	1	0	Poac	8	4	7	4	0	1
Caltha palustris	10	0	0	Ranu	7	9	6	4	0	-1
Cardamine pratensis	2	2	3	Bras	7	8	5	4	0	0
Cerastium fontanum	2	3	1	Cary	7	5	5	4	1	0
Festuca pratensis	3	0	0	Poac	7	6	6	6	0	0
Festuca rubra	0	1	2	Poac	8	5	6	5	-1	0
Holcus lanatus	30	25	25	Poac	7	6	6	5	0	0
Juncus effusus	0	0	10	Junc	7	7	4	4	1	0
Lolium perenne	0	1	0	Poac	8	5	6	6	0	0
Montia fontana	0	1	3	Port	7	9	5	3	1	-1
Phleum pratense	0	2	0	Poac	8	5	7	6	1	0
Poa pratensis	0	2	0	Poac	7	5	6	5	0	0
Poa trivialis	25	20	15	Poac	7	6	6	6	0	0
Ranunculus acris	15	10	15	Ranu	7	6	6	4	1	0
Ranunculus repens	3	4	10	Ranu	6	7	6	7	0	1
Rumex acetosa	5	6	5	Poly	7	5	5	4	0	0
Trifolium repens	2	5	3	Faba	7	5	6	6	0	0

SUMMARY	
Total	23.00
Grass	13.00
Sedge	0.00
Rush	1.00
Forb	9.00
Herb cover	32%
LIGHT L	
Average	7.17
Min	6.00
Max	8.00
MOISTURE F	
Average	5.96
Min	4.00
Max	9.00
REACTION R	
Average	5.70
Min	4.00
Max	7.00
NITROGEN N	
Average	4.91
Min	3.00
Max	7.00
GRAZING GI	
Average	0.22
NUTRIENTS NI	
Average	0.04

Site:	**704**
Area	**East Allendale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**2A**

This site lies to the north of Allenheads, at an elevation of 450m. The field is situated on a moderate south-west facing slope with a stream running down its south-eastern edge. Numerous springs / old field drains issue within the field. A recent dressing of FYM was evident in mid-July 2012.

The hay meadow has average species-richness and a short sward. The main constituents of the sward are *Lolium perenne*, *Cynosurus cristatus, Holcus lanatus, Agrostis capillaris, Anthoxanthum odoratum, Ranunculus acris* and *Trifolium repens*. Of the typical upland hay meadow axiophytes, only *Euphrasia officinalis agg.* is constant. Other such species are scarce with occasional *Caltha palustris,* and associated *Carex nigra* and rare *Rhinanthus minor*. Wetter areas, including the stream at the south-eastern eastern edge of the site support *Juncus bulbosus*, *J effusus, J acutiflorus, Stellaria alsine, Carex leporina* and *C nigra*. Negative indicators included *Urtica dioica,* which is around farm buildings to north, and an intermittent strip of *Rumex obtusifolius* and *U. dioica* along the north-western and south-western edges of the field, where animals shelter against the walls.

The majority of the vegetation shows affinities to MG6b (63.1) whilst certain patches within the wetter areas are referable to MG8 (59.5). The general lack of typical hay meadow species within both of these communities suggests strong affinities to O'Reilly's (2011) MG6b-ii and MG8o variants respectively. The field is therefore considered to be semi-improved, with both vegetation communities present being of average quality.

Three years of data were available for analysis, with the baseline year set at 1992. Over the survey period, species richness per 1x1m quadrat remained broadly similar from 18.8 (1992) to 18.7 (2012). The proportional representation of grazing tolerant species decreased from 0.4 (1992) to 0.2 (2012) indicating a slight loss of these species through time. The average proportion of nutrient tolerant species scores was initially relatively high (0.1) in 1992 and decreased strongly to -0.1 in 2012 indicating either a greater proportion of stress tolerant species in latter years. The ordination (DCA) plot (Annex II) shows relatively little movement in community composition through time, although later data points lie outside the error bars generated by the first year of data, especially for 1995. This suggests that the 2012 survey plots were more homogeneous in their species composition compared with the remaining survey years. The farmer questionnaire indicates that lime has never been used (under current management since 1987), only a dressing of farmyard manure in alternate years. Inorganic fertiliser was used under the ESA agreement. Broken field drains have been restored. Yield is reported to have declined since the cessation of use of NPK.

SOILS	
Texture	Sandy loam
pH	5.8
Olsens P	17
Total N	0.46
K	160

Penny Anderson Associates Ltd
CONSULTANT ECOLOGISTS

NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	20	0	12	Poac	6	5	4	4	0	0
Agrostis stolonifera	0	5	0	Poac	7	6	7	6	0	1
Alopecurus geniculatus	3	2	3	Poac	8	7	6	6	0	1
Alopecurus pratensis	20	5	0	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	10	5	5	Poac	7	6	4	3	0	-1
Bellis perennis	0	2	0	Aste	8	5	6	4	1	0
Caltha palustris	0	25	0	Ranu	7	9	6	4	0	-1
Cardamine pratensis	1	1	0	Bras	7	8	5	4	0	0
Cerastium fontanum	1	1	2	Cary	7	5	5	4	1	0
Cerastium glomeratum	0	0	2	Cary	7	5	6	5	1	0
Cynosurus cristatus	15	15	15	Poac	7	5	6	4	0	0
Deschampsia cespitosa	0	1	0	Poac	6	6	5	4	0	0
Euphrasia officinalis agg.	5	3	2	Scro	8	5	5	3	0	-1
Festuca pratensis	0	1	0	Poac	7	6	6	6	0	0
Festuca rubra	5	3	0	Poac	8	5	6	5	-1	0
Holcus lanatus	5	10	20	Poac	7	6	6	5	0	0
Lolium perenne	10	3	8	Poac	8	5	6	6	0	0
Montia fontana	0	0	2	Port	7	9	5	3	1	-1
Myosotis discolor	0	1	1	Bora	7	5	5	3	1	-1
Poa trivialis	5	5	5	Poac	7	6	6	6	0	0
Ranunculus acris	5	10	2	Ranu	7	6	6	4	1	0
Ranunculus repens	2	2	22	Ranu	6	7	6	7	0	1
Rumex acetosa	3	3	3	Poly	7	5	5	4	0	0
Taraxacum agg.	1	0	0	Aste	7	5	7	6	1	0
Trifolium pratense	1	1	0	Faba	7	5	7	5	1	0
Trifolium repens	3	5	8	Faba	7	5	6	6	0	0

SUMMARY	
Total	26.00
Grass	12.00
Sedge	0.00
Rush	0.00
Forb	14.00
Herb cover	36%
LIGHT L	
Average	7.08
Min	6.00
Max	8.00
MOISTURE F	
Average	5.85
Min	5.00
Max	9.00
REACTION R	
Average	5.69
Min	4.00
Max	7.00
NITROGEN N	
Average	4.77
Min	3.00
Max	7.00
GRAZING GI	
Average	0.27
NUTRIENTS NI	
Average	-0.08

Site:	**705**
Area	**East Allendale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**2A**

This site lies to the east of Spartylea, at an altitude of 440m, and has a shallow westerly gradient. The field is part of the Hexhamshire Moors Site of Special Scientific Interest. Six foraging black grouse were flushed during the survey in July 2012. Evidence of rabbit grazing in the form of droppings and scrapes was present.

The field has a *Lolium perenne, Festuca rubra* and *Holcus lanatus* dominated sward with frequent *Cynosurus cristatus and Anthoxanthum odoratum*. Upland hay meadow axiophytes are mainly found within the north-eastern part of the field and include frequent *Rhinanthus minor*, occasional *Conopodium majus,* and *Euphrasia officinalis agg. R minor* appears to have been sown, as it is present in distinct patches. In wetter areas, especially at the SE edge, there are *Deschampsia cespitosa, Juncus effusus, Alopecurus geniculatus, Caltha palustris* and *Carex nigra*.

The vegetation shows strong affinities to MG6b. It is considered to be a good fit to O'Reilly's (2011) MG6b-ii variant and is considered to be semi-improved and of average quality within the MG6b sub-community. The presence of foraging black grouse adds significant value to the site.

Three years of data were available for analysis, with the baseline set at 1992. Species richness per 1x1m quadrat remained similar decreasing slightly from 17 in 1992 to 16.67 in 2012. The proportional representation of grazing tolerant species declined over the survey period from 0.38 in 1992 to 0.16 in 2012 indicating a slight reduction in the numbers of species suited to high levels of grazing. Average nutrient tolerant species scores increased slightly from -0.01 in 1992 to -0.08 in 2012 indicating a slight increase in the representation of species suited to lower nutrient availability. No ordination plot was created for this site as scores for a single axis only were computed. This indicates that the variability within the date was not able to be explained by further ordination axes (axis 1 explained 46% of the overall variation within the data set), most likely due to the high proportion of rare species within the dataset relative to the total numbers of species.

The farmer questionnaire indicates that the site has been in current management for 35 years. 1 tonne lime per hectare was applied in 2000. No current fertiliser is used, but under previous scheme used NPK 20:10:10 inorganic annually. Green hay has been added (Haytime project).

SOILS	
Texture	Sandy loam
pH	5.4
Olsens P	25
Total N	0.62
K	137

Penny Anderson Associates Ltd
CONSULTANT ECOLOGISTS

NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Lolium perenne	30	20	12	Poac	8	5	6	6	0	0
Holcus lanatus	20	25	10	Poac	7	6	6	5	0	0
Cynosurus cristatus	10	3	2	Poac	7	5	6	4	0	0
Trifolium repens	10	0	8	Faba	7	5	6	6	0	0
Festuca rubra	5	25	10	Poac	8	5	6	5	-1	0
Agrostis capillaris	5	5	10	Poac	6	5	4	4	0	0
Ranunculus acris	5	5	5	Ranu	7	6	6	4	1	0
Anthoxanthum odoratum	5	3	10	Poac	7	6	4	3	0	-1
Poa trivialis	5	3	5	Poac	7	6	6	6	0	0
Alopecurus pratensis	3	5	8	Poac	7	5	6	7	0	0
Rumex acetosa	3	5	2	Poly	7	5	5	4	0	0
Cerastium fontanum	3	0	2	Cary	7	5	5	4	1	0
Bellis perennis	2	2	3	Aste	8	5	6	4	1	0
Cardamine pratensis	1	1	1	Bras	7	8	5	4	0	0
Myosotis discolor	1	0	0	Bora	7	5	5	3	1	-1
Bromus hordeaceus	0	10	0	Poac	8	4	7	4	0	1
Rhinanthus minor	0	2	1	Scro	7	5	6	4	0	0
Deschampsia cespitosa	0	2	0	Poac	6	6	5	4	0	0
Luzula campestris	0	2	0	Junc	7	4	5	2	1	-1
Conopodium majus	0	1	0	Apia	6	5	5	5	0	-1
Taraxacum agg.	0	1	0	Aste	7	5	7	6	1	0
Ranunculus repens	0	0	22	Ranu	6	7	6	7	0	1
Poa pratensis	0	0	1	Poac	7	5	6	5	0	0

SUMMARY	
Total	23.00
Grass	11.00
Sedge	0.00
Rush	1.00
Forb	11.00
Herb cover	25%
LIGHT L	
Average	7.00
Min	6.00
Max	8.00
MOISTURE F	
Average	5.35
Min	4.00
Max	8.00
REACTION R	
Average	5.61
Min	4.00
Max	7.00
NITROGEN N	
Average	4.61
Min	2.00
Max	7.00
GRAZING GI	
Average	0.22
NUTRIENTS NI	
Average	-0.09

Site:	**706**
Area	**East Allendale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**2A**

This site is situated in East Allendale, to the north-west of Middle Hope at an altitude of 350m. The field has a westerly aspect and comprises two relatively flat riverine terraces, with steep banks separating upper and lower.

The field supports two main hay meadow communities along with lush grassland / tall ruderal vegetation with *Holcus lanatus, Arrhenatherum elatius, Dactylis glomeratus* and *Alopecurus pratensis. Cirsium arvense* with *Urtica dioica* and *Rumex obtusifolius* were present, particularly at the northern edge. The upper terrace has coarser vegetation with wetter areas including constant *Caltha palustris* with *Cynosurus cristatus* and *Filipendula ulmaria* with abundant *Ranunculus repens, Prunella vulgaris, Juncus effusus*, *Glyceria* sp. and *Alopecurus geniculatus*. The best quality grassland occurs to the south of the site, particularly on the lower terrace, which has a finer more open sward consisting of *Lolium perenne* and *Cynosurus cristatus* with *Anthoxanthum odoratum, Ranunculus acris, Trifolium pratense* and *Trifolium repens*. Typical upland hay meadow axiophytes include constant *Rhinanthus minor* and scattered *Euphrasia officinalis agg.* and *Leontodon autumnalis*. The upper terrace has abundant *Holcus lanatus, Cynosurus cristatus, Dactylis glomeratus* with *Euphrasia officinalis agg.*, and particularly to the E edge, To the S, the sward thins and supports more *C cristatus*, and abundant *R repens* and *R minor*.

The bank separating the upper and lower terraces includes some of best flora and adds greatly to the species richness of the site. Despite the rough general character, with *Holcus lanatus* dominant, frequent finer patches occur, including *Centaurea nigra, Alchemilla glabra*, *A. xanthochlora*, *Equisetum sylvaticum*, *Hypochaeris radicata*, *Lathyrus pratensis, Dactylorhiza fuchsii* and *Cruciata laevigata*. Several flushes occur at the base of this bank, on the lower terrace, with *C palustris, J effusus, J acutiflorus*, and *Mimulus guttatus*. A flush at the northern edge of the field has *Equisetum fluviatile* and *D. fuchsii*.

The vegetation here is quite complex with coarse weedy vegetation, to the north of the site, mixed with both drier and wetter more typical hay meadow vegetation. In terms of the samples taken, the most widespread typical community has strong affinities to MG6b (71.7) whilst the wetter areas have strong affinities to MG8 (59.7). These two communities fit well to the MG6b-iii and MG8o variants, identified by O'Reilly (2011), respectively. While communities are considered to be semi-improved, those on drier ground are considered to be of high quality within this category whilst the wetter communities are considered to be of average quality. The steep bank between the upper and lower terraces is considered to be unimproved but probably has suffered some incidental improvement through nutrient run-off.

Three years of data were available for analysis with the baseline year set at 1992. Overall, species richness per 1x1m quadrat increased from 15.2 in 1992 to 17 in 2012, with a peak of over 20 in 1995. The proportion of grazing tolerant species decreased from 0.37 in 1992 to 0.26 in 2012, indicating a loss of some species known to tolerate high levels of grazing. Nutrient tolerant species scores decreased from 0.12 in 1992 to -0.03 in 2012, indicating an increased proportion of those species known to tolerate lower nutrient levels. The ordination plot (DCA) for 706 (Annex II) shows relatively little movement in community composition over time, with all later data points falling within the error bars generated by the first year of data.

The farmer questionnaire indicates that the site has been in current management for 35 years. 1 tonne lime per hectare was applied in 2000. No current fertiliser is used, but under previous scheme used NPK 20:10:10 inorganic annually. Green hay has been added (Haytime project).

SOILS	
Texture	Sandy loam
pH	5.8
Olsens P	14
Total N	0.56
K	147

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CONSULTANT ECOLOGISTS

NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	0	0	15	Poac	6	5	4	4	0	0
Agrostis stolonifera	5	0	0	Poac	7	6	7	6	0	1
Alopecurus pratensis	3	2	3	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	5	5	5	Poac	7	6	4	3	0	-1
Bellis perennis	3	1	0	Aste	8	5	6	4	1	0
Bromus hordeaceus	5	3	2	Poac	8	4	7	4	0	1
Caltha palustris	50	0	0	Ranu	7	9	6	4	0	-1
Cerastium fontanum	2	2	2	Cary	7	5	5	4	1	0
Conopodium majus	0	0	3	Apia	6	5	5	5	0	-1
Cynosurus cristatus	5	15	20	Poac	7	5	6	4	0	0
Dactylis glomerata	0	0	3	Poac	7	5	7	6	0	0
Euphrasia officinalis agg.	0	0	2	Scro	8	5	5	3	0	-1
Festuca rubra	0	0	20	Poac	8	5	6	5	-1	0
Holcus lanatus	5	5	5	Poac	7	6	6	5	0	0
Hypochaeris radicata	0	0	3	Aste	8	4	5	3	0	-1
Lolium perenne	5	30	15	Poac	8	5	6	6	0	0
Plantago lanceolata	0	0	8	Plan	7	5	6	4	1	0
Poa trivialis	3	5	3	Poac	7	6	6	6	0	0
Ranunculus acris	15	30	5	Ranu	7	6	6	4	1	0
Ranunculus repens	0	0	8	Ranu	6	7	6	7	0	1
Rhinanthus minor	5	5	5	Scro	7	5	6	4	0	0
Rumex acetosa	3	0	3	Poly	7	5	5	4	0	0
Taraxacum agg.	1	0	2	Aste	7	5	7	6	1	0
Trifolium pratense	3	5	3	Faba	7	5	7	5	1	0
Trifolium repens	2	3	2	Faba	7	5	6	6	0	0
Trisetum flavescens	0	0	3	Poac	7	4	7	4	0	0

SUMMARY	
Total	26.00
Grass	12.00
Sedge	0.00
Rush	0.00
Forb	14.00
Herb cover	47%
LIGHT L	
Average	7.12
Min	6.00
Max	8.00
MOISTURE F	
Average	5.31
Min	4.00
Max	9.00
REACTION R	
Average	5.88
Min	4.00
Max	7.00
NITROGEN N	
Average	4.73
Min	3.00
Max	7.00
GRAZING GI	
Average	0.19
NUTRIENTS NI	
Average	-0.08

Site:	**707**
Area	**West Allendale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**1B**

This site is lies close to the head of West Allendale, to the east of the River West Allen, at an altitude of 430m. The field has a south-westerly aspect and has a moderate slope, concave to the east and convex below.

The sward is almost dominated by *Ranunculus repens* and *R. acris* and the grass component consists of *Anthoxanthum odoratum* with *Holcus lanatus* and *Cynosurus* cristatus. Typical upland hay meadow axiophytes are few with *Rhinanthus minor* the only constant species throughout and *Conopodium majus* is occasional while *Lathyrus pratensis* and *Euphrasia officinalis agg.* are rare. *Caltha* is also scattered throughout but was not included in any of the samples.

The site shows strong affinities to MG6b (63.9) but the presence of scattered *Caltha* also suggests MG8 (58.5). Nevertheless, due to the low frequency and cover of axiophytes, the vegetation is considered to be a good fit to O'Reilly's MG6b-ii variant. The hay meadow is considered to be semi-improved and of average quality.

Three years of data were available for analysis, with the baseline year set at 1992. Overall, species richness per 1x1m quadrat increased slightly from 18 in 1992 to 19.7 in 2012. The proportion of grazing tolerant species decreased slightly from 0.37 in 1992 to 0.27 in 2012, indicating a slight loss of those species known to tolerate particularly high grazing intensity. Nutrient tolerant species scores increased slightly from -0.03 in 1992 to -0.13 in 2012 suggesting a slight increase in species able to tolerate higher nutrient levels. The ordination plot (DCA) shows relatively little movement in community structure through time, with all later data points overlapping the error bars generated by the first year of data.

The farmer questionnaire suggests that the site came into current management in 2008 but has always been cut for hay in living memory. Lime applied annually up to 2008. Only annual farmyard manure is currently used, but under previous scheme used NPK 20:10:10 annually. Yields have declined since 2008 (when joined HLS).

SOILS	
Texture	Sandy loam
pH	5.2
Olsens P	17
Total N	0.51
K	151

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	5	20	7	Poac	6	5	4	4	0	0
Alopecurus geniculatus	1	0	0	Poac	8	7	6	6	0	1
Alopecurus pratensis	1	3	2	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	35	30	7	Poac	7	6	4	3	0	-1
Bellis perennis	0	1	0	Aste	8	5	6	4	1	0
Cerastium fontanum	3	0	2	Cary	7	5	5	4	1	0
Cynosurus cristatus	5	5	7	Poac	7	5	6	4	0	0
Festuca pratensis	0	5	2	Poac	7	6	6	6	0	0
Festuca rubra	3	3	15	Poac	8	5	6	5	-1	0
Holcus lanatus	25	20	15	Poac	7	6	6	5	0	0
Hypochaeris radicata	0	0	1	Aste	8	4	5	3	0	-1
Lathyrus pratensis	0	0	1	Faba	7	6	6	5	1	0
Leontodon hispidus	0	0	4	Aste	8	4	7	3	0	-1
Lolium perenne	2	0	0	Poac	8	5	6	6	0	0
Montia fontana	3	3	1	Port	7	9	5	3	1	-1
Myosotis discolor	2	3	2	Bora	7	5	5	3	1	-1
Plantago lanceolata	0	3	14	Plan	7	5	6	4	1	0
Poa pratensis	1	0	0	Poac	7	5	6	5	0	0
Poa trivialis	0	3	0	Poac	7	6	6	6	0	0
Ranunculus acris	5	17	11	Ranu	7	6	6	4	1	0
Ranunculus repens	15	0	11	Ranu	6	7	6	7	0	1
Rhinanthus minor	3	3	3	Scro	7	5	6	4	0	0
Rumex acetosa	3	3	12	Poly	7	5	5	4	0	0
Taraxacum agg.	0	0	1	Aste	7	5	7	6	1	0
Trifolium pratense	0	1	2	Faba	7	5	7	5	1	0
Trifolium repens	5	3	26	Faba	7	5	6	6	0	0
Trisetum flavescens	0	1	3	Poac	7	4	7	4	0	0

SUMMARY	
Total	27.00
Grass	12.00
Sedge	0.00
Rush	0.00
Forb	15.00
Herb cover	42%
LIGHT L	
Average	7.15
Min	6.00
Max	8.00
MOISTURE F	
Average	5.41
Min	4.00
Max	9.00
REACTION R	
Average	5.81
Min	4.00
Max	7.00
NITROGEN N	
Average	4.67
Min	3.00
Max	7.00
GRAZING GI	
Average	0.30
NUTRIENTS NI	
Average	-0.11

Site:	**708**
Area	**West Allendale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**1B**

This site is situated close to the head of West Allendale, to the north-west of Coalcleugh, at an altitude of 500m. The field has a westerly aspect and undulating slope. The field boundaries are defunct and the adjacent field is similar in structure and sward. The farmer reports that the site was used as pasture prior until he took it over in 1984 and the field was still under light sheep-grazing (4 animals) in mid July 2012. Three black grouse were also disturbed at this time and droppings were found throughout the field.

The sward is characterised by the abundance of *Ranunculus* acris with the grass component comprising *Holcus lanatus* and *Anthoxanthum odoratum* lower down field and *Festuca rubra* higher up. Upland hay meadow indicators are sparse, with *Conopodium majus* occasional and *Caltha palustris* rare to locally occasional only. Other species of note were *Viola tricolor,* locally occasional on the bank above a species-poor flush in the western part of the field, and *Avenula pubescens,* locally frequent through the lower part of site. Negative indicators included *Juncus effusus* and *Urtica dioica* within the flush.

The site shows affinities to MG6b (62.7) and is a good fit to O'Reilly's (2011) MG6b-ii. The site is considered to be semi-improved and of medium to low quality. Nevertheless it provides foraging for black grouse, which significantly raises its value.

No previous data are available for analysis.

SOILS	
Texture	Loamy sand
pH	5.5
Olsens P	15
Total N	0.57
K	103

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	3	5	3	Poac	6	5	4	4	0	0
Alopecurus pratensis	2	2	0	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	12	4	35	Poac	7	6	4	3	0	-1
Arrhenatherum elatius	1	0	0	Poac	7	5	7	7	-1	0
Avenula pubescens	0	0	3	Poac	7	4	7	3	1	-1
Bellis perennis	15	6	0	Aste	8	5	6	4	1	0
Cerastium fontanum	2	2	0	Cary	7	5	5	4	1	0
Conopodium majus	0	2	8	Apia	6	5	5	5	0	-1
Cynosurus cristatus	2	3	0	Poac	7	5	6	4	0	0
Deschampsia cespitosa	0	0	5	Poac	6	6	5	4	0	0
Festuca rubra	12	21	5	Poac	8	5	6	5	-1	0
Holcus lanatus	12	23	45	Poac	7	6	6	5	0	0
Lolium perenne	3	0	0	Poac	8	5	6	6	0	0
Montia fontana	0	1	0	Port	7	9	5	3	1	-1
Plantago lanceolata	0	0	3	Plan	7	5	6	4	1	0
Poa trivialis	8	5	0	Poac	7	6	6	6	0	0
Ranunculus acris	53	48	2	Ranu	7	6	6	4	1	0
Ranunculus bulbosus	0	1	0	Ranu	7	4	7	4	0	0
Ranunculus repens	3	0	0	Ranu	6	7	6	7	0	1
Rumex acetosa	22	12	3	Poly	7	5	5	4	0	0
Trifolium repens	16	20	3	Faba	7	5	6	6	0	0

SUMMARY	
Total	21.00
Grass	11.00
Sedge	0.00
Rush	0.00
Forb	10.00
Herb cover	53%
LIGHT L	
Average	6.95
Min	6.00
Max	8.00
MOISTURE F	
Average	5.43
Min	4.00
Max	9.00
REACTION R	
Average	5.71
Min	4.00
Max	7.00
NITROGEN N	
Average	4.71
Min	3.00
Max	7.00
GRAZING GI	
Average	0.19
NUTRIENTS NI	
Average	-0.14

Site:	**709**
Area	**West Allendale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**1B**

This site is located to the north-west of Hawkuplee, in West Allendale, at an altitude of 250m. The field comprises part of the gently sloping valley floor, with a steeper bank above the Powstile Burn, and has a north-easterly aspect.

The sward is very grass-dominated with *Holcus lanatus, Cynosurus cristatus* and *Anthoxanthum odoratum* the principal species. Patchy, but generally high, cover of *Ranunculus repens* and *Ranunculus acris* also occurs. In terms of typical upland hay meadow axiophytes, *Rhinanthus minor* is constant, *Euphrasia officinalis agg.* is frequent and scattered to rare *Conopodium majus, Lathyrus pratensis* and *Leontodon autumnalis* are present. A small amount of *Geranium sylvaticum* occurs along the north-eastern edge of the field. *Rumex obtusifolius* and *Anthriscus sylvestris* are occasional within the sward and the stream bank is dominated by rank *H. lanatus*. Much of the south-western third of the field has frequent to abundant *Juncus effusus* on damp ground with parallel narrow grips, but few additional species.

The site shows strong affinities to MG6b (66.4) and is considered to be at the lower quality end of O'Reilly's MG6b-iii variant of this sub-community. The field is considered to be semi-improved and of average quality within this category.

No previous data are available for analysis.

No management information has been provided for this site.

SOILS	
Texture	Sandy loam
pH	5.6
Olsens P	12
Total N	0.41
K	103

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CONSULTANT ECOLOGISTS

NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	5	5	0	Poac	6	5	4	4	0	0
Alopecurus geniculatus	0	0	1	Poac	8	7	6	6	0	1
Alopecurus pratensis	0	1	2	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	30	15	3	Poac	7	6	4	3	0	-1
Bellis perennis	1	0	0	Aste	8	5	6	4	1	0
Bromus hordeaceus	0	5	0	Poac	8	4	7	4	0	1
Cerastium fontanum	1	0	3	Cary	7	5	5	4	1	0
Conopodium majus	2	1	0	Apia	6	5	5	5	0	-1
Cynosurus cristatus	5	20	22	Poac	7	5	6	4	0	0
Deschampsia cespitosa	0	0	1	Poac	6	6	5	4	0	0
Euphrasia officinalis agg.	1	0	0	Scro	8	5	5	3	0	-1
Festuca rubra	15	5	3	Poac	8	5	6	5	-1	0
Holcus lanatus	5	30	23	Poac	7	6	6	5	0	0
Holcus mollis	0	5	0	Poac	6	6	3	3	1	0
Lolium perenne	1	5	1	Poac	8	5	6	6	0	0
Myosotis discolor	1	0	0	Bora	7	5	5	3	1	-1
Phleum pratense	0	3	3	Poac	8	5	7	6	1	0
Plantago lanceolata	25	5	5	Plan	7	5	6	4	1	0
Poa pratensis	0	1	0	Poac	7	5	6	5	0	0
Poa trivialis	0	1	3	Poac	7	6	6	6	0	0
Ranunculus acris	10	3	3	Ranu	7	6	6	4	1	0
Ranunculus repens	0	1	40	Ranu	6	7	6	7	0	1
Rhinanthus minor	3	3	3	Scro	7	5	6	4	0	0
Rumex acetosa	3	3	3	Poly	7	5	5	4	0	0
Taraxacum agg.	0	0	1	Aste	7	5	7	6	1	0
Trifolium dubium	3	3	0	Faba	7	4	6	5	0	0
Trifolium pratense	5	1	5	Faba	7	5	7	5	1	0
Trifolium repens	5	3	3	Faba	7	5	6	6	0	0
Trisetum flavescens	5	1	0	Poac	7	4	7	4	0	0
Veronica chamaedrys	0	3	0	Scro	6	5	6	5	1	-1

SUMMARY	
Total	30.00
Grass	15.00
Sedge	0.00
Rush	0.00
Forb	15.00
Herb cover	41%
LIGHT L	
Average	7.03
Min	6.00
Max	8.00
MOISTURE F	
Average	5.23
Min	4.00
Max	7.00
REACTION R	
Average	5.73
Min	3.00
Max	7.00
NITROGEN N	
Average	4.70
Min	3.00
Max	7.00
GRAZING GI	
Average	0.30
NUTRIENTS NI	
Average	-0.07

Site:	**710**
Area	**Weardale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**1B**

This site lies to the south-west of Daddry Shield, to the west of the Greenlaw Hush, in Weardale, at an altitude of 350m. The field has an easterly aspect and comprises both gentle slopes, mown as a hay meadow, and steep unmown banks. It also contains part of an old lead mine.

The flatter western third of the field supports few upland hay meadow indicator species with just *Euphrasia officinalis agg.* and *Caltha palustris* recorded at very low frequency. Further east typical axiophytes include frequent *E. officinalis agg.*; occasional to rare *Rhinanthus minor*, *Centaurea nigra, Lotus corniculatus*, *Lathyrus pratensis*, *Leontodon autumnalis*, *Filipendula* ulmaria and *Alchemilla*. Two steep east-facing banks support a diverse flora and, in addition to the species named above include *Dactylorhiza purpurella*, *Linum catharticum*, *Potentilla erecta*, *Leontodon autumnalis* and *Conopodium majus*.

The site shows strong affinities to MG6b (66.7) and is considered to be a good fit to O'Reilly's MG6b-iii variant of this sub community. The site is considered to be semi-improved and of high quality within this category and is a very good candidate for restoration to MG3. The species-rich banks are considered to be unimproved.

Three years of data were available for analysis, with the baseline year set at 1987. Overall, species richness per 1x1m quadrat increased from 19.8 in 1987 to 22 in 2012. The proportion of grazing tolerant species decreased marginally from 0.4 in 1987 to 0.3 in 2012, indicating a slight loss of those species able to tolerate high levels of grazing. Nutrient tolerant species scores decreased from 0 in 1987 to -0.12 in 2012 indicating an increase proportion of those species able to tolerate high levels of nutrient availability. The ordination plot (Annex II) shows relatively little movement in community composition over time, with all later data points falling within the error bars generated by the first year of data. The farmer questionnaire suggests that only farmyard manure is used on an annual basis.

SOILS	
Texture	Sandy loam
pH	5.9
Olsens P	14
Total N	0.62
K	122

Penny Anderson Associates Ltd
CONSULTANT ECOLOGISTS

NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	3	3	5	Poac	6	5	4	4	0	0
Ajuga reptans	0	2	0	Lami	5	7	5	5	0	0
Alopecurus geniculatus	3	0	0	Poac	8	7	6	6	0	1
Alopecurus pratensis	0	0	3	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	0	5	2	Poac	7	6	4	3	0	-1
Bellis perennis	2	2	1	Aste	8	5	6	4	1	0
Centaurea nigra	0	5	0	Aste	7	5	6	5	1	-1
Cerastium fontanum	1	1	0	Cary	7	5	5	4	1	0
Cynosurus cristatus	10	10	15	Poac	7	5	6	4	0	0
Dactylis glomerata	0	3	3	Poac	7	5	7	6	0	0
Euphrasia officinalis agg.	0	3	3	Scro	8	5	5	3	0	-1
Festuca rubra	2	15	10	Poac	8	5	6	5	-1	0
Holcus lanatus	5	10	10	Poac	7	6	6	5	0	0
Hypochaeris radicata	0	2	0	Aste	8	4	5	3	0	-1
Leontodon autumnalis	0	2	0	Aste	8	6	6	4	1	0
Leontodon hispidus	0	5	0	Aste	8	4	7	3	0	-1
Lolium perenne	15	3	5	Poac	8	5	6	6	0	0
Montia fontana	1	0	0	Port	7	9	5	3	1	-1
Myosotis discolor	1	2	1	Bora	7	5	5	3	1	-1
Plantago lanceolata	2	10	10	Plan	7	5	6	4	1	0
Poa trivialis	10	5	5	Poac	7	6	6	6	0	0
Ranunculus acris	0	5	15	Ranu	7	6	6	4	1	0
Ranunculus repens	50	2	5	Ranu	6	7	6	7	0	1
Rhinanthus minor	0	1	0	Scro	7	5	6	4	0	0
Rumex acetosa	5	5	5	Poly	7	5	5	4	0	0
Taraxacum agg.	0	1	1	Aste	7	5	7	6	1	0
Trifolium pratense	2	10	7	Faba	7	5	7	5	1	0
Trifolium repens	5	2	3	Faba	7	5	6	6	0	0
Trisetum flavescens	0	2	2	Poac	7	4	7	4	0	0
Veronica chamaedrys	0	1	1	Scro	6	5	6	5	1	-1
Veronica serpyllifolia	2	0	0	Scro	7	5	6	5	-1	0
Vicia sepium	0	1	0	Faba	6	5	6	6	1	0

SUMMARY	
Total	32.00
Grass	11.00
Sedge	0.00
Rush	0.00
Forb	21.00
Herb cover	38%
LIGHT L	
Average	7.06
Min	5.00
Max	8.00
MOISTURE F	
Average	5.38
Min	4.00
Max	9.00
REACTION R	
Average	5.81
Min	4.00
Max	7.00
NITROGEN N	
Average	4.66
Min	3.00
Max	7.00
GRAZING GI	
Average	0.31
NUTRIENTS NI	
Average	-0.19

Site:	**711**
Area	**Weardale**
HLS options + supplements	**HK7**
Former ESA tier	**2A**

This site lies to the west of Copthill in Weardale, at altitude of 450m. The field comprises part of the gently northward-sloping valley floor. A frequently mown meadow accounts for most of the field, with the exception of a wet *Juncus effusus* dominated area along its northern and eastern boundaries.

Grass cover predominantly comprises *Agrostis stolonifera, Anthoxanthum odoratum, Cynosurus cristatus* and *Holcus lanatus,* although herbs are quite abundant (43% cover) a relatively small number of species make up the majority of cover, including *Ranunculus repens* and *Caltha palustris*. Other than the latter, and *Carex nigra,* upland hay meadow axiophytes, including *Filipendula ulmaria* and *Conopodium majus*, are of very restricted distribution.

The wet northern area contains a more substantial number of axiophytes including *C. majus, Rhinanthus minor, Lathyrus pratensis, Euphrasia officinalis agg., Leontodon autumnalis* and *Crepis paludosa*. The eastern edge of the field has affinities to poor-fen vegetation with *Galium palustre, Lychnis flos-cuculi, Angelica sylvestris* and *Dactylorhiza purpurella*.

The site shows strong affinities to MG8 (61.3) and to MG6b (57.7). Although the vegetation bears a strong resemblance to the MG6b, *Caltha* was a constant throughout and it is therefore considered to be a good fit to O'Reilly's (2011) MG8-. The meadow is considered to be semi-improved and of relatively low quality within this category. The unmown northern and eastern areas are considered to be better quality and are possibly unimproved.

Five years of data were available for analysis, with the baseline set at 1987. Overall, species richness per 1x1m quadrat increased slightly from 19 in 1987 to 21.6 in 2012. The proportion of grazing tolerant species present decreased slightly from 0.36 in 1987 to 0.25 in 2012 indicating a slight reduction in those species suited to high grazing intensity. Nutrient tolerant species scores increased from -0.06 (1987) to -0.03 (2012), indicating a very slight decline in the numbers of species suited to low nutrient availability. The ordination plot (Annex II) shows relatively little movement in species composition through time, with all later data points falling within the error bars generated by the first year of data.

The farmer questionnaire indicates that only farmyard manure is used on an annual basis. Additionally, the site has not been limed since the late 1980s. Seed addition is planned for the next few years (under the Haytime Project).

SOILS	
Texture	Loamy sand
pH	5.5
Olsens P	18
Total N	0.69
K	208

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	40	0	6	Poac	6	5	4	4	0	0
Agrostis stolonifera	5	30	7	Poac	7	6	7	6	0	1
Alopecurus geniculatus	2	5	4	Poac	8	7	6	6	0	1
Alopecurus pratensis	1	1	5	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	0	5	10	Poac	7	6	4	3	0	-1
Bellis perennis	3	3	0	Aste	8	5	6	4	1	0
Caltha palustris	25	8	20	Ranu	7	9	6	4	0	-1
Carex nigra	0	10	0	Cype	7	8	4	2	0	-1
Cerastium fontanum	2	1	2	Cary	7	5	5	4	1	0
Cerastium glomeratum	0	0	1	Cary	7	5	6	5	1	0
Cynosurus cristatus	5	10	3	Poac	7	5	6	4	0	0
Deschampsia cespitosa	0	1	0	Poac	6	6	5	4	0	0
Festuca rubra	3	5	5	Poac	8	5	6	5	-1	0
Holcus lanatus	10	10	20	Poac	7	6	6	5	0	0
Leontodon autumnalis	1	0	0	Aste	8	6	6	4	1	0
Lolium perenne	3	0	2	Poac	8	5	6	6	0	0
Montia fontana	3	3	7	Port	7	9	5	3	1	-1
Myosotis discolor	0	1	1	Bora	7	5	5	3	1	-1
Plantago lanceolata	0	0	1	Plan	7	5	6	4	1	0
Poa trivialis	5	3	17	Poac	7	6	6	6	0	0
Prunella vulgaris	0	1	0	Lami	7	5	6	4	0	0
Ranunculus acris	2	1	1	Ranu	7	6	6	4	1	0
Ranunculus repens	10	8	40	Ranu	6	7	6	7	0	1
Rumex acetosa	3	3	5	Poly	7	5	5	4	0	0
Sagina procumbens	0	0	2	Cary	7	6	6	5	0	0
Stellaria alsine	2	0	2	Cary	7	8	5	5	0	0
Trifolium pratense	1	1	2	Faba	7	5	7	5	1	0
Trifolium repens	3	3	3	Faba	7	5	6	6	0	0

SUMMARY	
Total	28.00
Grass	11.00
Sedge	1.00
Rush	0.00
Forb	16.00
Herb cover	43%
LIGHT L	
Average	7.07
Min	6.00
Max	8.00
MOISTURE F	
Average	5.93
Min	5.00
Max	9.00
REACTION R	
Average	5.64
Min	4.00
Max	7.00
NITROGEN N	
Average	4.61
Min	2.00
Max	7.00
GRAZING GI	
Average	0.29
NUTRIENTS NI	
Average	-0.07

Site:	**712**
Area	**Weardale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**1B**

This site lies to the west of Irehopeburn in Weardale, at an altitude of 380m. The field slopes gently to the north-east (maximum 1:4 gradient in the southwest corner) and is mildly undulating. This is a productive field with quite a dense, rough sward in places and also some lower lying areas with seepage lines.

The bulk of the field comprises a grass-dominated sward with *Dactylis glomerata*, *Poa trivialis*, *Alopecurus pratensis*, *Lolium perenne*, *Holcus lanatus*, *Ranunculus repens* and *Trifolium pratense*. Typical upland hay meadow axiophytes include constant *Rhinanthus minor,* frequent *Euphrasia officinalis agg.*, occasional *Filipendula ulmaria* and rare *Geranium sylvaticum* and *Leontodon autumnalis*. There is fine scale variation within the sward; some areas are more open with abundant *Rhinanthus* and *Euphrasia* but others coarser (e.g. along the south-eastern boundary) with *Heracleum sphondylium* and *Anthriscus sylvestris* frequent but also *Geranium sylvaticum* occasional to frequent. A wetter area, encompassing a wide strip of vegetation running down the centre of the field from the south-western corner has frequent *Caltha palustris*, *Ranunculus repens*, *Deschampsia cespitosa*, *Rumex crispus* and *Juncus acutiflorus*. *Dactylorhiza purpurella* is rare and restricted to the north-western boundary. Additional negative indicators are generally restricted to the field corners and edges; these include *Rumex obtusifolius*, *Urtica dioica* and *Cirsium vulgare*. The edges also hint at the former quality of the field with sometimes abundant *Filipendula ulmaria*, *Geranium sylvaticum* and *Leontodon hispidus* (rare).

The wetter areas of the meadow have affinities to MG8 (56.8) and it is considered this vegetation is a good fit to O'Reilly's (2011) MG8o variant of the community. The majority of the drier areas of the field show affinities to rather species-poor MG6b, these are considered to generally accord well with O'Reilly's MG6b-ii. The coarser area on the eastern edge of the site (not sampled) shows affinities to MG3c. The site is considered to be of average quality within the semi-improved category.

A total of six years of data were available for analysis, with the baseline set at 1987. Overall, species richness declined slightly from 22.4 in 1987, peaking at 27 (2002), to 20.7 in 2012. The proportion of grazing tolerant species decreased from 0.35 (1987) to 0.23 (2012). Nutrient tolerant species scores increased slightly across the period, from -0.06 in 1987 to -0.04 in 2012 indicating a slight increase in the proportion of those species know to tolerate higher levels of nutrient availability. The rise in scores for species favoured by elevated nutrients seen in the middle years of the study may result form NPK use under ESA Tier 1. Considering the origination plots (Annex II), error bars for 1987 encompassed all the variability in the rest of the dataset suggesting little change in the vegetation community through time. It is, however, worth noting that very tight error bars for quadrats sampled in 2012 indicate a highly homogeneous sward, similar to 1992 and 2002. The management information provided through the farmer questionnaire indicates that a move from ESA Tier 1 to 2 took place in 2009, but this has changed the management little apart from the cessation of annual NPK application in 2009 on entry to Tier 2. Farmer feels the sward now lacks body and may wish to add lime.

SOILS	
Texture	Sandy loam
pH	5.3
Olsens P	13
Total N	0.66
K	143

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CONSULTANT ECOLOGISTS

NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	0	5	0	Poac	6	5	4	4	0	0
Agrostis stolonifera	15	0	1	Poac	7	6	7	6	0	1
Alopecurus geniculatus	2	0	0	Poac	8	7	6	6	0	1
Alopecurus pratensis	0	2	1	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	10	5	2	Poac	7	6	4	3	0	-1
Caltha palustris	15	2	0	Ranu	7	9	6	4	0	-1
Cardamine pratensis	3	0	0	Bras	7	8	5	4	0	0
Carex nigra	10	0	0	Cype	7	8	4	2	0	-1
Cerastium fontanum	0	0	1	Cary	7	5	5	4	1	0
Cerastium glomeratum	2	0	0	Cary	7	5	6	5	1	0
Cynosurus cristatus	15	7	5	Poac	7	5	6	4	0	0
Dactylis glomerata	2	0	3	Poac	7	5	7	6	0	0
Euphrasia officinalis agg.	0	2	0	Scro	8	5	5	3	0	-1
Festuca pratensis	2	1	0	Poac	7	6	6	6	0	0
Filipendula ulmaria	1	11	0	Rosa	7	8	6	5	-1	0
Holcus lanatus	15	65	60	Poac	7	6	6	5	0	0
Lathyrus pratensis	0	2	0	Faba	7	6	6	5	1	0
Lolium perenne	10	3	15	Poac	8	5	6	6	0	0
Montia fontana	0	3	2	Port	7	9	5	3	1	-1
Phleum pratense	15	2	5	Poac	8	5	7	6	1	0
Plantago lanceolata	0	2	5	Plan	7	5	6	4	1	0
Poa trivialis	1	8	3	Poac	7	6	6	6	0	0
Ranunculus acris	10	3	3	Ranu	7	6	6	4	1	0
Ranunculus repens	3	22	5	Ranu	6	7	6	7	0	1
Rhinanthus minor	1	4	2	Scro	7	5	6	4	0	0
Rumex acetosa	5	4	5	Poly	7	5	5	4	0	0
Trifolium pratense	2	2	1	Faba	7	5	7	5	1	0
Trifolium repens	3	3	2	Faba	7	5	6	6	0	0
Trisetum flavescens	0	3	0	Poac	7	4	7	4	0	0

SUMMARY	
Total	29.00
Grass	13.00
Sedge	1.00
Rush	0.00
Forb	15.00
Herb cover	30%
LIGHT L	
Average	7.07
Min	6.00
Max	8.00
MOISTURE F	
Average	5.93
Min	4.00
Max	9.00
REACTION R	
Average	5.79
Min	4.00
Max	7.00
NITROGEN N	
Average	4.76
Min	2.00
Max	7.00
GRAZING GI	
Average	0.24
NUTRIENTS NI	
Average	-0.07

Site:	**713**
Area	**Weardale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**2A**

This site lies to the north-west of Copthill in Weardale, at an altitude of 480m. It comprises a small field with a relatively even south-facing slope.

The sward is quite uniform and grass-dominated, including high abundance of *Holcus lanatus*, *Cynosurus cristatus* and *Anthoxanthum odoratum*. Typical upland hay meadow axiophytes include constant *Euphrasia officinalis agg.* and *Conopodium majus,* with rare and scattered *Rhinanthus minor*, *Geranium sylvaticum*, *Alchemilla glabra* and *Filipendula ulmaria*, *Lathyrus pratensis* and *Leontodon hispidus*. A semi-circular flush at the base of the field adjoins a larger area in the meadow below and is dominated by *Juncus acutiflorus* with frequent *Caltha palustris, Cardamine pratensis* and *Galium palustre* and occasional *F. ulmaria*, *Dactylorhiza purpurella*, *Crepis paludosa*, *Geum rivale* and *Lychnis flos-cuculi*. A ditch in the south-western corner of the field also has frequent *Caltha palustris*. Negative species are largely confined to the field edges and include *Rumex obtusifolius*, *Cirsium vulgare*, *Urtica dioica* and *Anthriscus sylvestris*.

The adjacent field, to the south, contains *Geranium sylvaticum*, *Viola tricolor, Alchemilla glabra*, *A. filiformis vestita* and *Lathyrus pratensis*.

The meadow shows strong affinities to MG3a (70.7) and MG6b (61.8). While there are clearly strong affinities to MG3 within the field, the very low cover of differential / preferential species is considered to make the vegetation a better fit to O'Reilly's (2011) MG6b-iii variant. The site is considered to be semi-improved, but is of relatively high quality and is a very good candidate for restoration to MG3b.

No previous data are available for this site.

SOILS	
Texture	Sandy loam
pH	6
Olsens P	13
Total N	0.48
K	236

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CONSULTANT ECOLOGISTS

NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	6	0	5	Poac	6	5	4	4	0	0
Agrostis stolonifera	0	23	0	Poac	7	6	7	6	0	1
Alchemilla glabra	0	1	0	Rosa	7	6	6	4	0	0
Alopecurus pratensis	2	0	1	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	4	2	15	Poac	7	6	4	3	0	-1
Cardamine pratensis	0	0	2	Bras	7	8	5	4	0	0
Cerastium fontanum	1	0	1	Cary	7	5	5	4	1	0
Cerastium glomeratum	0	2	0	Cary	7	5	6	5	1	0
Conopodium majus	2	0	1	Apia	6	5	5	5	0	-1
Cynosurus cristatus	18	0	10	Poac	7	5	6	4	0	0
Dactylis glomerata	1	2	1	Poac	7	5	7	6	0	0
Euphrasia officinalis agg.	7	2	5	Scro	8	5	5	3	0	-1
Festuca rubra	9	23	5	Poac	8	5	6	5	-1	0
Holcus lanatus	18	23	20	Poac	7	6	6	5	0	0
Lathyrus pratensis	3	0	0	Faba	7	6	6	5	1	0
Lolium perenne	0	3	0	Poac	8	5	6	6	0	0
Luzula campestris	1	0	0	Junc	7	4	5	2	1	-1
Myosotis discolor	1	0	0	Bora	7	5	5	3	1	-1
Plantago lanceolata	4	2	5	Plan	7	5	6	4	1	0
Poa trivialis	8	23	3	Poac	7	6	6	6	0	0
Prunella vulgaris	0	0	1	Lami	7	5	6	4	0	0
Ranunculus acris	22	3	5	Ranu	7	6	6	4	1	0
Ranunculus bulbosus	1	0	0	Ranu	7	4	7	4	0	0
Ranunculus repens	0	20	10	Ranu	6	7	6	7	0	1
Rhinanthus minor	3	0	0	Scro	7	5	6	4	0	0
Rumex acetosa	7	4	5	Poly	7	5	5	4	0	0
Taraxacum agg.	2	2	1	Aste	7	5	7	6	1	0
Trifolium pratense	0	0	3	Faba	7	5	7	5	1	0
Trifolium repens	12	48	3	Faba	7	5	6	6	0	0
Trisetum flavescens	16	0	15	Poac	7	4	7	4	0	0
Veronica chamaedrys	2	2	3	Scro	6	5	6	5	1	-1

SUMMARY	
Total	31.00
Grass	11.00
Sedge	0.00
Rush	1.00
Forb	19.00
Herb cover	44%
LIGHT L	
Average	6.97
Min	6.00
Max	8.00
MOISTURE F	
Average	5.29
Min	4.00
Max	8.00
REACTION R	
Average	5.84
Min	4.00
Max	7.00
NITROGEN N	
Average	4.65
Min	2.00
Max	7.00
GRAZING GI	
Average	0.29
NUTRIENTS NI	
Average	-0.13

Site:	**714**
Area	**Weardale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**1B**

This site lies to the north of Westgate, in Weardale, at an altitude of 460m. The field has a gentle east-facing slope and is split roughly in half by a flushed area, which runs from east to west.

The sward is dense and dominated by *Holcus lanatus*, *Cynosurus cristatus* and *Festuca rubra* with *Anthoxanthum odoratum* and an unusually high abundance of *Trisetum flavescens* in places. Typical upland hay meadow axiophytes include constant *Rhinanthus minor*; frequent *Euphrasia officinalis agg.*; occasional *Conopodium majus* and rare *Alchemilla*. Negative species occur mainly at the field edges although *Anthriscus sylvestris* and *Rumex obtusifolius* occur at low frequency within the sward.

The flushed area is unmown and has poor-fen affinities with *Juncus effusus*, Dactylorhiza *purpurella, Lychnis flos-cuculi*, *Carex disticha*, *Cardamine pratensis, Cochlearia officinalis* and large patches of *Urtica dioica*.

The meadow shows strong affinities to MG6b (61.4) and is considered to be a good fit to O'Reilly's (2011) MG6b-iii variant of this sub-community due to the high frequency, but low abundance, of typical axiophytes. The site is considered to be a semi-improved meadow of relatively high value and is a very good candidate for restoration to MG3.

No previous data are available for this site.

SOILS	
Texture	Sandy loam
pH	6.1
Olsens P	12
Total N	0.57
K	150

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CONSULTANT ECOLOGISTS

NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	10	5	2	Poac	6	5	4	4	0	0
Alopecurus pratensis	5	5	3	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	5	3	5	Poac	7	6	4	3	0	-1
Bellis perennis	2	3	3	Aste	8	5	6	4	1	0
Bromus hordeaceus	3	2	1	Poac	8	4	7	4	0	1
Cerastium fontanum	0	0	1	Cary	7	5	5	4	1	0
Cynosurus cristatus	15	10	15	Poac	7	5	6	4	0	0
Dactylis glomerata	0	2	0	Poac	7	5	7	6	0	0
Deschampsia cespitosa	0	1	1	Poac	6	6	5	4	0	0
Euphrasia officinalis agg.	1	2	1	Scro	8	5	5	3	0	-1
Festuca rubra	10	15	10	Poac	8	5	6	5	-1	0
Holcus lanatus	5	7	5	Poac	7	6	6	5	0	0
Lolium perenne	15	5	5	Poac	8	5	6	6	0	0
Montia fontana	1	0	1	Port	7	9	5	3	1	-1
Myosotis discolor	1	0	0	Bora	7	5	5	3	1	-1
Phleum pratense	5	5	7	Poac	8	5	7	6	1	0
Plantago lanceolata	3	3	2	Plan	7	5	6	4	1	0
Poa trivialis	15	15	15	Poac	7	6	6	6	0	0
Ranunculus acris	10	5	7	Ranu	7	6	6	4	1	0
Ranunculus repens	2	1	2	Ranu	6	7	6	7	0	1
Rhinanthus minor	2	1	2	Scro	7	5	6	4	0	0
Rumex acetosa	7	5	3	Poly	7	5	5	4	0	0
Taraxacum agg.	2	1	1	Aste	7	5	7	6	1	0
Trifolium dubium	2	4	3	Faba	7	4	6	5	0	0
Trifolium pratense	2	15	20	Faba	7	5	7	5	1	0
Trifolium repens	0	1	2	Faba	7	5	6	6	0	0
Trisetum flavescens	0	2	0	Poac	7	4	7	4	0	0
Veronica chamaedrys	0	1	0	Scro	6	5	6	5	1	-1

SUMMARY	
Total	28.00
Grass	13.00
Sedge	0.00
Rush	0.00
Forb	15.00
Herb cover	35%
LIGHT L	
Average	7.07
Min	6.00
Max	8.00
MOISTURE F	
Average	5.29
Min	4.00
Max	9.00
REACTION R	
Average	5.86
Min	4.00
Max	7.00
NITROGEN N	
Average	4.68
Min	3.00
Max	7.00
GRAZING GI	
Average	0.32
NUTRIENTS NI	
Average	-0.11

Site:	**715**
Area	**Weardale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**1B**

This site lies to the east of New House in Weardale at an altitude of 380m. The field is situated on a long gentle, south-west facing slope. The northern part of the meadow has a dense and grassy sward, while the southern area is finer and more herb-rich.

The northern part of the meadow has abundant *Lolium perenne* and *Holcus lanatus* with *Anthoxanthum odoratum* and *Alopecurus pratensis*. Few typical upland hay meadow axiophytes are present here and include only rare *Rhinanthus minor* and *Conopodium majus*. To the south, grass cover includes more abundant *Cynosurus cristatus* and *A. odoratum* together with *L. perenne* and *H. lanatus*. Typical axiophytes are also more frequent, but never, constant, with *Rhinanthus minor, C. majus, Euphrasia officinalis agg.*, and *Leontodon autumnalis* all frequent to occasional. Negative species occur at low frequency and include *Anthriscus sylvestris*, *Rumex obtusifolius* and *Urtica dioica*.

The site shows strong affinities to MG6b (71.5). Taken as a whole the vegetation is considered to be a good fit to O'Reilly's (2011) MG6b-ii, although the northern part of the field is quite close to MG7d. The meadow is considered to be semi-improved and of average quality, relative to other meadows within the same category.

A total of six years of data were available for analysis, with the baseline set as 1987. Overall, species richness decreased strongly over the period, from 23.8 species per 1x1m quadrat recorded in 1987, increasing to 26.6 in 1995, and then decreasing strongly to 16.3 species in 2012. Average Grazing Suited Species Scores decreased from 0.42 to 0.19 over the same period, indicating a loss of those species suited to high grazing intensity. Conversely, the proportional representation of those species tolerant to high nutrient availability increased from -0.3 (1987) to 0.03 (2012). Considering the ordination plots (Annex II), wide error bars for quadrats surveyed in 1987 indicate a highly variable site, encompassing all the variability found within later surveys. This suggests limited overall change in vegetation community composition through time, although it should be noted that some of this additional variability may result from a higher number of quadrats (10) sampled during earlier surveys was 10 quadrats as compared to just 3 in 2002 and 2012.

No management information was received for this site.

SOILS	
Texture	Sandy loam
pH	5.7
Olsens P	13
Total N	0.61
K	126

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CONSULTANT ECOLOGISTS

NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	10	5	5	Poac	6	5	4	4	0	0
Alopecurus pratensis	2	0	0	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	2	15	10	Poac	7	6	4	3	0	-1
Anthriscus sylvestris	1	0	0	Apia	6	5	7	7	-1	1
Bellis perennis	0	2	1	Aste	8	5	6	4	1	0
Bromus hordeaceus	2	2	1	Poac	8	4	7	4	0	1
Cerastium fontanum	1	1	1	Cary	7	5	5	4	1	0
Conopodium majus	0	2	0	Apia	6	5	5	5	0	-1
Cynosurus cristatus	5	15	15	Poac	7	5	6	4	0	0
Dactylis glomerata	0	0	2	Poac	7	5	7	6	0	0
Festuca rubra	0	3	2	Poac	8	5	6	5	-1	0
Holcus lanatus	30	10	20	Poac	7	6	6	5	0	0
Lolium perenne	15	10	15	Poac	8	5	6	6	0	0
Myosotis discolor	0	1	0	Bora	7	5	5	3	1	-1
Plantago lanceolata	1	10	0	Plan	7	5	6	4	1	0
Poa trivialis	15	5	10	Poac	7	6	6	6	0	0
Ranunculus acris	0	10	7	Ranu	7	6	6	4	1	0
Ranunculus repens	2	3	7	Ranu	6	7	6	7	0	1
Rhinanthus minor	0	5	0	Scro	7	5	6	4	0	0
Rumex acetosa	10	5	10	Poly	7	5	5	4	0	0
Taraxacum agg.	0	3	0	Aste	7	5	7	6	1	0
Trifolium pratense	0	5	2	Faba	7	5	7	5	1	0
Trifolium repens	2	0	1	Faba	7	5	6	6	0	0

SUMMARY	
Total	23.00
Grass	10.00
Sedge	0.00
Rush	0.00
Forb	13.00
Herb cover	29%
LIGHT L	
Average	7.00
Min	6.00
Max	8.00
MOISTURE F	
Average	5.22
Min	4.00
Max	7.00
REACTION R	
Average	5.87
Min	4.00
Max	7.00
NITROGEN N	
Average	4.91
Min	3.00
Max	7.00
GRAZING GI	
Average	0.22
NUTRIENTS NI	
Average	0.00

Site:	**716**
Area	**Teesdale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**2A**

This site lies to the north-west of Ettersgill in Teesdale, at an altitude of 470m. The field slopes gently northwards, becoming steeper above a stream, at its northern edge.

Grass cover within the field comprises *Anthoxanthum odoratum, Agrostis stolonifera, Alopecurus pratensis, Cynosurus cristatus* and *Holcus lanatus*, although in some areas *Carex nigra* contributes very high cover. Typical upland hay meadow axiophytes include constant *Euphrasia officinalis agg.* and *Rhinanthus minor* with frequent *Caltha palustris, Leontodon autumnalis* and, very notably *Trollius europaeus*. Other, more scattered species included *Succisa pratensis*, *Lychnis flos-cuculi*, *Ajuga reptans*, *Achillea ptarmica*, *Lychnis flos-cuculi*. *Carex flacca, C. caryophyllea* and *Saxifraga granulata*. Negative species were almost entirely restricted to the edges where they were rare; *Urtica dioica* and *Anthriscus* were recorded. The north-western corner, and western edge, of the field have a poorer sward with fewer herbs and comparatively more negative species. A small species-rich bank adjacent to the bank, on the eastern edge of the field, supports *Lotus corniculatus*, *Potentilla erecta* and *Nardus stricta* in addition to many of the species present in the meadow.

The site shows strong affinities to MG8 (59.1) and based on O'Reilly's (2011) description it is tentatively placed into his unimproved MG8n category. This is primarily due to the high frequency of *Trollius europaeus,* together with a wide range of more common upland hay meadow axiophytes. The soil chemistry data are also in accordance with what might be expected within a long-established unimproved meadow. The classification is tentative because, other than *Rhinanthus* and *Euphrasia,* the additional species are perhaps of quite low abundance for an unimproved sward. Nevertheless, the meadow feature and additional unimproved bank are considered to be of very high quality.

Six years data were available for analysis, with the baseline year set at 1987. In 1987, 16 species were recorded across all 10 quadrats, compared to 2012 when 23 species were recorded across just 3 quadrats. Overall species richness, therefore, appears to have increased, but the small error bars shown on the ordination plot (Annex II) suggest that the quadrats were more homogeneous in 2012.

No demonstrable difference was observed in the average Grazing Suited Species Scores through time. However, a slight increase in stress-tolerant species was reflected in the average Nutrient Availability Suited Species Scores. The site has been part pasture, part hay meadow in the past, with the farmer reporting grazing only 3 times in the past decade. This could explain elevated variability in the early data as some quadrats may have been located in hay meadow while others were in pasture.

SOILS	
Texture	Sandy loam
pH	5.7
Olsens P	9
Total N	1.01
K	139

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CONSULTANT ECOLOGISTS

NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	3	2	0	Poac	6	5	4	4	0	0
Anthoxanthum odoratum	7	3	20	Poac	7	6	4	3	0	-1
Caltha palustris	9	2	0	Ranu	7	9	6	4	0	-1
Cardamine pratensis	2	0	0	Bras	7	8	5	4	0	0
Carex caryophyllea	0	0	5	Cype	7	4	7	2	-1	-1
Carex flacca	0	0	5	Cype	7	5	6	2	0	-1
Carex nigra	50	22	10	Cype	7	8	4	2	0	-1
Carex panicea	2	0	0	Cype	8	8	4	2	1	-1
Cerastium fontanum	0	1	0	Cary	7	5	5	4	1	0
Cynosurus cristatus	7	3	20	Poac	7	5	6	4	0	0
Deschampsia cespitosa	2	1	2	Poac	6	6	5	4	0	0
Equisetum palustre	2	0	0	Equi	7	8	6	3	1	-1
Euphrasia officinalis agg.	4	3	5	Scro	8	5	5	3	0	-1
Festuca rubra	3	3	5	Poac	8	5	6	5	-1	0
Holcus lanatus	3	3	2	Poac	7	6	6	5	0	0
Juncus acutiflorus	0	15	0	Junc	8	8	4	2	0	-1
Leontodon autumnalis	2	2	3	Aste	8	6	6	4	1	0
Luzula campestris	2	1	2	Junc	7	4	5	2	1	-1
Montia fontana	2	0	3	Port	7	9	5	3	1	-1
Myosotis discolor	0	1	3	Bora	7	5	5	3	1	-1
Myosotis laxa	2	0	3	Bora	7	9	6	5	0	1
Plantago lanceolata	0	1	0	Plan	7	5	6	4	1	0
Poa annua	1	0	0	Poac	7	5	6	7	0	1
Poa trivialis	2	0	5	Poac	7	6	6	6	0	0
Prunella vulgaris	0	2	2	Lami	7	5	6	4	0	0
Ranunculus acris	12	5	10	Ranu	7	6	6	4	1	0
Ranunculus repens	2	5	0	Ranu	6	7	6	7	0	1
Rhinanthus minor	6	8	3	Scro	7	5	6	4	0	0
Rumex acetosa	3	2	2	Poly	7	5	5	4	0	0
Sagina procumbens	3	0	0	Cary	7	6	6	5	0	0
Silene flos-cuculi	0	1	1	Cary	7	9	6	4	0	0
Succisa pratensis	0	0	5	Dips	7	7	5	2	1	-1
Taraxacum agg.	0	0	1	Aste	7	5	7	6	1	0
Trifolium dubium	0	0	2	Faba	7	4	6	5	0	0
Trifolium pratense	2	2	2	Faba	7	5	7	5	1	0
Trifolium repens	2	2	0	Faba	7	5	6	6	0	0
Trollius europaeus	2	0	2	Ranu	7	7	6	4	-1	0

SUMMARY	
Total	37.00
Grass	8.00
Sedge	4.00
Rush	2.00
Forb	23.00
Herb cover	40%
LIGHT L	
Average	7.05
Min	6.00
Max	8.00
MOISTURE F	
Average	6.11
Min	4.00
Max	9.00
REACTION R	
Average	5.57
Min	4.00
Max	7.00
NITROGEN N	
Average	3.97
Min	2.00
Max	7.00
GRAZING GI	
Average	0.24
NUTRIENTS NI	
Average	-0.27

Site:	**717**
Area	**Teesdale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**2A**

This site lies to the south-west of Middle Side in Teesdale, at an altitude of 300m. The field has a southerly aspect and a moderate slope to the north, steepening to 1 in 4 below a flushed area in the middle of the field. The site is part of Middle Side and Stonygill Meadows Site of Special Scientific Interest. The site lies within the Middle Side & Stonygill Meadows Site of Special Scientific Interest.

Grass cover comprises *Anthoxanthum odoratum*, *Cynosurus cristatus* and *Festuca rubra* with *Alopecurus pratensis* and *Avenula pubescens* making a contribution. Herb cover is generally very high (56% overall) with *Rhinanthus minor* and *Euphrasia officinalis agg.* constant and very frequent *Alchemilla spp.* (*A. glabra*, *A. xanthochlora* and, unconfirmed, *A. monticola*); frequent *Geranium sylvaticum, Filipendula ulmaria* and *Conopodium majus*; occasional *Sanguisorba officinalis, Lathyrus pratensis* and scattered *Centaurea nigra* and *Leontodon autumnalis*. *Persicaria bistorta* is locally frequent, particularly to the south of the flushed area. The field edges are rougher but very herb-rich with many MG3b species including dominant *F. ulmaria* and with *Cirsium heterophyllum* in at least one locality. The flushed area in the middle of the field supports *Caltha palustris*, *Lychnis flos-cuculi*, *Carex nigra*, *Juncus acutiflorus*, *Carex panicea*, *Carex leporina* and *Lathyrus linifolius*. Negative indicators are generally of minimal cover, although the western edge of the field is dominated by *Alopecurus pratensis*, with frequent *Anthriscus sylvestris*, possibly due to a combination of shading and localised manuring by sheltering stock in spring. At the time of the survey (June 2012) rebuilding of the wall, and associated vehicle movements, had caused some damage to the field-edge vegetation on the eastern side of the field. A small disturbed area, associated with a feeding station, was present to the north of the meadow.

This is an outstanding meadow representing the MG3 vegetation community. The sampled vegetation shows strong affinities to both MG3a (70.8) and MG3b (65.6) and is considered to be right on the cusp between both of these sub-communities. It is missing some typical species of the latter community (e.g. *Leucanthemum vulgare*) or they are present at low frequency (e.g. *Centaurea nigra, Persicaria bistorta*) and there is a suggestion of modest improvement, through a more grass dominated sward at the northern and western edges of the field. However, the soil chemistry data are in support of the majority of the field being unimproved and it is therefore considered possible the meadow is naturally less rich in species than MG3b stands. It could thus be considered to be an unimproved example of the MG3a sub community and is nevertheless of very high quality.

Seven years of data were available for analysis, with the baseline set at 1987. Overall, species richness increased from 19.3 in 1987 to a peak of 26.5 (1995) then declined to 24 in 2012. The ordination plot (Annex II) suggests that, although little directional change in the vegetation community has occurred, the site has become more homogeneous across the study period, but this may be due to higher sampling effort in earlier studies (e.g. 10 quadrats in 1987 as compared to just 3 in 2002 and 2012). No demonstrable change in the average Grazing Suited Species Scores was shown between 1987 and 2012, but they did peak in 1995.

The management information provided related to this and site 604. Prior to the past 5 years, the land was managed by the predecessor for 4 decades, but the current farmer believes no fertiliser or lime has ever been added, only farmyard manure. Overall the site has been improving in upland hay meadow characteristics and moved away from negative species.

SOILS	
Texture	Sandy loam
pH	5.6
Olsens P	9
Total N	0.66
K	103

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CONSULTANT ECOLOGISTS

NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	3	2	10	Poac	6	5	4	4	0	0
Alchemilla filicaulis ssp vestita	2	0	0	Rosa	8	6	6	3	0	-1
Alchemilla xanthochlora	2	0	0	Rosa	6	5	6	4	1	0
Anthoxanthum odoratum	8	3	12	Poac	7	6	4	3	0	-1
Avenula pubescens	0	0	8	Poac	7	4	7	3	1	-1
Bromus hordeaceus	0	1	0	Poac	8	4	7	4	0	1
Cerastium fontanum	1	1	2	Cary	7	5	5	4	1	0
Conopodium majus	1	0	5	Apia	6	5	5	5	0	-1
Cynosurus cristatus	13	2	10	Poac	7	5	6	4	0	0
Dactylis glomerata	6	12	2	Poac	7	5	7	6	0	0
Euphrasia officinalis agg.	1	2	3	Scro	8	5	5	3	0	-1
Festuca rubra	12	13	10	Poac	8	5	6	5	-1	0
Filipendula ulmaria	0	27	0	Rosa	7	8	6	5	-1	0
Geranium sylvaticum	0	1	1	Gera	6	5	6	5	0	0
Heracleum sphondylium	0	2	0	Apia	7	5	7	7	0	1
Holcus lanatus	15	15	5	Poac	7	6	6	5	0	0
Hypochaeris radicata	2	1	2	Aste	8	4	5	3	0	-1
Lolium perenne	1	2	0	Poac	8	5	6	6	0	0
Myosotis discolor	0	1	0	Bora	7	5	5	3	1	-1
Plantago lanceolata	22	32	10	Plan	7	5	6	4	1	0
Poa trivialis	8	2	0	Poac	7	6	6	6	0	0
Ranunculus acris	2	3	5	Ranu	7	6	6	4	1	0
Ranunculus bulbosus	2	2	1	Ranu	7	4	7	4	0	0
Rhinanthus minor	2	6	3	Scro	7	5	6	4	0	0
Rumex acetosa	3	3	2	Poly	7	5	5	4	0	0
Sanguisorba officinalis	28	1	25	Rosa	7	7	6	5	0	0
Taraxacum agg.	1	1	1	Aste	7	5	7	6	1	0
Trifolium dubium	0	1	0	Faba	7	4	6	5	0	0
Trifolium pratense	2	2	5	Faba	7	5	7	5	1	0
Trifolium repens	3	2	0	Faba	7	5	6	6	0	0
Trisetum flavescens	3	3	0	Poac	7	4	7	4	0	0
Veronica chamaedrys	2	0	0	Scro	6	5	6	5	1	-1

SUMMARY	
Total	32.00
Grass	11.00
Sedge	0.00
Rush	0.00
Forb	21.00
Herb cover	56%
LIGHT L	
Average	7.03
Min	6.00
Max	8.00
MOISTURE F	
Average	5.13
Min	4.00
Max	8.00
REACTION R	
Average	5.94
Min	4.00
Max	7.00
NITROGEN N	
Average	4.50
Min	3.00
Max	7.00
GRAZING GI	
Average	0.22
NUTRIENTS NI	
Average	-0.19

Site:	**718**
Area	**Upper Teesdale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**1B**

This site lies to the south of Langdon Beck, at an altitude of 360m. The field has a southerly aspect and a gentle slope to the north-east, steepening above the Harwood Beck. The site forms part of Upper Teesdale Site of Special Scientific Interest.

The vegetation comprises *Anthoxanthum odoratum, Cynosurus cristatus, Festuca rubra, Holcus lanatus* and *Lolium perenne* with prominent *Plantago lanceolata, Rumex acetosa* and *Trifolium pratense*. Typical upland hay meadow axiophytes include constant *Rhinanthus minor*; frequent *Euphrasia officinalis agg.* and *Conopodium majus*; occasional *Leontodon autumnalis* and *Filipendula ulmaria*; and rare *Centaurea nigra, Cirsium heterophyllum, Geranium sylvaticum, Sanguisorba officinalis* and *Succisa pratensis*. The steeper lower slope of the meadow is dominated by *Juncus acutiflorus* and supports *Caltha palustris*, *Ajuga reptans*, *Alchemilla glabra, Sanguisorba officinalis*, *Dactylorhiza purpurella*, *D. fuchsii, Lychnis flos-cuculi*, *Succisa pratensis* and *Gymnadenia conopsea*. Negative species are confined to the field boundaries and include *Urtica dioica*, *Heracleum sphondylium*, *Rumex obtusifolius*, *Anthriscus sylvestris* and *Juncus effusus*. Occasional droppings and signs of grazing suggests a small population of rabbits is present.

The majority of the vegetation shows strong affinities to MG3a (68.9) and MG6b (66.4). Although relatively rich in axiophytes, the general lack of preferentials for the former community is problematic and the vegetation is perhaps better regarded as a rich form of MG6b. The general herb-richness of the community and high frequency of *R. minor, C. majus* and *E. officinalis agg.* suggests a good fit to O'Reilly's (2011) MG6b-iii variant. The damper area on the steepest part of the slope, with *J. acutiflorus* and *C. palustris*, shows strong affinities to MG8 and is referable to O'Reilly's MG8+/n in variants. The majority of the meadow is therefore considered to be semi-improved and of relatively high quality. The damper areas are considered to have undergone less improvement and are of a higher quality.

Seven years of data were available for analysis, with the baseline set at 1987. Overall, species richness increased from 20.2 in 1987 to 25 in 2012 despite a decrease in numbers of quadrats from 10 to 3 over this period. The average Grazing Suited Species Scores decreased slightly from 0.4 (1987) to 0.3 (2012), indicating a slight loss in the proportion of species suited to high levels of grazing intensity. By contrast, nutrient tolerant species became slightly more abundant over the same period.

Considering the ordination plot (Annex II), minor changes in vegetation community composition are visible but appear to cycle around within the natural variability of the site with all years' data lie with in original error bars.

No farmer questionnaire was returned hence management information is not available for this site.

SOILS	
Texture	Sandy loam
pH	5.4
Olsens P	12
Total N	0.59
K	123

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CONSULTANT ECOLOGISTS

NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Achillea millefolium	2	0	0	Aste	7	5	6	4	0	0
Agrostis capillaris	5	5	5	Poac	6	5	4	4	0	0
Alopecurus pratensis	0	1	3	Poac	7	5	6	7	0	0
Anemone nemorosa	0	0	2	Ranu	5	6	5	4	0	-1
Anthoxanthum odoratum	20	25	30	Poac	7	6	4	3	0	-1
Bellis perennis	1	3	2	Aste	8	5	6	4	1	0
Bromus hordeaceus	0	2	3	Poac	8	4	7	4	0	1
Cerastium fontanum	3	3	2	Cary	7	5	5	4	1	0
Cerastium glomeratum	1	0	0	Cary	7	5	6	5	1	0
Conopodium majus	3	3	3	Apia	6	5	5	5	0	-1
Cynosurus cristatus	20	25	20	Poac	7	5	6	4	0	0
Dactylis glomerata	0	3	2	Poac	7	5	7	6	0	0
Euphrasia officinalis agg.	3	2	3	Scro	8	5	5	3	0	-1
Festuca pratensis	0	0	3	Poac	7	6	6	6	0	0
Festuca rubra	10	5	0	Poac	8	5	6	5	-1	0
Holcus lanatus	5	10	0	Poac	7	6	6	5	0	0
Holcus mollis	0	0	3	Poac	6	6	3	3	1	0
Hypochaeris radicata	0	5	0	Aste	8	4	5	3	0	-1
Leontodon hispidus	0	1	0	Aste	8	4	7	3	0	-1
Lolium perenne	2	3	10	Poac	8	5	6	6	0	0
Luzula campestris	3	0	0	Junc	7	4	5	2	1	-1
Montia fontana	0	1	3	Port	7	9	5	3	1	-1
Myosotis discolor	1	0	3	Bora	7	5	5	3	1	-1
Myosotis laxa	2	2	0	Bora	7	9	6	5	0	1
Plantago lanceolata	10	10	10	Plan	7	5	6	4	1	0
Poa trivialis	3	1	2	Poac	7	6	6	6	0	0
Prunella vulgaris	0	3	0	Lami	7	5	6	4	0	0
Ranunculus acris	3	3	5	Ranu	7	6	6	4	1	0
Ranunculus bulbosus	0	1	0	Ranu	7	4	7	4	0	0
Ranunculus repens	0	0	3	Ranu	6	7	6	7	0	1
Rhinanthus minor	5	5	3	Scro	7	5	6	4	0	0
Rumex acetosa	5	5	5	Poly	7	5	5	4	0	0
Taraxacum agg.	0	1	0	Aste	7	5	7	6	1	0
Trifolium pratense	5	3	3	Faba	7	5	7	5	1	0
Trifolium repens	3	3	3	Faba	7	5	6	6	0	0
Trisetum flavescens	0	1	0	Poac	7	4	7	4	0	0
Veronica chamaedrys	2	0	0	Scro	6	5	6	5	1	-1

SUMMARY	
Total	37.00
Grass	13.00
Sedge	0.00
Rush	1.00
Forb	23.00
Herb cover	39%
LIGHT L	
Average	7.00
Min	5.00
Max	8.00
MOISTURE F	
Average	5.30
Min	4.00
Max	9.00
REACTION R	
Average	5.76
Min	3.00
Max	7.00
NITROGEN N	
Average	4.43
Min	2.00
Max	7.00
GRAZING GI	
Average	0.30
NUTRIENTS NI	
Average	-0.19

Site:	**719**
Area	**Teesdale**
HLS options + supplements	**HK7**
Former ESA tier	**2A**

When the site was visited in late June 2012, it was being used as sheep pasture. The short sward with few obvious surviving axiophytes (except rare *Rhinanthus minor* and *Conopodium majus* in ungrazed patches around *Cirsium* spp.) suggested that it had been managed in this way for a considerable length of time. The site was not surveyed in 2012.

SOILS	
Texture	n/a
pH	n/a
Olsens P	n/a
Total N	n/a
K	n/a

Site:	**720**
Area	**Teesdale**
HLS options + supplements	**HK7**
Former ESA tier	**2A**

This site lies adjacent to Harwood Beck in Upper Teesdale, at an altitude of 420m. The field comprises a shallow north-east facing slope, with damp soils, a steep flushed bank and a small level terrace above the beck. The variety of slope angles and water movement in a north-easterly direction has lead to the development of several vegetation communities. Three sheep were grazing the site at the time of the survey (June 2012). The site is part of Upper Teesdale Site of Special Scientific Interest.

Vegetation on the shallow slope is characterised by *Holcus lanatus, Deschampsia cespitosa* and *Anthoxanthum odoratum* with patches of *Juncus acutiflorus* and typical axiophytes including constant *Caltha palustris*, with frequent to occasional *Carex nigra, Euphrasia officinalis agg., Lychnis flos-cuculi, Ajuga reptans* and *Lathyrus pratensis*. The flat terrace by Harwood Beck is poorer in typical upland hay meadow axiophytes with species restricted to frequent to occasional *Conopodium majus, E officinalis agg.* and *Alchemilla*. Negative species are rare, with a small amount of *Cirsium arvense* present.

The steep bank close to the northern edge of the field is flushed from the meadow above and supports very species-rich vegetation including *Trollius europaeus, Geranium sylvaticum, Persicaria vivipara, Alchemilla glabra, Trifolium medium, Valeriana dioica, Anemone nemorosa, Succisa pratensis, Briza media, Carex panicea, Carex flacca, Linum catharticum, Leontodon hispidus, Potentilla erecta, Viola tricolor, Rhinanthus minor, Achillea ptarmica, Centaurea nigra, Dactylorhiza purpurella, Geum rivale, Caltha palustris* and *Filipendula ulmaria*.

Vegetation on the shallow slope, which comprises the majority of the site, shows strong affinities to MG8 (56.7) and is considered to be a good fit to O'Reilly's MG8o (2011) variant of this community. The terrace above Harwood Beck shows strong affinities to MG6b (66.1) and is considered to be a good fit to O'Reilly's MG6b-ii variant. The hay meadow feature of the site is considered to be semi-improved and of relatively average quality. The steep bank close to the northern edge of the site is unimproved and of very high quality.

Four years of data were available for analysis, with the baseline year set at 1987. Overall, species richness per 1x1m quadrat decreased from 20.2 in 1987 to 18.7 in 2012. The proportion of grazing tolerant species scores remained static at 0.3 between 1987 and 2012, with limited variation in the intervening years. By contrast, the average Nutrient Availability Suited Species Scores decreased from -0.09 in 1987 to -0.3 in 2012. In combination with a reduced overall species richness, this suggests that the proportion of those species suited to high levels of nutrient availability has declined. The ordination plot (Annex II) shows relatively little movement in vegetation composition from the 1987 baseline. The farmer questionnaire indicates that no lime, farmyard manure or inorganic fertiliser is used, and a decrease in yield and increase in rushes has been noted over time.

SOILS	
Texture	Sandy loam
pH	5.4
Olsens P	0.13
Total N	0.71
K	147

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Achillea millefolium	0	0	5	Aste	7	5	6	4	0	0
Agrostis canina	0	3	0	Poac	7	6	3	3	0	-1
Agrostis capillaris	0	0	2	Poac	6	5	4	4	0	0
Ajuga reptans	0	3	0	Lami	5	7	5	5	0	0
Anthoxanthum odoratum	3	5	25	Poac	7	6	4	3	0	-1
Bellis perennis	3	0	0	Aste	8	5	6	4	1	0
Caltha palustris	8	2	0	Ranu	7	9	6	4	0	-1
Cardamine pratensis	2	0	0	Bras	7	8	5	4	0	0
Carex nigra	75	0	0	Cype	7	8	4	2	0	-1
Carex panicea	0	3	0	Cype	8	8	4	2	1	-1
Cerastium fontanum	0	2	3	Cary	7	5	5	4	1	0
Conopodium majus	0	0	3	Apia	6	5	5	5	0	-1
Cynosurus cristatus	0	3	3	Poac	7	5	6	4	0	0
Dactylis glomerata	1	0	0	Poac	7	5	7	6	0	0
Deschampsia cespitosa	3	10	0	Poac	6	6	5	4	0	0
Equisetum palustre	3	1	0	Equi	7	8	6	3	1	-1
Euphrasia officinalis agg.	1	0	5	Scro	8	5	5	3	0	-1
Festuca rubra	0	0	25	Poac	8	5	6	5	-1	0
Holcus lanatus	3	20	10	Poac	7	6	6	5	0	0
Juncus acutiflorus	0	30	0	Junc	8	8	4	2	0	-1
Lathyrus pratensis	0	1	0	Faba	7	6	6	5	1	0
Leontodon autumnalis	0	1	1	Aste	8	6	6	4	1	0
Lolium perenne	0	0	2	Poac	8	5	6	6	0	0
Luzula campestris	0	3	5	Junc	7	4	5	2	1	-1
Montia fontana	3	0	0	Port	7	9	5	3	1	-1
Myosotis laxa	0	1	0	Bora	7	9	6	5	0	1
Nardus stricta	0	1	0	Poac	7	7	3	2	1	-1
Phleum pratense	0	0	1	Poac	8	5	7	6	1	0
Plantago lanceolata	0	2	1	Plan	7	5	6	4	1	0
Poa trivialis	3	0	1	Poac	7	6	6	6	0	0
Ranunculus acris	3	10	3	Ranu	7	6	6	4	1	0
Ranunculus repens	0	8	1	Ranu	6	7	6	7	0	1
Rumex acetosa	0	3	10	Poly	7	5	5	4	0	0
Silene flos-cuculi	3	0	0	Cary	7	9	6	4	0	0
Trifolium repens	3	3	3	Faba	7	5	6	6	0	0

SUMMARY	
Total	35.00
Grass	12.00
Sedge	2.00
Rush	2.00
Forb	19.00
Herb cover	30%
LIGHT L	
Average	7.06
Min	5.00
Max	8.00
MOISTURE F	
Average	6.26
Min	4.00
Max	9.00
REACTION R	
Average	5.34
Min	3.00
Max	7.00
NITROGEN N	
Average	4.11
Min	2.00
Max	7.00
GRAZING GI	
Average	0.31
NUTRIENTS NI	
Average	-0.29

Site:	**721**
Area	**Teesdale**
HLS options + supplements	**HK7**
Former ESA tier	**1B**

This site lies adjacent to Harwood Beck in Upper Teesdale, at an altitude of 420m. The site has a southerly aspect and is relatively flat. The site is part of Upper Teesdale Site of Special Scientific Interest.

Grass cover comprises *Holcus mollis, Holcus lanatus, Lolium perenne, Anthoxanthum odoratum* and *Cynosurus cristatus*. The site is rich in typical upland hay meadow axiophytes including constant *Rhinanthus minor* and an unusually high frequency of *Persicaria bistorta* and frequent *Filipendula ulmaria, Geranium sylvaticum* and occasional *Conopodium majus, Euphrasia officinalis* and scattered *Lathyrus pratensis, Centaurea nigra, Leontodon autumnalis, Caltha palustris* and *Carex nigra*. Some of the wetter areas of the site have abundant *Juncus acutiflorus*. Negative indicators include frequent *Anthriscus sylvestris* and scattered *Heracleum sphondylium* and *Rumex crispus*.

The site has strong affinities to MG3a (58.1) and MG6b (57.9). Although few MG3 preferential / differential species occurred in the samples taken, the site is tentatively regarded as MG3a due to the relatively high frequency of *G. sylvaticum* observed on the RCA walk and the high frequency of *Persicaria bistorta*. The vegetation is considered to be representative of more semi-improved MG3 meadows but is nevertheless considered to be of high quality and is a very good candidate for restoration to MG3b.

Six years of vegetation data were available for analysis, with the baseline set at 1987. The ordination plot (Annex II) indicates that vegetation community homogeneity increased from 1987 to 2012, with the subset of quadrats sampled in 2012 falling entirely within the variability recorded in 1987. Overall, species richness increased from 15.6 in 1987 to 22.7 in 2002, but declined to 18.7 in 2012. The proportional representation of grazing tolerant species slightly increased, which may account for the slight increase in overall species richness. By contrast, representation of nutrient tolerant species remains similar across all years.

A slight directional change in vegetation composition was observed in 2012 toward a selection of annual species (e.g. *Myosotis discolor, Cerastium fontanum*). O'Reilly (2011) suggests that this may occur due to standardised management under the ESA scheme: rigid cutting dates after annuals have set seed allows them to build up in the seed bank; cutting operations with machinery open up the sward to provide colonisation gaps; and grazing keeps competition down until the season when annuals start to grow. The farmer management information provides no indications of an additional change in management.

SOILS	
Texture	Sandy loam
pH	5.3
Olsens P	15
Total N	0.58
K	146

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CONSULTANT ECOLOGISTS

NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Achillea millefolium	1	0	0	Aste	7	5	6	4	0	0
Agrostis capillaris	0	3	0	Poac	6	5	4	4	0	0
Anthoxanthum odoratum	5	3	15	Poac	7	6	4	3	0	-1
Anthriscus sylvestris	2	0	0	Apia	6	5	7	7	-1	1
Bellis perennis	2	1	2	Aste	8	5	6	4	1	0
Bromus hordeaceus	5	0	2	Poac	8	4	7	4	0	1
Cerastium fontanum	2	1	1	Cary	7	5	5	4	1	0
Conopodium majus	0	1	0	Apia	6	5	5	5	0	-1
Cynosurus cristatus	5	0	5	Poac	7	5	6	4	0	0
Dactylis glomerata	3	0	0	Poac	7	5	7	6	0	0
Euphrasia officinalis agg.	1	0	0	Scro	8	5	5	3	0	-1
Festuca pratensis	0	0	1	Poac	7	6	6	6	0	0
Filipendula ulmaria	0	1	1	Rosa	7	8	6	5	-1	0
Heracleum sphondylium	1	0	0	Apia	7	5	7	7	0	1
Holcus lanatus	10	3	15	Poac	7	6	6	5	0	0
Holcus mollis	40	40	0	Poac	6	6	3	3	1	0
Lolium perenne	5	3	15	Poac	8	5	6	6	0	0
Montia fontana	3	0	0	Port	7	9	5	3	1	-1
Myosotis discolor	0	0	1	Bora	7	5	5	3	1	-1
Persicaria bistorta	0	45	45	Poly	6	7	6	6	0	0
Plantago lanceolata	3	0	0	Plan	7	5	6	4	1	0
Poa trivialis	3	3	3	Poac	7	6	6	6	0	0
Ranunculus acris	5	3	3	Ranu	7	6	6	4	1	0
Ranunculus repens	10	5	5	Ranu	6	7	6	7	0	1
Rhinanthus minor	3	0	0	Scro	7	5	6	4	0	0
Rumex acetosa	5	3	3	Poly	7	5	5	4	0	0
Trifolium pratense	3	0	2	Faba	7	5	7	5	1	0
Trifolium repens	0	1	3	Faba	7	5	6	6	0	0

SUMMARY	
Total	28.00
Grass	10.00
Sedge	0.00
Rush	0.00
Forb	18.00
Herb cover	47%
LIGHT L	
Average	6.93
Min	6.00
Max	8.00
MOISTURE F	
Average	5.57
Min	4.00
Max	9.00
REACTION R	
Average	5.71
Min	3.00
Max	7.00
NITROGEN N	
Average	4.71
Min	3.00
Max	7.00
GRAZING GI	
Average	0.21
NUTRIENTS NI	
Average	-0.04

Site:	**722**
Area	**Teesdale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**2A**

This site lies below the edge of Langdon Common in Upper Teesdale, at an altitude of 470m. The field has a south-westerly aspect and moderate overall slope. The field contains a shake-hole. The site forms part of Upper Teesdale Site of Special Scientific Interest.

This is quite a heterogeneous field containing both damp and freely draining areas which support slightly different vegetation communities. Grass cover throughout comprises a mixture of *Agrostis capillaris, Anthoxanthum odoratum, Cynosurus cristatus, Festuca rubra* and *Holcus lanatus*. There are a wide range of typical upland hay meadow axiophytes present including constant *Alchemilla spp.* (*A. glabra* and *A. xanthochlora*), *Euphrasia officinalis* agg. and *Rhinanthus minor*. The damper areas of the field have *Caltha palustris, Carex nigra* and very occasional *Achillea ptarmica*, *Crepis paludosa* and *Trollius europaeus*. Drier parts of the field are characterised by the presence of *Conopodium majus* and occasionally *T. europaeus,* with very scattered *Potentilla erecta* and *Centaurea nigra*. Scattered through both communities are *Leontodon autumnalis* and *L. hispidus*. Other very locally distributed species of interest include *Dactylorhiza purpurella*, *Neottia ovata*, *Viola tricolor*, *Lychnis flos-cuculi*, *Briza media*. Negative species are generally rare within the sward although *Cirsium arvense, Urtica dioica* and *Rumex crispus* are occasional at the field edges.

The wetter parts of the site show strong affinities to MG8 (58.6), while the drier areas, without *Caltha,* show affinities to MG3a (64.5) and MG6b (64.0). The wetter areas are considered to be referable to O'Reilly's (2011) MG8+, possibly at the richer end of this category. Although the drier areas have no *Geranium sylvaticum* they are tentatively considered to be MG3a due to the high frequency of other axiophytes (most notably *Alchemilla spp.*) and the presence of *T. europaeus*.

Six years of data were available for analysis, with the baseline year set as 1987. A demonstrable increase in species richness was observed from 15.4 in 1987 to a peak of 25.7 in 2002 and 23.7 in 2012. The proportional representation of grazing tolerant declined from an average Grazing Suited Species Score of 0.4 in 1987 to 0.2 in 2012, which may also account for the increased overall species richness over this period. The proportional representation of nutrient tolerant species also decreased slightly over this same period. Considering the ordination plot (Annex II), overall, the community appears to have remained broadly static, with all current samples falling within the variability shown for the 1987 baseline. However, a stronger alliance to positive species for upland hay meadows (i.e. nutrient and grazing intolerant species) is visible for latter years. It should be noted that the variability noted across individual years may be an artefact of the number of quadrats sampled in each year. Specifically, the sward was found to be very variable in years where 10 quadrats were taken, whereas in 1992 (5 quadrats) and 2002 (3) and 2012 (3), error bars (and therefore variability across quadrats) are small. Because this field is a very variable, more of this variety is represented when sampling intensity is greater, and the differences do not relate to a decrease in variability of the sward.

The farmer reported that the field has not been limed for 5 years, but farmyard manure is applied in a light dressing annually. They also noted the field is yielding less year on year.

SOILS	
Texture	Sandy loam
pH	5.7
Olsens P	13
Total N	0.66
K	147

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CONSULTANT ECOLOGISTS

NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis canina	0	1	0	Poac	7	6	3	3	0	-1
Agrostis capillaris	20	12	5	Poac	6	5	4	4	0	0
Alchemilla glabra	0	5	0	Rosa	7	6	6	4	0	0
Alopecurus pratensis	0	1	0	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	30	20	5	Poac	7	6	4	3	0	-1
Avenula pubescens	1	0	0	Poac	7	4	7	3	1	-1
Bellis perennis	2	1	0	Aste	8	5	6	4	1	0
Caltha palustris	0	20	0	Ranu	7	9	6	4	0	-1
Carex nigra	0	2	0	Cype	7	8	4	2	0	-1
Cerastium fontanum	2	3	3	Cary	7	5	5	4	1	0
Conopodium majus	0	0	1	Apia	6	5	5	5	0	-1
Cynosurus cristatus	5	9	20	Poac	7	5	6	4	0	0
Dactylis glomerata	3	0	1	Poac	7	5	7	6	0	0
Euphrasia officinalis agg.	2	0	3	Scro	8	5	5	3	0	-1
Festuca rubra	15	8	15	Poac	8	5	6	5	-1	0
Holcus lanatus	5	5	15	Poac	7	6	6	5	0	0
Juncus acutiflorus	0	1	0	Junc	8	8	4	2	0	-1
Leontodon autumnalis	0	1	0	Aste	8	6	6	4	1	0
Lolium perenne	0	3	0	Poac	8	5	6	6	0	0
Luzula campestris	2	0	0	Junc	7	4	5	2	1	-1
Myosotis discolor	0	1	0	Bora	7	5	5	3	1	-1
Plantago lanceolata	3	0	3	Plan	7	5	6	4	1	0
Poa pratensis	1	0	0	Poac	7	5	6	5	0	0
Poa trivialis	3	3	1	Poac	7	6	6	6	0	0
Prunella vulgaris	3	0	0	Lami	7	5	6	4	0	0
Ranunculus acris	3	3	3	Ranu	7	6	6	4	1	0
Ranunculus bulbosus	1	0	1	Ranu	7	4	7	4	0	0
Ranunculus repens	15	25	15	Ranu	6	7	6	7	0	1
Rhinanthus minor	1	1	1	Scro	7	5	6	4	0	0
Rumex acetosa	3	3	0	Poly	7	5	5	4	0	0
Taraxacum agg.	1	1	<4	Aste	7	5	7	6	1	0
Trifolium pratense	2	0	2	Faba	7	5	7	5	1	0
Trifolium repens	3	3	3	Faba	7	5	6	6	0	0
Trisetum flavescens	2	0	1	Poac	7	4	7	4	0	0
Trollius europaeus	0	0	2	Ranu	7	7	6	4	-1	0
Veronica chamaedrys	3	0	3	Scro	6	5	6	5	1	-1

SUMMARY	
Total	36.00
Grass	13.00
Sedge	1.00
Rush	2.00
Forb	20.00
Herb cover	41%
LIGHT L	
Average	7.06
Min	6.00
Max	8.00
MOISTURE F	
Average	5.47
Min	4.00
Max	9.00
REACTION R	
Average	5.69
Min	3.00
Max	7.00
NITROGEN N	
Average	4.31
Min	2.00
Max	7.00
GRAZING GI	
Average	0.25
NUTRIENTS NI	
Average	-0.28

Site:	**723**
Area	**Teesdale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**1B**

This site lies to the south-west of Langdon Beck in Upper Teesdale, at an altitude of 380m. The field is adjacent to the Harwood Beck and is relatively flat, with a south-westerly aspect. The site boundaries were not stock proof at the time of the survey (June 2012) and there was evidence of recent grazing by rabbits and livestock.

The field comprises a species-poor former pasture and an unmown bank to the north. The pasture has few upland hay meadow axiophytes except scattered *Conopodium majus* and frequent negative species, including *Rumex crispus*, *Cirsium arvense, C. vulgare* and *Heracleum sphondylium*. Localised wet areas at the foot of the bank are dominated by *Juncus acutiflorus* with *Carex disticha, Filipendula ulmaria* and *Lychnis flos-cuculi*. The bank at the northern edge of the site is more species-rich with *Centaurea nigra*, *Sanguisorba officinalis*, *Geranium sylvaticum, Cirsium heterophyllum, Lathyrus pratensis* and *Rhinanthus minor*.

The mown area shows affinities to both MG10a (50.0) and also to MG8 (48.1) as *Caltha palustris* was recorded two of the samples. As the overall frequency of *Caltha* was low it might be better to regard the vegetation as MG10a. The field is considered to be semi-improved and of relatively low quality. The bank at the northern edge of the site is unimproved and of high quality.

Six years of data were available from this site, with the baseline year set at 1987. Considering community changes through time (ordination plots presented in Annex II), overall homogeneity increased. This could, however, be an artefact of the numbers of quadrats sampled, from 10 quadrats in 1987 to just 3 in 2012. The 2012 data appears to be a subset of 1987, and is very similar to that displayed for 2002. Overall, species richness remained largely consistent between 1987 (16) and 2012 (15), with a peak of 20.4 in 1992. A distinct decline in the proportional representation of grazing tolerant species was seen from an average Grazing Suited Species Score of 0.37 in 1987 to 0.16 in 2012, which would tie-in with former management as a pasture. The proportion of nutrient tolerant species has gradually decreased over time from -0.03 in 1987 to 0.07 in 2012. The farmer questionnaire suggests that the field has not been limed for 5 years, but was last dosed with NPK inorganic fertiliser in 2010 which may explain the slight increasing trend for nutrient tolerant species. However, overall levels of N and P in the soils are low to moderate. Minor changes have occurred across the whole site, with increases in *Poa trivialis* probably allied to the NPK application in 2010.

SOILS	
Texture	Sandy loam
pH	5.4
Olsens P	17
Total N	0.53
K	163

Penny Anderson Associates Ltd
CONSULTANT ECOLOGISTS

NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis stolonifera	3	0	5	Poac	7	6	7	6	0	1
Alopecurus geniculatus	0	0	5	Poac	8	7	6	6	0	1
Anthoxanthum odoratum	2	0	3	Poac	7	6	4	3	0	-1
Bromus hordeaceus	0	3	0	Poac	8	4	7	4	0	1
Caltha palustris	20	0	1	Ranu	7	9	6	4	0	-1
Carex disticha	3	0	0	Cype	7	8	6	4	1	0
Cerastium fontanum	0	2	3	Cary	7	5	5	4	1	0
Cynosurus cristatus	0	0	20	Poac	7	5	6	4	0	0
Dactylis glomerata	3	0	0	Poac	7	5	7	6	0	0
Galium uliginosum	2	0	0	Rubi	7	9	6	4	0	-1
Glyceria fluitans	0	0	20	Poac	7	10	6	6	-1	1
Holcus lanatus	3	3	1	Poac	7	6	6	5	0	0
Holcus mollis	0	50	0	Poac	6	6	3	3	1	0
Juncus acutiflorus	70	0	10	Junc	8	8	4	2	0	-1
Lolium perenne	1	10	3	Poac	8	5	6	6	0	0
Montia fontana	3	3	0	Port	7	9	5	3	1	-1
Myosotis laxa	1	0	0	Bora	7	9	6	5	0	1
Poa trivialis	2	10	3	Poac	7	6	6	6	0	0
Ranunculus acris	0	0	2	Ranu	7	6	6	4	1	0
Ranunculus repens	5	20	15	Ranu	6	7	6	7	0	1
Rumex acetosa	0	5	3	Poly	7	5	5	4	0	0
Rumex crispus	1	3	0	Poly	8	6	7	6	0	1
Schedonorus arundinacea	1	0	0	Poac	8	6	7	6	0	0
Stellaria alsine	2	0	3	Cary	7	8	5	5	0	0
Trifolium repens	3	0	5	Faba	7	5	6	6	0	0

SUMMARY	
Total	25.00
Grass	12.00
Sedge	1.00
Rush	1.00
Forb	11.00
Herb cover	30%
LIGHT L	
Average	7.16
Min	6.00
Max	8.00
MOISTURE F	
Average	6.64
Min	4.00
Max	10.00
REACTION R	
Average	5.76
Min	3.00
Max	7.00
NITROGEN N	
Average	4.76
Min	2.00
Max	7.00
GRAZING GI	
Average	0.16
NUTRIENTS NI	
Average	0.08

Site:	**724**
Area	**Teesdale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**1B**

This site is located to the south-east of Langdon Beck in Teesdale, at an altitude of 380m, and lies within the Upper Teesdale Site of Special Scientific Interest. The field comprises a damp convex slope, with a raised drier area at its eastern edge and some wet unmown areas at its north-eastern and south-eastern corners.

The meadow has abundant *Anthoxanthum odoratum* and *Cynosurus cristatus* with a good range of typical upland hay meadow axiophytes including constant *Rhinanthus minor;* very frequent *Filipendula ulmaria* and *Euphrasia officinalis agg.*; frequent *Conopodium majus, Leontodon autumnalis* and *Centaurea nigra*; and occasional to scarce *Anemone nemorosa, Geranium sylvaticum, Succisa pratensis* and *Alchemilla glabra.* The low-lying north-western part of the meadow, and the unmown areas at the eastern edge of the field, support *Caltha palustris, Ajuga reptans* and *Dactylorhiza purpurella*. The field margins here support *Crepis paludosa*. Other species on the drier banks include *Viola tricolor* ssp *tricolor*, *Lathyrus linifolius*, *Neottia ovata Dactylorhiza fuchsii*, Negative species are concentrated around the field barn and include *Heracleum sphondylium, Anthriscus sylvestris* and *Rumex crispus*.

The sampled vegetation (the drier, more southerly area of the site) shows strong affinities to MG3a (70.0) and is considered to also conform well to the definition of the community in O'Reilly (2011). The wetter lower lying areas (not sampled) are likely to conform to one of the more specie-rich MG8 variants. The low levels of soil phosphorus and improvement indicator species and species richness and diversity suggests this field is either unimproved or has had very little improvement and is therefore considered to be of high quality.

Three years of data were available for analysis, with the baseline year set at 1987. Overall, species richness per 1x1m quadrat decreased marginally from 25 in 1987 to 24 in 2012. The proportion of grazing tolerant species declined from an average Grazing Suited Species Score of 0.37 in 1987 to 0.24 in 2012. The proportion of species tolerant to high levels of nutrient availability increased slightly over the time period from an average Nutrient Availability Suited Species Score of -0.23 in 1987 to -0.15 in 1990, but subsequently decreased again to the original score of -0.23 in 2012. The ordination plot (Annex II) shows relatively little movement in vegetation composition through time, with all later data points falling within the variability shown for the baseline year. The farmer questionnaire indicates that the site has been in current management for 4 years. No lime and no farmyard manure has been used in recent years, but prior application levels and use of inorganic fertiliser are not known. Meadow provided a hay meadow seed source for enhancements elsewhere in the area in 2011.

SOILS	
Texture	Sandy loam
pH	5.5
Olsens P	12
Total N	0.39
K	137

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	0	1	3	Poac	6	5	4	4	0	0
Alchemilla xanthochlora	0	0	1	Rosa	6	5	6	4	1	0
Anthoxanthum odoratum	20	40	40	Poac	7	6	4	3	0	-1
Avenula pubescens	3	3	3	Poac	7	4	7	3	1	-1
Cardamine pratensis	0	1	0	Bras	7	8	5	4	0	0
Carex caryophyllea	3	0	0	Cype	7	4	7	2	-1	-1
Centaurea nigra	0	1	0	Aste	7	5	6	5	1	-1
Cerastium fontanum	2	2	0	Cary	7	5	5	4	1	0
Conopodium majus	3	0	5	Apia	6	5	5	5	0	-1
Cynosurus cristatus	15	10	5	Poac	7	5	6	4	0	0
Dactylis glomerata	2	2	<4	Poac	7	5	7	6	0	0
Euphrasia officinalis agg.	5	0	3	Scro	8	5	5	3	0	-1
Festuca rubra	5	10	10	Poac	8	5	6	5	-1	0
Geranium sylvaticum	3	0	0	Gera	6	5	6	5	0	0
Heracleum sphondylium	0	0	2	Apia	7	5	7	7	0	1
Holcus lanatus	3	5	10	Poac	7	6	6	5	0	0
Lathyrus pratensis	3	0	1	Faba	7	6	6	5	1	0
Leontodon hispidus	2	0	1	Aste	8	4	7	3	0	-1
Lolium perenne	0	0	3	Poac	8	5	6	6	0	0
Lotus corniculatus	5	0	0	Faba	7	4	6	2	0	-1
Luzula campestris	0	0	1	Junc	7	4	5	2	1	-1
Myosotis laxa	1	2	0	Bora	7	9	6	5	0	1
Plantago lanceolata	15	10	15	Plan	7	5	6	4	1	0
Poa trivialis	2	3	0	Poac	7	6	6	6	0	0
Prunella vulgaris	5	5	3	Lami	7	5	6	4	0	0
Ranunculus acris	3	5	3	Ranu	7	6	6	4	1	0
Ranunculus repens	0	0	2	Ranu	6	7	6	7	0	1
Rhinanthus minor	10	5	5	Scro	7	5	6	4	0	0
Rumex acetosa	5	3	5	Poly	7	5	5	4	0	0
Sanguisorba officinalis	5	0	0	Rosa	7	7	6	5	0	0
Trifolium pratense	3	2	3	Faba	7	5	7	5	1	0
Trifolium repens	2	5	3	Faba	7	5	6	6	0	0
Trisetum flavescens	0	0	3	Poac	7	4	7	4	0	0
Veronica chamaedrys	2	0	2	Scro	6	5	6	5	1	-1

SUMMARY	
Total	34.00
Grass	10.00
Sedge	1.00
Rush	1.00
Forb	22.00
Herb cover	45%
LIGHT L	
Average	6.94
Min	6.00
Max	8.00
MOISTURE F	
Average	5.29
Min	4.00
Max	9.00
REACTION R	
Average	5.91
Min	4.00
Max	7.00
NITROGEN N	
Average	4.41
Min	2.00
Max	7.00
GRAZING GI	
Average	0.24
NUTRIENTS NI	
Average	-0.21

Site:	**725**
Area	**Teesdale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**2A**

This site lies to the north of High Dike in Teesdale, at an altitude of 350m. The field slopes gently to the west. The field contained at least one lapwing nest with young chicks in 2012 and because of this, the survey had to be abandoned when bad weather moved in. Approximately half the RCA walk was completed and one sample of the vegetation was taken.

The field is a typical moderately species-rich meadow with constant *Trifolium pratense, Euphrasia officinalis* and *Rhinanthus minor*; very frequent *Conopodium majus* and occasional *Leontodon autumnalis*. Grass cover comprised *Agrostis capillaris*, *Anthoxanthum odoratum* and *Cynosurus cristatus*. Negative species were limited to occasional *Senecio jacobaea*. The relatively short sward is very suitable for ground-nesting waders.

Based on the limited information collected, the site shows strong affinities to MG6b (66.5) and accords well with O'Reilly's (2011) M6b-iii variant of this sub-community. The meadow is considered to be semi-improved, but of relatively high quality and is possibly a good candidate for restoration to MG3.

Four years of data were available for analysis, with the baseline set at 1992. It should be noted that a single quadrat was sampled in 2012, therefore, any conclusions should be generalisations only. Nevertheless, overall species richness was shown to increase from 17.4 species in 1992 to 24 in 2002 but decreased slightly back to 18 species in 2012. Although the proportional representation of those species considered tolerant of high grazing intensity increased between 1992 and 2002, the average Grazing Suited Species Score decreased slightly from 0.37 in 1992 to 0.28 in 2012, indicating an increase in the proportion of grazing intolerant species within the sward. Over the same time period, the proportion of species suited to high levels of nutrient availability showed a slight increase, from an average Nutrient Suited Species Score of -0.02 in 1992 to –0.11 in 2012. Although conclusions relating to the change in vegetation composition for this site should be considered with caution, a clear directional movement is shown on the ordination plot (Annex II), with quadrats moving towards species considered more typical of improved grassland swards (i.e. *Lolium perenne*).

No management information has been provided for this site.

SOILS	
Texture	Sandy loam
pH	5
Olsens P	10
Total N	0.4
K	109

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	25	0	0	Poac	6	5	4	4	0	0
Alopecurus pratensis	2	0	0	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	10	0	0	Poac	7	6	4	3	0	-1
Bellis perennis	1	0	0	Aste	8	5	6	4	1	0
Cerastium fontanum	1	0	0	Cary	7	5	5	4	1	0
Cynosurus cristatus	15	0	0	Poac	7	5	6	4	0	0
Euphrasia officinalis agg.	3	0	0	Scro	8	5	5	3	0	-1
Festuca rubra	10	0	0	Poac	8	5	6	5	-1	0
Holcus lanatus	5	0	0	Poac	7	6	6	5	0	0
Lolium perenne	5	0	0	Poac	8	5	6	6	0	0
Plantago lanceolata	10	0	0	Plan	7	5	6	4	1	0
Ranunculus acris	8	0	0	Ranu	7	6	6	4	1	0
Rhinanthus minor	1	0	0	Scro	7	5	6	4	0	0
Rumex acetosa	2	0	0	Poly	7	5	5	4	0	0
Taraxacum agg.	1	0	0	Aste	7	5	7	6	1	0
Trifolium dubium	2	0	0	Faba	7	4	6	5	0	0
Trifolium pratense	3	0	0	Faba	7	5	7	5	1	0
Trifolium repens	4	0	0	Faba	7	5	6	6	0	0

SUMMARY	
Total	18.00
Grass	7.00
Sedge	0.00
Rush	0.00
Forb	11.00
Herb cover	33%
LIGHT L	
Average	7.17
Min	6.00
Max	8.00
MOISTURE F	
Average	5.11
Min	4.00
Max	6.00
REACTION R	
Average	5.72
Min	4.00
Max	7.00
NITROGEN N	
Average	4.61
Min	3.00
Max	7.00
GRAZING GI	
Average	0.28
NUTRIENTS NI	
Average	-0.11

Site:	**726**
Area	**Teesdale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**1B**

This site lies above the River Tees, north-west of Newbiggin in Teesdale, at an altitude of 270m. The field comprises two gentle convex slopes, one facing north-east and the other facing south-west, which meet to form a small ridge, roughly in the centre of the field. The site is part of Bowlees and Friar House Meadows Site of Special Scientific Interest.

Grass cover generally comprises *Lolium perenne* and *Cynosurus cristatus* with frequent *Anthoxanthum odoratum*. Three typical upland hay meadow axiophytes are constant throughout: *Conopodium majus*, *Euphrasia officinalis agg.* and *Rhinanthus minor*. The south-west facing slope in the western half of the meadow supports the most species-rich vegetation, with frequent *Alchemilla xanthochlora, A. glabra*, *Sanguisorba officinalis* and scarce *Geranium sylvaticum* in addition to the constant species. A more species-poor stand of vegetation occupies the corresponding north-west facing slope and has frequent *Cirsium arvense*.

The vegetation shows strong affinities to MG3a (70.7) and MG6b (64.4). The most species-rich area (not sampled) is considered to be referable to MG3a, due to the high frequency of *Alchemilla spp.* and presence of *Geranium sylvaticum*. However the vegetation of the rest of the field is less well defined and is considered to be a better fit to O'Reilly's (2011) MG6b-iii variant. The field is considered to be semi-improved and of high quality and is a very good candidate for restoration to MG3b.

A total of six years of data were available for analysis, with the baseline year set at 1987. Overall, species richness per 1x1m quadrat increased from 20.9 (1987) to 25 (2012), peaking at 22.3 in 2002, representing a 19.6% change. The proportion of grazing tolerant species changed little over the period with average Grazing Suited Species Scores of 0.31 (1987) and 0.22 (2012), indicating a slight increase in numbers of those species suited to low grazing intensity. Similarly, the proportion of nutrient tolerant species remained largely static, with scores of -0.2 (1987) and -0.1 (2012), demonstrating a slight increase in species suited to higher levels of nutrient availability, although the balance is still in favour of stress tolerant species. The ordination plot (Annex II) indicates the 1987 baseline was highly variable (10 quadrats in 1987 and 1990), with all subsequent years' data falling within this variation. It is considered that this is, at least partly, expected in view of the numbers of quadrats sampled (only 5 or 3). The lack of movement/change in vegetation composition from the 1987 baseline is most likely a reflection of the lack of change in management over this time period as confirmed by the farmer questionnaire. The farmer notes that the adjacent field has been a seed donor site for other farms in the past.

SOILS	
Texture	Sandy loam
pH	5.5
Olsens P	12
Total N	0.39
K	137

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CONSULTANT ECOLOGISTS

NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	5	3	0	Poac	6	5	4	4	0	0
Alopecurus pratensis	0	3	3	Poac	7	5	6	7	0	0
Anemone nemorosa	0	0	1	Ranu	5	6	5	4	0	-1
Anthoxanthum odoratum	5	10	5	Poac	7	6	4	3	0	-1
Bellis perennis	3	3	3	Aste	8	5	6	4	1	0
Bromus hordeaceus	15	0	5	Poac	8	4	7	4	0	1
Cerastium fontanum	3	3	3	Cary	7	5	5	4	1	0
Conopodium majus	3	3	0	Apia	6	5	5	5	0	-1
Cynosurus cristatus	20	10	20	Poac	7	5	6	4	0	0
Dactylis glomerata	3	3	3	Poac	7	5	7	6	0	0
Euphrasia officinalis agg.	3	5	0	Scro	8	5	5	3	0	-1
Festuca rubra	3	10	2	Poac	8	5	6	5	-1	0
Filipendula ulmaria	0	0	5	Rosa	7	8	6	5	-1	0
Holcus lanatus	5	5	3	Poac	7	6	6	5	0	0
Hypochaeris radicata	0	1	0	Aste	8	4	5	3	0	-1
Lathyrus pratensis	2	0	0	Faba	7	6	6	5	1	0
Lolium perenne	20	10	25	Poac	8	5	6	6	0	0
Myosotis discolor	1	2	0	Bora	7	5	5	3	1	-1
Phleum pratense	0	0	5	Poac	8	5	7	6	1	0
Plantago lanceolata	10	10	10	Plan	7	5	6	4	1	0
Poa trivialis	3	10	3	Poac	7	6	6	6	0	0
Prunella vulgaris	3	3	0	Lami	7	5	6	4	0	0
Ranunculus acris	3	10	10	Ranu	7	6	6	4	1	0
Ranunculus bulbosus	5	5	3	Ranu	7	4	7	4	0	0
Ranunculus repens	1	0	0	Ranu	6	7	6	7	0	1
Rhinanthus minor	3	10	5	Scro	7	5	6	4	0	0
Rumex acetosa	5	5	5	Poly	7	5	5	4	0	0
Taraxacum agg.	0	1	0	Aste	7	5	7	6	1	0
Trifolium dubium	3	3	0	Faba	7	4	6	5	0	0
Trifolium pratense	5	3	3	Faba	7	5	7	5	1	0
Trifolium repens	5	1	5	Faba	7	5	6	6	0	0
Trisetum flavescens	3	3	0	Poac	7	4	7	4	0	0
Vicia sepium	1	0	0	Faba	6	5	6	6	1	0

SUMMARY	
Total	33.00
Grass	12.00
Sedge	0.00
Rush	0.00
Forb	21.00
Herb cover	45%
LIGHT L	
Average	7.03
Min	5.00
Max	8.00
MOISTURE F	
Average	5.18
Min	4.00
Max	8.00
REACTION R	
Average	5.88
Min	4.00
Max	7.00
NITROGEN N	
Average	4.70
Min	3.00
Max	7.00
GRAZING GI	
Average	0.24
NUTRIENTS NI	
Average	-0.12

Site:	**727**
Area	**Teesdale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**1B**

This site lies to the north-west of Langdon Beck in Upper Teesdale, at an altitude of 470m. The field slopes steadily to the south- west and is adjacent to the B6277.

The sward comprises *Anthoxanthum odoratum, Cynosurus cristatus* and *Holcus* lanatus with locally frequent *Lolium* perenne. Upland hay meadow axiophytes are restricted to the more ubiquitous species including constant *Caltha palustris, Rhinanthus minor* and *Euphrasia officinalis agg.*, frequent *Leontodon autumnalis* and occasional *Alchemilla glabra*. *Trollius europaeus* is very local within the field. The negative indicators comprise occasional *Rumex crispus*.

The vegetation shows strong affinities to MG6b (64.7) and MG8 (64.1). Although only one of the 1m x 1m quadrats contained *Caltha* it was included within the 2m x 2m quadrat in an additional sample and recorded at all except 2 sample points on the RCA walk. The vegetation is therefore considered to most attributable to MG8, and is a good fit to O'Reilly's (2011) MG8+ variant of the community. The field is considered to be semi-improved, and of relatively high quality.

A total of six years data is available for the analysis, with the baseline year set as 1987. Total species richness per 1x1m quadrat has largely remained unchanged from 20.1 (1987), peaking at 24.1 (1995), to 20.7 (2012). Similarly, average Grazing Suited Species remained largely static from 0.38 (1987) to 0.30 (2012). By contrast, the proportion of nutrient tolerant species has decreased slightly from the 1987 baseline from 0 (1987) to -0.08 (2012). Considering the ordination plots (Annex II), the community variability within all subsequent years falls within that shown for the 1987 baseline, except for 2012. This indicates that some community-level changes have occurred at this site. The management information indicates that the ESA scheme ended and the HLS began in 2012, and with it a cessation in NPK fertiliser application – the farmer has commented on a reduction in crop yields since. Given that fertiliser use has likely only just ceased, it seems unlikely to be the cause of the movement in the vegetation seen. Perhaps the lower sampling intensity in 2012 has overemphasised differences in the sward.

SOILS	
Texture	Sandy loam
pH	5.8
Olsens P	12
Total N	0.89
K	142

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CONSULTANT ECOLOGISTS

NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	2	2	0	Poac	6	5	4	4	0	0
Alchemilla glabra	0	0	1	Rosa	7	6	6	4	0	0
Alopecurus geniculatus	2	0	0	Poac	8	7	6	6	0	1
Alopecurus pratensis	0	2	10	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	15	20	20	Poac	7	6	4	3	0	-1
Bellis perennis	5	5	0	Aste	8	5	6	4	1	0
Bromus hordeaceus	5	0	2	Poac	8	4	7	4	0	1
Caltha palustris	0	1	0	Ranu	7	9	6	4	0	-1
Cardamine pratensis	0	0	2	Bras	7	8	5	4	0	0
Cerastium fontanum	1	2	2	Cary	7	5	5	4	1	0
Cynosurus cristatus	10	20	30	Poac	7	5	6	4	0	0
Dactylis glomerata	0	15	0	Poac	7	5	7	6	0	0
Euphrasia officinalis agg.	1	5	2	Scro	8	5	5	3	0	-1
Festuca pratensis	0	2	0	Poac	7	6	6	6	0	0
Festuca rubra	3	5	0	Poac	8	5	6	5	-1	0
Holcus lanatus	10	10	20	Poac	7	6	6	5	0	0
Leontodon autumnalis	3	5	0	Aste	8	6	6	4	1	0
Lolium perenne	40	0	0	Poac	8	5	6	6	0	0
Montia fontana	0	2	3	Port	7	9	5	3	1	-1
Myosotis discolor	1	2	2	Bora	7	5	5	3	1	-1
Plantago lanceolata	3	5	0	Plan	7	5	6	4	1	0
Poa trivialis	0	0	10	Poac	7	6	6	6	0	0
Prunella vulgaris	0	0	1	Lami	7	5	6	4	0	0
Ranunculus acris	10	5	0	Ranu	7	6	6	4	1	0
Ranunculus repens	5	0	5	Ranu	6	7	6	7	0	1
Rhinanthus minor	2	15	0	Scro	7	5	6	4	0	0
Rumex acetosa	0	2	2	Poly	7	5	5	4	0	0
Rumex crispus	3	0	3	Poly	8	6	7	6	0	1
Taraxacum agg.	2	3	0	Aste	7	5	7	6	1	0
Trifolium pratense	3	2	2	Faba	7	5	7	5	1	0
Trifolium repens	2	2	5	Faba	7	5	6	6	0	0

SUMMARY	
Total	31.00
Grass	12.00
Sedge	0.00
Rush	0.00
Forb	19.00
Herb cover	33%
LIGHT L	
Average	7.19
Min	6.00
Max	8.00
MOISTURE F	
Average	5.71
Min	4.00
Max	9.00
REACTION R	
Average	5.84
Min	4.00
Max	7.00
NITROGEN N	
Average	4.68
Min	3.00
Max	7.00
GRAZING GI	
Average	0.26
NUTRIENTS NI	
Average	-0.03

Site:	**728**
Area	**Teesdale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**1B**

This lies to the east of Bowlees in Teesdale at an altitude of 270m. The field is a flat field with a relatively uniform open sward.

The sward comprises *Anthoxanthum odoratum, Cynosurus cristatus* and *Lolium perenne* with *Agrostis capillaris*, *Bromus hordeaceus* and *Holcus lanatus*. Upland hay meadow axiophytes are restricted to the more ubiquitous species including constant *Rhinanthus minor* and *Euphrasia officinalis agg*., occasional *Conopodium majus* and very local *Lathyrus pratensis*, *Anemone nemorosa* and *Alchemilla sp.* The field edges support a denser grass sward dominated by *Alopecurus pratensis* and *Dactylis glomerata* with occasional negative species including *Cirsium arvense*, *Cirsium vulgare*, *Anthriscus sylvestris* and *Urtica dioica*. The western edge of the field is shaded by planted trees and has abundant *Stellaria media.* The gateway into the eastern edge of the field supports *Potentilla anserina*, *Poa annua* and occasional *Digitalis purpurea* and *Geranium pratense*. Brown hare droppings were present in a number of locations.

The vegetation shows strong affinities to MG6b (67.3) and is considered to be representative of O'Reilly's (2011) MG6b-iii variant of this sub-community. The field is considered to be semi-improved and of relatively high quality and is a very good candidate for restoration to MG3.

Seven years of data are available for comparison, with the baseline year set at 1987. Overall, species richness remained largely static, moving from 17.3 (1987) to a peak of 22.9 (1995) and declining again to 18.3 (2012). The proportional representation of grazing tolerant species decreased slightly, demonstrated by a slight decline in average Grazing Suited Species Scores from 0.3 (1987) to 0.27 (2012). The proportion of nutrient tolerant species has not altered over the period. Considering the ordination plots (Annex II), data for 2012 is nested within the variability shown for 1987, indicating that, over the intervening 25 years, the vegetation has become more homogeneous. In addition, the data suggest a negative move in community composition toward more rank grass species such as *H. lanatus* and *Dactylis glomerata* since the original survey year. No farmer questionnaire was returned so management changes can not be considered.

SOILS	
Texture	Sandy loam
pH	5.3
Olsens P	23
Total N	0.5
K	112

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CONSULTANT ECOLOGISTS

NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	10	3	0	Poac	6	5	4	4	0	0
Agrostis stolonifera	0	0	10	Poac	7	6	7	6	0	1
Alopecurus pratensis	10	5	0	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	5	10	10	Poac	7	6	4	3	0	-1
Bellis perennis	0	0	1	Aste	8	5	6	4	1	0
Bromus hordeaceus	2	3	5	Poac	8	4	7	4	0	1
Cerastium fontanum	2	2	2	Cary	7	5	5	4	1	0
Cynosurus cristatus	5	10	5	Poac	7	5	6	4	0	0
Dactylis glomerata	0	2	3	Poac	7	5	7	6	0	0
Euphrasia officinalis agg.	5	2	3	Scro	8	5	5	3	0	-1
Festuca rubra	0	10	0	Poac	8	5	6	5	-1	0
Holcus lanatus	5	5	0	Poac	7	6	6	5	0	0
Holcus mollis	0	0	5	Poac	6	6	3	3	1	0
Lolium perenne	5	10	5	Poac	8	5	6	6	0	0
Myosotis discolor	0	0	2	Bora	7	5	5	3	1	-1
Phleum pratense	0	0	2	Poac	8	5	7	6	1	0
Plantago lanceolata	15	25	10	Plan	7	5	6	4	1	0
Poa trivialis	10	3	5	Poac	7	6	6	6	0	0
Ranunculus acris	15	10	20	Ranu	7	6	6	4	1	0
Ranunculus repens	8	0	0	Ranu	6	7	6	7	0	1
Rhinanthus minor	3	10	5	Scro	7	5	6	4	0	0
Rumex acetosa	4	5	5	Poly	7	5	5	4	0	0
Taraxacum agg.	0	2	0	Aste	7	5	7	6	1	0
Trifolium pratense	8	10	5	Faba	7	5	7	5	1	0
Trifolium repens	0	3	2	Faba	7	5	6	6	0	0
Veronica serpyllifolia	0	0	2	Scro	7	5	6	5	-1	0

SUMMARY	
Total	26.00
Grass	13.00
Sedge	0.00
Rush	0.00
Forb	13.00
Herb cover	53%
LIGHT L	
Average	7.12
Min	6.00
Max	8.00
MOISTURE F	
Average	5.27
Min	4.00
Max	7.00
REACTION R	
Average	5.81
Min	3.00
Max	7.00
NITROGEN N	
Average	4.77
Min	3.00
Max	7.00
GRAZING GI	
Average	0.27
NUTRIENTS NI	
Average	0.00

Site:	**729**
Area	**Teesdale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**2A**

This site lies to the south of the River Tees, between Holwick and Middleton-in-Teesdale, at an altitude of 250m. The field is flat and adjacent to the River. The field was in use as permanent pasture (June 2012) and for that reason was not surveyed.

SOILS	
Texture	n/a
pH	n/a
Olsens P	n/a
Total N	n/a
K	n/a

Site:	**730**
Area	**Teesdale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**2A**

This site lies to the south of the River Tees, between Holwick and Middleton-in-Teesdale, at an altitude of 250m. The field lies adjacent to the River Tees and is mostly flat, with a steep south-facing bank running along the southern edge of the meadow.

The vegetation is quite uniform and grassy apart from some localised *Juncus acutiflorus* dominated patches with *Caltha palustris*, *Filipendula ulmaria* and *Lychnis flos-cuculi*. In the majority of the meadow, grasses comprise *Anthoxanthum odoratum*, *Cynosurus cristatus, Lolium perenne* and *Poa trivialis*. Upland hay meadow axiophytes are restricted to the more ubiquitous species and include frequent *Rhinanthus minor*, *Euphrasia officinalis agg*., and *Conopodium majus* with scattered *Leontodon autumnalis* and *Filipendula ulmaria*. Negative species are generally rare and include scattered individuals of *Cirsium arvense*, *Rumex obtusifolius*, *Urtica dioica* and *Cirsium vulgare*. The steep bank at the southern edge of the site is dominated by *Pteridium aquilinum* and, towards the western edge, dense scrub. Open grassy areas further east support *Geranium sylvaticum* and *F. ulmaria*. A bank adjacent to the River has *Succisa pratensis* and locally frequent *Cirsium heterophyllum*.

The vegetation shows strong affinities to MG6b and is considered to accord with O'Reilly's MG6b-ii variant of this sub community, although typical axiophytes are of higher abundance compared to some other stands. The site is considered to be semi-improved and of moderate to high quality.

Six years of vegetation data are available for comparison, with the baseline year set as 1987 Overall, species richness increased from 14.4 (1987), peaking at 18.8 (1995), to 17 (2002 and 12). The proportion of grazing tolerant species has decreased across the period from an average Grazing Suited Species Score of 0.4 in 1987 to 0.1 in 2012, indicating an overall improvement in the quality of the sward. The proportion of species tolerant to high levels of nutrient availability has also decreased from 0.04 in 1987 to -0.03 in 2012, further confirmation of an improvement in the quality of the meadow. Considering the ordination plot (Annex II), the error bars for 2012 are outwith those for the 1987 baseline suggesting that the community has changed over the period. Other indications are that this change has been toward more grazing and nutrient intolerant species, favouring re-establishment of an upland hay meadow community.

No management information has been provided for this site.

SOILS	
Texture	Sandy loam
pH	6
Olsens P	9
Total N	0.49
K	134

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	15	15	15	Poac	6	5	4	4	0	0
Alopecurus pratensis	0	0	3	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	15	15	15	Poac	7	6	4	3	0	-1
Bellis perennis	0	2	0	Aste	8	5	6	4	1	0
Bromus hordeaceus	0	0	2	Poac	8	4	7	4	0	1
Cardamine pratensis	1	0	0	Bras	7	8	5	4	0	0
Cerastium fontanum	2	3	2	Cary	7	5	5	4	1	0
Conopodium majus	0	3	0	Apia	6	5	5	5	0	-1
Cynosurus cristatus	15	25	15	Poac	7	5	6	4	0	0
Euphrasia officinalis agg.	0	3	4	Scro	8	5	5	3	0	-1
Festuca rubra	15	5	2	Poac	8	5	6	5	-1	0
Holcus lanatus	15	5	15	Poac	7	6	6	5	0	0
Lolium perenne	15	15	20	Poac	8	5	6	6	0	0
Myosotis laxa	1	0	0	Bora	7	9	6	5	0	1
Plantago lanceolata	0	3	0	Plan	7	5	6	4	1	0
Poa trivialis	15	3	15	Poac	7	6	6	6	0	0
Ranunculus acris	27	5	10	Ranu	7	6	6	4	1	0
Ranunculus bulbosus	0	0	2	Ranu	7	4	7	4	0	0
Ranunculus repens	3	2	1	Ranu	6	7	6	7	0	1
Rhinanthus minor	0	3	2	Scro	7	5	6	4	0	0
Rumex acetosa	3	0	2	Poly	7	5	5	4	0	0
Taraxacum agg.	0	3	0	Aste	7	5	7	6	1	0
Trifolium pratense	0	1	0	Faba	7	5	7	5	1	0
Trifolium repens	0	3	24	Faba	7	5	6	6	0	0
Trisetum flavescens	0	0	3	Poac	7	4	7	4	0	0
Veronica chamaedrys	0	0	3	Scro	6	5	6	5	1	-1

SUMMARY	
Total	26.00
Grass	10.00
Sedge	0.00
Rush	0.00
Forb	16.00
Herb cover	29%
LIGHT L	
Average	7.04
Min	6.00
Max	8.00
MOISTURE F	
Average	5.38
Min	4.00
Max	9.00
REACTION R	
Average	5.85
Min	4.00
Max	7.00
NITROGEN N	
Average	4.69
Min	3.00
Max	7.00
GRAZING GI	
Average	0.23
NUTRIENTS NI	
Average	-0.04

Site:	**731**
Area	**Teesdale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**1B**

This site lies to the south of the River Tees, between Holwick and Middleton-in-Teesdale, at an altitude of 250m. The field is large and comprises a small hill (summit at 290m) with both north-easterly and south-westerly aspects and moderate slopes.

Despite the variety of topographical aspects the vegetation is relatively homogenous throughout, with grasses comprising *Anthoxanthum odoratum, Festuca rubra* and *Cynosurus cristatus* with *Lolium perenne* and *Holcus lanatus*. Upland hay meadow axiophytes are restricted to the more ubiquitous species and include very frequent *Conopodium majus, Rhinanthus minor* and *Euphrasia officinalis agg*. (the latter two quite abundant in places), with occasional *Leontodon autumnalis* and rare *Alchemilla glabra, Filipendula ulmaria* and *Alchemilla xanthochlora*. The field margins support *Sanguisorba officinalis* and *Geranium sylvaticum*. The bank at the eastern corner of the field has an attractive colony of *Viola tricolor* ssp. *curtisii*, as well as some *Geranium sylvaticum* and *Galium verum*. Negative indicators include scattered *Senecio jacobaea*, *Cirsium vulgare*, *Cirsium arvense* and *Urtica dioica*.

The vegetation shows strong affinities to MG3a (65.0) and MG6b (62.9). Due to the general lack of differential / preferential species for MG3a, but high frequency and abundance of the more catholic axiophytes, the vegetation is considered to be a good fit to O'Reilly's (2011) MG6b-iii variant. The site is considered to be semi-improved and of relatively high quality and is a very good candidate for restoration to MG3.

Six years of vegetation data are available for comparison, with the baseline set at 1987. Overall, species richness increased slightly from 19 in 1987 to a peak of 21 in 2012. The proportion of grazing tolerant species decreased in dominance over the period as shown by a decline in the average Grazing Suited Species Score from 0.39 (1987) to 0.23 (2012). Similarly, the proportion of nutrient tolerant species decreased within the sward, with average Nutrient Availability Suited Species Scores decreasing from 0.05 to -0.14 over the same period. These decreases suggest that stress-tolerant species are increasing in the sward, which is a broadly positive indicator for upland hay meadow vegetation. The 2012 community lies completely outwith the error bars for all previous years, further indicating an actual positive community change, although this may be due, at least in part, to a smaller number of quadrats sampled in this year as compared with the 1987 baseline.

No farmer questionnaire was returned for this site.

SOILS	
Texture	Sandy loam
pH	5.4
Olsens P	10
Total N	0.53
K	212

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	5	20	10	Poac	6	5	4	4	0	0
Anthoxanthum odoratum	30	0	15	Poac	7	6	4	3	0	-1
Cerastium fontanum	2	3	3	Cary	7	5	5	4	1	0
Conopodium majus	3	3	0	Apia	6	5	5	5	0	-1
Cynosurus cristatus	10	0	10	Poac	7	5	6	4	0	0
Dactylis glomerata	3	3	3	Poac	7	5	7	6	0	0
Euphrasia officinalis agg.	15	3	10	Scro	8	5	5	3	0	-1
Festuca rubra	10	10	5	Poac	8	5	6	5	-1	0
Holcus lanatus	10	10	10	Poac	7	6	6	5	0	0
Leontodon autumnalis	1	1	1	Aste	8	6	6	4	1	0
Leontodon hispidus	1	0	0	Aste	8	4	7	3	0	-1
Lolium perenne	5	5	5	Poac	8	5	6	6	0	0
Myosotis discolor	0	0	2	Bora	7	5	5	3	1	-1
Plantago lanceolata	5	7	5	Plan	7	5	6	4	1	0
Poa trivialis	3	3	5	Poac	7	6	6	6	0	0
Ranunculus acris	5	7	5	Ranu	7	6	6	4	1	0
Ranunculus bulbosus	3	3	3	Ranu	7	4	7	4	0	0
Ranunculus repens	0	0	1	Ranu	6	7	6	7	0	1
Rhinanthus minor	5	10	15	Scro	7	5	6	4	0	0
Rumex acetosa	5	0	0	Poly	7	5	5	4	0	0
Stellaria graminea	3	0	0	Cary	7	6	5	4	1	0
Taraxacum agg.	2	0	2	Aste	7	5	7	6	1	0
Trifolium dubium	0	0	3	Faba	7	4	6	5	0	0
Trifolium pratense	3	0	0	Faba	7	5	7	5	1	0
Trifolium repens	3	7	5	Faba	7	5	6	6	0	0
Trisetum flavescens	1	1	0	Poac	7	4	7	4	0	0
Veronica chamaedrys	2	0	0	Scro	6	5	6	5	1	-1

SUMMARY	
Total	27.00
Grass	9.00
Sedge	0.00
Rush	0.00
Forb	18.00
Herb cover	45%
LIGHT L	
Average	7.04
Min	6.00
Max	8.00
MOISTURE F	
Average	5.15
Min	4.00
Max	7.00
REACTION R	
Average	5.85
Min	4.00
Max	7.00
NITROGEN N	
Average	4.56
Min	3.00
Max	7.00
GRAZING GI	
Average	0.30
NUTRIENTS NI	
Average	-0.19

Site:	**732**
Area	**Teesdale**
HLS options + supplements	**HK7**
Former ESA tier	**1B**

This site lies adjacent to Holwick Lodge to the south of the River Tees, in Teesdale, at an altitude of 300m. The field comprises a mildly sloping north-east facing slope with various undulations.

The sward is dense and grass dominated and comprises abundant *Anthoxanthum odoratum, Festuca rubra, Holcus lanatus* and frequent *Cynosurus cristatus, Lolium perenne* and *Trisetum flavescens*. A good range of typical upland hay meadow axiophytes are present including very frequent *Conopodium majus, Lathyrus pratensis, Rhinanthus minor* and *Sanguisorba officinalis*; frequent *Filipendula ulmaria*, and *Euphrasia officinalis agg*., and occasional *Geranium sylvaticum* and *Alchemilla spp.* and *Leontodon autumnalis*. Negative species within the sward are scattered and occasional *Heracleum sphondylium*. The field edges are dominated by coarse grasses including *Dactylis glomerata, Alopecurus pratensis* with *Anthriscus sylvestris, Rumex crispus* and *Urtica dioica*. Other axiophytes also occur here including *Achillea millefolium*, *Geranium sylvaticum* and *Hyacinthoides non-scripta*.

The vegetation shows very strong affinities to MG3a (73.8) and to a lesser degree MG6b (65.4). It has been tentatively attributed to MG3a due to the frequency of *Sanguisorba officinalis*, an MG3 preferential, although it could equally be regarded as MG6b-iii (O'Reilly 2011). The field is considered to be semi-improved, but of relatively high quality, and is a very good candidate for more targeted restoration to MG3b.

A total of six years of data were available for analysis, with the baseline year set at 1987. Overall, species richness per 1x1m quadrat has increased from 20.4 (1987) to 22.3 (2012), peaking at 26.7 (2002). The proportion of grazing tolerant species decreased slightly as shown by an average Grazing Suited Species Score of 0.40 in 1987, decreasing to 0.24 by 2012. In combination with an overall increase in species richness, this may suggest that the numbers of grazing intolerant species has increased through time, although the bias is still towards those species with a tolerance for higher levels of grazing intensity (positive as opposed to negative average Grazing Suited Species Scores). The proportion of nutrient tolerant species also increased slightly over this period, with average Nutrient Availability Suited Species Scores decreasing from -0.07 (1987) to -0.1 (2012), with the bias towards those species suited to lower nutrient availability (negative Suited Species Scores). Considering the ordination plot (Annex II), wide error bars for the 1987 baseline indicate a heterogeneous site, with all subsequent quadrats falling within these limits of variability. However error bars for 2012 are much tighter and lie in the extreme lower right hand quadrant, indicating some movement of the vegetation away from the original baseline to the left of the graph. Management information indicates that inorganic fertiliser (NPK 20:10:10) has been used in the past (by previous farmer under ESA scheme) perhaps about 10 years ago, i.e. c. 2002.

SOILS	
Texture	Sandy loam
pH	5.5
Olsens P	13
Total N	0.67
K	258

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Achillea millefolium	0	0	3	Aste	7	5	6	4	0	0
Agrostis capillaris	15	3	5	Poac	6	5	4	4	0	0
Alchemilla glabra	2	0	0	Rosa	7	6	6	4	0	0
Alopecurus pratensis	0	2	0	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	15	3	20	Poac	7	6	4	3	0	-1
Avenula pubescens	0	2	0	Poac	7	4	7	3	1	-1
Bellis perennis	1	2	0	Aste	8	5	6	4	1	0
Bromus hordeaceus	0	1	3	Poac	8	4	7	4	0	1
Cerastium fontanum	0	2	0	Cary	7	5	5	4	1	0
Conopodium majus	0	4	4	Apia	6	5	5	5	0	-1
Cynosurus cristatus	10	16	5	Poac	7	5	6	4	0	0
Dactylis glomerata	2	14	3	Poac	7	5	7	6	0	0
Euphrasia officinalis agg.	0	2	1	Scro	8	5	5	3	0	-1
Festuca pratensis	3	0	0	Poac	7	6	6	6	0	0
Festuca rubra	0	16	20	Poac	8	5	6	5	-1	0
Holcus lanatus	15	17	25	Poac	7	6	6	5	0	0
Lathyrus pratensis	0	2	3	Faba	7	6	6	5	1	0
Lolium perenne	5	2	5	Poac	8	5	6	6	0	0
Plantago lanceolata	15	23	10	Plan	7	5	6	4	1	0
Poa trivialis	10	15	3	Poac	7	6	6	6	0	0
Ranunculus acris	7	8	4	Ranu	7	6	6	4	1	0
Ranunculus bulbosus	0	2	0	Ranu	7	4	7	4	0	0
Ranunculus repens	0	0	3	Ranu	6	7	6	7	0	1
Rhinanthus minor	2	2	0	Scro	7	5	6	4	0	0
Rumex acetosa	3	6	5	Poly	7	5	5	4	0	0
Sanguisorba officinalis	2	0	3	Rosa	7	7	6	5	0	0
Taraxacum agg.	0	0	1	Aste	7	5	7	6	1	0
Trifolium dubium	0	1	0	Faba	7	4	6	5	0	0
Trifolium pratense	8	7	0	Faba	7	5	7	5	1	0
Trifolium repens	3	20	3	Faba	7	5	6	6	0	0
Trisetum flavescens	2	3	3	Poac	7	4	7	4	0	0
Veronica chamaedrys	0	2	2	Scro	6	5	6	5	1	-1
Vicia sepium	0	0	2	Faba	6	5	6	6	1	0

SUMMARY	
Total	33.00
Grass	13.00
Sedge	0.00
Rush	0.00
Forb	20.00
Herb cover	39%
LIGHT L	
Average	7.00
Min	6.00
Max	8.00
MOISTURE F	
Average	5.18
Min	4.00
Max	7.00
REACTION R	
Average	5.97
Min	4.00
Max	7.00
NITROGEN N	
Average	4.76
Min	3.00
Max	7.00
GRAZING GI	
Average	0.27
NUTRIENTS NI	
Average	-0.09

Site:	**733**
Area	**Teesdale**
HLS options + supplements	**HK7**
Former ESA tier	**1B**

This site lies to the east of Holwick Lodge to the south of the River Tees, in Teesdale, at an altitude of 290m. The field comprises a steady east-facing slope with a lower-lying wet area at the southern edge.

This sward is quite productive, at approximately 0.5m in June, with generally low cover of typical upland hay meadow species. Grass cover principally comprises *Holcus lanatus* and *Poa trivialis* with *Anthoxanthum odoratum*, *Cynosurus cristatus*, *Festuca rubra* and *Alopecurus pratensis*. Cover of broadleaved plants is mainly provided by *Plantago lanceolata, Trifolium repens* and *Rumex acetosa*, although, where the sward is finer, *Conopodium majus, Rhinanthus minor*, *Euphrasia officinalis agg.* and *Sanguisorba officinalis* are frequent. A wet *Juncus acutiflorus* dominated area occurs along southern edge of the field and extends forwards the eastern field gate. This includes *Caltha palustris, Dactylorhiza purpurella, Dactylorhiza fuchsii*, *Lychnis flos-cuculi*, *Lathyrus pratensis*, *Helictotrichon pratensis*, *Filipendula ulmaria*, *Cardamine pratensis* and *Alchemilla glabra*. A few negative indicators occur in the field corners and including *Anthriscus sylvestris*, *Urtica dioica* and *Rumex obtusifolius*.

The vegetation shows strong affinities to MG3a (72.3) and MG6b (65.9). Due to the sparse distribution of axiophytes and their generally low cover the vegetation is considered to be more referable to O'Reilly's MG6b-iii variant rather than to MG3. The field is considered to be semi-improved, but of relatively high quality and a good candidate for targeted restoration to MG3.

Five years of data were available for analysis, with the baseline year set as 1987. Overall, species richness per 1x1m quadrat decreased slightly from 21.3 (1987) to 19.7 (2012). The proportion of grazing tolerant species remained constant at 0.3 between 1987 and 2012. The proportion of nutrient tolerant species, however, decreased slightly from -0.14 (1987) to -0.12 (2012), although the bias remains towards those species intolerant of high levels of nutrient availability (negative Suited Species Scores). The ordination plot (Annex II) shows relatively little movement in community composition, with all later quadrats falling within the variability shown for the 1987 baseline. Management information indicates that inorganic fertiliser (NPK 20:10:10) has been used in the past (by previous farmer under ESA scheme) perhaps about 10 years ago, i.e. c. 2002.

SOILS	
Texture	Sandy loam
pH	6.1
Olsens P	16
Total N	0.78
K	352

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	0	4	3	Poac	6	5	4	4	0	0
Alopecurus pratensis	0	0	5	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	5	4	10	Poac	7	6	4	3	0	-1
Bellis perennis	0	1	2	Aste	8	5	6	4	1	0
Cardamine pratensis	1	0	0	Bras	7	8	5	4	0	0
Carex nigra	3	0	0	Cype	7	8	4	2	0	-1
Cerastium fontanum	1	2	2	Cary	7	5	5	4	1	0
Conopodium majus	0	4	0	Apia	6	5	5	5	0	-1
Cynosurus cristatus	5	5	10	Poac	7	5	6	4	0	0
Dactylis glomerata	0	4	3	Poac	7	5	7	6	0	0
Euphrasia officinalis agg.	1	0	0	Scro	8	5	5	3	0	-1
Festuca rubra	0	15	5	Poac	8	5	6	5	-1	0
Holcus lanatus	15	47	10	Poac	7	6	6	5	0	0
Juncus acutiflorus	5	0	0	Junc	8	8	4	2	0	-1
Lathyrus pratensis	0	1	0	Faba	7	6	6	5	1	0
Leontodon autumnalis	1	0	0	Aste	8	6	6	4	1	0
Lolium perenne	5	0	5	Poac	8	5	6	6	0	0
Myosotis discolor	1	0	1	Bora	7	5	5	3	1	-1
Plantago lanceolata	5	22	10	Plan	7	5	6	4	1	0
Poa trivialis	50	22	30	Poac	7	6	6	6	0	0
Ranunculus acris	8	3	3	Ranu	7	6	6	4	1	0
Ranunculus bulbosus	0	2	0	Ranu	7	4	7	4	0	0
Ranunculus repens	3	0	5	Ranu	6	7	6	7	0	1
Rhinanthus minor	3	0	0	Scro	7	5	6	4	0	0
Rumex acetosa	3	12	5	Poly	7	5	5	4	0	0
Sanguisorba officinalis	3	2	1	Rosa	7	7	6	5	0	0
Trifolium pratense	3	3	0	Faba	7	5	7	5	1	0
Trifolium repens	12	6	3	Faba	7	5	6	6	0	0
Trisetum flavescens	3	4	1	Poac	7	4	7	4	0	0

SUMMARY	
Total	29.00
Grass	10.00
Sedge	1.00
Rush	1.00
Forb	17.00
Herb cover	32%
LIGHT L	
Average	7.10
Min	6.00
Max	8.00
MOISTURE F	
Average	5.59
Min	4.00
Max	8.00
REACTION R	
Average	5.66
Min	4.00
Max	7.00
NITROGEN N	
Average	4.45
Min	2.00
Max	7.00
GRAZING GI	
Average	0.24
NUTRIENTS NI	
Average	-0.17

Site:	**734**
Area	**Teesdale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**2A**

This site lies to the north-west of Herdship in Teesdale, at an altitude of 460m. The field slopes gently to the north-east and is adjacent to the Harwood Beck. It is part of Upper Teesdale Site of Special Scientific Interest. A recently constructed shed has resulted in the loss of a small part of the eastern edge of the field.

Grass cover mainly comprises *Cynosurus cristatus, Anthoxanthum odoratum* and *Lolium perenne* with locally abundant *Agrostis stolonifera* and *Poa trivialis*. A good range of typical upland hay meadow axiophytes is present although only three species, *Euphrasia officinalis agg., Rhinanthus minor* and *Caltha palustris,* are frequent. The remaining scattered species include *Alchemilla sp., Conopodium majus* and *Leontodon autumnalis*. Negative species were infrequent and include a patch of *Urtica dioica* in the south-eastern corner of the site. The sloping bank above the Harwood Beck holds greater interest than the hay meadow, perhaps hinting at a richer former composition. Axiophytes present here include *Geranium sylvaticum*, *Filipendula ulmaria*, *Alchemilla glabra*, *Centaurea nigra*, *Conopodium majus*, *Trifolium medium*, *Caltha palustris*, *Trollius europaeus* and *Lotus corniculatus*.

The vegetation within the majority of the hay meadow shows strong affinities to M6b (61.1) and MG8 (59.8). Due to the high frequency of *C. palustris*, it is considered to have stronger affinities to the latter community and is a good fit to O'Reilly's (2011) MG8+ variant. The terrace above the Harwood Beck shows affinities to MG7b (43.2). The majority of the field is considered to be semi-improved and of relatively high quality. The bank below the eastern edge of the meadow is considered to be unimproved and of high quality. The bank adjoins an area of improved grassland adjacent to the river.

Seven years of past data were available for comparison, with the baseline set as 1987. Overall, species richness remained constant between 1987 and 20012 at an average of 17.2 species per 1x1m quadrat, peaking at 23.4 (1995). The proportion of grazing and nutrient tolerant species respectively decreased from 0.36 (1987) to 0.13 (2012), and from 0.07 to -0.08 over the same period, indicating that stress-tolerant species have increased slightly within the sward. Considering the ordination plot, high variability was present in all years with 2012 nested within the variability of all other years – i.e. indicating little or no overall community change through time. An unknown perturbation between 1995 and 2002 caused a small amount of movement in the species composition of quadrats for this year, as shown also by a peak in species richness at this time. The community has since returned to the baseline state. The field entered ESA Tier 2 in 2009 but was in Tier 1 before this. It receives no farmyard manure under the new HLS scheme and has not been fertilised wince 2005. It was last limed in 2010, and has also had spot treatment for ragwort and docks. None of these events coincide with the postulated event to explain the atypical data point for 2002.

SOILS	
Texture	Sandy loam
pH	5.6
Olsens P	21
Total N	0.64
K	153

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	0	5	5	Poac	6	5	4	4	0	0
Agrostis stolonifera	3	50	0	Poac	7	6	7	6	0	1
Alopecurus geniculatus	0	0	2	Poac	8	7	6	6	0	1
Anthoxanthum odoratum	10	5	10	Poac	7	6	4	3	0	-1
Arrhenatherum elatius	0	5	0	Poac	7	5	7	7	-1	0
Bellis perennis	5	0	3	Aste	8	5	6	4	1	0
Bromus hordeaceus	1	0	0	Poac	8	4	7	4	0	1
Caltha palustris	30	0	20	Ranu	7	9	6	4	0	-1
Carex nigra	5	0	0	Cype	7	8	4	2	0	-1
Cerastium fontanum	0	0	1	Cary	7	5	5	4	1	0
Conopodium majus	0	2	0	Apia	6	5	5	5	0	-1
Cynosurus cristatus	5	0	15	Poac	7	5	6	4	0	0
Dactylis glomerata	0	1	15	Poac	7	5	7	6	0	0
Euphrasia officinalis agg.	1	0	2	Scro	8	5	5	3	0	-1
Festuca rubra	3	0	5	Poac	8	5	6	5	-1	0
Holcus lanatus	3	0	5	Poac	7	6	6	5	0	0
Leontodon autumnalis	0	0	1	Aste	8	6	6	4	1	0
Lolium perenne	10	5	10	Poac	8	5	6	6	0	0
Montia fontana	3	0	2	Port	7	9	5	3	1	-1
Myosotis laxa	3	0	0	Bora	7	9	6	5	0	1
Phleum pratense	0	1	0	Poac	8	5	7	6	1	0
Poa annua	0	0	5	Poac	7	5	6	7	0	1
Poa pratensis	0	3	0	Poac	7	5	6	5	0	0
Poa trivialis	0	20	5	Poac	7	6	6	6	0	0
Ranunculus acris	3	0	5	Ranu	7	6	6	4	1	0
Ranunculus repens	20	6	0	Ranu	6	7	6	7	0	1
Rhinanthus minor	2	0	2	Scro	7	5	6	4	0	0
Rumex acetosa	3	4	0	Poly	7	5	5	4	0	0
Sagina procumbens	3	0	0	Cary	7	6	6	5	0	0
Stellaria alsine	0	3	0	Cary	7	8	5	5	0	0
Trifolium repens	10	0	3	Faba	7	5	6	6	0	0
Veronica chamaedrys	0	3	0	Scro	6	5	6	5	1	-1

SUMMARY	
Total	32.00
Grass	15.00
Sedge	1.00
Rush	0.00
Forb	16.00
Herb cover	40%
LIGHT L	
Average	7.13
Min	6.00
Max	8.00
MOISTURE F	
Average	5.88
Min	4.00
Max	9.00
REACTION R	
Average	5.78
Min	4.00
Max	7.00
NITROGEN N	
Average	4.81
Min	2.00
Max	7.00
GRAZING GI	
Average	0.16
NUTRIENTS NI	
Average	-0.03

Site:	**735**
Area	**Teesdale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**2A**

This site lies to north of Forest-in-Teesdale, at an altitude of 460m. The field has a gentle slope and southerly aspect.

The sward is grass-dominated sward with *Anthoxanthum odoratum*, *Cynosurus cristatus*, *Holcus lanatus* and *Poa trivialis* the most prominent species. Typical upland hay meadow axiophytes include constant *Caltha palustris* and *Rhinanthus minor* with frequent *Euphrasia officinalis agg.* Negative indicator species within the field are restricted to very scattered *Rumex crispus*. The field edges are characterised by a denser grass sward, with *Alopecurus pratensis*, *Dactylis glomerata, Rumex obtusifolius, Anthriscus sylvestris* and *Urtica dioica*.

The vegetation shows strong affinities to MG6b (60.7) and MG8 (59.5). Due to the high frequency of *C. palustris* it is to referable to the latter community and a good fit to O'Reilly's (2011) MG8+ variant, due to the high frequency and cover of *R. minor* and overall high cover of herbs. The field is considered to be semi-improved and of relatively high quality.

A total of seven years of data were available for analysis, with the baseline year set as 1987. Overall, species richness across the 1x1m quadrats increased from 19.5 (1987), peaked at 25.1 (1990) to 21 (2012). The proportion of grazing tolerant species declined slightly, as shown by a decline in the average Grazing Suited Species Scores from 0.35 (1987) to 0.22 (2012), although the bias remains towards those species tolerant to higher levels of grazing (positive Suited Species Scores). For nutrient tolerant species, average Nutrient Availability Suited Species Scores decreased slightly from -0.08 to -0.14 indicating an increased dominance of stress tolerant species through time. Considering the ordination plots (Annex II), the wide error bars in 1987 (10 quadrats) encompass most of the variability seen across all quadrats in all years, but data for 2002 and 2012 (3 quadrats) are located right at the left hand extent of this variability suggesting some slight directional trend in community-level change. This could, however, be due to reduced sampling intensity in later years, as overall parameters indicate little change. Management information provided for this site indicates that lime and inorganic fertiliser were prohibited under the ESA agreement so only farmyard manure has been used, annually. Indeed the farmer does not think that inorganic fertiliser has ever been used at this site. Blocked drains have been maintained and spot treatment for weeds undertaken. Poor yields have been noted recently, but the field is cold and peaty.

SOILS	
Texture	Sandy Loam
pH	5.5
Olsens P	19
Total N	0.85
K	219

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	14	0	12	Poac	6	5	4	4	0	0
Agrostis stolonifera	0	0	10	Poac	7	6	7	6	0	1
Alopecurus pratensis	3	5	7	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	15	10	13	Poac	7	6	4	3	0	-1
Bellis perennis	0	0	1	Aste	8	5	6	4	1	0
Caltha palustris	0	30	10	Ranu	7	9	6	4	0	-1
Carex nigra	0	2	2	Cype	7	8	4	2	0	-1
Cerastium fontanum	2	2	2	Cary	7	5	5	4	1	0
Cerastium glomeratum	1	0	0	Cary	7	5	6	5	1	0
Cynosurus cristatus	18	25	15	Poac	7	5	6	4	0	0
Dactylis glomerata	0	1	0	Poac	7	5	7	6	0	0
Deschampsia cespitosa	0	0	2	Poac	6	6	5	4	0	0
Euphrasia officinalis agg.	0	3	1	Scro	8	5	5	3	0	-1
Festuca rubra	10	3	6	Poac	8	5	6	5	-1	0
Holcus lanatus	12	5	12	Poac	7	6	6	5	0	0
Lolium perenne	2	1	0	Poac	8	5	6	6	0	0
Montia fontana	1	0	1	Port	7	9	5	3	1	-1
Myosotis discolor	1	2	1	Bora	7	5	5	3	1	-1
Plantago lanceolata	2	3	0	Plan	7	5	6	4	1	0
Poa annua	1	0	1	Poac	7	5	6	7	0	1
Poa trivialis	3	5	1	Poac	7	6	6	6	0	0
Ranunculus acris	15	5	12	Ranu	7	6	6	4	1	0
Ranunculus repens	6	0	7	Ranu	6	7	6	7	0	1
Rhinanthus minor	9	5	6	Scro	7	5	6	4	0	0
Rumex acetosa	3	3	3	Poly	7	5	5	4	0	0
Trifolium pratense	0	5	2	Faba	7	5	7	5	1	0
Trifolium repens	20	1	6	Faba	7	5	6	6	0	0
Trisetum flavescens	0	2	0	Poac	7	4	7	4	0	0

SUMMARY	
Total	28.00
Grass	13.00
Sedge	1.00
Rush	0.00
Forb	14.00
Herb cover	44%
LIGHT L	
Average	7.04
Min	6.00
Max	8.00
MOISTURE F	
Average	5.64
Min	4.00
Max	9.00
REACTION R	
Average	5.71
Min	4.00
Max	7.00
NITROGEN N	
Average	4.61
Min	2.00
Max	7.00
GRAZING GI	
Average	0.25
NUTRIENTS NI	
Average	-0.11

Site:	**736**
Area	**Teesdale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**2A**

This site lies adjacent to Harwood Beck, to the west of Langdon Beck, in Teesdale at an altitude of 380m. The meadow slopes gently to the north-east, becoming flat adjacent to Harwood Beck.

The southern edge of the field is grass dominated with *Cynosurus cristatus, Anthoxanthum odoratum, Holcus lanatus* and *Agrostis stolonifera*. Typical upland hay meadow axiophytes here include constant *Caltha palustris* with rare *Conopodium majus* and *Euphrasia officinalis agg.* The lower meadow is slightly richer with frequent *Rhinanthus minor* and *Lathyrus pratensis* and occasional *Conopodium majus*. Negative species are concentrated at the edges of the field and include *Rumex crispus* and *Rumex obtusifolius*. Those within the sward comprise very scattered *Urtica dioica* and *Anthriscus sylvestris*. The bank separating the upper and lower meadows is species-rich and supports *Trollius europaeus*, *Crepis paludosa, Filipendula ulmaria*, *Lychnis flos-cuculi*, *Caltha palustris*, *Carex nigra* and *Achillea ptarmica*. The northern boundary of the field also supports a small amount of *Cirsium heterophyllum*.

The vegetation of the upper (southern) meadow shows strong affinities to MG8 and, due to its very species-poor vegetation with constant *C. palustris* is considered to be a good fit to O'Reilly's (2011) MG8- variant of this community. The lower meadow has affinities to MG6b and is considered to be a good fit to O-Reilly's MG6b-ii variant. Both of these areas are considered to be semi-improved and of moderate to low quality. The bank separating the two meadows is considered to be close to O'Reilly's MG8n variant, the richest form of this plant community, and is classed as unimproved.

No previous data were available.

SOILS	
Texture	Sandy loam
pH	5.5
Olsens P	14
Total N	0.74
K	150

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CONSULTANT ECOLOGISTS

NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	0	5	30	Poac	6	5	4	4	0	0
Agrostis stolonifera	20	0	0	Poac	7	6	7	6	0	1
Alopecurus pratensis	2	0	0	Poac	7	5	6	7	0	0
Anemone nemorosa	0	3	0	Ranu	5	6	5	4	0	-1
Anthoxanthum odoratum	20	10	10	Poac	7	6	4	3	0	-1
Avenula pubescens	0	3	0	Poac	7	4	7	3	1	-1
Bellis perennis	1	0	0	Aste	8	5	6	4	1	0
Caltha palustris	5	0	0	Ranu	7	9	6	4	0	-1
Cerastium fontanum	3	0	3	Cary	7	5	5	4	1	0
Conopodium majus	0	0	3	Apia	6	5	5	5	0	-1
Cynosurus cristatus	20	0	5	Poac	7	5	6	4	0	0
Dactylis glomerata	0	0	3	Poac	7	5	7	6	0	0
Deschampsia cespitosa	0	1	0	Poac	6	6	5	4	0	0
Festuca rubra	3	5	5	Poac	8	5	6	5	-1	0
Holcus lanatus	20	5	10	Poac	7	6	6	5	0	0
Holcus mollis	0	0	20	Poac	6	6	3	3	1	0
Juncus acutiflorus	0	33	0	Junc	8	8	4	2	0	-1
Lathyrus pratensis	0	0	3	Faba	7	6	6	5	1	0
Lolium perenne	0	0	3	Poac	8	5	6	6	0	0
Montia fontana	3	0	0	Port	7	9	5	3	1	-1
Myosotis discolor	0	0	1	Bora	7	5	5	3	1	-1
Myosotis laxa	2	1	0	Bora	7	9	6	5	0	1
Plantago lanceolata	0	0	2	Plan	7	5	6	4	1	0
Poa trivialis	3	5	3	Poac	7	6	6	6	0	0
Ranunculus acris	3	3	2	Ranu	7	6	6	4	1	0
Ranunculus ficaria	0	3	0	Ranu	6	6	6	6	0	0
Ranunculus repens	5	8	5	Ranu	6	7	6	7	0	1
Rhinanthus minor	0	2	2	Scro	7	5	6	4	0	0
Rumex acetosa	5	3	10	Poly	7	5	5	4	0	0
Trifolium repens	3	0	0	Faba	7	5	6	6	0	0
Trollius europaeus	0	25	0	Ranu	7	7	6	4	-1	0
Veronica chamaedrys	0	3	0	Scro	6	5	6	5	1	-1

SUMMARY	
Total	32.00
Grass	13.00
Sedge	0.00
Rush	1.00
Forb	18.00
Herb cover	31%
LIGHT L	
Average	6.84
Min	5.00
Max	8.00
MOISTURE F	
Average	5.88
Min	4.00
Max	9.00
REACTION R	
Average	5.59
Min	3.00
Max	7.00
NITROGEN N	
Average	4.53
Min	2.00
Max	7.00
GRAZING GI	
Average	0.25
NUTRIENTS NI	
Average	-0.19

Site:	**737**
Area	**Teesdale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**1B**

This site lies to the south of Ettersgill in Teesdale, at an elevation of 380m. Although shown as two fields on Ordnance Survey maps, it currently consists of one long rectangular field, with a general north-north-west facing slope but an undulating topography.

The sward primarily comprises *Anthoxanthum odoratum, Holcus lanatus, Festuca rubra, Cynosurus cristatus* and *Lolium perenne*. Typical upland hay meadow axiophytes include constant *Rhinanthus minor* with frequent *Conopodium majus* over the northern part of the meadow and frequent *Lotus corniculatus* over the southern part. Other species are rare and scattered and include *Alchemilla sp.* and *Caltha palustris*. The southern field boundary comprises a sunken track with dock with *Rumex obtusifolius*. The remaining field boundaries are dry stone walls with a species-poor assemblage of tall herbs including *Anthriscus sylvestris* and *Rumex crispus*.

The vegetation shows strong affinities to MG3a (64.8) and MG6b (64.5). Due to the absence of *C. palustris* over much of the field it is considered to have greater affinities to the latter community. The relatively low cover of herbs and scattered typical upland hay meadow axiophytes suggests a good fit to O'Reilly's (2011) MG6b-ii variant. The field is considered to be semi-improved and of average quality within this category.

No previous data were available.

SOILS	
Texture	Sandy loam
pH	5.5
Olsens P	15
Total N	0.62
K	152

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CONSULTANT ECOLOGISTS

NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Anthoxanthum odoratum	25	20	25	Poac	7	6	4	3	0	-1
Holcus lanatus	25	20	25	Poac	7	6	6	5	0	0
Cynosurus cristatus	10	5	0	Poac	7	5	6	4	0	0
Lolium perenne	10	5	0	Poac	8	5	6	6	0	0
Festuca rubra	5	20	15	Poac	8	5	6	5	-1	0
Plantago lanceolata	5	10	0	Plan	7	5	6	4	1	0
Ranunculus acris	5	3	5	Ranu	7	6	6	4	1	0
Rumex acetosa	5	3	5	Poly	7	5	5	4	0	0
Rhinanthus minor	3	<5	5	Scro	7	5	6	4	0	0
Trifolium repens	3	3	5	Faba	7	5	6	6	0	0
Bellis perennis	3	3	3	Aste	8	5	6	4	1	0
Leontodon autumnalis	3	3	0	Aste	8	6	6	4	1	0
Bromus hordeaceus	3	0	0	Poac	8	4	7	4	0	1
Conopodium majus	3	0	0	Apia	6	5	5	5	0	-1
Dactylis glomerata	3	0	0	Poac	7	5	7	6	0	0
Poa trivialis	3	0	0	Poac	7	6	6	6	0	0
Avenula pubescens	2	2	0	Poac	7	4	7	3	1	-1
Anthriscus sylvestris	2	0	0	Apia	6	5	7	7	-1	1
Ranunculus bulbosus	2	0	0	Ranu	7	4	7	4	0	0
Cerastium fontanum	1	2	3	Cary	7	5	5	4	1	0
Achillea ptarmica	1	0	0	Aste	7	7	5	3	1	-1
Alchemilla glabra	1	0	0	Rosa	7	6	6	4	0	0
Ranunculus repens	0	10	5	Ranu	6	7	6	7	0	1
Agrostis capillaris	0	3	0	Poac	6	5	4	4	0	0
Taraxacum agg.	0	3	0	Aste	7	5	7	6	1	0
Trifolium pratense	0	3	0	Faba	7	5	7	5	1	0
Phleum pratense	0	1	3	Poac	8	5	7	6	1	0
Myosotis discolor	0	1	1	Bora	7	5	5	3	1	-1
Alopecurus pratensis	0	0	5	Poac	7	5	6	7	0	0
Agrostis stolonifera	0	0	3	Poac	7	6	7	6	0	1
Montia fontana	0	0	1	Port	7	9	5	3	1	-1
Veronica serpyllifolia	0	0	1	Scro	7	5	6	5	-1	0

SUMMARY	
Total	32.00
Grass	13.00
Sedge	0.00
Rush	0.00
Forb	19.00
Herb cover	33%
LIGHT L	
Average	7.06
Min	6.00
Max	8.00
MOISTURE F	
Average	5.38
Min	4.00
Max	9.00
REACTION R	
Average	5.97
Min	4.00
Max	7.00
NITROGEN N	
Average	4.72
Min	3.00
Max	7.00
GRAZING GI	
Average	0.28
NUTRIENTS NI	
Average	-0.06

Site:	**738**
Area	**Teesdale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**1B (2002)**

This site lies to the east of Harwood in Upper Teesdale at an altitude of 450m. The field comprises a small knoll, sloping moderately to the south-west, south-east and north-east. The site is part of Upper Teesdale Site of Special Scientific Interest.

The field is relatively very homogenous with constant *Caltha palustris, Carex nigra, Rhinanthus minor* and *Euphrasia officinalis* with *Anthoxanthum odoratum, Cynosurus cristatus* and *Festuca rubra*. There is some minor variation in that the northern part of the field is slightly less species-rich and lacks the higher frequency of *Juncus acutiflorus* elsewhere. In addition to the more general upland hay meadow axiophytes, within the southern part of the field, are frequent *Trollius europaeus*; occasional *Succisa pratensis* and *Dactylorhiza purpurella*; and rare *Achillea ptarmica, Crepis paludosa, Lychnis flos-cuculi* and *Lathyrus pratensis*. This combination of species, and their frequency within the sward, is considered outstanding in the context of Teesdale meadows surveyed in 2012.

The vegetation shows strong affinities to MG8 (60.5). The high frequency and cover of the typical *R. minor* and *E. officinalis* together with the occurrence of rarer herbs such as *T. europaeus* and *S. pratensis* suggests a good fit to O'Reilly's (2011) MG8n variant. The field is considered to be largely unimproved and of very high quality.

No previous survey data exist for this site.

SOILS	
Texture	Sandy loam
pH	5.8
Olsens P	15
Total N	0.88
K	162

Penny Anderson Associates Ltd
CONSULTANT ECOLOGISTS

NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	3	3	5	Poac	6	5	4	4	0	0
Agrostis stolonifera	0	0	3	Poac	7	6	7	6	0	1
Ajuga reptans	0	1	0	Lami	5	7	5	5	0	0
Alopecurus pratensis	0	2	5	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	10	15	15	Poac	7	6	4	3	0	-1
Avenula pratensis	0	1	0	Poac	7	4	7	2	0	-1
Bellis perennis	1	0	1	Aste	8	5	6	4	1	0
Caltha palustris	10	10	30	Ranu	7	9	6	4	0	-1
Carex flacca	3	0	0	Cype	7	5	6	2	0	-1
Carex nigra	1	5	5	Cype	7	8	4	2	0	-1
Carex panicea	1	0	0	Cype	8	8	4	2	1	-1
Cerastium fontanum	1	3	0	Cary	7	5	5	4	1	0
Cynosurus cristatus	10	15	10	Poac	7	5	6	4	0	0
Deschampsia cespitosa	0	1	0	Poac	6	6	5	4	0	0
Equisetum palustre	1	2	0	Equi	7	8	6	3	1	-1
Euphrasia officinalis agg.	3	3	3	Scro	8	5	5	3	0	-1
Festuca rubra	10	5	3	Poac	8	5	6	5	-1	0
Holcus lanatus	3	3	3	Poac	7	6	6	5	0	0
Juncus acutiflorus	25	0	0	Junc	8	8	4	2	0	-1
Juncus effusus	0	3	0	Junc	7	7	4	4	1	0
Leontodon autumnalis	3	3	1	Aste	8	6	6	4	1	0
Lolium perenne	0	3	0	Poac	8	5	6	6	0	0
Luzula campestris	1	0	0	Junc	7	4	5	2	1	-1
Montia fontana	3	3	3	Port	7	9	5	3	1	-1
Myosotis discolor	1	3	2	Bora	7	5	5	3	1	-1
Myosotis laxa	3	3	1	Bora	7	9	6	5	0	1
Phleum pratense	2	1	0	Poac	8	5	7	6	1	0
Plantago lanceolata	1	0	0	Plan	7	5	6	4	1	0
Poa pratensis	2	0	1	Poac	7	5	6	5	0	0
Poa trivialis	2	3	3	Poac	7	6	6	6	0	0
Prunella vulgaris	2	0	0	Lami	7	5	6	4	0	0
Ranunculus acris	3	3	3	Ranu	7	6	6	4	1	0
Ranunculus repens	15	15	15	Ranu	6	7	6	7	0	1
Rhinanthus minor	10	10	5	Scro	7	5	6	4	0	0
Rumex acetosa	3	0	0	Poly	7	5	5	4	0	0
Sagina procumbens	3	0	0	Cary	7	6	6	5	0	0
Silene flos-cuculi	1	0	0	Cary	7	9	6	4	0	0
Succisa pratensis	1	0	0	Dips	7	7	5	2	1	-1
Taraxacum agg.	1	1	1	Aste	7	5	7	6	1	0
Trifolium pratense	3	5	1	Faba	7	5	7	5	1	0
Trifolium repens	3	10	3	Faba	7	5	6	6	0	0
Trollius europaeus	0	3	0	Ranu	7	7	6	4	-1	0

SUMMARY	
Total	42.00
Grass	13.00
Sedge	3.00
Rush	3.00
Forb	23.00
Herb cover	37%
LIGHT L	
Average	7.07
Min	5.00
Max	8.00
MOISTURE F	
Average	6.05
Min	4.00
Max	9.00
REACTION R	
Average	5.62
Min	4.00
Max	7.00
NITROGEN N	
Average	4.14
Min	2.00
Max	7.00
GRAZING GI	
Average	0.31
NUTRIENTS NI	
Average	-0.24

Site:	**739**
Area	**Baldersdale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**1B (2002)**

This site lies on the southern edge of Hury Reservoir in Baldersdale, at an altitude of 280m. The field has a very gentle north-facing slope with several areas of standing water and a stream running down its centre.

The sward comprises Anthoxanthum odoratum, Cynosurus cristatus and Lolium perenne. Upland hay meadow axiophytes include constant Rhinanthus minor with frequent and Filipendula ulmaria and occasional Lathyrus pratensis, Leontodon autumnalis, Centaurea nigra, and Conopodium majus. Additionally, Geranium sylvaticum was recorded at one location within the sward. Wetter areas of the field support frequent Caltha palustris with Crepis paludosa, Lychnis, Cirsium heterophyllum and Dactylorhiza fuchsii and Ranunculus flammula and a small group of Trollius europaeus is present in the south-eastern corner of the meadow.

The vegetation shows strong affinities to MG6b (67.9) and MG3a (66.5). The general lack of preferentials for the latter community suggests a better fit to MG6b. The general herb-richness of the community and high frequency of *R. minor, C. nigra* and *F. ulmaria* suggest a good fit to O'Reilly's (2011) MG6b-iii variant of this sub-community. The damper areas of the field, with *C. palustris*, show strong affinities to MG8 (62.3) and are referable to O'Reilly's MG8n in places where *C. paludosa* or *Trollius europaeus* occur. The majority of the meadow is therefore considered to be semi-improved and of relatively high quality. The damper areas are considered to have undergone less improvement and are of a slightly higher quality.

No previous survey data exist for this site.

SOILS	
Texture	Sandy loam
pH	5.7
Olsens P	13
Total N	0.82
K	182

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	5	5	15	Poac	6	5	4	4	0	0
Anthoxanthum odoratum	15	15	5	Poac	7	6	4	3	0	-1
Bellis perennis	1	2	1	Aste	8	5	6	4	1	0
Bromus hordeaceus	1	1	1	Poac	8	4	7	4	0	1
Caltha palustris	0	1	0	Ranu	7	9	6	4	0	-1
Cardamine pratensis	0	1	1	Bras	7	8	5	4	0	0
Centaurea nigra	5	0	5	Aste	7	5	6	5	1	-1
Cerastium fontanum	1	1	1	Cary	7	5	5	4	1	0
Cynosurus cristatus	15	5	15	Poac	7	5	6	4	0	0
Dactylis glomerata	1	2	1	Poac	7	5	7	6	0	0
Festuca rubra	5	10	3	Poac	8	5	6	5	-1	0
Filipendula ulmaria	0	2	20	Rosa	7	8	6	5	-1	0
Holcus lanatus	10	10	5	Poac	7	6	6	5	0	0
Hypochaeris radicata	5	0	0	Aste	8	4	5	3	0	-1
Lathyrus pratensis	0	0	2	Faba	7	6	6	5	1	0
Leontodon autumnalis	5	1	0	Aste	8	6	6	4	1	0
Lolium perenne	5	15	3	Poac	8	5	6	6	0	0
Myosotis discolor	1	0	1	Bora	7	5	5	3	1	-1
Phleum pratense	0	<4	0	Poac	8	5	7	6	1	0
Plantago lanceolata	5	5	5	Plan	7	5	6	4	1	0
Poa annua	1	0	0	Poac	7	5	6	7	0	1
Poa trivialis	5	3	2	Poac	7	6	6	6	0	0
Ranunculus acris	10	15	10	Ranu	7	6	6	4	1	0
Ranunculus repens	2	2	3	Ranu	6	7	6	7	0	1
Rhinanthus minor	3	3	3	Scro	7	5	6	4	0	0
Rumex acetosa	3	3	5	Poly	7	5	5	4	0	0
Taraxacum agg.	0	1	1	Aste	7	5	7	6	1	0
Trifolium dubium	0	1	0	Faba	7	4	6	5	0	0
Trifolium hybridum	2	5	0	Faba	7	5	7	6	0	0
Trifolium pratense	12	2	5	Faba	7	5	7	5	1	0
Trifolium repens	2	0	2	Faba	7	5	6	6	0	0
Trisetum flavescens	1	0	0	Poac	7	4	7	4	0	0
Veronica chamaedrys	0	1	0	Scro	6	5	6	5	1	-1

SUMMARY	
Total	33.00
Grass	12.00
Sedge	0.00
Rush	0.00
Forb	21.00
Herb cover	48%
LIGHT L	
Average	7.12
Min	6.00
Max	8.00
MOISTURE F	
Average	5.42
Min	4.00
Max	9.00
REACTION R	
Average	5.94
Min	4.00
Max	7.00
NITROGEN N	
Average	4.76
Min	3.00
Max	7.00
GRAZING GI	
Average	0.30
NUTRIENTS NI	
Average	-0.09

Site:	**740**
Area	**Howgills, Ravenstonedale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**-**

This site lies to the west of Ravenstonedale, at an altitude of 280m. Overall, the field slopes gently northwards however frequent undulations create a varied micro-topography. The site has two different characters; the southern ¾ showing strong evidence of improvement, and the northern ¼ with an almost complete lack of improvement indicators.

To the south, the sward comprises *Lolium perenne*, *Alopecurus pratensis*, *Poa trivialis*, with abundant to frequent *Ranunculus repens*, *Ranunculus acris*, *Trifolium repens*, *Cerastium glomeratum* and *Anthriscus sylvestris*. Typical upland hay meadow axiophytes include constant *Rhinanthus minor* and occasional *Euphrasia officinalis agg.* and *Geranium sylvaticum*. Moving south, the sward opens, with *Cynosurus cristatus* becoming more dominant, *Geranium sylvaticum* and *Trisetum flavescens* increasing and *Sanguisorba officinalis* and *Filipendula ulmaria* beginning to appear. The northern quarter of the field, has constant *Geranium sylvaticum*, *Sanguisorba officinalis*, *Conopodium majus* and much lower abundance of *Anthriscus sylvestris* and *Ranunculus spp.* Generally, the field edges shows signs of improvement including, *Anthriscus sylvestris*, *Galium aparine*, *Poa trivialis,* but also, especially to the north, tall axiophytes including *Geranium sylvaticum*, *Geranium pratense* and *Filipendula ulmaria*.

Match analysis of the three quadrats sampled along the long axis of the field in 2012 is interesting. Quadrat 1, near to the southern boundary shows strong affinities to MG6b (59.9), Quadrat 2, in the middle of the field shows strong affinities to MG3a (63.0) and the 3rd sample, taken in the northern quarter of the field shows stronger affinities to MG3a (68.0). This stratification suggests improvement of the field was possibly incidental, with excess fertilisers, from other fields spread from the southern edge, with supplies dwindling by the time the northern part of the field was reached. In terms of O'Reilly's (2011) classification, the southern part of the field is referable to MG6-iii while the northern area is regarded as MG3a. The southern part is considered semi-improved but of high quality, particularly further north. The northern part of the field is considered to be unimproved (or only very slightly improved) and is of very high quality.

No previous survey data exist for this site.

SOILS	
Texture	Sandy loam
pH	6.3
Olsens P	16
Total N	0.68
K	121

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	3	2	1	Poac	6	5	4	4	0	0
Agrostis stolonifera	1	0	0	Poac	7	6	7	6	0	1
Alchemilla glabra	0	0	1	Rosa	7	6	6	4	0	0
Alopecurus pratensis	3	1	1	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	15	15	6	Poac	7	6	4	3	0	-1
Anthriscus sylvestris	3	4	2	Apia	6	5	7	7	-1	1
Bellis perennis	0	2	1	Aste	8	5	6	4	1	0
Bromus hordeaceus	3	2	0	Poac	8	4	7	4	0	1
Cardamine pratensis	0	1	0	Bras	7	8	5	4	0	0
Cerastium fontanum	2	2	3	Cary	7	5	5	4	1	0
Cerastium glomeratum	3	0	0	Cary	7	5	6	5	1	0
Conopodium majus	0	0	2	Apia	6	5	5	5	0	-1
Cynosurus cristatus	2	2	13	Poac	7	5	6	4	0	0
Dactylis glomerata	2	15	1	Poac	7	5	7	6	0	0
Euphrasia officinalis agg.	0	0	2	Scro	8	5	5	3	0	-1
Festuca pratensis	0	0	3	Poac	7	6	6	6	0	0
Geranium sylvaticum	0	0	7	Gera	6	5	6	5	0	0
Holcus lanatus	15	10	13	Poac	7	6	6	5	0	0
Lolium perenne	14	15	3	Poac	8	5	6	6	0	0
Myosotis discolor	0	2	1	Bora	7	5	5	3	1	-1
Phleum pratense	2	5	0	Poac	8	5	7	6	1	0
Plantago lanceolata	1	2	22	Plan	7	5	6	4	1	0
Poa trivialis	10	3	10	Poac	7	6	6	6	0	0
Ranunculus acris	11	20	10	Ranu	7	6	6	4	1	0
Ranunculus repens	24	4	5	Ranu	6	7	6	7	0	1
Rhinanthus minor	2	3	20	Scro	7	5	6	4	0	0
Rumex acetosa	7	<4	10	Poly	7	5	5	4	0	0
Sanguisorba officinalis	0	0	2	Rosa	7	7	6	5	0	0
Taraxacum agg.	2	0	0	Aste	7	5	7	6	1	0
Trifolium pratense	15	4	5	Faba	7	5	7	5	1	0
Trifolium repens	15	4	10	Faba	7	5	6	6	0	0
Trisetum flavescens	6	3	4	Poac	7	4	7	4	0	0

SUMMARY	
Total	32.00
Grass	13.00
Sedge	0.00
Rush	0.00
Forb	19.00
Herb cover	54%
LIGHT L	
Average	7.00
Min	6.00
Max	8.00
MOISTURE F	
Average	5.38
Min	4.00
Max	8.00
REACTION R	
Average	5.94
Min	4.00
Max	7.00
NITROGEN N	
Average	4.88
Min	3.00
Max	7.00
GRAZING GI	
Average	0.25
NUTRIENTS NI	
Average	0.00

Site:	**741**
Area	**Howgills, Ravenstonedale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**-**

This site lies to the south-west of Ravenstonedale at an altitude of 270m. The field is large and comprises a moderate east-facing slope and flat area above Greenside Beck. It adjoins the open fell, to the west. A hedgerow has recently been planted along the western edge of the field. There is a large wych elm (*Ulmus glabra*) (c.10m high) in the northern part of the meadow, together with two ash trees (*Fraxinus excelsior*).

The meadow is relatively homogeneous, with only some subtle variation in relation to hydrology. The lower-lying, eastern, part of the field is drier than the slope above, with a denser and more grass-dominated sward. This includes abundant *Cynosurus cristatus*, *Lolium perenne* *Trifolium pratense* and *Ranunculus acris*. Typical upland hay-meadow axiophytes include constant *Rhinanthus minor* and *Euphrasia officinalis agg* with occasional *Conopodium majus*. The sloping part (western two thirds) of the site is wetter, with similar grass composition but a finer sward with a greater percentage of herbs. The wettest areas occur on top of the slope with *Carex leporina*, *Carex nigra*, *Stellaria alsine* and *Alopecurus geniculatus*, *present*. The edges of the site are not significantly different to the mown area, although *Anthriscus sylvestris* increases along the northern boundary.

The vegetation shows strong affinities to MG6b (61.5). The high frequency of *R. minor* and *E. officinalis agg.*, together with overall high herb cover suggests a good fit to O'Reilly's (2011) MG6b-iii variant. The meadow is considered to be semi-improved and of above average quality.

No previous survey data exist for this site.

SOILS	
Texture	Sandy loam
pH	6
Olsens P	16
Total N	0.78
K	104

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Achillea millefolium	2	0	0	Aste	7	5	6	4	0	0
Agrostis capillaris	2	0	0	Poac	6	5	4	4	0	0
Agrostis stolonifera	0	3	2	Poac	7	6	7	6	0	1
Alopecurus geniculatus	0	0	10	Poac	8	7	6	6	0	1
Alopecurus pratensis	8	0	0	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	4	7	12	Poac	7	6	4	3	0	-1
Anthriscus sylvestris	1	0	0	Apia	6	5	7	7	-1	1
Bellis perennis	4	2	0	Aste	8	5	6	4	1	0
Bromus hordeaceus	3	0	1	Poac	8	4	7	4	0	1
Cardamine pratensis	0	1	0	Bras	7	8	5	4	0	0
Cerastium fontanum	3	1	0	Cary	7	5	5	4	1	0
Cerastium glomeratum	1	3	2	Cary	7	5	6	5	1	0
Cynosurus cristatus	12	10	1	Poac	7	5	6	4	0	0
Euphrasia officinalis agg.	2	5	20	Scro	8	5	5	3	0	-1
Festuca pratensis	0	0	1	Poac	7	6	6	6	0	0
Festuca rubra	0	3	0	Poac	8	5	6	5	-1	0
Holcus lanatus	11	3	7	Poac	7	6	6	5	0	0
Leontodon autumnalis	1	0	0	Aste	8	6	6	4	1	0
Lolium perenne	15	8	15	Poac	8	5	6	6	0	0
Myosotis discolor	0	2	2	Bora	7	5	5	3	1	-1
Phleum pratense	2	2	2	Poac	8	5	7	6	1	0
Plantago lanceolata	1	0	0	Plan	7	5	6	4	1	0
Poa trivialis	7	15	9	Poac	7	6	6	6	0	0
Ranunculus acris	18	10	13	Ranu	7	6	6	4	1	0
Ranunculus repens	1	10	15	Ranu	6	7	6	7	0	1
Rhinanthus minor	2	5	3	Scro	7	5	6	4	0	0
Rumex acetosa	5	2	5	Poly	7	5	5	4	0	0
Rumex obtusifolius	1	0	0	Poly	7	5	7	9	1	1
Stellaria alsine	0	2	0	Cary	7	8	5	5	0	0
Taraxacum agg.	2	0	0	Aste	7	5	7	6	1	0
Trifolium pratense	15	15	4	Faba	7	5	7	5	1	0
Trifolium repens	37	20	27	Faba	7	5	6	6	0	0
Trisetum flavescens	12	0	0	Poac	7	4	7	4	0	0
Veronica arvensis	1	0	0	Scro	8	4	6	5	1	0
Veronica serpyllifolia	0	0	1	Scro	7	5	6	5	-1	0

SUMMARY	
Total	35.00
Grass	14.00
Sedge	0.00
Rush	0.00
Forb	21.00
Herb cover	59%
LIGHT L	
Average	7.17
Min	6.00
Max	8.00
MOISTURE F	
Average	5.40
Min	4.00
Max	8.00
REACTION R	
Average	5.94
Min	4.00
Max	7.00
NITROGEN N	
Average	4.97
Min	3.00
Max	9.00
GRAZING GI	
Average	0.26
NUTRIENTS NI	
Average	0.09

Site:	**742**
Area	**Arkengarthdale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**2A (2002)**

This site lies to the west of Booze in Arkengarthdale, at an altitude of 320m. The field is small and slopes gently to the south.

The vegetation is relatively homogeneous and of moderate species-richness. Grasses comprise *Agrostis capillaris, Anthoxanthum odoratum, Cynosurus cristatus, Festuca rubra, Holcus lanatus* and *Poa trivialis*. Typical upland hay meadow axiophytes include constant *Trifolium pratense, Rhinanthus minor, Euphrasia officinalis agg.* and *Leontodon autumnalis* with *Conopodium majus* rare. Damper pockets in the field support *Juncus effusus* and *Ranunculus repens* with occasional *Caltha palustris* and *Lychnis flos-cuculi*. Negative species are concentrated at the field edges, and include *Urtica dioica*, *Cirsium vulgare*, *C. arvense* and much *Arrhenatherum elatius*.

The vegetation shows strong affinities to MG6b (68.2) and MG3a (65.4). Due to a lack of preferential and differential species for MG3, it is considered to be a better fit to the former sub-community and referable to O'Reilly's MG6b-iii variant. The meadow is considered to be semi-improved and of medium to high quality.

A total of six years of data were available for analysis, with the baseline set as 1987. Species richness in 1x1m quadrats was relatively stable, increasing slightly from 20.2 (1987), peaked at 22.33 (2002) to 21.7 (2012). The proportion of grazing tolerant species fluctuated considerably over the analysis period, but declined slightly overall, with average Grazing Tolerant Suited Species Scores decreasing from 0.34 in 1987 to 0.24 in 2012. The proportion of nutrient tolerant species within the sward also decreased slightly, with average Nutrient Availability Suited Species Scores decreasing from -0.06 in 1987 to -0.13 in 2012. Coupled with the slight increase in species richness over this same period it could be suggested that some minor improvements in the community have occurred through time as less desirable grazing and nutrient tolerant species have been lost and replaced with other species. Considering the ordination plots (Annex II), wide error bars in 1987 (10 quadrats) encompass all of the variability in the quadrats in subsequent years and the majority of data points are closely clustered suggesting little overall change in the vegetation community.

No management information was provided for this site.

SOILS	
Texture	Sandy loam
pH	5.8
Olsens P	15
Total N	0.87
K	324

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CONSULTANT ECOLOGISTS

NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	15	25	15	Poac	6	5	4	4	0	0
Alopecurus pratensis	1	0	1	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	25	15	8	Poac	7	6	4	3	0	-1
Bellis perennis	1	2	2	Aste	8	5	6	4	1	0
Bromus hordeaceus	0	0	3	Poac	8	4	7	4	0	1
Carex nigra	0	15	0	Cype	7	8	4	2	0	-1
Carex ovalis	5	0	0	Cype	7	7	5	4	0	-1
Cerastium fontanum	0	1	0	Cary	7	5	5	4	1	0
Conopodium majus	0	0	2	Apia	6	5	5	5	0	-1
Cynosurus cristatus	5	5	9	Poac	7	5	6	4	0	0
Dactylis glomerata	0	0	5	Poac	7	5	7	6	0	0
Euphrasia officinalis agg.	2	2	3	Scro	8	5	5	3	0	-1
Festuca rubra	10	5	7	Poac	8	5	6	5	-1	0
Holcus lanatus	5	5	11	Poac	7	6	6	5	0	0
Hypochaeris radicata	1	0	0	Aste	8	4	5	3	0	-1
Leontodon autumnalis	3	3	3	Aste	8	6	6	4	1	0
Lolium multiflorum	0	2	0	Poac	7	5	7	7	0	0
Lolium perenne	2	2	12	Poac	8	5	6	6	0	0
Myosotis discolor	0	1	0	Bora	7	5	5	3	1	-1
Plantago lanceolata	2	10	12	Plan	7	5	6	4	1	0
Poa pratensis	2	0	0	Poac	7	5	6	5	0	0
Poa trivialis	10	3	11	Poac	7	6	6	6	0	0
Prunella vulgaris	0	2	0	Lami	7	5	6	4	0	0
Ranunculus acris	20	12	2	Ranu	7	6	6	4	1	0
Ranunculus bulbosus	0	0	3	Ranu	7	4	7	4	0	0
Ranunculus repens	0	4	0	Ranu	6	7	6	7	0	1
Rhinanthus minor	0	1	1	Scro	7	5	6	4	0	0
Rumex acetosa	0	4	14	Poly	7	5	5	4	0	0
Senecio jacobaea	0	1	0	Aste	7	4	6	4	0	1
Taraxacum agg.	0	1	0	Aste	7	5	7	6	1	0
Trifolium pratense	3	3	5	Faba	7	5	7	5	1	0
Trifolium repens	1	2	3	Faba	7	5	6	6	0	0
Trisetum flavescens	0	0	3	Poac	7	4	7	4	0	0
Vicia sepium	0	0	6	Faba	6	5	6	6	1	0

SUMMARY	
Total	34.00
Grass	13.00
Sedge	2.00
Rush	0.00
Forb	19.00
Herb cover	36%
LIGHT L	
Average	7.09
Min	6.00
Max	8.00
MOISTURE F	
Average	5.21
Min	4.00
Max	8.00
REACTION R	
Average	5.82
Min	4.00
Max	7.00
NITROGEN N	
Average	4.59
Min	2.00
Max	7.00
GRAZING GI	
Average	0.24
NUTRIENTS NI	
Average	-0.12

Site:	**743**
Area	**Arkengarthdale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**-**

This site lies to the north-west of Whaw in Arkengarthdale at an altitude of 310m. The field lies on a flat area adjacent to the Arkle Beck and has a southerly aspect. It is part of Arkle Beck Meadows Site of Special Scientific Interest.

This is a colourful meadow with a lush sward (approximately 0.4-0.5m, June 2012). *Ranunculus* species form a great deal of cover, with *Ranunculus repens* in the damper areas and *Ranunculus acris* elsewhere. The vegetation is rich in grass species with *Alopecurus pratensis*, *Anthoxanthum odoratum*, *Dactylis glomerata*, *Agrostis capillaris*, *Arrhenatherum elatius*, *Holcus lanatus* and *Bromus hordeaceus* all playing a significant role in the sward. Less abundant species include *Poa pratensis*, *Poa trivialis*, *Festuca rubra*. Locally abundant *Lolium perenne* perhaps suggests past attempts at improvement. Of the typical upland hay meadow axiophytes, *Conopodium majus* and *Rhinanthus minor* are very frequent, with *Lathyrus pratensis* and *Filipendula ulmaria* frequent, although the latter are mainly at edges and in damper areas. *Geranium sylvaticum* is frequent but at relatively low overall cover; *Cirsium heterophyllum* and *Alchemilla* (*Alchemilla xanthochlora* and *A. glabra* present) are rare. The southern part of the field around the electricity pole has a finer sward, with abundant *Trifolium pratense* and *Plantago lanceolata* and it includes *G. sylvaticum* and *Cirsium heterophyllum* also. Hollows within the field have *F. ulmaria*, *R. repens* and *Agrostis stolonifera*. The field edges have a 'rougher' appearance with *F. ulmaria*, *G. sylvaticum*, *C. majus*, *Helictotrichon pubescens*, *Arrhenatherum elatius*, *Dactylis glomerata* and *Veronica arvensis*, *Cruciata laevipes* and *Rumex acetosa* shaded by *Acer pseudoplatanus* and *Alnus glutinosa*. At the southern and northern edges *Anthriscus* is frequent, but generally of low cover. Rabbits present, some evidence of light grazing.

The vegetation shows strong affinities to MG3a (69.9) and also to MG6b. Due to constant *G. sylvaticum* and *R. minor* in the samples taken and the overall high herb cover it is considered to be a good fit to the MG3a. The site is considered to be semi-improved, but of high quality.

No previous survey data exists for this site.

SOILS	
Texture	Sandy loam
pH	5.5
Olsens P	12
Total N	0.61
K	190

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Achillea millefolium	0	0	4	Aste	7	5	6	4	0	0
Agrostis capillaris	15	10	12	Poac	6	5	4	4	0	0
Alopecurus pratensis	2	0	0	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	8	7	8	Poac	7	6	4	3	0	-1
Arrhenatherum elatius	0	0	1	Poac	7	5	7	7	-1	0
Bellis perennis	0	2	1	Aste	8	5	6	4	1	0
Bromus hordeaceus	3	3	8	Poac	8	4	7	4	0	1
Cerastium fontanum	2	3	3	Cary	7	5	5	4	1	0
Conopodium majus	2	1	2	Apia	6	5	5	5	0	-1
Dactylis glomerata	2	2	2	Poac	7	5	7	6	0	0
Festuca rubra	13	2	0	Poac	8	5	6	5	-1	0
Geranium sylvaticum	5	1	4	Gera	6	5	6	5	0	0
Holcus lanatus	18	10	10	Poac	7	6	6	5	0	0
Holcus mollis	0	35	0	Poac	6	6	3	3	1	0
Lathyrus pratensis	4	0	0	Faba	7	6	6	5	1	0
Lolium perenne	7	1	10	Poac	8	5	6	6	0	0
Plantago lanceolata	7	0	1	Plan	7	5	6	4	1	0
Poa pratensis	0	1	1	Poac	7	5	6	5	0	0
Poa trivialis	7	3	7	Poac	7	6	6	6	0	0
Ranunculus acris	20	22	8	Ranu	7	6	6	4	1	0
Ranunculus repens	27	5	25	Ranu	6	7	6	7	0	1
Rhinanthus minor	3	6	1	Scro	7	5	6	4	0	0
Rumex acetosa	11	11	5	Poly	7	5	5	4	0	0
Trifolium pratense	2	1	2	Faba	7	5	7	5	1	0
Trifolium repens	2	2	2	Faba	7	5	6	6	0	0
Veronica chamaedrys	0	3	0	Scro	6	5	6	5	1	-1
Vicia sepium	0	0	4	Faba	6	5	6	6	1	0

SUMMARY	
Total	27.00
Grass	12.00
Sedge	0.00
Rush	0.00
Forb	15.00
Herb cover	50%
LIGHT L	
Average	6.89
Min	6.00
Max	8.00
MOISTURE F	
Average	5.26
Min	4.00
Max	7.00
REACTION R	
Average	5.78
Min	3.00
Max	7.00
NITROGEN N	
Average	4.93
Min	3.00
Max	7.00
GRAZING GI	
Average	0.26
NUTRIENTS NI	
Average	-0.04

Site:	**744**
Area	**Swaledale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**2A**

This site is known as Yellands Meadow and lies to the east of Muker, in Swaledale, at an altitude of 240m. The field comprises flat terrace, adjacent to the River Swale, site bisected by a small stream, which joins the River at the eastern edge of the meadow. The site is part of the Muker Meadows Site of Special Scientific Interest.

To the south of the stream the vegetation is very diverse and lush, being dominated by tall herbs including *Filipendula ulmaria, Geranium sylvaticum*, *Centaurea nigra* and *Cirsium heterophyllum* with *Anthoxanthum odoratum, Conopodium majus, Alchemilla glabra*, *Alchemilla xanthochlora*, *Cirsium palustre*, *Ajuga reptans*, *Rhinanthus minor*, *Euphrasia officinalis agg.*, *Ranunculus acris* and *Anemone nemorosa*. The richest vegetation being along the stream banks which are not mown. To the north of the stream (adjacent to the river) is a more homogeneous stand of vegetation with abundant *Festuca rubra*, *Anthoxanthum odoratum*, *Agrostis capillaris* and, locally, *Holcus lanatus*. Upland hay meadow axiophytes here include constant *C. majus* and *E. officinalis agg.* with frequent *Rhinanthus minor* and *Lathyrus pratensis*. The river bank also includes *Hyacinthoides non-scripta* and *Dryopteris* ferns.

The vegetation (only that to the north of the stream was sampled) shows strong affinities to MG3a and MG6b. Due to the overall lack of strong MG3 preferentials / differentials it is assessed as being a good fit to O'Reilly's MG6b-iii variant, but is considered to have significant affinities with MG3b/c. The southern part of the meadow is therefore considered to be semi-improved and of high quality while the southern part is unimproved and of very high quality.

Given that only two years of survey data are available for this site no ordination plots have been drawn as this represents insufficient information with which to draw conclusions pertaining to community-level change. Nevertheless, species richness remained consistent across the two data years, with an average of 19 species reported for both 1988 and 2012. Similarly, both the average Grazing and average Nutrient Availability Suited Species Scores remained broadly similar between the two years.

SOILS	
Texture	Sandy loam
pH	5.2
Olsens P	7
Total N	0.38
K	144

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	35	12	10	Poac	6	5	4	4	0	0
Alopecurus pratensis	2	0	0	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	20	12	15	Poac	7	6	4	3	0	-1
Avenula pratensis	0	2	0	Poac	7	4	7	2	0	-1
Bellis perennis	0	0	2	Aste	8	5	6	4	1	0
Cerastium fontanum	2	0	2	Cary	7	5	5	4	1	0
Conopodium majus	3	10	7	Apia	6	5	5	5	0	-1
Cynosurus cristatus	0	12	10	Poac	7	5	6	4	0	0
Dactylis glomerata	3	2	0	Poac	7	5	7	6	0	0
Euphrasia officinalis agg.	3	2	3	Scro	8	5	5	3	0	-1
Festuca rubra	25	12	15	Poac	8	5	6	5	-1	0
Holcus lanatus	2	12	15	Poac	7	6	6	5	0	0
Lathyrus pratensis	1	3	2	Faba	7	6	6	5	1	0
Leontodon autumnalis	0	0	3	Aste	8	6	6	4	1	0
Leontodon hispidus	0	0	5	Aste	8	4	7	3	0	-1
Luzula campestris	3	2	3	Junc	7	4	5	2	1	-1
Plantago lanceolata	7	10	10	Plan	7	5	6	4	1	0
Poa pratensis	2	0	0	Poac	7	5	6	5	0	0
Poa trivialis	0	12	5	Poac	7	6	6	6	0	0
Ranunculus acris	9	10	5	Ranu	7	6	6	4	1	0
Ranunculus ficaria	1	0	0	Ranu	6	6	6	6	0	0
Rhinanthus minor	0	1	3	Scro	7	5	6	4	0	0
Rumex acetosa	4	20	3	Poly	7	5	5	4	0	0
Trifolium pratense	0	1	5	Faba	7	5	7	5	1	0
Trifolium repens	3	3	2	Faba	7	5	6	6	0	0
Vicia sepium	0	0	1	Faba	6	5	6	6	1	0

SUMMARY	
Total	26.00
Grass	10.00
Sedge	0.00
Rush	1.00
Forb	15.00
Herb cover	38%
LIGHT L	
Average	7.04
Min	6.00
Max	8.00
MOISTURE F	
Average	5.15
Min	4.00
Max	6.00
REACTION R	
Average	5.81
Min	4.00
Max	7.00
NITROGEN N	
Average	4.46
Min	2.00
Max	7.00
GRAZING GI	
Average	0.31
NUTRIENTS NI	
Average	-0.23

Site:	**745**
Area	**Swaledale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**2A**

This site lies to the south-west of Satron in Swaledale, at an altitude of 310m. The field comprises a moderate and undulating north-west facing slope.

The vegetation comprises *Anthoxanthum odoratum, Cynosurus* cristatus and *Agrostis capillaris* with generally high cover of *Caltha palustris* and *Ranunculus repens*. The frequency of other upland hay meadow axiophytes other than *Euphrasia officinalis agg.* is low, but quite a wide range of species are represented, including *Filipendula ulmaria, Leontodon autumnalis, Rhinanthus minor, Conopodium majus, Anemone nemorosa Lathyrus pratensis* and *Geranium sylvaticum.* This suggests a richer past, but on the whole it is a rather poor quality meadow. The upper part of the field, adjacent to the house, has conspicuous patches of *Urtica dioica*, *Rumex* obtusifolius and *R. crispus* with the latter two species also quite frequent in the remainder of the field. Some *Juncus acutiflorus* dominated patches in the southern part of the field support a richer flora with *Caltha palustris*, *Carex nigra*, *Carex flacca*, *Filipendula ulmaria*, *Lychnis flos-cuculi*, *Dactylorhiza maculata*, *Helictotrichon pubescens* and *Ajuga reptans*. The site is grazed by rabbits.

The vegetation shows strong affinities to M8 (57.7), with some areas probably transitional to MG6b (54.7), and is considered to be a good fit to O'Reilly's (2011) MG8o variant. The meadow is considered to be semi-improved and of average quality. The *Juncus acutiflorus* dominated area on the north-eastern boundary is considered to be unimproved.

A total of three years of data were available for analysis, with the baseline set as 1987. Overall, species richness in 1x1m quadrats increased from 19.0 in 1987 to 22.7 in 2012. The proportional representation of grazing tolerant species within the sward declined slightly, with a decrease in the average Grazing Suited Species Score from 0.27 in 1987 to 0.18 in 2012. The proportion of nutrient tolerant species also declined slightly, with a decrease in the average Nutrient Availability Suited Species Score from -0.03 in 1987 to -0.15 in 2012. Coupled with the increased species richness, this may indicate a positive change in the quality of this site since the 1987 baseline survey. Considering the ordination plot (Annex II), error bars for the data collected in 1987 (5 quadrats) encompass all of the variability shown for subsequent years, and the data points are closely clustered, suggesting little overall change in the vegetation community.

The farmer reports that the field has been under his ownership for around 30 years and has predominately cut for hay, although silage has been taken in some years. The field has never been fertilised in his ownership, but is likely to have been treated before he took it over; a tonne of farmyard manure is added annually. The field was last limed around 10 years ago at a rate of 3 tonnes per acre.

SOILS	
Texture	Sandy Loam
pH	5.3
Olsens P	17
Total N	0.65
K	197

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	3	12	1	Poac	6	5	4	4	0	0
Agrostis stolonifera	0	2	8	Poac	7	6	7	6	0	1
Anthoxanthum odoratum	4	20	7	Poac	7	6	4	3	0	-1
Bellis perennis	2	1	2	Aste	8	5	6	4	1	0
Caltha palustris	2	20	40	Ranu	7	9	6	4	0	-1
Cardamine flexuosa	0	1	0	Bras	5	7	6	6	0	0
Cardamine pratensis	2	0	0	Bras	7	8	5	4	0	0
Carex nigra	4	0	0	Cype	7	8	4	2	0	-1
Cerastium fontanum	1	2	1	Cary	7	5	5	4	1	0
Cynosurus cristatus	4	5	7	Poac	7	5	6	4	0	0
Euphrasia officinalis agg.	3	2	3	Scro	8	5	5	3	0	-1
Festuca pratensis	0	2	1	Poac	7	6	6	6	0	0
Festuca rubra	4	3	0	Poac	8	5	6	5	-1	0
Filipendula ulmaria	0	1	0	Rosa	7	8	6	5	-1	0
Holcus lanatus	3	5	8	Poac	7	6	6	5	0	0
Juncus bulbosus	0	0	1	Junc	7	10	4	2	-1	-1
Lolium perenne	0	1	0	Poac	8	5	6	6	0	0
Montia fontana	0	1	3	Port	7	9	5	3	1	-1
Myosotis discolor	2	2	1	Bora	7	5	5	3	1	-1
Phleum pratense	0	5	0	Poac	8	5	7	6	1	0
Poa annua	0	0	1	Poac	7	5	6	7	0	1
Poa pratensis	1	1	0	Poac	7	5	6	5	0	0
Poa trivialis	2	8	11	Poac	7	6	6	6	0	0
Prunella vulgaris	0	2	0	Lami	7	5	6	4	0	0
Ranunculus acris	7	8	0	Ranu	7	6	6	4	1	0
Ranunculus ficaria	2	0	2	Ranu	6	6	6	6	0	0
Ranunculus repens	5	12	20	Ranu	6	7	6	7	0	1
Rumex acetosa	3	3	3	Poly	7	5	5	4	0	0
Sagina procumbens	0	2	3	Cary	7	6	6	5	0	0
Stellaria alsine	0	0	2	Cary	7	8	5	5	0	0
Taraxacum agg.	1	0	0	Aste	7	5	7	6	1	0
Trifolium repens	0	3	2	Faba	7	5	6	6	0	0
Veronica arvensis	0	0	2	Scro	8	4	6	5	1	0

SUMMARY	
Total	33.00
Grass	12.00
Sedge	1.00
Rush	1.00
Forb	19.00
Herb cover	56%
LIGHT L	
Average	7.03
Min	5.00
Max	8.00
MOISTURE F	
Average	6.09
Min	4.00
Max	10.00
REACTION R	
Average	5.64
Min	4.00
Max	7.00
NITROGEN N	
Average	4.70
Min	2.00
Max	7.00
GRAZING GI	
Average	0.15
NUTRIENTS NI	
Average	-0.12

Site:	**746**
Area	**Swaledale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**1B**

This site lies to the south-east of Gunnerside in Swaledale, at an elevation of 200m. The field comprises a flat, but slightly undulating, area between the River Swale and a steep wooded escarpment.

The vegetation is lush, with strong grass growth including *Lolium perenne*, *Anthoxanthum odoratum*, *Bromus hordeaceus* and *Holcus lanatus*. A range of typical upland hay meadow axiophytes is present, including frequent *Rhinanthus minor*, *Geranium sylvaticum*, *Conopodium majus*, *Lathyrus pratensis* and *Filipendula ulmaria* with more scattered *Cirsium heterophyllum* and *Euphrasia officinalis* agg. Negative species are present at low cover and include frequent *Anthriscus sylvestris* with *Heracleum sphondylium* and *Urtica dioica* at the edges of the field.

The vegetation shows strong affinities to MG3a (71.5) and is considered to be a good fit to this sub-community. The meadow is semi-improved, but is of high quality.

A total of four years of data were available for analysis, with the baseline set as 1987. Overall, species richness in 1x1m quadrats increased from 17.7 in 1987 to 19.67 in 2012. The proportion of grazing tolerant species recorded across all quadrats declined, with average Grazing Suited Species Scores showing a reasonably large decrease from 0.40 to 0.13 in 2012. The proportion of nutrient tolerant species also decreased slightly, with average Nutrient availability Suited Species Scores decreasing from -0.02 in to -0.05 in 2012. In combination with the increased species richness, it could be suggested that these declines in less desirable species represent a positive change in the status of this site through time. Considering the ordination plot (Annex II), the error bars for the data collected in 1987 (5 quadrats) encompass all of the variability shown for subsequent years, and the data points are closely clustered, suggesting little overall change in the vegetation community.

No farmer information was provided for this site.

SOILS	
Texture	Sandy loam
pH	5.8
Olsens P	14
Total N	0.7
K	187

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	0	0	5	Poac	6	5	4	4	0	0
Alopecurus pratensis	0	2	0	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	20	10	22	Poac	7	6	4	3	0	-1
Anthriscus sylvestris	0	3	0	Apia	6	5	7	7	-1	1
Arrhenatherum elatius	5	10	0	Poac	7	5	7	7	-1	0
Bellis perennis	2	0	5	Aste	8	5	6	4	1	0
Bromus hordeaceus	20	10	10	Poac	8	4	7	4	0	1
Cerastium fontanum	1	3	3	Cary	7	5	5	4	1	0
Cirsium heterophyllum	0	2	0	Aste	7	6	6	5	-1	0
Conopodium majus	2	3	1	Apia	6	5	5	5	0	-1
Cynosurus cristatus	5	5	5	Poac	7	5	6	4	0	0
Dactylis glomerata	0	0	3	Poac	7	5	7	6	0	0
Festuca rubra	5	0	3	Poac	8	5	6	5	-1	0
Filipendula ulmaria	1	5	0	Rosa	7	8	6	5	-1	0
Geranium sylvaticum	10	10	8	Gera	6	5	6	5	0	0
Holcus lanatus	5	10	16	Poac	7	6	6	5	0	0
Lathyrus pratensis	3	0	0	Faba	7	6	6	5	1	0
Leontodon hispidus	0	0	3	Aste	8	4	7	3	0	-1
Lolium perenne	10	5	11	Poac	8	5	6	6	0	0
Phleum pratense	0	0	3	Poac	8	5	7	6	1	0
Plantago lanceolata	1	0	10	Plan	7	5	6	4	1	0
Poa trivialis	2	5	5	Poac	7	6	6	6	0	0
Ranunculus acris	10	8	10	Ranu	7	6	6	4	1	0
Rhinanthus minor	1	0	3	Scro	7	5	6	4	0	0
Rumex acetosa	0	5	5	Poly	7	5	5	4	0	0
Trifolium pratense	2	5	3	Faba	7	5	7	5	1	0
Trifolium repens	1	0	3	Faba	7	5	6	6	0	0
Trisetum flavescens	0	0	3	Poac	7	4	7	4	0	0
Vicia sepium	0	10	0	Faba	6	5	6	6	1	0

SUMMARY	
Total	29.00
Grass	13.00
Sedge	0.00
Rush	0.00
Forb	16.00
Herb cover	40%
LIGHT L	
Average	7.03
Min	6.00
Max	8.00
MOISTURE F	
Average	5.21
Min	4.00
Max	8.00
REACTION R	
Average	6.03
Min	4.00
Max	7.00
NITROGEN N	
Average	4.93
Min	3.00
Max	7.00
GRAZING GI	
Average	0.10
NUTRIENTS NI	
Average	-0.03

Site:	**747**
Area	**Swaledale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**1B (2002)**

This site lies adjacent to the River Swale, to the south-west of Reeth in Swaledale, at an altitude of 180m. The meadow is relatively flat and has an open aspect. It is bordered by a raised footpath along the riverbank to the north and by a wet ditch along its southern edge.

The riverbank supports poached eroded ground with frequent *Alnus glutinosa* trees. The field is relatively homogeneous, with grass cover comprising *Anthoxanthum odoratum, Lolium perenne, Holcus lanatus* and locally abundant *Bromus hordeaceus*. Upland hay meadow axiophytes include very frequent *Rhinanthus minor* and *Conopodium majus* with scattered *Leontodon autumnalis.* Wetter ground near the southern boundary supports *Filipendula ulmaria* and *Caltha palustris* interspersed with *Cirsium arvense* and *Rumex obtusifolius*. Other negative species within the sward include scattered *Urtica dioica*, *Cirsium vulgare* and *Rumex crispus*. Field edges are similar to main sward but support occasional stands of *U. dioica*.

The vegetation shows strong affinities to MG6b (66.1) and also to MG3a (59.3). Due to the relatively high frequency of *C. majus* and *R. minor* but their low cover and low cover of herbs overall, it is considered to be referable to O'Reilly's (2011) MG6b-ii variant. The meadow is considered to be semi-improved and of average quality.

A total of six years of data were available for analysis, with the baseline set at 1987. Overall, species richness per 1x1m quadrat declined from 15.6 in 1987, peaking at 18.7 in 2002, to 11.7 in 2012. Mirroring overall species richness, the proportion of grazing tolerant species remained relatively constant between 1987 (average Grazing Suited Species Score of 0.31) and 2002 (0.30), peaking at 0.40 in 1995. This proportion subsequently decreased, with an average Grazing Suited Species Score of 0.19 in 2012. The proportion of nutrient tolerant species also declined, but more steadily, with average Nutrient Availability Suited Species Scores showing a decline from 0.08 in 1987 to -0.021 in 2012, suggesting an overall change towards a more stress-tolerant flora. Considering the ordination plots (Annex II), error bars from 1987 (5 quadrats) were large, indicating diverse vegetation, and encompass all of the variability recorded for quadrats between 1990 and 1995. The 2002 data point is on the upper limit of the y-axis error bar for 1987 and the 2012 data point moves beyond it, but remains within the x-axis error bar. This suggests a shift in the vegetation community and is perhaps related to the changes observed in the grazing and nutrient tolerant species. The overall suggestion is that the condition of the meadow is improving, with the more desirable elements of the flora perhaps becoming more widespread and the negative elements declining. However, the information provided by the farmer suggests little change in management over the last 20 years although flooding from the adjacent River Swale was perceived to have been more frequent recently than in the past

The farmer reports that apart from additional input from the River Swale farmyard manure or artificial fertiliser have not been added to the field; it was last limed in the 1970's. Seed was added to the field under ESA in the 1990's.

SOILS	
Texture	Sandy silt loam
pH	6
Olsens P	9
Total N	0.53
K	111

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	0	5	0	Poac	6	5	4	4	0	0
Alopecurus pratensis	4	5	0	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	8	10	20	Poac	7	6	4	3	0	-1
Bellis perennis	0	1	0	Aste	8	5	6	4	1	0
Bromus hordeaceus	40	15	10	Poac	8	4	7	4	0	1
Cerastium fontanum	0	4	0	Cary	7	5	5	4	1	0
Conopodium majus	0	10	0	Apia	6	5	5	5	0	-1
Cynosurus cristatus	0	0	5	Poac	7	5	6	4	0	0
Dactylis glomerata	2	0	0	Poac	7	5	7	6	0	0
Holcus lanatus	4	5	10	Poac	7	6	6	5	0	0
Leontodon autumnalis	0	1	0	Aste	8	6	6	4	1	0
Lolium perenne	20	10	10	Poac	8	5	6	6	0	0
Plantago lanceolata	2	2	5	Plan	7	5	6	4	1	0
Ranunculus acris	3	5	5	Ranu	7	6	6	4	1	0
Ranunculus repens	3	0	0	Ranu	6	7	6	7	0	1
Rhinanthus minor	4	0	2	Scro	7	5	6	4	0	0
Rumex acetosa	3	5	10	Poly	7	5	5	4	0	0
Trifolium pratense	0	3	0	Faba	7	5	7	5	1	0
Trifolium repens	0	2	5	Faba	7	5	6	6	0	0
Trisetum flavescens	2	10	10	Poac	7	4	7	4	0	0

SUMMARY	
Total	20.00
Grass	9.00
Sedge	0.00
Rush	0.00
Forb	11.00
Herb cover	27%
LIGHT L	
Average	7.05
Min	6.00
Max	8.00
MOISTURE F	
Average	5.20
Min	4.00
Max	7.00
REACTION R	
Average	5.85
Min	4.00
Max	7.00
NITROGEN N	
Average	4.70
Min	3.00
Max	7.00
GRAZING GI	
Average	0.30
NUTRIENTS NI	
Average	0.00

Site:	**748**
Area	**Howgill Fells, Sedburgh**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**2A**

This site is located at Cautley, to the north-east of Sedburgh, at an altitude of 210m. The field comprises a west-facing slope which is slight adjacent to Birks Farm, but steepens below.

Grass cover here comprises *Anthoxanthum odoratum, Cynosurus cristatus* and *Holcus lanatus*, with local *Festuca rubra* and *Lolium perenne*. Typical upland hay meadow axiophytes include constant *Euphrasia officinalis agg.*, *Rhinanthus minor* and *Leontodon autumnalis*. In the steeper parts of the field *Conopodium majus* is frequent, with occasional *Leucanthemum vulgare* and *Sanguisorba officinalis*. Several damp patches in the north-eastern part of the field support *Caltha palustris* and an un-mown bank here has *Dactylorhiza fuchsii*, *Stachys officinalis* and *Crepis paludosa*. Negative species were generally sparse within the sward and limited to infrequent *Rumex obtusifolius*. The field edges support *Urtica dioica*, particularly round a feeding station in the south-eastern corner. *Pteridium aquilinum* occurs along the southern field boundary.

The vegetation shows strong affinities to MG6b (66.6) and MG3a (61.9). The overall lack of preferentials for the latter community suggests a better fit to MG6b. The relatively high herb-richness of the vegetation and high frequency of *R. minor, E. officinalis agg.* and *Leontodon* autumnalis suggests a good fit to O'Reilly's (2011) MG6b-iii variant of this sub-community. The field is semi-improved but is of relatively high quality.

No previous data exist for this site.

SOILS	
Texture	Sandy Loam
pH	5.7
Olsens P	17
Total N	0.78
K	154

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Achillea millefolium	0	0	1	Aste	7	5	6	4	0	0
Agrostis capillaris	12	15	20	Poac	6	5	4	4	0	0
Alopecurus pratensis	0	5	0	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	15	20	5	Poac	7	6	4	3	0	-1
Bellis perennis	2	1	0	Aste	8	5	6	4	1	0
Centaurea nigra	1	0	0	Aste	7	5	6	5	1	-1
Cerastium fontanum	1	1	2	Cary	7	5	5	4	1	0
Cerastium glomeratum	0	1	0	Cary	7	5	6	5	1	0
Conopodium majus	3	0	2	Apia	6	5	5	5	0	-1
Cynosurus cristatus	12	15	3	Poac	7	5	6	4	0	0
Dactylis glomerata	0	1	0	Poac	7	5	7	6	0	0
Euphrasia officinalis agg.	12	3	3	Scro	8	5	5	3	0	-1
Festuca rubra	22	0	5	Poac	8	5	6	5	-1	0
Holcus lanatus	15	10	30	Poac	7	6	6	5	0	0
Hypochaeris radicata	2	1	2	Aste	8	4	5	3	0	-1
Juncus effusus	0	0	1	Junc	7	7	4	4	1	0
Leontodon autumnalis	2	4	3	Aste	8	6	6	4	1	0
Lolium perenne	3	15	2	Poac	8	5	6	6	0	0
Montia fontana	0	1	0	Port	7	9	5	3	1	-1
Myosotis discolor	0	1	1	Bora	7	5	5	3	1	-1
Plantago lanceolata	23	0	5	Plan	7	5	6	4	1	0
Poa trivialis	0	3	8	Poac	7	6	6	6	0	0
Ranunculus acris	2	4	2	Ranu	7	6	6	4	1	0
Ranunculus repens	1	4	15	Ranu	6	7	6	7	0	1
Rhinanthus minor	12	0	10	Scro	7	5	6	4	0	0
Rumex acetosa	5	4	3	Poly	7	5	5	4	0	0
Sanguisorba officinalis	1	0	0	Rosa	7	7	6	5	0	0
Trifolium pratense	5	4	2	Faba	7	5	7	5	1	0
Trifolium repens	5	3	1	Faba	7	5	6	6	0	0
Trisetum flavescens	1	0	0	Poac	7	4	7	4	0	0
Veronica arvensis	1	0	0	Scro	8	4	6	5	1	0

SUMMARY	
Total	31.00
Grass	10.00
Sedge	0.00
Rush	1.00
Forb	20.00
Herb cover	41%
LIGHT L	
Average	7.13
Min	6.00
Max	8.00
MOISTURE F	
Average	5.39
Min	4.00
Max	9.00
REACTION R	
Average	5.68
Min	4.00
Max	7.00
NITROGEN N	
Average	4.55
Min	3.00
Max	7.00
GRAZING GI	
Average	0.35
NUTRIENTS NI	
Average	-0.19

Site:	**749**
Area	**Mallerstang**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**1B**

This site lies to the east of Nateby, at the northern edge of the Mallerstang Valley, at an altitude of 240m. The field comprises a gentle east-facing slope.

The sward is grass dominated and includes abundant *Holcus lanatus*, *Cynosurus cristatus*, *Lolium perenne* and *Anthoxanthum odoratum* and frequent *Dactylis glomerata*, *Alopecurus pratensis*, with scattered *Trisetum flavescens*, *Phleum pratense* and *Alopecurus geniculatus*. Typical upland hay meadow axiophytes are of scattered throughout and include locally frequent *Conopodium majus* and *Lathyrus pratensis* with occasional *Filipendula ulmaria*, and rare occurrences of *Rhinanthus minor*, *Alchemilla glabra*, *Caltha palustris* and *Sanguisorba officinalis*. Negative indicator species include *Anthriscus sylvestris* and *Urtica dioica,* frequent along the western boundary, while the sward includes rare examples of *Heracleum sphondylium* and *Rumex obtusifolius*. The northern part of the eastern boundary comprises a small wet area with *Caltha palustris*, *L. pratensis, F. ulmaria*, *Juncus articulatus*, *Juncus effusus* and *Carex nigra*.

The vegetation shows strong affinities to MG6b (69.9) and is considered to be referable to O'Reilly's (2011) MG6b-ii variant of this sub-community. The meadow is semi-improved meadow and of average quality.

A total of three years of data were available for analysis, with the baseline set as 1992. Overall, species richness in 1x1m quadrats showed no change at 17 species. The proportion of grazing tolerant species declined overall, with average Grazing Suited Species Score decreasing from 0.33 in 1992 to 0.16 in 2012. The average Nutrient Availability Suited Species Score decreased slightly from 0.10 in 1992 to -0.02 in 2012, suggesting that the bias has shifted towards more nutrient intolerant species. Considering the ordination plots (Annex II), the error bars for the data collected in 1992 (5 quadrats) encompass all of the variability recorded in subsequent years, suggesting little significant change in the vegetation community. The slight directional movement in the data points and the suited species scores suggest there may have been a minor shift in species composition towards a more stress-tolerant flora.

The land has been in the ownership of the same farmer for the last 50 years. The field receives an annual application of manure. NPK (20:10:10) was used in the past from time to time; the field was last limed in the 1980's when grant aid was available.

SOILS	
Texture	Sandy loam
pH	5.5
Olsens P	18
Total N	0.69
K	132

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	15	5	2	Poac	6	5	4	4	0	0
Alopecurus geniculatus	0	0	3	Poac	8	7	6	6	0	1
Alopecurus pratensis	0	15	0	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	15	15	10	Poac	7	6	4	3	0	-1
Bellis perennis	0	0	2	Aste	8	5	6	4	1	0
Cerastium fontanum	1	0	2	Cary	7	5	5	4	1	0
Conopodium majus	5	2	0	Apia	6	5	5	5	0	-1
Cynosurus cristatus	15	5	15	Poac	7	5	6	4	0	0
Dactylis glomerata	0	2	2	Poac	7	5	7	6	0	0
Festuca pratensis	2	0	0	Poac	7	6	6	6	0	0
Festuca rubra	10	5	0	Poac	8	5	6	5	-1	0
Holcus lanatus	15	25	5	Poac	7	6	6	5	0	0
Lolium perenne	3	2	10	Poac	8	5	6	6	0	0
Myosotis discolor	1	2	0	Bora	7	5	5	3	1	-1
Phleum pratense	0	1	0	Poac	8	5	7	6	1	0
Poa annua	0	0	1	Poac	7	5	6	7	0	1
Poa trivialis	2	0	0	Poac	7	6	6	6	0	0
Ranunculus acris	15	15	30	Ranu	7	6	6	4	1	0
Ranunculus repens	3	2	15	Ranu	6	7	6	7	0	1
Rhinanthus minor	0	0	1	Scro	7	5	6	4	0	0
Rumex acetosa	5	5	2	Poly	7	5	5	4	0	0
Rumex obtusifolius	0	1	0	Poly	7	5	7	9	1	1
Taraxacum agg.	0	0	1	Aste	7	5	7	6	1	0
Trifolium pratense	1	0	0	Faba	7	5	7	5	1	0
Trifolium repens	5	0	5	Faba	7	5	6	6	0	0
Trisetum flavescens	0	5	0	Poac	7	4	7	4	0	0
Veronica serpyllifolia	1	0	0	Scro	7	5	6	5	-1	0
Vicia sativa	1	0	0	Faba	7	4	7	4	-1	0

SUMMARY	
Total	28.00
Grass	14.00
Sedge	0.00
Rush	0.00
Forb	14.00
Herb cover	38%
LIGHT L	
Average	7.07
Min	6.00
Max	8.00
MOISTURE F	
Average	5.25
Min	4.00
Max	7.00
REACTION R	
Average	5.96
Min	4.00
Max	7.00
NITROGEN N	
Average	5.18
Min	3.00
Max	9.00
GRAZING GI	
Average	0.18
NUTRIENTS NI	
Average	0.04

Site:	**750**
Area	**Dentdale**
HLS options + supplements	**HK7**
Former ESA tier	**1B**

This site is located to the south-east of Dent, at an altitude of 210m. The field comprises a north-west facing moderate slope with slightly undulating topography.

The vegetation comprises *Anthoxanthum odoratum, Cynosurus cristatus* and *Holcus lanatus* with *Ranunculus acris, Trifolium pratense* and *Rumex acetosa*. Typical upland hay meadow axiophytes include very frequent *Rhinanthus minor* and *Leontodon autumnalis* with occasional *Centaurea nigra* and rare *Euphrasia officinalis agg.* and *Filipendula ulmaria*. The upper quarter of the field is damper and supports frequent *Caltha palustris* and *Carex nigra*. Negative species are rare with only a small amount of *Rumex crispus* and *Heracleum sphondylium* occurring within the sward.

The vegetation shows strong affinities to MG6b (63.7) and is considered, on the basis of its herb richness and the frequency of a number of typical axiophytes to accord well with O'Reilly's (2011) MG6b-iii variant of the sub-community. The upper part of the field shows affinities to MG8 (57.1). The meadow is semi-improved and of high quality.

A total of five years of data were available for analysis, with the baseline set at 1987. Overall, species richness in 1x1m quadrats increased from 22.8 in 1987 24.7 in 2012. The proportion of grazing tolerant species declined slightly, as shown by average Grazing Suited Species Scores falling from 0.40 in 1987 to 0.35 in 2012. The proportion of nutrient tolerant species remained broadly similar over the same period at with average Nutrient Availability Suited Species Scores of -0.08 and -0.07 respectively. Considering the ordination plot (Annex II), the error bars for the data collected in 1987 (5 quadrats) encompass all of the variability observed in subsequent years, suggesting little significant change in the vegetation community. The distribution of the data points does indicate some shifts in the community between 1990 and 2002, but quite high similarity between 1987 and 2012. This movement is also supported by the suited species scores.

The farmer reports that the field has been regularly cut for hay for at least the past 30 years. Current nutrient input is through farmyard manure which is added annually; previously NPK was used annually (no details on rate).

SOILS	
Texture	Sandy loam
pH	5.3
Olsens P	13
Total N	0.73
K	158

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CONSULTANT ECOLOGISTS

NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	2	0	3	Poac	6	5	4	4	0	0
Agrostis stolonifera	0	3	0	Poac	7	6	7	6	0	1
Alopecurus geniculatus	0	1	0	Poac	8	7	6	6	0	1
Anthoxanthum odoratum	13	11	17	Poac	7	6	4	3	0	-1
Bellis perennis	3	3	4	Aste	8	5	6	4	1	0
Bromus hordeaceus	3	0	2	Poac	8	4	7	4	0	1
Caltha palustris	0	15	0	Ranu	7	9	6	4	0	-1
Cardamine pratensis	2	2	1	Bras	7	8	5	4	0	0
Carex nigra	0	3	0	Cype	7	8	4	2	0	-1
Carex ovalis	0	2	0	Cype	7	7	5	4	0	-1
Centaurea nigra	1	0	0	Aste	7	5	6	5	1	-1
Cerastium fontanum	2	2	2	Cary	7	5	5	4	1	0
Cerastium glomeratum	0	1	1	Cary	7	5	6	5	1	0
Cynosurus cristatus	15	11	17	Poac	7	5	6	4	0	0
Euphrasia officinalis agg.	0	3	0	Scro	8	5	5	3	0	-1
Holcus lanatus	21	11	17	Poac	7	6	6	5	0	0
Hypochaeris radicata	1	0	0	Aste	8	4	5	3	0	-1
Juncus articulatus	0	2	0	Junc	8	9	6	3	1	-1
Leontodon autumnalis	2	2	3	Aste	8	6	6	4	1	0
Lolium perenne	15	2	17	Poac	8	5	6	6	0	0
Montia fontana	0	10	0	Port	7	9	5	3	1	-1
Myosotis discolor	0	1	2	Bora	7	5	5	3	1	-1
Plantago lanceolata	13	1	10	Plan	7	5	6	4	1	0
Poa trivialis	20	5	17	Poac	7	6	6	6	0	0
Prunella vulgaris	0	1	1	Lami	7	5	6	4	0	0
Ranunculus acris	14	5	10	Ranu	7	6	6	4	1	0
Ranunculus repens	4	2	15	Ranu	6	7	6	7	0	1
Rhinanthus minor	2	1	1	Scro	7	5	6	4	0	0
Rumex acetosa	3	2	20	Poly	7	5	5	4	0	0
Taraxacum agg.	0	0	1	Aste	7	5	7	6	1	0
Trifolium dubium	0	2	1	Faba	7	4	6	5	0	0
Trifolium pratense	15	7	5	Faba	7	5	7	5	1	0
Trifolium repens	2	12	4	Faba	7	5	6	6	0	0
Veronica arvensis	0	0	2	Scro	8	4	6	5	1	0
Veronica serpyllifolia	0	0	2	Scro	7	5	6	5	-1	0

SUMMARY	
Total	35.00
Grass	9.00
Sedge	2.00
Rush	1.00
Forb	23.00
Herb cover	49%
LIGHT L	
Average	7.20
Min	6.00
Max	8.00
MOISTURE F	
Average	5.74
Min	4.00
Max	9.00
REACTION R	
Average	5.71
Min	4.00
Max	7.00
NITROGEN N	
Average	4.40
Min	2.00
Max	7.00
GRAZING GI	
Average	0.34
NUTRIENTS NI	
Average	-0.17

Site:	**751**
Area	**Dentdale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**1B**

This site lies to the east of Dent, at an altitude of 135m. The field is narrow and its long axis runs from east to west. The eastern boundary is formed by the River and the western and southern boundaries by a small stream. In terms of hydrology the field is divided roughly in two along its long axis, with dry ground to the north and a high water table to the south.

Across the meadow are *Anthoxanthum odoratum, Cynosurus cristatus* and *Lolium perenne* with *Plantago lanceolata, Ranunculus repens, Ranunculus acris, Trifolium repens* and *Trifolium pratense.* Typical upland hay meadow axiophytes throughout include very frequent *Rhinanthus minor*; and frequent *Euphrasia officinalis agg.* and *Leontodon autumnalis*. In addition, the drier northern area supports occasional *Lathyrus pratensis*, *Centaurea nigra*, *Alchemilla glabra, A. filicaulis vestita* and *A. xanthochlora*. The wetter southern area is characterised by *Juncus acutiflorus* with *Carex nigra, Caltha palustris* and *Filipendula ulmaria*. Scattered wetland axiophytes included *Geum rivale, Lotus pedunculatus, Lychnis flos-cuculi* and *Valeriana dioica*.

The vegetation in the drier areas of the site shows strong affinities to MG6b (60.0) and, on the basis of high herb cover and high frequency and abundance of a number of typical axiophytes is considered to be a good fit to O'Reilly's MG6b-iii variant of this sub-community. The wetter area (not sampled) is considered to be a *Juncus* dominated form of MG8 and conforms well to O'Reilly's MG8+ variant. The field is semi-improved, but of relatively high quality.

Six years of data were available for analysis, with the baseline set as 1987. Overall, species richness per 1x1m quadrat was seen to increase from 19.6 (1987) to 24.7 (2012). The proportion of grazing tolerant species remained broadly similar, with the average Grazing Suited Species Scores of 0.38 in 1987 and 0.35 in 2012. The proportion of nutrient tolerant species decreased slightly, with average Nutrient Availability Suited Species Scores showing a decrease from -0.03 (1987) to -0.10 (2012). In combination with the increased species richness, this indicates a possible improvement in the quality of the sward through time. Considering the ordination plot (Annex II) although some homogenisation of the sward is indicated by the tighter error bars in later years, the variability captured for 1987 incorporates all subsequent quadrats, thereby suggesting little change in community composition through time.

SOILS	
Texture	Sandy loam
pH	5.3
Olsens P	12
Total N	0.62
K	170

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CONSULTANT ECOLOGISTS

NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	5	7	13	Poac	6	5	4	4	0	0
Anthoxanthum odoratum	5	14	13	Poac	7	6	4	3	0	-1
Bellis perennis	2	2	3	Aste	8	5	6	4	1	0
Carex hirta	1	0	3	Cype	7	7	7	6	0	0
Carex nigra	0	1	0	Cype	7	8	4	2	0	-1
Centaurea nigra	0	0	2	Aste	7	5	6	5	1	-1
Cerastium fontanum	0	1	2	Cary	7	5	5	4	1	0
Cerastium glomeratum	1	0	1	Cary	7	5	6	5	1	0
Cynosurus cristatus	17	17	13	Poac	7	5	6	4	0	0
Euphrasia officinalis agg.	0	2	0	Scro	8	5	5	3	0	-1
Festuca rubra	2	2	2	Poac	8	5	6	5	-1	0
Holcus lanatus	4	5	6	Poac	7	6	6	5	0	0
Juncus acutiflorus	0	4	0	Junc	8	8	4	2	0	-1
Lathyrus pratensis	0	3	0	Faba	7	6	6	5	1	0
Leontodon autumnalis	3	3	2	Aste	8	6	6	4	1	0
Lolium perenne	17	4	11	Poac	8	5	6	6	0	0
Lotus pedunculatus	0	4	0	Faba	7	8	6	4	1	0
Montia fontana	3	0	0	Port	7	9	5	3	1	-1
Myosotis discolor	2	0	1	Bora	7	5	5	3	1	-1
Phleum pratense	2	0	0	Poac	8	5	7	6	1	0
Plantago lanceolata	2	11	25	Plan	7	5	6	4	1	0
Poa annua	2	0	0	Poac	7	5	6	7	0	1
Poa trivialis	17	7	13	Poac	7	6	6	6	0	0
Prunella vulgaris	2	2	2	Lami	7	5	6	4	0	0
Ranunculus acris	2	3	2	Ranu	7	6	6	4	1	0
Ranunculus repens	8	2	0	Ranu	6	7	6	7	0	1
Rhinanthus minor	20	22	22	Scro	7	5	6	4	0	0
Rumex acetosa	0	2	3	Poly	7	5	5	4	0	0
Taraxacum agg.	1	1	1	Aste	7	5	7	6	1	0
Trifolium dubium	1	1	1	Faba	7	4	6	5	0	0
Trifolium pratense	2	2	10	Faba	7	5	7	5	1	0
Trifolium repens	3	2	8	Faba	7	5	6	6	0	0

SUMMARY	
Total	32.00
Grass	9.00
Sedge	2.00
Rush	1.00
Forb	20.00
Herb cover	49%
LIGHT L	
Average	7.16
Min	6.00
Max	8.00
MOISTURE F	
Average	5.69
Min	4.00
Max	9.00
REACTION R	
Average	5.72
Min	4.00
Max	7.00
NITROGEN N	
Average	4.53
Min	2.00
Max	7.00
GRAZING GI	
Average	0.41
NUTRIENTS NI	
Average	-0.16

Site:	**752**
Area	**Dentdale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**1B**

This site is located at Waller's Bridge in the side valley of Deepdale, at an altitude of 230m. The field comprises a moderate east-facing slope that is steeper to the west.

The vegetation is characterised by *Anthoxanthum odoratum, Cynosurus cristatus, Lolium perenne* and *Poa trivialis* with *Ranunculus acris, Trifolium repens* and *Rumex acetosa*. Typical upland hay meadow axiophytes include constant *Rhinanthus minor* and *Centaurea nigra*; occasional *Leontodon autumnalis* and *L. hispidus*; and rare *Alchemilla glabra, Euphrasia officinalis agg., Lathyrus pratensis, Lotus corniculatus* and *Sanguisorba officinalis*. Two species rich banks, at the north-eastern corner and northern edge of the field, support species-rich vegetation including *Conopodium majus*, *Potentilla erecta* and *Stachys officinalis*.

The vegetation shows strong affinities to MG6b (63.2) and also to MG3a (59.2). On the basis of its relatively high herb cover, and high frequency and abundance of a number of typical axiophytes, the vegetation is considered to be a good fit to O'Reilly's MG6b-iii variant of this sub-community. The meadow is considered to be semi-improved and of relatively high quality.

A total of five years of data were available for analysis, with the baseline set as 1987. Overall, species richness in 1x1m quadrats increased from 21.4 in 1987 to 26.3 in 2012. The proportion of grazing tolerant species remained broadly similar, with average Grazing Suited Species Scores of 0.36 in 1987 and 0.40 in 2012. The proportion of nutrient tolerant species decreased slightly, with average Nutrient Availability Suited Species Scores showing a decrease from -0.07 (1987) to -0.09 (2012). In combination with the increased species richness, this indicates a possible improvement in the quality of the sward through time. Considering the ordination plot (Annex II), the error bars for the data collected in 1987 (5 quadrats) encompass all of the variability recorded for subsequent years, suggesting little significant change in the vegetation community. The distribution of the data points does, however, indicate some shifts in the community between 1987 and 2002, but high similarity between 1987 and 1995-2012. This similarity is also supported by the suited species scores.

SOILS	
Texture	Sandy loam
pH	5.2
Olsens P	11
Total N	0.64
K	126

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	Gl (grazing)	Nl (nutrients)
Agrostis capillaris	2	12	13	Poac	6	5	4	4	0	0
Alchemilla glabra	1	0	0	Rosa	7	6	6	4	0	0
Anthoxanthum odoratum	18	13	13	Poac	7	6	4	3	0	-1
Bellis perennis	15	12	16	Aste	8	5	6	4	1	0
Bromus hordeaceus	1	0	0	Poac	8	4	7	4	0	1
Cardamine pratensis	0	0	1	Bras	7	8	5	4	0	0
Centaurea nigra	10	4	2	Aste	7	5	6	5	1	-1
Cerastium fontanum	2	2	2	Cary	7	5	5	4	1	0
Cerastium glomeratum	2	2	2	Cary	7	5	6	5	1	0
Cynosurus cristatus	18	17	13	Poac	7	5	6	4	0	0
Euphrasia officinalis agg.	0	0	2	Scro	8	5	5	3	0	-1
Festuca rubra	0	0	2	Poac	8	5	6	5	-1	0
Holcus lanatus	3	4	2	Poac	7	6	6	5	0	0
Hypochaeris radicata	0	0	1	Aste	8	4	5	3	0	-1
Lathyrus pratensis	0	0	2	Faba	7	6	6	5	1	0
Leontodon autumnalis	1	1	2	Aste	8	6	6	4	1	0
Lolium perenne	17	20	14	Poac	8	5	6	6	0	0
Luzula campestris	0	0	2	Junc	7	4	5	2	1	-1
Montia fontana	0	0	1	Port	7	9	5	3	1	-1
Myosotis discolor	0	1	1	Bora	7	5	5	3	1	-1
Phleum pratense	1	0	0	Poac	8	5	7	6	1	0
Plantago lanceolata	2	5	4	Plan	7	5	6	4	1	0
Poa trivialis	20	20	12	Poac	7	6	6	6	0	0
Prunella vulgaris	1	1	0	Lami	7	5	6	4	0	0
Ranunculus acris	5	15	13	Ranu	7	6	6	4	1	0
Ranunculus ficaria	1	0	1	Ranu	6	6	6	6	0	0
Ranunculus repens	3	5	2	Ranu	6	7	6	7	0	1
Rhinanthus minor	2	2	3	Scro	7	5	6	4	0	0
Rumex acetosa	5	8	20	Poly	7	5	5	4	0	0
Taraxacum agg.	2	1	3	Aste	7	5	7	6	1	0
Trifolium dubium	0	2	1	Faba	7	4	6	5	0	0
Trifolium pratense	2	3	2	Faba	7	5	7	5	1	0
Trifolium repens	10	24	5	Faba	7	5	6	6	0	0
Veronica arvensis	1	0	0	Scro	8	4	6	5	1	0
Veronica serpyllifolia	1	1	0	Scro	7	5	6	5	-1	0

SUMMARY	
Total	35.00
Grass	9.00
Sedge	0.00
Rush	1.00
Forb	25.00
Herb cover	50%
LIGHT L	
Average	7.17
Min	6.00
Max	8.00
MOISTURE F	
Average	5.34
Min	4.00
Max	9.00
REACTION R	
Average	5.77
Min	4.00
Max	7.00
NITROGEN N	
Average	4.49
Min	2.00
Max	7.00
GRAZING Gl	
Average	0.37
NUTRIENTS Nl	
Average	-0.14

Site:	**753**
Area	**Dentdale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**1B**

This site is located to the north-east of Dent, at an altitude of 150m. The field has a south-westerly aspect and moderate slope steepening slightly to the north.

The field is characterised by *Agrostis capillaris, Anthoxanthum odoratum, Cynosurus cristatus* and *Holcus lanatus* with abundant *Plantago lanceolata, Trifolium pratense and Trifolium repens*. Typical upland hay meadow axiophytes include constant Euphrasia officinalis agg., *Rhinanthus minor* and *Leontodon autumnalis*. In addition, *Conopodium majus* is frequent within the centre of the field and *Centaurea nigra* is occasional. The field edges support a little *Sanguisorba officinalis* and *C. majus* whereas the southern edge of the field is species-poor and dominated by *Urtica dioica*.

The vegetation shows strong affinities to MG6b (62.8) and MG3a (58.7). On the basis of high herb cover and high frequency and abundance of a number of typical axiophytes is considered to be a good fit to O'Reilly's MG6b-iii variant of this sub-community. The field is semi-improved, but of relatively high quality.

A total of four years of data were available for analysis, with the baseline set as 1987. Overall, species richness in 1x1m quadrats increased greatly from 17.8 in 1987 to 25.3 in 2012, an overall increase of 42%. The proportion of grazing tolerant species fell between 1987 and 2012, with average Grazing Suited Species Scores decreasing from 0.53 in 1987 to 0.34 in 2012. The proportion of nutrient tolerant species decreased slightly, with average Nutrient Availability Suited Species Scores showing a decrease from -0.03 (1987) to -0.10 (2012). In combination with the increased species richness, this indicates a possible improvement in the quality of the sward through time. Considering the ordination plot (Annex II) the error bars for the data collected in 1987 (5 quadrats) encompass all of the variability collected in subsequent years, suggesting little significant change in the vegetation community. The distribution of the data points suggests an almost significant change in the community in 2002, although by 2012 a similar shift in the opposite direction had taken place.

The farmer reports the field has been managed for hay for at least 50 years. Well rotted farmyard manure is applied annually, at a rate of less than 10 tonnes per hectare; the field was last limed in 2010.

SOILS	
Texture	Sandy loam
pH	5.5
Olsens P	10
Total N	0.59
K	107

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	13	10	1	Poac	6	5	4	4	0	0
Alopecurus geniculatus	0	0	2	Poac	8	7	6	6	0	1
Anthoxanthum odoratum	5	15	17	Poac	7	6	4	3	0	-1
Bellis perennis	10	12	18	Aste	8	5	6	4	1	0
Bromus hordeaceus	1	0	2	Poac	8	4	7	4	0	1
Cardamine pratensis	1	0	0	Bras	7	8	5	4	0	0
Centaurea nigra	0	2	0	Aste	7	5	6	5	1	-1
Cerastium fontanum	1	2	2	Cary	7	5	5	4	1	0
Cynosurus cristatus	15	15	17	Poac	7	5	6	4	0	0
Euphrasia officinalis agg.	13	8	2	Scro	8	5	5	3	0	-1
Festuca rubra	1	0	0	Poac	8	5	6	5	-1	0
Holcus lanatus	18	15	16	Poac	7	6	6	5	0	0
Hypochaeris radicata	2	2	1	Aste	8	4	5	3	0	-1
Juncus bufonius	0	0	1	Junc	7	7	6	5	1	1
Leontodon autumnalis	0	2	2	Aste	8	6	6	4	1	0
Lolium perenne	15	4	17	Poac	8	5	6	6	0	0
Montia fontana	0	0	2	Port	7	9	5	3	1	-1
Myosotis discolor	0	1	1	Bora	7	5	5	3	1	-1
Phleum pratense	1	0	1	Poac	8	5	7	6	1	0
Plantago lanceolata	20	20	12	Plan	7	5	6	4	1	0
Poa annua	0	0	1	Poac	7	5	6	7	0	1
Poa trivialis	5	2	12	Poac	7	6	6	6	0	0
Prunella vulgaris	2	2	10	Lami	7	5	6	4	0	0
Ranunculus acris	2	2	5	Ranu	7	6	6	4	1	0
Ranunculus bulbosus	0	2	0	Ranu	7	4	7	4	0	0
Ranunculus repens	0	0	3	Ranu	6	7	6	7	0	1
Rhinanthus minor	2	5	2	Scro	7	5	6	4	0	0
Rumex acetosa	3	2	1	Poly	7	5	5	4	0	0
Taraxacum agg.	1	1	2	Aste	7	5	7	6	1	0
Trifolium dubium	5	13	2	Faba	7	4	6	5	0	0
Trifolium pratense	8	8	2	Faba	7	5	7	5	1	0
Trifolium repens	15	5	18	Faba	7	5	6	6	0	0

SUMMARY	
Total	32.00
Grass	11.00
Sedge	0.00
Rush	1.00
Forb	20.00
Herb cover	54%
LIGHT L	
Average	7.22
Min	6.00
Max	8.00
MOISTURE F	
Average	5.44
Min	4.00
Max	9.00
REACTION R	
Average	5.81
Min	4.00
Max	7.00
NITROGEN N	
Average	4.59
Min	3.00
Max	7.00
GRAZING GI	
Average	0.34
NUTRIENTS NI	
Average	-0.03

Site:	**754**
Area	**Dentdale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**2A (2002)**

This site lies in Deepdale, to the south-east of Dent, at an altitude of 280m. The field comprises a slightly convex, east-facing, slope which is moderate to the west and steeper below.

The vegetation is relatively homogeneous, and despite being on a fairly steep slope, the ground is probably very moist. The damper areas are characterised by constant *Caltha palustris*, *Juncus acutiflorus, Carex nigra* and *Senecio aquaticus* with grasses comprising *Cynosurus cristatus* and *Holcus lanatus*. On the less extensive drier areas *Centaurea nigra* is frequent, with *Conopodium majus* localised, on steeper slopes or banks, often accompanied by *Stachys officinalis*. Additional upland hay meadow axiophytes include *Euphrasia officinalis Rhinanthus minor* and *Leontodon* species (mostly *L. autumnalis* with local *L. hispidus*). On especially damp patches, colonies of *Lychnis flos-cuculi* add colour.

The *Caltha* dominated vegetation shows strong affinities to MG8 (54.6) and is considered to be a good fit to O'Reilly's (2011) MG8+ variant of the community. Similarly the drier areas show strong affinities to MG6b (62.2) and are considered a good fit to O'Reilly's MG6b-iii variant of this sub-community. The vegetation is considered to be semi-improved, but is of high quality.

A total of six years of data were available for analysis, with the baseline set as 1987. Overall, species richness in 1x1m quadrats increased greatly from 19.2 in 1987 to 29.7 in 2012, an overall increase of 55%. The proportion of grazing tolerant species fell between 1987 and 2012, with average Grazing Suited Species Scores decreasing from 0.47 in 1987 to 0.35 in 2012. The proportion of nutrient tolerant species remained broadly similar, with average Nutrient Availability Suited Species Scores showing a slight decrease from -0.21 (1987) to -0.25 (2012). In combination with the increased species richness, this indicates a possible improvement in the quality of the sward through time. Considering the ordination plot (Annex II) the error bars for the data collected in 1987 (5 quadrats) encompass all of the variability collected in subsequent years. In addition, the data points are closely clustered suggesting little overall change in the vegetation community.

The farmer reported that the meadow can't be cut for hay every year, although it has been cut in July for the last four, due to the ground becoming too soft in extended periods of wet weather.

SOILS	
Texture	Sandy loam
pH	5.7
Olsens P	18
Total N	0.8
K	155

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Achillea ptarmica	1	0	0	Aste	7	7	5	3	1	-1
Agrostis capillaris	4	16	3	Poac	6	5	4	4	0	0
Alopecurus pratensis	2	0	0	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	4	4	4	Poac	7	6	4	3	0	-1
Bellis perennis	3	2	2	Aste	8	5	6	4	1	0
Caltha palustris	3	0	4	Ranu	7	9	6	4	0	-1
Cardamine pratensis	2	0	2	Bras	7	8	5	4	0	0
Carex nigra	4	0	4	Cype	7	8	4	2	0	-1
Carex ovalis	3	0	2	Cype	7	7	5	4	0	-1
Centaurea nigra	0	4	0	Aste	7	5	6	5	1	-1
Cerastium fontanum	1	2	1	Cary	7	5	5	4	1	0
Cerastium glomeratum	1	0	1	Cary	7	5	6	5	1	0
Cynosurus cristatus	18	15	18	Poac	7	5	6	4	0	0
Deschampsia cespitosa	2	0	0	Poac	6	6	5	4	0	0
Euphrasia officinalis agg.	5	3	2	Scro	8	5	5	3	0	-1
Festuca pratensis	0	0	1	Poac	7	6	6	6	0	0
Festuca rubra	0	5	0	Poac	8	5	6	5	-1	0
Holcus lanatus	20	20	12	Poac	7	6	6	5	0	0
Hypochaeris radicata	0	4	1	Aste	8	4	5	3	0	-1
Juncus acutiflorus	10	0	4	Junc	8	8	4	2	0	-1
Leontodon autumnalis	3	3	2	Aste	8	6	6	4	1	0
Leontodon hispidus	0	2	0	Aste	8	4	7	3	0	-1
Lolium perenne	1	3	2	Poac	8	5	6	6	0	0
Lotus pedunculatus	3	0	2	Faba	7	8	6	4	1	0
Luzula campestris	0	2	0	Junc	7	4	5	2	1	-1
Montia fontana	2	0	3	Port	7	9	5	3	1	-1
Myosotis discolor	2	1	1	Bora	7	5	5	3	1	-1
Phleum pratense	0	0	2	Poac	8	5	7	6	1	0
Plantago lanceolata	2	12	3	Plan	7	5	6	4	1	0
Poa trivialis	7	15	10	Poac	7	6	6	6	0	0
Prunella vulgaris	3	2	0	Lami	7	5	6	4	0	0
Ranunculus acris	2	2	6	Ranu	7	6	6	4	1	0
Ranunculus bulbosus	0	0	3	Ranu	7	4	7	4	0	0
Ranunculus repens	3	0	3	Ranu	6	7	6	7	0	1
Rhinanthus minor	2	2	2	Scro	7	5	6	4	0	0
Rumex acetosa	2	5	2	Poly	7	5	5	4	0	0
Sagina procumbens	1	0	0	Cary	7	6	6	5	0	0
Senecio aquaticus	0	0	12	Aste	7	8	6	5	0	1
Taraxacum agg.	0	2	0	Aste	7	5	7	6	1	0
Trifolium dubium	3	2	0	Faba	7	4	6	5	0	0
Trifolium pratense	1	3	2	Faba	7	5	7	5	1	0
Trifolium repens	45	40	2	Faba	7	5	6	6	0	0

SUMMARY	
Total	42.00
Grass	11.00
Sedge	2.00
Rush	2.00
Forb	27.00
Herb cover	52%
LIGHT L	
Average	7.14
Min	6.00
Max	8.00
MOISTURE F	
Average	5.76
Min	4.00
Max	9.00
REACTION R	
Average	5.67
Min	4.00
Max	7.00
NITROGEN N	
Average	4.31
Min	2.00
Max	7.00
GRAZING GI	
Average	0.33
NUTRIENTS NI	
Average	-0.26

Site:	**755**
Area	**Wensleydale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**1B**

This site is located to the north-west of Appersett in Wensleydale at an altitude of 310m. The field has a mainly south-easterly aspect and forms a shallow valley with moderately sloping sides.

The meadow is relatively species-poor and had been grazed until quite recently ahead of the 2012 visit (mid June). The dominant grasses are *Lolium perenne*, *Cynosurus cristatus*, and *Anthoxanthum odoratum*. Typical upland hay meadow axiophytes are generally sparse and of low cover and include, frequent *Conopodium majus*; occasional *Euphrasia officinalis*; and scattered individuals of *Potentilla erecta, Caltha palustris, Centaurea nigra, Lathyrus pratensis, Leontodon autumnalis, Lotus corniculatus, Persicaria bistorta* and *Rhinanthus minor*. A flushed area at the eastern edge of the field supports abundant *Juncus acutiflorus* and frequent *C. palustris* and *Succisa pratensis* with *Anemone nemorosa* and *Stachys officinalis*. An acidic bank at the southern edge of the field supports *Deschampsia flexuosa, Vaccinium myrtillus* and *S. officinalis*. Negative indicators included *Cirsium arvense* at low cover and frequency.

The vegetation shows strong affinities to MG6 (68.0) with the central wetter area showing affinities to MG8. The vegetation is considered to correspond well to O'Reilly's (2011) MG6b-ii and MG8+ variants of these communities. The meadow is semi-improved and of moderate quality.

A total of three years of data were available for analysis, with the baseline set as 1992. Overall, species richness in 1x1m quadrats decreased greatly from 27.4 in 1992 to 16.3 in 2012, an overall decrease of 40%. The proportion of grazing tolerant species fell between 1987 and 2012, with average Grazing Suited Species Scores decreasing from 0.45 in 1992 to 0.34 in 2012. The proportion of nutrient tolerant species remained broadly similar, with average Nutrient Availability Suited Species Scores of -0.18 in both 1992 and 2012. Considering the ordination plot (Annex II) the error bars for the data collected in 1992 (5 quadrats) encompass all of the variability recorded in subsequent years, suggesting little significant change in the vegetation community. The closely grouped data points likewise suggest very little change in the community.

The current tenant took over the field 2 years ago, so little information was available about its history.

SOILS	
Texture	Sandy loam
pH	5.5
Olsens P	8
Total N	0.51
K	106

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CONSULTANT ECOLOGISTS

NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	10	45	10	Poac	6	5	4	4	0	0
Anthoxanthum odoratum	10	20	5	Poac	7	6	4	3	0	-1
Bellis perennis	0	3	0	Aste	8	5	6	4	1	0
Caltha palustris	2	5	0	Ranu	7	9	6	4	0	-1
Cardamine flexuosa	0	0	1	Bras	5	7	6	6	0	0
Cardamine pratensis	0	3	0	Bras	7	8	5	4	0	0
Carex flacca	0	0	1	Cype	7	5	6	2	0	-1
Cerastium fontanum	1	3	2	Cary	7	5	5	4	1	0
Cynosurus cristatus	10	5	15	Poac	7	5	6	4	0	0
Dactylis glomerata	0	0	2	Poac	7	5	7	6	0	0
Euphrasia officinalis agg.	1	0	0	Scro	8	5	5	3	0	-1
Festuca rubra	15	5	15	Poac	8	5	6	5	-1	0
Holcus lanatus	10	3	5	Poac	7	6	6	5	0	0
Juncus acutiflorus	2	0	0	Junc	8	8	4	2	0	-1
Lathyrus pratensis	0	1	0	Faba	7	6	6	5	1	0
Leontodon autumnalis	1	3	2	Aste	8	6	6	4	1	0
Lolium perenne	5	5	10	Poac	8	5	6	6	0	0
Luzula campestris	0	0	3	Junc	7	4	5	2	1	-1
Myosotis discolor	1	3	2	Bora	7	5	5	3	1	-1
Plantago lanceolata	2	3	3	Plan	7	5	6	4	1	0
Poa trivialis	10	3	15	Poac	7	6	6	6	0	0
Prunella vulgaris	2	0	0	Lami	7	5	6	4	0	0
Ranunculus acris	0	3	7	Ranu	7	6	6	4	1	0
Ranunculus repens	3	5	3	Ranu	6	7	6	7	0	1
Rumex acetosa	3	5	10	Poly	7	5	5	4	0	0
Sagina procumbens	0	1	0	Cary	7	6	6	5	0	0
Trifolium repens	15	5	5	Faba	7	5	6	6	0	0
Veronica chamaedrys	0	0	2	Scro	6	5	6	5	1	-1

SUMMARY	
Total	28.00
Grass	8.00
Sedge	1.00
Rush	2.00
Forb	17.00
Herb cover	32%
LIGHT L	
Average	7.04
Min	5.00
Max	8.00
MOISTURE F	
Average	5.71
Min	4.00
Max	9.00
REACTION R	
Average	5.61
Min	4.00
Max	7.00
NITROGEN N	
Average	4.32
Min	2.00
Max	7.00
GRAZING GI	
Average	0.29
NUTRIENTS NI	
Average	-0.25

Site:	**756**
Area	**Coverdale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**1B**

This site lies to the west of Arkleside in Coverdale at an altitude of 250m. The field is a gently sloping, to level, shelf adjacent to the River Cover.

The meadow has a lush and productive sward with abundant *Ranunculus acris* and *Rumex acetosa* throughout. The dominant grass varies between *Alopecurus pratensis* in some areas to *Holcus lanatus* elsewhere, with *Anthoxanthum odoratum* localised and more abundant at the edges of the field. Typical upland hay meadow axiophytes include *Conopodium majus* and *Rhinanthus minor* at low cover and only occasional frequency. A small flushed bank, adjacent to a field gate, supports frequent *Caltha palustris*, *Filipendula ulmaria*, *Cardamine pratensis*, *Lathyrus pratensis* and *R. minor*, Negative species include frequent *Rumex obtusifolius* and occasional *Cirsium arvense* and *Heracleum sphondylium* within the sward.

The vegetation shows strong affinities to MG6b (62.7) and corresponds well to O'Reilly's MG6b-i variant of the sub-community. The meadow is semi-improved and of below average quality in the context of the 2012 survey.

A total of four years of data were available for analysis, with the baseline set as 1992. Overall, species richness in 1x1m quadrats decreased from 16 in 1992 to 12 in 2012. The proportion of grazing tolerant species fell between 1987 and 2012, with average Grazing Suited Species Scores decreasing from 0.35 in 1992 to 0.16 in 2012. The proportion of nutrient tolerant species fell slightly, with average Nutrient Availability Suited Species Scores of -0.20 in 1992 and 0 in 2012. Considering the ordination plot (Annex II) the error bars for the data collected in 1992 (5 quadrats) encompass all of the variability recorded in 1995-2002, suggesting little significant change in the vegetation community in this time. However, a shift in the vegetation community was observed in 2012, possibly due to the reduction in grazing and nutrient tolerant species. Subsequent data are needed, however, to determine whether this is a long term trend or a short-term fluctuation.

The farmer reports that the field was consistently cut for hay until 5 years ago; now haylage is produced. Farmyard manure is applied annually and some inorganic fertiliser was added under ESA rules.

SOILS	
Texture	Sandy loam
pH	5.4
Olsens P	12
Total N	0.44
K	118

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	1	2	5	Poac	6	5	4	4	0	0
Alopecurus pratensis	30	10	0	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	0	10	0	Poac	7	6	4	3	0	-1
Bellis perennis	1	0	0	Aste	8	5	6	4	1	0
Bromus hordeaceus	0	3	0	Poac	8	4	7	4	0	1
Cardamine pratensis	1	0	2	Bras	7	8	5	4	0	0
Cerastium fontanum	2	3	0	Cary	7	5	5	4	1	0
Cynosurus cristatus	5	2	0	Poac	7	5	6	4	0	0
Festuca rubra	3	2	5	Poac	8	5	6	5	-1	0
Holcus lanatus	30	20	70	Poac	7	6	6	5	0	0
Lolium perenne	0	0	5	Poac	8	5	6	6	0	0
Myosotis discolor	1	0	0	Bora	7	5	5	3	1	-1
Plantago lanceolata	3	0	0	Plan	7	5	6	4	1	0
Poa trivialis	0	0	3	Poac	7	6	6	6	0	0
Ranunculus acris	25	25	10	Ranu	7	6	6	4	1	0
Ranunculus ficaria	0	0	2	Ranu	6	6	6	6	0	0
Ranunculus repens	2	2	0	Ranu	6	7	6	7	0	1
Rhinanthus minor	0	0	2	Scro	7	5	6	4	0	0
Rumex acetosa	15	20	10	Poly	7	5	5	4	0	0
Trifolium repens	2	0	0	Faba	7	5	6	6	0	0
Veronica chamaedrys	0	0	2	Scro	6	5	6	5	1	-1

SUMMARY	
Total	21.00
Grass	9.00
Sedge	0.00
Rush	0.00
Forb	12.00
Herb cover	39%
LIGHT L	
Average	7.00
Min	6.00
Max	8.00
MOISTURE F	
Average	5.43
Min	4.00
Max	8.00
REACTION R	
Average	5.67
Min	4.00
Max	7.00
NITROGEN N	
Average	4.71
Min	3.00
Max	7.00
GRAZING GI	
Average	0.24
NUTRIENTS NI	
Average	-0.05

Site:	**757**
Area	**Langstrothdale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**1B (2002)**

This site lies to the north-west of Yockenthwaite, in Upper Wharfedale, at an altitude of 300m. The field is north-facing and steeply sloping, with an undulating topography.

The field is relatively homogeneous with *Anthoxanthum odoratum, Cynosurus cristatus, Festuca rubra* and *Lolium perenne* comprising the majority of grass cover. Typical upland hay meadow axiophytes include constant *Rhinanthus minor*; frequent *Euphrasia officinalis agg.* and *Leontodon autumnalis*; and rare *Alchemilla glabra, Conopodium majus, Filipendula ulmaria, Geum rivale, Lathyrus pratensis* and *Helictotrichon pratensis*. The most diverse mown area is on the terrace adjacent to the Green Field Beck. A small spring at the base of the slope here has *Caltha palustris*, *Filipendula ulmaria*, *Alchemilla glabra*, *Ajuga reptans*, *Geum rivale*, *Crepis paludosa*, *Briza media*, *Carex nigra*, *Carex panicea* and *Rhinanthus minor*. Also present on the lower bank are *Centaurea nigra*, *Lathyrus pratensis*, *Sanguisorba minor* and *Carex caryophyllea*, particularly on thin soils near rock outcrops.

The vegetation shows strong affinities to MG6b (67.0) and MG3a (65.0). Due to the lack of differential species for the latter community, and the sparse distribution of preferential species, the vegetation is considered to be a better fit to MG6b. It accords well with O'Reilly's (2011) MG6b-iii variant of this sub-community. The meadow is considered to be semi-improved and of relatively high quality. The bank at near the northern edge of the field, and associated, spring, are considered to be unimproved and are of high quality.

A total of six years of data were available for analysis, with the baseline set as 1987. Overall, species richness in 1x1m quadrats decreased from 20 in 1992 to 18.7 in 2012, but peaked at 26 in 1995. The proportion of grazing tolerant species mirrored the pattern shown by species richness, with an overall decline in the average Grazing Suited Species Scores from 0.36 in 1992 to 0.24 in 2012, but peaking at 0.43 in 1995. The proportion of nutrient tolerant species fell slightly, with average Nutrient Availability Suited Species Scores of -0.03 in 1987 and -0.12 in 2012. Considering the ordination plot (Annex II) the error bars for the data collected in 1992 (5 quadrats) encompass all of the variability recorded in subsequent years. The data points are closely clustered suggesting there has been little overall change in the vegetation community.

The farmer currently adds manure annually at a rate of 0.5 tonnes an acre. Before ESA it was fertilised every other year at a rate of 1cwt per acre (20:10:10); the field was last limed in 1968.

SOILS	
Texture	Loamy sand
pH	5.6
Olsens P	12
Total N	0.44
K	118

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	5	2	8	Poac	6	5	4	4	0	0
Anthoxanthum odoratum	35	10	8	Poac	7	6	4	3	0	-1
Anthriscus sylvestris	0	2	1	Apia	6	5	7	7	-1	1
Arrhenatherum elatius	0	2	0	Poac	7	5	7	7	-1	0
Avenula pubescens	0	15	2	Poac	7	4	7	3	1	-1
Bellis perennis	0	5	10	Aste	8	5	6	4	1	0
Bromus hordeaceus	0	4	1	Poac	8	4	7	4	0	1
Cardamine pratensis	1	1	0	Bras	7	8	5	4	0	0
Cerastium fontanum	2	3	2	Cary	7	5	5	4	1	0
Conopodium majus	0	2	4	Apia	6	5	5	5	0	-1
Cynosurus cristatus	5	20	12	Poac	7	5	6	4	0	0
Dactylis glomerata	0	0	2	Poac	7	5	7	6	0	0
Euphrasia officinalis agg.	0	2	1	Scro	8	5	5	3	0	-1
Festuca rubra	20	7	15	Poac	8	5	6	5	-1	0
Holcus lanatus	<4	4	7	Poac	7	6	6	5	0	0
Hypochaeris radicata	2	0	0	Aste	8	4	5	3	0	-1
Leontodon autumnalis	0	5	0	Aste	8	6	6	4	1	0
Leontodon hispidus	0	0	2	Aste	8	4	7	3	0	-1
Lolium perenne	<4	5	7	Poac	8	5	6	6	0	0
Luzula campestris	0	0	2	Junc	7	4	5	2	1	-1
Plantago lanceolata	20	12	12	Plan	7	5	6	4	1	0
Poa trivialis	2	4	0	Poac	7	6	6	6	0	0
Prunella vulgaris	2	0	1	Lami	7	5	6	4	0	0
Ranunculus acris	8	10	3	Ranu	7	6	6	4	1	0
Ranunculus bulbosus	0	0	2	Ranu	7	4	7	4	0	0
Rhinanthus minor	1	3	2	Scro	7	5	6	4	0	0
Rumex acetosa	1	5	3	Poly	7	5	5	4	0	0
Senecio jacobaea	0	0	2	Aste	7	4	6	4	0	1
Trifolium pratense	7	3	5	Faba	7	5	7	5	1	0
Trifolium repens	0	2	3	Faba	7	5	6	6	0	0
Trisetum flavescens	0	0	1	Poac	7	4	7	4	0	0
Veronica chamaedrys	0	2	2	Scro	6	5	6	5	1	-1

SUMMARY	
Total	32.00
Grass	12.00
Sedge	0.00
Rush	1.00
Forb	19.00
Herb cover	43%
LIGHT L	
Average	7.13
Min	6.00
Max	8.00
MOISTURE F	
Average	5.00
Min	4.00
Max	8.00
REACTION R	
Average	5.94
Min	4.00
Max	7.00
NITROGEN N	
Average	4.38
Min	2.00
Max	7.00
GRAZING GI	
Average	0.19
NUTRIENTS NI	
Average	-0.16

Site:	**758**
Area	**Wharfedale**
HLS options + supplements	**HK7**
Former ESA tier	**2A**

This site lies to the north-west of Starbotton in Wharfdale at an altitude of 220m. The field has a south-westerly aspect and a gentle slope toward the River Wharfe.

The site comprises species-rich meadow where the dominant forbs are *Ranunculus acris*, *Ranunculus bulbosus* and *Trifolium pratense*. Some typical upland hay meadow axiophytes reach high frequency but never high abundance and include constant *Filipendula ulmaria* and *Rhinanthus minor*; frequent *Conopodium majus*; occasional *Lathyrus pratensis*, *Leontodon hispidus* and *L. autumnalis*; and rare *Alchemilla glabra, Centaurea nigra, Lathyrus pratensis* and *Sanguisorba officinalis*. The terrace adjacent to the River is particularly herb-rich, supporting high concentrations of *F. ulmaria*, *S. officinalis, T. pratense* and *Ajuga reptans*. A low-lying swamp, dominated by *Carex disticha* with *Caltha palustris*, at the south-eastern end of the field adds further diversity and interest. Species present around the gateway into the field suggest localised nutrient enrichment and include *Rumex obtusifolius*, *Poa annua*, *Anthriscus sylvestris* and *Dactylis glomerata*.

The vegetation shows strong affinities to MG3a (62.6) and MG6b (60.5). The overall scarcity of preferentials / differentials for the former community suggests a better fit to MG6b. The relatively high herb-richness of the stand and high frequency of *R. minor, F. ulmaria* and *C. majus* suggest correspondence with O'Reilly's (2011) MG6b-iii variant of this sub-community. The meadow is semi-improved and of relatively high quality.

A total of six years of data were available for analysis, with the baseline set as 1987. Overall, species richness in 1x1m quadrats increased from 24 in 1987 to 26.3 in 2012. The proportion of grazing tolerant species showed an overall decline in the average Grazing Suited Species Scores from 0.34 in 1987 to 0.22 in 2012, but peaking at 0.42 in 2002. The proportion of nutrient tolerant species fell slightly, with average Nutrient Availability Suited Species Scores of -0.15 in 1987 and -0.14 in 2012. Considering the ordination plot (Annex II) the error bars for the data collected in 1992 (5 quadrats) encompass all of the variability recorded in subsequent years. The data points are closely clustered suggesting there has been little overall change in the vegetation community.

The farmer reports that the field receives 5 tonnes per acre of farmyard manure annually and that one year in five it received a top-dressing of NPK (40:60:20) under the ESA scheme. Lead in the soil restricts the use of cattle in dry conditions.

SOILS	
Texture	Sandy loam
pH	6.3
Olsens P	7
Total N	0.63
K	84

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CONSULTANT ECOLOGISTS

NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Ajuga reptans	0	3	0	Lami	5	7	5	5	0	0
Alchemilla glabra	0	1	0	Rosa	7	6	6	4	0	0
Alopecurus pratensis	1	0	0	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	30	20	20	Poac	7	6	4	3	0	-1
Arrhenatherum elatius	0	0	1	Poac	7	5	7	7	-1	0
Bellis perennis	2	3	3	Aste	8	5	6	4	1	0
Bromus hordeaceus	0	0	3	Poac	8	4	7	4	0	1
Centaurea nigra	0	0	4	Aste	7	5	6	5	1	-1
Cerastium fontanum	2	2	2	Cary	7	5	5	4	1	0
Conopodium majus	0	3	2	Apia	6	5	5	5	0	-1
Cynosurus cristatus	15	20	15	Poac	7	5	6	4	0	0
Dactylis glomerata	0	3	0	Poac	7	5	7	6	0	0
Euphrasia officinalis agg.	1	1	0	Scro	8	5	5	3	0	-1
Festuca rubra	3	3	3	Poac	8	5	6	5	-1	0
Filipendula ulmaria	0	1	1	Rosa	7	8	6	5	-1	0
Holcus lanatus	15	15	15	Poac	7	6	6	5	0	0
Hypochaeris radicata	2	2	0	Aste	8	4	5	3	0	-1
Lathyrus pratensis	0	0	3	Faba	7	6	6	5	1	0
Leontodon autumnalis	2	0	0	Aste	8	6	6	4	1	0
Lolium perenne	15	20	20	Poac	8	5	6	6	0	0
Luzula campestris	3	3	2	Junc	7	4	5	2	1	-1
Plantago lanceolata	3	7	7	Plan	7	5	6	4	1	0
Poa trivialis	0	5	10	Poac	7	6	6	6	0	0
Prunella vulgaris	2	5	3	Lami	7	5	6	4	0	0
Ranunculus acris	7	5	10	Ranu	7	6	6	4	1	0
Ranunculus bulbosus	5	4	2	Ranu	7	4	7	4	0	0
Ranunculus ficaria	4	3	3	Ranu	6	6	6	6	0	0
Rhinanthus minor	3	3	3	Scro	7	5	6	4	0	0
Rumex acetosa	5	3	4	Poly	7	5	5	4	0	0
Sanguisorba officinalis	0	0	1	Rosa	7	7	6	5	0	0
Senecio jacobaea	0	1	0	Aste	7	4	6	4	0	1
Taraxacum agg.	1	0	1	Aste	7	5	7	6	1	0
Trifolium dubium	0	1	3	Faba	7	4	6	5	0	0
Trifolium pratense	2	3	3	Faba	7	5	7	5	1	0
Trifolium repens	3	3	3	Faba	7	5	6	6	0	0

SUMMARY	
Total	35.00
Grass	10.00
Sedge	0.00
Rush	1.00
Forb	24.00
Herb cover	38%
LIGHT L	
Average	7.09
Min	5.00
Max	8.00
MOISTURE F	
Average	5.26
Min	4.00
Max	8.00
REACTION R	
Average	5.91
Min	4.00
Max	7.00
NITROGEN N	
Average	4.66
Min	2.00
Max	7.00
GRAZING GI	
Average	0.20
NUTRIENTS NI	
Average	-0.11

Site:	**759**
Area	**Wharfedale**
HLS options + supplements	**HK7**
Former ESA tier	**2A**

This site lies to the north-west of Starbotton in Wharfdale at an altitude of 220m. The field has a south-westerly aspect and consists of a series of gently sloping natural terraces. Oystercatcher were nesting south-eastern corner of the field during the 2012 survey, thus the RCA walk comprised 15 stops, over the lower part of the meadow.

A relatively species-rich meadow with a generally uniform sward dominated by *Anthoxanthum odoratum, Lolium perenne* and *Cynosurus cristatus* with a wide range of forbs including a good number of upland hay meadow axiophytes. These include constant *Conopodium majus* and *Euphrasia officinalis agg;* frequent *Rhinanthus minor;* and rare *Alchemilla glabra, A, xanthochlora, Centaurea nigra, Lathyrus pratensis* and *Leontodon autumnalis.* The unmown bank at the north-western edge of the field adds diversity and further richness, with *Helictotrichon pubescens*, *Festuca ovina*, *Sanguisorba minor*, *Primula veris*, *Lotus corniculatus* and *Plantago media*. Coarser grassland at the edges of the field, outside the cutting area, but the sward has few negative species.

The vegetation shows strong affinities to MG3a (62.3) and MG6b (58.6). The overall scarcity of preferentials / differentials for the former community suggests a better fit to MG6b. The relatively high herb-richness of the stand and high frequency of *E. officinalis agg., C. majus* and *R. minor* suggest correspondence with O'Reilly's (2011) MG6b-iii variant of this sub-community. The meadow is semi-improved and of relatively high quality. The bank at the north-eastern edge of the field is unimproved and also of high quality.

No ordination plot was created for this site as scores for a single axis only were computed. This indicates that the variability within the data was not able to be explained by further ordination axes, most likely due to the high proportion of rare species within the dataset relative to the total numbers of species. Nevertheless, a total of six years of data were available for analysis, with the baseline set as 1987. Overall, species richness in 1x1m quadrats increased from 20.8 in 1987 to 27.3 in 2012. The proportion of grazing tolerant species showed an overall decline in the average Grazing Suited Species Scores from 0. 41 in 1987 to 0.29 in 2012. The proportion of nutrient tolerant species fell slightly, with average Nutrient Availability Suited Species Scores of -0.04 in 1987 and -0.14 in 2012. In combination with the increased species richness, the decline in dominance of both grazing and nutrient tolerant species suggests a positive change in the community composition of the site.

SOILS	
Texture	Loamy sandy
pH	6.3
Olsens P	6
Total N	0.81
K	118

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CONSULTANT ECOLOGISTS

NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	0	3	0	Poac	6	5	4	4	0	0
Ajuga reptans	1	0	0	Lami	5	7	5	5	0	0
Alchemilla xanthochlora	1	0	0	Rosa	6	5	6	4	1	0
Anthoxanthum odoratum	4	25	15	Poac	7	6	4	3	0	-1
Arrhenatherum elatius	0	0	1	Poac	7	5	7	7	-1	0
Bellis perennis	2	5	3	Aste	8	5	6	4	1	0
Bromus hordeaceus	0	0	2	Poac	8	4	7	4	0	1
Centaurea nigra	0	1	0	Aste	7	5	6	5	1	-1
Cerastium fontanum	0	3	0	Cary	7	5	5	4	1	0
Cerastium glomeratum	2	0	0	Cary	7	5	6	5	1	0
Conopodium majus	6	3	3	Apia	6	5	5	5	0	-1
Cruciata laevipes	2	0	0	Rubi	6	5	7	5	1	0
Cynosurus cristatus	3	5	2	Poac	7	5	6	4	0	0
Dactylis glomerata	1	3	0	Poac	7	5	7	6	0	0
Euphrasia officinalis agg.	3	2	0	Scro	8	5	5	3	0	-1
Festuca rubra	7	5	5	Poac	8	5	6	5	-1	0
Filipendula ulmaria	0	2	0	Rosa	7	8	6	5	-1	0
Heracleum sphondylium	0	1	1	Apia	7	5	7	7	0	1
Holcus lanatus	6	3	3	Poac	7	6	6	5	0	0
Hypochaeris radicata	1	0	0	Aste	8	4	5	3	0	-1
Lathyrus pratensis	0	2	1	Faba	7	6	6	5	1	0
Leontodon autumnalis	3	3	5	Aste	8	6	6	4	1	0
Lolium perenne	30	25	35	Poac	8	5	6	6	0	0
Luzula campestris	3	3	0	Junc	7	4	5	2	1	-1
Myosotis discolor	1	0	1	Bora	7	5	5	3	1	-1
Plantago lanceolata	7	10	7	Plan	7	5	6	4	1	0
Poa trivialis	30	0	10	Poac	7	6	6	6	0	0
Prunella vulgaris	2	4	0	Lami	7	5	6	4	0	0
Ranunculus acris	0	1	3	Ranu	7	6	6	4	1	0
Ranunculus bulbosus	10	8	5	Ranu	7	4	7	4	0	0
Ranunculus ficaria	3	5	0	Ranu	6	6	6	6	0	0
Rhinanthus minor	1	0	2	Scro	7	5	6	4	0	0
Rumex acetosa	5	4	2	Poly	7	5	5	4	0	0
Taraxacum agg.	1	3	5	Aste	7	5	7	6	1	0
Trifolium dubium	1	3	0	Faba	7	4	6	5	0	0
Trifolium pratense	3	5	8	Faba	7	5	7	5	1	0
Trifolium repens	4	3	3	Faba	7	5	6	6	0	0
Trisetum flavescens	0	1	1	Poac	7	4	7	4	0	0
Veronica chamaedrys	1	0	0	Scro	6	5	6	5	1	-1

SUMMARY	
Total	39.00
Grass	11.00
Sedge	0.00
Rush	1.00
Forb	27.00
Herb cover	43%
LIGHT L	
Average	6.97
Min	5.00
Max	8.00
MOISTURE F	
Average	5.15
Min	4.00
Max	8.00
REACTION R	
Average	5.92
Min	4.00
Max	7.00
NITROGEN N	
Average	4.62
Min	2.00
Max	7.00
GRAZING GI	
Average	0.31
NUTRIENTS NI	
Average	-0.15

Site:	**760**
Area	**Wharfedale**
HLS options + supplements	**HK7**
Former ESA tier	**2A**

This site lies to the south-east of Starbotton in Wharfedale, at an altitude of 210m. The field has a westerly aspect, gentle slope and even topography.

The meadow has an open sward comprised of fine-leaved grasses including *Anthoxanthum odoratum, Lolium perenne* and *Cynosurus cristatus* with prominent *Ranunculus spp.* and *Plantago lanceolata*. Typical upland hay meadow axiophytes include constant *Centaurea nigra, Conopodium majus* and *Rhinanthus minor*; occasional *Filipendula ulmaria;* and rare *Lathyrus pratensis*. Several areas along the north-eastern boundary of the field support calcicoles such as, *Primula veris* and *Sanguisorba minor*, while the south-eastern boundary has tall *F. ulmaria, C. nigra* and *Cruciata laevipes*. Negative species are rare and include local patches of *Urtica dioica* and *Rumex obtusifolius*.

The vegetation shows strong affinities to MG3a (67.9) and MG6b (64.3). Due to the relatively low cover of MG3 differentials / preferentials but overall high herb richness and frequency of typical upland hay meadow axiophytes the stand is considered to correspond well with O'Reilly's (2011) MG6b-iii variant. The site is semi-improved and is a high quality example of such swards within the context of the 2012 survey.

A total of six years of data were available for analysis, with the baseline set as 1987. Overall, species richness in 1x1m quadrats decreased from 21.6 in 1987 to 20.7 in 2012. Nevertheless, the peak of species richness was recorded for quadrats sampled in 1990 (29.8). The proportion of grazing tolerant species showed an overall decline in the average Grazing Suited Species Scores from 0.42 in 1987 to 0.18 in 2012. The proportion of nutrient tolerant species rose slightly, with average Nutrient Availability Suited Species Scores of -0.15 in 1987 and -0.08 in 2012. Considering the ordination plot (Annex II) the error bars for the data collected in 1992 (5 quadrats) encompass all of the variability recorded in subsequent years. The data points are closely clustered suggesting there has been little overall change in the vegetation community.

The farmer reports that the field receives 5 tonnes per acre of farmyard manure annually and that one year in five it received a top-dressing of NPK (40:60:20) under the ESA scheme. Lead in the soil restricts the use of cattle in dry conditions.

SOILS	
Texture	Loamy sand
pH	6.3
Olsens P	6
Total N	1.21
K	105

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	5	0	1	Poac	6	5	4	4	0	0
Ajuga reptans	1	0	0	Lami	5	7	5	5	0	0
Anthoxanthum odoratum	5	5	10	Poac	7	6	4	3	0	-1
Arrhenatherum elatius	0	1	1	Poac	7	5	7	7	-1	0
Bellis perennis	5	5	0	Aste	8	5	6	4	1	0
Bromus hordeaceus	5	5	15	Poac	8	4	7	4	0	1
Centaurea nigra	5	3	0	Aste	7	5	6	5	1	-1
Cerastium fontanum	2	3	2	Cary	7	5	5	4	1	0
Conopodium majus	4	3	2	Apia	6	5	5	5	0	-1
Cynosurus cristatus	5	5	10	Poac	7	5	6	4	0	0
Dactylis glomerata	2	3	2	Poac	7	5	7	6	0	0
Festuca rubra	15	15	1	Poac	8	5	6	5	-1	0
Heracleum sphondylium	0	0	1	Apia	7	5	7	7	0	1
Holcus lanatus	2	3	2	Poac	7	6	6	5	0	0
Hypochaeris radicata	0	2	0	Aste	8	4	5	3	0	-1
Lolium perenne	10	5	15	Poac	8	5	6	6	0	0
Luzula campestris	3	0	0	Junc	7	4	5	2	1	-1
Phleum pratense	1	1	0	Poac	8	5	7	6	1	0
Plantago lanceolata	12	12	4	Plan	7	5	6	4	1	0
Poa trivialis	10	10	20	Poac	7	6	6	6	0	0
Prunella vulgaris	1	1	1	Lami	7	5	6	4	0	0
Ranunculus acris	3	2	4	Ranu	7	6	6	4	1	0
Ranunculus bulbosus	8	10	10	Ranu	7	4	7	4	0	0
Rhinanthus minor	1	1	0	Scro	7	5	6	4	0	0
Rumex acetosa	2	2	2	Poly	7	5	5	4	0	0
Taraxacum agg.	1	2	2	Aste	7	5	7	6	1	0
Trifolium dubium	2	2	0	Faba	7	4	6	5	0	0
Trifolium pratense	5	3	2	Faba	7	5	7	5	1	0
Trifolium repens	10	0	2	Faba	7	5	6	6	0	0
Trisetum flavescens	5	1	0	Poac	7	4	7	4	0	0
Veronica chamaedrys	2	0	0	Scro	6	5	6	5	1	-1
Veronica serpyllifolia	0	0	1	Scro	7	5	6	5	-1	0

SUMMARY	
Total	32.00
Grass	12.00
Sedge	0.00
Rush	1.00
Forb	19.00
Herb cover	43%
LIGHT L	
Average	7.03
Min	5.00
Max	8.00
MOISTURE F	
Average	5.00
Min	4.00
Max	7.00
REACTION R	
Average	5.97
Min	4.00
Max	7.00
NITROGEN N	
Average	4.72
Min	2.00
Max	7.00
GRAZING GI	
Average	0.22
NUTRIENTS NI	
Average	-0.13

Site:	**761**
Area	**Wharfedale**
HLS options + supplements	**HK7**
Former ESA tier	**2A**

This site lies to the south-east of Starbotton in Wharfedale, at an altitude of 210m. The field has a westerly aspect, gentle slope and undulating topography.

The meadow comprises *Anthoxanthum odoratum, Festuca rubra, Cynosurus cristatus* and *Lolium perenne* with prominent *Ranunculus spp., Plantago lanceolata* and *Trifolium pratense*. Typical upland hay meadow axiophytes include very frequent *Centaurea nigra, Conopodium majus* and *Rhinanthus minor*; occasional *Filipendula ulmaria* and *Euphrasia officinalis agg.*; and rare *Alchemilla spp., Lathyrus pratensis, Leontodon autumnalis* and *Lotus corniculatus*. An area of coarse tussocky *Deschampsia cespitosa* dominated vegetation in the southern corner of the field supports *Primula vulgaris*, *Primula veris*, *Sanguisorba minor, Ajuga reptans, Avenula pubescens* and *Carex flacca,* with small patches of *Geranium pratense*. A small bank at the north-eastern edge of the field includes *Geranium sylvaticum, Linum catharticum* and *Galium verum*.

The vegetation shows strong affinities to MG3a (66.6) and MG6b (63.5). Due to the relatively low cover of MG3 differentials / preferentials but overall high herb richness and frequency of typical upland hay meadow axiophytes the stand is considered to correspond well with O'Reilly's (2011) MG6b-iii variant. The site is semi-improved and is a high quality example of such swards within the context of the 2012 survey.

A total of five years of data were available for analysis, with the baseline set as 1987. Overall, species richness in 1x1m quadrats decreased from 24.6 in 1987 to 13.3 in 2012. Nevertheless, the peak of species richness was recorded for quadrats sampled in 1995 (31.2). This is likely to be due to the 2012 survey sampling only the mown area of the site. The proportion of grazing tolerant species showed an overall decline in the average Grazing Suited Species Scores from 0.46 in 1987 to 0.20 in 2012. The proportion of nutrient tolerant species fell, with average Nutrient Availability Suited Species Scores of -0.23 in 1987 and -0.30 in 2012. Considering the ordination plot (Annex II) the error bars for the data collected in 1987 (5 quadrats) encompass all of the variability recorded in subsequent years. The data points are closely clustered suggesting there has been little overall change in the vegetation community.

The farmer reports that the field receives 5 tonnes per acre of farmyard manure annually and that one year in five it received a top-dressing of NPK (40:60:20) under the ESA scheme rules. Lead in the soil restricts the grazing by cattle in dry conditions.

SOILS	
Texture	Loamy sand
pH	6.5
Olsens P	12
Total N	1.18
K	97

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis canina	3	0	0	Poac	7	6	3	3	0	-1
Agrostis capillaris	0	5	5	Poac	6	5	4	4	0	0
Ajuga reptans	2	0	0	Lami	5	7	5	5	0	0
Anthoxanthum odoratum	7	7	3	Poac	7	6	4	3	0	-1
Bellis perennis	3	5	3	Aste	8	5	6	4	1	0
Bromus hordeaceus	4	4	3	Poac	8	4	7	4	0	1
Cardamine pratensis	0	1	0	Bras	7	8	5	4	0	0
Centaurea nigra	2	0	2	Aste	7	5	6	5	1	-1
Cerastium fontanum	3	2	3	Cary	7	5	5	4	1	0
Conopodium majus	2	0	3	Apia	6	5	5	5	0	-1
Cruciata laevipes	1	0	3	Rubi	6	5	7	5	1	0
Cynosurus cristatus	5	5	5	Poac	7	5	6	4	0	0
Dactylis glomerata	3	0	2	Poac	7	5	7	6	0	0
Euphrasia officinalis agg.	2	2	3	Scro	8	5	5	3	0	-1
Festuca rubra	20	25	20	Poac	8	5	6	5	-1	0
Filipendula ulmaria	0	10	0	Rosa	7	8	6	5	-1	0
Galium verum	5	0	0	Rubi	7	4	6	2	0	-1
Holcus lanatus	3	3	3	Poac	7	6	6	5	0	0
Lathyrus pratensis	1	0	0	Faba	7	6	6	5	1	0
Leontodon autumnalis	0	2	2	Aste	8	6	6	4	1	0
Lolium perenne	10	7	10	Poac	8	5	6	6	0	0
Luzula campestris	3	0	3	Junc	7	4	5	2	1	-1
Phleum pratense	0	4	3	Poac	8	5	7	6	1	0
Plantago lanceolata	20	10	20	Plan	7	5	6	4	1	0
Poa pratensis	0	0	5	Poac	7	5	6	5	0	0
Poa trivialis	3	5	0	Poac	7	6	6	6	0	0
Prunella vulgaris	5	0	0	Lami	7	5	6	4	0	0
Ranunculus acris	5	5	5	Ranu	7	6	6	4	1	0
Ranunculus bulbosus	10	10	15	Ranu	7	4	7	4	0	0
Ranunculus ficaria	0	2	0	Ranu	6	6	6	6	0	0
Rhinanthus minor	5	2	3	Scro	7	5	6	4	0	0
Rumex acetosa	4	2	2	Poly	7	5	5	4	0	0
Taraxacum agg.	1	1	2	Aste	7	5	7	6	1	0
Trifolium pratense	7	7	5	Faba	7	5	7	5	1	0
Trifolium repens	4	0	10	Faba	7	5	6	6	0	0
Trisetum flavescens	2	0	0	Poac	7	4	7	4	0	0
Veronica chamaedrys	2	0	3	Scro	6	5	6	5	1	-1

SUMMARY	
Total	37.00
Grass	13.00
Sedge	0.00
Rush	1.00
Forb	23.00
Herb cover	55%
LIGHT L	
Average	7.00
Min	5.00
Max	8.00
MOISTURE F	
Average	5.30
Min	4.00
Max	8.00
REACTION R	
Average	5.84
Min	3.00
Max	7.00
NITROGEN N	
Average	4.49
Min	2.00
Max	6.00
GRAZING GI	
Average	0.30
NUTRIENTS NI	
Average	-0.19

Site:	**762**
Area	**Wharfedale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**2A**

This site lies to the north-east of Hubberholme in Wharfdale, at an elevation of 350m. The meadow has a southerly aspect and comprises three gently sloping terraces separated by short but steep un-mown banks.

The vegetation comprises a quite uniform mix of *Anthoxanthum odoratum, Festuca rubra,* and *Lolium perenne* with prominent *Ranunculus spp., Plantago lanceolata* and *Trifolium pratense*. Typical upland hay meadow axiophytes include constant *Rhinanthus minor* and *Conopodium majus*; frequent *Euphrasia officinalis agg.;* and occasional *Centaurea nigra* and *Leontodon autumnalis*. A range of negative species occur around the field and the hay barn, including *Rumex obtusifolius*, *Heracleum sphondylium*, *Anthriscus sylvestris* and *Urtica dioica*. The steep banks between the mown terraces are species-rich and support calcicolous vegetation including *Galium verum, Scabiosa columbaria, Orchis mascula*, *Primula veris, Plantago media* and *Geranium sylvaticum*.

The vegetation shows strong affinities to MG3a (64.6) and MG6b (61.5). Due to the relatively low cover of MG3 differentials / preferentials but overall high herb richness and frequency of typical upland hay meadow axiophytes the stand is considered to correspond well with O'Reilly's (2011) MG6b-iii variant. The site is semi-improved and is a high quality example of such swards within the context of the 2012 survey.

No ordination plot was created for this site as scores for a single axis only were computed. This indicates that the variability within the date was not able to be explained by further ordination axes, most likely due to the high proportion of rare species within the dataset relative to the total numbers of species. Nevertheless, a total of six years of data were available for analysis, with the baseline set as 1987. Overall, species richness in 1x1m quadrats decreased from 22.4 in 1987 to 17.3 in 2012, although at least 25 species were reported until 2002. The proportion of grazing tolerant species showed an overall decline in the average Grazing Suited Species Scores from 0.42 in 1987 to 0.20 in 2012. The proportion of nutrient tolerant species rose slightly, with average Nutrient Availability Suited Species Scores of -0.15 in 1987 and -0.08 in 2012.

SOILS	
Texture	Sandy loam
pH	5.9
Olsens P	14
Total N	1.19
K	184

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CONSULTANT ECOLOGISTS

NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	3	0	3	Poac	6	5	4	4	0	0
Alopecurus pratensis	0	1	0	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	15	15	20	Poac	7	6	4	3	0	-1
Bellis perennis	5	3	3	Aste	8	5	6	4	1	0
Briza media	0	2	0	Poac	8	5	7	3	1	-1
Bromus hordeaceus	3	5	3	Poac	8	4	7	4	0	1
Cerastium fontanum	2	1	0	Cary	7	5	5	4	1	0
Conopodium majus	5	2	2	Apia	6	5	5	5	0	-1
Cynosurus cristatus	6	2	2	Poac	7	5	6	4	0	0
Dactylis glomerata	4	0	5	Poac	7	5	7	6	0	0
Euphrasia officinalis agg.	1	0	3	Scro	8	5	5	3	0	-1
Festuca rubra	10	10	10	Poac	8	5	6	5	-1	0
Holcus lanatus	5	15	20	Poac	7	6	6	5	0	0
Lolium perenne	15	35	30	Poac	8	5	6	6	0	0
Myosotis discolor	0	0	1	Bora	7	5	5	3	1	-1
Plantago lanceolata	15	5	6	Plan	7	5	6	4	1	0
Poa trivialis	5	0	3	Poac	7	6	6	6	0	0
Prunella vulgaris	3	0	2	Lami	7	5	6	4	0	0
Ranunculus acris	3	3	3	Ranu	7	6	6	4	1	0
Ranunculus bulbosus	5	5	0	Ranu	7	4	7	4	0	0
Rhinanthus minor	3	3	3	Scro	7	5	6	4	0	0
Rumex acetosa	0	2	3	Poly	7	5	5	4	0	0
Taraxacum agg.	3	1	0	Aste	7	5	7	6	1	0
Trifolium pratense	15	2	2	Faba	7	5	7	5	1	0
Trifolium repens	10	2	3	Faba	7	5	6	6	0	0

SUMMARY	
Total	25.00
Grass	11.00
Sedge	0.00
Rush	0.00
Forb	14.00
Herb cover	34%
LIGHT L	
Average	7.16
Min	6.00
Max	8.00
MOISTURE F	
Average	5.08
Min	4.00
Max	6.00
REACTION R	
Average	5.88
Min	4.00
Max	7.00
NITROGEN N	
Average	4.52
Min	3.00
Max	7.00
GRAZING GI	
Average	0.28
NUTRIENTS NI	
Average	-0.16

Site:	**763**
Area	**Wharfedale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**2A**

This site lies to the north-east of Hubberholme in Wharfdale, at an elevation of 350m. The meadow has a southerly aspect and comprises three gently sloping terraces separated by short but steep un-mown banks.

The vegetation comprises a quite uniform mix of *Anthoxanthum odoratum, Festuca rubra,* and *Lolium perenne* with prominent *Ranunculus spp., Plantago lanceolata* and *Trifolium pratense*. Typical upland hay meadow axiophytes include frequent *Rhinanthus minor* and *Leontodon autumnalis, Euphrasia officinalis agg* and *Conopodium majus*; occasional *Centaurea nigra, Lathyrus pratensis*; and rare *Geum rivale* and *Lotus corniculatus.* Damper ground to the south and west of the field supports *Ajuga reptans* and *Filipendula ulmaria* and there is a small *Caltha palustris* dominated at the western edge of the higher terrace. Negative species are generally restricted to the edges of the field and include *Heracleum sphondylium*, *Urtica dioica*, and *Anthriscus sylvestris*.

The banks which separate the mown terraces, and that at the southern edge of the field, support a calcicolous flora including *Anthyllis vulneraria, Lotus corniculatus*, *Sanguisorba minor*, *Sanguisorba officinalis, Linum catharticum*, *Leontodon hispidus Stachys officinalis Achillea millefolium*, *Galium verum*, *Geranium sylvaticum* and *Potentilla sterilis*.

The vegetation shows strong affinities to MG3a (64.6) and MG6b (61.5). Due to the relatively low cover of MG3 differentials / preferentials, but overall high herb richness and frequency of typical upland hay meadow axiophytes the stand is considered to correspond well with O'Reilly's (2011) MG6b-iii variant. The site is semi-improved and of relatively high quality. The three banks within the field are unimproved are of high quality.

A total of six years of data were available for analysis, with the baseline set as 1987. Overall, species richness in 1x1m quadrats decreased from 22.8 in 1987 to 20.0 in 2012. Nevertheless, the peak of species richness was recorded for quadrats sampled in 1992 (29.8). The proportion of grazing tolerant species showed an overall decline as evidenced by a change in the average Grazing Suited Species Scores from 0.40 in 1987 to 0.12 in 2012. The proportion of nutrient tolerant species rose slightly, with average Nutrient Availability Suited Species Scores of -0.14 in 1987 and -0.08 in 2012. Considering the ordination plot (Annex II) the error bars for the data collected in 1987 (5 quadrats) encompass all of the variability recorded in subsequent years. The data points are closely clustered suggesting there has been little overall change in the vegetation community.

The farmer reports that the field receives around 10 tonnes per acre of farmyard manure annually and that it previously received annual addition of 50kg per acre of NPK (20:10:10) under the ESA scheme. Lead in the soil restricts the use of cattle in dry conditions. Additional seed (green hay), from Deepdale Farm, Yockenthwaite, was added in 2010 under the Hay Time Project. This may have been responsible for some of the changes in the vegetation observed between 2002 and 2012.

SOILS	
Texture	Sandy loam
pH	5.8
Olsens P	9
Total N	1.24
K	239

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CONSULTANT ECOLOGISTS

NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	5	2	15	Poac	6	5	4	4	0	0
Ajuga reptans	0	0	2	Lami	5	7	5	5	0	0
Alopecurus geniculatus	0	3	0	Poac	8	7	6	6	0	1
Alopecurus pratensis	1	0	0	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	30	30	25	Poac	7	6	4	3	0	-1
Anthriscus sylvestris	1	5	0	Apia	6	5	7	7	-1	1
Arrhenatherum elatius	0	5	0	Poac	7	5	7	7	-1	0
Bellis perennis	5	3	1	Aste	8	5	6	4	1	0
Bromus hordeaceus	1	5	3	Poac	8	4	7	4	0	1
Cerastium fontanum	0	2	1	Cary	7	5	5	4	1	0
Conopodium majus	2	3	8	Apia	6	5	5	5	0	-1
Cynosurus cristatus	0	5	2	Poac	7	5	6	4	0	0
Dactylis glomerata	1	2	10	Poac	7	5	7	6	0	0
Euphrasia officinalis agg.	2	1	0	Scro	8	5	5	3	0	-1
Festuca ovina	1	0	0	Poac	7	5	4	2	0	-1
Festuca rubra	8	6	20	Poac	8	5	6	5	-1	0
Heracleum sphondylium	0	1	0	Apia	7	5	7	7	0	1
Holcus lanatus	12	5	15	Poac	7	6	6	5	0	0
Hypochaeris radicata	0	0	2	Aste	8	4	5	3	0	-1
Leontodon autumnalis	3	2	0	Aste	8	6	6	4	1	0
Lolium perenne	30	30	0	Poac	8	5	6	6	0	0
Luzula campestris	0	0	3	Junc	7	4	5	2	1	-1
Plantago lanceolata	5	22	6	Plan	7	5	6	4	1	0
Poa trivialis	2	7	0	Poac	7	6	6	6	0	0
Potentilla erecta	0	0	1	Rosa	7	7	3	2	1	-1
Prunella vulgaris	3	2	1	Lami	7	5	6	4	0	0
Ranunculus acris	3	3	2	Ranu	7	6	6	4	1	0
Ranunculus bulbosus	1	1	1	Ranu	7	4	7	4	0	0
Ranunculus repens	0	0	1	Ranu	6	7	6	7	0	1
Rhinanthus minor	3	2	1	Scro	7	5	6	4	0	0
Rumex acetosa	2	3	3	Poly	7	5	5	4	0	0
Taraxacum agg.	2	1	0	Aste	7	5	7	6	1	0
Trifolium dubium	1	1	0	Faba	7	4	6	5	0	0
Trifolium hybridum	0	0	1	Faba	7	5	7	6	0	0
Trifolium pratense	1	5	1	Faba	7	5	7	5	1	0
Trifolium repens	0	3	0	Faba	7	5	6	6	0	0
Veronica chamaedrys	0	2	0	Scro	6	5	6	5	1	-1

SUMMARY	
Total	37.00
Grass	13.00
Sedge	0.00
Rush	1.00
Forb	23.00
Herb cover	31%
LIGHT L	
Average	7.03
Min	5.00
Max	8.00
MOISTURE F	
Average	5.22
Min	4.00
Max	7.00
REACTION R	
Average	5.81
Min	3.00
Max	7.00
NITROGEN N	
Average	4.73
Min	2.00
Max	7.00
GRAZING GI	
Average	0.19
NUTRIENTS NI	
Average	-0.08

Site:	**764**
Area	**Littondale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**Sandy loam**

This site is located to the north-west of Foxup in Littondale at an altitude of 340m. The field has an easterly aspect and is steeply sloping, with undulating topography.

The vegetation comprises *Agrostis capillaris, Anthoxanthum odoratum* and *Cynosurus cristatus* with prominent *Rumex acetosa, Plantago lanceolata* and *Trifolium pratense*. Typical upland hay meadow axiophytes are numerous, but generally of scattered occurrence, and include constant *Rhinanthus minor*; occasional *Conopodium majus* and *Filipendula ulmaria*; and rare *Alchemilla glabra*, *A. xanthochlora, Cirsium heterophyllum, Euphrasia officinalis agg., Lathyrus pratensis* and *Leontodon hispidus*. The field edges, particularly to the south-east, provide further hints that a richer tall-herb community may have existed here in the past and includes *Geranium sylvaticum, Sanguisorba minor* and *Mercurialis perennis*. Negative species included occasional *Anthriscus sylvestris* at low cover.

The vegetation shows strong affinities to MG3a (65.2) and MG6b (62.1). While the field edges and a number of axiophytes within the sward hint at MG3, the low cover of MG3 differentials / preferentials within the field suggest a better fit to MG6b. The field's high herb richness and relatively high frequency of typical upland hay meadow axiophytes, in comparison to other MG6b stands, suggest that it corresponds well with O'Reilly's (2011) MG6b-iii variant. The site is semi-improved and is a high quality example of such swards within the context of the 2012 survey.

No ordination plot was created for this site as scores for a single axis only were computed. This indicates that the variability within the date was not able to be explained by further ordination axes, most likely due to the high proportion of rare species within the dataset relative to the total numbers of species. Nevertheless, a total of four years of data were available for analysis, with the baseline set as 1992. Overall, species richness in 1x1m quadrats increased from 20.6 in 1992 to 23.0 in 2012. The proportion of grazing tolerant species showed an overall decline in the average Grazing Suited Species Scores from 0.31 in 1987 to 0.23 in 2012. The proportion of nutrient tolerant species fell slightly, with average Nutrient Availability Suited Species Scores of 0.07 in 1987 and -0.06 in 2012.

SOILS	
Texture	Sandy loam
pH	5.8
Olsens P	9
Total N	0.62
K	122

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CONSULTANT ECOLOGISTS

NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	18	5	15	Poac	6	5	4	4	0	0
Alopecurus geniculatus	0	1	0	Poac	8	7	6	6	0	1
Anemone nemorosa	1	0	0	Ranu	5	6	5	4	0	-1
Anthoxanthum odoratum	15	25	20	Poac	7	6	4	3	0	-1
Anthriscus sylvestris	0	0	2	Apia	6	5	7	7	-1	1
Bellis perennis	1	5	6	Aste	8	5	6	4	1	0
Bromus hordeaceus	0	1	1	Poac	8	4	7	4	0	1
Cerastium fontanum	1	3	3	Cary	7	5	5	4	1	0
Conopodium majus	1	2	0	Apia	6	5	5	5	0	-1
Cynosurus cristatus	15	25	15	Poac	7	5	6	4	0	0
Dactylis glomerata	5	0	0	Poac	7	5	7	6	0	0
Euphrasia officinalis agg.	0	3	3	Scro	8	5	5	3	0	-1
Festuca rubra	12	3	4	Poac	8	5	6	5	-1	0
Filipendula ulmaria	0	0	2	Rosa	7	8	6	5	-1	0
Heracleum sphondylium	1	0	1	Apia	7	5	7	7	0	1
Holcus lanatus	7	10	3	Poac	7	6	6	5	0	0
Lolium perenne	0	10	15	Poac	8	5	6	6	0	0
Myosotis discolor	1	0	0	Bora	7	5	5	3	1	-1
Phleum pratense	0	1	1	Poac	8	5	7	6	1	0
Plantago lanceolata	22	4	5	Plan	7	5	6	4	1	0
Poa trivialis	10	3	3	Poac	7	6	6	6	0	0
Ranunculus acris	10	5	4	Ranu	7	6	6	4	1	0
Ranunculus ficaria	1	0	0	Ranu	6	6	6	6	0	0
Ranunculus repens	0	5	3	Ranu	6	7	6	7	0	1
Rhinanthus minor	1	3	3	Scro	7	5	6	4	0	0
Rumex acetosa	2	5	10	Poly	7	5	5	4	0	0
Taraxacum agg.	0	0	3	Aste	7	5	7	6	1	0
Trifolium pratense	25	3	2	Faba	7	5	7	5	1	0
Trifolium repens	3	10	5	Faba	7	5	6	6	0	0
Veronica chamaedrys	1	3	3	Scro	6	5	6	5	1	-1
Veronica serpyllifolia	1	0	0	Scro	7	5	6	5	-1	0

SUMMARY	
Total	31.00
Grass	11.00
Sedge	0.00
Rush	0.00
Forb	20.00
Herb cover	42%
LIGHT L	
Average	6.97
Min	5.00
Max	8.00
MOISTURE F	
Average	5.39
Min	4.00
Max	8.00
REACTION R	
Average	5.90
Min	4.00
Max	7.00
NITROGEN N	
Average	4.94
Min	3.00
Max	7.00
GRAZING GI	
Average	0.16
NUTRIENTS NI	
Average	-0.03

Site:	**765**
Area	**Littondale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**2A**

This site lies adjacent to the River Skirfe, to the west of Halton Gill in Littondale, at an altitude of 320m. The field has a north-easterly aspect and undulating topography.

The vegetation comprises *Agrostis capillaris, Anthoxanthum odoratum, Cynosurus cristatus* and *Festuca rubra* with prominent *Rumex acetosa, Trifolium repens* and *Trifolium pratense*. Typical upland hay meadow axiophytes are numerous, but generally of scattered occurrence and low abundance, and include constant *Rhinanthus minor*; occasional *Conopodium majus*; and rare *Euphrasia officinalis agg., Lathyrus pratensis* and *Leontodon autumnalis*. The wetter southern corner of the field supports *Caltha palustris* and *Filipendula ulmaria*. Un-mown areas around limestone outcrops above the River support *Galium verum, Linum catharticum, Achillea millefolium* and *Hypochaeris radicata*. The field edges support occasional stands of negative species including *Cirsium vulgare, Urtica dioica, Rumex obtusifolius* and *Senecio jacobaea*.

The vegetation shows strong affinities to MG3a (62.0) and MG6b (61.7). The low cover of MG3 differentials / preferentials within the field suggests a better fit to MG6b. The field's relatively high herb cover and relatively high frequency of typical upland hay meadow axiophytes, in comparison to other MG6b stands, suggest it corresponds well with O'Reilly's (2011) MG6b-ii or, possibly, the lower quality end of the MG6b-iii variant. The site is semi-improved and is an average quality example of such swards within the context of the 2012 survey.

Three years of data were available for analysis, with the baseline set as 1992. Overall, species richness per 1x1m quadrat remained fairly stable from 20.3 in 1992 to 22 in 2012. The proportion of grazing tolerant species declined slightly, with a decline in the average Grazing Suited Species Scores from 0.32 (1992) and 0.19 (2012), although the bias remains towards those species tolerant to higher levels of grazing (positive average Suited Species Scores). The proportion nutrient tolerant species decreased slightly, with average Nutrient Availability Suited Species Scores showing a decrease from -0.02 (1992) to -0.07 (2012). In combination with the slight increase in species richness, this indicates a possible improvement in the quality of the sward through time. Considering the ordination plot (Annex II), little community compositional change is evident, with the variability observed for quadrats sampled in 1992 encompassing the range of species recorded in all years. It should be noted that there is some apparent homogenisation of the sward in 2012, with tighter error bars around the mean quadrat point, however, this may, at least in part, be due to the smaller sample size for 2012.

SOILS	
Texture	Sandy loam
pH	5.6
Olsens P	16
Total N	0.61
K	155

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CONSULTANT ECOLOGISTS

NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	2	45	12	Poac	6	5	4	4	0	0
Alchemilla xanthochlora	0	1	0	Rosa	6	5	6	4	1	0
Alopecurus pratensis	0	5	1	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	25	15	15	Poac	7	6	4	3	0	-1
Anthriscus sylvestris	2	2	0	Apia	6	5	7	7	-1	1
Bellis perennis	1	3	2	Aste	8	5	6	4	1	0
Carex nigra	0	0	8	Cype	7	8	4	2	0	-1
Cerastium fontanum	1	1	1	Cary	7	5	5	4	1	0
Cerastium glomeratum	0	0	1	Cary	7	5	6	5	1	0
Conopodium majus	1	2	0	Apia	6	5	5	5	0	-1
Crepis paludosa	0	0	1	Aste	6	7	6	4	0	0
Cynosurus cristatus	5	2	15	Poac	7	5	6	4	0	0
Dactylis glomerata	2	1	0	Poac	7	5	7	6	0	0
Euphrasia officinalis agg.	0	1	1	Scro	8	5	5	3	0	-1
Festuca rubra	25	3	5	Poac	8	5	6	5	-1	0
Heracleum sphondylium	4	1	0	Apia	7	5	7	7	0	1
Holcus lanatus	5	2	5	Poac	7	6	6	5	0	0
Lathyrus pratensis	0	1	0	Faba	7	6	6	5	1	0
Leontodon autumnalis	0	0	3	Aste	8	6	6	4	1	0
Lolium perenne	5	3	2	Poac	8	5	6	6	0	0
Luzula campestris	3	2	1	Junc	7	4	5	2	1	-1
Myosotis discolor	1	0	1	Bora	7	5	5	3	1	-1
Plantago lanceolata	2	5	1	Plan	7	5	6	4	1	0
Poa trivialis	5	0	15	Poac	7	6	6	6	0	0
Prunella vulgaris	0	0	2	Lami	7	5	6	4	0	0
Ranunculus acris	5	5	7	Ranu	7	6	6	4	1	0
Ranunculus ficaria	0	1	1	Ranu	6	6	6	6	0	0
Ranunculus repens	3	5	7	Ranu	6	7	6	7	0	1
Rhinanthus minor	4	3	1	Scro	7	5	6	4	0	0
Rumex acetosa	10	5	5	Poly	7	5	5	4	0	0
Taraxacum agg.	2	0	0	Aste	7	5	7	6	1	0
Trifolium dubium	0	0	2	Faba	7	4	6	5	0	0
Trifolium pratense	2	5	8	Faba	7	5	7	5	1	0
Trifolium repens	10	3	4	Faba	7	5	6	6	0	0
Veronica arvensis	0	0	1	Scro	8	4	6	5	1	0
Veronica chamaedrys	2	0	1	Scro	6	5	6	5	1	-1

SUMMARY	
Total	36.00
Grass	9.00
Sedge	1.00
Rush	1.00
Forb	25.00
Herb cover	38%
LIGHT L	
Average	6.94
Min	6.00
Max	8.00
MOISTURE F	
Average	5.31
Min	4.00
Max	8.00
REACTION R	
Average	5.81
Min	4.00
Max	7.00
NITROGEN N	
Average	4.72
Min	2.00
Max	7.00
GRAZING GI	
Average	0.33
NUTRIENTS NI	
Average	-0.11

Site:	**766**
Area	**Littondale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**2A**

This site lies adjacent to the River Skirfe, to the south of Litton, at an altitude of 250m. The field has a north-easterly aspect and undulating topography.

The vegetation comprises *Agrostis capillaris, Anthoxanthum odoratum, Cynosurus cristatus* and *Festuca rubra* with prominent *Plantago lanceolata, Ranunculus acris, Trifolium repens* and *Trifolium pratense*. Typical upland hay meadow axiophytes are numerous and frequent, but generally of low abundance, and include constant *Rhinanthus minor*; very frequent *Conopodium majus*; frequent *Euphrasia officinalis agg.* and *Lathyrus pratensis*; occasional Filipendula *ulmaria* and *Leontodon autumnalis*; and rare *Sanguisorba officinalis*. Negative species within the sward are restricted to occasional *Anthriscus sylvestris*, while the field edges support *Urtica dioica, Heracleum sphondylium*, and *Rumex obtusifolius*. The field edges also support Mercurialis *perennis*.

The vegetation shows strong affinities to MG3a (67.4) and MG6b (67.0). The low cover of MG3 differentials / preferentials within the field suggests a better fit to MG6b. The field's relatively high herb cover and high frequency of typical upland hay meadow axiophytes, in comparison to other MG6b stands, suggest it corresponds well with O'Reilly's (2011) MG6b-iii variant. The site is semi-improved and is a high quality example of such swards within the context of the 2012 survey.

No ordination plot was created for this site as scores for a single axis only were computed. This indicates that the variability within the date was not able to be explained by further ordination axes, most likely due to the high proportion of rare species within the dataset relative to the total numbers of species. Nevertheless, a total of four years of data were available for analysis, with the baseline set as 1992. Overall, species richness in 1x1m quadrats decreased steadily from 20.0 in 1992 to 13.7 in 2012. The proportion of grazing tolerant species remained largely constant, with an average Grazing Suited Species Score of 0.12 in 1992 and 0.22 2012. The proportion of nutrient tolerant species fell slightly, with average Nutrient Availability Suited Species Scores of -0.02 in 1992 and -0.12 in 2012.

SOILS	
Texture	Loamy sand
pH	5.5
Olsens P	7
Total N	0.59
K	105

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CONSULTANT ECOLOGISTS

NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	40	35	5	Poac	6	5	4	4	0	0
Anthoxanthum odoratum	15	15	25	Poac	7	6	4	3	0	-1
Arrhenatherum elatius	0	2	0	Poac	7	5	7	7	-1	0
Bellis perennis	0	2	4	Aste	8	5	6	4	1	0
Cerastium fontanum	0	1	3	Cary	7	5	5	4	1	0
Conopodium majus	0	2	2	Apia	6	5	5	5	0	-1
Cynosurus cristatus	10	25	12	Poac	7	5	6	4	0	0
Dactylis glomerata	2	0	3	Poac	7	5	7	6	0	0
Euphrasia officinalis agg.	2	0	3	Scro	8	5	5	3	0	-1
Festuca rubra	10	3	20	Poac	8	5	6	5	-1	0
Holcus lanatus	5	2	0	Poac	7	6	6	5	0	0
Lathyrus pratensis	2	0	1	Faba	7	6	6	5	1	0
Leontodon autumnalis	0	3	2	Aste	8	6	6	4	1	0
Lolium perenne	0	0	5	Poac	8	5	6	6	0	0
Myosotis discolor	0	0	1	Bora	7	5	5	3	1	-1
Phleum pratense	0	0	2	Poac	8	5	7	6	1	0
Plantago lanceolata	10	10	10	Plan	7	5	6	4	1	0
Poa trivialis	0	0	3	Poac	7	6	6	6	0	0
Prunella vulgaris	0	0	1	Lami	7	5	6	4	0	0
Ranunculus acris	5	5	5	Ranu	7	6	6	4	1	0
Ranunculus bulbosus	0	3	4	Ranu	7	4	7	4	0	0
Rhinanthus minor	3	3	7	Scro	7	5	6	4	0	0
Rumex acetosa	3	3	0	Poly	7	5	5	4	0	0
Taraxacum agg.	0	0	1	Aste	7	5	7	6	1	0
Trifolium pratense	5	5	2	Faba	7	5	7	5	1	0
Trifolium repens	3	3	3	Faba	7	5	6	6	0	0
Veronica chamaedrys	0	0	2	Scro	6	5	6	5	1	-1

SUMMARY	
Total	27.00
Grass	10.00
Sedge	0.00
Rush	0.00
Forb	17.00
Herb cover	34%
LIGHT L	
Average	7.11
Min	6.00
Max	8.00
MOISTURE F	
Average	5.19
Min	4.00
Max	6.00
REACTION R	
Average	5.89
Min	4.00
Max	7.00
NITROGEN N	
Average	4.67
Min	3.00
Max	7.00
GRAZING GI	
Average	0.33
NUTRIENTS NI	
Average	-0.19

Site:	**767**
Area	**Littondale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**2A**

This site lies adjacent to the Hesleden Beck, to the east of Nether Hesleden, at an altitude of 270m. The field has a north-easterly aspect and consists of a series of flat terraces separated by minor undulations. At the time of the 2012 survey (late May 2012), the sward was very short and recent sheep droppings indicated shutting up had only occurred very recently.

The vegetation comprises *Agrostis capillaris, Anthoxanthum odoratum, Holcus lanatus* and *Festuca rubra* with prominent *Ranunculus acris, Trifolium repens* and *Trifolium pratense*. Typical upland hay meadow axiophytes are numerous, but generally scattered and of low abundance, and include constant *Rhinanthus minor*; occasional *Conopodium majus*; and rare *Euphrasia officinalis agg., Filipendula ulmaria, Lathyrus pratensis, Leontodon autumnalis* and *Caltha palustris*. Negative species included *Rumex obtusifolius, Urtica dioica* and *Heracleum sphondylium* at the field edges and occasional *Anthriscus sylvestris* within the sward.

The vegetation shows strong affinities to MG6b (69.7) and MG3a (64.2). The low cover of MG3 differentials / preferentials within the field suggests a better fit to MG6b. The field's relatively high herb cover and relatively high number of typical upland hay meadow axiophytes, in comparison to other MG6b stands, suggest it corresponds well with O'Reilly's (2011) MG6b-ii or, possibly, the lower quality end of the MG6b-iii variant. The site is semi-improved and is an average quality example of such swards within the context of the 2012 survey.

No ordination plot was created for this site as scores for a single axis only were computed. This indicates that the variability within the date was not able to be explained by further ordination axes, most likely due to the high proportion of rare species within the dataset relative to the total numbers of species. Nevertheless, a total of four years of data were available for analysis, with the baseline set as 1992. Overall, species richness in 1x1m quadrats increased slightly from 19.4 in 1992 to 20.0 in 2012. The proportion of grazing tolerant species remained largely constant, with an average Grazing Suited Species Score of 0.29 in 1992 and 0.28 2012. The proportion of nutrient tolerant species fell slightly, with average Nutrient Availability Suited Species Scores of 0.12 in 1992 and -0.11 in 2012.

SOILS	
Texture	Loamy sand
pH	5.4
Olsens P	8
Total N	0.66
K	98

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CONSULTANT ECOLOGISTS

NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	20	12	10	Poac	6	5	4	4	0	0
Alopecurus pratensis	0	1	0	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	15	15	10	Poac	7	6	4	3	0	-1
Anthriscus sylvestris	1	2	0	Apia	6	5	7	7	-1	1
Avenula pubescens	0	0	3	Poac	7	4	7	3	1	-1
Bellis perennis	1	2	5	Aste	8	5	6	4	1	0
Cardamine pratensis	0	1	0	Bras	7	8	5	4	0	0
Cerastium fontanum	1	1	3	Cary	7	5	5	4	1	0
Conopodium majus	1	0	3	Apia	6	5	5	5	0	-1
Cynosurus cristatus	15	0	3	Poac	7	5	6	4	0	0
Dactylis glomerata	0	8	0	Poac	7	5	7	6	0	0
Festuca rubra	15	22	25	Poac	8	5	6	5	-1	0
Holcus lanatus	10	10	3	Poac	7	6	6	5	0	0
Leontodon autumnalis	0	0	9	Aste	8	6	6	4	1	0
Lolium perenne	2	5	5	Poac	8	5	6	6	0	0
Luzula campestris	0	0	3	Junc	7	4	5	2	1	-1
Phleum pratense	1	0	0	Poac	8	5	7	6	1	0
Plantago lanceolata	0	1	3	Plan	7	5	6	4	1	0
Poa trivialis	4	0	0	Poac	7	6	6	6	0	0
Prunella vulgaris	0	0	1	Lami	7	5	6	4	0	0
Ranunculus acris	10	15	9	Ranu	7	6	6	4	1	0
Ranunculus ficaria	0	1	2	Ranu	6	6	6	6	0	0
Rhinanthus minor	1	2	5	Scro	7	5	6	4	0	0
Rumex acetosa	3	3	3	Poly	7	5	5	4	0	0
Taraxacum agg.	0	2	9	Aste	7	5	7	6	1	0
Trifolium pratense	1	15	3	Faba	7	5	7	5	1	0
Trifolium repens	15	15	5	Faba	7	5	6	6	0	0
Veronica chamaedrys	1	0	3	Scro	6	5	6	5	1	-1

SUMMARY	
Total	28.00
Grass	11.00
Sedge	0.00
Rush	1.00
Forb	16.00
Herb cover	42%
LIGHT L	
Average	7.00
Min	6.00
Max	8.00
MOISTURE F	
Average	5.25
Min	4.00
Max	8.00
REACTION R	
Average	5.89
Min	4.00
Max	7.00
NITROGEN N	
Average	4.75
Min	2.00
Max	7.00
GRAZING GI	
Average	0.32
NUTRIENTS NI	
Average	-0.14

Site:	**768**
Area	**Ribblesdale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**1B**

This site lies to the south-east of Ribblehead, at an altitude of 270m. The field has an open aspect and is relatively level with undulating topography. A stream passes through the northern part of the field, from west to east, and there is a small *Fraxinus excelsior* copse in the south-eastern part. The site forms part of Ashes Pasture and Meadows Site of Special Scientific Interest.

The vegetation comprises *Agrostis capillaris, Anthoxanthum odoratum, Cynosurus cristatus* and *Holcus lanatus* with prominent *Plantago lanceolata, Ranunculus acris* and *Trifolium pratense*. Typical upland hay meadow axiophytes are numerous, with the constant species, *Rhinanthus minor, Euphrasia officinalis agg.* and *Leontodon autumnalis*, attaining quite high overall cover. Other such species were never more than occasional and included *Alchemilla glabra, Centaurea nigra, Conopodium majus, Filipendula ulmaria, Lathyrus pratensis, Sanguisorba officinalis, Dactylorhiza fuchsii* and *Potentilla erecta*. Occasional damper areas support *Caltha palustris* and *Carex nigra*. Other species, encountered more rarely are *Hypochaeris radicata, Leontodon hispidus, Lychnis flos-cuculi* and *Geum rivale*. The field edges are dominated by *F. ulmaria* with rare negative species including *Urtica dioica* and *Rumex obtusifolius*.

The vegetation immediately adjacent to the stream is tall and species-rich and dominated by *F. ulmaria with Carex disticha, Carex acutiformis, Valeriana officinalis, Caltha palustris, Lathyrus pratensis, Leontodon autumnalis, Lotus pedunculatus, Cirsium heterophyllum, Geranium sylvaticum, Mentha aquatica* and *Galium palustre*. The *F. excelsior* copse includes *Crataegus monogyna* and a *F. ulmaria* dominated understorey.

The vegetation shows strong affinities to MG3a (63.9) and MG6b (59.9). The low frequency and cover of MG3 differentials / preferentials within the field is problematic, but the vegetation is placed into the former category as *Lolium perenne* (an MG6 species) is scarce here and the vegetation exceeds O'Reilly's (2011) specification for the MG6b-iii variant. The site is semi-improved and is a very high quality example of such swards within the context of the 2012 survey.

No previous survey data exist for this site.

SOILS	
Texture	Sandy loam
pH	5.1
Olsens P	17
Total N	0.64
K	199

Penny Anderson Associates Ltd
CONSULTANT ECOLOGISTS

NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	22	30	14	Poac	6	5	4	4	0	0
Ajuga reptans	1	0	0	Lami	5	7	5	5	0	0
Alchemilla glabra	3	1	1	Rosa	7	6	6	4	0	0
Alopecurus pratensis	0	0	1	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	8	10	17	Poac	7	6	4	3	0	-1
Bellis perennis	1	0	2	Aste	8	5	6	4	1	0
Centaurea nigra	0	1	0	Aste	7	5	6	5	1	-1
Cerastium fontanum	0	2	2	Cary	7	5	5	4	1	0
Cynosurus cristatus	12	10	4	Poac	7	5	6	4	0	0
Dactylorhiza fuchsii	0	0	1	Orch	7	8	7	3	0	-1
Deschampsia cespitosa	0	3	0	Poac	6	6	5	4	0	0
Euphrasia officinalis agg.	3	2	6	Scro	8	5	5	3	0	-1
Festuca pratensis	0	1	0	Poac	7	6	6	6	0	0
Festuca rubra	15	0	19	Poac	8	5	6	5	-1	0
Filipendula ulmaria	2	0	1	Rosa	7	8	6	5	-1	0
Holcus lanatus	10	30	3	Poac	7	6	6	5	0	0
Leontodon autumnalis	3	10	3	Aste	8	6	6	4	1	0
Lolium perenne	2	0	0	Poac	8	5	6	6	0	0
Luzula campestris	0	1	0	Junc	7	4	5	2	1	-1
Myosotis discolor	1	0	0	Bora	7	5	5	3	1	-1
Plantago lanceolata	8	10	27	Plan	7	5	6	4	1	0
Prunella vulgaris	3	0	2	Lami	7	5	6	4	0	0
Ranunculus acris	8	5	5	Ranu	7	6	6	4	1	0
Ranunculus repens	1	0	2	Ranu	6	7	6	7	0	1
Rhinanthus minor	4	2	7	Scro	7	5	6	4	0	0
Rumex acetosa	4	5	7	Poly	7	5	5	4	0	0
Sanguisorba officinalis	0	1	1	Rosa	7	7	6	5	0	0
Taraxacum agg.	2	2	0	Aste	7	5	7	6	1	0
Trifolium dubium	2	0	0	Faba	7	4	6	5	0	0
Trifolium pratense	3	3	3	Faba	7	5	7	5	1	0
Trifolium repens	2	2	3	Faba	7	5	6	6	0	0

SUMMARY	
Total	31.00
Grass	9.00
Sedge	0.00
Rush	1.00
Forb	21.00
Herb cover	45%
LIGHT L	
Average	7.00
Min	5.00
Max	8.00
MOISTURE F	
Average	5.55
Min	4.00
Max	8.00
REACTION R	
Average	5.74
Min	4.00
Max	7.00
NITROGEN N	
Average	4.52
Min	2.00
Max	7.00
GRAZING GI	
Average	0.26
NUTRIENTS NI	
Average	-0.16

Site:	**769**
Area	**Lunedale**
HLS options + supplements	**HK7, HK18**
Former ESA tier	**2A**

This meadow lies adjacent to Selsett Reservoir at altitude of 350m. The field is large and undulating and has a southerly aspect. The northern part of the field is quite heavily improved, while the southern area supports higher quality vegetation. The site forms part of Lune Forest Site of Special Scientific Interest.

The northern part of the meadow is characterised by a vigorous, grass-dominated sward comprised of *Phleum pratense*, *Dactylis glomerata*, *Anthoxanthum odoratum*, *Holcus lanatus* and *Bromus hordeaceus*. To the south, the vegetation comprises *Agrostis capillaris, Anthoxanthum odoratum, Cynosurus cristatus Holcus lanatus* and *Festuca rubra* with prominent *Plantago lanceolata, Ranunculus acris,* and *Trifolium pratense*. Typical upland hay meadow axiophytes occur across the field with *Rhinanthus minor* constant and *Euphrasia officinalis agg.* frequent throughout. Other species include occasional *Conopodium majus*; and rare *Filipendula ulmaria, Leontodon autumnalis* and *Caltha palustris*. Negative species are occasional within the sward and include *Urtica dioica*, *Cirsium vulgare*, *Cirsium arvense*, *Rumex obtusifolius* and *Heracleum sphondylium*. The same species are frequent at the field edges. Wetter areas within the southern area support large stands of *Juncus acutiflorus*, C*arex nigra*, *C. flacca* and *Lychnis flos-cuculi.*

The vegetation shows strong affinities to MG8 (61.8), MG3a (61.4) and MG6b (59.9). The absence of *Caltha palustris* (MG8) and low cover of MG3 differentials / preferentials within the samples suggests a best fit to MG6b. The field's relatively high herb cover and relatively high number of typical upland hay meadow axiophytes, in comparison to other MG6b stands, suggest it corresponds well with O'Reilly's (2011) MG6b-ii or, possibly, the lower quality end of the MG6b-iii variant. The site is semi-improved and is an average quality example of such swards within the context of the 2012 survey.

No previous survey data exist for this site.

SOILS	
Texture	Sandy loam
pH	5.6
Olsens P	15
Total N	0.75
K	179

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CONSULTANT ECOLOGISTS

NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	2	1	2	Poac	6	5	4	4	0	0
Anthoxanthum odoratum	5	3	5	Poac	7	6	4	3	0	-1
Avenula pratensis	0	0	2	Poac	7	4	7	2	0	-1
Avenula pubescens	0	1	0	Poac	7	4	7	3	1	-1
Bellis perennis	0	2	1	Aste	8	5	6	4	1	0
Cardamine pratensis	0	1	1	Bras	7	8	5	4	0	0
Carex nigra	0	5	25	Cype	7	8	4	2	0	-1
Cerastium fontanum	1	0	1	Cary	7	5	5	4	1	0
Conopodium majus	3	0	0	Apia	6	5	5	5	0	-1
Cynosurus cristatus	15	20	15	Poac	7	5	6	4	0	0
Dactylis glomerata	2	0	0	Poac	7	5	7	6	0	0
Euphrasia officinalis agg.	0	5	3	Scro	8	5	5	3	0	-1
Festuca rubra	15	2	3	Poac	8	5	6	5	-1	0
Holcus lanatus	15	3	3	Poac	7	6	6	5	0	0
Juncus acutiflorus	0	30	5	Junc	8	8	4	2	0	-1
Juncus conglomeratus	0	0	5	Junc	7	7	4	3	-1	-1
Leontodon autumnalis	0	2	2	Aste	8	6	6	4	1	0
Leontodon hispidus	0	2	1	Aste	8	4	7	3	0	-1
Lolium perenne	3	2	2	Poac	8	5	6	6	0	0
Myosotis discolor	1	1	1	Bora	7	5	5	3	1	-1
Myosotis laxa	0	2	0	Bora	7	9	6	5	0	1
Phleum pratense	0	1	0	Poac	8	5	7	6	1	0
Plantago lanceolata	15	7	15	Plan	7	5	6	4	1	0
Poa trivialis	2	2	1	Poac	7	6	6	6	0	0
Ranunculus acris	2	10	10	Ranu	7	6	6	4	1	0
Ranunculus repens	10	2	2	Ranu	6	7	6	7	0	1
Rhinanthus minor	3	5	0	Scro	7	5	6	4	0	0
Rumex acetosa	5	<3	3	Poly	7	5	5	4	0	0
Taraxacum agg.	1	1	1	Aste	7	5	7	6	1	0
Trifolium pratense	1	3	5	Faba	7	5	7	5	1	0
Trifolium repens	10	2	0	Faba	7	5	6	6	0	0
Trisetum flavescens	7	0	2	Poac	7	4	7	4	0	0
Veronica chamaedrys	1	0	0	Scro	6	5	6	5	1	-1

SUMMARY	
Total	33.00
Grass	12.00
Sedge	1.00
Rush	2.00
Forb	18.00
Herb cover	41%
LIGHT L	
Average	7.12
Min	6.00
Max	8.00
MOISTURE F	
Average	5.55
Min	4.00
Max	9.00
REACTION R	
Average	5.76
Min	4.00
Max	7.00
NITROGEN N	
Average	4.27
Min	2.00
Max	7.00
GRAZING GI	
Average	0.27
NUTRIENTS NI	
Average	-0.27

Site:	**770**
Area	**Teesdale**
HLS options + supplements	**HK7**
Former ESA tier	**1B**

This site lies to the south-east of Dent Bank at an altitude of 240m. The field has a southerly aspect and gentle slope toward the River Tees.

The vegetation comprises *Anthoxanthum odoratum, Cynosurus cristatus, Festuca rubra* and *Holcus lanatus* with prominent *Plantago lanceolata, Ranunculus acris* and *Ranunculus repens*. Occurrence of typical upland hay meadow axiophytes is variable, with only *Rhinanthus minor* very frequent across the whole field. Other species are patchier and include frequent *Filipendula ulmaria*, mainly in the centre of the field*;* occasional *Conopodium majus*, to the south; and scattered *Alchemilla glabra, Lathyrus pratensis, Geranium sylvaticum, Sanguisorba officinalis* and *Euphrasia officinalis agg.,* the latter species forming some quite dense stands. Frequent localised damp areas support *F. ulmaria* and *Carex disticha*. Negative indicators within the sward include frequent *Anthriscus sylvestris* and *Rumex crispus* and scattered *Rumex obtusifolius* and *Heracleum sphondylium*. The bank at the southern edge of the field is un-mown but supports tall and dense grass-dominated vegetation with *Dactylis glomerata*, *Alopecurus pratensis*, *Urtica dioica* and *Geranium sylvaticum*.

The vegetation shows strong affinities to MG3a (69.7) and MG6b (69.1). The low cover of MG3 differentials / preferentials within the field, however, suggests a better fit to MG6b. The field's relatively high herb cover and relatively high number of typical upland hay meadow axiophytes, in comparison to typical MG6b stands, suggest it corresponds well with O'Reilly's (2011) MG6b-iii or, possibly, the lower quality end of the MG6b-iii variant. The site is semi-improved and is of relatively high quality within the context of the 2012 survey.

No previous survey data exist for this site.

SOILS	
Texture	Sandy loam
pH	5.3
Olsens P	12
Total N	0.47
K	144

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CONSULTANT ECOLOGISTS

NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	10	15	15	Poac	6	5	4	4	0	0
Alopecurus pratensis	2	3	10	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	10	0	<4	Poac	7	6	4	3	0	-1
Anthriscus sylvestris	0	0	5	Apia	6	5	7	7	-1	1
Bellis perennis	1	0	0	Aste	8	5	6	4	1	0
Bromus hordeaceus	1	1	3	Poac	8	4	7	4	0	1
Cardamine pratensis	0	0	1	Bras	7	8	5	4	0	0
Cerastium fontanum	2	1	1	Cary	7	5	5	4	1	0
Conopodium majus	0	1	0	Apia	6	5	5	5	0	-1
Cynosurus cristatus	8	15	2	Poac	7	5	6	4	0	0
Dactylis glomerata	0	5	5	Poac	7	5	7	6	0	0
Festuca rubra	20	15	0	Poac	8	5	6	5	-1	0
Filipendula ulmaria	6	8	0	Rosa	7	8	6	5	-1	0
Holcus lanatus	3	5	0	Poac	7	6	6	5	0	0
Holcus mollis	0	0	10	Poac	6	6	3	3	1	0
Lolium perenne	5	3	5	Poac	8	5	6	6	0	0
Phleum pratense	0	2	0	Poac	8	5	7	6	1	0
Plantago lanceolata	10	0	3	Plan	7	5	6	4	1	0
Poa pratensis	0	2	0	Poac	7	5	6	5	0	0
Poa trivialis	0	8	10	Poac	7	6	6	6	0	0
Ranunculus acris	20	10	20	Ranu	7	6	6	4	1	0
Ranunculus repens	4	0	0	Ranu	6	7	6	7	0	1
Rhinanthus minor	1	2	8	Scro	7	5	6	4	0	0
Rumex acetosa	3	5	5	Poly	7	5	5	4	0	0
Trifolium pratense	5	0	2	Faba	7	5	7	5	1	0
Trifolium repens	5	7	0	Faba	7	5	6	6	0	0
Trisetum flavescens	0	1	2	Poac	7	4	7	4	0	0

SUMMARY	
Total	27.00
Grass	14.00
Sedge	0.00
Rush	0.00
Forb	13.00
Herb cover	41%
LIGHT L	
Average	7.00
Min	6.00
Max	8.00
MOISTURE F	
Average	5.41
Min	4.00
Max	8.00
REACTION R	
Average	5.81
Min	3.00
Max	7.00
NITROGEN N	
Average	4.85
Min	3.00
Max	7.00
GRAZING GI	
Average	0.15
NUTRIENTS NI	
Average	0.04

Site:	**771**
Area	**Teesdale**
HLS options + supplements	**HK7**
Former ESA tier	**1B**

This site lies adjacent to the Drygill Sike, north of Harwood in Upper Teesdale, at an altitude of 475m. The field has a south-westerly aspect and slope which steepens from the top of the field, toward the Sike. It lies opposite site 772, to the west of Drygill Sike and forms part of Upper Teesdale Site of Special Scientific Interest.

The vegetation comprises *Agrostis stolonifera, Anthoxanthum odoratum, Cynosurus cristatus* and *Holcus lanatus* with abundant *Caltha palustris* and prominent *Ranunculus repens* and *Ranunculus acris*. Other typical upland hay meadow axiophytes include constant *Euphrasia officinalis agg.*; very frequent *Rhinanthus minor*; frequent *Carex nigra*; occasional *Leontodon autumnalis, Lychnis flos-cuculi* and *Succisa pratensis*; and rare *Achillea ptarmica, Ajuga reptans, Crepis paludosa* and *Potentilla erecta.* Many of the rare and occasional species are restricted to the steeper areas of the meadow. A steep unmown slope adjacent to the Sike supports *Briza media*, *Dactylorhiza purpurella*, *Coeloglossum viride*, *Gymnadenia conopsea agg.*, *Trollius europaeus*, *Viola tricolor* ssp *curtisii*, *Conopodium majus* and *Trifolium medium* is present next to the stream in the south-west field corner. *Juncus acutiflorus* is of variable cover over the site, and is particularly abundant in the south-western and south-eastern corners of the field.

The vegetation shows strong affinities to MG8 (60.2). The low cover of MG3 differentials / preferentials within the field, however, suggests a better fit to MG6b. The very high cover of herbs and relatively high number of typical upland hay meadow axiophytes suggests it corresponds well with O'Reilly's (2011) MG8+ variant of the community. The site is semi-improved and is of relatively high quality within the context of the 2012 survey. The bank above Drygill Sike is considered to be unimproved and of very high quality.

No previous survey data exist for this site.

SOILS	
Texture	Sandy loam
pH	5.3
Olsens P	12
Total N	0.71
K	128

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CONSULTANT ECOLOGISTS

NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Achillea ptarmica	0	0	3	Aste	7	7	5	3	1	-1
Agrostis stolonifera	10	5	5	Poac	7	6	7	6	0	1
Ajuga reptans	0	0	5	Lami	5	7	5	5	0	0
Alopecurus geniculatus	0	3	0	Poac	8	7	6	6	0	1
Alopecurus pratensis	0	3	0	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	10	5	20	Poac	7	6	4	3	0	-1
Avenula pratensis	0	0	2	Poac	7	4	7	2	0	-1
Caltha palustris	15	50	15	Ranu	7	9	6	4	0	-1
Carex nigra	5	0	0	Cype	7	8	4	2	0	-1
Cerastium fontanum	2	2	0	Cary	7	5	5	4	1	0
Cynosurus cristatus	0	5	10	Poac	7	5	6	4	0	0
Deschampsia cespitosa	5	0	0	Poac	6	6	5	4	0	0
Euphrasia officinalis agg.	0	2	10	Scro	8	5	5	3	0	-1
Festuca pratensis	1	0	0	Poac	7	6	6	6	0	0
Holcus lanatus	5	5	10	Poac	7	6	6	5	0	0
Juncus acutiflorus	0	0	3	Junc	8	8	4	2	0	-1
Juncus articulatus	5	0	0	Junc	8	9	6	3	1	-1
Juncus effusus	15	0	0	Junc	7	7	4	4	1	0
Leontodon autumnalis	2	0	3	Aste	8	6	6	4	1	0
Montia fontana	3	3	0	Port	7	9	5	3	1	-1
Myosotis discolor	2	3	2	Bora	7	5	5	3	1	-1
Phleum pratense	0	2	5	Poac	8	5	7	6	1	0
Plantago lanceolata	3	0	0	Plan	7	5	6	4	1	0
Poa trivialis	0	5	0	Poac	7	6	6	6	0	0
Prunella vulgaris	5	0	5	Lami	7	5	6	4	0	0
Ranunculus acris	5	5	3	Ranu	7	6	6	4	1	0
Ranunculus repens	5	20	10	Ranu	6	7	6	7	0	1
Rhinanthus minor	5	5	0	Scro	7	5	6	4	0	0
Rumex acetosa	5	2	3	Poly	7	5	5	4	0	0
Succisa pratensis	5	0	0	Dips	7	7	5	2	1	-1
Taraxacum agg.	1	0	0	Aste	7	5	7	6	1	0
Trifolium pratense	0	1	0	Faba	7	5	7	5	1	0
Trifolium repens	0	2	3	Faba	7	5	6	6	0	0
Trollius europaeus	0	0	2	Ranu	7	7	6	4	-1	0

SUMMARY	
Total	34.00
Grass	11.00
Sedge	1.00
Rush	3.00
Forb	19.00
Herb cover	60%
LIGHT L	
Average	7.06
Min	5.00
Max	8.00
MOISTURE F	
Average	6.15
Min	4.00
Max	9.00
REACTION R	
Average	5.65
Min	4.00
Max	7.00
NITROGEN N	
Average	4.26
Min	2.00
Max	7.00
GRAZING GI	
Average	0.35
NUTRIENTS NI	
Average	-0.24

Site:	**772**
Area	**Teesdale**
HLS options + supplements	**HK7**
Former ESA tier	**1B**

This site lies adjacent to the Drygill Sike, north of Harwood in Upper Teesdale, at an altitude of 475m. The field has a south-easterly aspect and slope which steepens from the top of the field, toward the Sike. It lies opposite site 771, to the east of Drygill Sike and forms part of Upper Teesdale Site of Special Scientific Interest.

The vegetation comprises *Agrostis stolonifera, Anthoxanthum odoratum, Cynosurus cristatus* and *Holcus lanatus* with constant and very abundant *Caltha palustris* and *Rhinanthus minor* with prominent *Ranunculus repens* and *Trifolium repens*. Other typical upland hay meadow axiophytes include very frequent *Euphrasia officinalis agg.*; and rare *Achillea ptarmica, Dactylorhiza purpurella Leontodon autumnalis, Lychnis flos-cuculi*, *Succisa pratensis, Potentilla erecta, Trollius europaeus* and *Valeriana dioica*. Many of the rare and occasional species are restricted to the steeper areas of the meadow. Negative species are rare and primarily concentrated at the edges, these include *Rumex crispus* and *Anthriscus* sylvestris. A steep un-mown bank above the Sike mirrors that within site 771 and supports *Coeloglossum viride*, *Primula farinosa, Neottia ovata, D. purpurella*, *Valeriana dioica*, *Carex hostiana*, *Lathyrus pratensis*, *Briza media*, *Alchemilla glabra*, *Carex flacca*, *Carex nigra*, *Trollius europaeus*, *Centaurea nigra*, *Ajuga reptans* and *Lathyrus linifolius*.

The vegetation shows strong affinities to MG8 (59.4). The low cover of MG3 differentials / preferentials within the field, however, suggests a better fit to MG6b. The very high cover of herbs and relatively high number of typical upland hay meadow axiophytes suggests it corresponds well with O'Reilly's (2011) MG8+ variant of the community. The site is semi-improved and is of relatively high quality within the context of the 2012 survey. The bank above Drygill Sike is considered to be unimproved and of very high quality.

No previous survey data exist for this site.

SOILS	
Texture	Sandy loam
pH	5.6
Olsens P	9
Total N	0.7
K	119

Penny Anderson Associates Ltd
CONSULTANT ECOLOGISTS

NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis stolonifera	0	5	3	Poac	7	6	7	6	0	1
Alopecurus geniculatus	2	5	2	Poac	8	7	6	6	0	1
Anthoxanthum odoratum	5	5	3	Poac	7	6	4	3	0	-1
Bellis perennis	1	0	0	Aste	8	5	6	4	1	0
Caltha palustris	25	25	8	Ranu	7	9	6	4	0	-1
Cardamine pratensis	0	1	0	Bras	7	8	5	4	0	0
Carex nigra	17	0	2	Cype	7	8	4	2	0	-1
Carex panicea	2	0	0	Cype	8	8	4	2	1	-1
Cerastium fontanum	2	2	1	Cary	7	5	5	4	1	0
Cerastium glomeratum	0	0	1	Cary	7	5	6	5	1	0
Cynosurus cristatus	5	5	3	Poac	7	5	6	4	0	0
Deschampsia cespitosa	1	0	3	Poac	6	6	5	4	0	0
Equisetum palustre	3	0	2	Equi	7	8	6	3	1	-1
Euphrasia officinalis agg.	13	2	20	Scro	8	5	5	3	0	-1
Festuca pratensis	3	5	3	Poac	7	6	6	6	0	0
Festuca rubra	6	2	3	Poac	8	5	6	5	-1	0
Holcus lanatus	2	5	3	Poac	7	6	6	5	0	0
Leontodon autumnalis	1	0	0	Aste	8	6	6	4	1	0
Luzula campestris	1	0	0	Junc	7	4	5	2	1	-1
Montia fontana	2	5	3	Port	7	9	5	3	1	-1
Myosotis discolor	1	5	1	Bora	7	5	5	3	1	-1
Myosotis laxa	8	0	4	Bora	7	9	6	5	0	1
Poa annua	0	0	1	Poac	7	5	6	7	0	1
Poa trivialis	2	2	3	Poac	7	6	6	6	0	0
Prunella vulgaris	2	0	0	Lami	7	5	6	4	0	0
Ranunculus acris	4	0	6	Ranu	7	6	6	4	1	0
Ranunculus repens	9	10	18	Ranu	6	7	6	7	0	1
Rhinanthus minor	8	15	18	Scro	7	5	6	4	0	0
Rumex acetosa	2	1	3	Poly	7	5	5	4	0	0
Sagina procumbens	2	0	0	Cary	7	6	6	5	0	0
Silene flos-cuculi	2	0	0	Cary	7	9	6	4	0	0
Stellaria alsine	0	0	2	Cary	7	8	5	5	0	0
Succisa pratensis	2	0	0	Dips	7	7	5	2	1	-1
Trifolium pratense	2	0	1	Faba	7	5	7	5	1	0
Trifolium repens	8	2	8	Faba	7	5	6	6	0	0

SUMMARY	
Total	35.00
Grass	10.00
Sedge	2.00
Rush	1.00
Forb	22.00
Herb cover	71%
LIGHT L	
Average	7.11
Min	6.00
Max	8.00
MOISTURE F	
Average	6.29
Min	4.00
Max	9.00
REACTION R	
Average	5.60
Min	4.00
Max	7.00
NITROGEN N	
Average	4.29
Min	2.00
Max	7.00
GRAZING GI	
Average	0.31
NUTRIENTS NI	
Average	-0.14

Site:	**773**
Area	**Teesdale**
HLS options + supplements	**HK7**
Former ESA tier	**1B**

This site lies just to the north-east of Herdship, at an altitude of 480m. The field slopes gently to the south-west; the site forms part of Upper Teesdale Site of Special Scientific Interest.

The vegetation comprises *Alopecurus pratensis, Anthoxanthum odoratum, Cynosurus cristatus, Lolium perenne* and *Poa trivialis* with prominent *Caltha palustris*, *Ranunculus repens* and *Trifolium repens*. Other upland hay meadow axiophytes are rare but include occasional *Trollius europaeus* and *Leontodon autumnalis*; and rare *Rhinanthus minor, Crepis paludosa* and *Alchemilla glabra*. Negative species are rare, with *Rumex crispus* occasional within the sward and *Anthriscus sylvestris* present on the eastern edge of the field. The eastern field edge also supported *Conopodium majus*, *Lathyrus pratensis*, *Carex leporina* and *Cardamine pratensis*.

The vegetation shows strong affinities to MG3a (65.5), MG6b (61.3) and MG8 (59.4). The low cover of MG3 differentials / preferentials within the field and constant *Caltha* suggests a best fit to MG8. The relatively low frequency and cover of typical upland hay meadow axiophytes suggests the vegetation corresponds well with O'Reilly's (2011) MG8o variant of the community. The site is semi-improved and is of average quality within the context of the 2012 survey.

No ordination plot was created for this site as scores for a single axis only were computed. This indicates that the variability within the date was not able to be explained by further ordination axes, most likely due to the high proportion of rare species within the dataset relative to the total numbers of species. Nevertheless, a total of six years of data were available for analysis, with the baseline set as 1987. Overall, species richness in 1x1m quadrats increased slightly from 18.2 in 1992 to 22.3 in 2012. The proportion of grazing tolerant species declined strongly, with an average Grazing Suited Species Score of 0.41 in 1987 and 0.24 2012. The proportion of nutrient tolerant species remained broadly similar, with average Nutrient Availability Suited Species Scores of -0.06 in 1987 and -0.04 in 2012.

SOILS	
Texture	Sandy loam
pH	6
Olsens P	11
Total N	0.73
K	143

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	2	0	2	Poac	6	5	4	4	0	0
Agrostis stolonifera	3	0	0	Poac	7	6	7	6	0	1
Alopecurus geniculatus	5	2	0	Poac	8	7	6	6	0	1
Alopecurus pratensis	0	10	6	Poac	7	5	6	7	0	0
Anthoxanthum odoratum	0	10	6	Poac	7	6	4	3	0	-1
Avenula pubescens	0	0	1	Poac	7	4	7	3	1	-1
Bellis perennis	3	0	15	Aste	8	5	6	4	1	0
Bromus hordeaceus	1	0	3	Poac	8	4	7	4	0	1
Caltha palustris	4	2	0	Ranu	7	9	6	4	0	-1
Cerastium fontanum	2	1	2	Cary	7	5	5	4	1	0
Cerastium glomeratum	3	0	2	Cary	7	5	6	5	1	0
Conopodium majus	0	0	1	Apia	6	5	5	5	0	-1
Crepis paludosa	0	0	1	Aste	6	7	6	4	0	0
Cynosurus cristatus	0	10	11	Poac	7	5	6	4	0	0
Dactylis glomerata	0	15	2	Poac	7	5	7	6	0	0
Festuca pratensis	0	5	5	Poac	7	6	6	6	0	0
Festuca rubra	0	0	8	Poac	8	5	6	5	-1	0
Holcus lanatus	2	0	4	Poac	7	6	6	5	0	0
Juncus acutiflorus	0	3	0	Junc	8	8	4	2	0	-1
Leontodon autumnalis	0	2	0	Aste	8	6	6	4	1	0
Leontodon hispidus	0	0	1	Aste	8	4	7	3	0	-1
Lolium perenne	66	10	3	Poac	8	5	6	6	0	0
Montia fontana	22	10	3	Port	7	9	5	3	1	-1
Myosotis discolor	0	0	1	Bora	7	5	5	3	1	-1
Phleum pratense	3	0	9	Poac	8	5	7	6	1	0
Plantago lanceolata	0	0	3	Plan	7	5	6	4	1	0
Poa annua	0	5	0	Poac	7	5	6	7	0	1
Poa pratensis	0	2	0	Poac	7	5	6	5	0	0
Poa trivialis	10	10	13	Poac	7	6	6	6	0	0
Ranunculus acris	0	0	2	Ranu	7	6	6	4	1	0
Ranunculus bulbosus	0	0	2	Ranu	7	4	7	4	0	0
Ranunculus repens	22	10	0	Ranu	6	7	6	7	0	1
Rhinanthus minor	0	0	1	Scro	7	5	6	4	0	0
Rumex acetosa	2	1	20	Poly	7	5	5	4	0	0
Taraxacum agg.	0	0	2	Aste	7	5	7	6	1	0
Trifolium pratense	0	0	2	Faba	7	5	7	5	1	0
Trifolium repens	47	2	12	Faba	7	5	6	6	0	0
Trisetum flavescens	0	0	3	Poac	7	4	7	4	0	0
Trollius europaeus	0	0	2	Ranu	7	7	6	4	-1	0
Veronica chamaedrys	0	0	1	Scro	6	5	6	5	1	-1
Veronica serpyllifolia	0	1	0	Scro	7	5	6	5	-1	0

SUMMARY	
Total	41.00
Grass	18.00
Sedge	0.00
Rush	1.00
Forb	22.00
Herb cover	45%
LIGHT L	
Average	7.10
Min	6.00
Max	8.00
MOISTURE F	
Average	5.51
Min	4.00
Max	9.00
REACTION R	
Average	5.98
Min	4.00
Max	7.00
NITROGEN N	
Average	4.68
Min	2.00
Max	7.00
GRAZING GI	
Average	0.24
NUTRIENTS NI	
Average	-0.10

Site:	**774**
Area	**Teesdale**
HLS options + supplements	**HK7**
Former ESA tier	**1B**

This site lies to the south-east of Langdon Beck, at an altitude of 450m. The field has a south-westerly aspect and a gentle slope; the site forms part of Upper Teesdale Site of Special Scientific Interest.

The vegetation comprises *Anthoxanthum odoratum* and *Cynosurus cristatus* with prominent *Caltha palustris, Juncus acutiflorus* and *Carex nigra*. Other typical upland hay meadow axiophytes include constant *Euphrasia officinalis agg.*, *Leontodon autumnalis* and *Rhinanthus minor*; and scattered *Alchemilla glabra, Cirsium heterophyllum, Filipendula ulmaria, Geranium sylvaticum* and *Lathyrus pratensis*. Negative species within the sward include occasional *Rumex crispus;* and rare *Urtica dioica* and *Anthriscus sylvestris*. Outside the mown area, the south-western field boundary supports some aggregations of *U. dioica*, *A. sylvestris* and *R. crispus*. The eastern boundary is dominated by *Lolium perenne* and *Alopecurus pratensis*. An un-mown flush on the south-western boundary includes the northern montane *Persicaria vivipara* with *Dactylorhiza purpurella* and *Geranium sylvaticum*.

The vegetation shows strong affinities to MG8 (60.2) with some areas, where *Caltha* cover is reduced, probably transitional to MG6b (55.0). Overall, the community is considered to be a good fit to O'Reilly's (2011) MG8+ variant. The meadow is considered to be semi-improved and of relatively high quality. The flush on the south-western boundary is considered to be unimproved and is of high quality.

No previous survey data exist for this site.

SOILS	
Texture	Sandy loam
pH	5.5
Olsens P	7
Total N	0.57
K	81

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NATE18 Name	Q1	Q2	Q3	Fam	L (light)	F (moisture)	R (reaction)	N (nitrogen)	GI (grazing)	NI (nutrients)
Agrostis capillaris	0	2	3	Poac	6	5	4	4	0	0
Alchemilla glabra	2	0	3	Rosa	7	6	6	4	0	0
Anthoxanthum odoratum	10	10	15	Poac	7	6	4	3	0	-1
Bellis perennis	1	1	1	Aste	8	5	6	4	1	0
Caltha palustris	20	5	1	Ranu	7	9	6	4	0	-1
Carex nigra	30	30	0	Cype	7	8	4	2	0	-1
Cerastium fontanum	0	1	0	Cary	7	5	5	4	1	0
Cynosurus cristatus	10	10	10	Poac	7	5	6	4	0	0
Euphrasia officinalis agg.	1	0	5	Scro	8	5	5	3	0	-1
Festuca pratensis	5	3	0	Poac	7	6	6	6	0	0
Festuca rubra	0	3	5	Poac	8	5	6	5	-1	0
Holcus lanatus	5	5	5	Poac	7	6	6	5	0	0
Juncus acutiflorus	0	10	10	Junc	8	8	4	2	0	-1
Leontodon autumnalis	3	0	5	Aste	8	6	6	4	1	0
Lolium perenne	0	5	5	Poac	8	5	6	6	0	0
Luzula campestris	0	0	1	Junc	7	4	5	2	1	-1
Montia fontana	0	2	0	Port	7	9	5	3	1	-1
Myosotis discolor	3	2	0	Bora	7	5	5	3	1	-1
Phleum pratense	10	5	0	Poac	8	5	7	6	1	0
Plantago lanceolata	3	0	5	Plan	7	5	6	4	1	0
Prunella vulgaris	2	5	5	Lami	7	5	6	4	0	0
Ranunculus acris	5	10	3	Ranu	7	6	6	4	1	0
Ranunculus repens	0	2	3	Ranu	6	7	6	7	0	1
Rhinanthus minor	5	5	10	Scro	7	5	6	4	0	0
Rumex acetosa	2	1	5	Poly	7	5	5	4	0	0
Senecio jacobaea	0	0	1	Aste	7	4	6	4	0	1
Succisa pratensis	0	0	1	Dips	7	7	5	2	1	-1
Taraxacum agg.	0	1	1	Aste	7	5	7	6	1	0
Trifolium dubium	1	0	5	Faba	7	4	6	5	0	0
Trifolium pratense	2	3	3	Faba	7	5	7	5	1	0
Trifolium repens	1	3	2	Faba	7	5	6	6	0	0
Trollius europaeus	0	1	10	Ranu	7	7	6	4	-1	0

SUMMARY	
Total	32.00
Grass	8.00
Sedge	1.00
Rush	2.00
Forb	21.00
Herb cover	44%
LIGHT L	
Average	7.16
Min	6.00
Max	8.00
MOISTURE F	
Average	5.72
Min	4.00
Max	9.00
REACTION R	
Average	5.63
Min	4.00
Max	7.00
NITROGEN N	
Average	4.16
Min	2.00
Max	7.00
GRAZING GI	
Average	0.31
NUTRIENTS NI	
Average	-0.22