3.3.2 Effectiveness of Grazing Animals in achieving the Conservation Objectives

To determine the effectiveness of grazing animals in achieving the nature conservation objectives respondents were asked to assess their stock on a five point scale (very poor, poor, average, good and very good). As no definition of these points could be given the responses are, to a degree, subjective especially in determining 'average'. In the questionnaire ten conservation objectives were suggested (Box 10) but respondents added a further seven; not all the latter might be considered conservation objectives (e.g. "dog-proof", "aesthetic") but as these attributes may be important in the selection of breed they have been retained. Others may be an indirect effect of grazing e.g. dragonfly, butterfly, insect and bird conservation are likely to be indirectly achieved through modification of the vegetation. Nonetheless they may well represent the purpose of grazing and are also retained in the analysis.

There were 15 nil responses to this question. Approximately two-thirds of the responses indicated that the stock achieved the conservation objectives well or very well whereas only 13% were considered worse than average (Table 28). Stock were particularly effective at controlling tree/shrub seedling establishment, maintaining or improving vegetation structure and developing a vegetation mosaic for which respectively 64%, 84%, 75% and 78% of assessments were good or very good. Of the objectives suggested in the questionnaire stock were least effective at controlling bracken, but even for that objective similar proportions were better (37%) and worse (42%) than 'average'.

Of the objectives suggested by respondents it is perhaps not surprising that most records were for better than average effectiveness. Only in "dog-proof" did one respondent record a poorer than average assessment. Generally there were too few records for these 'other' objectives for meaningful analysis.

Table 29 shows the effectiveness of the various sheep breeds in achieving the main conservation objectives of grazing. It is clear that sheep generally are not effective at eliminating established trees and shrubs or at controlling bracken. However, on two occasions Soay and on one occasion each Hebridean and Manx Loghtan were recorded as controlling bracken well. A wider range of eleven breeds was recorded as being better than average at eliminating trees and shrubs but six of those were also recorded as poorer than average. In both instances it is not clear whether this means better or worse than average for sheep or for all stock.

There was considerable variation between sites and/or assessments. For example, Beulah Speckled Faces' effectiveness in developing a vegetation mosaic was recorded as poor twice, average twice but good on four occasions. The same breed varied between poor and very good at improving vegetation structure. Such variation was clearly more likely to be recorded in the more widely used breeds. Thus Hebrideans' effectiveness at eliminating trees and shrubs varied from very poor (one record) through every category to very good (six records).

Most sheep breeds were better than average at controlling tree and shrub seedlings and maintaining or developing a vegetation mosaic. Many could also improve the vegetation structure. Hebridean and Soay were outstanding in being recorded as good or very good at 10 of the 17 conservation objectives; although it may be argued that this outcome is biased by the frequency of their use, it is equally valid to argue that their frequency of use is a product of their effectiveness in achieving a wide range of objectives. Beulah Speckled Face were better

than average at eight of the objectives but had fewer very good assessments; even Suffolk was recorded as very good at six objectives. No breed stood out as particularly poor; it is to be hoped that any such breed would have been replaced if it was ineffective at achieving the conservation objectives for a particular site.

Generally hill breeds achieved more better than average ratings for more objectives than down or other lowland sheep. Thus Beulah Speckled Face, Herdwick and Welsh Mountain managed seven or more better than average assessments; Rough Fell, Swaledale and Teeswater were not quite as highly rated although Teeswater achieved five very good ratings. Primitive breeds were also rated highly: Hebridean, Soay and to a lesser extent Manx Loghtan achieved above average ratings for many objectives and Shetland achieved five very good ratings for the same objectives as the Teeswater.

Amongst the lowland breeds Jacob stands out with eight better than average assessments, followed by Southdown with six. As noted above Suffolk was rated very good at achieving six objectives. Portland came out of the assessments rather badly; in its defence two of its three poorer than average ratings were for controlling bracken and increasing bare ground which are not the strong points of any sheep breeds. In evaluating breeds for use on conservation sites other features may need to be taken into account; for example the lack of fleece in the Wiltshire Horn, the low reproductive rate of Portland or, conversely, the high prolificacy of Lleyn may all be valuable features in certain situations, provided the main conservation objectives can be achieved by the chosen breed.

Figure 9. Main grazing objectives; headings in first row refer to the objectives identified in Box 9, values in subsequent rows show number of sites recording that objective and numbers in last row show total number of sites where that objective was recorded

Store	Fatten Finish	Flush	Tup/ Bull	Over- winter	Breeding	Conservat.	Fun	Recreate	Education	Public relat.	Income	Local Farm	Tradition	Land restor.	Pres. flock	Keep fit	Number of Sites	Percentage of Total
																	2	2
																	73	60
																	1	1
																	5	4
																	3	3
																	1	1
																	5	4
																	1	1
																	1	1
																	1	1
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9	9	1	5	7	13	109	2	1	1	6	9	3	1	1	2	1		

Table 28. Effectiveness of grazing animals in achieving main conservation objectives; values indicate number of times that degree of effectiveness was reported for each main conservation objective

Main objectives			Effective	eness		
	Very good	Good	Average	Poor	Very poor	TOTALS
Eliminate Trees / Shrubs	11	24	11	14	5	65
Control Tree / Shrub Seedlings	20	30	18	9	1	78
Maintain Vegetation Structure	28	43	9	5	0	85
Improve Vegetation Structure	26	42	17	5	1	91
Develop Vegetation Mosaic	22	44	13	5	1	85
Increase Bare Ground	8	19	17	9	1	54
Control Invasive Grasses	14	30	20	7	0	71
Control Bracken	3	11	8	11	5	38
Reduce Fire Risk	4	4	9	1	0	18
Single Species Management	4	4	3	0	0	11
Deforestation Management	1	0	0	0	0	1
Dog Proof	0	1	1	- 1	0	3
Aesthetic	0	1	0	. 0	0	1
Dragonfly Conservation	1	0	0	0	0	1
Butterfly Conservation	2	2	2	0	0	6
Insect Conservation	0	1	0	0	0	1
Bird Conservation	1	0	0	0	0	1
TOTALS	145	256	128	67	14	610

Table 29. Effectiveness of sheep breeds in achieving the main conservation objectives of grazing; abbreviations refer to the objectives listed in Box 10. Numbers in brackets indicate number of records if greater than one

			Effectiveness		
Breed or Cross	Very poor	Poor	Average	Good	Very good
Berrichon du Cher x	Elimin.Trees/Shrubs	CntrlTree/ShrubSeed.		Elimin.Trees/Shrubs Maintain Veg. Struct. (2) Improve Veg. Struct. (2) Develop Veg. Mosaic Control Invas. Grass (2)	Elimin.Trees/Shrubs CntrlTree/ShrubSeed. (2)
Beulah Speckled Face		Elimin.Trees/Shrubs (3) CntrlTree/ShrubSeed. Improve Veg. Struct. Develop Veg. Mosaic (2) Increase Bare Ground Control Invas. Grass Control Bracken	CntrlTree/ShrubSeed. (2) Maintain Veg. Struct. (3) Improve Veg. Struct. (4) Develop Veg. Mosaic (2) Increase Bare Ground (2) Control Invas. Grass (3) Butterfly Conservation	Elimin.Trees/Shrubs (5) CntrlTree/ShrubSeed. (6) Maintain Veg. Struct. (4) Improve Veg. Struct. (3) Develop Veg. Mosaic (4) Increase Bare Ground Control Invas. Grass (2) Reduce Fire Risk	CntrlTree/ShrubSeed. Maintain Veg. Struct. (3) Improve Veg. Struct. (2)
Beulah Speckled Face x	Elimin.Trees/Shrubs		Reduce Fire Risk	Improve Veg. Struct. Develop Veg. Mosaic	
Beulah Speckled Face x Suffolk				Elimin.Trees/Shrubs CntrlTree/ShrubSeed. Develop Veg. Mosaic Control Invas. Grass	Maintain Veg. Struct. Improve Veg. Struct.
Beulah Speckled Face x Welsh Mule	Control Bracken		Elimin.Trees/Shrubs Control Invas. Grass	CntrlTree/ShrubSeed. Maintain Veg. Struct. Develop Veg. Mosaic	Maintain Veg. Struct.
Black Welsh Mountain				Improve Veg. Struct. Develop Veg. Mosaic Control Invas. Grass	
Bleu du Maine x Cheviot					CntrlTree/ShrubSeed. Maintain Veg. Struct. Develop Veg. Mosaic

	······		Effectiveness	***********		
Breed or Cross	Very poor	Poor	Average	Good	Very good	
Bleu du Maine x Lleyn					CntrlTree/ShrubSeed. Maintain Veg. Struct. Develop Veg. Mosaic	
Bleu du Maine x Mule			-		CntrlTree/ShrubSeed. Maintain Veg. Struct. Develop Veg. Mosaic	
Cheviot			-	CntrlTree/ShrubSeed. Maintain Veg. Struct. Improve Veg. Struct.		
Clun Forest	Elimin.Trees/Shrubs	CntrlTree/ShrubSeed.		Elimin.Trees/Shrubs Maintain Veg. Struct. Improve Veg. Struct. Control Invas. Grass	CntrlTree/ShrubSeed.	
Derbyshire Gritstone		-		CntrlTree/ShrubSeed. Maintain Veg. Struct.		
Dorset		Elimin.Trees/Shrubs	Maintain Veg. Struct. Improve Veg. Struct. Increase Bare Ground Control Invas. Grass Butterfly Conservation	CntrlTree/ShrubSeed. Develop Veg. Mosaic		
Exmoor Horn	Control Bracken (2)	CntrlTree/ShrubSeed. Increase Bare Ground		CntrlTree/ShrubSeed. Improve Veg. Struct. Develop Veg. Mosaic (2) Increase Bare Ground Control Invas. Grass		

			Effectiveness		
Breed or Cross	Very poor	Poor	Average	Good	Very good
Hebridean	Elimin.Trees/Shrubs Increase Bare Ground Control Bracken	Elimin.Trees/Shrubs (2) CntrlTree/ShrubSeed. (2) Control Bracken (2)	Elimin.Trees/Shrubs (2) CntrlTree/ShrubSeed. (3) Maintain Veg. Struct. Improve Veg. Struct. (4) Develop Veg. Mosaic (2) Increase Bare Ground (2) Control Invas. Grass (4) Reduce Fire Risk Single Species Man. Butterfly Conservation	Elimin. Trees/Shrubs (5) CntrlTree/ShrubSeed. (3) Maintain Veg. Struct. (8) Improve Veg. Struct. (7) Develop Veg. Mosaic (5) Increase Bare Ground (2) Control Invas. Grass (4) Control Bracken Reduce Fire Risk	Elimin.Trees/Shrubs (6) CntrlTree/ShrubSeed. (7) Maintain Veg. Struct. (2) Improve Veg. Struct. (3) Develop Veg. Mosaic (3) Control Invas. Grass (3) Reduce Fire Risk Single Species Man.
Hebridean x Berrichon du Cher			Elimin.Trees/Shrubs CntrlTree/ShrubSeed. Increase Bare Ground Control Invas. Grass (2)	Maintain Veg. Struct. Improve Veg. Struct. Develop Veg. Mosaic	
Herdwick	Elimin.Trees/Shrubs	CntrlTree/ShrubSeed. Control Bracken		CntrlTree/ShrubSeed. Maintain Veg. Struct. (3) Improve Veg. Struct. (2) Develop Veg. Mosaic (2) Increase Bare Ground Control Invas. Grass Reduce Fire Risk	CntrlTree/ShrubSeed. Improve Veg. Struct. Control Invas. Grass
Herdwick x Soay			Increase Bare Ground		
Јасођ	Elimin.Trees/Shrubs	Elimin.Trees/Shrubs CntrlTree/ShrubSeed. Control Invas. Grass	Elimin.Trees/Shrubs Develop Veg. Mosaic	Elimin.Trees/Shrubs Maintain Veg. Struct. Improve Veg. Struct. (2) Develop Veg. Mosaic Increase Bare Ground Control Invas. Grass Single Species Man.	CntrlTree/ShrubSeed. (2) Maintain Veg. Struct.
Kent				Maintain Veg. Struct. Develop Veg. Mosaic	
Leicester Longwool x	Control Bracken			CntrlTree/ShrubSeed. Develop Veg. Mosaic Increase Bare Ground	

			Effectiveness			
Breed or Cross	Very poor	Poor	Average	Good	Very good	
Lleyn		Increase Bare Ground Control Invas. Grass Dog Proof	Elimin.Trees/Shrubs CntrlTree/ShrubSeed. Improve Veg. Struct. Reduce Fire Risk Single Species Man.	Maintain Veg. Struct. Develop Veg. Mosaic	Maintain Veg. Struct. Develop Veg. Mosaic	
Manx Loghtan	Elimin.Trees/Shrubs	CntriTree/ShrubSeed.		Elimin.Trees/Shrubs (2) CntrlTree/ShrubSeed. Maintain Veg. Struct. (2) Improve Veg. Struct. (3) Develop Veg. Mosaic (2) Control Invas. Grass Control Bracken	CntrlTree/ShrubSeed.	
Masham		Elimin.Trees/Shrubs	Maintain Veg. Struct. Improve Veg. Struct. Increase Bare Ground Control Invas. Grass Butterfly Conservation	CntrlTree/ShrubSeed. Develop Veg. Mosaic		
Mule	Elimin.Trees/Shrubs	Elimin.Trees/Shrubs (2)	CntrlTree/ShrubSeed. Maintain Veg. Struct. Improve Veg. Struct. Increase Bare Ground Control Invas. Grass Butterfly Conservation	CntrlTree/ShrubSeed. (2) Maintain Veg. Struct. Develop Veg. Mosaic	Maintain Veg. Struct. Improve Veg. Struct. Develop Veg. Mosaic Increase Bare Ground	
Northumberland Blackface				Maintain Veg. Struct. Develop Veg. Mosaic	Deforestation Manag.	
Portland	Control Bracken	CntrlTree/ShrubSeed. Increase Bare Ground		Improve Veg. Struct. Develop Veg. Mosaic Control Invas. Grass		
Rough Fell	Control Bracken	Increase Bare Ground Control Bracken	Control Invas. Grass	Elimin.Trees/Shrubs CntrlTree/ShrubSeed. Maintain Veg. Struct. Improve Veg. Struct. Develop Veg. Mosaic (2)		

			Effectiveness		
Breed or Cross	Very poor	Poor	Average	Good	Very good
Scottish Blackface	Develop Veg. Mosaic Control Bracken	Maintain Veg. Struct. Improve Veg. Struct. Control Invas. Grass		CntriTree/ShrubSeed. Maintain Veg. Struct. Improve Veg. Struct.	
Scottish Blackface x			Control Invas. Grass	CntrlTree/ShrubSeed. Maintain Veg. Struct. Develop Veg. Mosaic	
Scottish Halfbred		Elimin.Trees/Shrubs	Increase Bare Ground Control Invas. Grass	CntrlTree/ShrubSeed. Maintain Veg. Struct.	Improve Veg. Struct. Develop Veg. Mosaic
Shetland					Maintain Veg. Struct. Improve Veg. Struct. Develop Veg. Mosaic Control Invas. Grass Single Species Man.
Soay		Increase Bare Ground Control Bracken	Maintain Veg. Struct. Increase Bare Ground Control Invas. Grass	Elimin.Trees/Shrubs (2) Maintain Veg. Struct. Improve Veg. Struct. Develop Veg. Mosaic Increase Bare Ground Control Invas. Grass Control Bracken (2) Reduce Fire Risk Single Species Man. (2)	Elimin.Trees/Shrubs (2) CntrlTree/ShrubSeed. (2) Maintain Veg. Struct. Improve Veg. Struct. (3) Develop Veg. Mosaic (2) Increase Bare Ground Control Invas. Grass
Southdown		Elimin.Trees/Shrubs Control Invas. Grass Control Bracken	Increase Bare Ground Control Invas. Grass (2)	CntrlTree/ShrubSeed. Maintain Veg. Struct. Improve Veg. Struct. Develop Veg. Mosaic (3) Increase Bare Ground Single Species Man.	CntrlTree/ShrubSeed. (2) Maintain Veg. Struct. (2) Improve Veg. Struct.
Southdown x Jacob		Elimin.Trees/Shrubs Control Invas. Grass		Improve Veg. Struct. Develop Veg. Mosaic Increase Bare Ground Single Species Man.	CntrlTree/ShrubSeed. Maintain Veg. Struct.

			Effectiveness		
Breed or Cross	Very poor	Poor	Average	Good	Very good
Suffolk	Elimin.Trees/Shrubs	Elimin.Trees/Shrubs	CntrlTree/ShrubSeed.		Maintain Veg. Struct. (2) Improve Veg. Struct. (2) Develop Veg. Mosaic (2) Increase Bare Ground Control Invas. Grass Single Species Man.
Suffolk x		Develop Veg. Mosaic	Elimin.Trees/Shrubs CntrlTree/ShrubSeed. Control Invas. Grass	Elimin.Trees/Shrubs CntrlTree/ShrubSeed. Maintain Veg. Struct. Improve Veg. Struct.	
Swaledale		Increase Bare Ground Control Bracken	Improve Veg. Struct. Control Invas. Grass	Elimin.Trees/Shrubs (2) CntrlTree/ShrubSeed. Maintain Veg. Struct. (2) Improve Veg. Struct. Develop Veg. Mosaic	Maintain Veg. Struct.
Teeswater					Maintain Veg. Struct. Improve Veg. Struct. Develop Veg. Mosaic Control Invas. Grass Single Species Man.
Texel	Elimin.Trees/Shrubs	Elimin.Trees/Shrubs Control Bracken	Elimin.Trees/Shrubs CntrlTree/ShrubSeed. (2) Control Invas. Grass	CntrlTree/ShrubSeed, Maintain Veg. Struct, Develop Veg. Mosaic Increase Bare Ground Reduce Fire Risk	Maintain Veg. Struct. Improve Veg. Struct. Develop Veg. Mosaic Increase Bare Ground
Texel x			Elimin.Trees/Shrubs CntrlTree/ShrubSeed. Control Invas. Grass	CntrlTree/ShrubSeed. Maintain Veg. Struct. Develop Veg. Mosaic	

		Effectiveness								
Breed or Cross	Very poor	Poor	Average	Good	Very good					
Welsh Mountain	Control Bracken	Maintain Veg. Struct. Control Bracken	CntrlTree/ShrubSeed. Improve Veg. Struct. Control Invas. Grass	CntrlTree/ShrubSeed. Maintain Veg. Struct. Improve Veg. Struct. (3) Develop Veg. Mosaic (3) Increase Bare Ground Control Invas. Grass Butterfly Conservation	Bird Conservation					
Welsh Mountain x			Increase Bare Ground	CntrlTree/ShrubSeed. Improve Veg. Struct.	Maintain Veg. Struct.					
Wiltshire Horn		Elimin. Trees/Shrubs	Increase Bare Ground	CntrlTree/ShrubSeed. (2) Improve Veg. Struct. Develop Veg. Mosaic Increase Bare Ground	CntrlTree/ShrubSeed. (2)					

Table 30. Effectiveness of cattle breeds in achieving the main conservation objectives of grazing; abbreviations refer to the objectives listed in Box 10. Numbers in brackets indicate number of records if greater than one

Breed or Cross			Effectiveness		
	Very poor	Poor	Average	Good	Very good
Aberdeen Angus		Develop Veg. Mosaic	Control Invas. Grass	Maintain Veg. Struct. (2) Improve Veg. Struct. Develop Veg. Mosaic Increase Bare Ground	CntrlTree/ShrubSeed. Maintain Veg. Struct. Develop Veg. Mosaic
Aberdeen Angus x Friesian				CntrlTree/ShrubSeed. Maintain Veg. Struct. Develop Veg. Mosaic Increase Bare Ground Control Invas. Grass	
Aubrac x Galloway				Develop Veg. Mosaic Increase Bare Ground Control Invas. Grass	
Beef Shorthorn			Maintain Veg. Struct.	CntrlTree/ShrubSeed. Improve Veg. Struct. Control Invas. Grass	Maintain Veg. Struct. Improve Veg. Struct. Develop Veg. Mosaic
Beef Shorthorn x		Elimin.Trees/Shrubs (2) CntrlTree/ShrubSeed.	Elimin.Trees/Shrubs CntrlTree/ShrubSeed. (2) Control Invas. Grass	CntrlTree/ShrubSeed. (2) Maintain Veg. Struct. (3) Improve Veg. Struct. Develop Veg. Mosaic (3) Increase Bare Ground (2) Control Invas. Grass (3) Bracken Control Reduce Fire Risk Butterfly Conservation	Maintain Veg. Struct. Improve Veg. Struct. Develop Veg. Mosaic Increase Bare Ground Control Invas. Grass
Beef Shorthorn x Hereford		Elimin.Trees/Shrubs Bracken Control	CntrlTree/ShrubSeed.	Improve Veg. Struct. Develop Veg. Mosaic Increase Bare Ground	Maintain Veg. Struct. Control Invas. Grass
Beef Shorthorn x Jersey x Longhorn		Elimin.Trees/Shrubs Bracken Control	CntrlTree/ShrubSeed.	Improve Veg. Struct. Develop Veg. Mosaic Increase Bare Ground	Maintain Veg. Struct. Control Invas. Grass

Breed or Cross			Effectiveness		*****
	Very poor	Poor	Average	Good	Very good
Beef Shorthorn x British White x Friesian x Hereford		Elimin.Trees/Shrubs Bracken Control	CntrlTree/ShrubSeed.	Improve Veg. Struct. Develop Veg. Mosaic Increase Bare Ground	Maintain Veg. Struct. Control Invas. Grass
Beef Shorthorn x British White x Friesian	·	Elimin.Trees/Shrubs Bracken Control	CntrlTree/ShrubSeed.	Improve Veg. Struct. Develop Veg. Mosaic Increase Bare Ground	Maintain Veg. Struct. Control Invas. Grass
Belgian Blue		Elimin.Trees/Shrubs		CntrlTree/ShrubSeed. Maintain Veg. Struct. Improve Veg. Struct. Control Invas. Grass	
Belgian Blue x		Develop Veg. Mosaic	Control Invas. Grass	CntrlTree/ShrubSeed. Maintain Veg. Struct. (2) Develop Veg. Mosaic Increase Bare Ground Control Invas. Grass	
"Black" Hereford			Increase Bare Ground Control Invas. Grass Reduce Fire Risk Single Species Man.	Improve Veg. Struct. Dog Proof	
Blonde d'Aquitaine		Elimin.Trees/Shrubs		CntrlTree/ShrubSeed. Maintain Veg. Struct. Improve Veg. Struct. Control Invas. Grass	
Blonde d'Aquitaine x		Develop Veg. Mosaic	Control Invas. Grass	CntrlTree/ShrubSeed. Maintain Veg. Struct. (2) Develop Veg. Mosaic Increase Bare Ground Control Invas. Grass	

Breed or Cross			Effectiveness		
	Very poor	Poor	Average	Good	Very good
British White	CntrlTree/ShrubSeed.		Elimin.Trees/Shrubs CntrlTree/ShrubSeed. Maintain Veg. Struct. Improve Veg. Struct. Develop Veg. Mosaic Increase Bare Ground Control Invas. Grass	CntrlTree/ShrubSeed. Maintain Veg. Struct. (2) Develop Veg. Mosaic Increase Bare Ground Control Invas. Grass Bracken Control Reduce Fire Risk	Bracken Control Reduce Fire Risk Butterfly Conservation
British White x Friesian		Elimin.Trees/Shrubs Bracken Control	CntrlTree/ShrubSeed.	Improve Veg. Struct. Develop Veg. Mosaic Increase Bare Ground	Maintain Veg. Struct. Control Invas. Grass
British White x Friesian x Hereford		Elimin.Trees/Shrubs Bracken Control	CntrlTree/ShrubSeed.	Improve Veg. Struct. Develop Veg. Mosaic Increase Bare Ground	Maintain Veg. Struct. Control Invas. Grass
Charolais		Elimin.Trees/Shrubs		CntrlTree/ShrubSeed. Maintain Veg. Struct. Improve Veg. Struct. Control Invas. Grass	Maintain Veg. Struct. Improve Veg. Struct. Develop Veg. Mosaic
Charolais x		Develop Veg. Mosaic	Control Invas. Grass	CntrlTree/ShrubSeed. Maintain Veg. Struct. (2) Develop Veg. Mosaic	
Charolais x Friesian				CntrlTree/ShrubSeed. Maintain Veg. Struct. Develop Veg. Mosaic Increase Bare Ground Control Invas. Grass	
Charolais x Simmental	Elimin.Trees/Shrubs	Increase Bare Ground	CntrlTree/ShrubSeed.	Improve Veg. Struct. Develop Veg. Mosaic Control Invas. Grass	Maintain Veg. Struct. Reduce Fire Risk
"Continental" x	Elimin. Trees/Shrubs	CntrlTree/ShrubSeed. Maintain Veg. Struct. Improve Veg. Struct.		Maintain Veg. Struct. (2) Improve Veg. Struct. Develop Veg. Mosaic Control Invas. Grass	CntrlTree/ShrubSeed.

Breed or Cross		Effectiveness						
	Very poor	Poor	Average	Good	Very good			
Devon		Elimin.Trees/Shrubs CntrlTree/ShrubSeed.	CntrlTree/ShrubSeed. Maintain Veg. Struct. Improve Veg. Struct Develop Veg. Mosaic Increase Bare Ground (2) Control Invas. Grass Reduce Fire Risk	Bracken Control	Improve Veg. Struct. Develop Veg. Mosaic Control Invas. Grass Bracken Control Reduce Fire Risk Butterfly Conservation			
Devon x				Improve Veg. Struct. Control Invas. Grass				
Dexter			CntrlTree/ShrubSeed. Increase Bare Ground	Improve Veg. Struct.	Maintain Veg. Struct. Develop Veg. Mosaic			
Friesian		Elimin.Trees/Shrubs Develop Veg. Mosaic Control Invas. Grass	Elimin.Trees/Shrubs CntrlTree/ShrubSeed. (2) Improve Veg. Struct. Develop Veg. Mosaic Increase Bare Ground Control Invas. Grass	CntrlTree/ShrubSeed. Maintain Veg. Struct. (7) Improve Veg. Struct. (3) Develop Veg. Mosaic (2) Increase Bare Ground Control Invas. Grass Insect Conservation	Maintain Veg. Struct. (2) Improve Veg. Struct. Develop Veg. Mosaic (2)			
Friesian x	Elimin.Trees/Shrubs Improve Veg. Struct.	Elimin.Trees/Shrubs Maintain Veg. Struct.	CntrlTree/ShrubSeed.		Maintain Veg. Struct. Improve Veg. Struct. Develop Veg. Mosaic Increase Bare Ground			
Friesian x Hereford		Elimin.Trees/Shrubs	CntrlTree/ShrubSeed. Maintain Veg. Struct. Increase Bare Ground Control Invas. Grass	CntrlTree/ShrubSeed. Maintain Veg. Struct. Improve Veg. Struct. Develop Veg. Mosaic (2) Increase Bare Ground Control Invas. Grass				
Friesian x Holstein				CntrlTree/ShrubSeed. Maintain Veg. Struct. Develop Veg. Mosaic Increase Bare Ground Control Invas. Grass				

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Breed or Cross		Effectiveness					
	Very poor	Poor	Average	Good	Very good		
Friesian x Limousin				CntrlTree/ShrubSeed. Maintain Veg. Struct. Develop Veg. Mosaic Increase Bare Ground Control Invas. Grass			
Friesian x Simmental				CntrlTree/ShrubSeed, Maintain Veg. Struct. Develop Veg. Mosaic Increase Bare Ground Control Invas. Grass			
Galloway x			CntrlTree/ShrubSeed. Increase Bare Ground (3) Control Invas. Grass Reduce Fire Risk	Maintain Veg. Struct. (2) Improve Veg. Struct. (3) Develop Veg. Mosaic Control Invas. Grass	Maintain Veg. Struct. Develop Veg. Mosaic (2)		
Guernsey		Develop Veg. Mosaic	Control Invas. Grass	Maintain Veg. Struct.			
Hereford		Elimin.Trees/Shrubs	Elimin.Trees/Shrubs CntrlTree/ShrubSeed. (2) Maintain Veg. Struct. Improve Veg. Struct, Develop Veg. Mosaic Increase Bare Ground Control Invas. Grass	Maintain Veg. Struct. Improve Veg. Struct. Develop Veg. Mosaic			
Hereford x	Elimin.Trees/Shrubs Bracken Control	Elimin Trees/Shrubs CntrlTree/ShrubSeed. Develop Veg. Mosaic	Improve Veg. Struct. Develop Veg. Mosaic Increase Bare Ground Control Invas. Grass (3) Bracken Control Reduce Fire Risk Single Species Man.	Elimin. Trees/Shrubs CntrlTree/ShrubSeed. (2) Maintain Veg. Struct. (4) Improve Veg. Struct. (2) Develop Veg. Mosaic Increase Bare Ground Control Invas. Grass Reduce Fire Risk	Maintain Veg. Struct. Dragonfly Conservation		

Breed or Cross		Effectiveness						
	Very poor	Poor	Average	Good	Very good			
Highland		Develop Veg. Mosaic Increase Bare Ground (2) Bracken Control Reduce Fire Risk	Elimin.Trees/Shrubs (2) CntrlTree/ShrubSeed. (3) Maintain Veg. Struct. Increase Bare Ground (2) Control Invas. Grass Bracken Control (2) Reduce Fire Risk (2) Dog Proof	Elimin.Trees/Shrubs (3) CntrlTree/ShrubSeed. (3) Maintain Veg. Struct. (2) Improve Veg. Struct. (4) Develop Veg. Mosaic (5) Control Invas. Grass (3)	Elimin.Trees/Shrubs CntrlTree/ShrubSeed. Maintain Veg. Struct. (3) Improve Veg. Struct. (5) Develop Veg. Mosaic (4) Increase Bare Ground Control Invas. Grass (4) Bracken Control Reduce Fire Risk			
Holstein			Control Invas. Grass	CntrlTree/ShrubSeed. Maintain Veg. Struct. Develop Veg. Mosaic (2)	Maintain Veg. Struct. (2) Improve Veg. Struct. Develop Veg. Mosaic			
Jersey		Develop Veg. Mosaic	Elimin. Trees/Shrubs Control Invas. Grass	CntrlTree/ShrubSeed. Maintain Veg. Struct.	Maintain Veg. Struct. Improve Veg. Struct. Develop Veg. Mosaic Increase Bare Ground Control Invas. Grass			
Limousin			Bracken Control Reduce Fire Risk	Elimin.Trees/Shrubs CntrlTree/ShrubSeed. Maintain Veg. Struct. Improve Veg. Struct. Develop Veg. Mosaic Increase Bare Ground	Maintain Veg. Struct. Improve Veg. Struct. Develop Veg. Mosaic Dragonfly Conservation			
Limousin x		Elimin.Trees/Shrubs Develop Veg. Mosaic	Control Invas. Grass (2) Bracken Control Reduce Fire Risk	Elimin. Trees/Shrubs CntrlTree/ShrubSeed. (4) Maintain Veg. Struct. (5) Improve Veg. Struct. (3) Develop Veg. Mosaic (2) Increase Bare Ground Control Invas. Grass	Dragonfly Conservation			

Breed or Cross		Effectiveness						
	Very poor	Poor	Average	Good	Very good			
Longhorn		Elimin.Trees/Shrubs Increase Bare Ground	Elimin.Trees/Shrubs CntrlTree/ShrubSeed. (2) Maintain Veg. Struct. Develop Veg. Mosaic Increase Bare Ground (2) Control Invas. Grass Bracken Control Reduce Fire Risk	Improve Veg. Struct. Develop Veg. Mosaic (2) Control Invas. Grass	CntrlTree/ShrubSeed. Maintain Veg. Struct. (2) Develop Veg. Mosaic			
Murray Grey			Bracken Control Reduce Fire Risk	Elimin.Trees/Shrubs CntrlTree/ShrubSeed. Maintain Veg. Struct. Improve Veg. Struct. Develop Veg. Mosaic Increase Bare Ground	Dragonfly Conservation			
Piemontese x		Develop Veg. Mosaic	Control Invas. Grass	Maintain Veg. Struct.				
Red Poll		Elimin.Trees/Shrubs (2) CntrlTree/ShrubSeed.	CntrlTree/ShrubSeed. (2) Maintain Veg. Struct. (2) Improve Veg. Struct. Develop Veg. Mosaic Increase Bare Ground (3) Control Invas. Grass (2) Reduce Fire Risk	Improve Veg. Struct. Develop Veg. Mosaic Bracken Control	Improve Veg. Struct. Develop Veg. Mosaic Control Invas. Grass Bracken Control Reduce Fire Risk Butterfly Conservation			
Saler				Improve Veg. Struct. Develop Veg. Mosaic Bracken Control				
Saler x				CntrlTree/ShrubSeed. Maintain Veg. Struct. Develop Veg. Mosaic Increase Bare Ground Control Invas. Grass				
Simmental x		Develop Veg. Mosaic	Control Invas. Grass	Maintain Veg. Struct.				
South Devon	Elimin.Trees/Shrubs	Bracken Control	Reduce Fire Risk	Improve Veg. Struct. Develop Veg. Mosaic Control Invas. Grass				

Breed or Cross		Effectiveness						
	Very poor	Poor	Average	Good	Very good			
"Store" cattle	Elimin.Trees/Shrubs	CntrlTree/ShrubSeed.	Increase Bare Ground Bracken Control	Elimin.Trees/Shrubs Maintain Veg. Struct. Develop Veg. Mosaic Control Invas. Grass (2)	CntrlTree/ShrubSeed. (2) Maintain Veg. Struct. Improve Veg. Struct. (2)			
Sussex	Elimin.Trees/Shrubs	Elimin.Trees/Shrubs CntrlTree/ShrubSeed. Control Invas. Grass	Improve Veg. Struct. Develop Veg. Mosaic Increase Bare Ground Control Invas. Grass Single Species Man.	Maintain Veg. Struct. Reduce Fire Risk	CntrlTree/ShrubSeed. Maintain Veg. Struct. Improve Veg. Struct. Develop Veg. Mosaic Increase Bare Ground Single Species Man.			
Welsh Black				Elimin.Trees/Shrubs CntrlTree/ShrubSeed. Improve Veg. Struct. Develop Veg. Mosaic Increase Bare Ground Control Invas. Grass Bracken Control Reduce Fire Risk Aesthetic				
White Park		Elimin.Trees/Shrubs CntrlTree/ShrubSeed.	CntrlTree/ShrubSeed. Increase Bare Ground (2) Bracken Control Reduce Fire Risk (2)	Elimin.Trees/Shrubs CntrlTree/ShrubSeed. Maintain Veg. Struct. Improve Veg. Struct. (2) Develop Veg. Mosaic Increase Bare Ground Bracken Control	Maintain Veg. Struct. Improve Veg. Struct. Develop Veg. Mosaic (2) Control Invas. Grass Dragonfly Conservation			

Table 31. Effectiveness of goat breeds in achieving the main conservation objectives of grazing; abbreviations refer to the objectives listed in Box 10. Numbers in brackets indicate number of records if greater than one

Breed or Cross		Effectiveness					
	Very poor	Poor	Average	Good	Very good		
Bagot					Elimin.Trees/Shrubs CntrlTree/ShrubSeed.		
Cashmere			Bracken Control		CntrlTree/ShrubSeed. Improve Veg. Struct.		
Feral English				CntrlTree/ShrubSeed.	Elimin.Trees/Shrubs Increase Bare Ground Control Invas. Grass		
Golden Guernsey		Develop Veg. Mosaic	Control Invas. Grass	Elimin.Trees/Shrubs CntrlTree/ShrubSeed. Maintain Veg. Struct. Improve Veg. Struct.			
Saanen x	Bracken Control	Elimin.Trees/Shrubs	Develop Veg. Mosaic	Elimin.Trees/Shrubs Maintain Veg. Struct.	CntrlTree/ShrubSeed. (2)		
"White"	Bracken Control						

Table 32. Effectiveness of pony breeds in achieving the main conservation objectives of grazing; abbreviations refer to the objectives listed in Box 10. Numbers in brackets indicate number of records if greater than one

	Effectiveness						
Breed	Very poor	Poor	Average	Good	Very good		
Dartmoor	Elimin.Trees/Shrubs	Elimin.Trees/Shrubs CntrlTree/ShrubSeed. (2) Improve Veg. Struct. Bracken Control	Maintain Veg. Struct. Increase Bare Ground Control Invas. Grass Reduce Fire Risk Butterfly Conservation	Improve Veg. Struct. Develop Veg. Mosaic (2) Increase Bare Ground Control Invas. Grass (2) Bracken Control Single Species Man.	CntrlTree/ShrubSeed. Maintain Veg. Struct. Improve Veg. Struct. Develop Veg. Mosaic (2) Increase Bare Ground Bracken Control Butterfly Conservation		
Exmoor	CntrlTree/ShrubSeed.	Control Invas. Grass Bracken Control	CntrlTree/ShrubSeed. Improve Veg. Struct. Develop Veg. Mosaic Increase Bare Ground Bracken Control Reduce Fire Risk	Elimin.Trees/Shrubs (2) CntrlTree/ShrubSeed. Maintain Veg. Struct. (4) Improve Veg. Struct. Develop Veg. Mosaic Increase Bare Ground Control Invas. Grass (2) Bracken Control Butterfly Conservation	Maintain Veg. Struct. (2) Improve Veg. Struct. (4) Develop Veg. Mosaic (3) Control Invas. Grass (3) Reduce Fire Risk		
Fell			Improve Veg. Struct.	Elimin.Trees/Shrubs Maintain Veg. Struct. Increase Bare Ground Bracken Control	CntrlTree/ShrubSeed. Develop Veg. Mosaic Control Invas. Grass Reduce Fire Risk		
Highland				Maintain Veg. Struct. Improve Veg. Struct.			
Konik			Increase Bare Ground	CntrlTree/ShrubSeed. Maintain Veg. Struct.	Improve Veg. Struct. Develop Veg. Mosaic		

		Effectiveness					
Breed	Very poor	Poor	Average	Good	Very good		
New Forest		CntrlTree/ShrubSeed. Control Invas. Grass	Elimin.Trees/Shrubs CntrlTree/ShrubSeed. Improve Veg. Struct. (2) Increase Bare Ground Bracken Control	Elimin.Trees/Shrubs CntrlTree/ShrubSeed. Maintain Veg. Struct. Develop Veg. Mosaic (4) Increase Bare Ground Control Invas. Grass Bracken Control Reduce Fire Risk	Maintain Veg. Struct. Improve Veg. Struct. Control Invas. Grass		
Shetland		CntrlTree/ShrubSeed. Improve Veg. Struct. Increase Bare Ground Control Invas. Grass Bracken Control	Elimin.Trees/Shrubs Develop Veg. Mosaic Increase Bare Ground Reduce Fire Risk	Maintain Veg. Struct. (2) Develop Veg. Mosaic Control Invas. Grass			
Welsh Section A			Elimin.Trees/Shrubs Reduce Fire Risk	Elimin.Trees/Shrubs CntrlTree/ShrubSeed. Improve Veg. Struct. (5) Develop Veg. Mosaic (3) Increase Bare Ground (3) Control Invas. Grass (2) Bracken Control (4) Reduce Fire Risk Aesthetic	Improve Veg. Struct. (2) Develop Veg. Mosaic (2) Bird Conservation		

Amongst cattle breeds (Table 30) most breeds were recorded as being worse than average at eliminating trees and shrubs. Although controlling bracken was also quite frequently recorded as poor or very poor this was for a limited number of sites. More often cattle breeds and crosses were recorded as average for bracken control. Eight breeds and crosses were ranked better than average and of these British White, Devon, Highland and Red Poll were recorded as very good on one occasion each.

Cattle were particularly effective at maintaining vegetation structure with 24 of the 52 breeds and crosses for which there were records scoring a very good on at least one occasion. Most breeds and crosses of cattle were also recorded as better than average at improving the vegetation structure, developing a vegetation mosaic and controlling invasive grasses. The large size of cattle also meant that most breeds were able to increase the proportion of bare ground, an objective rarely achieved by sheep.

As for sheep there were no outstandingly poor breeds and overall assessments are made more difficult by variation in use and hence representation in the survey. One notable breed difference is between the two Channel Island breeds: the Guernsey would not appear to be particularly promising for most conservation sites, but the Jersey, which might be expected to have similar grazing requirements and preferences, achieves very good rankings for five objectives. Other dairy breeds (Friesian, Holstein) appeared to be intermediate although the Friesian achieved good ratings for seven objectives which included seven records for maintaining vegetation structure.

There was little to choose between most of the commercial crosses which were similar, and generally adequate, in their effectiveness. Beef Shorthorn x was perhaps best of this group but some named continental crosses (e.g. Blonde d'Aquitaine x, Limousin x) were also rated as good at a variety of objectives. Amongst the beef breeds British White and White Park were rated above average for eight and nine objectives respectively; it appears that the former is very good at butterfly conservation whereas the latter specialises in dragonflies! Welsh Black also achieved nine good ratings, but this includes an 'aesthetic' which may be in the eye of the beholder. Highland cattle lived up to their reputation for conservation grazing with nine very good assessments; once again, recording effort for this widely used breed must be borne in mind when evaluating the number of records for these objectives, but it is clear that conservation managers using Highlands are more than satisfied with their efficacy.

Compared to sheep and cattle most breeds of goats were better than average at eliminating trees and shrubs (Table 31); two breeds (Bagot, Feral English) were recorded as very good at achieving that objective. Goats were also good at controlling tree and shrub seedlings. No breed of goat was better than average at developing a vegetation mosaic or controlling bracken. Thus the results support, or perhaps reflect, the usual role of goats in the restoration of sites by control of scrub and trees through browsing.

Most breeds of pony were good or very good at improving vegetation structure and developing a vegetation mosaic (Table 32). Ponies generally seemed less good at eliminating established or seedling trees and shrubs although all but two breeds (Highland, Shetland) managed at least one good or very good for one or both of these objectives. Five of the eight breeds also achieved a better than average assessment for bracken control; this objective was not assessed for Highland and Konik and New Forest were recorded as average. Exmoor, Fell, New Forest and Welsh Section A were recorded as better than average at reducing fire risk. There were no assessments for Gloucester Old Spot pigs' effectiveness but Berkshire pigs were recorded as good at bracken control and very good at increasing the amount of bare ground.

3.4 Grazing Preferences

(N.B. Scientific and common names of plants are listed in Appendix 5; throughout this section the terms 'liked' and 'disliked' are used as indicate preferred food plants and those not eaten by stock respectively).

Respondents were asked to identify any plant(s) that their animals particularly liked or disliked and where possible to indicate if there were any discernible differences in preferences between the sexes (and castrates) or between animals of different ages. The only preferences recorded for pigs were for the Berkshire breed which favoured *Pteridium aquilinum*, *Quercus* spp., *Rubus fruticosus* and *Sorbus aucuparia*. No dislikes were recorded for pigs.

3.4.1 Grazing Preferences of Sheep

Box 11 shows the 47 identified preferences of sheep; these range from individual plant species, through genera and families to general descriptions such as crops, flowers, scrub etc. The most frequently mentioned preferred species was *Betula pendula* with eight citations, followed by *Festuca* spp. and, surprisingly given its toxic nature, *Senecio jacobaea* with seven mentions each. Another toxic plant, *Taxus baccata* was also reported to be liked on three occasions and *Hedera helix*, which has poisonous berries, was one of the more frequently mentioned preferences.

While some preferred species would be considered worthy targets by many site managers (e.g. *Brachypodium pinnatum, Molinia caerulea* or *Juncus effusus*) others may not be welcomed (e.g. *Calluna vulgaris, Hyacinthoides non-scriptus, Dactylorhiza maculata* or the more general Orchidaceae). Where scrub invasion is a problem preferences for scrub, woody vegetation and species such as *Alnus glutinosa, Fraxinus excelsior, Populus tremula, Prunus spinosa, R. fruticosus, Salix* spp. and *Ulex europeaus*, as well as *B. pendula*, may be useful although most were only recorded as preferred species on one or two sites.

Breed differences may be important in choosing stock to suit different sites with varying objectives. Table 33 shows the preferences recorded for various sheep. Clearly there are differences in recorded preferences, although these may reflect the plant species to which the breeds have been exposed and the efficiency of record collection. Hebridean sheep have the longest list of preferred species and this includes six of the eight records for *B. pendula* and four of the six records for *M. caerulea*. It also has preferences for a range of shrub and tree species suggesting a browsing habit. However it is also guilty of a liking for Orchidaceae.

The three breeds recorded as liking *D. maculata* are all hill breeds or crosses - Derbyshire Gritstone, Swaledale and Mule, perhaps reflecting the distributions of the plant and the breeds; similarly the breeds with a recorded liking for *C. vulgaris* are mainly hill breeds - Exmoor Horn, Scottish Blackface and Welsh Mountain, but the Jacob also liked this species. The Exmoor Horn at least partially redeemed itself by also liking *M. caerulea*. A range of breeds and crosses was recorded as liking 'flowers' - Beulah Speckled Face, Dorset, Lleyn, Masham and Mule and the Swaledale stands accused of a liking for crops, but which crops was not specified.

The breeds and crosses willing to eat *S. jacobaea* were Beulah Speckled Face and its cross with Welsh Mule, Herdwick, Soay, Suffolk x and Texel x. *T. baccata* was favoured by Jacob, Southdown and Southdown x Jacob. Beulah Speckled Face and its cross with Suffolk were reported to like *Urtica dioica*.

Box 11: Plants recorded as 'liked' by indicate number of records	y at least one breed of sheep; numbers in brackets
1. Coarse grass (4)	25. Gramineae (2)
2. Crops (2)	26. Hedera helix (6)
3. Flowers (5)	27. Helianthemum nummularium (1)
4. Herbs (1)	28. Hyacinthoides non-scriptus (1)
5. Scrub (2)	29. Juncus spp. (1)
6. Sweet grass* (1)	30. Juncus effusus (1)
7. Woody vegetation (1)	31. Leontodon spp. (2)
8. Alnus glutinosa (2)	32. Molinia caerulea (6)
9. Armeria maritima (1)	33. Orchidaceae (2)
10. Armoracia rusticana (3)	34. Phalaris arundinacea (2)
11. Betula pendula (8)	35. Pinus spp. (1)
12. Brachypodium pinnatum (2)	36. Polygonaceae (2)
13. Calluna vulgaris (4)	37. Populus tremula (1)
14. <i>Carex</i> spp. (3)	38. Prunus spinosa (2)
15. Cirsium spp. (1)	39. Quercus spp. (1)
16. Cornus sanguinea (1)	40. Rubus fruticosus (5)
17. Dactylis glomerata (1)	41. Salix spp. (2)
18. Dactylorhiza maculata (3)	42. Senecio jacobaea (7)
19. Daucus carota (2)	43. Succisa pratensis (1)
20. Deschampsia spp. (3)	44. Taxus baccata (3)
21. Deschampsia flexuosa (1)	45. Thymus serpyllum (1)
22. Epipactis spp. (1)	46. Ulex europeaus (1)
23. Festuca spp. (7)	47. Urtica dioica (2)
24. Fraxinus excelsior (1)	

* It is not clear whether sweet grass refers to *Glyceria* spp. or is a contrast to coarse grass; the latter is presumed.

Table 33. Plant species 'liked' by various breeds of sheep: full names of species as in Box11. Values in brackets show number of reports of the 'preference' if greater than one

Breed or Cross	Plant species 'liked'		
Berrichon du Cher x	A. glutinosa, B. pendula, Carex spp., Deschampsia spp., M. caerulea, Orchidaceae, P. arundinacea, Salix spp., S. pratensis		
Beulah Speckled Face	Flowers, Scrub, Festuca spp., H. helix, Polygonaccac, R. fruticosus, S. jacobaea, U. dioica		
Beulah Speckled Face x Suffolk	Scrub, H. helix, R. fruticosus, U. dioica		
Beulah Speckled Face x Welsh Mule	B. pendula, S. jacobaea		
Black Welsh Mountain	Gramineae		
Derbyshire Gritstone	D. maculata		
Dorset	Flowers, Festuca spp.		
Exmoor Horn	Coarse grass, Sweet grass, C. vulgaris, M. caerulea, Pinus spp., U. europaeus		
Hebridean	A. glutinosa, B. pendula (6), Carex spp., Deschampsia spp., D. flexuosa, Festuca spp., H. nummularium, Juncus spp., J. effusus, M. caerulea (4), Orchidaceae, P. arundinacea, P. tremula, Quercus spp., R. fruticosus (2), Salix spp., T. serpyllum		
Hebridean x Berrichon du Cher	Herbs, Carex spp., Deschampsia spp.		
Herdwick	B. pinnatum, S. jacobaea		
Jacob	A. rusticana, C. vulgaris, H. helix, R. fruticosus, T. baccata		
Leicester Longwool x	Coarse grass		
Lleyn	Flowers		
Manx Loghtan	Cirsium spp., C. sanguinea, Festuca spp., F. excelsior, H. helix, H. non-scriptus		
Masham	Flowers, Festuca spp.		
Mule	Flowers, D. maculata, Festuca spp.		
Northumberland Blackface	Festuca spp.		
Rough Fell	Coarse grass, Crops		
Scottish Blackface	C. vulgaris		
Soay	Woody vegetation, B. pinnatum, D. glomerata, Epipactis spp., S. jacobaea		
Southdown	A. rusticana, H. helix, T. baccata		
Southdown x Jacob	A. rusticana, H. helix, T. baccata		
Suffolk x	D. carota, Leontodon spp., Polygonaceae, P. spinosa, S. jacobaea (2)		
Swaledale	Crops, D. maculata		
Texel x	D. carota, Leontodon spp., P. spinosa, S. jacobaea		
Welsh Mountain	Coarse grass, A. maritima, C. vulgaris, Gramineae		

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