31. Nottinghamshire

31.1 Physical

Geology

Most of the county occurs on Permian and Triassic sediments, although some Coal Measures lie on its extreme western edge, and a larger area of Jurassic Lias clays are present in the east. To the west there is a north to south band of Magnesian Limestone, with sandstones in the centre, and mudstones to the east. Drift and alluvial deposits include river gravels and in the east and patches of blown sand known as Coversand.

Soils

The sandstones north of Nottingham support the largest single area dominated by brown sands in the country, and also some areas dominated by podzols. North of Newark there are small areas of brown sands developed on blown sand (**Map 1e**).

31.2 Landscape history

19th Century

The 1820's and 1830's 1 inch OS maps show a county which was largely enclosed. North of Nottingham, the brown sands were occupied by parks and the recently enclosed landscape of Sherwood Forest.

Current landscapes and Natural Areas

The county includes all of the Sherwood Natural Area (NA32) which encompasses the enclosed heathland landscape. Much of the rest of the county is within the Trent Valley and Rises Natural Area (NA33) but the Humberhead Levels Natural Area (NA22) just enters the county in the north. Parts of the Southern Magnesian Limestone and the Coal Measure Natural Areas (NA23 & NA24 respectively) occupy the far west of the county.

31.3 Existing information

Flora

The coincidence maps (**Maps 2-4**) of lowland acid grassland species listed in **Table 1** show concentrations of lowland acid flora recorded in the Sherwood Natural Area, the Trent Valley between Newark and Nottingham and most particularly, on the Coversand. This extends beyond Nottinghamshire and falls largely into NA22 and NA34 (North Lincolnshire and Coversands and Clay Vales). The Coversand and Sherwood Forest still have surviving floristic interest but the Trent Valley appears to have little interest left. The flora of Sherwood Forest includes a reasonable selection of acid grassland species and outlying stations for the southern Dwarf Gorse, *Ulex minor*. The Coversand in Nottinghamshire supports the rare *Festuca longifolia* and *Carex arenaria*. Lists of the lowland acid grassland species recorded from Sherwood and the Coversand of NA34 and 33 areas are given in **Table 6** (relevant extract given below).

Fauna

The English Nature Local Team reports that the U2 grasslands of Sherwood do have a considerable invertebrate interest, particularly the rich spider fauna in the *Deschampsia flexuosa* grassland (U2) at Birklands & Bilhaugh SSSI. This site supports an assemblage which has affinities with the Breckland grass heaths and countains both national and regional rarities.

Habitat surveys

The Grassland Inventory includes some sites on the Magnesian Limestone, in the Trent Valley and in Sherwood Forest, although the grassland in the heathlands of Sherwood Forest have been omitted. The Heathland Inventory includes sites in Sherwood Forest and the Coversand area.

Many of the heathlands of Sherwood Forest were surveyed by Soden (1991) and the *Deschampsia* grass heaths (U2) were included in the survey. The survey specifically excluded any areas dominated by the more species-rich parched acid grasslands (U1). A total of 142.2ha of U2 was recorded and tiny amounts of *Nardus* grassland (U5). The U2 grassland is quite species-poor but provides the local locus for *Ulex minor* and the northern lichen *Icmadophila ericetorum* . A photograph in the report of short, grazed, U2 grassland at Walesbury Forest contrasts greatly to the more typical rank, tussocky, ungrazed *Deschampsia* grassland.

The biological survey of common land (Francis *et al*, 1990) recorded a few derelict sites as acid grassland all of which appear to be rank neutral grassland (MG1) rather than acid grassland.

Summary of consultations with Local Team Conservation Officers

Parched acid grassland (U1) and moist acid grasslands (U4) are restricted in area and have a probable extent of less than 50ha. The *Deschampsia flexuosa* grass heaths (U2) cover between 100-200ha and are mostly found in Sherwood Forest. The grass heath is thought to have increased at the expense of heath and there is a desire to increase the proportion of Heather cover.

Parched acid grasslands are very fragmentary, with the best site in Spalford Warren on the Coversand, where *Festuca longifolia* occurs. This site includes *Carex arenaria* dune and is in the process of being restored. The Trent Valley now only has secondary U1 in gravel pits.

The Coal Measures have stands transitional between U4b and MG5c (9ha in extent), which are a distinctive local feature of considerable interest found in juxtaposition with acid grassland (U4b) and more base rich grasslands (MG5a & CG4). A tiny amount of U2 occurs in the Humberhead Levels.

In Sherwood Forest, grazing is being restored to Clumber Park. Heathland is being restored on coal waste and more heathland management on Forest Enterprise land is now carried out. Sheep are currently used, but with high levels of public access, this is not without its problems. Cattle may therefore be used in future. Scrub clearance is being done and soil stripping is being used to reduce the amount of *Deschampsia flexuosa*.

31.4 Summary of resource

Extent and composition

The county includes small but important fragments of the Coversand grassland and less diverse *Deschampsia* grass heaths (U2) in the Sherwood Forest heathlands. The latter area has a reasonable acid grassland flora and is very likely to have some parched acid grassland. However, little

information exists about it. Beyond these areas, the extent and flora of the acid grasslands appears to be very limited.

Conservation value

The Coversand sites are a significant part of the nationally important acid grasslands of the Coversand which extend into other counties. The grasslands of Sherwood Forest are an integral part of the heathlands here but may be of lower intrinsic significance. The acidic MG5c and transitions to U4 on the Coal Measures are a distinctive local feature.

31.5 Future requirements for survey and conservation

Survey

The County Council are to carry out a survey to identify SNCIs. This survey should ideally include NVC vegetation mapping as well as species lists. The most pressing requirement is to locate and characterise any parched acid grassland stands. Detailed Phase 2 surveying is required on the main Coversand sites to inform management decisions and monitor condition of these areas.

Conservation

The highest priority for acid grassland conservation is to conserve and extend the Coversand heathland and grassland. The ongoing work in Sherwood Forest should aim, where possible, to recreate a more varied and sustainable heathland ecosystem than currently exists.

31.6 References

FRANCIS I.S., PENFORD, N., FINCH, M. & AITCHISON, J.W. 1990. *Biological survey of common land No 11: Nottinghamshire.* Peterborough: Nature Conservancy Council.

SODEN, D.W. 1991. *A vascular plant survey of selected Nottinghamshire heathlands - Summer 1990.* Grantham: Nature Conservancy Council, East Midlands Region.

Extract from Table 6 for Nottinghamshire: occurrence of plant species generally faithful to lowland acid grassland

County: Nottinghamshire		
Natural Areas:	**34 + 33**	**32**
Grasses		
Apera interrupta	1	
Festuca longifolia	1	
Other Vascular Plants		
Crassula tillaea	1	
Filago minima	1	1
Hypochaeris glabra	1	1
Moenchia erecta	0	0
Ornithopus perpusillus	1	1
Potentilla argentea	1	1
Stellaria pallida	1	
Teesdalia nudicaulis	1	1
Trifolium striatum	1	1
Trifolium subterraneum	1	
Vicia lathyroides	1	1
Total no. of species extant	**12**	**7**
Total no. of species extinct	**1**	**1**
Total no. of species recorded	**13**	**8**

34 + 33 = North Lincolnshire Coversands and Clay Vales and Trent Valley and Rises (includes records from other counties)
32 = Sherwood

1 = Recent record
0 = Apparently extinct

Nottinghamshire acid grassland surveys

Survey Name	GR	Date	Landscape Types	Comments	No Sites	Site Area	Gr Area	AG Area	H Area	LHA
Grassland Inventory		1987-94	Field, Enclosure relic, waste	Excludes heathlands	11	175.0	128.5	116.8		
Heathland Inventory		1985-91	Heath, Enclosure relic	All in NA 33 & 32	33	3840.0			183.3	
Notts Heathland Phase 2		1991	Heath, Enclosure relic	Survey of selected heaths in NA32 (Soden, 1991)	17		182.5	142.7	40.3	
Common Land Survey		1990	Common	Most derelict and now MG1, not acid grassland	4	26.7	13.85	2.8	6.7	
Estimates, ha		1996	Also Waste, Fields	Ian Butterfield, EN						
Estimates, classes		1996		Ian Butterfield, EN				C		

Survey Name	U1	U1a	U1b	U1c	U1d	U1e	U1f	U2	U2a	U2b	U3	U4	U4a	U4b	U4c	U4d	U4e	U5	U6	SD10	SD11	U20r
Grassland Inv.																						
Heathland Inv.																						
Notts Heath								142.2	142.2									0.5				
Common Land																						
Estimates, ha	< 50											< 10		< 10						c10		
Estimates, class	A		A			A		C	C			A		A				A		A		

Key

Column headings
GR = Grid reference if relevant
No Sites = Number of sites
Site Area = Area of sites
GR Area = Area of grassland
A G Area = Area of acid grassland
H Area = Area of dry heath
LHA = Area of lichen heath
NI = No information
NA = Natural Area
U1-U20r = NVC communities/sub-communities

Area estimates
A = Less than 50 ha
B = 50-100 ha
C = 100-500 ha
D = 500-1,000 ha,
E = 1,000-5,000 ha
F = 5,000-10,000 ha
G = Greater than 10,000 ha
+ = Present but no area given
? = Possibly present

32. Oxfordshire

32.1 Physical

Geology

The youngest rocks in Oxfordshire are small relics of Tertiary sands and clays left as patches in the Chalk of the Chilterns. North of the Chalk, the county is dominated by Lower Cretaceous and Jurassic clays & limestones but some sand outcrops are found south and south west of Oxford where fragments of Lower Greensand and outcrops of sandy Corallian limestone occur.

Soils

Oxfordshire is dominated by surface water gleys, brown earth soils and rendzinas but small areas of brown sands occur south of Oxford (**Map 1b**).

32.2 Landscape history

19th Century

In the 1830's there were still small areas of common on the sand areas near Oxford and frequent small commons on the Chilterns.

Current landscapes and Natural Areas

Three of English Nature's Natural Areas (the Thames and Avon Vales ((NA63), the Berkshire and Marlborough Downs (NA79) and the Cotswolds (NA55)) have very limited potential for acid grassland. However, the Midvale Ridge Natural Area (NA64) has areas of brown sand and a few areas of semi-natural vegetation, whilst areas of common on the dip slopes of the Chilterns (NA65) could once have supported some acid grassland.

32.3 Existing information

Flora

The coincidence maps (**Maps 2-4**) of lowland grassland species listed in **Table 1** show a high concentration in the area south of Oxford, plus a less prominent concentration on the Chilterns. However, there is evidence of a marked decline from inspection of post-1970 records.

The acid grassland flora of the Chilterns is limited, but the area south of Oxford in the Midvale Ridge Natural Area had a rich flora, with sixteen species recorded, of which six have no recent records. The best site is Frilford Heath, where grass heath with species such as *Silene conica* and *Dianthus deltiodes*, survives on a golf course. Lists of the lowland acid grassland species recorded from both Natural Areas are given in **Table 6** (relevant extract given below).

Fauna

The English Nature Local Team report that grass heaths at Frilford and Shotover are important for aculeate Hymenoptera.

Habitat surveys

The Grassland Inventory records three sites in the Midvale Ridge Natural Area, Frilford Heath, Sidlings Copse and Brasenose Wood and Shotover. The Heathland Inventory includes small heathland fragments in the Midvale Ridge and the Chilterns.

Summary of consultations with Local Team Conservation Officers

The area of acid grassland in Oxfordshire is very limited and extends to about 10-20ha. All of this is likely to be parched acid grassland (U1). The well known area at Frilford Heath has proved to be difficult to conserve within the golf course but a recent survey of the rarer species confirmed their continued existence. An attempt is being made to restore grass heath on adjacent farmland and if successful, should ensure the survival of the grass heath habitat. The other areas in the Midvale Ridge are very small but restoration work is being carried out at Brasenose Wood. The Chiltern Commons could have a little acid grassland and a recent Biological Survey of Common Land should help clarify this. The local Wildlife Trust, BBONT, are currently working on a heathland restoration project on the Oxford Chilterns Commons using Countryside Stewardship grant aid. The Hymenoptera fauna of the sand pits in the Oxford Heights is of interest.

32.4 Summary of resource

Extent and composition

The area of acid grassland in Oxfordshire is very limited but includes fragments of floristically very rich parched acid grassland. No NVC surveys have been carried out but presumably U1b is present, and possibly U1d.

Conservation value

The floristic importance of Frilford Heath is high in spite of its fragmented condition, and it is of considerable importance as an outlier of grassland assemblages more typical of the east of England, as well as having an unusual combination of habitats, from base rich fen through to acid grassland.

32.5 Future requirements for survey and conservation

Survey

There are no high priorities for survey although only limited resources would be required to carry out a NVC survey of the grassland that remains.

Conservation

The Frilford Heath area is a high priority for habitat restoration in general. Ideally, an area of extensively grazed grass heath and base rich fen should be restored. If successful, the complex would probably be of national importance.

Extract from Table 6 for Oxfordshire: occurrence of plant species generally faithful to lowland acid grassland

County: Oxfordshire		
Natural Areas:	**64**	**65**
Grasses		
Apera interrupta	1	
Other Vascular Plants		
Chamaemelum nobile	0	0
Dianthus deltoides	1	
Filago minima	1	
Hypochaeris glabra	0	1
Moenchia erecta	0	
Ornithopus perpusillus	1	1
Potentilla argentea	1	0
Silene conica	1	
Stellaria pallida	1	
Teesdalia nudicaulis	1	
Trifolium scabrum	0	
Trifolium striatum	1	1
Trifolium subterraneum	0	
Vicia lathyroides	1	
Viola lactea	0	
Total no. of species extant	**10**	**3**
Total no. of species extinct	**6**	**2**
Total no. of species recorded	**16**	**5**

64 = Midvale Ridge
65 = Chilterns

1 = Recent record
0 = Apparently extinct

Oxfordshire acid grassland surveys

Survey Name	GR	Date	Landscape Types	Comments	No Sites	Site Area	Gr Area	AG Area	H Area	HLA
Grassland Inventory		1986, 94	Two are probably Heath relics	All three sites in Midvale Ridge NA	3	142.4	NI	NI		
Heathland Inventory		1986, 95	Heath relics, Commons, Calcicolous	In Midvale Ridge & Chilterns NAs	11	575			23.6	0.2
Estimates, hectares		1996		Graham Steven, English Nature				10-20		
Estimates, classes		1996		Graham Steven, English Nature				A		

Survey Name	U1	U1a	U1b	U1c	U1e	U1f	U2	U2a	U2b	U3	U4	U4a	U4b	U4c	U4d	U4e	U5	U6	SD10	SD11	U20r
Grassland Inv.																					
Heathland Inv.																					
Estimates, Ha	10-20																				
Estimates, class	A		?																		

Key

Column headings
GR = Grid reference if relevant
No Sites = Number of sites
Site Area = Area of sites
GR Area = Area of grassland
A G Area = Area of acid grassland
H Area = Area of dry heath
LHA = Area of lichen heath
NI = No information
NA = Natural Area
U1-U20r = NVC communities/sub-communities

Area estimates
A = Less than 50 ha
B = 50-100 ha
C = 100-500 ha
D = 500-1,000 ha,
E = 1,000-5,000 ha
F = 5,000-10,000 ha
G = Greater than 10,000 ha
+ = Present but no area given
? = Possibly present

33. Shropshire

33.1 Physical

Geology

The north and east of the county is on Triassic and Permian sandstones and mudstones with outcrops of Coal Measures on the southern and western edge. The rest of the county is a complex mixture of Silurian, Ordovician, Cambrian and Precambrian rocks with a block of Old Red Sandstone in the south. Dolerite intrusions are found in the southern parts of the county. Glacial sands and gravels common in the lowlands to north and east.

Soils

The upland areas are dominated by brown podzolic soils, whilst brown sands and podzols are found on glacial drift in the north and east (**Map 1c**).

33.2 Landscape history

19th Century

The 1830 1 inch OS map shows a scatter of small to medium-sized heathland commons in the north and east of the county. Sinker *et al* (1985) indicates that many others had been enclosed in the decades before this date. These commons were mostly associated with the podzol and brown sand-dominated areas. The uplands, then as now, had large areas of moorland.

Current landscapes and Natural Areas

The lowlands are divided between the The Mosses & Meres and the Midlands Plateau Natural Areas (NA27 & NA43 respectively). Both have widespread areas of acid soils, that are now virtually all within enclosed farmland.

The uplands are divided between the small Ostwestry Uplands Natural Area (NA41) in the west, the Shropshire Hills (NA42) and the Clun and North West Herefordshire Hills Natural Area (NA58). The Shropshire Hills are characterised by thin soils on south-facing rock outcrops, with a specialised flora which is rarer in the Clun.

33.3 Existing Information

Flora

The coincidence maps (**Maps 2-4**) of lowland grassland species listed in **Table 1** show that a considerable concentration has been recorded from in, and around, the Shropshire Hills. Despite a decline, the post-1970 records still show a notable number of records. The lowland acid grassland species recorded from the Natural Areas of Shropshire are listed on **Table 6**, the relevant parts of which are shown below.

The Ecological Flora of the Shropshire Region (Sinker *et al*, 1985) describes the lowland acid grassland flora, which is regarded as an important feature of the region. Coincidence maps of species of 'warm rocky slopes' are given using twelve species: *Aira caryophyllea, Cerastium semidecandrum, Dianthus deltoides, Filago minima, Jasione montana, Lepidium heterophyllum, Moenchia erecta,*

Ornithopus perpusillus, *Sedum fosteranum*, *Spergularia rubra*, *Teesdalia nudicaulis* and *Trifolium striatum*.

This coincidence map shows very localised concentrations of these species, most of which are found in the Shropshire Hills, especially the east side of Long Mynd and Caer Caradoc and just over the Welsh border, including the important Briedden Hill. Here these species are typically found on steep slopes, on igneous rocks, volcanic ashes, or hard Precambrian sediments.

The Clun and North West Heredfordshire Hills have a scatter of sites and there are additional sites at Earls Hill (SJ4004) just north of the Shropshire Hills. To the north and east there is limited survival from the once extensive heaths of the lowlands, with Prees Heath (SJ5436), a broken up concrete runway on a former heath in the north, and the Bridgnorth area (SO7288 & 7488), on a sandstone outcrop in the east. Other species characteristic of this habitat include *Umblicus rupestris*, *Carlina vulgaris*, *Sedum anglicum* and *Scleranthus annuus polycarpos*.

Sinker *et al* (1985) also produce quadrat data which indicates that these species are found in parched acid grassland (U1), including the Typical sub-community (U1b), the Hypochaeris sub-community (U1f) and the Galium-Potentilla sub-community (U1e).

Associated habitats include consolidated dolerite scree with *Sedum fosteranum*, *Umblicus rupestris*, *Cladonia* species, *Scapania gracilis*, *Dicranum scoparium*, *Geranium lucidum* and other species. This chasmophytic vegetation does not appear to be described by the NVC and is probably related to the scree vegetation described below in the section on Somerset.

Over the border in Wales, the cliffs of Briedden Hill support further chasmophytic communities with *Lychnis viscaria* (RDB sp), *Potentilla rupestris* (RDB sp), *Veronica spicata* (RDB sp), *Filipendula vulgaris* and *Geranium sanguineum* as well as the bryophytes *Bartamia stricta* (RDB sp), *Frullania fragilifolia*, *Pterogonium gracile* and *Targionia hypophylla*. Although no Shropshire site is as rich as this, *Geranium sanguineum* occurs at some sites.

Interestingly the Stiperstones area stands out for its total lack of lowland acid grassland species and for its very upland character with *Vaccinium vitis-idaea* and *Empetrum nigrum* frequent.

Waste sites can also develop acid grasslands. These include parched acid grassland developed on disturbed former heathland and dolerite quarries. They can include characteristic local species such as *Dianthus deltiodes*, *Lepidium heterophyllum*, *Sedum fosteranum*, *Filago minima*, *Ornithopus perpusillus* and *Parentucellia viscosa*. Coal shale pit mounds near Telford support impoverished heath and *Deschampsia flexuosa* grassland (U2), whilst much richer vegetation is found in open cast coal and clay workings at Coalbrookdale, which includes acid communities. Here one small area supports three clubmosses species: *Diphasiastrum alpinum*, *Huperzia selago* and *Lycopodium clavatum*.

Habitat surveys

The Grassland and Heathland Inventories record a scatter of sites across the county. A Phase 2 grassland survey of Shropshire (Wrench, 1995) concentrates on neutral grassland and fen meadows and appears only to have recorded acid grasslands when associated with the target habitats. A total of 1.7ha of parched acid grassland is recorded, mainly of the Lotus-Anthoxanthum sub-community (U1d), 8ha of moist acid grassland (U4), of which 3.95 was identified as the Typical sub-community (U4a) and 3.2ha of *Nardus* grassland (U5).

A monitoring survey of Earls Hill and the Lump includes quadrat data recorded from an example of Festuca-Agrostis-Rumex grassland Typical sub-community (U1b) on the south facing side of the hill and form a Festuca-Agrostis-Rumex grassland Galium-Potentilla sub-community (U1e) on the north

side. Species of interest include *Carlina vulgaris*, *Jasione montana*, *Teesdalia nudicaulis* and *Moenchia erecta*.(Chris Walker, pers. comm. 1996)

At the Lump, the quadrat data records a rich community that is probably closest to Festuca-Agrostis-Rumex grassland Hypochaeris sub-community (U1f), but mixed with Lotus-Anthoxanthum sub-community (U1d) species. *Thymus polytrichus* is a constant, but otherwise there is no particular relationship to the Festuca-Agrostis-Thymus grassland (CG10). Species of interest that are present include *Dianthus deltoides*, *Sedum forsteranum*, *Vulpia bromoides*, *Trifolium striatum*, *Jasione montana* and *Moenchia erecta*.

Summary of consultations with Local Team Conservation Officers

'Lowland' acid grassland is rather difficult to define as U1 grassland can occur in upland situations. The communities U4, U5 and U6 are common in unenclosed upland grasslands but within these communities, parched acid grasslands with southern floras can occur on favourable, south-facing, shallow soils. In enclosed areas, U4 is fairly widespread and probably extends to over 100ha. The parched acid grasslands (U1) occur on similar rock outcrops to those in the uplands, as well as on the Triassic sandstones, on valley sides river terraces and in old parkland in the east of the county. Deschampsia flexuosa grassland (U2) occurs locally within heathland relics.

33.4 Summary of resource

Extent and composition

The presence of U1 grasslands in the uplands of Shropshire is best regarded as the extension of lowland acid grassland where favourable conditions permit. These parched acid grassland are the most species-rich acid grasslands in the county and cover an approximate 50-100ha. The moist acid grasslands (U4), extend into the upland fringe in enclosed fields, and are likely to cover at least 100ha.

Conservation value

The parched acid grasslands are of high nature conservation value. They form part of a series of north western outliers of this southern community, and reach their greatest development in the Welsh dolerite hills, where rare chasmophtyic species are also found. The other acid grassland types are generally only regarded as being of particular conservation value where they form mosaics with neutral grasslands or heaths.

33.5 Future requirements for survey and conservation

Survey

Enclosed grasslands are well surveyed, to the point that only limited new grasslands of interest are likely to be found by more survey work. However, the parched acid grasslands of steep slopes have not been well covered and a specific survey to fully ascertain their extent and quality is required.

Conservation

The upland U1 grasslands are relatively secure but the effects on these grasslands of any measures to counteract over grazing should be considered; they may benefit from heavy grazing. The heathlands of the north and east have suffered catastrophic losses and any opportunities to extend and restore what is left should be followed up.

33.6 References

SINKER, C.A., PACKHAM, J.R., TRUEMAN, I.C., OSWALD, P.H., PERRING, F.H. & PRESTWOOD, W.V. 1985. *Ecological flora of the Shropshire region.* Shrewsbury: Shropshire Trust for Nature Conservation.

WRENCH, D.H. 1995. *Botanical survey of semi-natural grasslands in Shropshire.* Shrewsbury: English Nature, West Midlands Team.

Extract from Table 6 for Shropshire: occurrence of plant species generally faithful to lowland acid grassland

County: Shropshire				
Natural Areas:	**43 (part)**	**58**	**42**	**27**
Chamaemelum nobile		0		0
Dianthus deltoides	0	1	1	1
Erodium maritimum	0			
Filago minima	1	1	1	1
Hypochaeris glabra	1		1	1
Moenchia erecta	1	1	1	1
Ornithopus perpusillus	1	1	1	1
Potentilla argentea	0		1	1
Stellaria pallida	1			1
Teesdalia nudicaulis	1	1	1	1
Trifolium scabrum				0
Trifolium striatum	1	1	1	1
Vicia lathyroides	1	1		
Total no. of species extant	**8**	**7**	**8**	**9**
Total no. of species extinct	**3**	**1**	**0**	**2**
Total no. of species recorded	**11**	**8**	**8**	**11**

43 = Midlands Plateau (part)
58 = Clun and North West Herefordshire Hills
42 = Shropshire Hills
27 = Mosses and Meres

1 = Recent record
0 = Apparently extinct

Shropshire acid grassland surveys

Survey Name	GR	Date	Landscape Types	Comments	No Sites	Site Area	Gr Area	AG Area	H Area	LHA
Grassland Inventory		1981-95	Fields, Enclosure relic, Rock	Recorded sites scattered across the county	46	306.7	120.7	17.9		
Heathland Inventory		1988-93	Heath, Enclosure relic, Waste	Recorded sites scattered across the county	46	1700.0			208.9	
Phase 2		1995	Fields	Wrench (1995), mainly recorded neutral grassland				12.9		
Estimates, classes		1996		Chris Walker, English Nature				C		

Survey Name	U1	U1a	U1b	U1c	U1d	U1e	U1f	U2	U2a	U2b	U3	U4	U4a	U4b	U4c	U4d	U4e	U5	U6	SD10	SD11	U20r
Grassland Inv.																						
Heathland Inv.																						
Phase 2	1.7				1.7							8.0	4.0					3.2				
Estimates, class	B		+		+	+	+	A	A			C	+					A				

Key

Column headings
GR = Grid reference if relevant
No Sites = Number of sites
Site Area = Area of sites
GR Area = Area of grassland
A G Area = Area of acid grassland
H Area = Area of dry heath
LHA = Area of lichen heath
NI = No information
NA = Natural Area
U1-U20r = NVC communities/sub-communities

Area estimates
A = Less than 50 ha
B = 50-100 ha
C = 100-500 ha
D = 500-1,000 ha,
E = 1,000-5,000 ha
F = 5,000-10,000 ha
G = Greater than 10,000 ha
+ = Present but no area given
? = Possibly present

34. Somerset

34.1 Physical

Geology

The varied geology of Somerset includes outcrops of harder, old rocks, in the west. Devonian and Carboniferous sandstones underlie Exmoor and the Quantock Hills. In the north east, the Mendips are on Carboniferous limestones. Permian and Triassic sandstones and mudstones and Jurassic clays and limestone underlie the lowlands, with Lower Cretaceous Upper Greensand covering these deposits in the south east to form the Blackdown Hills.

Soils

The soil map shows extensive areas of brown podzolic soils and stagnopodzols in the uplands of the west. Elsewhere, only small areas of podzols are recorded on the summits of the Mendips (**Map 1a**).

34.2 Landscape history

19th Century

The 1800 and 1810 1 inch OS maps show large blocks of moorland on Exmoor and The Quantock Hills. Beyond the uplands, areas of heathland were mainly confined to the summits of the Mendips and the Blackdown Hills.

Current landscapes and Natural Areas

The upland areas of the west are included within the Exmoor and The Quantocks Natural Area (NA87). The moorland of Exmoor is still extensive but more fragmented than in the early 19th century. In the Mendips and in the Blackdowns Natural Areas (NA84 & NA89 respectively), most of the heathland recorded in the 19th century is no longer present.

34.3 Existing information

Flora

The coincidence maps (**Maps 2-4**) of lowland acid grassland species listed in **Table 1** show that Somerset has few concentrations, with the only notable areas along the coast. However, the total flora is fairly impressive with 20 species recorded, of which two are apparently extinct. The lowland acid grassland species recorded for the county are listed in **Table 6** with the relevant extract shown below.

The Flora of Somerset (Roe, 1981) indicates that many of the acid grassland species are confined to sand dune systems, such as Minehead Warren. Elsewhere, the frequency of *Sagina subulata* in the west is notable. The Blackdowns have an impoverished lowland acid grassland flora.

Fauna

The English Nature Local Team reported that the Robber Fly, *Asilus crabroniformis*, a species listed in the Biodiversity Action Plan, occurs on Exmoor.

Habitat surveys

The Grassland Inventory records acid grassland on Exmoor and in the Blackdowns, and on the Mendips on drift over limestone. The Heathland Inventory includes a large amount of moorland on Exmoor and on The Quantock Hills and some lowland heathland on the Blackdowns and the Mendips.

The Biological Survey of Common Land (Hedley & Aitchison, 1992) mostly covers upland commons but indicates the presence of some U4 on the Mendips and some parched acid grassland (U1) with *Ornithopus perpusillus* and *Aphanes inexspectata* in a quarry on the edge of The Quantocks.

The enclosed land on Exmoor (including Devon as well as Somerset) has been covered by a Phase 2 survey and report (Butcher & Stewart, 1990). The survey records 267.4ha of U4, 56.4ha of U1, 14.1ha of U2 and 1.7ha of U3. The report gives no description of the floristics of the acid grasslands or details of their conservation value. The parched acid grasslands (U1) were found at lower altitudes and were the most species-rich type of acid grassland.

A similar survey has been carried out in the Blackdown Hills (Butcher, 1987). This was done before any draft of the NVC acid grassland classification was available and no attempt was made to describe the 42ha of acid grassland recorded. Acid grasslands were said to form a high proportion of the vegetation of the Blackdowns but only species-rich examples were surveyed. (Data from Dorset was also included.)

Summary of consultations with Local Team Conservation Officers

Most enclosed acid grassland is in Exmoor and is covered by Butcher & Stewart (1990). Associated with some of the acid grasslands are herb-rich bracken stands which can support fritillary butterflies and the small ferns *Ophioglossum vulgatum* and *Botrychium lunaria*. The Blackdowns probably have about 200ha of acid grassland, of which much is probably U4. However, EPR is aware of some U3 in heathland mosaics. In the Quantocks most of the commons are heath or bracken with probably not more than a few hectares of U3 and U4.

One feature of interest is the scree communities of Old Red Sandstone sea cliffs (Mike Edgington, pers. comm. 1996). These have *Sedum anglicum* and *Dicranum scoparium* as constants and include a lichen rich sub-community. One sub-community has constant *Aira praecox* and *Festuca ovina* frequent. The latter stands closely approach U1, but the community is probably best regarded as undescribed in the NVC. Related communities occur on screes in Shropshire.

34.4 Summary of resource

Extent and composition

Somerset is characterised by the dominance of U4 and by the general floristic poverty of the U1 that exists, although a wide variety of acid grassland plants occur on coastal dunes. Most acid grassland is confined to Exmoor and the Blackdown Hills. There is acid grassland in the Mendips but this appears to be an unknown resource.

Conservation value

Most acid grasslands in Somerset appear to have relatively low intrinsic interest and their conservation value is mostly defined by their association with other habitats of value.

34.5 Future requirements for survey and conservation

Survey

There are no obvious high priorities for Phase 2 surveys of acid grasslands in Somerset, although the Mendips resource could usefully be assessed, along with the important calcareous communities in this Natural Area.

Conservation

No obvious priorities for conservation of acid grasslands, apart from maintaining them in mosaics with other habitats.

34.6 References

BUTCHER, B. & STEWART, A. 1990. *Grassland in the Exmoor National Park: a report of survey 1990*. Somerset Trust for Nature Conservation.

HEDLEY, S. & AITCHISON, J.W. 1992. *Biological survey of common land. No 22: Somerset.* Peterborough: English Nature.

SAUNDERS, G. & BUTCHER, B. 1987. *The grassland resource of the Blackdown Hills: its extent, classification and conservation potential.* Taunton: Nature Conservancy Council, South-West Region.

Extract from Table 6 for Somerset: occurrence of plant species generally faithful to lowland acid grassland

County: Somerset	
Natural Areas:	**All**
Grasses	
Vulpia ciliata ambigua	1
Other Vascular Plants	
Chamaemelum nobile	1
Crassula tillaea	1
Erodium maritimum	1
Filago minima	0
Hypochaeris glabra	1
Moenchia erecta	1
Ornithopus perpusillus	1
Sagina subulata	1
Silene conica	1
Stellaria pallida	1
Teesdalia nudicaulis	1
Trifolium glomeratum	0
Trifolium ornithopodioides	1
Trifolium scabrum	1
Trifolium striatum	1
Trifolium subterraneum	1
Trifolium suffocatum	1
Vicia lathyroides	1
Viola lactea	1
Total no. of species extant	**18**
Total no. of species extinct	**2**
Total no. of species recorded	**20**

1 = Recent record
0 = Apparently extinct

Somerset acid grassland surveys

Survey Name	GR	Date	Landscape Types	Comments	No Sites	Site Area	Gr Area	AG Area	H Area	LHA
Grassland Inventory		1986-90	Field, Drift/calcicolous, Common	Mainly NA87, 89, 84	21	574.9	NI	NI		
Heathland Inventory		1984-94		Includes some upland sites	28	17650.0			251.4	
Exmoor Survey		1990		Butcher & Stewart (1990) Phase 2 survey	53		1250.3	340.2		
Blackdowns Survey		1987		Butcher (1987) Phase 2 survey				42.0		
Estimates, ha		1996		Dr Flemming Ulf-Hansen & Mike Edgington, EN				500+		
Estimates, classes		1996		Dr Flemming Ulf-Hansen & Mike Edgington, EN				D		

Survey Name	U1	U1a	U1b	U1c	U1d	U1e	U1f	U2	U2a	U2b	U3	U4	U4a	U4b	U4c	U4d	U4e	U5	U6	SD10	SD11	U20r
Grassland Inv.																						
Heathland Inv.																						
Exmoor Survey	56.4							14.7			1.7	267.4										
Blackdowns																						
Estimates, ha	56+							40+														
Estimates, class	B							A			B	C										+

Key

Column headings
GR = Grid reference if relevant
No Sites = Number of sites
Site Area = Area of sites
GR Area = Area of grassland
A G Area = Area of acid grassland
H Area = Area of dry heath
LHA = Area of lichen heath
NI = No information
NA = Natural Area
U1-U20r = NVC communities/sub-communities

Area estimates
A = Less than 50 ha
B = 50-100 ha
C = 100-500 ha
D = 500-1,000 ha,
E = 1,000-5,000 ha
F = 5,000-10,000 ha
G = Greater than 10,000 ha
+ = Present but no area given
? = Possibly present

35. South Yorkshire

35.1 Physical

Geology

The Dark Peak to the west of the county is composed of Millstone Grit and the centre is occupied by a wide exposure of the Coal Measures. Magnesian Limestone forms a narrow band in the east, with Sandstone in the extreme east. The latter area has deep recent alluvial deposits.

Soils

The hills of the Dark Peak to the west have upland soils with surface water gleys, while brown earths dominate the Coal Measures. To the east of Doncaster, the recent deposits include areas of brown sands (**Map 1e**).

35.2 Landscape history

19th Century

The 1840's 1 inch OS map shows a largely enclosed lowland landscape.

Current landscapes and Natural Areas

The Natural Areas of the region closely follow the geology. The uplands to the west are part of the Dark Peak Natural Area (NA25), and this is followed eastwards by the Coal Measures Natural Area (NA24), the Southern Magnesian Limestone Natural Area (NA23) with the Humberhead Level Natural Area (NA22), covering the alluvial land of the eastern part of the county. The Coal Measures have become very urbanised.

35.3 Existing information

Flora

The coincidence maps (**Maps 2** to **4**) of lowland acid grasslands listed in **Table 1** show a concentration recorded from the east side of Doncaster, in the Humberhead Levels. The acid grassland species recorded from the Humberhead Levels (including records from beyond South Yorkshire) are listed in **Table 6** the relevant parts of which are extracted below. A total of 10 species have been recorded of which two are probably extinct. Sand sedge, *Carex arenaria* has also been recorded.

Habitat surveys

The Grassland Inventory records three acid grasslands on the Coal Measures and one on the Magnesian Limestone, both Areas have a very poor acid grassland flora. The Heathland Inventory records a scatter of heathland relics around Doncaster, which correlate with the rich acid grassland flora recorded on **Map 2**.

Summary of consultations with Local Team Conservation Officers

There are no acid grassland SSSIs and the extent of the resource is unclear, although the extent of good quality habitat is estimated at 10-50ha. It occurs mainly on the higher ground, as this rises

towards the Pennines. U4 and U5 have been identified from the Coal Measures, where their distribution is patchy. Acid grassland around Doncaster are associated with remnant heathland.

35.4 Summary of resource

Extent and composition

It is clear that the Doncaster heathlands once supported a rich acid grassland flora although their current condition is not well known. However, the flora recorded from them suggests that parched acid grasslands (U1) and possibly *Carex arenaria* dune (SD11/12) are, or were, present. The Coal Measures support small areas of U4 and U5, and some acid grassland occurs on the Magnesian Limestone.

Conservation value

The acid grasslands of the Doncaster area are, or were, of considerable interest and were as rich as the acid grasslands of the Vale of York. The presence of *Carex arenaria* indicates a strong similarity to the flora of the Coversand to the east. The Coal Measures and Magnesian Limestone support floristically rather poor acid grasslands, and are of particular floristic interest where associated with richer neutral grassland or limestone grassland.

35.5 Future requirements for survey and conservation

Survey

The English Nature Local Team regard the Coal Measures and the Humberhead Levels as priorities for further survey. Although the Coal Measures may be a priority for survey of general, enclosed, grassland, which includes acid grasslands, it does not appear to EPR that they are of national priority for acid grassland survey. An assessment of the condition of the Doncaster heathlands and the current condition of the associated acid grassland flora is a higher priority.

Conservation

The heathlands of the Humberhead Levels are priorities for conservation and restoration.

Extract from Table 6 for South Yorkshire: occurrence of plant species generally faithful to lowland acid grassland

County: South Yorkshire	
Natural Area:	**22**
Dianthus deltoides	0
Filago minima	1
Hypochaeris glabra	1
Moenchia erecta	0
Ornithopus perpusillus	1
Potentilla argentea	1
Stellaria pallida	1
Teesdalia nudicaulis	1
Trifolium striatum	1
Vicia lathyroides	1
Total no. of species extant	**8**
Total no. of species extinct	**2**
Total no. of species recorded	**10**

22 = Humberhead Levels (may include records from outside South Yorkshire)

1 = Recent record
0 = Apparently extinct

South Yorkshire acid grassland surveys

Survey Name	GR	Date	Landscape Types	Comments	No Sites	Site Area	Gr Area	AG Area	H Area	LHA
Grassland inventory		1991-94	Enclosure relics & fields	Very little recorded	4	49.3	5.5	NI		
Heathland inventory		NI	Enclosure relics	Few areas calculated. Most in NA22	15	3544.0			8.0	
Estimates: classes		1996		Neil Sanderson, EPR, Colin Newlands, EN				A		

Survey Name	U1	U1a	U1b	U1c	U1d	U1e	U1f	U2	U2a	U2b	U3	U4	U4a	U4b	U4c	U4d	U4e	U5	U6	SD10	SD11	U20r
Grassland Inv.																						
Heathland Inv.																						
Estimates: class	A											A						A				

Key

Column headings
GR = Grid reference if relevant
No Sites = Number of sites
Site Area = Area of sites
GR Area = Area of grassland
A G Area = Area of acid grassland
H Area = Area of dry heath
LHA = Area of lichen heath
NI = No information
NA = Natural Area
U1-U20r = NVC communities/sub-communities

Area estimates
A = Less than 50 ha
B = 50-100 ha
C = 100-500 ha
D = 500-1,000 ha,
E = 1,000-5,000 ha
F = 5,000-10,000 ha
G = Greater than 10,000 ha
+ = Present but no area given
? = Possibly present