7. Hereford and Worcester: Natural Area 43, Midlands Plateau

Hurcott Pasture SSSI (SO8477) - enclosed pasture - U1f

Hurcott Pasture is located in north Worcestershire, on the eastern edge of Kidderminster. The 4.7 ha site occupies the edge of a plateau and the valley slopes to the south and west. The higher ground has freely draining sandy soils developed on the Bunter Sandstones, supporting parched acid grassland (U1f). Lower slopes, especially in shallow hollows have damper soils with neutral grassland (MG6b).

Notes on vegetation and flora

U1 grassland dominates much of the site and is closest to U1f. As is typical of U1f, the only Fescue present is *Festuca rubra*, while *Festuca ovina* agg is absent. *Vulpia bromoides, Agrostis capillaris* and *Aira praecox* are also abundant. The vegetation ranges from very short, open, *Polytrichum juniperinum-Aira praecox* swards (**Quadrat 1**) to denser swards with a high herb cover, especially to the east (**Quadrat 2**). To the west some weedy, disturbed, patches occur with abundant *Senecio jacobaea*, Thistles and *Urtica dioica*. A total of 56 species were recorded from the U1f grassland. The acid grassland flora is rich for a small, enclosed, site. Seven acid grassland indicator species are present. The SSSI citation notes others not seen in 1997.

Management

The field is lightly horse-grazed. The horses were removed at the time of survey. The weedy latrine areas may be related to past over-grazing, not the current management. Some limited rabbit grazing occurs.

Conservation value

A good quality example of an enclosed acid grassland. U1f is typical of such situations, ie dry but not strongly acid soils. This stand is likely to be near the edge of the national distribution of U1f, which appears to have a south-western distribution (Rodwell 1992).

Hurcott Pasture, Worcester
U1f: Community list
Date of survey: 19/5/97

Species	DAFOR
Trees & tall shrubs	
Crataegus monogyna	E
Sambucus nigra	E
Ulex europaeus	E
Grasses	
Agrostis capillaris	A
Aira praecox @	A
Anthoxanthum odoratum	F
Bromus hordeaceus	O
Dactylis glomerata	O
Festuca rubra	A
Holcus mollis	O
Lolium perenne	O
Vulpia bromoides	A
Other vascular plants	
Achillea millefolium	F
Aphanes inexspectata @	A
Bellis perennis	R
Carduus nutans	O
Carex hirta	R
Carex muricata lamprocarpa	R
Cerastium arvense @	O
Cerastium fontanum	O
Cerastium semidecandrum @	F
Cirsium vulgare	O
Conopodium majus	O
Crepis capillaris	O
Digitalis purpurea	E
Erodium cicutarium @	O
Galium verum	R
Geranium molle	A

Species	DAFOR
Hypochaeris radicata	A
Lotus corniculatus	O
Luzula campestris	F
Myosotis discolor	O
Ornithopus perpusillus @	A
Pilosella officinarum	A
Plantago lanceolata	F
Ranunculus bulbosus	F
Rubus fruiticosus	E
Rumex acetosella	A
Senecio jacobaea	F
Silene latifolia	O
Stellaria media	R
Taraxacum sect Erythrosperma	O
Trifolium dubium	O
Trifolium repens	O
Trifolium striatum @	F
Urtica dioica	O
Veronica arvensis	F
Veronica chamaedrys	O
Veronica serpyllifolia	R
Vicia sativa nigra	O
Viola arvensis	R
Mosses	
Brachythecium albicans	A
Ceratodon purpureus	A
Polytrichum juniperinum	A
Pseudoscleropodium purum	O
Lichens	
Cladonia furcata	R

Total number of species = 56
Number of acid grassland indicator species (@) = 7

E = edge

Additional indicator species noted on SSSI citation

Cerastuim arvense
Spergularia rubra

Note: The English Nature record of *Vicia lathyroides* could be an error for small *Vicia sativa nigra*.

Hurcott Pasture
U1f: Quadrat 1
Date of survey: 29/5/97

Species	DAFOR
Grasses	
Agrostis capillaris	5
Aira praecox	6
Festuca rubra	5
Vulpia bromoides	5
Other vascular plants	
Aphanes inexspectata	2
Cerastium semidecandrum	2
Geranium molle	2
Hypochaeris radicata	4
Ornithopus perpusillus	4
Pilosella officinarum	2
Plantago lanceolata	2
Ranunculus bulbosus	2
Rumex acetosella	6
Senecio jacobaea	1
Taraxacum sect Erythrosperma	2
Veronica arvensis	2
Vicia sativa nigra	1
Mosses	
Brachythecium albicans	4
Ceratodon purpureus	5
Polytrichum juniperinum	7

Total number of species = 20
Quadrat size = $4m^2$
Vegetation height = 1-4cm
Management: horse grazed but rested at time of survey.

Quadrat placed on open, short, *Polytrichum* and *Aira*-dominated U1f.

Hurcott Pasture
U1f: Quadrat 2
Date of survey: 29/5/97

Species	DAFOR
Grasses	
Agrostis capillaris	4
Aira praecox	5
Festuca rubra	6
Vulpia bromoides	6
Other vascular plants	
Achillea millefolium	4
Aphanes inexspectata	3
Carduus nutans	1
Cerastium fontanum	2
Cerastium semidecandrum	3
Geranium molle	3
Hypochaeris radicata	3
Lotus corniculatus	4
Ornithopus perpusillus	3
Pilosella officinarum	4
Plantago lanceolata	4
Ranunculus bulbosus	3
Rumex acetosella	6
Senecio jacobaea	4
Trifolium dubium	4
Trifolium striatum	5
Vicia sativa nigra	4
Mosses	
Brachythecium albicans	3
Polytrichum juniperinum	1

Total number of species = 23
Quadrat size = $4m^2$
Vegetation height = 1-6cm
Management: horse grazed but rested at time of survey.

Quadrat placed in more herb-rich area of U1f with lower moss cover.

8. Humberside: Natural Area 34, North Lincolnshire Coversands and Clay Vales

a. Risby Warren (SE9213) - grass heath - U1c

Site Description

Risby Warren is the largest surviving area of Coversand heathland, and the SSSI covers 150ha. It is private land. It is an Grade 1 NCR site and was surveyed by Wigginton (1990). The survey card for Risby Warren could not be found but the 1988 report indicates that the vegetation at the time included 80ha of U1, 38.8ha of Bracken and 9.44ha of *Brachypodium pinnatum*-dominated vegetation. The bulk of the U1 vegetation was not identified to sub-community level (56.52ha) with 23.24ha of U1a and 1ha of U1c. The site consists of windblown sand over Jurassic limestone. The limestone is exposed on the surface as fragments but does not have an obviously strong effect on the vegetation. As well as stable dunes there are active dunes in the north-west.

Notes on Vegetation

The most surprising feature of the heathland, found when the site was visited on 20/5/97, was the dominance of high quality U1c. A quadrat (Q1) was taken and a community species list made (see below). The quadrat contained a remarkable 38 species and a total of 67 were recorded from the community. Three species were nationally scarce and 23 were dry acid grassland indicator species. (Wigginton recorded 3 more indicator species from the site). Patches of *Calluna* occur in the U1c locally but are currently being suppressed by heavy rabbit grazing. Older bushes seem to be declining, but some regeneration was noted.

A little U1a was noted and in places the U1c graded into less herb-rich U1b. The stable dunes examined had heavily-grazed U1b with a high *Carex arenaria* cover and some lichen-rich *Carex* dune community, SD11b. Moribund Marram grass could be seen in the south-east, on now stable dunes planted in the 1920s, on what were then mobile dunes. In the north-east an active blow out and dune system has developed which lacks Marram. The blow out has an open growth of *Erodium cicutarium*, *Cerastium semidecandrum* and *Poa annua* while the dune has a pioneer dune community of *Carex arenaria* with *Teucrium scorodonia* and *Senecio jacobaea* growing through from the buried sward. This may be the only true inland pioneer *Carex arenaria* dune in Britain at the moment.

The *Brachypodium pinnatum* vegetation is a curious feature. It has been said to be associated with the thinner sands over the limestones, but in fact it can be found on top of dunes, so is not restricted to limestone areas but is probably more frequent on areas with limestone. The areas examined were mostly extremely species-poor, over-grown, stands. Where rabbit grazing had kept down the *Brachypodium* the grassland appeared closer to U1d than CG4. The frequency of *Teucrium scorodonia* is a distinctive feature which is very atypical of any CG4 sub-communities. It is possible that true CG4 did once occur here but its distinctiveness has been lost in the over growth of the grass.

Management

The combination of very high rabbit grazing and WES-funded Bracken cutting appears to have transformed the site since 1988. There is now well over 50ha of U1c of very high quality. Rabbit grazing is maintaining the condition of the U1 grassland but rabbit populations are liable to crash and the rabbits are having little effect on the *Brachypodium*. There has been a trial with sheep grazing in a small area but these have also had no effect on the *Brachypodium*. On seeing the site, the best solution would appear to be to introduce a small number of ponies to keep down the *Brachypodium*, and to introduce sheep if the rabbit population crashes. The site will need ring-fencing but the current rabbit fencing which nearly surrounds the site is probably adequate to fence in ponies.

Conservation Value

Other than the Stanford Training Area in Breckland, this is the only large stand of U1c known in Britain at the moment. It may be the largest as no figures exist for the Stanford Training Area. The mobile dune area is also probably the best mobile inland dune in the country, with associated stabilised dunes. As such this site may be of international significance (along with other heathlands in the area) as well as national significance.

Risby Warren
U1c: Community species list
Date of survey: 20/5/97

Species	DAFOR
Grasses	
Agrostis capillaris	A
Agrostis vinealis	O
Aira praecox @	A
Brachypodium pinnatum	O
Festuca filiformis	F
Festuca ovina	O
Holcus lanatus	R
Poa pratensis	F
Vulpia bromoides	O
Other vascular plants	
Anagallis arvensis	R
Aphanes inexspectata @	A
Botrychium lunaria	R
Campanula rotundifolia	R
Carex arenaria @	O
Carlina vulgaris	O
Centaurium erythraea	O
Cerastium arvense @	O
Cerastium semidecandrum	F
Chamerion angustifolium	O
Cirsium arvense	O
Cynoglossum officinale	O
Echium vulgare @	O
Erodium cicutarium @	F
Erophila verna	F
Filago minima @	A
Geranium molle	P
Hypochaeris glabra @ *	O
Lotus corniculatus	R
Luzula campestris	F
Myosotis ramosissima @	F
Ornithopus perpusillus @	O
Pilosella officinarum	O
Plantago coronopus @	O
Prunella vulgaris	R

Species	DAFOR
Pteridium aquilinum	F
Rumex acetosella	F
Sagina apetala	R
Sagina procumbens	F
Sedum acre @	F
Senecio jacobaea	F
Taraxacum sect Erythrosperma	O
Teesdalia nudicaulis @	O
Teucrium scorodonia	A
Trifolium dubium	O
Veronica arvensis	F
Vicia lathyroides @	R
Viola canina @	O
Mosses and liverworts	
Brachythecium albicans	A
Bryum sp	O
Bryum argenteum	O
Ceratodon purpureus	A
Dicranum scoparium	F
Hypnum cupressiforme lacunosum @	F
Polytrichum juniperinum	A
Ptilidium ciliare @	O
Lichens	
Cladonia arbuscula @	R
Cladonia c. cervicornis	F
Cladonia cariosa @ *	R
Cladonia chlorophea	O
Cladonia diversa	O
Cladonia foliacea @	A
Cladonia furcata	A
Cladonia rangiformis	O
Cladonia uncialis @	R
Coelocaulon aculeatum @	F
Peltigera canina @ *	R
Peltigera lactucifolia	O

Total number of species = 67
Number of nationally scarce species (*) = 3
Number of acid grassland indicator species (@) = 23
Additional indicator species recorded by Wigginton (1990) = 3
Aira caryophyllea @ *Erigeron acer* @ *Sagina nodosa* @
Number of acid grassland indicator species on site (@) = 26

P = present, no DAFOR given

Risby Warren
U1c: Quadrat 1
Date of survey: 20/5/97

Species	Domin
Grasses	
Agrostis capillaris	6
Agrostis vinealis	4
Aira praecox	5
Poa pratensis	3
Other vascular plants	
Aphanes inexspectata	4
Centaurium erythraea	2
Cerastium arvense	3
Cerastium semidecandrum	3
Erodium cicutarium	3
Erophila verna	3
Filago minima	3
Geranium molle	3
Hypochaeris glabra	4
Luzula campestris	2
Myosotis ramosissima	3
Plantago coronopus	2
Pteridium aquilinum	1
Rumex acetosella	2
Sagina apetala	1

Species	Domin
Sagina procumbens	3
Sedum acre	5
Senecio jacobaea	2
Taraxacum sect Erythrosperma	1
Teesdalia nudicaulis	3
Teucrium scorodonia	3
Veronica arvensis	3
Viola canina	1
Mosses	
Brachythecium albicans	2
Bryum sp	2
Bryum argenteum	1
Ceratodon purpureus	4
Dicranum scoparium	4
Hypnum c. lacunosum	3
Polytrichum juniperinum	6
Lichens	
Cladonia furcata	4
Coelocaulon aculeatum	2
Peltigera canina	3
Peltigera lactucifolia	1

Total number of species = 38
Quadrat size $4m^2$
Vegetation height = 0-1cm
Management: heavily rabbit grazed

b. Manton and Twigmoor SSSI and adjacent areas (SU9404) - grass heath, stablised sand dune, arable reversion - U1, SD11b, H11a

Background

The area examined includes the southern part of Manton & Twigmoor SSSI and adjacent areas of early-succession acid grassland, developed on former arable fields put into Countryside Stewardship in 1992. The SSSI had been surveyed by Wigginton (1990). Wigginton recorded 27.56ha of Bracken (U20a), 4.04ha of heath (H11), 3.8ha of U1c, 0.01ha of U1a, 5.2ha of undefined acid grassland and dune, 2.4ha *Deschampsia flexuosa* grassland (U2a) and 0.24ha of *Brachypodium pinnatum* grasland (CG4).

Part of the SSSI, called Manton Warren South, and an area to the south in the Countryside Stewardship Scheme were surveyed together, with a total site species list made from the heathland communities. A selection of the quadrats recorded are reproduced below. An area adjacent to the northern edge of Manton Warren South has been entered into the Stewardship Scheme, and was also surveyed. Two quadrats and a total species list are given below.

Physical Features

The sites consist of windblown sand over Jurassic limestone. There are stablised sand dunes, as well as an old sand quarry in which some limestone is exposed on the surface. The northern Stewardship field has developed active blow outs and dunes since 1992.

Manton Warren South & southern Stewardship field

Vegetation

The Warren has a complex mixture of high quality acid grasslands as well as areas degraded by Bracken invasion. Since 1988, heavy rabbit grazing and mowing of Bracken under WES has clearly greatly improved the quality of the acid grassland, but there is a problem with Rosebay Willowherb invasion, which the rabbits will not graze. The southern Stewardship field has an impressive area of early-succession U1c grassland but lacks the recent blowouts and dunes of the northern field. The vegetation comprises the following types:

U1a: 2.03ha, very lichen rich, mainly found in the quarry floor.

U1b: 9.03ha, greatly extended by the mowing of Bracken. Rosebay Willowherb invasion is a problem. Includes transitions to SD10, where grazing is converting derelict, rank, *Carex arenaria* swards back to

U1b swards (and possibly SD11 if lichens recolonise).

U1c (late succession): 0.2ha, small areas in quarry floor and in north.

U1c (early succession): 9.95ha, developing on Stewardship restoration areas.

SD11b: 1.01ha, on sand dunes.

H11a: 1.99ha, on old dunes and in quarry. *Ericaceous* species are heavily rabbit grazed.

U1d/CG4: 0.08ha, on limestone and sand mixtures in quarry.

Wigginton's site map is too unclear to interpret easily but his data indicates the disappearance of U2a due to increased rabbit grazing .

Flora

A total of 86 species were recorded from the open heathland. These included one nationally scarce species, *Hypochaeris glabra*, and 21 dry acid grassland indicator species. An unusual record was that of *Ranunculus parviflorus*, with a few plants in disturbed areas, possibly on introduced soil, within parched acid grassland (U1). This record appears to be the first post-1970 record for Lincolnshire and one of the few modern records for eastern England.

Management

The WES-funded mowing of Bracken combined with heavy rabbit grazing is maintaining the condition of the site well, with the exception of the Rosebay Willowherb. This will need controlling, in the short term swiping or applying herbicide with a weed wipe should suffice but in the long term a ring fence and light stock grazing would be best. More scrub clearance is required to open up the central area.

Manton Warren South
Species List, Open Heathland
Date of survey: 21/5/97

Species	DAFOR
Dwarf shrubs	
Calluna vulgaris	O
Erica cinerea	F
Grasses	
Agrostis capillaris	F
Agrostis vinealis	O
Aira caryophyllea @	R
Aira praecox @	A
Brachypodium pinnatum	O
Deschampsia flexuosa	O
Festuca filiformis	F
Holcus mollis	O
Holcus lanatus	O
Poa pratensis	F
Vulpia bromoides	O
Other vascular plants	
Anchusa arvensis	O
Anchusa ochroleuca	O
Aphanes inexspectata @	F
Arenaria serpyllifolia	O
Carex arenaria @	A
Centaurium erythraea	O
Cerastium arvense @	O
Cerastium fontanum	R
Cerastium semidecandrum @	F
Chamerion angustifolium	F
Cirsium arvense	O
Erodium cicutarium @	O
Filago minima @	O
Fragaria vesca	R
Galium saxatile	O
Galium verum	O
Geranium molle	O
Glechoma hederacea	O
*Hypochaeris glabra * @*	R
Lotus corniculatus	R
Luzula campestris	F
Myosotis ramosissima @	F
Pilosella officinarum	O
Prunella vulgaris	O
Pteridium aquilinum	A
Ranunculus parviflorus	R
Rumex acetosella	F
Sagina procumbens	F
Senecio jacobaea	O
Taraxacum sect Erythrosperma	O

Total number of species = 86
Number of nationally scarce species (*) = 1
No of acid grassland indicator species (@) = 22

Species	DAFOR
Teesdalia nudicaulis @	O
Teucrium scorodonia	F
Urtica dioica	O
Urtica urens	O
Veronica arvensis	O
Veronica serpyllifolia	R
Viola arvensis	O
Viola canina @	O
Mosses	
Brachythecium albicans	F
Campylopus introflexus	O
Ceratodon purpurea	F
Dicranum scoparium	A
Hypnum lacunosum tectorum @	F
Hypnum jutlandicum	O
Pohlia nutans	R
Polytrichum juniperinum	A
Polytrichum piliferum	O
Pseudoscleropodium purum	O
Racomitrium elongatum @	O
Tortula ruralis ruralis	R
Liverworts	
Ptilidium ciliare @	F
Lichens	
Cladonia arbuscula @	F
Cladonia c. cervicornis	O
Cladonia chlorophea	F
Cladonia ciliata @	F
Cladonia diversa	O
Cladonia foliacea @	A
Cladonia furcata	A
Cladonia gracilis @	F
Cladonia portentosa	O
Cladonia rangiformis	O
Cladonia scrabriuscula	R
Cladonia subulata	O
Cladonia uncialis @	F
Coelocaulon aculeatum @	F
Hypogymnia physodes	O
Lepraria incana	O
Peltigera didactyla	O
Peltigera lactucifolia	R
Peltigera rufescens @	R
Placynthiella uliginosa	O
Trapeliopsis flexuosa	R
Trapeliopsis granulosa	O

Additional indicator species recorded by Wigginton (1990):
Echium vulgare @ & Sagina nodosa @
No of acid grassland indicator species (@) = 24

Manton Warren South
U1b: Quadrat 1
Date of survey: 21/5/97

Species	Domin
Grasses	
Agrostis capillaris	6
Aira praecox	4
Poa pratensis	4
Other vascular plants	
Aphanes inexspectata	2
Cerastium semidecandrum	2
Filago minima	1
Sagina procumbens	1
Veronica arvensis	3
Mosses	
Brachythecium albicans	7
Ceratodon purpurea	2
Dicranum scoparium	1
Hypnum c. lacunosum	4
Polytrichum juniperinum	5
Polytrichum piliferum	3
Lichens	
Cladonia chlorophea	1
Cladonia foliacea	4
Cladonia furcata	4
Coelocaulon aculeatum	1
Bare soil	4

Total number of species = 19
Quadrat size = 4m^2
Vegetation height = 0-1cm
Management: heavily rabbit grazed.

Moss-dominated and with lichens and *Agrostis capillaris* prominent. Close to U1c, but not rich enough for classification as U1c

Manton Warren South
SD11b: Quadrat 3
Date of survey: 21/5/97

Species	Domin
Grasses	
Agrostis capillaris	1
Other vascular plants	
Carex arenaria	7
Myosotis ramosissima	2
Rumex acetosella	3
Teesdalia nudicaulis	3
Teucrium scorodonia	2
Viola canina	1
Mosses	
Ceratodon purpurea	3
Dicranum scoparium	1
Polytrichum juniperinum	5
Lichens	
Cladonia arbuscula	5
Cladonia foliacea	6
Cladonia furcata	6
Cladonia gracilis	1
Cladonia uncialis	1
Coelocaulon aculeatum	4
Bare soil	3

Total number of species = 16
Quadrat size = 4m^2
Vegetation height = 0-3cm
Management: heavily rabbit grazed

Stabilised sand dune, dominated by *Carex arenaria* and lichens

Manton Warren South
H11a: Quadrat 4
Date of survey: 21/5/97

Species	Domin
Dwarf shrubs	
Calluna vulgaris	5
Erica cinerea	7
Grasses	
Agrostis capillaris	2
Aira praecox	1
Deschampsia flexuosa	4
Festuca filiformis	3
Poa pratensis	2
Other vascular plants	
Carex arenaria	4
Luzula campestris	5
Rumex acetosella	2
Teucrium scorodonia	3
Viola canina	2
Mosses	
Dicranum scoparium	5
Hypnum c. lacunosum	4
Hypnum jutlandicum	5
Liverworts	
Ptilidium ciliare	4
Lichens	
Cladonia arbuscula	3
Cladonia ciliata	4
Cladonia foliacea	2
Cladonia furcata	2
Cladonia subulata	1
Coelocaulon aculeatum	3
Bare soil	2

Total number of species = 22
Quadrat size = $4m^2$
Vegetation height = 0-8cm
Management: heavily rabbit grazed.

Heath on stabilised dunes, *Calluna* and *Erica* rabbit-grazed, with *Calluna* prostrate and the less palatable *Erica cinerea* in browsed bushes

Manton Warren South
U1a: Quadrat 6
Date of survey: 21/5/97

Species	Domin
Dwarf shrubs	
Erica cinerea	3
Grasses	
Agrostis capillaris	2
Agrostis vinealis	3
Aira praecox	3
Deschampsia flexuosa	3
Other vascular plants	
Carex arenaria	1
Luzula campestris	4
Pteridium aquilinum	1
Rumex acetosella	2
Senecio jacobaea	1
Teesdalia nudicaulis	2
Veronica arvensis	1
Mosses	
Campylopus introflexus	3
Ceratodon purpurea	4
Polytrichum piliferum	2
Liverworts	
Ptilidium ciliare	3
Lichens	
Cladonia arbuscula	4
Cladonia c. cervicornis	1
Cladonia ciliata	6
Cladonia foliacea	3
Cladonia furcata	3
Cladonia uncialis	8
Coelocaulon aculeatum	3
Bare soil	4

Total number of species = 23
Quadrat size = $4m^2$
Vegetation height = 0-1cm
Management: heavily rabbit grazed.

Rich U1a in old sand pit.

Northern Stewardship field

Vegetation

Since 1992 the field has developed an early-succession form of U1c, covering 5.95 ha. The vegetation is very heavily rabbit-grazed, with the result that the sand is mainly being stabilised by moss mats dominated by *Brachythecium albicans* and *Ceratodon purpureus*. To the west the surface is so destabilised that blow outs and a dune are developing, perhaps initially from a small sand pit on the southern edge of the field. The vegetation consists of annual herbs typical of U1c, with much *Aira praecox* and variable amounts of ruderal species such as *Cirsium arvense* and *Senecio jacobaea*. Many typical grasses such as *Agrostis capillaris* and *Festuca ovina* agg are rare or absent, as are many lichen species as these appear to be late colonists. Some species such as *Carex arenaria* and *Cerastium arvense* are spreading in from surviving plants on the field margins and there is some late-succession U1c on the western field margin. The dune lacks *Carex arenaria* but is otherwise similar to the active dune at Risby Warren, with *Cirsium arvense*, *Senecio jacobea*, *Anchusa arvensis*, *Erodium cicutarium* and *Poa annua*. Two grazing-exclusion plots have been set up and illustrate the importance of grazing in restoring acid grassland, as they are poorer in species, with low cover of bryophytes and ephemeral vascular plants.

Flora

A total of 55 species were recorded from the field, of which 2 were nationally scarce species, *Hypochaeris glabra* and *Vulpia ciliaris ambigua*, the latter a new 10km square record. A total of 11 dry acid grassland indicator species were recorded including *Filago minima*. The flora is remarkably rich in parched acid grassland specialist species considering that the grassland is only 5 years old.

Management

The perennial weeds will require control and in the long term grazing by suitable stock should be considered. The hedges planted along the southern and western edge threaten to isolate the developing grass heath from the rest of the heathland to the south and ideally should be removed.

Overall conservation value of Manton Warren South and Stewardship fields

The area has excellent acid grassland vegetation with a rich flora. A total of 2 nationally scare and 23 dry acid grassland indicator species were recorded from the area examined, and Wigginton (1990) recorded 2 more species. The area has a remarkable collection of inland blown sand communities, including active dunes and should be considered with Risby Warren as part of site of possible international significance.

Northern Countryside Stewardship field
Total species list
Date of survey: 21/5/97

Species	DAFOR
Grasses	
Agrostis capillaris	R
Agrostis stolonifera	O
Aira praecox @	A
Dactylis glomerata	O
Elytrigia repens	R
Festuca rubra	O
Holcus lanatus	O
Poa annua	A
Poa pratensis	F
Vulpia bromoides	R
Vulpia ciliata ambigua * @	R
Other vascular plants	
Anchusa arvensis	F
Anchusa ochroleuca	O
Aphanes inexspectata @	A
Arabidopsis thaliana	F
Arenaria serpyllifolia	F
Capsella bursa-pastoris	R
Cardamine hirsuta	R
Carex arenaria @	O
Cerastium arvense @	R
Cerastium fontanum	R
Cerastium semidecandrum @	F
Cirsium arvense	A
Cirsium vulgare	O
Claytonia perfoliata	O
Erodium cicutarium @	A
Erophila verna	F
Filago minima @	R

Species	DAFOR
Geranium molle	A
Glechoma hederacea	O
Hypochaeris glabra * @	R
Myosotis arvensis	R
Myosotis ramosissima @	A
Pteridium aquilinum	R
Rumex acetosella	O
Rumex obtusifolius	O
Sagina procumbens	A
Senecio jacobaea	A
Silene latifolia	R
Taraxacum sp.	R
Trifolium dubium	O
Urtica dioica	F
Urtica urens	R
Veronica arvensis	A
Vicia sativa nigra	R
Viola arvensis	R
Mosses	
Brachythecium albicans	A
Brachythecium rutabulum	R
Bryum argenteum	F
Ceratodon purpureus	A
Tortula ruralis ruralis	O
Lichens	
Cladonia chlorophea	O
Cladonia foliacea @	R
Cladonia humilis	R
Peltigera didactyla	O

Total number of species = 55
Number of nationally scarce species (*) = 2
Number of acid grassland indicator species (@) = 11

Northern Countryside Stewardship field U1c (early succession form): Quadrat 1 Date of survey: 21/5/97	
Species	**Domin**
Grasses	
Agrostis stolonifera	2
Aira praecox	4
Dactylis glomerata	1
Poa annua	4
Poa pratensis	1
Other vascular plants	
Anchusa arvensis	2
Anchusa ochroleuca	2
Aphanes inexspectata	2
Arabidopsis thaliana	3
Arenaria serpyllifolia	3
Cerastium semidecandrum	3
Cirsium arvense	2
Cirsium vulgare	1
Erodium cicutarium	4
Erophila verna	2
Geranium molle	6
Myosotis ramosissima	3
Rumex acetosella	1
Sagina procumbens	4
Senecio jacobaea	3
Trifolium dubium	2
Veronica arvensis	3
Mosses	
Brachythecium albicans	3
Brachythecium rutabulum	2
Bryum argenteum	2
Ceratodon purpureus	3
Tortula ruralis ruralis	3
Bare soil	6

Total number of species = 27
Quadrat size = $4m^2$
Vegetation height = 0-2cm
Management: heavily rabbit grazed Countryside Stewardship land reverting from arable. Last arable in 1992.

Quadrat placed on fairly typical area of early-succession U1c, near the NE exclusion plot. Some areas have higher levels of perennial weeds. *Rumex acetosella* mainly as seedlings in rabbit grazed areas.

Northern Countryside Stewardship field U1c (early succession form): Quadrat 2 Date of survey: 21/5/97	
Species	**Domin**
Grasses	
Aira praecox	6
Holcus lanatus	2
Poa annua	4
Poa pratensis	2
Vulpia bromoides	2
Other vascular plants	
Aphanes inexspectata	3
Arenaria serpyllifolia	1
Cerastium semidecandrum	3
Erodium cicutarium	3
Erophila verna	1
Filago minima	1
Hypochaeris glabra	2
Myosotis ramosissima	3
Sagina procumbens	6
Senecio jacobaea	3
Veronica arvensis	3
Mosses	
Bryum argenteum	2
Ceratodon purpureus	3
Lichens	
Cladonia chlorophea	1
Bare soil	8

Total number of species = 19
Quadrat size = $4m^2$
Vegetation height = 0-1cm
Management: heavily rabbit grazed Countryside Stewardship land reverting from arable. Last arable in 1992.

Quadrat placed where slight blown sand accumulations are occurring. A very open stand with *Hypochaeris glabra* and *Filago minima* present, a remarkable stand for a site only 5 years old.

9. Kent and Sussex (East): Natural Area 71, Romney Marshes

Dungeness SSSI (TR0518) - non-maritime grassland on shingle - U1a

The SSSI includes extensive areas of acid grassland on stable shingle beaches. It was surveyed by Ferry et al (1990) in the 1980's. As part of the study a classification of the shingle vegetation was produced and related to NVC communities. Quadrat size was generally 2x4m and occasionally 1x4m, with 53 quadrats from types equivalent to U1, with a further 30 from variants of these types. NVC sub-communities identified include U1a (220.9 ha), U1d (54.5 ha) and U1f (33.0 ha). In some cases only general affinities to NVC communities could be identified, for example Type A25 (72.8 ha) (U1) which had no obvious relation to any sub-community of U1. The conditions of very well-drained shingle, and an annual rainfall of less than 800mm, with less than 140 wet days per annum, provides suitable conditions for the development of U1 (Ferry et al 1990).

The U1a sub-community at Dungeness is characterised by *Festuca tenuifolia* replacing *F. ovina* as the constant and sometimes dominant grass. The nationally scarce species, *Silene nutans* occurs in the sub-community as well as a rich bryophyte and lichen flora. The type occurs where disturbance of the shingle surface is absent or very slight and is replaced by variants and other types on more disturbed areas, including a U1d-equivalent type. The area of U1a (over 200 ha) at Dungeness may be the most extensive stand of this sub-community anywhere in Britain. An extract of quadrat data from Ferry et al (1990) is given below, comparing the table for U1a from the NVC (Volume 3) and the U1a found at Dungeness. According to Ferry the site is largely ungrazed by stock but rabbit populations have recovered after massive declines due myxomatosis in the 1950s. Ferry suggests that stock grazing may have been responsible for increasing the mesotrophic component of some of the acid grassland swards.

Dungeness SSSI
Constancy table for U1a
Date of survey - 1980's (Latin names follow those in the NVC).

Species	NVC U1a		Dungeness U1a	
	Constancy	Domin	Constancy	Domin
Festuca ovnia	V	3-9	I	1
Agrostis capillaris	II	2-3	I	1-4
Rumex acetosella	I	1-4	V	1-7
Dicranum scoparium	IV	3-8	V	3-9
Coelocaulon aculeata	IV	3-8	V	1-3
Cladonia arbuscula	IV	2-6		
Polytrichum piliferum	III	2-7		
Cladonia ciliata	III	2-6	V	1-8
Cladonia portentosa	III	2-7	IV	1-5
Cladonia foliacea	III	2-3	III	1-2
Cladonia uncialis	III	2-5	I	1-3
Cladonia furcata	II	2-3	II	1-2
Cladonia squamosa	II	2-3	I	1
Cladonia gracilis	II	2-3	II	1-3
Ptilidum ciliare	II	2-6		
Pohlia nutans	II	1-4		
Cladonia fimbriata	II	3-4		
Cladonia pyxidata	II	3-4		
Campylopus introflexus	I	3-8	I	1-2
Brachythecium albicans	I	4-5		
Holcus lanatus	I	3-4	I	1
Galium saxatile	I	2		

Species	NVC U1a		Dungeness U1a	
	Constancy	Domin	Constancy	Domin
Hieracium pilosella	I	3	II	1-4
Senecio jacobaea	I	2		
Koeleria macrantha	II	3-4		
Hypnum cupressiforme s.l.	II	2-8	I	1-2
Calluna vulgaris	I	2		
Ceratodon purpureus	I	1-2	I	2
Polytrichum juniperinum	II	3-4	II	1-4
Pseudoscleropodium purum	I	5		
Pteridium aquilinum	I	2-3		
Rhytidiadelphus squarrosus	I	2		
Epilobium angustifolium	I	2		
Pleurozium schreberi	I	2		
Aira praecox			IV	1-2
Cerastium fontanum			I	1
Teesdalia nudicaulis			II	1-3
Anthoxanthum odoratum			V	1-4
Hypochoeris radicata			II	1-3
Sedum anglicum			III	1-2
Cuscuta epithymum			III	1-2
Cladonia verticillata			II	1-4
Cladonia floerkeana			I	1
Cytisus scoparius (ground)			I	4-6
Cladonia chlorophaea agg			III	1-3
Hypogymnia physodes			I	1
Festuca tenuifolia			V	1-8
Silene nutans			III	2-4
Teucrium scorodonia			V	1-8
Cladonia rangiformis			I	1-2
Rumex acetosa			III	1-3
Silene vulgaris subsp maritima			II	2-5
Bryum capillare			II	1
Poa compressa			I	1
Vicia hirsuta			I	1
Peltigera polydactyla			I	1
Cladonia polydactyla			I	1

Number of samples	18	19
Number of species per sample	7-20	9-20
Average number of species per sample	14	15

10. Kent: Natural Area 70, Wealden Greensand

Hatch Park SSSI (TR0641) - parkland - U1

Physical Features

The Park lies over freely draining sand, with flushes occurring locally on lower ground. The southern margin is marked by a shallow valley which has been dammed to create four ornamental ponds. There is an old sand pit in the north.

Vegetation Types

The dominant form of acid grassland is U1e, locally tending to U1d, with a fairly closed sward with few lichens and a variable bryophyte cover. Ephemeral species can be frequent where the grassland is rabbit grazed, or where moles are active, or in areas trampled by people. Areas only grazed by deer are quite poor in species. In contrast, in the old sand pit where the thick humus layer found under U1e elsewhere is absent, U1b and U1a (on south facing slopes) have developed and have a richer lower plant flora. The local lichen *Cladonia foliacea* occurs in the U1a type. Quadrat samples were taken from the dominant, more mesic, U1 grasslands (U1c and U1d/e) and the more restricted xeric stands (U1a and U1b). Four quadrats are reproduced below.

Bracken stands (U20) predominate in some places and have a local abundance of woodland species such as *Hyacinthoides*. Elsewhere a few enriched areas to the north grade to MG6b and the wet areas have a variety of communities including M6d, M25b, M23a and MG10b.

The Park has an impressive collection of ancient trees including Oak, Ash and Hornbeam, including many in-cycle pollards to the south. The main pollard orchard was over-run by Rhododendron, which has been cleared recently to produce an early successional form of U1b.

Flora

A total of 114 species were recorded on 29/4/97, of which 57 were found in the acid grassland. A total of 6 acid grassland indicator species were seen, *Aira praecox*, *Aphanes inexpectata*, *Ornithopus perpusillus*, *Cladonia ciliata*, *Cladonia foliacea* and *Coelocaulon aculeatum*. At least two others, *Moenchia erecta* and *Trifolium subterraneum*, have been recorded in the past and a survey in May or early June would probably produce more indicator species.

Management

The Park is still deer grazed. The sward, which rather densely matted in most places, could be improved by some cattle grazing. It is planned to reduced the area of Bracken and this should produce open, good quality, U1 grassland if open bare ground is created as a result.

Hatch Park SSSI
U1d/e: Quadrat 2
Date of survey: 29/4/97

Species	Domin
Grasses	
Agrostis capillaris	8
Aira praecox	2
Anthoxanthum odoratum	4
Festuca rubra	5
Holcus lanatus	1
Other vascular plants	
Achillea millefolium	3
Aphanes inexspectata	3
Carex hirta	2
Galium saxatile	5
Hypericum humifusum	1
Lotus corniculatus	2
Luzula campestris	4
Ornithopus perpusillus	2
Pilosella officinarum	5
Potentilla erecta	2
Rumex acetosella	5
Senecio jacobaea	1
Stellaria graminea	1
Trifolium dubium	2
Veronica arvensis	1
Veronica serpyllifolia	1
Mosses	
Pseudoscleropodium purum	3

Total number of species = 22
Quadrat size = $4m^2$
Vegetation height = 1cm
Management: heavily deer grazed.

A stand of U1 with elements of both U1d and U1e present. Presumably on less stressed soils than the U1a stands.

Hatch Park SSSI
U1e: Quadrat 6
Date of survey: 29/4/97

Species	Domin
Grasses	
Agrostis capillaris	4
Festuca filiformis	6
Holcus lanatus	2
Other vascular plants	
Galium saxatile	6
Luzula campestris	2
Rumex acetosella	4
Mosses	
Ceratodon purpureus	3
Dicranum scoparium	5
Pleurozium schreberi	6
Pseudoscleropodium purum	4

Total number of species = 9
Quadrat size = $4m^2$
Vegetation height = 1cm
Management: heavily deer grazed.

A stand of U1e with a thick springy turf.

Hatch Park SSSI **U1a: Quadrat 4** Date of survey: 29/4/97	
Species	**Domin**
Grasses	
Agrostis capillaris	3
Aira praecox	3
Festuca filiformis	4
Holcus lanatus	2
Other vascular plants	
Rumex acetosella	4
Mosses	
Polytrichum juniperinum	6
Lichens	
Cladonia c. cervicornis	3
Cladonia chlorophea	2
Cladonia ciliata	8
Cladonia coniocraea	3
Cladonia foliacea	2
Cladonia furcata	2
Coelocaulon aculeatum	3

Total number of species = 13
Quadrat size = $4m^2$
Vegetation height = 0-1cm
Management: heavily rabbit & deer grazed.

On south face of sand pit, a lichen dominated sward with *Cladonia ciliata* dominant and *Cladonia foliacea* and *Coelocaulon aculeatum* present. Lacks *Cladonia arbuscula* but best described as U1a.

Hatch Park SSSI **U1b: Quadrat 5** Date of survey: 29/4/97	
Species	**Domin**
Grasses	
Agrostis capillaris	2
Aira praecox	3
Danthonia decumbens	2
Festuca filiformis	5
Holcus lanatus	3
Nardus stricta	1
Other vascular plants	
Rumex acetosella	6
Mosses	
Dicranum scoparium	7
Hypnum jutlandicum	2
Polytrichum juniperinum	5
Lichens	
Cladonia chlorophea	1
Cladonia ciliata	1
Cladonia foliacea	1

Total number of species = 11
Quadrat size = $4m^2$
Vegetation height = 0-1cm
Management: heavily rabbit & deer grazed.

Moss-dominated U1b sward with low lichen cover and *Nardus* and *Danthonia* present. *Galium saxatile* absent.

11. Suffolk: Natural Area 46, Breckland

Lakenheath Warren SSSI (TL7680) - heathland - U2a, SD10b

This site was surveyed by Smith (1996), in August 1995. The relatively late timing of the survey and the effect of drought means that the floristic diversity may have been underestimated, particularly in U1 communities. The site has a wide range of acid grassland and heath communities intermixed with calcareous grassland. Types include U1a, U1b and U1d, H1 (*Calluna vulgaris - Festuca ovina* heath) SD10b and extensive stands of U2a (total of 150.8ha). The site has had varied history of management, including sheep grazing. Long-established trees and scrub suggest low grazing levels at times. Rodwell (1992) suggests that *Deschampsia flexuosa* has recently become locally prominent on Breckland grass heaths. Smith (1996) notes that the grass was particularly prominent in U1, H1 and SD10 at Lakenheath and may have overwhelmed other areas, resulting in the current large areas of U2a. In places these areas contain tussocky *Deschampsia flexuosa* with a reminant lichen carpet, possibly indicating succession from U1a, H1a or SD11a. Possible causes of spread of *Deschampsia flexuosa* are listed as reduction in numbers of rabbits due to myxomatosis, irregular sheep grazing regimes or atmospheric deposition of nitrogen. A constancy table based on 22 quadrats (2x2m) taken from U2a are reproduced below. The community at Lakenheath is described as long, coarse, tussocky grassland dominated by *Deschampsia flexuosa*, with *Festuca ovina*, *Hypnum cupressiforme*, *Pleurozium schreberi* and *Rumex acetosella* the only other constant species. A constancy table from 10 quadrats taken from SD10b is also given below. This community is also coarse and tussocky and is overwhelmingly dominated by *Carex arenaria*. Only *Festuca ovina* and *Holcus lanatus* are constant but their abundance is low. Lichens are very sparse.

Lakenheath Warren SSSI
Constancy table for U2a
Date of survey: 8/95

Species	Frequency	Domin
Deschampsia flexuosa	V	4-10
Festuca ovina	V	2-8
Hypnum cupressiforme	V	2-6
Pleurozium schreberi	IV	2-7
Rumex acetosella	IV	1-3
Agrostis capillaris	III	2-4
Dicranum scoparium	III	2-5
Pseudoscleropodium purum	III	2-6
Carex arenaria	III	2-3
Holcus lanatus	II	1-2
Poa pratensis	II	2
Ceratodon purpureus	II	1-2
Galium saxatile	II	1-3
Rhytidiadelphus squarrosus	II	2-5
Pteridium aquilinum	II	2-8
Galium verum	I	1-3
Polytyrichum juniperinum	I	2-5
Agrostis canina	I	2

Species	Frequency	Domin
Campanula rotundifolia	I	1
Anthoxanthum odoratum	I	2
Urtica dioica	I	1
Calluna vulgaris	I	2
Cladonia arbuscula	I	2
Cirsium vulgare	I	1-2
Juncus squarrosus	I	1
Arrhenatherum elatius	I	1
Veronica chamaedrys	I	1
Hyclomium splendens	I	2
Campylopus introflexus	I	3-5
Polytrichum piliferum	I	2
Teucrium scorodonia	I	1-2
Brachythecium albicans	I	2
Brachythecium rutabulum	I	2
Bare ground	III	1-3

Number of species per sample = 5-18
Average number of species per sample = 8.9
Additional species (DAFOR abundance): *Chamerion angustifolium* R, *Pinus sylvestris* O, *Crataegus monogyna* O, *Cerastium arvense* O, *Calamagrostis epigejos* R

Lakenheath Warren SSSI
Constancy table for SD10b
Date of survey: 8/95

Species	Frequency	Domin
Carex arenaria	V	8-10
Holcus lanatus	IV	2-6
Festuca ovina	IV	2-4
Deschampsia flexuosa	III	2-3
Senecio sylvaticus	III	2-3
Poa pratensis	III	2-3
Brachythecium rutabulum	I	1
Agrostis capillaris	I	2
Anthoxanthum odoratum	I	2
Galium verum	I	1-2
Koeleria macrantha	I	1
Urtica dioica	I	2
Teucrium scorodonia	I	3
Pteridum aquilinum	I	2-5
Luzula campestris	I	2
Arrhenatherum elatius	I	2
Bare ground	I	2

Number of species per sample = 3-8
Average number of species per sample = 5.3
Additional species (DAFOR abundance): *Cirsium arvense* O

12. Sussex (East): Natural Area 74, South Downs

Burnthouse Down West (TQ31) - Clayton to Offham Escarpment SSSI - acid grassland on drift over chalk - U4b

Fragments of acid grassland are occasionally recorded in chalk and limestone areas where there are patches of superficial deposits. The following two quadrats were taken from a site surveyed by Graham Steven and Nicola Muggeridge (Steven and Muggeridge 1992). The 1.8 ha of acid grassland at Burnthouse Down West occurs on the summit of a north-facing scarp face. The scarp face has a species rich complex of calcicolous grassland communities: CG3a, CG3c, CG2b, CG2c, CG3b, CG4b and CG2a (in order of decreasing abundance). The quadrats were identified as U4a using MATCH but the presence of *Holcus lanatus, Achillea millefolium, Cerastium fontanum* and *Dactylis glomerata* and the lack of strongly calcifuge species actually puts them much closer to U4b in phytosociological terms. In the description *Rumex acetosella* is also mentioned as occuring in the community, so U1e is likely to be present in drier areas. The site is lightly grazed by sheep and rabbits.

Burnthouse Down West
U4b: Quadrat data
Surveyed 2/8/91

Species	Domin (Q8)	Domin (Q9)
Grasses		
Agrostis capillaris	3	2
Anthoxanthum odoratum	3	2
Dactylis glomerata		1
Festuca ovina	7	6
Festuca rubra		2
Holcus lanatus	5	4
Koeleria macrantha	1	
Other vascular plants		
Achillea millefolium	4	3
Campanula rotundifolia		3
Centaurea nigra	1	
Cerastium fontanum	2	
Galium saxatile		8
Luzula campestris		4
Plantago lanceolata	5	
Potentilla erecta	5	6
Rumex acetosa	4	3
Mosses		
Pseudoscleropodium purum	2	
Species total	12	12
Quadrat size	$1m^2$	$1m^2$
Vegetation height (cm)	3	3