

5. The importance of beef grazing to SSSI management

5.1 Introduction

5.1.1 In this chapter, we turn our attention to examining the implications for SSSIs of beef grazing. It is important to point out at the outset of this chapter that we experienced some difficulty in obtaining high quality data for this part of the project. The data are presented by way of a series of case studies.

5.2 SSSI study methodology

Initial Approach to EN Teams

5.2.1 The methodological starting point of the project was a general request to all 21 EN Area Teams for information on SSSIs in their region principally dependent upon beef grazing. The aim was to obtain standardised data on SSSIs and beef grazing across all Area Teams as a precursor to later selection of case study sites. It is recognized that this was an administratively convenient approach rather than one which is sensitive to habitat. The information sought from teams was structured according to three main strands of evidence:

i. Characteristics of the SSSI

Teams were asked to identify all Sites known to be dependent on beef grazing by name and to include NNRs in their listings. They were requested to specify Site location and size to assist the identification of Sites for further investigation.

ii. Type of beef system influencing the nature conservation interest and management of the Site.

The aim was to place this information in a two-tier typology of beef grazing regimes. The first tier was to distinguish between Sites directly dependent upon beef cattle and those with more indirect beef enterprise links through grass cuts for hay or silage. A second tier was established to operate within each first tier category to help pinpoint the nature of beef enterprises on Sites. For example, where grazed directly, specific differentiation could be made between: beef animal grazing only; mixed dairy and beef cattle grazing; mixed cattle and other livestock grazing; and grazing by short-term ad hoc mixtures of animals or those where the exact grazing type was questionable. Additionally, teams were asked to note stocking rates of regimes where appropriate.

iii. Classification of SSSI habitat type

Habitat types were derived from the UK Biodiversity Steering Group (1995). Eight habitat types were constructed and teams asked to assign SSSIs to these groupings. They comprised:

- lowland wood pasture and parkland
- acid grassland
- grazing marsh (wet or dry)
- lowland heath
- unimproved neutral grassland (including mire)
- calcareous grassland
- upland heath

The Selection of EN Area Teams

5.2.2 The original tender suggested that we would select from the 21 English Nature team areas an adequate sample to fully represent the key habitats. In the event the selection of Area Teams was based primarily on the quality of information, where received, as well as the range of habitats classified. Teams which made specific requests not to go forward into the more detailed analytical phase were also excluded¹². The 10 selected Teams were clustered, as far as possible, into three geographical areas:

<i>1. West</i>	<i>2. South-east</i>	<i>3. North</i>
<ul style="list-style-type: none">● Dorset	<ul style="list-style-type: none">● Beds, Cambs & Northants	<ul style="list-style-type: none">● Cumbria
<ul style="list-style-type: none">● Somerset & Avon	<ul style="list-style-type: none">● Essex, Herts & London	<ul style="list-style-type: none">● North & East Yorkshire
<ul style="list-style-type: none">● Three Counties	<ul style="list-style-type: none">● Sussex & Surrey	<ul style="list-style-type: none">● North West
		<ul style="list-style-type: none">● Peak District & Derbyshire

5.2.3 Nine out of the ten Regional Teams selected for further analysis responded to requests for co-operation in the project; North and East Yorkshire Team providing no response. This generated a total of 47 case study Sites for detailed investigation. Visits were made to five teams to hold face-to-face interviews with Conservation Officers (COs). In each case, discussions lasted up to 1 hour for each Site under scrutiny. The main advantage was that reference could be made to Site maps, citations and file information (for example, notes about management agreement negotiations). These proved a useful aid to discussion. Open-ended interviews generated a large amount of qualitative data as COs were able to explain the most important issues relevant to each site. Due to time constraints, the remaining four teams were sent a comprehensive list of information requirements and this was followed up with telephone interviews of COs. This was supplemented, where necessary to fill major gaps, by the distribution of a questionnaire to owner occupiers and telephone interviews with farmers about their cattle systems. Overall, it is acknowledged that the survey relies mainly upon CO knowledge and more telephone interviews with farmers might be helpful within the selected team areas.

Selecting the SSSI Case Studies

5.2.4 As already indicated, the data varied considerably in quality and format across the Team Areas. Further, with habitat group being a coarser indicator than expected (many SSSIs fitting into more than one type category or being difficult to classify precisely), a fully independent consistent sampling process could not be devised. The selection of sites in Team Areas proportional to habitat type dependent upon beef grazing was considered as a sensitive modification to the original tender methodology. However, this was not feasible given that full data was unavailable for some Team areas (and some provided pre-structured samples) and the broad classificatory devices used. It was

¹²Non-selected Teams were asked to identify a sample of 6 SSSIs, at their discretion, dependent upon beef grazing. For consistency, these teams were requested to reflect the range of habitats, grazing beef enterprises and characteristics of SSSIs in their areas. The purpose was to have a reserve of SSSIs which could be used as a supplementary source of information to that gathered from the 50 detailed sampled sites. It was envisaged that this would aid further research in other team areas if required at a later stage. No use of this data is made in this report but it is available for further use if required.

decided to choose 5 Sites for investigation from each of the 10 Teams, as originally suggested, based on the advice of Team Managers and Conservation Officers on Sites suitable for detailed study.

Information Sought about Case Study SSSIs

- 5.2.5 An indication of the detailed information to be gathered from each case study SSSI is illustrated by reference to a listing of questions as set out in Figure 5.1. These were asked of Conservation Officers and Land Agents in order to compile a comprehensive profile of each chosen Site. In cases where information was particularly sparse, the information was sought from other sources, including, on occasions, certain occupiers.
- 5.2.6 It is important to point out that resource constraints meant that we were unable to approach farmers directly on all sites. Those farmers who were approached were interviewed by telephone after we had spoken to COs and on the basis of the information supplied to us by the COs. We found, in some instances, that there were significant inconsistencies between the information provided for us by the COs and information given to us by the farmer. Key examples are as follows:
- an SSSI where the CO claimed that there were 3 graziers but the grazier interviewed claimed he was the only one to use the site.
 - a grazier who places dairy stock on the SSSI not beef as the CO specified.
 - a number of farmers on various SSSIs cited by COs as graziers who denied this status.
 - a grazier claiming not to be in receipt of ESA payments when the CO had informed us the farm was subject to an ESA agreement.
- 5.2.7 Such inconsistencies between the accounts of project officers and farmers were not anticipated at the outset of the project. Rather it was felt that additional case study interviews with farmers would serve to add depth and detail to the accounts provided by COs. Thus, it is important to emphasize that the information provided in this chapter on farm systems and numbers of graziers should be treated with appropriate caution. It represents an exploratory analysis and for any one site should be seen as a set of hypotheses which require further exploration along lines indicated in the concluding chapter. It became clear to us towards the end of the project that while COs were usually well aware of the importance of grazing to the management of a particular site, their knowledge of the relevant farming systems and businesses might be weak and/or dated.

Figure 5.1 Guiding questions for SSSI case studies

<p>A. Characteristics of the SSSI</p> <p>i. Full habitat details (where citations not already supplied), including Potentially Damaging Operations (PDO) lists and site management statements if available.</p> <p>ii. Check habitat against classification system being used in the project.</p> <p>iii. Summary of any prioritization of nature conservation interest on SSSI.</p> <p>iv. Estimate of general upper and lower livestock carrying capacity limits of site vis a vis levels of nature conservation interest.</p>						
<p>B. Landholding structures on SSSI</p> <p>i. Number of landowning units occupying the SSSI (whether farms are owned or rented where relevant) together with a sample of names and contacts.</p> <p>ii. Nature of occupiers - private individual owners, tenants, conservation trusts, etc.</p> <p>iii. Known details of each occupier - land ownership, length of time owners or occupiers have farmed on the Site (ie. family tradition); business structure (sole proprietorship, partnership, company etc.).</p> <p>iv. EN relationship with occupier(s) - from constructive / co-operative to difficult.</p>						
<p>C. Beef regime on SSSI</p> <p>i. Type of beef enterprise on the SSSI:</p> <table border="0" style="width: 100%;"> <tr> <td style="vertical-align: top;"> <ul style="list-style-type: none"> ● beef exclusively - suckler or rearing/finishing ● cattle: beef and dairy combinations ● cattle (beef/dairy) and other livestock (noting type) ● grazed but unknown ● hay cut then beef cattle primary grazers </td> <td style="vertical-align: top;"> <ul style="list-style-type: none"> ● hay cut, then beef subsidiary grazers ● grazing: hay or feed crops ● hay for beef only ● hay for beef/dairy ● hay for cattle and other livestock ● hay unknown ● other </td> </tr> </table> <p>ii. Type of beef system - whether the enterprises identified above form part of the following beef systems:</p> <table border="0" style="width: 100%;"> <tr> <td style="vertical-align: top;"> <ul style="list-style-type: none"> ● suckler systems within LFA ● suckler systems outside LFA ● semi-intensive beef systems ● without a suckler herd (eg store beef, 18 month and 24 month beef) </td> <td style="vertical-align: top;"> <ul style="list-style-type: none"> ● intensive beef systems without a suckler herd (eg veal, barley beef and silage beef) </td> </tr> </table> <p>iii. Importance of cattle enterprises to nature conservation interest of SSSI:</p> <table border="0" style="width: 100%;"> <tr> <td style="vertical-align: top;"> <ul style="list-style-type: none"> ● extent of beef enterprise on SSSI (actual hectarage grazed on farm of compared with overall farm size and area within the SSSI; % area of SSSI grazed with beef) ● frequency of grazing (including seasonality patterns) </td> <td style="vertical-align: top;"> <ul style="list-style-type: none"> ● numbers of grazing animals (stocking densities / scale enterprise) ● advantages and disadvantages of beef versus sheep for continued conservation importance of the site ● types (breeds) of beef animals, where of specific relevance </td> </tr> </table> <p>iv. Establish whether the overall impact is positive, negative or neutral.</p>	<ul style="list-style-type: none"> ● beef exclusively - suckler or rearing/finishing ● cattle: beef and dairy combinations ● cattle (beef/dairy) and other livestock (noting type) ● grazed but unknown ● hay cut then beef cattle primary grazers 	<ul style="list-style-type: none"> ● hay cut, then beef subsidiary grazers ● grazing: hay or feed crops ● hay for beef only ● hay for beef/dairy ● hay for cattle and other livestock ● hay unknown ● other 	<ul style="list-style-type: none"> ● suckler systems within LFA ● suckler systems outside LFA ● semi-intensive beef systems ● without a suckler herd (eg store beef, 18 month and 24 month beef) 	<ul style="list-style-type: none"> ● intensive beef systems without a suckler herd (eg veal, barley beef and silage beef) 	<ul style="list-style-type: none"> ● extent of beef enterprise on SSSI (actual hectarage grazed on farm of compared with overall farm size and area within the SSSI; % area of SSSI grazed with beef) ● frequency of grazing (including seasonality patterns) 	<ul style="list-style-type: none"> ● numbers of grazing animals (stocking densities / scale enterprise) ● advantages and disadvantages of beef versus sheep for continued conservation importance of the site ● types (breeds) of beef animals, where of specific relevance
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<p>D. Management practices</p> <p>i. How far does the keeping of beef on the site represent part of a traditional management system for the farm covering the SSSI (for example, have beef cattle appeared since notification (or re-notification if originally recognized under the 1949 Act))?</p> <p>ii. Is grazing with beef cattle (or any variant identified above) part of the occupier's PDO list, consent notice or management agreement for the site?</p> <p>iii. What is the extent of muck-spreading on the SSSI, paying particular attention to this if the source is an intensive beef-rearing system? What is the level of fertilizer, pesticide and other chemical (such as veterinary products) usage?</p> <p>iv. Do owner occupiers claim any extensification premiums on their holdings which cover the SSSI (or part of it)?</p> <p>v. Whether any occupiers have additional beef animals on their holdings for which they do not claim premiums [unlikely, to be known by COs, but worth asking].</p> <p>vi. Conservation status of owner occupier (for example, whether participating in any other conservation scheme, or whether they have management agreements with EN or have entered the Wildlife Enhancement Scheme).</p>
<p>E. Change in the SSSI</p> <p>i. Site history - any record of damage on the site (whether short or long-term) and the agent(s) of change. What is the assessment of risk - is the Site under threat.</p> <p>ii. Current directions of change in the nature conservation interest of the SSSI site (if any), be they human-induced or natural.</p> <p>iii. Grazing trends on the SSSI over the last 5 years and note of any impacts.</p> <p>iv. Are grazing beef cattle causing any specific changes in the SSSI?</p> <p>v. Can any influences of agri-environmental initiatives generally be observed on the SSSI?</p> <p>vi. Are there any noticeable effects of extensification specifically on the SSSI?</p> <p>vii. Are any short-term influences of overstocking due to delays in the BSE cull evident on SSSIs?</p> <p>viii. Has the BSE crisis caused any longer term changes in land management likely to be problematic to the continued environmental interest in the SSSI?</p>

5.3 Information obtained on beef and SSSIs in England

5.3.1 The response of Area Teams proved to be uneven. Only a very small number of teams were able to provide as detailed information as sought. In some cases very little information was forthcoming from initial enquiries. The information ranged from simple 'tick lists' of named SSSIs where beef grazing is evident, to comprehensive packages of site citations, grazing histories, recent developments and addresses of occupiers. Several teams experienced basic difficulty in the identification of sites principally dependent upon beef grazing for their nature conservation interest. Specific requests were also made by some to exclude them from the more intensive stages of SSSI analysis. Collectively, the data were too inconsistent to construct the anticipated comprehensive database of beef-grazed SSSIs.

5.3.2 An evaluation of information obtained is possible using three strands:

i. Characteristics of the SSSI

Basic data on the number of SSSIs reliant upon beef grazing proved problematic to compile. Table 5.1 records the quantity of SSSIs where beef are important divided according to Area Team and habitat type, where such data are available (see iii below). Numbers of relevant

sites in each Team area vary dramatically, from just 6 identified in Suffolk to 270 in Northumbria. Indeed, in part this helps to explain the different responses of Teams to the initial request for information. In general, there is a northern and western bias to relevant Sites, reflecting the basic agricultural geography of England. Physical suitability to grass systems of production in the west and north is an obvious reason for the differences observed. However, it is vital to appreciate that this has been reinforced and modified over time by government policies in the agrarian sector. These have favoured a westwards spread of cereal crops into the mixed farming areas of Middle England, aided by technological developments. The CAP regime, prior to 1992 and to some extent since, has accelerated this trend towards intensive and specialized cereal production in non-traditional areas.

The lack of basic data on SSSIs and beef appears disappointing. For example, from Table 5.1, it is not possible to express the percentage of SSSIs dependent upon beef grazing as a proportion of all Sites in a Team's region. However, the use of such factual information is of questionable value. A beef SSSI percentage calculation may appear desirable at first, but SSSIs recorded by Teams varied from 0.5 hectares to 29,000 hectares in size. Hence, the size variation is such that any calculation of this nature would clearly be misleading. Discussions with Conservation Officers in several Area Teams confirmed that reporting on this basis would be unsatisfactory. The general significance of beef grazing to nature conservation through the SSSI system is therefore difficult to ascertain with precision at this stage of the research.

ii. Type of beef system

The ability to identify the beef system currently operating on SSSIs varied not only between Teams, but also within them, reflecting differences in the knowledge of Conservation Officers and Land Agents about beef enterprises. Where information was supplied, the type of beef grazing regime could be easily assigned to groups within the devised typology. However, it is apparent that the larger the SSSI, the less directly nature conservation welfare within the Site can be attributed to beef grazing. In particular, many extensive grazing marsh SSSIs had only a fraction of their area stocked with beef animals. Two further observations can be made concerning this strand of inquiry. First, many Teams referred to the seasonality of grazing observed on their Sites. Particular note was made of such characteristics as a further aid to choosing Sites for detailed investigation. Secondly, very few Teams were able to supply definitive stocking density statistics for each Site. Consequently, rather than rely upon guesswork and approximations for the exact form of beef grazing on Sites, it is intended to proceed directly to the case study phase and pay special attention to the precise form of beef systems in operation using the 50 selected SSSIs as representative examples.

iii. Classification of SSSI habitat type

The habitat types provided to Teams served as broad indicators of nature conservation interest in SSSIs and acted as guidelines to choosing Sites for further investigation. Table 5.1 outlines the numbers of SSSIs in each habitat type, where the information is available. It is important to note that there are certain drawbacks with assigning SSSIs to habitat types in this way:

- The nature conservation interest in sites is often multi-faceted, so that one site can be recorded under more than one heading. The categories are not mutually exclusive, and up to four habitats in one SSSI could be identified.
- Interpretation of each category is subjective. For example, 'peaty wet pasture' could be assigned legitimately to several habitat categories. Some Teams gave pre-

classified habitat data, whereas many Sites had to be classified subsequently on the basis of the (variable quality) descriptions provided.

- Certain categories are more specific than others and will inevitably have fewer sites assigned to them. For example, 'lowland wood pastures and parkland' is far more limited than 'grazing marsh'.
- Lowland Teams generally found that it was easier to differentiate between sites using this habitat classification than upland Teams. For example, a distinction is made between 'lowland heath' and 'lowland wood pasture', yet there is no upland equivalent.

5.3.3 Despite the drawbacks, this strand of information does permit a cross-section of sites to be drawn for detailed investigation, especially when used in conjunction with the Site characteristic and beef system data.

5.3.4 It is inevitable that the quality of data on Sites varies considerably from purely anecdotal evidence to specific and recent information used to compile comprehensive management strategies. In particular, it has emerged that, due to limitations in available data, the analysis of wider farm systems, of which SSSIs are a part, is sketchy. Nevertheless, the methods employed do permit an exploratory analysis of data to establish the relationship between beef grazing and the conservation of SSSIs.

Table 5.1 Case Studies by Habitat Type¹³

	Case study SSSI	Habitat	Team	Size (ha)
1	Blackwater Estuary	coastal grazing marsh	EHL	5,737.0
2	Christchurch Harbour	coastal grazing marsh	Dor	353.2
3	Foulness	coastal grazing marsh	EHL	10,702.0
4	Lune Estuary	coastal grazing marsh	NW	6,978.0
5	Upper Solway Flats & Marshes	coastal grazing marsh	Cum	29,951.0
6	Pevensey Levels	coastal grazing marsh	S&S	3,501.0
7	Southlake Moor	grazing marsh	S&A	196.1
8	Lewes Brooks	wet grassland / marsh	S&S	333.0
9	Mercaston Marsh & Mugginton Bottoms	wet grassland / marsh	PD	14.0
10	Woolcombe	marshy grassland and fen	Dor	18.8
11	Martin Mere	wet grassland / marsh	NW	119.3
12	Ouse Washes	wet grassland	BCN	2,403.0
13	Nene Washes	wet grassland	BCN	1,310.0
14	Heysham Moss	lowland raised bog	NW	12.9
15	Leek Moors	upland moor / acidic grassland	PD	3,785.0
16	Geltsdale & Glendue Fells	upland moor / woodland	Cum	19,686.0
17	North Exmoor	upland heath	S&A	12,022.0
18	Hartland Moor	lowland heath	Dor	299.9

¹³For further details of the sites see the inventory in Appendix 1.

	Case study SSSI	Habitat	Team	Size (ha)
19	Kings & Bakers Woods & Heaths	acid grassland/ lowland heath	BCN	212.8
20	Brotherswater	acid grassland	Cum	34.1
21	Mapperton & Poorton Vales	acid grassland	Dor	85.6
22	Wavendon Heath Ponds	acid grassland	BCN	4.9
23	Ashleworth Ham	neutral grassland	3C	104.7
24	Charleshill	neutral grassland	S&S	10.3
25	Deadman	neutral grassland	S&A	28.7
26	Lord's Wood Meadows	neutral grassland	3C	6.7
27	Moss Valley	neutral grassland	PD	25.9
28	Plumpton Pasture	neutral grassland	BCN	3.8
29	Robert Hall Moor	neutral grassland	NW	18.8
30	Rookery Cottage Meadows	neutral grassland	3C	5.7
31	Wadenhoe Marsh & Achurch Meadow	neutral grassland	BCN	47.4
32	Woodchester Park	semi-improved grassland	3C	214.9
33	Rose End Meadows	neutral / calcareous grassland	PD	48.5
34	St. Catherine's Valley	neutral / calcareous grassland	S&A	170.6
35	Arnside Knott	calcareous grassland	Cum	166.1
36	Axbridge and Fry's Hill	calcareous grassland	S&A	78.7
37	Castle Hill	calcareous grassland	S&S	113.5
38	Crosby Gill	calcareous grassland	Cum	120.0
39	Giant Hill	calcareous grassland	Dor	103.7
40	Lewes Downs	calcareous grassland	S&S	149.8
41	Minchinhampton Common	calcareous grassland	3C	182.1
42	Oddy Hill & Tring Park	calcareous grassland	EHL	35.6
43	Rodborough Common	calcareous grassland	3C	116.7
44	Snailwell Meadows	calcareous grassland	BCN	14.7
45	Soham Wet Horse Fen	calcareous grassland	BCN	32.9
46	Topley Pike & Deepdale	calcareous grassland	PD	66.7
47	Warton Crag	calcareous grassland	NW	73.0

5.4 Case studies of beef-conservation relationships

5.4.1 This section utilises Table 5.1 to analyse case study Sites, collated broadly according to habitat type. A description of each Site is presented which emphasises the link between the nature conservation interest and grazing regimes rather than summarising the conservation value *per se*. For the latter, reference can be made to the detailed nature conservation description provided by each Site citation. Following the individual site-based analysis, an evaluation of the major common characteristics and issues emerging from the case studies is given at the end of each habitat section. It is important to note that in order to safeguard confidentiality, no individual private landowner or occupier is identified at any site. In some habitat sections, where additional farmer interviews have been undertaken, we present boxed case-studies and in these cases the individual SSSIs are not identified. It was considered vital that the project did not jeopardise relationships built up between EN and owner-occupiers. However, land owned or managed by institutions and trusts of various descriptions has been revealed as appropriate.

5.4.2 Coastal grazing marshes

1. *Blackwater Estuary*

The Blackwater Estuary SSSI provides a complex of mud flats and saltmarsh frequented by large populations of wildfowl and wading birds. The RSPB, National Trust and Essex Wildlife Trust dominate the landownership and management of the area. Increasing numbers of Brent geese in particular and a decline in grazing marsh in the 1970s resulted in geese shifting to feed on improved pastures and arable fields landward of the sea wall. To help ease growing conflict with the commercial activities of farmers, areas of improved pasture are now managed for geese. One example of this practice is at Old Hall Marshes, in the north east of the SSSI.

Old Hall Marshes has been in sole ownership of the RSPB since 1984 and is managed as a farm / nature reserve. Grazing is rented to one cattle and two sheep graziers and includes 264 ha of grazing marsh and 70 ha of improved fields. All areas of the reserve are grazed by a combination of cattle and sheep. Suckler cows are employed on the marshes through a summer grazing licence, to be followed by sheep in autumn and winter. The improved fields are grazed briefly in May and June, mainly by sheep. A hay cut is taken from 7 ha of improved fields to provide winter sheep feed.

The saltmarsh areas have been grazed in this way more or less continuously since their reclamation in the 17th Century. Hence, continuity is regarded by RSPB as vital to maintaining the conservation interest of the reserve. Sheep could be increased to provide general grazing coverage, but would not be able to cope with 'rank' vegetation. Cattle will always be required at this reserve to ensure its condition. The importance of consistency of grazing has meant that the BSE crisis has not had an influence on the reserve. With cattle being used directly as a management tool through licences, some sheltering from short term economic vagaries of the beef market is in operation. However, it must be remembered that the availability of suitable graziers may be reduced in the medium term, necessitating a switch to the more expensive option of resident herds. This said, the operation of the Essex Coast ESA does offer individual farmers and organisations more financial scope to continue with their beef enterprises.

2. *Christchurch Harbour*

This Site provides a mixture of nature conservation interest dominated by saltmarsh and wet meadows, but with dry heath, sand dune and geological interest. Birds and invertebrates are well-represented. There are over 20 landholding units in the SSSI, although many are of

insignificant size comprising small pieces of land around the edges (including some residential property back gardens!). Bournemouth Borough Council (BBC) and Christchurch Borough Council (CBC) are significant owner-occupiers, as is the West Hampshire Water Company.

Cattle have traditionally grazed the marsh extensively and poached wet grassland to the benefit of bird and plant interest. On the BBC land (27.5 ha), between 16 and 20 Black Galloway cattle graze together with 3 horses. In any year, one third of the herd are bought in as stores to replace the third finished at around 36 months. The BSE 30 month cull reduced the stocking rate in 1996 as several animals exceeded this age. Financially, no loss was experienced as compensation rates were greater than the value of these small beef cattle. Nevertheless, it should be appreciated that the BBC have no need to run the herd commercially. One problem concerns obtaining replacement animals, so the possibility of introducing Belted Galloway cattle (a minority rare breed) is being explored. Cattle are removed from the marsh area in winter and relocated to 10 ha of improved pasture within the SSSI (notified as a refuge for passage birds). Cattle are fed during their stay on this pasture. The grazing marsh has been entered into Countryside Stewardship, but this merely provides a 'bonus' for grazing practices already undertaken in the area.

Cattle represent an ideal management tool in this locality, although CBC use a greater number of ponies in conjunction with cattle than BBC. The BBC part of the Site now benefits generally from a lower stocking density established in 1992, with cattle reduced by one third and horses to 10% of their previous total. It is clear that the conservation interest of the site will suffer in the absence of cattle grazing. Galloways have been purposely selected to withstand the exposed conditions experienced at this site. Sheep are less attractive for this reason. Further, this is a popular recreational area. In 1994, there were an estimated 84,000 visits so that dog worrying and contamination render sheep a practically unviable option.

3. *Foulness*

Foulness SSSI is a nationally important feeding ground for waders and wildfowl, supporting amongst others breeding colonies of terns and avocets. There are 10 owner-occupiers actively involved in the management of Foulness, with the majority of the area owned by the Ministry of Defence (MOD). Grazing with cattle occurs over 5 discrete blocks covering 280 ha, three of which are let out to tenants by the MOD. A diverse range of beef systems are represented, including suckler, rearing and finishing systems, aftermath grazing, and hay cuts for beef and other stock. Enterprises vary in scale from 15 to 300 grazing head. The Site lies within the Essex Coast ESA.

Cattle are grazed from April to October to avoid wet conditions, and lighter grazing is advised from March to July to prevent disturbance of breeding waders. Cattle have the particular advantage of creating tussocks, through their grazing action and movement, which are favoured by breeding waders. Sheep are also grazed at present. A significant event at this Site was the recent loss of the biggest grazier in the SSSI at one of the MOD blocks. This was a combination of the stage in the family business life cycle (with the entry into the business of a daughter interested only in cereals) and the BSE crisis which has made beef less profitable. A new grazier has since been secured for the site, although he lives 30 miles away across the estuary and has to engage another local farmer to check the stock. The new grazier has store cattle on the Site and is about to enter the Essex Coast ESA scheme.

4. *Lune Estuary*

The Lune Estuary SSSI is an important site for waders and wildfowl. It is characterized by a mixed cattle and sheep grazing regime. It represents a transition between the predominantly cattle grazed Ribble Estuary to the south and the sheep dominated marshes of Morecambe Bay to the north. The specific advantage of cattle grazing is that it produces a sward of differential height which provides nesting opportunities and cover for waders such as redshank. In contrast, grazing by sheep produces a 'billiard table' by reducing swards to a short and uniform height of little use to birds.

The site suffered greatly in the early 1980s from a marsh reclamation programme, just prior to the introduction of the Wildlife and Countryside Act. Hence, marsh habitat is now largely confined to a small strip of land seaward of a defensive wall. Pasture behind the sea wall has been improved primarily for sheep grazing. A more recent element of change has been a shift in the grazing balance towards more sheep, in evidence prior to the BSE announcements of March 1996. A particular management problem is the lack of marsh grazing control which can be exerted throughout the area. For example, fencing is seldom effective due to the tidal influence.

There is a complex owner-occupation structure to the Site, with at least 7 distinct grazing units apparent.

- i. Cockerham - this unit is grazed by a mixture of cattle and sheep from April to October. It has a tendency to be overgrazed and would benefit from fewer sheep.
- ii. Glasson - a mixture of cattle and sheep are grazed here by two farmers. A total of 125 cattle are summer grazed following over wintering off-farm. The small sizes of the farm businesses involved creates pressure to graze the marsh.
- iii. South Stodday - cattle formerly rough grazed this unit, but they have recently been removed and replaced by sheep. The reasons for change are unknown.
- iv. Aidcliffe - the unit was ungrazed for many years until a management plan was produced in 1991. This specifies cattle grazing at 1 beast / hectare, but finding available cattle has been problematic. Sheep were originally used as an emergency substitute, but were increased on the site to such an extent that redshank failed to nest from 1995. A reduction in sheep has been arranged, but this will still fail to produce a tufted sward.
- v. Heaton - a complicated unit grazed with beef, dairy and sheep by individual farmers and commoners. Animals are mainly put on to the marshes in summer, but rights to graze are frequently not exercised. Some who do exercise their common rights choose to graze dairy cows only.
- vi. Trailholme - grazed by a farmer who lives away from the locality. About 70 hardy beef cattle are simply left to over winter here.
- vii. Middleton - summer grazed by a dairy farmer with a subsidiary beef enterprise. Depending on tides, about 50 animals are grazed.

In general, the Lune Estuary suffers from a dualistic problem of overgrazing and a lack of grazing attention from the owner-occupiers. Thus, some farmers are keen to stock the marshes to provide an 'early bite' for livestock in spring. This provides relief from winter feeding whilst giving an opportunity for grass growth on improved farm pastures. It also

means that adoption of Countryside Stewardship, which would restrict grazing opportunity at springtime, is less attractive to these farmers. However, other farmers are no longer exercising their rights to graze, often because they have specialized their production on sheep or dairying, become 'part-time' or moved out of farming.

5. *Upper Solway Flats and Marshes*

The Upper Solway SSSI is the third largest continuous inter tidal grazing marsh in Britain (after Morecambe Bay and the Wash). It has been designated mainly for its bird interest (breeding and over wintering wildfowl and waders), although pioneer saltmarsh species and natterjack toad colonies are also of note.

The Site is grazed throughout by cattle and sheep. Cattle provide a grass sward / reed mosaic beneficial to breeding birds. Lack of grazing would result in the area becoming more 'rank' with *Juncus* spp. and reduce species diversity. Substitution with sheep would result in shorter turf and be less suitable for over wintering geese and nesting waders. There are approximately 50 owner-occupiers involved, but most grazing comes under the auspices of a 'Marsh Committee'. The Committee is an elected group of marsh owners which oversees the annual letting and selling of particular sections of marsh known as 'stints'. Farmers typically operate small holdings and so rely on stints to provide summer (May to September) grazing. The Committee also helps to co-ordinate land management (such as fencing) and handling of cattle just outside the marsh boundaries.

Cattle which graze the stints come predominantly from beef suckler herds, and the Marsh Committee has a key influence in maintaining the stability of the grazing regime found in this locality. The Committee is keen on traditional management and this is reflected in the fact that about 98% of the English portion of the Upper Solway Site has been entered into Countryside Stewardship. The combined effect has been to reduce the current threat of marsh reclamation for agriculture.

Synopsis of coastal grazing marshes

- Cattle grazing is essential to establishing the correct conditions to support breeding birds. This is by virtue of an ability to produce swards of different heights and footprint hollows, both of which assist roosting and nesting.
- Sheep grazing prevents incursion by rank vegetation and allows pasture to survive, but the grass sward is too uniform to provide cover for breeding birds. There is also an element of 'competition' with geese. Further, potential conflicts with the recreational use of certain Sites are evident, as illustrated at Christchurch Harbour.
- Ownership or management of coastal grazing marshes by wildlife trusts of various descriptions is no guarantee of the future survival of a marsh. This is because trusts depend upon licensing and letting arrangements with graziers. Many graziers are local farmers who may choose to move out of beef and no longer require grass for cattle. This has already occurred at Foulness SSSI as a direct consequence of the BSE crisis.
- Graziers may be available at further distances, but questions arise surrounding the ability to supervise appropriate cattle grazing in specific localities and the sustainability of systems involving movement of animals over long distances.
- Prior to the BSE crisis, agri-environmental policies such as ESAs and Countryside Stewardship acted as 'holding mechanisms' for beef enterprises in coastal grazing marshes.

Specific aid for beef grazing as an integral part of these schemes now seems necessary to relieve the additional pressure created by the crisis.

- The exposed conditions experienced at the coastal marsh Sites makes hardy beef breeds most suitable for grazing, yet these breeds are effectively discriminated against by the 30 month ruling on beef entering the human food chain. Many hardy breeds take longer than this to mature and provide full economic benefits to the farmer. A government review of this situation is necessary.

Coastal Grazing Marsh - Farmer Case Study

Mr. H. is a dairy farmer with a subsidiary beef herd on a 77 hectare farm on a coastal grazing marsh. He has approximately 20 beef cattle and 30 young dairy stock (Herefords, Aberdeen Angus, Limousins and Charolais) grazing the marsh between the end of May until November. The stocking rate is less than 1 beast per hectare. There have been some changes to the beef enterprise in the last year. He considered his beef production as important to the farm business until the BSE crisis, but since then has reacted by buying in more milk quotas to try to compensate for the effects of the BSE crisis. Moreover, he now has to feed extra supplements to finish his beef cattle sooner as a result of the 30 month rule. Thus, during the last year, he had to get rid of his Friesian bull calves which grazed the estuary, a combined result of the BSE crisis and the fact that SSSI grazing could not fatten the beasts quickly enough. However dairy followers have replaced these beef animals so there is no immediate risk of diminished grazing on the marsh. However, Mr H's experience does raise questions over the commercial suitability of some beef breeds for conservation grazing, especially given the 30 month rule. Mr. H is not considering increasing his beef enterprise in the near future and will not do so unless there is some indication of a return to the old beef production system pre-March 1996.

5.4.3 Wet grassland / marsh

6. *Pevensy Levels*

This Site is a series of low-lying grazing meadows containing important communities of wetland (ditch) flora, invertebrates and wintering lapwing. There are 140 occupation units, although the Levels are dominated by owner occupiers who run 'traditional' dairying and beef family farm businesses on permanent pasture. Indeed, an important characteristic is the presence of large extended family interests in farming on Pevensy. A significant proportion of owned land is let annually using grazing licences as a business arrangement between family members. Other interests include two private landholding estates, the Sussex Wildlife Trust and a golf club.

Given the family nature of agriculture in this locality, many farmers have been involved since the war with extensive suckler and store beef (about 22 months finished), in conjunction with limited arable cropping and some sheep. However, a trend towards greater sheep numbers is becoming discernible. A pump drainage scheme introduced in the 1960s and recent low rainfall has made sheep rearing progressively easier as the land dries out. The BSE crisis is likely to increase the attractiveness of sheep. A switch in this direction away from cattle does not cause a problem for site management in itself. Instead, the increase in sheep is merely symptomatic of broader factors which have favoured a shift in farm enterprise types. In this case, the decline in recorded bird numbers and losses of aquatic flora cannot be associated solely with the beef regime.

7. *Southlake Moor*

Southlake Moor SSSI consists of a mixture of grazing marsh and unimproved neutral grassland as part of the Somerset Levels and Moors locality. Most of the Site is under

permanent pasture so that botanically rich grassland forms the major conservation interest. There is a highly complex landownership pattern, there being 19 landholding units on the Site, including 64.4 ha owned by EN. All other owner-occupiers operate traditional medium scale family farm businesses utilising land outside the SSSI. Four of them graze the EN land, either under grazing licence or with a 10 year tenancy agreement to encourage entry into the Somerset Levels and Moors ESA.

Dairying is the dominant farming system, with beef grazing very much a by-product of this activity. The emphasis is on dairy herds and dairy followers, with just a few animals finished from the dairy offspring. The SSSI land is traditionally aftermath grazed following a hay cut, or a silage cut for those farmers not participating in the ESA scheme. However, for many farmers, the frequency and intensity of grazing in the SSSI depends upon the level of entry into the 3-tiered ESA scheme. Some farmers have additional WES agreements which provide 'top-up' payments for observing additional restrictions on management.

It is apparent that the ESA has complicated patterns of farming and conservation practice in an already complex area. For example, the ESA pays farmers to raise water levels on grassland in winter and spring in an attempt to encourage breeding and wintering birds and aquatic flora and fauna in ditches (rhynes). However, this is at the expense of other grassland flora. It also exacerbates problems associated with cattle poaching land, despite firm controls on overgrazing in the ESA management prescriptions. Undergrazing has similar safeguards, although it should be noted that the sheep grazing option is becoming progressively less satisfactory as wetness increases. Grazing with dairy cattle offspring rather than recognized beef breeds causes difficulties with the control of unpalatable grasses and rushes. Changes in the beef markets have had little influence on farmers in Southlake Moor as the price received for milk has not been affected by events associated with the BSE crisis. In fact, government compensation available to discourage and remove dairy-derived beef animals from the human food chain will have generally benefited farmers in the locality.

8. *Lewes Brooks*

This Site is located on the Ouse flood plain and its network of brooks and ditches supports a wide diversity of invertebrates, especially water beetles. Ditch banks support some flora of importance in amongst an area of improved pastures. Indeed, the area once had a richer diversity of grassland than at present. Prior to notification in 1988, pump drainage schemes made the Site drier and encouraged farmers to plough and fertilize. There are four major occupation units on this SSSI, all with owner-occupiers running family farm businesses.

The traditional farming system of this locality was the rearing of beef cattle, but there has been considerable movement away from this enterprise towards dairying and sheep in recent times. Indeed, only one of the four occupiers now raises beef cattle as extensive stores to finish. With drier conditions, sheep grazing would be a fully acceptable alternative, especially as the main conservation interest lies in the ditch complexes. A general reduction in grazing in the locality occurred up until the mid-1990s, but this trend has stabilised. In fact, there has been a marginal increase in grazing outside the SSSI as some farmers have returned arable fields to pasture. Further research is needed to ascertain the reasons for such action, although one possible influence is the South Downs ESA scheme which is available in this area. Nevertheless, in most cases, payment levels have been insufficient to attract farmers into the grassland reversion tier of the scheme.

9. *Mercaston Marsh & Mugginton Bottoms*

This two-part Derbyshire SSSI is a lowland wetland mosaic of marshy grassland, valley mire and tall fen and swamp formed on poorly draining soils. Mugginton Bottoms is marginally more acidic than Mercaston Marsh. Both are important for wintering and breeding snipe and a variety of nationally rare beetles.

Mugginton Bottoms is grazed by a single owner-occupier who farms part-time in association with another income-earning occupation. The farmer grows arable crops on the surrounding free-draining pastures, but has an interest in rare livestock breeds (Hebridean sheep and Longhorn cattle). The SSSI fields are too wet for sheep, so it is the Longhorns which are used to graze the Bottoms. However, the adjacent area has recently been entered into Countryside Stewardship which should encourage integrated grazing. The herd consists of 16 cattle which graze the Site for most of the year except early summer. The Longhorns, despite being a little on the heavy side, are able to tackle coarse vegetation easily on the Site so that it is grazed well. Apart from fulfilling nature conservation objectives in a highly advantageous way, the rare breeds are commercially profitable. The cattle are sold to a butcher for a premium price and craft products are made from the Hebridean wool.

Mercaston Marsh comprises four pastures grazed by two owner-occupiers. The farmer at Mugginton Bottoms has rented two pastures since 1995. They were 'derelict' and in need of grazing, so Longhorn Cattle were introduced. They were able to cope well and the pastures are now used to house weaned replacement heifers. The remainder of the site is grazed under agreement by a dairy farmer with a mixture of dairy heifers and beef cattle derived from dairy stock. However, the result is much less satisfactory than that produced by the Longhorns and is dependent upon weather conditions and dryness of the marsh.

Both parts of the SSSI clearly depend upon cattle grazing for maintenance of their conservation interest. In particular, the open habitat currently created is required for snipe to breed. Grazing by dairy animals is generally unsatisfactory for the long-term conservation of this Site. In the absence of beef animals, the Site would revert to woodland. Vulnerability to changes in farming practice is evident. Further, the need to match specific breed types to Site conditions is indicated. At present, this largely depends upon preferences and enthusiasm of individual farmers.

10. *Woolcombe*

The Woolcombe SSSI is a valley bottom fen grassland and also includes an area of wet woodland. There is a rich diversity of vegetation and invertebrate interest in this nationally important mire. There are three landholding units, only one of which covers nine hectares of grazing (the others comprise exclusively woodland). At present, the farmer is in the process of building up a herd of rare breed cattle (British White). The number of beasts stands at 28, although they graze the entire holding of improved and semi-improved grass. The intention is to sell heifers for breeding in the future.

The SSSI is grazed from April to October and sometimes through to December. The wetness of the area can dictate that cattle remain on the site for only a few days at a time. This also helps to ensure that the sward height is not reduced to below an average of 10cm. Cattle are vital in maintaining the nature conservation interest of this Site. They can reduce the fen sward height, which can reach over a metre, efficiently and their trampling creates wet hollows needed by invertebrates. The breed of cattle are especially suitable as they tackle vegetation many other breeds would not, including willow and alder suckers. The increased grazing of the site with a suitable breed has reduced scrub and has contributed to an improvement in the quality of the Site. This has been temporarily threatened by the BSE

crisis as several animals had to be removed and culled. However, the longer-term plans of the farmer remain unaltered.

11. *Martin Mere*

Martin Mere SSSI was acquired as a Wildfowl and Wetlands Trust Reserve in 1974. It is renowned for the large populations of over wintering wildfowl and breeding waders it supports. The area is wet pasture derived from a glacial lake drained in the 18th Century. It provides a grassland refuge amongst a surrounding dominance of arable cultivation.

The Wildfowl and Wetlands Trust arranges grazing with local farmers rather than keeping a resident flock or herd. The Site is now lightly grazed following previous periods in which no grazing occurred and where overgrazing by sheep, including supplementary feeding, drastically reduced sward height and disuniformity. Cattle and sheep are used on the Site in spring and autumn, but avoiding the breeding period between April and June. Grazing regimes are manipulated across the site, although sheep graziers are easier to obtain. In fact, there has been reliance on one cattle grazier who is considering withdrawal from a beef enterprise. If this happens and the Trust wishes to maintain the tufted swards which have been created by cattle grazing on the Site, it will either be forced to search beyond the immediate locality for a suitable grazier or establish a resident herd at considerable extra cost.

12. *Ouse Washes*

The Ouse Washes SSSI, the largest SSSI in Cambridgeshire¹⁴, is an area of wet grassland between the Old Bedford River and Hundred Foot River. The area plays a crucial role in the land drainage system of the Bedford Levels, acting as a winter flood water storage area. Traditionally, this long and narrow washland has been maintained by a combination of cattle grazing and hay cutting. Some areas are unmanaged, providing a mosaic of swards for various birds which represent the main conservation interest associated with the Site. It is effectively a relic of the Bedford Levels prior to drainage by Vermuyden in the 17th Century.

There is a fragmented landowning pattern with individual washes (fields) owned by many different farming occupiers, some of whom let land to tenants. However, this form of ownership is now representative of only a fraction of the Site as approximately 80% of the area is in trust, with the Wildfowl and Wetlands Trust, Cambridgeshire Wildlife Trust and the RSPB prominent. Three large shooting / wildfowling clubs also own or lease washlands. The Wildfowl and Wetlands Trust and RSPB operate a 'shepherding' service for tenant graziers, each employing a stockman to co-ordinate grazing management. There is a national demand for wash pasture, with cattle stock arriving from as far away as Shropshire in the summer months. In contrast, shooting clubs tend to rent their land to local farmers. Some sheep are grazed, but the area is generally too wet.

With cattle plentiful, especially during the summer of 1996 as cattle waited for slaughter under the government's emergency BSE measures, the main immediate and direct threat on the Washes comes from Summer flooding. Animals have to then be removed from the Site, but it is difficult to find places to put them in a locality dominated by arable production. Countryside Stewardship agreements cover about one half of the Site. They help to ensure that traditional management continues despite summer flooding which discourages interest by graziers.

¹⁴Part of the northern end is in Norfolk.

13. *Nene Washes*

The Nene Washes provide a useful contrast to the problems experienced on the Ouse Washes. The Nene Site possesses similar nature conservation interest to the Ouse. However, summer flooding is not a problem as water is at a premium in this locality, especially as water is abstracted to supply Rutland Water and there is a general lack of water in the Lower Nene catchment at times during the summer months. The middle third of the area is again owned and managed by RSPB. The remainder, unlike the Ouse, is mainly in the private ownership of farm businesses. Arable production (including potatoes, carrots and other vegetable crops) is present both within and outside the Nene Washes. Some individual farmers are based entirely within the washlands. There has been some return of arable land to pasture on the RSPB land and some have suggested that wetter springs might accelerate this trend on other land holdings. However, it would take a long series of such springs to prompt a major shift to pasture on commercial holdings and while the long term effects of the BSE crisis remain unclear, it is unlikely that reversion will become a major option for arable farmers even with the potential availability of Countryside Stewardship agreements¹⁵.

Synopsis of wet grasslands/marsh

- In terms of grassland management, it appears that grazing by sheep could produce similar outcomes to those of cattle in a significant number of Sites. Mixed cattle and sheep grazing appears to provide optimum conditions for the mosaic of swards it creates.
- The major problem is one of animal husbandry in these habitats, as sheep are less able to withstand the wetter conditions presented by Sites. For example, sheep would not be able to graze at Woolcombe or Mugginton Bottoms. Further, where initial management of a Site depends upon the removal of rank vegetation, cattle grazing is the only practical approach. In some cases, as at Mercaston Marsh, dairy derived stock provide inadequate grazing and particular traditional breeds of hardy cattle are required to clear and maintain a Site in good condition.
- Potential future problems associated with wildlife trusts recruiting sufficient graziers to continue management of Sites along traditional lines have again been identified (as discussed under 'coastal grazing marshes').
- Agri-environmental policies (ESAs and Countryside Stewardship) appear to have had minor and *ad hoc* 'on the ground' impacts by persuading farmers to continue with cattle, or even in some cases in the South Downs ESA and on the Nene Washes, assisting conversion from arable to grass-based enterprises. Unfortunately, just when the impacts of agri-environmental initiatives are finally being observed, the BSE crisis has reduced the attractiveness of the farming systems they support. An enhancement in the competitiveness of payments seems necessary.
- Overall, it can be suggested that the drying out of sites due to post-war agricultural improvement, primarily through pump drainage schemes, and water abstraction, exacerbated by recent winter droughts, represents a greater immediate threat to this habitat type than a change in the grazing regime from beef to dairy or sheep.

¹⁵Of course, radical reform of the CAP arable regime would also have an impact.

Wet Grasslands / Marsh Farmer Case Study 1

Mr. D is a dairy and beef farmer with dairying the main enterprise. He has an 80 hectare farm, including 16 hectares of SSSI which is grazed by 50 Hereford cross beef cattle between April and November. The 50 cow dairy herd which does not use the SSSI, forms the backbone of his business, but Mr D stresses that his beef enterprise is also very important due to the milk quota restrictions on his dairy herd. His son has recently set up a suckler system and receives SCP on 60 cattle and BSP on approximately 50 cattle with additional extensification payments. The 30 month rule means that more concentrates have to be fed to the beef cattle. Even with supplementary feeding, the SSSI grazing is inadequate for fattening in under 30 months in many instances. Consequently, Mr D is now considering changing the beef system to one of selling stores instead. This will not have an immediate effect on the conservation grazing, Mr. D did not feel that the SSSI grazing and his farm business worked well together due to restrictions on grazing numbers and mowing times which affects the feed value of his fodder. He said that "the cattle would be much better off if they were not on the SSSI" which he feels has "de-valued the livestock". (Furthermore, he perceives that since the SSSI has been in operation it has had a negative effect on the wildlife due to the lack of vermin control of fox and mink).

Wet Grasslands / Marsh Farmer Case Study 2

Mr. B is a dairy farmer (200 head of cattle) on a 90 hectare farm, inclusive of 10 hectares of SSSI and has recently planted a fifth of his farm with maize. Until three years ago he grazed the SSSI with a mixture of beef (Friesian bull calves), dairy and dairy replacements. Now the system is entirely dairy and dairy followers through the personal preference of both himself and his son (who now farms with him). Neither father or son intend to return to a beef enterprise. Mr. B does not perceive the loss of the beef herd as having affected the SSSI as he still grazes dairy cows there. He does not think the SSSI is beneficial for his farm business, in production terms, but thinks it is necessary for the conservation value, if done correctly, but only thinks this has been achieved in the last two years. He receives ESA payments and is not considering making any changes to his conservation grazing at present.

5.4.4 Lowland Bog

14. *Heysham Moss*

Just one case of the rare lowland raised peat bog habitat was investigated in this study. Heysham Moss SSSI is a small coastal Site located on the Lune Estuary. Like many other Sites of this type, it is not intact, having been influenced by cutting for the extraction of peat in the early 1900s. Thus, the bog is leaking, being truncated to the east by a drain and to the west by a railway line. The very centre of the bog is the only part which has survived relatively intact. This is surrounded by a 'halo' of willow and alder carr, moving outwards to wet rough pasture. Woodland invasion by birch is apparent to the north of the site as it slowly dries out.

The survival of the site as an open bog is due entirely to grazing by hardy beef cattle. Two owners occupy the Site, but only one chooses to run a beef herd. A total of 40 heifers are grazed on adjacent land and they are simply allowed to stray on to the bog. The irony here is that cattle are needed to ensure that the bog remains reasonably intact, but only until an active long-term strategy to modify the hydrology of the bog is devised and implemented. Removal of beasts would mean that any future opportunity to repair and restore Heysham Moss will be quickly and irreversibly lost.

5.4.5 Upland moor and heath

15. *Leek Moors*

The Leek Moors is a composite SSSI comprising blocks of heather moorland and wet rushy fields which are important for breeding waders. The latter represent parts of the locality which have proved difficult to improve for agriculture. The area appears to be drying out, and there has been a continual and marked decline in wader populations recorded since 1985. Possible reasons include the influence of agricultural drainage, less rainfall, intensification of sheep enterprises and greater predation in the absence of gamekeepers. The effect has been to produce a site of less nature conservation interest than existed in the 1960s.

There are 120 owners and tenants across the site, including moorland owned by the Peak District National Park authority. Owner occupiers are mainly family farmers with a cultural emphasis on 'improvement' in a harsh agricultural environment. The community is close-knit and sceptical about outside interference. The designation of the South West Peak ESA in 1993 has been important in attempting to shift the emphasis away from improvement through the use of a wide range of management prescriptions.

Most beef enterprises are small-scale (15-20 cattle) and consist of animals bred from farm stock for sale in autumn. There is a limited amount of dairying, but some beef animals are derived from this source. Typically, they graze the wet and rushy pastures. Sheep occupy the heather moors. Cattle are put on pastures early in the season, but a trend towards keeping more stock has increased disturbance to ground nesting birds. The beef crisis has exacerbated overgrazing in 1996, but may be advantageous in reducing herd numbers over the longer term. Nevertheless, complete replacement of beef with sheep enterprises is a potential problem. An ideal situation to achieve low intensity grazing throughout the SSSI would be the adoption of traditional hardy cattle breeds by farmers. More areas could be grazed and stock would be better equipped to cope with environmental conditions.

It should also be noted that many family farm businesses in the locality have diversified away from agriculture so that farming is no longer their main business activity. Additionally, there has been a movement of hobby farmers into the region who choose either to keep small numbers of animals or let the land they acquire with a property to local farmers. More research is required to establish the consequences of these trends on grazing patterns and nature conservation interest in the SSSI.

16. *Geltsdale and Glendue Fells*

Terminating the Pennines at the northern end of the range, these fells comprise open moorland, in-bye pasture and woodland. The main SSSI interest lies in upland breeding birds, including dunlin, merlin, golden plover, red grouse and hen harrier. With the co-operation of landowners, the RSPB has established a large reserve at Haltonlea Fell. Unusually for the North Pennines, the locality is characterized by family farm landholding interests rather than estate ownership or tenancies (there are just two estate tenancies in the south of the SSSI). It is the in-bye and fringes of the western (Geltsdale) section of the Site where beef grazing can be observed. Sheep dominate the heather moorland and management for grouse shooting is more intensive within the Glendue section.

One suckler herd of 45 animals is grazed on in-bye pastures in spring, autumn and winter. The cattle are permitted to stray on to the fell close to the in-bye during summer, whereas in winter they are fed near the farm buildings and utilise a wood for shelter. The beef enterprise is run in conjunction with sheep which roam the fell in summer and are moved

in winter to allotments which lie adjacent to a main road, facilitating feeding. A compensatory payment is made by EN to prevent an increase in the fell ewe flock. The combined grazing pressure from the farm means that the density of heather coverage is poor near the farm buildings. However, it does provide an opportunity for lapwing, snipe, curlew and redshank to nest on wet fell-edge pastures created by grazing, provided that densities of lambing ewes are not preclusive. Beef grazing creates suitable conditions for these species by virtue of the diversity of sward structure created and the prevention of rush encroachment.

However, there are signs that the beef enterprise is in decline. Indeed, established agreements permit a stock limit of 65 cattle grazing the SSSI area. The stockman managing the herd has become older and has had to rationalise feeding. A change to a rearing system, buying in summer store cattle, seemed likely prior to the BSE crisis. The plans of the farmer since the crisis are unknown. Although not essential to a heather moorland dominated SSSI, the nature conservation interest in the Site looks set to decline in the absence of a beef cattle enterprise.

17. *North Exmoor*

This Site is an extensive upland area of which approximately one third is heather moorland. There are important upland breeding bird communities (including merlin, ring ouzel and red grouse which are close to their southern breeding limits), lichen flora and a very large heath fritillary butterfly population. There are approximately 70 landholding units in the SSSI, 50 of which are significant. Family farms dominate, many of which have a long tradition of occupation and farming in the locality. Beef suckler systems are typically operated in conjunction with sheep enterprises.

Many farmers prefer to run cattle enterprises alongside sheep. In two sample farms subjected to detailed investigation, cattle are kept on improved pasture outside the SSSI and moved on to adjacent SSSI land in winter where they receive feed. Some poaching of the sections linking improved pasture and heathland is apparent and some winter feeding damage is evident. Replacement with sheep would generally be more suitable for the site, especially as the Exmoor National Park Farm Conservation Scheme and ESA scheme availability offers some scope for prevention of overstocking. However, this appears unlikely as both farmers investigated were reducing cattle numbers without abandoning their beef enterprises altogether. Even with the BSE crisis, one had contemplated moving out of sucklers but was reluctant to take such action in reality, whilst the other was simply waiting and hoping for a revival in the beef market.

Synopsis of upland moor and heath

- While cattle grazing may not be absolutely vital to the main conservation interests of upland moor and heath SSSIs, more cattle and fewer sheep would help to maintain heather communities.
- The main benefit of cattle grazing lies with creating a diversity of habitat and thus interest in the SSSI, especially around the margins of land in a transitional zone between pasture and heather. Cattle grazing provides opportunities for waders to breed where agricultural intensification in the lowlands has pushed them into the uplands.
- Ownership patterns in the upland SSSI case studies are complex, involving a large number of owner-occupiers over a large area. Impressions of changes and pressures have been gained, but extensive farm survey work seems especially important to obtain a detailed understanding of upland beef farming systems.

- Farmers tend to contemplate change, in this case manifest as a movement out of beef enterprises, but show a general reluctance to actually 'take the plunge' and implement modifications. Even in the event of the BSE crisis, many farmers seem prepared to take a medium-term perspective and sit out the short-term disadvantages experienced.
- The operation of agri-environmental measures is important as they facilitate limits on the expansion of sheep enterprises, which would otherwise be a logical way for farmers to compensate for the falling value of beef cattle. Participation stems intensification and prompts modifications of stocking management.

5.4.6 Lowland Heath

18. *Hartland Moor*

Hartland Moor is an area of lowland heath in the Isle of Purbeck with conservation interest varying from dry heath through wet heath to valley mire. A rich heathland flora and fauna (including sand lizards, dragonflies and grasshoppers) are supported. Site ownership is split between EN and the National Trust. EN has owned most of its part of Hartland Moor since the 1950s and its area is a NNR. The National Trust has been involved since the land was bequeathed to them in the 1980s, and they now manage the area as a single grazing unit. Cattle grazing in the Site has only recently recommenced (in the last two years) following a long gap. At present, 30 cattle and eight ponies graze the entire Site, except for 2 ha of the area excluded as a precaution to prevent trampling of sand lizards. Cattle graze from May to December and belong to the National Trust, whereas the ponies graze all year round and are owned in part by the Trust and part by a local grazier.

The beef system comprises a mix of suckler and non-suckler type animals. The National Trust are in the process of establishing a herd and are not selling animals at present. As all calves are kept, the system cannot be described as truly suckler or stores because it is not commercial. It is anticipated that calves from the sucklers and store beasts will be sold in the future. A monitoring programme implemented to assess the impact of grazing since its reintroduction has already revealed benefits in terms of increased diversity of grassland communities. The stock tend to graze erratically creating a sward mosaic. Within the Site, there is a small area of improved grassland which the cattle utilise fully. As the fertility of this area drops, they will be forced to roam more extensively and spread the creation of a grassland mosaic. Cattle have also reduced the amount of scrub clearance necessary on the site, currently paid for through a Countryside Stewardship lowland heath option agreement. However, more subtle effects of grazing after a long absence have yet to be revealed.

As the only true example of this habitat type covered in this study, general conclusions are difficult to draw. It appears that cattle grazing is not essential, but can help nature conservation diversity and reduce the demands on active site management. In this case, even with a scenario in which beef rearing becomes more expensive due to poor market prices, the National Trust will continue to graze with cattle to fulfil conservation objectives. Agri-environmental policies to manage lowland heath again seem important to provide private owner-occupiers with a reason to either persist with or acquire beef cattle.