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Inventories of lowland grassland in England

Rationale and methodology

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Inventories of Lowland Grassland in England: rationale and methodology

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1. Introduction

Lowland, agriculturally unimproved semi-natural grassland of nature conservation value is now a scarce habitat in England as a result of substantial losses sustained over the last fifty years (Fuller 1987, Hopkins & Hopkins 1994). This decline can be principally attributed to the intensification of agriculture which has resulted in the conversion of semi-natural grasslands to more productive swards through drainage, ploughing and reseeding with high yielding rye-grasses together with the sustained use of inorganic fertilisers and herbicides or to arable land for crop production (Hopkins & Hopkins 1994).

Positive conservation of the semi-natural grassland resource in England has principally been a phenomena of the last 45 years (Ratcliffe 1984, Moore 1987, Adams 1986) with the early 1980's marking the beginning of an increased conservation effort with the implementation of the 1981 Wildlife and Countryside Act including increased protection measures for Sites of Special Scientific Interest (SSSI).

Recent years have seen the introduction and development of positive incentive schemes designed to encourage the conservation of important wildlife habitats and the maintenance of traditional landscapes by supporting extensive farming practices. These include the Environmentally Sensitive Areas Scheme (ESA) based on defined areas which have concentrations of similar wildlife habitats and landscape features and the Countryside Stewardship Scheme (CSS) which is targeted at specific habitats or landscape types such as chalk and limestone grassland throughout England.

Information concerning the location, area and nature of the lowland grassland resource in England is vital to inform current strategies for the conservation of lowland grassland which would need to consider the use of a variety of mechanisms including SSSI designation, acquisition by Non-Governmental Organisations (NGOs) and voluntary incentive measures, especially the CSS and ESA both run by the Ministry of Agriculture, Fisheries & Food (MAFF).

In the early 1980's, the then Nature Conservancy Council (NCC) began a concerted effort to document the extent of grassland of conservation value. As a consequence, considerable resources were deployed towards survey of lowland grassland in England during the 1980's (see Palmer & Blake 1991).

Following the reorganisation of NCC into separate country agencies in 1991, further grassland surveys have been undertaken, although at a decreased intensity and, with a view to completing major gaps in the knowledge of the resource. These grassland surveys, until relatively recently, were principally geared towards identifying sites of high nature conservation value which could subsequently be protected by designation as SSSIs. Other organisations such as Wildlife Trusts and Local Authorities, including National Park Authorities, have also contributed to this information base through commissioned surveys and contributions to NCC/English Nature (EN)-led surveys.

However, this survey information can also be used to target incentive schemes such as the CSS and ESA with a view to assisting in the conservation and enhancement of the grassland resource.

Grassland survey information resulting from surveys undertaken by NCC and EN and other organisations has often not been available in an easily accessible format. The collation of this grassland survey information into County-based Inventories was considered to be a priority by EN to ensure that the information was available for use in the conservation of grassland

and, in particular, to inform the targeting of incentive schemes. The ancient woodland inventories produced in the 1980s have demonstrated the success of this approach in the development of woodland conservation and forestry policies (Spencer & Kirby 1992). Similar inventories have recently been produced for lowland heathland in England (Evans *et al* 1994).

2. Background to inventory production

The desirability of collating grassland survey data into an accessible format led English Nature to commence the production of grassland inventories in 1992 following a 3-month pilot project in 1991. The pilot suggested the concept was viable and had external support from organisations operating schemes or involved in habitat conservation such as MAFF and Countryside Commission.

It was generally agreed that the inventories should provide an index of sites for which more detailed survey information is held by English Nature or other organisations. The inventories were to be compiled on the basis of administrative counties although it was recognised at an early stage of the project that the data may ultimately need to be converted into the Natural Areas framework being developed by English Nature (English Nature 1993).

3. Definitions, criteria and sources

3.1. Definitions

For the purposes of inventory production, lowland grassland is defined as enclosed grassland (ie occurring below the "moor wall") mostly located at or below 300m above sea level. Only semi-natural grassland communities have been considered for inclusion in the inventories and these are listed at Annex 1. These include neutral, calcareous and acid grassland, Calaminarian grassland (metallophyte vegetation), fen meadows and rush pasture and selected swamp and mire communities. These are all considered to be of high conservation value. Maritime cliff grassland (SC in the National Vegetation Classification (NVC)), salt marsh (NVC SM) and sand dune grasslands (NVC SD) are normally excluded from the definition.

Where surveys provide detailed botanical data but do not specifically allocate vegetation to the NVC, where possible, an interpretation has been made using the NVC volumes.

3.2 Selection criteria

In addition to the above prerequisite, the following criteria have to be satisfied before a site is included on an inventory.

- **Post-1980 survey data**

  1980 was chosen as the cut-off date for inclusion of information. This captures a great deal of survey effort but has the disadvantage that some information is quite old and some sites will have been lost or damaged by agricultural intensification or development. Later survey dates would of course suffer from the same problem although to a lesser extent.

- **Minimum size**

  A minimum site area for inclusion was set at 0.5 ha. This coincides with the minimum for the selection of lowland grassland SSSIs in the SSSI guidelines (NCC 1989). However, an exception to this was made for the Hereford & Worcester, a County which holds a significant amount of the national resource of MG5 grassland (Jefferson *et al* 1994), where a number of neutral grassland sites of high conservation value occur and are less than 0.5 ha. For linear features such as roadside verges, sites greater than 100 m in length were included.

- **Accessible information with an adequate level of botanical data**

  Only survey data of a quality which i) allows the distinction of semi-natural grassland, ii) the precise mapping of site boundaries and iii) is in the form of a record which can be easily and quickly accessed by a user is included in the inventories.

3.3 Sources

A range of sources were used but NCC/EN phase 2 level surveys (see Rowell & Robertson 1994 for methodology) formed the bulk of the data used to compile inventories. The outputs of NCC/EN Phase 2 grassland surveys typically consist of a written report, completed grassland record cards and, since the late 1980's, many surveys entered data onto the VEGAN grassland database (Rowell & Robertson 1994).

Other sources include surveys or compilations of data carried out by other organisations such as County Wildlife Trusts and Local Authorities, for example Sites of Nature Conservation Importance (SINCs) databases. These latter information sources have to satisfy the selection criteria outlined above.

One-off surveys initiated in special circumstances are used where appropriate, for example the assessment of chalk grassland in Kent likely to be affected by the Channel tunnel (Keymer 1986) was used in compiling the Kent inventory.

In many cases acquisition of grassland survey data involves visits to the EN Local Teams or organisations holding the data. This has the added advantage of enabling discussions with relevant personnel which in turn can provide valuable insight into the nature of the data and allow for feedback on the inventory methodology.

4. Compilation and inventory contents

4.1 Spreadsheet

Sites selected using the criteria outlined above are given a unique site code based on the following formula:

County abbreviation/10 x 10 km grid square/first letter of sitename and number for that letter

For example, Any Hill, Berkshire - BK/SU36/A01
Any Field, Berkshire - BK/SU36/A02

The code and the following information is then entered into a Quattro Pro spreadsheet on a portable personal computer:

Site name
Six figure Grid reference
SSSI name if notified
Date of survey
County
Conservation status (Statutory designations only)
Site area (in hectares)
Grassland area (if different)
Grassland type (CG: calcareous, MG: neutral, U: acid M: fen meadow/rush pasture S: swamp) (see Annex 1)

The location of original survey data if not held at the relevant local English Nature office is provided as a footnote on the spreadsheet. A more detailed record of data sources is held by the grassland section of English Nature's Lowlands Team.

An example of a spreadsheet is provided at Annex 2.

4.2 Maps

Sites are mapped onto 1:50000 bromide OS maps divided into 10 km squares using a 0.35 mm Rotring pen. These maps are reduced from OS 1:25000 maps which show individual field boundaries which often reflect the boundaries of grassland management units. The maps are produced using the facilities of EN's Geographical Information Unit. An example of a map is provided at Annex 3. A site is normally taken as the discrete area defined by the relevant survey which contains lowland semi-natural grassland. The boundaries may or may not accord with actual field boundaries (see also section 4.3.2 for further clarification). Exceptionally, disjunct yet related areas of grassland, such as along the line of a chalk escarpment , may have been recorded under a single site name in a survey. In this latter case the spreadsheet would ascribe a single site name and code.

On completion of an inventory, a summary dot distribution map of grassland sites is produced (see Annex 4). These are produced using the Plot 5 mapping package and Word Perfect for Windows Graphics.

4.3 Constraints

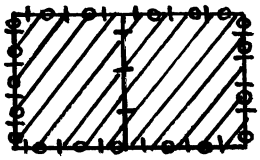
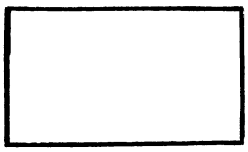
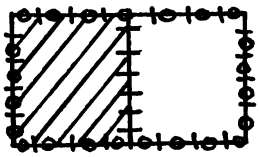
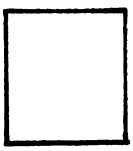
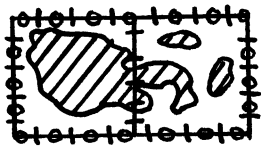
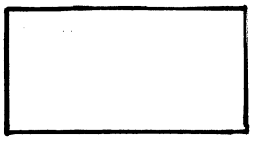
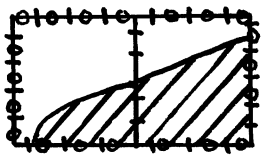
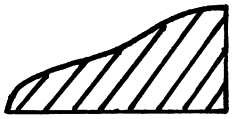
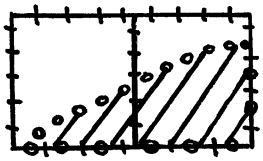
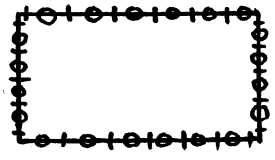
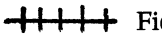
4.3.1 SSSIs

The inclusion of SSSIs presents a number of problems. A number of SSSIs which have been notified for their lowland grassland interest in whole or in part have only been mapped at Phase 1 level (See Nature Conservancy Council (1990) for methodology). Despite this, it is clear that it would be inappropriate to omit them from inventories due to lack of information and for failing to meet the criteria as they clearly contain grassland of high nature conservation value. Thus SSSIs notified for their lowland grassland interest but mapped at Phase 1 level were **included** in the inventory and the SSSI boundary was mapped and the total site area recorded on the spreadsheet. The limitation is that for sites containing a mosaic of habitats, this does mean that there is no record of grassland area.

4.3.2 Site boundaries and treatment of sites with mosaics and transitions

As indicated in 4.2. above, areas of lowland grassland are mapped unless there are difficulties as with some SSSIs or where there are complex mosaics or transitions with vegetation communities which would not normally be included on the inventory. These might include semi-improved/improved grassland or non-grassland communities such as scrub, woodland or lowland heathland. Figure 1 provides some examples to illustrate the approach.

Figure 1: Treatment of site boundaries

Record card map	Inventory map entry	Site area	Grass area[1]
Example 1 		2	2
Example 2 		1	1
Example 3[2] 		2	1.5 If given on record card
Example 4 		1	1
Example 5 		1	1
Example 6 Unimproved grassland and scrub (no habitat map) 		1	-
KEY ooo Survey boundary  unimproved grassland  Field boundary			

[1] this must meet the criteria outlined in section 3.1 and is only given if previously calculated
[2] Frequently, a complex mosaic shown on a grassland record card will be impossible to map because of the reduction in scale from the record card to the inventory map.

NOTE: a) "Site area" on the spreadsheet refers to the site outline on the **inventory** not necessarily the original survey area b) The original survey area may not always relate to field boundaries ie: it may not include whole management units.

4.3.3 Differences in survey methodologies

Some data has been derived from surveys that have not used the standard Phase 2 methodology. This has made it impossible to complete certain spreadsheet information for some Inventories. For example, a survey may record total site area but not the area of different grassland communities.

4.4 Quality assurance

Draft inventories are sent to the relevant English Nature local office and to other organisations supplying data for comment prior to finalisation.

4.5 Inventory contents

Each County inventory contains a title page, a brief rationale (Annex 5), a series of spreadsheets (Annex 2) a dot distribution map (Annex 4) a series of 10 × 10 km maps which cover the County (Annex 3) and a map showing the 10km squares which cover the County (Annex 6). The 10×10 km maps are included even if they do not contain grassland sites as it is felt that this provides a complete impression of the distribution of sites and data held for the particular County.

4.6 Inventory distribution

The completed inventories are being published in loose-leaf form to facilitate use and to ensure ease of updating. The inventories have been sent to partner organisations who may be able to use the inventories especially those responsible for incentive schemes. These include the Ministry of Agriculture, Fisheries & Food, Countryside Commission, Local Authorities and various NGOs. Local distribution is normally undertaken by the relevant EN Local Team while distribution to national offices of target organisations is undertaken centrally at Peterborough.

5. Discussion

5.1 Limitations

It should be stressed that the inventories are **provisional** and should not be used uncritically to derive grassland resource figures. This is because the data has been collected from sources spanning a 16 year timescale and hence some sites will no longer be extant due to loss caused by agricultural improvement and development. In addition, the coverage of Phase 2 grassland surveys is not comprehensive with some grassland types having better coverage (eg calcareous chalk grassland) than others (eg acid grassland) and there will be sites known to be of high conservation value for which little data is held and thus will not be entered onto inventories. However, despite these limitations, various analyses of grassland inventories could potentially help to inform policy development.

The inventories concentrate on documenting the semi-natural grassland resource and do not include semi-improved sites which may be of importance for their fauna. Sites such as these may also have potential for restoration or re-creation of the vegetation community. However, the inventories can be used to target recreation of grassland to the most beneficial locations which are often adjacent to grasslands of high nature conservation value.

5.2 Uses: actual and potential

5.2.1 Targeting

The County-based grassland inventories have been produced by English Nature primarily with a view to assist the targeting of Environmental Land Management Schemes such as the Countryside Stewardship Scheme. The need for targeting to ensure cost-effectiveness in operating countryside policy mechanisms has been stressed by Webster & Felton (1993). There is already evidence that the inventories are being used in this way and the existence of Inventories played a part in convincing MAFF of the feasibility of extending CSS to cover all lowland neutral and acid grasslands as from 1996. It is likely that they will be used to help target the extended scheme. Inventories should also assist in the implementation of the UK Biodiversity Action plan through their role in targeting schemes.

5.2.2 Conservation strategies and land use planning policy

The formulation of local conservation strategies and action plans, including Natural Area profiles and Local Biodiversity Action Plans and the formulation and implementation of land use planning policy could be informed in part by grassland inventories.

5.2.3 Monitoring

Grassland inventories could be used as a baseline for monitoring change of grasslands in the wider countryside.

DOE (1996), for example, suggests that grassland inventories could be used as wildlife indicators of sustainable development and may prove to be a better means of understanding grassland change in the wider countryside.

5.2.4 Prime Biodiversity Areas (PBAs)

The concept of Prime Biodiversity Areas (PBAs) is outlined in the UK Steering Group Report (1995). This suggests that PBAs are areas with particular concentrations of high priority habitats where conservation action could be targeted to ensure cost effectiveness. This approach has been adopted by Mendip District Council who have identified High Biodiversity Areas using species and semi-natural habitat data (Butcher, Rowe & Cloughley 1995). English Nature is currently undertaking a pilot project investigating the use of selected habitat inventory data (grasslands, woodlands and heathlands) and species datasets for defining PBAs.

5.3 Future development

It is clearly desirable to periodically update inventories as new sites will continue to be discovered as a result of survey effort and existing sites may be damaged or destroyed. It is envisaged that updating of selected inventories could be undertaken periodically. It is important that any new data meet the selection criteria and the reason for removal from the inventory is recorded, eg agricultural improvement, residential development road construction etc as this information can be valuable in influencing rural land use policy. Retaining the original inventory maps and spreadsheets and using some form of annotation to indicate loss (eg cross hatching on the map and italicizing site data on the spreadsheets) on the updates is probably the most practical method. There may also be merit in identifying new sites which have been added at revisions.

The grid reference for each inventory site can be used as point data in a Geographical Information System (GIS). However, in order to maximise the use of the inventories for various purposes such as identifying PBAs, digitisation of the inventory site boundaries may be desirable in the future. The cost-benefit of undertaking this work needs to be carefully considered though because of the high cost of digitisation.

Implementation of the habitat elements of the UK Biodiversity Action Plan (UK Steering Group 1995) will require, in part, the use of appropriate Environmental Land Management Schemes to deliver nature conservation targets (see section 5.2) If these schemes are to be effective they need to be properly targeted. Inventories of lowland grassland should help in the targeting of schemes as well as having a variety of other uses as outlined in section 5.2.

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Annex 1 Definition of lowland grassland as used for Grassland Inventories

Neutral grasslands	National Vegetation Classification equivalent(s)
Tall herb grassland	MG2 *Arrenatherum elatius-Filipendula ulmaria* tall-herb grassland
Mountain/northern Dales hay meadow	MG3 *Anthoxanthum odoratum-Geranium sylvaticum* grassland
Flood/alluvial meadow	MG4 *Alopecurus pratensis-Sanguisorba officinalis* grassland
Clay/loam pasture, old meadow/pasture	MG5 *Cynosurus cristatus-Centaurea nigra* grassland
Water meadow, flood pasture	MG8 *Cynosurus cristatus-Caltha palustris* grassland
Inundation grassland	MG11 *Festuca rubra-Agrostis stolonifera-Potentilla anserina* grassland
Coarse grassland	MG12 *Festuca arundinacea* grassland
Inundation grassland, washland, alluvial meadow	MG13 *Agrostis stolonifera-Alopecurus geniculatus* grassland
Calcareous grasslands (dry grasslands)	
Limestone grassland	CG1 *Festuca ovina-Carlina vulgaris* grassland
Chalk/limestone grassland	CG2 *Festuca ovina-Avenula pratensis* grassland CG3 *Bromus erectus* grassland CG4 *Brachypodium pinnatum* grassland CG5 *Bromus erectus-Brachypodium pinnatum* grassland CG6 *Avenula pubescens* grassland CG7 *Festuca ovina-Hieracium pilosella-Thymus praecox/pulegioides* grassland
(Magnesian) limestone grassland	CG8 *Sesleria albicans-Scabiosa columbaria* grassland
Carboniferous limestone grassland (lowland examples)	CG9 *Sesleria albicans-Galium sterneri* grassland
Calaminarian grassland (heavy metal grassland)	OV37 *Festuca ovina-Minuartia verna* community
Acid grasslands	
Grass-heath	U1 *Festuca ovina-Agrostis capillaris-Rumex acetosella* grassland

Neutral grasslands	National Vegetation Classification equivalent(s)
Grass-heath	U2 *Deschampsia flexuosa* grassland
Grass-heath	U3 *Agrostis curtisii* grassland
Acid grassland	U4 *Festuca ovina-Agrostis capillaris-Galium saxatile* grassland
Fen meadow ('mires')	
Rich fen meadow	M22 *Juncus subnodulosus-Cirsium palustre* fen meadow
Rush pasture, wet acid grassland	M23 *Juncus effusus/acutiflorus-Galium palustre* rush-pasture
Wet acid grassland	M24 *Cirsio-Molinietum caeruleae* fen meadow
Wet acid grasland	M25 *Molinia caerulea-Potentilla erecta* mire
Mixed-fen	M26 *Molinia caerulea-Crepis paludosa* mire
Tall herb fen	M27 *Filipendula ulmaria-Angelica sylvestris* mire
	M28 *Iris pseudacorus-Filipendula ulmaria* mire
Mires	
Calcareous mire	*M13 *Schoenus nigricans-Juncus subnodulosus* mire
Wet heath	*M16 *Erica tetralix-Sphagnum compactum* wet heath
Swamps	
Swamp	S5 *Glyceria maxima* swamp
Swamp	S22 *Glyceria fluitans* water-margin vegetation
Swamp	S28 *Phalaris arundinacea* tall-herb fen

* Included where occur in a mosaic/zonation with other fen meadow communities

SITE CODE	SITE NAME	SITE/FIELD NO.	GRID REF	SSSI NAME(if notified)	DATE OF SURVEY	COUNTY	STATUTORY CONSERVATION STATUS	SITE AREA ha	GRASS AREA ha	GRASSLAND TYPE
HW/SO77/F02	FORD LANE MEADOW	24/40	SO 736760	Wyre Forest	1991	HW	SSSI (part of)	0.8	0.8	MG
HW/SO77/H01	HUNTSFIELD FARM MEADOWS	54/87-89,120,121	SO 773795	Huntsfield Farm Pasture	1991	HW	SSSI (part)	8.0	2.4	MG/U
HW/SO77/H02	HORSEJUMP MEADOW	59/94	SO 771762	Wyre Forest	1991	HW	NNR (part of),SSSI (part of)	0.6	0.5	MG/U
HW/SO77/H03	HITTERHILL MEADOW	62/97	SO 772761		1991	HW		2.6	2.0	MG
HW/SO77/H04	HAWTHORN BUSH MEADOWS	65/104-106	SO 772749		1991	HW		5.7	5.5	MG
HW/SO77/I01	IVY COTTAGE MEADOW	39/64	SO 748721		1991	HW		1.1	1.1	MG
HW/SO77/K01	KNOWLES MILL MEADOW	49/79	SO 762767	Wyre Forest	1991	HW	NNR (part of),SSSI (part of)	0.8	0.8	MG
HW/SO77/L01	LEM HILL MEADOWS	12/20	SO 722749		1991	HW		2.5	2.5	MG
HW/SO77/L02	LODGEHILL FARM	42/76,77	SO 758766	Wyre Forest	1991	HW	NNR (part of),SSSI (part of)	2.0	2.0	MG
HW/SO77/N01	NEWALLS MEADOWS	21/31-36	SO 729758	Wyre Forest	1991	HW	NNR (part of),SSSI (part of)	2.1	1.7	MG
HW/SO77/O01	ORGANSHILL MEADOW	40/67	SO 752717		1991	HW		0.3	0.2	MG
HW/SO77/O02	OAK COTTAGE MEADOW	93/119	SO 771764	Wyre Forest	1991	HW	NNR (part of),SSSI (part of)	1.9	1.9	MG
HW/SO77/P01	POUND BANK MEADOW	26/43	SO 735739		1991	HW		0.8	0.8	MG
HW/SO77/R01	ROCK GARAGE MEADOW	77/43	SO 738739		1992	HW		1.0	1.0	MG
HW/SO77/S01	SUGARS FARM MEADOW	22/37	SO 732755		1991	HW		0.9	0.9	MG
HW/SO77/T01	THE HAWTHORNS MEADOWS	52/82,83,85	SO 766747		1992	HW		3.3	0.8	MG
HW/SO77/T02	TEDDON FARM MEADOWS	3/4-8,126,127	SO 716740		1991	HW		18.8	12.9	MG
HW/SO77/T03	TANNERS BROOK MEADOW	6/12	SO 719745		1991	HW		1.0	1.0	MG
HW/SO77/T04	TANNER'S HILL MEADOWS	64/100-103,141	SO 772755		1991	HW		8.1	c6.0	MG/U
HW/SO77/W01	WADHOUSE ORCHARD	50/137	SO 775702		1991	HW		3.0	3.0	MG
HW/SO83/A01	AVENUE MEADOW	12/12,45	SO 829302	Severn Valley Grasslands 7. Avenue Meadow	1992	HW	SSSI (part)	1.7	1.7	MG
HW/SO83/C01	COOMB HILL MEADOWS	18/19,47	SO 840320	Coombhill Meadow	1992	HW	SSSI	2.8	2.7	MG
HW/SO83/C02	COLE'S ORCHARD	35/40	SO 818304		1992	HW		1.4	1.4	MG
HW/SO83/D01	DRAKE STREET MEADOW	5/5	SO 803398		1992	HW		0.3	0.3	MG
HW/SO83/H01	HOOZE MEADOWS	34/39	SO 820335		1992	HW		7.0	3.2	MG
HW/SO83/M01	MALTHOUSE FARM MEADOWS	4/4,42,43	SO 806390	Malthouse Farm Meadows	1992	HW	SSSI	4.8	4.6	MG
HW/SO83/M02	MARSHLANDS MEADOWS	6/6,44	SO 812324	Severn Valley Grasslands 6. Marshlands M.	1992	HW	SSSI (part)	0.8	0.8	MG
HW/SO83/M03	MARSH END MEADOW	7/7	SO 817356		1992	HW		1.0	1.0	MG
HW/SO83/M04	MICKLEFIELD MEADOW	30/31,48	SO 813384	Micklefield Meadow	1992	HW	SSSI (part)	1.8	1.8	MG
HW/SO83/M05	MICKLEFIELD PADDOCK	36/41	SO 810384		1992	HW		2.3	2.3	MG
HW/SO83/P01	PENDOCK BANK	11/11	SO 821341		1992	HW		4.0	0.5	MG
HW/SO83/P02	POOLHAY MEADOWS	13/14,46	SO 829308	Poolhay Meadows	1992	HW	SSSI	2.7	2.7	MG
HW/SO84/A01	ASHMOOR COMMON		SO 852467	Ashmoor Common	1990	HW	SSSI	30.4		MG/M
HW/SO84/B01	BROTHERIDGE GREEN MEADOWS	11/13,14,15,36,65	SO 833409	Brotheridge Green Meadows	1992	HW	SSSI (part)	6.0	6.0	MG
HW/SO84/B02	BROTHERIDGE GREEN DISUSED RAILWAY LINE		SO 814413	Brotheridge Green Disused Railway Line	1984	HW	SSSI	2.3		CG
HW/SO84/C01	CLEVELODE MEADOW	40/52	SO 834468		1992	HW		0.8	0.3	MG
HW/SO84/E01	EARL'S CROOME MEADOW	19/23,24	SO 862420	Earl's Croome Meadow	1992	HW	SSSI (part & part of)	1.7	1.6	MG
HW/SO84/G01	GILVERS MEADOWS	7/7,8	SO 816410		1992	HW		2.0	1.8	MG
HW/SO84/G02	GREEN STREET MEADOWS	23/29	SO 873489		1992	HW		0.8	0.8	MG
HW/SO84/G03	GRANGE FARM MEADOW	44/67	SO 815452		1992	HW		2.1	2.1	MG
HW/SO84/K01	KEMSEY UPPER HAM	28/39	SO 849498		1992	HW		12.0	8.0	MG
HW/SO84/M01	MELROSE FARM MEADOWS	6/6,54,66,68,69	SO 817410	Brotheridge Green Meadows	1992	HW	SSSI	4.6	4.6	MG

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Annex 2 Example inventory data spreadsheet

Wiltshire (WL)/Dorset/ Hampshire

SU02

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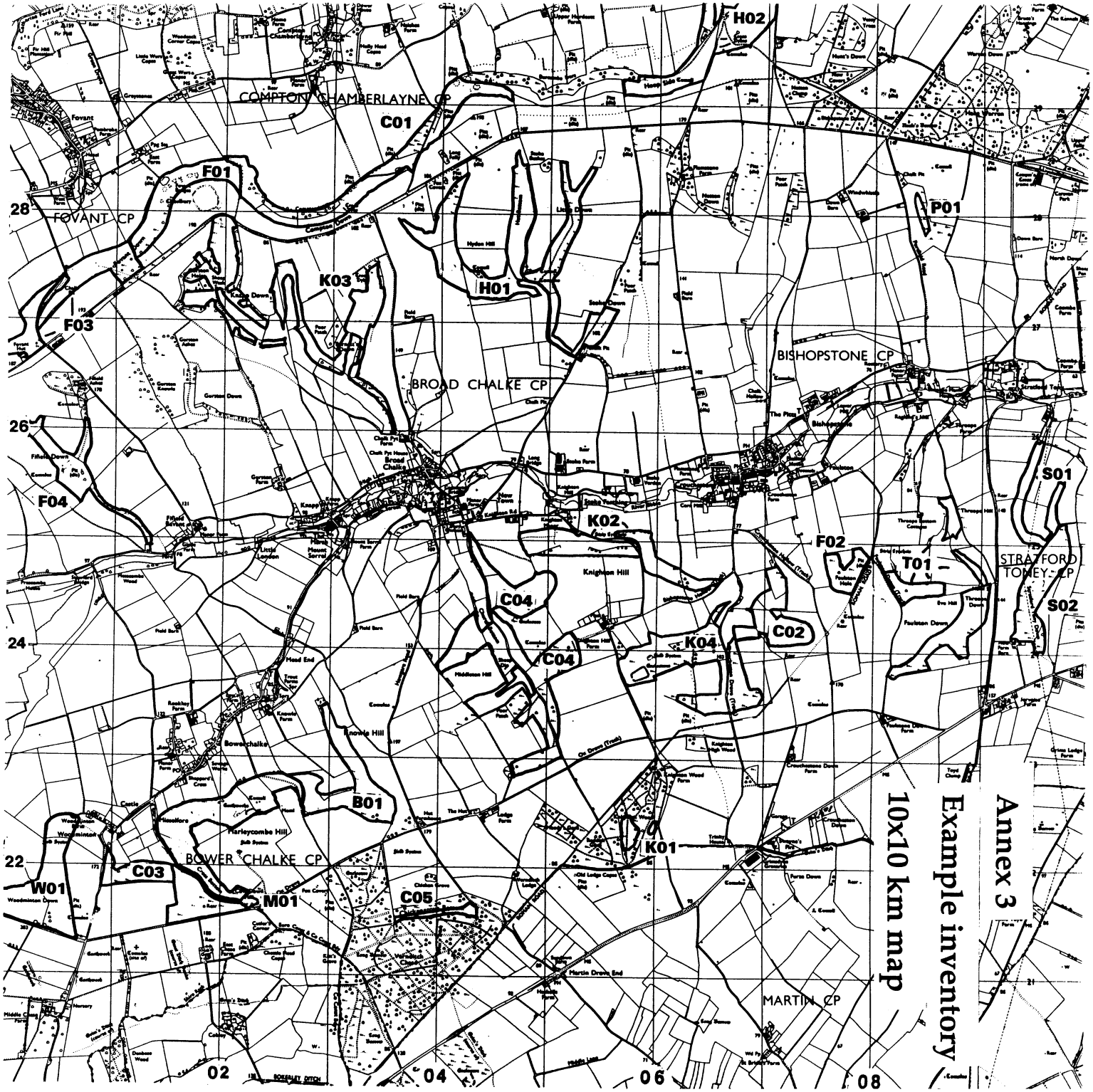
1 : 50 000

The English Nature Grassland Inventory



Annex 3
Example inventory
10x10 km map

Annex 4 Example County dot distribution map of inventory sites

Annex 5 Inventory rationale

Rationale

This inventory has been produced by English Nature (EN) with the aim of making lowland grassland data available for conservation management schemes in the wider countryside. English Nature, its predecessor body, the Nature Conservancy Council (NCC) and other organisations, have over the last 15 years built up a large body of site-specific information through Phase 2 survey (see Note 1). This level of information allows an assessment to be made of the botanical conservation value of a site. With the introduction of management schemes such as Countryside Stewardship and larger initiatives such as Environmentally Sensitive Areas (ESAs), there is now an opportunity for this information to be used in targeting resources and identifying sites of particular value. This inventory is designed to aid that process. However it is a PROVISIONAL document and should be used as a guide and not as a definitive resource statement.

Criteria for inclusion

The inventory highlights sites for which EN or other organisations hold detailed information. Lowland grassland is broadly defined as enclosed grassland occurring at, or below, 300 m above sea level. Sites include fen meadows and selected swamp communities and those unimproved lowland grasslands defined as of high-botanical interest in Guidelines for the selection of biological *SSSIs*[1] (NCC, 1989), but exclude maritime and sea cliff vegetation. The fen meadow and swamp communities have been included because they are often part of the farmland landscape and frequently occur in mosaics with grassland communities (see Note 2). Sites were included according to the following criteria:

- high botanical interest
- post-1980 survey data
- minimum size of 0.5 ha (100m length for linear features)
- information which is easily located and held as a readily accessible record.

The majority of site information which met these criteria derived from systematic surveys. These sites include SSSIs and non-SSSIs. In special circumstances, due to local considerations, sites which do not meet all the criteria have been included.

How to use this inventory

The sites are mapped on 10 x 10 km grid squares at a 1:50,000 scale, using reduced 1:25,000 maps. Each site has a unique site code, to avoid possible confusion, for examples where sites have multiple names. The code is made up of an abbreviation of the county name, e.g. BK for Berkshire, the grid square the site is located in and an alphabetical/numerical code identifying the individual site, for example BK/SU36/A01 for Any Hill, Berkshire. Where sites occur on more than one map, the site code may not be shown on each map. In these cases, the code can be found on adjacent maps. The site listing overleaf is ordered according to this code. Basic information, e.g. grid reference, grassland type, site area and conservation status, is presented and indicates that more detailed site information is held by EN or other organisations. Grid squares which do not contain any known sites have been included for a fuller picture of the spread of sites and data held for the county.

Limitations of this approach

On many sites, habitats other than grassland may occur. Clear delineations of habitat types are

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[1] Sites of Special Scientific Interest

frequently not practical at the scale used and consequently the complete site has been mapped without habitat divisions. The area shown therefore may include habitats other than grasslands of high botanical interest. All SSSIs with a significant grassland component have been included but a number of these will include other habitats within the site boundary shown. Data for disjunct yet related areas of grassland, such as along the line of a chalk escarpment, may have been collected as one site and consequently the grassland will be mapped as one site. The area surveyed and the site mapped may not always coincide with either the SSSI boundary as notified, or field boundaries.

This inventory is provisional and is designed to be used as a guide. Some of the figures presented are estimates and the quality of data may vary from site to site. There may be little or no data for the years following the main survey date. Consequently, given the rate of grassland change and loss, the data are likely to contain some inaccuracies or differences when compared with the present day situation. The inventory should therefore not be seen as a complete resource statement: rather, as a guide to identified sites for which information is held.

Inventory distribution

Whilst the document is intended for positive use in the planning and targeting of countryside management schemes, **the potentially sensitive nature of the information is appreciated** and consequently distribution is being limited to a restricted number of organisations concerned with conservation and countryside management.

Distribution to national headquarters or organisations is being undertaken by EN headquarters at Peterborough whilst local distribution is being undertaken by Local Area Teams based at local EN offices.

Further information

If you require further data on any of the sites listed, reference should be made to your local English Nature office. Quoting the site code will enable the staff to identify the site data and advise you accordingly. It would be helpful if you could pass new information on the loss of known sites or the discovery of new sites to your local English Nature office.

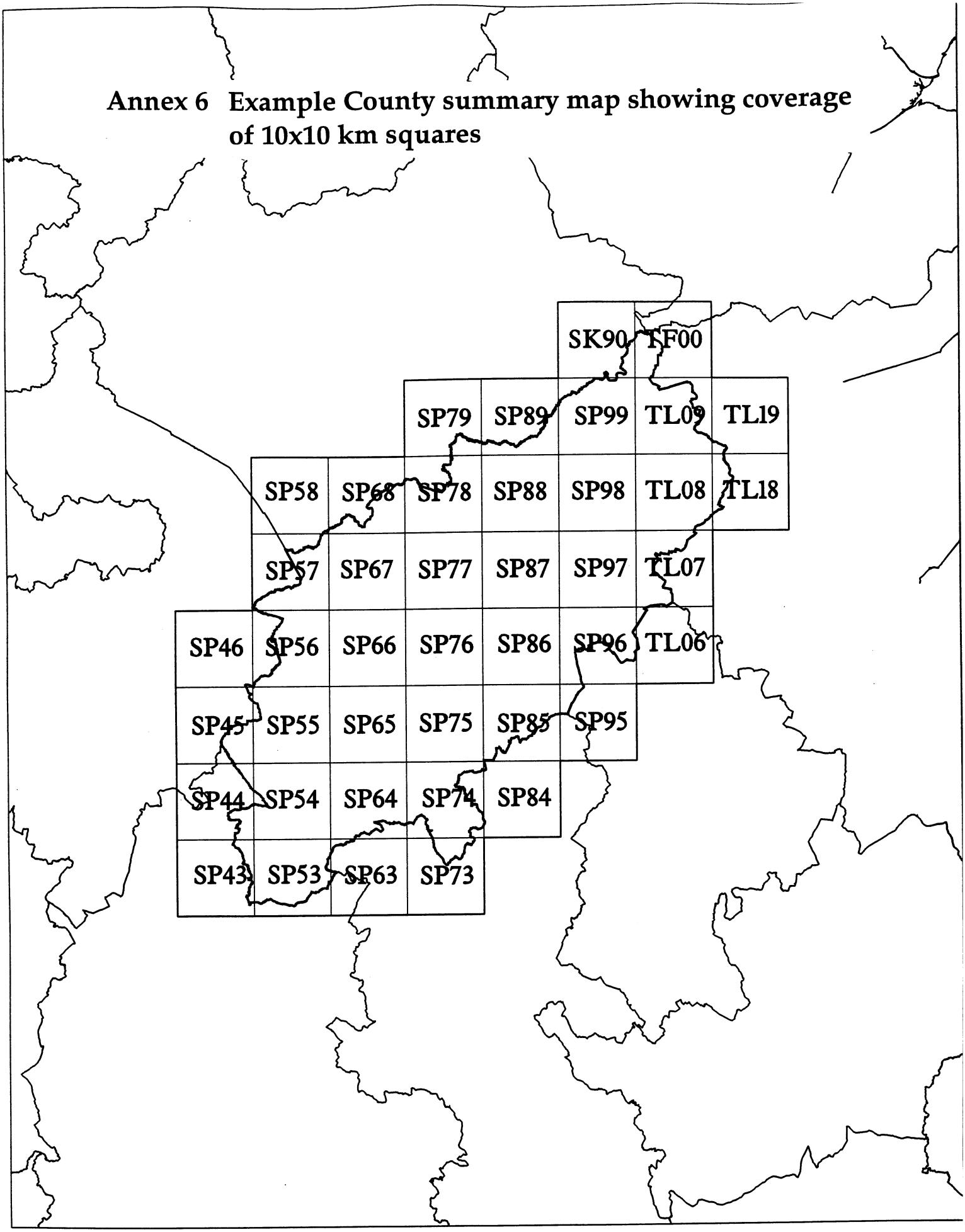
Notes

1. Phase 1 survey is a standardised system that was devised by the NCC for classifying and mapping habitats, in which land is allocated to one of ninety specified habitat types.

   Phase 2 is the more detailed level of survey, at which vegetation is defined according to its plant communities as categorised, for example, in the National Vegetation Classification. (British Plant Communities Volume 2 - Mires and Heaths, Volume 3 - Grassland and Montane Communities and Volume 4 - Swamps and Aquatic Communities. J. Rodwell (ed), Cambridge University Press 1991, 1992 and in press respectively).

2. Communities covered by the inventory, in addition to those unimproved lowland grassland communities defined as being of high botanical interest in *Guidelines for the selection of biological SSSIs* (NCC, 1989), are NVC communities M13, M16, M22-M28 (mires, fen meadows and rush pastures), S5 (*Glyceria maxima* swamp), S22 (*Glyceria fluitans* water-margin vegetation) and S28 (*Phalaris arundinacea* tall-herb fen).

Annex 6 Example County summary map showing coverage of 10x10 km squares



The Grassland Inventory

Key map of 10km squares of Northamptonshire

Scale 1:625000

kilometres 0 5 10 15 20

miles 0 5 10

Grid North

ENGLISH NATURE

Prepared by Geographic Information Unit, English Nature, Peterborough.