ENGLISH NATURE



No. 63
Upland Resource Survey
Consolidation Project



# English Nature Research Reports

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No. 63

# Upland Resource Survey Consolidation Project

Phase I: Dartmoor, Culm Measures, The Peak District

Ecological Advisory Service, Keighley

Final Report (Contract F72-18-18)

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# *SUMMARY*


1. *EAS* was commissioned by English Nature to collate vegetation data on two pilot study areas in the English Uplands; Dartmoor and the Peak District.

2. The Less Favoured Area was taken as a working definition of the uplands. A reduced Phase I classification was adopted to record the vegetation data.

3. Data were collated from several different Phase I and similar surveys in each area by copying directly on to 1:25,000 maps which were then digitised.

4. Summary statistics have been derived for each area and are presented in this report.

5. Further investigation was undertaken into possible definitions of 'upland' and the conclusion is reached that the Severely Disadvantaged Area of the Less Favoured Area would be the best choice.

# UPLAND RESOURCE SURVEY CONSOLIDATION PROJECT

## 1 INTRODUCTION

**1.1** The *EAS* was awarded a contract in November 1992 by English Nature to carry out a pilot study into the feasibility of collating existing vegetation data for the uplands of England in order to produce summary statistics.

**1.2** The pilot study areas selected by English Nature were Dartmoor and the Peak District. These were deliberately selected *because* there was no comprehensive, up to date Phase I survey coverage, thus a full picture of the difficulties involved in survey consolidation would be built up.

**1.3** At the time the contract was let, the definition of what constituted "upland" had not been finalised, and thus the *EAS* based the scope of the project upon the National Park boundaries for the two areas concerned. For reasons which will be described below, the scope of the project was extended in January 1993.

## 2 METHODOLOGY

### Definition of study area boundaries

**2.1** The first task was to establish a workable definition for what constitutes "uplands". This is dealt with in detail in a later section of this report, but in the first instance, four possible definitions were considered:

**2.1.1** The 800' (244 metre) contour

This is the definition formerly adopted by the Ministry of Agriculture, Fisheries and Food (MAFF), but it bears little relationship to vegetation types, which are much more influenced by climate, soils and slope than by altitude itself.

**2.1.2** The boundary of enclosed land

The "moor wall" would by definition exclude all enclosed pastures and meadows in which agricultural improvement had taken place. Such a definition of upland would, however, take no account of the inter-relationship between unenclosed and enclosed land in the management of hill farms.

**2.1.3** National Park Boundaries

National Parks have, until the recent designation of the Norfolk and Suffolk

Broads, been designated in the "wilder" areas of England and Wales and all are largely "upland" and/or coastal. Their boundaries have, however, been drawn up partly on political grounds and arbitrarily exclude areas of "upland" which are virtually identical in landscape, land-use and vegetation to areas which have been included.

**2.1.4** The Less Favoured Area

The Less Favoured Area (LFA) is designated by the MAFF in response to European Community Directives aimed at sustaining agriculture in areas where physical, economic and/or social constraints make this difficult. The LFA is divided into *Severely Disadvantaged* and *Disadvantaged* areas. The former consists of land which most people would accept as "upland", while the latter includes land on the margins of the uplands and other land which is low lying but which imposes severe constraints upon farming for other reasons.

**2.2** After considering these four options, it was decided to use the LFA as the boundary of upland, since it reflects agricultural systems better than any of the other three options and would allow English Nature to present statistics for an area to which MAFF and others would immediately be able to relate.

**2.3** The implications of using this boundary are that a large area of marginal land to the south-west, south and east of the Peak District National Park is included, as is the "Culm Measures" to the north-west of Dartmoor. Maps showing the LFA boundaries in both areas, together with National Park and County boundaries are given as Figures 1, 2 and 3.

**2.4** The LFA boundary continues northward from the Peak District unbroken to the Scottish border and, indeed, right through Scotland. Since the pilot study contract was only to look at two areas and not the whole of Northern England, the arbitrary decision was taken to use OS northing 412 as the northern boundary, thus ensuring that the whole of the Peak District National Park was included in the pilot exercise.

**Data sources**

**2.5** The next stage of the project was to identify and evaluate the available data sources. This was done by contacting the following organisations in each area:

English Nature sub-regional offices
National Park Departments
County Wildlife Trusts
Agricultural Development and Advisory Service (ADAS)

**2.6** In the south-west, discussions with these bodies led to contact being established with:

Royal Society for the Protection of Birds (RSPB)
Duchy of Cornwall Estate
National Trust

In the north, contact was also established with:

Greater Manchester Countryside Unit

**2.7** All of the organisations contacted had, or had access to, vegetation data covering *part* of one of the areas of interest. Details of each survey inspected are given in Appendix 1.

**2.8** As will be seen from Appendix 1, many of the data sources are up to ten years old, and they were not all carried out to the same specification. Most of them are Phase I surveys carried out between 1979 and 1985 and, as shown in the Review of Phase I Surveys (NCC 1991), they are variable in quality.

**2.9** Interestingly, the qualitative aspects of surveys in Dartmoor and the Peak District generate different problems. In Dartmoor, the survey data for the unenclosed moorland ("The Commons") are much more up to date than those for the enclosed land; indeed the latter is not covered by Phase I survey at all, but by a Phase II survey conducted by the Dartmoor National Park Department. In the Peak District, surveys tend to be more thorough, and reliable, in the enclosed land and less so on the moorlands.

**2.10** The decision was taken to use the most up-to-date survey available for any particular part of the pilot study area. Thus the data for two adjacent locations in either Dartmoor or the Peak District might come from surveys of different dates and different provenance.

**Habitat classification**

**2.11** The variability of the different sources of data, together with the sheer size of the task of copying vegetation data for more than 500,000 ha of land led to the decision to use a *reduced* Phase I classification. This groups together various categories from the current Phase I classification to give a more manageable 21 classes. The classification, together with the colour coding, is given at Appendix 2. The merits of the reduced classification are discussed in a later section of the report.

**Copying of data**

**2.12** The mechanical task of copying the vegetation data was carried out by *EAS* staff, generally through visiting the offices of the various organisations who held the maps. In one or two cases, where the data to be copied were on 1:25,000 sheets rather than the more commonly found 1:10,000 scale, colour photocopies were taken and the transcription carried out at the *EAS* offices.

**2.13** The data were drawn onto photocopies of the 1:25,000 scale Ordnance Survey sheets in

A3 sections. As far as possible the *Pathfinder* series maps were used as these have a white background and no tourist information. In the heart of the Peak District and Dartmoor, however, no *Pathfinder* maps are published and the *Outdoor Leisure* sheets were used. The tinted background to these sheets made them slightly less satisfactory as base maps, but the results are still generally acceptable.

**Area measurement and digitising**

**2.14** It was decided during the tendering process for this contract that since the mechanical process for measuring areas with a planimeter is very similar to, and takes roughly the same amount of time as, digitising the data, the latter would be a far more satisfactory approach. The results of the digitising can be fed straight into English Nature's Geographical Information System (GIS) at Peterborough for subsequent manipulation as required.

**2.15** *EAS* does not have the facilities to carry out large scale digitising operations and it was, therefore, decided to sub-contract this part of the work. The GIS unit in Peterborough gave every assistance in identifying potential sub-contractors, tightening up the brief and answering queries relating to that brief raised by the sub-contractors. A copy of the brief is given at Appendix 3. At the stage that the sub-contract was let, it was impossible to assess how much digitising there would be, so the brief invited sub-contractors to submit a price *per polygon*.

**2.16** The contract was won by Summerside Associates of St Ives, Cambridgeshire who had previously worked closely with English Nature.

**2.17** The output from the digitising process consists of computer-readable tape which can be fed straight into English Nature's GIS, together with summary statistics for each of the pilot study areas split between the two categories of Less Favoured Areas.

**Existing digitised data**

**2.18** Reference to Appendix 1 will show that two major sets of data were already digitised. The Dartmoor Commons survey had been carried out by English Nature and was already on the GIS in Peterborough, while the data for the North Peak ESA had been surveyed by ADAS and digitised by their cartography unit. The existence of these two surveys in digital format led to the decision to use them, not only because of their recent origin (1990 and 1992 respectively), but because it would reduce the amount of map copying and digitising to be carried out in the main contract.

**Summary statistics**

**2.19** The summary statistics which form part of this report have been drawn from the digitised data from Summersides, together with that from ADAS (see above) and from the Dartmoor Commons survey which are already published.

**2.20** The actual tables, pie charts, etc in this report have been produced using the Microsoft Excel program and the computer files form part of the output of this contract.

## 3 RESULTS

### Presentation

**3.1** The results of the collation exercise, in the form of summary statistics as described above, are presented in the form of tables showing the area in hectares of each habitat type, with pie charts for the major subdivisions in each region. For the purposes of making the pie charts more readable, habitat types occurring in less than 1% of the area which is the subject of the chart have been grouped together in an 'other' category. Reference to the main data tables will, however, always allow these small areas to be identified accurately.

### Dartmoor

**3.2** Virtually the whole of Dartmoor is within the Severely Disadvantaged Area (SDA) of the LFA with only very small zones of Disadvantaged Area (DA) (2% of the total) to the north-east.

**3.3** Reference to Table 1.1 shows the breakdown of habitat types for the whole of Dartmoor. The bog, heath and unimproved grassland habitats account for nearly half of the LFA, the remainder being split between woodland (10%) and semi-improved and improved grassland (37%).

**3.4** The major division of habitat types in Dartmoor lies between the unenclosed land known as the Commons, and the enclosed agricultural land which surrounds them. Table 1.2 shows clearly how different the habitat composition is on either side of this divide. On the Commons, virtually the whole area is bog, heath and unimproved acid grassland, while in the remainder of the SDA semi-improved and improved grassland (59%) and woodland (15%) are the most significant.

**3.5** The LFA boundary around Dartmoor is more or less co-incident with the Dartmoor National Park boundary, and the results for the former apply with a reasonable degree of accuracy to the latter. Once the digitised data are installed on English Nature's GIS, however, it will be possible to superimpose the National Park boundary and to produce accurate figures for the Park.

**3.6** There is a proposal for an Environmentally Sensitive Area in Dartmoor and it is understood from the ADAS regional office that once again the ESA boundary will closely follow that of the LFA around Dartmoor. Should ADAS decide to carry out an up-to-date habitat survey, an ideal opportunity will exist both to produce much more up-to-date maps of the enclosed parts of Dartmoor and to compare the 1984 and 1990 figures with a more recent data set.

### The Culm Measures

**3.7** The area of land to the north-west, north and north-east of Dartmoor is known as the Culm. This area overlies shales and sandstones of the upper Carboniferous period (the Culm Measures) which tend to produce soils which are difficult to work in farming terms and as a result there are considerable areas of agriculturally unimproved, "enclosed" habitats still to be found. (Devon Wildlife Trust 1992)

**3.8** Much of the Culm is covered by the Disadvantaged Area of the LFA and since this area is contiguous with Dartmoor, it was included in the current exercise. The great majority of the Culm LFA lies in Devon, but a small amount is in north-east Cornwall stretching across to the coast. (Figure 2)

**3.9** The actual Culm Grasslands pose a problem in terms of how they should be mapped under Phase I since they usually consist of an intimate mosaic of valley mire, marshy grassland, wet heath and scrub. After discussions with the Devon Wildlife Trust's Conservation Officer, who was responsible for co-ordinating a recent survey of Culm Grasslands, they have all been mapped as wet heath.

**3.10** The total area of LFA in the Culm is just under 150,000 ha, of which 2% is Culm Grassland and the remaining 93% is semi-improved and improved grassland and arable land. (Table 2)

### Peak District

**3.11** If data for both Dartmoor and the Culm were relatively straightforward to collate the Peak District presents a much more complex picture, both ecologically and administratively.

**3.12** The Peak District LFA consists of an inner core of Severely Disadvantaged Area surrounded by a belt of Disadvantaged Area of widely varying breadth (Figure 3). The SDA is more or less coincident with the Peak District National Park boundary, while there is a major geological division across the centre of the area with limestone to the south and gritstone to the north. The heart of the gritstone moorland area has been designated as the North Peak Environmentally Sensitive Area. Finally, the Peak District LFA lies in six different administrative regions - three Shire Counties and three Metropolitan Counties. In fact, in the Metropolitan Areas, the Counties have no administrative meaning today, all powers having been passed to the unitary Metropolitan Districts. This final level of complexity has not been taken into account in analysing the Peak District data for the purposes of this report.

**3.13** As was mentioned in Section 2.4, the data collation exercise was arbitrarily stopped at OS northing 412 in the north, since this just encompasses both the National Park and the North Peak ESA. The LFA boundary continues both to the north and north-west of this line, right up the Pennine chain.

**3.14** Table 3.1 gives overall figures for the Peak District, broken down into the two LFA divisions. It may be clearly seen that the great majority of the Disadvantaged Area (84%) is either semi-improved or improved grassland or built-up or amenity land. The semi-natural habitats of greater interest account for approximately 14%, and woodland accounts for half of that.

**3.15** In the SDA, the picture is very different, with semi-improved and improved grassland accounting for only 42% of the total, while heath, bog, unimproved acid grassland and bracken account for 38%. Despite the known interest of calcareous grassland in the southern Peak District, this only accounts for just over 1% of the SDA and less than 1% of the LFA as a whole.

**3.16** Table 3.2 further refines the figures for the SDA into the North Peak ESA and land outside it. The ESA accounts for only 30% of the SDA, but virtually all of the bog communities, most of the marshy grassland and over half of the heathland are contained within it. This reflects the altitude and topography of the North Peak ESA which is markedly more 'severe' than the remainder of the SDA.

**3.17** Table 3.3 summarises the overlap of the LFA with the various administrative boundaries. These figures are approximate, but give a very good impression of how much of each county occurs in each division of the LFA.

### General Comments

**3.18** Clearly, once the digitised data have been imported onto English Nature's GIS, far more sophisticated interpretation and manipulation of the results will be possible, but that is outside the scope of this contract and this report.

## 4 DEFINITION OF UPLAND

**4.1** As described in Section 2.1 *et seq*, it was necessary to establish a working definition for uplands in order to prosecute the data collection for this contract. Once the LFA boundary had been selected, *EAS* were asked to review its effectiveness as a definition and to try to evaluate it against other possible definitions.

### What is understood by the term "upland"

**4.2** The term "upland" is one which everyone uses, but no-one seems able to define categorically. For most individuals it probably conjures an image of windswept or rocky unenclosed land at considerable altitude and with a feeling of remoteness. For the purpose of this contract, however, such an 'emotional' definition is inadequate. Some attempt must be made to define uplands in ecological terms.

**4.3** An attempt to make such a definition, at least for England, is fraught with difficulty,

because despite the number of obvious factors such as altitude, rainfall, insolation, geology, soils, aspect, etc., the dominant force in determining the vegetation of most of England's "upland" is Man.

**4.4** The major human activities concerned are, roughly in decreasing order of significance in terms of area: agriculture, game management, catchment management, afforestation, military activity, quarrying and tourism. These are overlain by further human-derived factors which are harder to pinpoint such as acid deposition and general climatic change.

**4.5** The result of all this activity is a blurring, sometimes quite dramatic, of natural ecological gradients associated with the physical factors mentioned in Section 4.3 above. For example, much of the land within the SDA in the southern Peak District is capable of quite intensive agricultural management and thus consists of improved grassland or even short-term leys. In other parts of the Peak District, over-grazing is so severe that habitats have been modified considerably and possibly irreversibly.

**4.6** Since a rigorous scientific definition of uplands using, for example, selected National Vegetation Community types (which would mean surveying the whole of England at NVC level before one could draw an upland boundary), is impractical on resource grounds, the only solution appears to be to adopt a pragmatic approach and use some existing boundary, even if it includes land which most individuals would not readily think of as upland.

**Land classification**

**4.7** Before reviewing the options, consideration must be given to the approach adopted by the Institute of Terrestrial Ecology at Merlewood. The methodology of their Land Classification is well documented (eg Bunce & Heal 1984; Bunce *et al* 1992) and relies on assigning environmental attributes to a sample of 1 km squares throughout Britain, subjecting the data to multivariate analysis and thus producing a series of 32 Land Classes. These classes are then used as a framework for sampling land use and vegetation in order to predict, for example, the quantities of each habitat type that should occur in any land class.

**4.8** The 32 land classes can be conveniently aggregated into four 'super classes' corresponding to landscapes respectively dominated by 'arable crops', 'lowland grasslands', 'mixed marginal uplands' and 'open moorlands'. It is possible to interrogate the Countryside Information System (CIS) at Merlewood to produce maps showing the overlap between these four classes and the LFA boundaries used in this contract. Carrying out this exercise for the LFA areas concerned in this contract shows that the whole of the Culm Measures and the outer fringes of Dartmoor key out as 'lowland grasslands', while the core of Dartmoor keys out as 'mixed marginal uplands'. In the Peak District, most of the SDA is 'mixed marginal' with a tiny amount of 'open moorland' in the North Peak, while the DA is mostly 'lowland grassland'.

**4.9** It is also possible to interrogate the CIS to obtain land cover figures for any selected area.

In order to test the feasibility of using this system as an alternative to the approach adopted in the URSC project, a comparison was conducted for the Peak District LFA.

**4.10** The boundary of the Peak District LFA was "painted" as accurately as possible onto the UK map on the CIS computer screen. Land cover figures are then automatically generated by the CIS. The figures are not broken down as finely as those in the USRC, but Table 4 shows a comparison between the figures generated by the two methods for the Peak District.

**4.11** As can be seen, the figures for some of the categories - acid grassland, other grassland and open water - are remarkably close, while those for others - woodland, marshy grassland and urban land - are widely different. it is outside the scope of this contract to investigate these differences further, but English Nature may wish to pursue the matter separately.

**Possible solutions**

**4.12** The practical solutions to the upland boundary which have been considered are as follows:

- The 800 ft contour
- The boundary of enclosed land
- National Park boundaries
- The Less Favoured Area
- ITE Land Classes

**4.13** As was mentioned at the beginning of this report, the 800 ft contour is too arbitrary, and takes insufficient account of land capability which is related more to climate, geology, soils and *topography* than to altitude alone. For this reason it is felt that it merits no further consideration here.

**4.14** The boundary of enclosed land effectively divides land which receives agricultural treatment in the form of lime and fertiliser addition, etc from that which does not, although there are exceptions to this rule. It is certainly true to say that the vast majority of bog, heathland and improved acid grassland occurs in "unenclosed" land and thus such a boundary for upland might be felt to have some merit. What it fails to take into account, however, is the requirement of any hill livestock farm to contain a combination of enclosed "inbye" land and unenclosed moor. To place the boundary of upland between the two would deny English Nature any credibility in trying to influence the hill farming community in terms of nature conservation.

**4.15** National Park Boundaries are too much influenced by political considerations to merit much further discussion here. *EAS* are aware of situations where land has been excluded from a National Park on the grounds that the landowner would not accept his land being designated, even though that land might be identical in character, habitat composition, etc to land which has been included. Moreover, National Parks by no means cover all of the hill land in England, notably in the north Pennines.

**4.16** The Less Favoured Areas are designated under European Community regulations to assist farmers who operate under difficult conditions, whether those difficulties be physical, social or in terms of reaching their market. In Britain the LFAs are designated under Article 3(4) of the Less Favoured Areas Directive, that is "LFAs in danger of depopulation". The detailed criteria for LFA designation are included as Appendix 4 to this report, but they essentially depend on the presence of infertile land *and* economic results lower than the mean *and* a low or dwindling population reliant on agriculture. The actual boundary of the LFA is arrived at by applying a whole range of tests in terms of land capability, economic results, etc in order to determine the final position of the line on the map.

**4.17** The two parts of the LFA in Britain are separated simply on the severity of the handicaps to farming, the Severely Disadvantaged Area obviously relating to those areas where farming is determined to be *most* difficult.

**4.18** The results of the URSC exercise suggest that the LFA is an adequate boundary for 'upland' in England, in that it includes most of the areas which one could intuitively think of as upland - the problem, if any, is that the LFA as a whole extends too far "down the hill" and thus includes land which may not be felt to be truly 'upland' in character. This is demonstrated clearly in the Peak District where the Disadvantaged Area consists of 72% semi-improved and improved grassland, 12% urban land and amenity grassland, 8% woodland and 2% unimproved neutral grassland leaving only 5% of the land containing habitats of 'upland interest'. In the Culm Measures, there are no 'upland' habitats, the Culm Grasslands themselves being perhaps a unique case of 'upland plant communities' occurring in relatively low-lying agricultural land.

**4.19** The ITE land classification offers an opportunity to use objective environmental parameters to produce a boundary of 'upland' - in the case of England, the 'mixed marginal' and 'open moorland' categories would have to be used. This approach has the merits of objectivity and of the opportunity to obtain statistics for vegetation cover without having to collate existing survey data. The drawbacks, however, in practical terms, include the fact that the boundary of upland produced in this way would give incoherent patches of land not related to any existing administrative or physical boundaries. While this might be acceptable from a purely scientific point of view, it may not be entirely practical in terms of English Nature's aims of influencing agricultural and other activities which affect the uplands either at a local or a national level.

**Conclusions**

**4.20** The *EAS* conclude, therefore, that the optimum solution to the question of an upland boundary would be to adopt the *Severely* Disadvantaged Area of the LFA. This would, as far as the results for Dartmoor and the Peak District demonstrate, include all the unenclosed land and that inbye land most closely associated with it, while excluding the great tracts of enclosed, marginal land included in the Disadvantaged Area. It has the merit of being immediately identifiable by MAFF and other agencies who will presumably hold

statistics about it with which the vegetation data can be compared.

# 5 COMMENTS ON METHODOLOGY

## Reliability of data sources

**5.1** The tables of summary statistics confer a sense of reliability and accuracy on the data which may, in truth, be spurious.

**5.2** The majority of the surveys which were drawn upon for this exercise, particularly in the Peak District were not exceptionally reliable, are around ten years out of date and are not rated particularly highly in the *Review of Phase I Habitat Survey in England* (NCC 1991). Thus, although the statistics give a reasonable *overall* impression of the distribution of habitats in each area, the maps should not be treated too literally at a very local level. Clearly any errors in boundaries or habitat classification on the original maps will have been reproduced in the maps prepared for this contract, and, of course, vegetation may have changed since the original maps were drawn. Provided that these points are borne in mind, then the statistics can be used with reasonable confidence.

## Habitat Classification

**5.3** The 'reduced Phase I' habitat classification appears to be satisfactory except that it must be appreciated that some information will have been lost by combining the semi-improved grassland categories with the improved grassland. The decision to do this was based on two factors: first that the distinctions between semi-improved and unimproved grassland are among the most difficult for Phase I surveyors to make in the field and thus the classification of semi-improved is particularly unreliable, and second that if semi-improved grassland were left as a separate category, the time taken (and thus the cost) to transcribe and digitise the maps would increase dramatically.

**5.4** If the URSC project is extended to the rest of England, the classification of semi-improved grassland should be carefully considered, especially in relation to areas such as the Yorkshire Dales where the species-rich hay meadows are classified as semi-improved. This particular problem may, on the other hand, be somewhat ameliorated by the fact that if the Severely Disadvantaged Area only is selected, it will be reasonable to assume that most of the land in the Yorkshire Dales which is recorded as semi-improved grassland will in fact contain hay meadows of some interest.

## Copying and digitising

**5.5** The copying process itself did not yield any particular problems, apart from the difficulty of edge-matching different surveys where habitat classifications do not conform across

boundaries on the original maps.

**5.6** There were few technical problems with the digitising - on occasions the digitisers may have had difficulty reading the habitat classification in very small areas of land, but this is insignificant in percentage terms.

**Financial/procedural**

**5.7** One of the very real problems with the pilot project was that it was impossible to predict how long either copying or digitising would take, since the intricacy of individual maps varied tremendously. This made costing extremely difficult, although fortunately the final figures were not too far from the estimates.

**5.8** The copying did in fact take 50 man-days, which is approximately as estimated in the *EAS* quote, although extra time was needed to collate, check and despatch maps to the digitisers. On average, therefore, between three and four 1:10,000 sheets could be copied by one person in a day, but this varied very widely from one area to the next, with the Devon maps being almost an order of magnitude quicker to deal with than those in the Peak.

**5.9** The digitising actually cost more than was originally estimated, largely because of the complexity of the Peak District maps. In the final event, approximately 13,000 polygons were digitised at a cost of £8,700.

**5.10** Thus the final costs of the project were as follows:

| | **£** |
|---|---|
| Copying of maps | 6,000 |
| Expenses associated with project | 4,000 |
| Digitising | 8,700 |
| | **18,700** |

This excludes time spent by *EAS* in assessing upland definitions, etc which will not be relevant if the project is taken forward to other parts of England.

**5.11** A total of 512,000 ha or 5,120 square kilometres was mapped and digitised. Thus the cost was £3.65 per square kilometre. As mentioned above, this figure should be used with caution in a predictive sense, since the cost may have varied by as much as a factor of three between Dartmoor and the Peak District.

## 6 RECOMMENDATIONS

The *EAS* concludes that if the project is extended to the rest of England then:

- the *Severely* Disadvantaged Area of the LFA should be used as the boundary of upland
- the separation of semi-improved and improved grassland should be carefully considered on a cost/benefit basis
- further investigation should be made into the possibility of using the ITE land classification to generate summary statistics.

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| ADAS Cartography: Gloucester | Malcolm Dalby |
| Wolverhampton | Bernadette Micklewright |

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Figure 1

General map showing Less Favoured Areas in Dartmoor and the Culm Measures
Scale 1:625,000 approximately
Grid lines at 50 km intervals

Figure 2

**General map showing Less Favoured Areas in the Peak District**
**Scale 1:625,000 approximately**
**Grid lines at 50 km intervals**

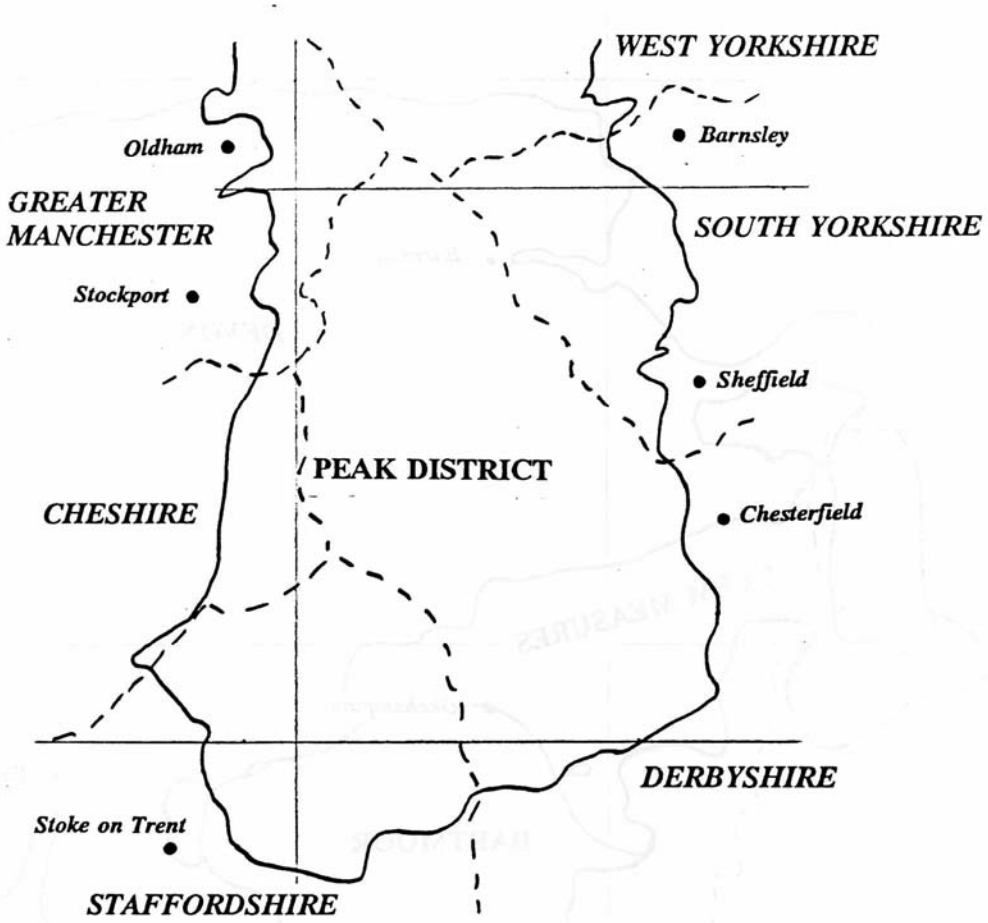
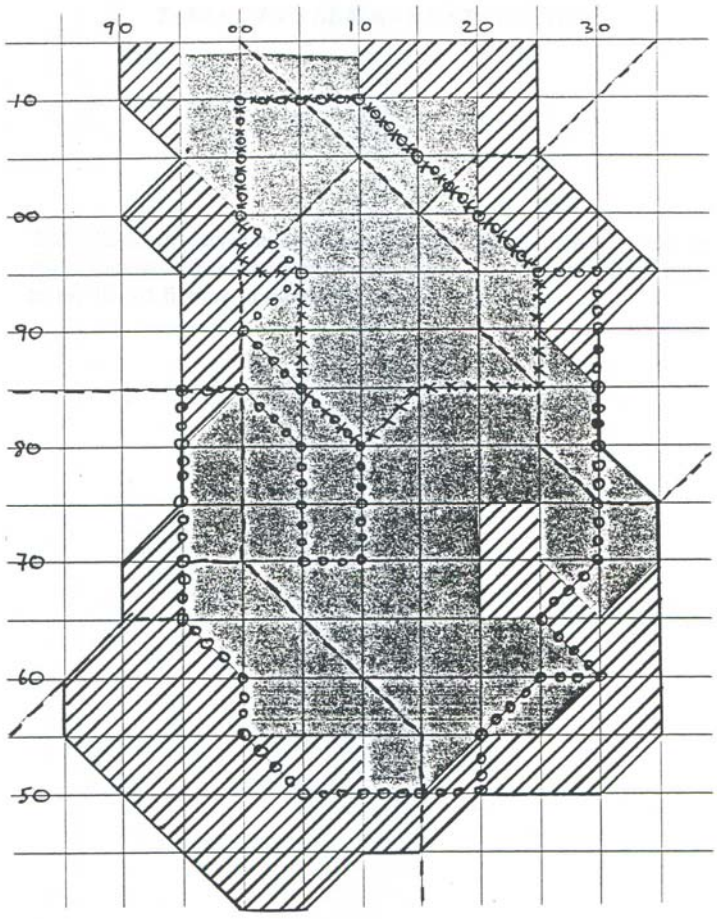


Figure 3

Stylised map of the Peak District LFA showing the Severely Disadvantaged Ar
Disadvantaged Area, National Park and Environmentally Sensitive Area
Not to scale




Legend

- Disadvantaged Area
- Severely Disadvantaged Area
- National Park
- Environmentally Sensitive Area

## *TABLES 1 - 3 SUMMARY STATISTICS*

The 'slices' of each pie chart are not labelled, but they should be read clockwise from the top of each circle and can thus be related to the list of figures immediately to their left.

Table 1.1

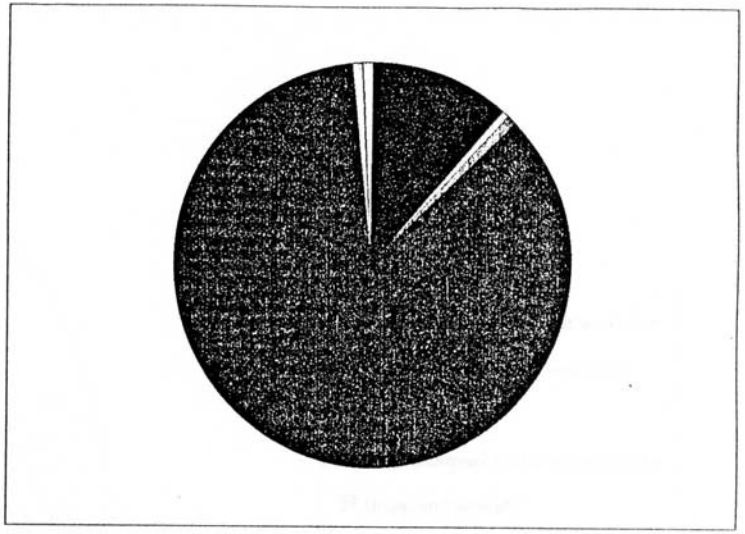
## Dartmoor Less Favoured Area

| Habitat type | Disadvantaged | | S'ly disadvant'd | | TOTAL | |
|---|---|---|---|---|---|---|
| | ha | % | ha | % | ha | % |
| Semi-natural broadleaved woodland | 244 | 11 | 4741 | 6 | 4985 | 5 |
| Planted broadleaved woodland | | | 66 | 0 | 66 | 0 |
| Coniferous and mixed woodland | 17 | 1 | 4028 | 5 | 4045 | 4 |
| Dense scrub | 13 | 1 | 481 | 2 | 494 | 1 |
| Unimproved acid grassland | | | 9371 | 11 | 9371 | 10 |
| Unimproved neutral grassland | | | 290 | 0 | 290 | 0 |
| Unimproved calcareous grassland | | | 0 | 0 | 0 | 0 |
| Marshy grassland | | | 1243 | 1 | 1243 | 1 |
| Semi-improved, improved and arable | 1819 | 85 | 33285 | 22 | 35104 | 37 |
| Continuous bracken | 8 | 0 | 4983 | 6 | 4991 | 5 |
| Dry heath and mosaics | | | 13967 | 17 | 13967 | 15 |
| Wet heath and mosaics | | | 1015 | 1 | 1015 | 1 |
| Bog (all types) | | | 13983 | 18 | 13983 | 15 |
| Mire | | | 1389 | 5 | 1389 | 1 |
| Swamp | 1 | 0 | 146 | 0 | 147 | 0 |
| Open Water | | | 59 | 0 | 59 | 0 |
| Quarries, spoil, etc | | | 352 | 0 | 352 | 0 |
| Urban and amenity | 17 | 1 | 688 | 1 | 705 | 1 |
| No access/ not surveyed | 15 | 1 | 2519 | 3 | 2534 | 3 |
| **TOTAL** | **2134** | **100** | **92606** | **100** | **94739** | **100** |

Table 1.1

*Dartmoor: whole LFA*

| DISADVANTAGED AREA | ha | % |
|---|---|---|
| Semi-natural broadleaved woodland | 244 | 11 |
| Coniferous and mixed woodland | 17 | 1 |
| Dense scrub | 13 | 1 |
| Semi-improved, improved and arable | 1828 | 86 |
| Urban and amenity | 17 | 1 |
| No access/ not surveyed | 15 | 1 |
| **TOTAL** | **2134** | **100** |



| SEVERELY DISADVANTAGED AREA | | |
|---|---|---|
| Semi-natural broadleaved woodland | 4741 | 5 |
| Coniferous and mixed woodland | 4028 | 4 |
| Dense scrub | 481 | 1 |
| Unimproved acid grassland | 9371 | 10 |
| Marshy grassland | 1243 | 1 |
| Semi-improved, improved and arable | 33285 | 36 |
| Continuous bracken | 4983 | 5 |
| Dry heath and mosaics | 13967 | 15 |
| Wet heath and mosaics | 1015 | 1 |
| Bog (all types) | 13983 | 15 |
| Mire | 1389 | 1 |
| Urban and amenity | 688 | 1 |
| No access/ not surveyed | 2519 | 3 |
| Other | 913 | 1 |
| **TOTAL** | **92606** | **100** |

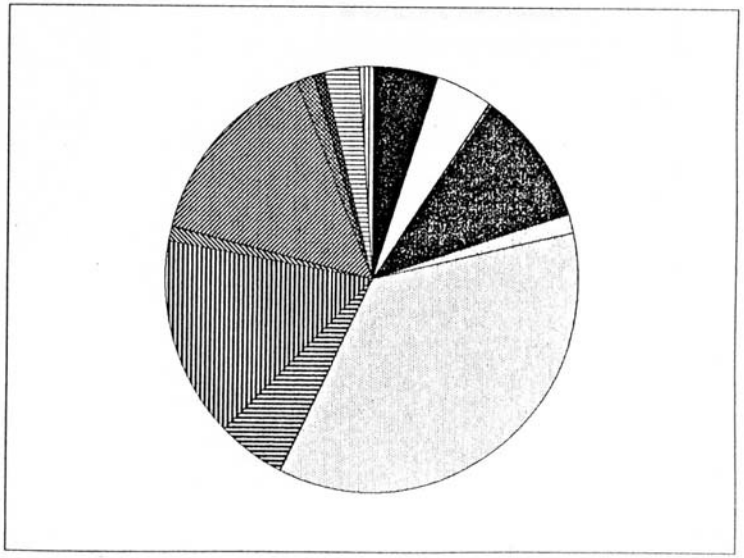
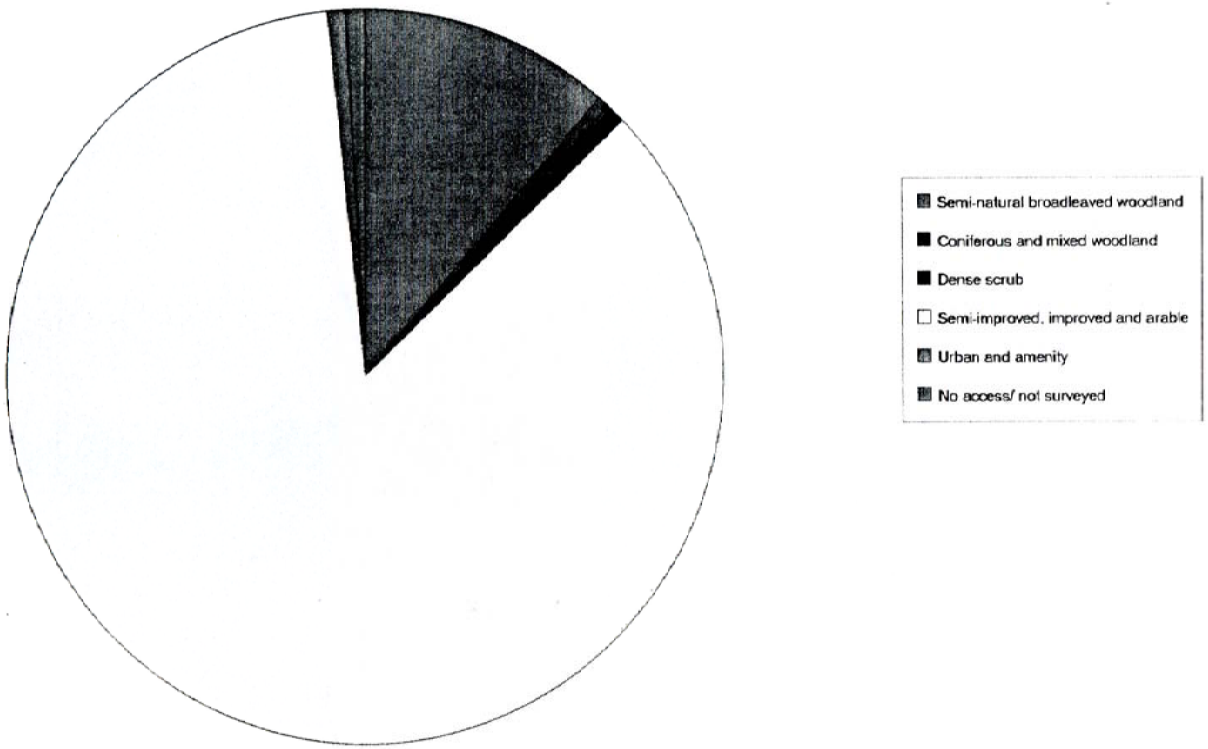
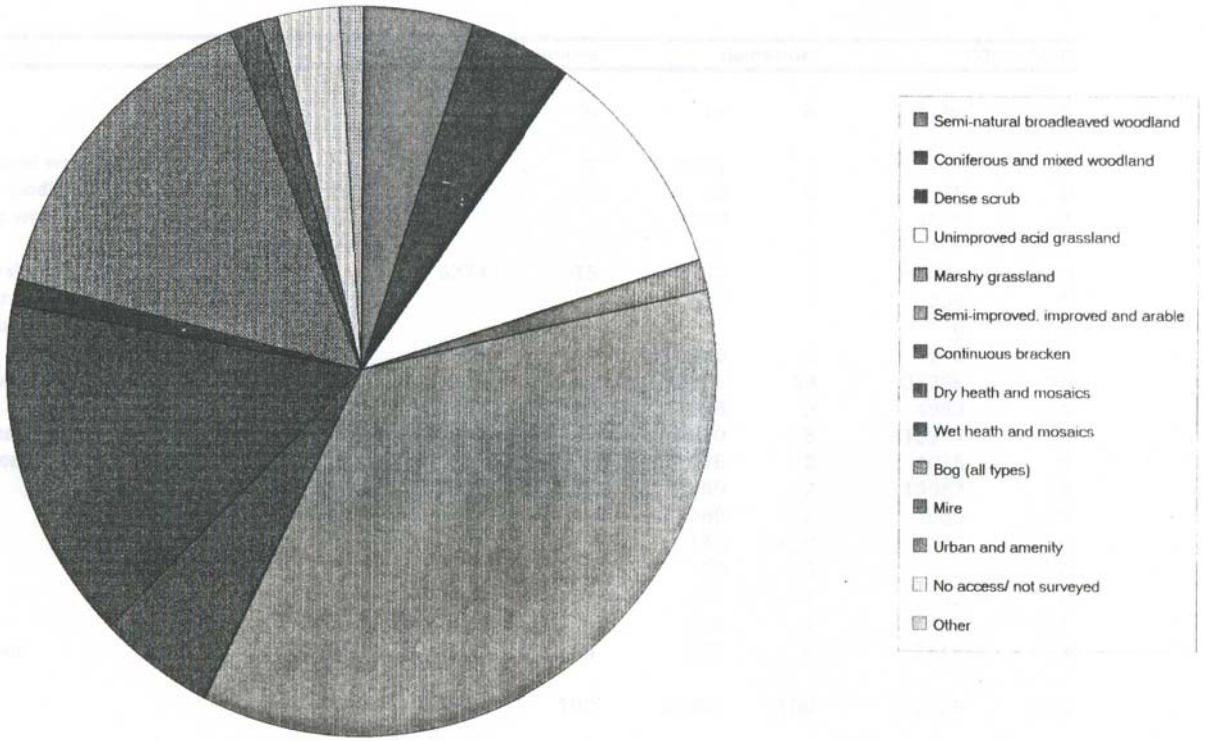


Table 1.1

Dartmoor: DA



Dartmoor: SDA

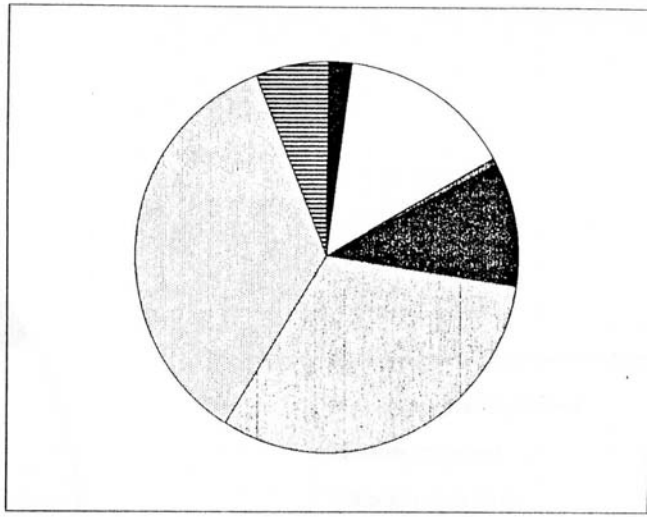


## Dartmoor Less Favoured Area: Severely Disadvantaged Area

| Habitat types | Commons | | Remainder | | Whole SDA | |
|---|---|---|---|---|---|---|
| | ha | % | ha | % | ha | % |
| Semi-natural broadleaved woodland | 700 | 2 | 4041 | 7 | 4741 | 5 |
| Planted broadleaved woodland | | | 66 | 0 | 66 | 0 |
| Coniferous and mixed woodland | | | 4028 | 7 | 4028 | 4 |
| Dense scrub | | | 481 | 1 | 481 | 1 |
| Unimproved acid grassland | 5374 | 15 | 3997 | 7 | 9371 | 10 |
| Unimproved neutral grassland | | | 290 | 1 | 290 | 0 |
| Unimproved calcareous grassland | | | | | 0 | 0 |
| Marshy grassland | 195 | 1 | 1048 | 2 | 1243 | 1 |
| Semi-improved, improved and arable | | | 33285 | 59 | 33285 | 36 |
| Continuous bracken | 3645 | 10 | 1338 | 2 | 4983 | 5 |
| Dry heath and mosaics | 11297 | 31 | 2670 | 5 | 13967 | 15 |
| Wet heath and mosaics | | | 1015 | 2 | 1015 | 1 |
| Bog (all types) | 12628 | 35 | 1355 | 2 | 13983 | 15 |
| Mire | | | 1389 | 2 | 1389 | 1 |
| Swamp | | | 146 | 0 | 146 | 0 |
| Open Water | | | 59 | 0 | 59 | 0 |
| Quarries, spoil, etc | | | 352 | 1 | 352 | 0 |
| Urban and amenity | | | 688 | 1 | 688 | 1 |
| No access/not surveyed | 2160 | 6 | 359 | 1 | 2519 | 3 |
| TOTAL | 35999 | 100 | 56607 | 100 | 92606 | 100 |

Table 1.2

| COMMONS | ha | % |
|---|---|---|
| Semi-natural broadleaved woodland | 700 | 2 |
| Unimproved acid grassland | 5374 | 15 |
| Marshy grassland | 195 | 1 |
| Continuous bracken | 3645 | 10 |
| Dry heath and mosaics | 11297 | 31 |
| Bog (all types) | 12628 | 35 |
| No access/not surveyed | 2160 | 6 |
| **TOTAL** | **35999** | **100** |



| REMAINDER OF SDA | | |
|---|---|---|
| Semi-natural broadleaved woodland | 4041 | 7 |
| Coniferous and mixed woodland | 4028 | 7 |
| Dense scrub | 481 | 1 |
| Unimproved acid grassland | 3997 | 7 |
| Unimproved neutral grassland | 290 | 1 |
| Marshy grassland | 1048 | 2 |
| Semi-improved, improved and arable | 33285 | 59 |
| Continuous bracken | 1338 | 2 |
| Dry heath and mosaics | 2670 | 5 |
| Wet heath and mosaics | 1015 | 2 |
| Bog (all types) | 1355 | 2 |
| Mire | 1389 | 2 |
| Quarries, spoil, etc | 351 | 1 |
| Urban and amenity | 688 | 1 |
| No access/not surveyed | 359 | 1 |
| Other | 272 | 0 |
| **TOTAL** | **56607** | **100** |

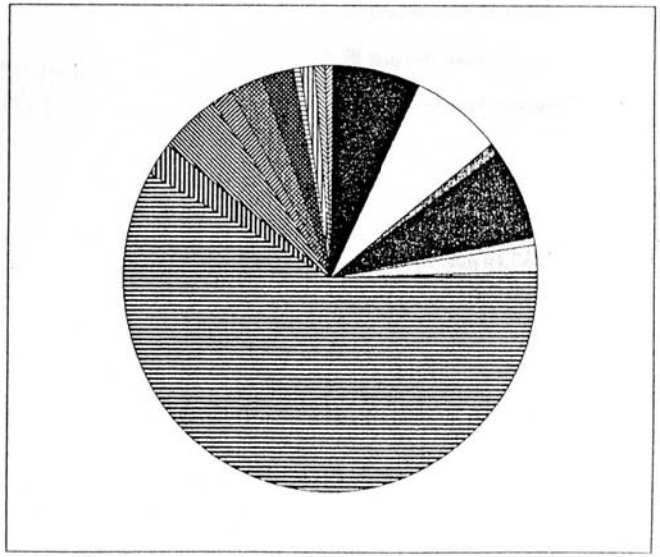
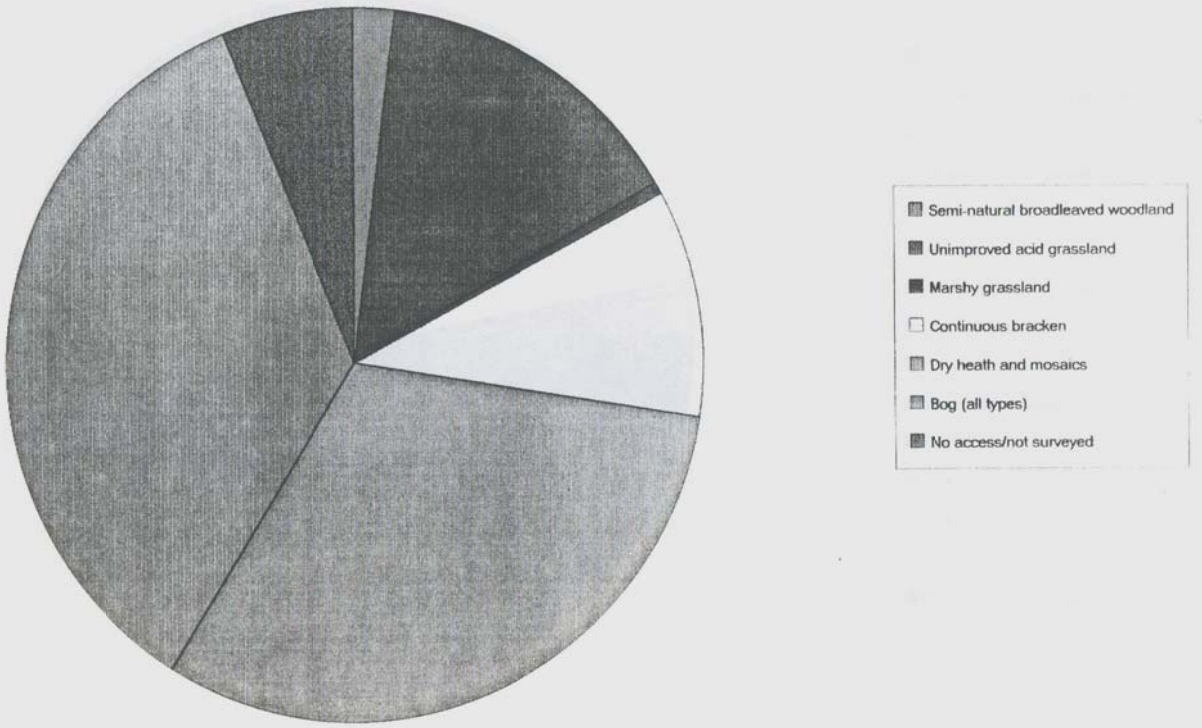
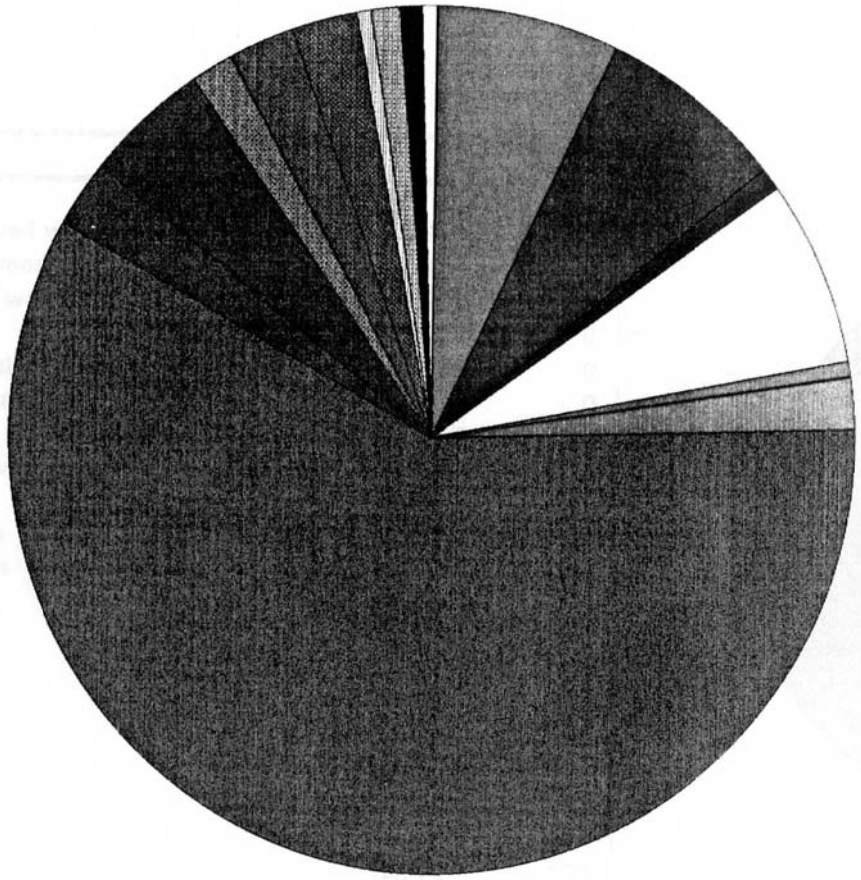


Table 1.2

Dartmoor Commons



Dartmoor: Remaining SDA



- Semi-natural broadleaved woodland
- Coniferous and mixed woodland
- Dense scrub
- Unimproved acid grassland
- Unimproved neutral grassland
- Marshy grassland
- Semi-improved, improved and arable
- Continuous bracken
- Dry heath and mosaics
- Wet heath and mosaics
- Bog (all types)
- Mire
- Quarries, spoil, etc
- Urban and amenity
- No access/not surveyed
- Other

## Culm Measures Less Favoured Area

| Habitat type | TOTAL | |
|---|---|---|
| | ha | % |
| Semi-natural broadleaved woodland | 2754 | 2 |
| Planted broadleaved woodland | 103 | 0 |
| Coniferous and mixed woodland | 3788 | 3 |
| Dense scrub | 89 | 0 |
| Unimproved acid grassland | 58 | 0 |
| Unimproved neutral grassland | 4 | 0 |
| Marshy grassland | 7 | 0 |
| Semi-improved, improved and arable | 137419 | 93 |
| Continuous bracken | 15 | 0 |
| Dry heath and mosaics | 40 | 0 |
| Wet heath and mosaics | 2321 | 2 |
| Bog (all types) | | |
| Mire | 2 | 0 |
| Swamp | 7 | 0 |
| Open Water | 277 | 0 |
| Quarries, spoil, etc | 10 | 0 |
| Urban and amenity | 654 | 0 |
| No access/ not surveyed | 198 | 0 |
| TOTAL | 147746 | 100 |

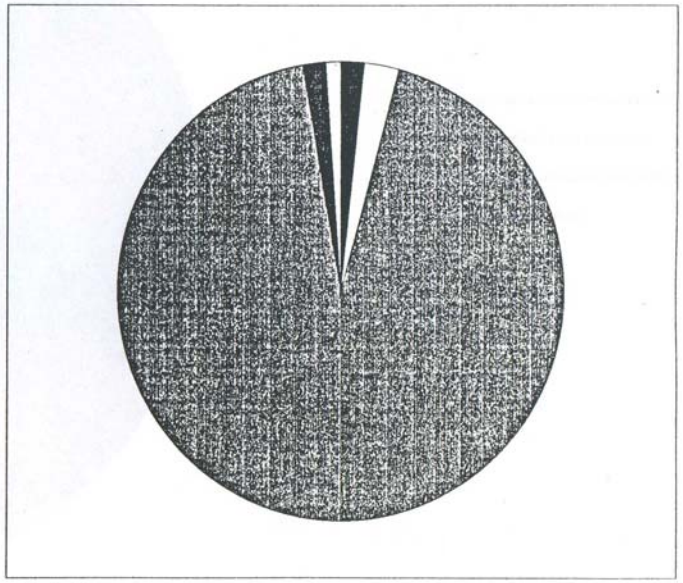


Table 2

Culm measures: SDA

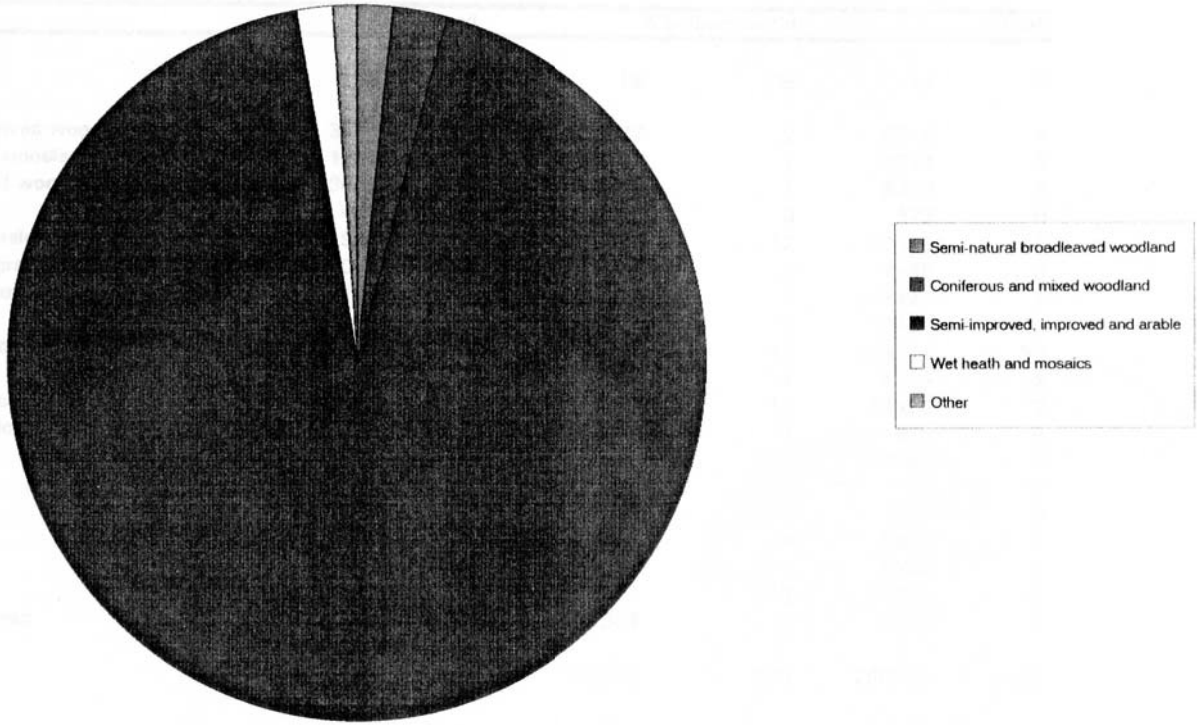


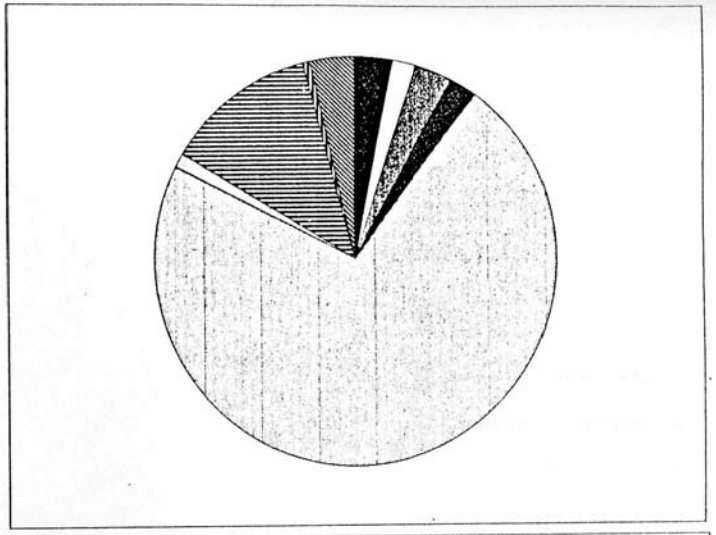
Table 3.1

## Peak District Less Favoured Area

| Habitat type | Disadvantaged | | S'ly disadvant'd | | TOTAL | |
|---|---|---|---|---|---|---|
| | ha | % | ha | % | ha | % |
| Semi-natural broadleaved woodland | 3169 | 3 | 2577 | 2 | 5746 | 2 |
| Planted broadleaved woodland | 1787 | 2 | 1937 | 1 | 3724 | 1 |
| Coniferous and mixed woodland | 3002 | 3 | 5908 | 4 | 8910 | 3 |
| Dense scrub | 426 | 0 | 551 | 0 | 977 | 0 |
| Unimproved acid grassland | 949 | 1 | 19096 | 12 | 20045 | 8 |
| Unimproved neutral grassland | 2005 | 2 | 5493 | 3 | 7498 | 3 |
| Unimproved calcareous grassland | 121 | 0 | 2307 | 1 | 2428 | 1 |
| Marshy grassland | 211 | 0 | 3227 | 2 | 3438 | 1 |
| Semi-improved, improved and arable | 69629 | 72 | 68488 | 42 | 138117 | 53 |
| Continuous bracken | 356 | 0 | 3880 | 2 | 4236 | 2 |
| Dry heath and mosaics | 847 | 1 | 16679 | 10 | 17526 | 7 |
| Wet heath and mosaics | 9 | 0 | 967 | 1 | 976 | 0 |
| Bog (all types) | 54 | 0 | 21828 | 13 | 21882 | 8 |
| Mire | 0 | 0 | 14 | 0 | 14 | 0 |
| Swamp | 50 | 0 | 130 | 0 | 180 | 0 |
| Open Water | 533 | 1 | 1333 | 1 | 1866 | 1 |
| Quarries, spoil, etc | 518 | 1 | 1382 | 1 | 1900 | 1 |
| Urban and amenity | 11755 | 12 | 5312 | 3 | 17067 | 7 |
| No access/ not surveyed | 762 | 1 | 2804 | 2 | 3566 | 1 |
| **TOTAL** | **96183** | **100** | **163913** | **100** | **260096** | **100** |

| DISADVANTAGED | ha | % |
|---|---|---|
| Semi-natural broadleaved woodland | 3169 | 3 |
| Planted broadleaved woodland | 1787 | 2 |
| Coniferous and mixed woodland | 3002 | 3 |
| Unimproved neutral grassland | 2005 | 2 |
| Semi-improved, improved and arable | 69629 | 72 |
| Dry heath and mosaics | 847 | 1 |
| Urban and amenity | 11755 | 12 |
| No access/ not surveyed | 762 | 1 |
| Other | 3227 | 3 |
| TOTAL | 96183 | 100 |

| SEVERELY DISADVANTAGED | | |
|---|---|---|
| Semi-natural broadleaved woodland | 2577 | 2 |
| Coniferous and mixed woodland | 5908 | 4 |
| Unimproved acid grassland | 19096 | 12 |
| Unimproved neutral grassland | 5493 | 3 |
| Unimproved calcareous grassland | 2307 | 1 |
| Marshy grassland | 3227 | 2 |
| Semi-improved, improved and arable | 68488 | 42 |
| Continuous bracken | 3880 | 2 |
| Dry heath and mosaics | 16679 | 10 |
| Bog (all types) | 21828 | 13 |
| Urban and amenity | 5312 | 3 |
| No access/ not surveyed | 2804 | 2 |
| Other | 6314 | 4 |
| TOTAL | 163913 | 100 |



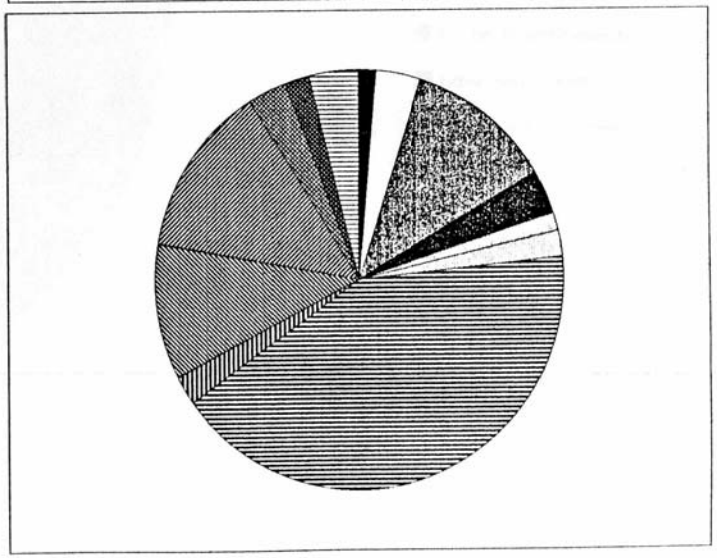


Table 3.1

Peak District: DA

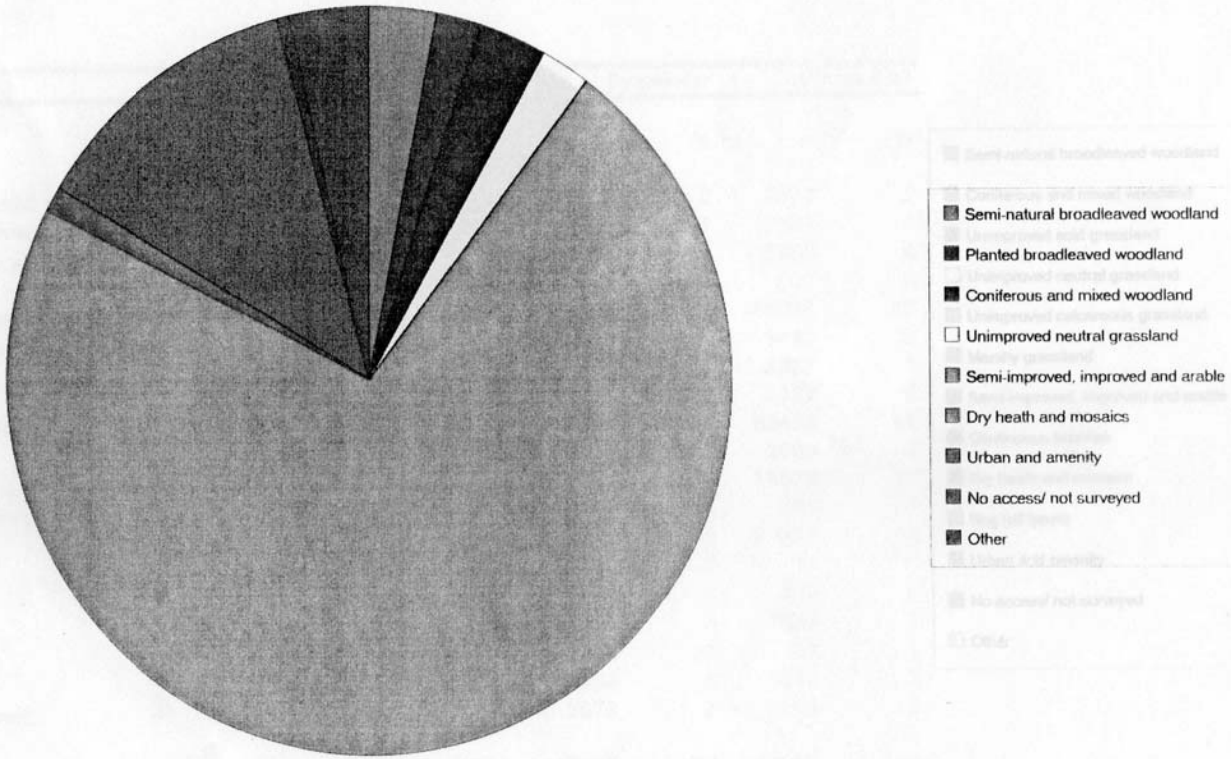
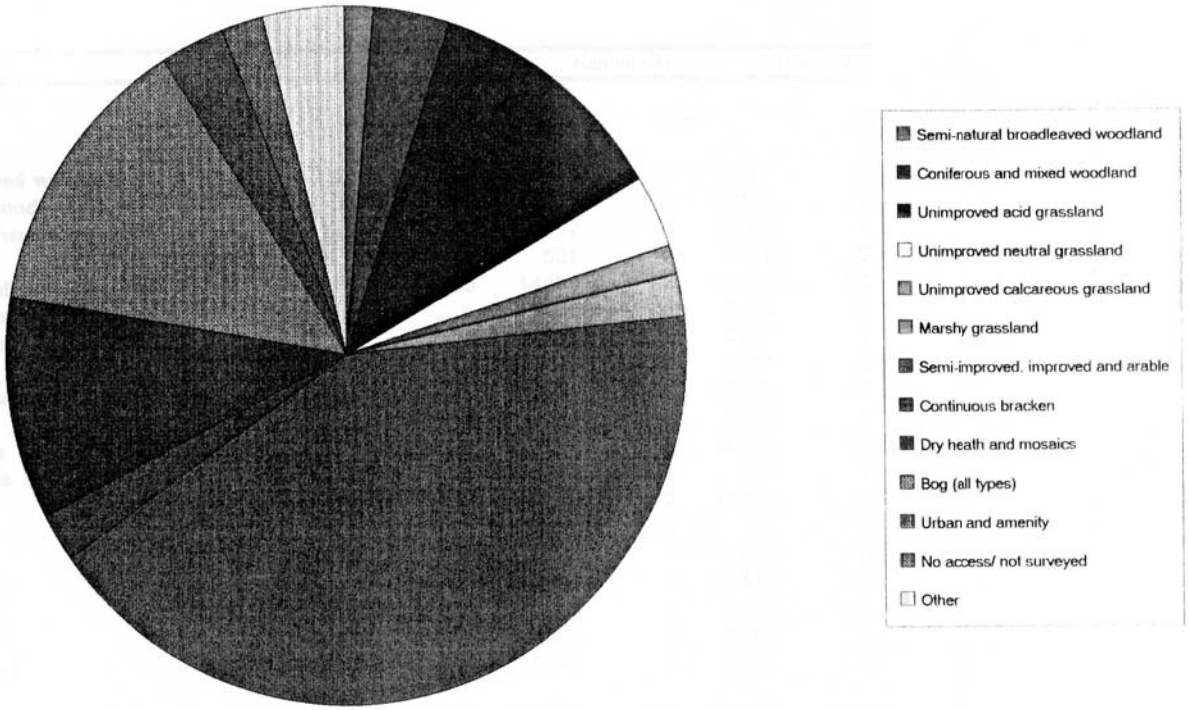


Table 3.1

Peak District: SDA



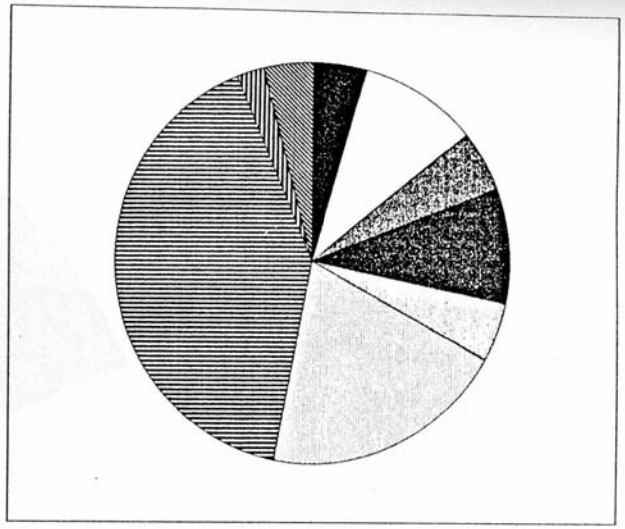
## Peak District Less Favoured Area: Severely Disadvantaged Area

| Habitat types | ESA | | Remainder | | Whole SDA | |
|---|---|---|---|---|---|---|
| | ha | % | ha | % | ha | % |
| Semi-natural broadleaved woodland | 268 | 1 | 2309 | 2 | 2577 | 2 |
| Planted broadleaved woodland | 337 | 1 | 1600 | 1 | 1937 | 1 |
| Coniferous and mixed woodland | 2176 | 4 | 3732 | 3 | 5908 | 4 |
| Dense scrub | 50 | 0 | 501 | 0 | 551 | 0 |
| Unimproved acid grassland | 4838 | 10 | 14258 | 12 | 19096 | 12 |
| Unimproved neutral grassland | | | 5493 | 5 | 5493 | 3 |
| Unimproved calcareous grassland | | | 2307 | 2 | 2307 | 1 |
| Marshy grassland | 2389 | 5 | 838 | 1 | 3227 | 2 |
| Semi-improved, improved and arable | 4481 | 9 | 64007 | 56 | 68488 | 42 |
| Continuous bracken | 2256 | 5 | 1624 | 1 | 3880 | 2 |
| Dry heath and mosaics | 9785 | 20 | 6894 | 6 | 16679 | 10 |
| Wet heath and mosaics | | | 967 | 1 | 967 | 1 |
| Bog (all types) | 19720 | 41 | 2108 | 2 | 21828 | 13 |
| Mire | | | 14 | 0 | 14 | 0 |
| Swamp | | | 130 | 0 | 130 | 0 |
| Open Water | 983 | 2 | 350 | 0 | 1333 | 1 |
| Quarries, spoil, etc | 149 | 0 | 1233 | 1 | 1382 | 1 |
| Urban and amenity | 460 | 1 | 4852 | 4 | 5312 | 3 |
| No access/not surveyed | 731 | 2 | 2073 | 2 | 2804 | 2 |
| TOTAL | 48623 | 100 | 115290 | 100 | 163913 | 100 |

Table 3.2

| ESA | ha | % |
|---|---|---|
| Coniferous and mixed woodland | 2176 | 4 |
| Unimproved acid grassland | 4838 | 10 |
| Marshy grassland | 2389 | 5 |
| Semi-improved, improved and arable | 4481 | 9 |
| Continuous bracken | 2256 | 5 |
| Dry heath and mosaics | 9785 | 20 |
| Bog (all types) | 19720 | 41 |
| Open water | 983 | 2 |
| Other | 1995 | 4 |
| **TOTAL** | **48623** | **100** |

| REMAINDER OF SDA | | |
|---|---|---|
| Semi-natural broadleaved woodland | 2309 | 2 |
| Planted broadleaved woodland | 1600 | 1 |
| Coniferous and mixed woodland | 3732 | 3 |
| Unimproved acid grassland | 14258 | 12 |
| Unimproved neutral grassland | 5493 | 5 |
| Unimproved calcareous grassland | 2307 | 2 |
| Marshy grassland | 838 | 1 |
| Semi-improved, improved and arable | 64007 | 56 |
| Continuous bracken | 1624 | 1 |
| Dry heath and mosaics | 6894 | 6 |
| Wet heath and mosaics | 967 | 1 |
| Bog (all types) | 2108 | 2 |
| Quarries, spoil, etc | 1233 | 1 |
| Urban and amenity | 4852 | 4 |
| No access/not surveyed | 2073 | 2 |
| Other | 995 | 1 |
| **TOTAL** | **115290** | **100** |



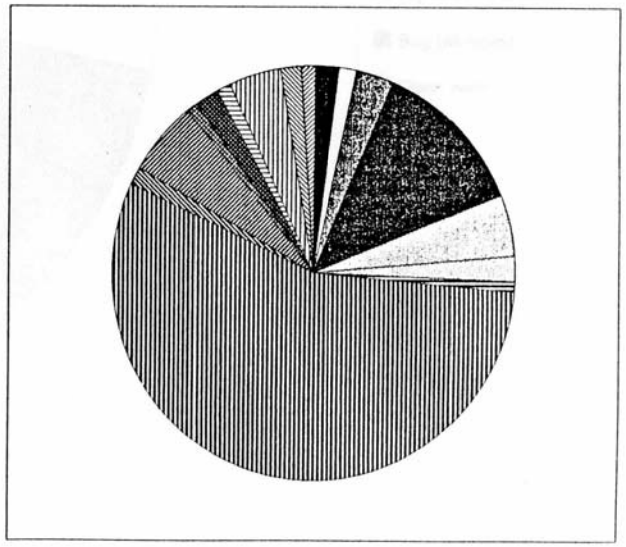
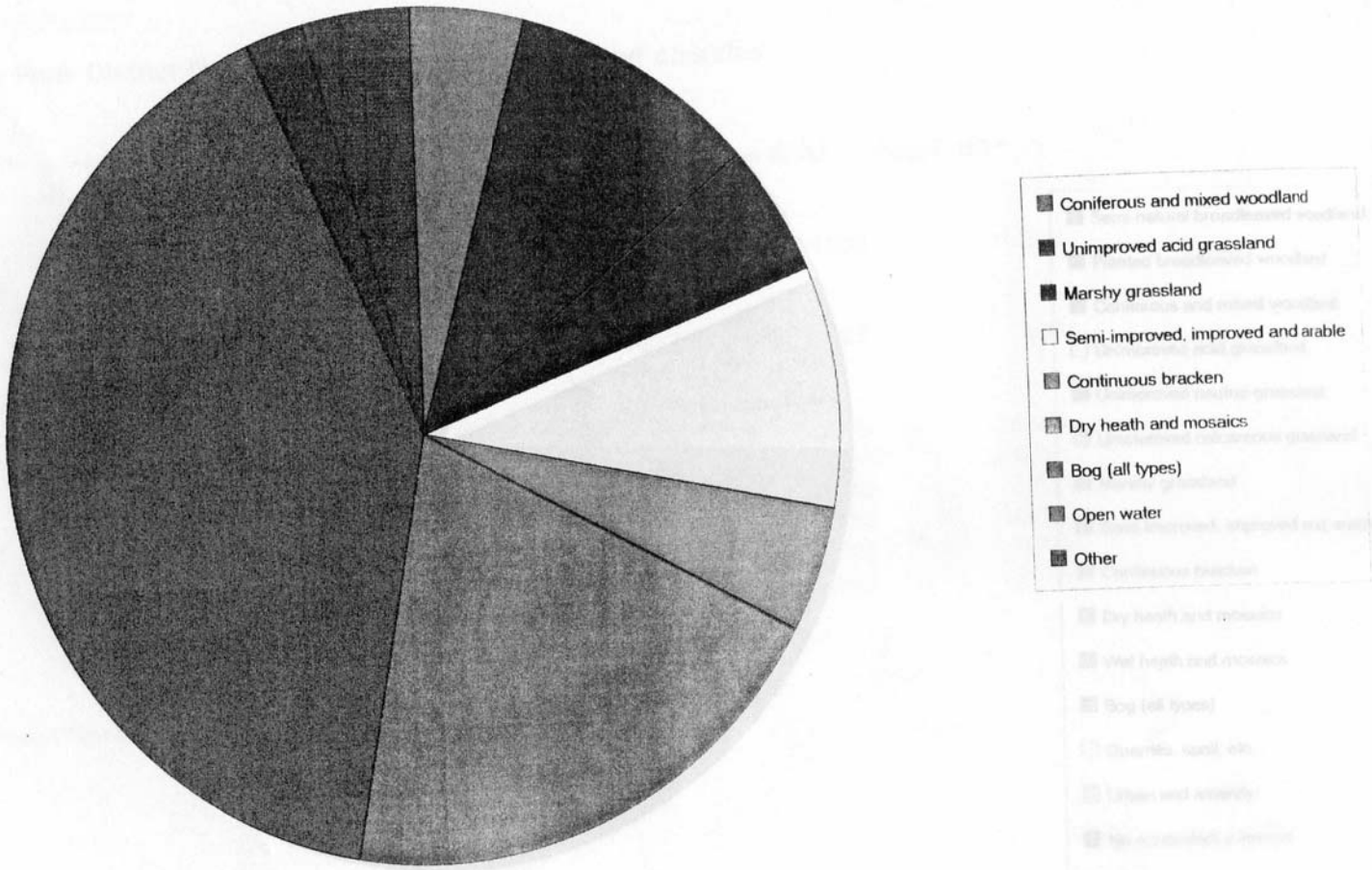
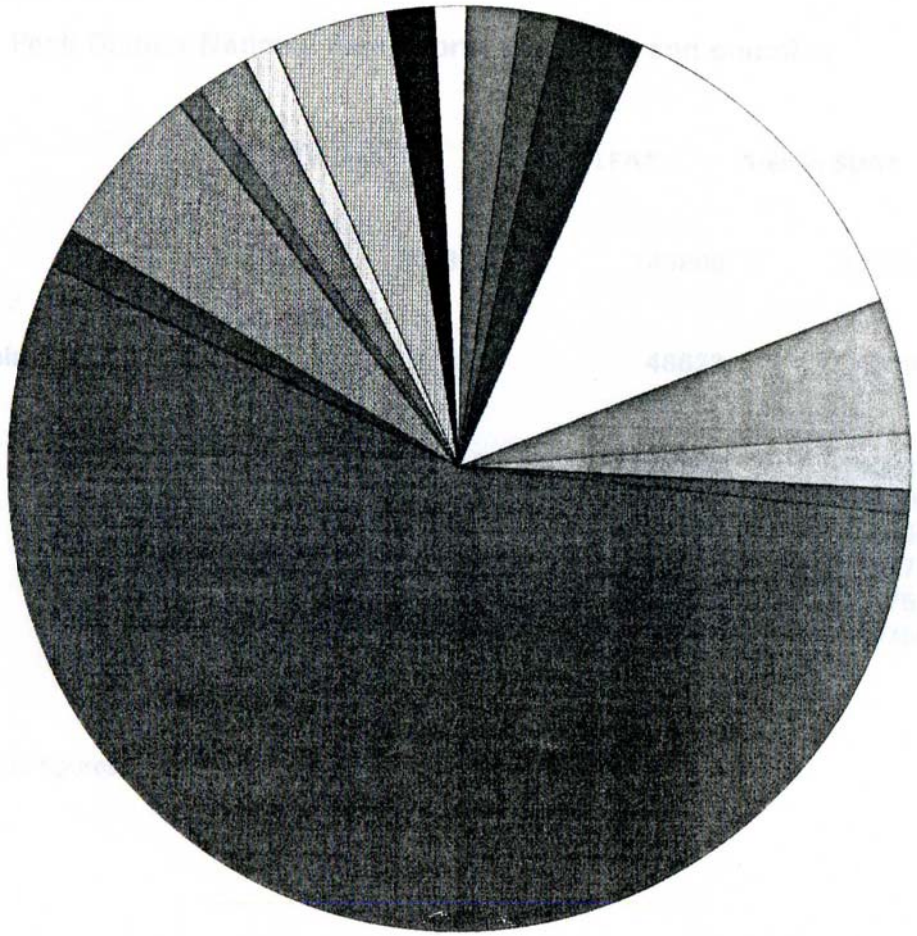


Table 3.2

Peak District ESA



## Peak District :Remaining SDA



- Semi-natural broadleaved woodland
- Planted broadleaved woodland
- Coniferous and mixed woodland
- Unimproved acid grassland
- Unimproved neutral grassland
- Unimproved calcareous grassland
- Marshy grassland
- Semi-improved, improved and arable
- Continuous bracken
- Dry heath and mosaics
- Wet heath and mosaics
- Bog (all types)
- Quarries, spoil, etc
- Urban and amenity
- No access/not surveyed
- Other

## Peak District Less Favoured Area

### Coincidence with Peak District National Park, North Peak ESA and counties

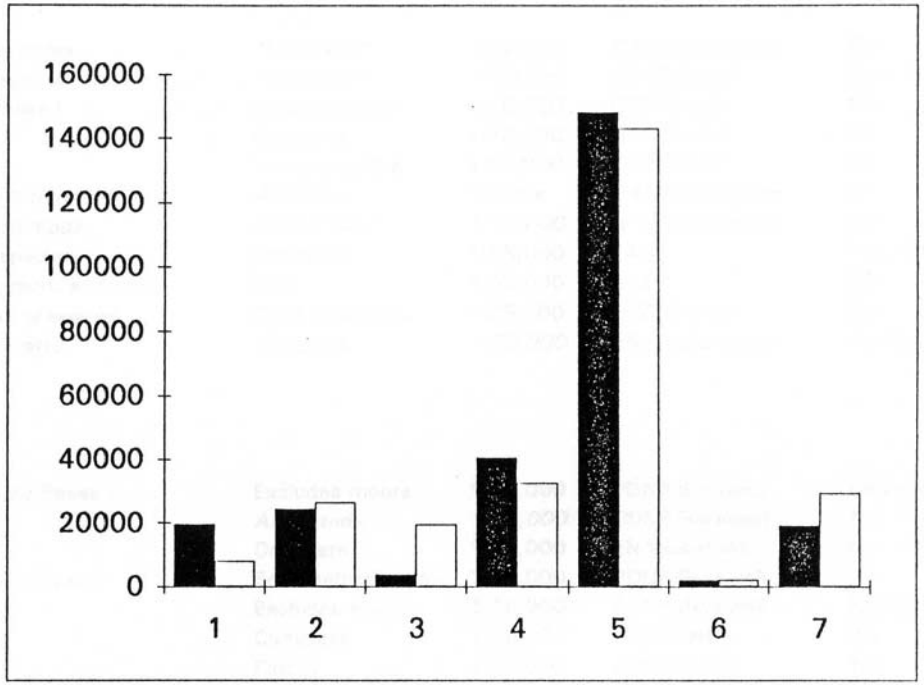
| | Total area | Area in LFA* | Area in SDA* | Area in DA* |
|---|---|---|---|---|
| **National Park** | 143800 | 143800 | 129200 | 14600 |
| **Environmentally Sensitive Area** | 48623 | 48623 | 48183 | 440 |
| **Derbyshire** | 263110 | 126250 | 100625 | 25625 |
| **Staffordshire** | 271615 | 53750 | 15000 | 38750 |
| **Cheshire** | 232846 | 13750 | 8750 | 5000 |
| **Greater Manchester** | 128674 | 28000 | 13875 | 14125 |
| **West Yorkshire** | 203226 | 15250 | 9750 | 5500 |
| **South Yorkshire** | 156049 | 27500 | 13750 | 13750 |

* Estimated figures

## Comparison of URSC and ITE statistics

### Peak District: complete LFA

| Habitat groups | URSC (black) | ITE (white) | % diff |
|---|---|---|---|
| 1 Woodland and scrub | 19375 | 7864 | 41 |
| 2 Acid grassland and bracken | 24281 | 26412 | 109 |
| 3 Marshy grassland | 3438 | 19424 | 565 |
| 4 Heath, bog and mire | 40398 | 32381 | 80 |
| 5 All other grassland | 148043 | 143098 | 97 |
| 6 Open water | 1866 | 1933 | 104 |
| 7 Urban, quarries, etc. | 18967 | 29256 | 154 |
| Unclassified | 3728 | | |
| **Total** | **260096** | **260368** | |



**URSC data source table**

**Surveys in italics were examined but not used**

| Survey title | Date | Classification | Coverage | Scale | Location | Digitised? |
|---|---|---|---|---|---|---|
| **Dartmoor** | | | | | | |
| *Dartmoor Ecological Survey* | *1969* | *Dominant species* | *"Moorland"* | *1:63,360* | *E N/Okehampton* | *No* |
| *Dartmoor Birds and Vegetation* | *1979* | *Dominant species* | *"Moorland"* | *1:10,000* | *RSPB/Exeter* | *No* |
| Phase II survey of enclosed land | 1983/4 | Modified Phase I | Inbye/newtake | 1:10,000 | DNP/Bovey | No |
| Phase I survey of Devon outside the National Park | 1983/4 | Old Phase I | Complete | 1:10,000 | DWT/Exeter | No |
| Survey of enclosed land on Duchy farms | 1984-89 | Phase I | Inbye/newtake | 1:10,000 | DNP/Bovey | No |
| *Vegetation surveys of SSSIs* | *Various* | *NVC/Birks & Ratcliffe* | *All SSSIs* | *Various* | *E N/Okehampton* | *No* |
| *Biological surveys of National Trust Properties* | *Various* | *Phase I with mods.* | *All N T land* | *1:10,000* | *N Trust/Ci'cester* | *No* |
| Moorland Management/Heather condition maps | 1991 | Dominant species | Commons | 1:25,000 | EAS | Yes, E Nature |
| Section 3 Conservation map | 1991 | Woodland; moor and heath | DNP | 1:50,000 | EAS | No |
| Culm grassland survey | 1991 | Unimproved grassland | Culm measures | 1:25,000 | DWT/Exeter | No |
| *Ancient Woodland Inventory* | *1992* | *Woodland status* | *Complete* | *1:50,000* | *EN/Okehampton* | *Centroids* |
| **Peak District** | | | | | | |
| Phase I of Staffordshire within PDNP | 1979-80 | Non-Standard Phase I | Excludes moors | 1:10,000 | PDNP/Bakewell | Partially |
| *Longdendale Study (Penny Anderson)* | *1979-80* | *Phase I* | *Area study* | *1:10,000* | *PDNP/Bakewell* | *No* |
| Phase I of South Yorkshire | 1979-81 | Old Phase I | Complete | 1:10,000 | EN/Wakefield | No |
| Semi-natural vegetation of the Peak District National Park | 1983 | Modified old Phase I | Semi-natural veg | 1:25,000 | PDNP/Bakewell | No |
| Phase I of Derbyshire within PDNP | 1983-85 | Old Phase I | Excludes moors | 1:10,000 | PDNP/Bakewell | Partially |
| Phase I of Derbyshire outside the National Park | 1983-85 | Old Phase I | Complete | 1:10,000 | DWT/Derby | No |
| Phase I of Cheshire outside the National Park | 1984-85 | Old Phase I | Patchy | 1:10,000 | Cheshire CC | Yes |
| *Phase I of Cheshire within PDNP* | *1984-85* | *Old Phase I* | *Patchy* | *1:10,000* | *Cheshire CC* | *Yes* |
| Phase I of West Yorkshire | 1988 | Phase I | Complete | 1:10,000 | EAS | No |
| Phase I of Barnsley District | 1989 | Phase I | Complete | 1:10,000 | EN/Wakefield | No |
| Phase I of Greater Manchester within PDNP | 1990 | Phase I | Complete | 1:10,000 | GMCU | No |
| *Section 3 Conservation map* | *1991* | *Woodland; moor and heath* | *PDNP* | *1:10,000* | *PDNP/Bakewell* | *No* |
| North Peak ESA Vegetation survey | 1991 | Phase I | Northern PDNP | 1:10,000 | ADAS/W'hmpton | Yes |
| *Vegetation of the Limestone Dales* | *1991-92* | *NVC* | *All s-n vegetatn* | *1:10,000* | *EN/Over H'don* | *No* |
| *Ancient Woodland Inventory* | *1992* | *Woodland status* | *Complete* | *1:50,000* | *EN/Over H'don* | *Centroids* |
| Leek Moors SSSI survey | Various | NVC/Birks & Ratcliffe | Whole SSSI | 1:10,000 | EN/Over H'don | No |
| Vegetation of other SSSIs | Various | NVC/Birks & Ratcliffe | All SSSIs | Various | EN/Over H'don | No |
| Phase I of Staffordshire outside the Nat'l Park | Various | Old/New Phase I | Complete | 1:25,000 | SWT/Stafford | No |
| Phase I of Greater Manchester Districts | Various | Old/New Phase I | Complete | 1:10,000 | GMCU | No |

APPENDIX 2

## UPLAND RESOURCE SURVEY CONSOLIDATION PROJECT

## PROPOSED HABITAT CODINGS

| | | | |
|---|---|---|---|
| Woodland | semi-natural b/l |  | Green |
| | plantation b/l |  | Green |
| | conifers & mixed |  | True Green |
| Dense scrub | |  | Green |
| **Grassland and Marsh** | | | |
| Unimproved | Acid |  | Orange |
| | Neutral |  | Orange |
| | Calcareous |  | Orange |
| Marshy grassland | |  | Purple |
| Semi-improved, improved and arable | |  | Orange |
| **Tall Herb and Fern** | | | |
| Continuous bracken | |  | Terracotta |
| **Heathland** | | | |
| Dry dwarf shrub heath and mosaics | |  | Yellow ochre |
| Wet dwarf shrub heath and mosaics | |  | Purple/ Yellow ochre |
| Montane heath | |  | Yellow ochre |

**Mire**

| | | |
|---|---|---|
| Bog (all types) |  | Purple |
| Valley/Basin mire |  | Magenta |

**Swamp, Marginal and Inundation**

| | | |
|---|---|---|
| Swamp |  | Sky blue |

**Open Water**

| | | |
|---|---|---|
| Standing Water |  | Indigo blue |

**Rock Exposure/Waste**

| | | |
|---|---|---|
| Natural (e.g. limestone pavement) |  | Scarlet red |
| Artificial (e.g. Metalliferous spoil) |   | Scarlet red |

**Miscellaneous**

| | | |
|---|---|---|
| Urban and amenity |  | Black |
| No access/not surveyed |   | White |

APPENDIX 3

# INVITATION TO TENDER

## 1. INTRODUCTION

You are invited to tender for the task of digitising vegetation maps of Dartmoor and the Peak District.

## 2. BACKGROUND

**2.1** The *Ecological Advisory Service* has been awarded a contract by English Nature to collate existing vegetation survey data for the uplands of England, using Dartmoor and the Peak District as pilot study areas. *EAS* staff are currently engaged in physically copying various surveys onto a 1:25,000 scale base map using a specially designed colour key.

**2.2** The successful tenderer for the digitising work will be required to digitise all the vegetation maps and to supply the results in a computer-readable format, capable of being input directly to English Nature's GIS. In addition, a text report will be required summarising the total area (in hectares) of each vegetation type.

## 3. SPECIFICATION

**3.1** The maps to be digitised will be supplied on A3 photocopied sections of 1:25,000 Ordnance Survey maps i.e. 5 km x 10 km (see Appendix 1) with vegetation survey information recorded using a standardised colour key (see Appendix 2).

**3.2** Each polygon should be digitised as a unique item referenced to the National Grid, but with no duplicate lines where polygons touch. All polygons should form part of a *single* overlay. Each polygon will have *two* attributes:

i. habitat type (as defined by the colour key)
ii. area in hectares

**3.3** It is *essential* that all polygons should be closed.

**3.4** The output should take the form of:

i. computer-readable media containing the digitised data in either "IGDS" or "Microstation" format capable of being read directly by English Nature's Intergraph-based GIS.

ii. a text report summarising the area (in hectares) of each habitat type (as defined by the colour key) for each region (i.e. Dartmoor and the Peak District)

## 4. QUANTITY OF WORK AND TIMESCALE

**4.1** The actual data collation work is taking place at present and the final area of land for which digitising will be required is, as yet, unknown. Moreover, the complexity of the final maps is also unknown. As an *indication* to tenderers, however, the number of A3 (5 km x 10 km) sections of 1:25,000 map is unlikely to exceed 60, while the maps are likely to be of a similar order of complexity to the sample colour photocopy in Appendix 1, with about 100-150 polygons per A3 sheet.

**4.2** It is intended that this contract should commence on 18 January 1993, by which time the first maps will be ready for digitising. Further maps will be supplied to the contractor on a "production line" basis and all the digitising is required to be completed by 5 February 1993, with the computer-readable and text-based output delivered to the *EAS* offices by 10 February 1993.

## 5. WHAT YOU ARE REQUIRED TO SUBMIT

Please make a *brief* response to this invitation to tender including:

- Details of the company and its track record in digitising
- Evidence of the ability to output the digitised data in either of the two specified formats
- A price *per polygon* for the digitising, inclusive of computer-readable and text-based output as specified

## 6. CLOSING DATE FOR SUBMISSIONS

Quotes must be received at the *EAS* offices by noon on Thursday 14 January. Facsimile transmission will be acceptable.

In the event of any queries concerning this invitation to quote, please contact Bob Tobin on 0535 618241.

APPENDIX 4

THE LESS FAVOURED AREAS DIRECTIVE 75/268/EEC

Areas that may qualify for inclusion as Less-Favoured Areas within the meaning of the Directive

CATEGORIES THAT MAY BE DESIGNATED

1. The only areas that may be designated as LFAs are those provided for in the Directive. There are 3 such categories:-

- Article 3(3) - Mountain Areas
- Article 3(4) - LFAs in danger of depopulation
- Article 3(5) - Other LFAs affected by specific handicaps.

GENERAL CONDITIONS BASIC TO ALL CATEGORIES

2. The Directive makes it a fundamental requirement to all three categories that:-

(a) the land must be poor, and the handicap of a permanent nature; and

(b) there must be a poor level of performance; and

(c) there must be predominant dependence on an agricultural economy; and

(d) the areas must have adequate infrastructures, including access roads to farms, electricity and drinking water and, in tourist and recreation areas, disposal of sewage; and

(e) the areas must be homogeneous and made up of local government districts or part districts.

SPECIFIC CRITERIA FOR INDIVIDUAL CATEGORIES

3. The following are the definitions contained in the Directive, together with the criteria used by the EEC Commission (indicated in square brackets herein) to measure the characteristics of each category:-

(1) Article 3(3) Areas - Mountain Areas: local government districts (or part districts) characterised by a considerable limitation of the possibilities for using the land and an appreciable increase in the cost of working due:-

(a) to the existence, because of the altitude, of very difficult climatic conditions the effect of which is substantially to shorten the growing season. [The qualifying criterion is that of altitudes in excess of 600-800 metres above sea level for each district or part district]; or

(b) at a lower altitude, to the presence, over the greater part of the district in question, of slopes too steep for the use of machinery or requiring the use of very expensive special equipment. [The qualifying criterion is that such slopes must be greater than 20% as an average per square kilometre]; or

(c) to the combination of factors (a) and (b), where the natural handicap resulting from each taken separately is less acute, provided that this combination gives rise to a handicap equivalent to that caused by the situation referred to in (a) or (b).

Article 3(4) Areas - LFAs in danger of depopulation: farming areas homogeneous in character, having permanent natural handicaps comprising all the following:-

(a) the presence of infertile land, unsuitable for cultivation or intensification, with a limited potential which cannot be increased except at excessive cost, and mainly suitable for extensive livestock farming.

[The qualifying criteria concerning the incidence of infertile land are any one of the following:-

(i) crop yields of below 80% of the national average (and not above the EEC community average); or

(ii) stocking rates of under 1 livestock unit per forage growing hectare (1 bull, cow or other bovine animal over 2 years = 1 livestock unit; 1 bovine animal from 6 months to 2 years = 0.60 livestock unit; 1 sheep or goat = 0.15 livestock unit); or

(iii) high percentage of the farm land, or of the land in permanent pasture, made up of rough grazing; or

(iv) sale value of land considerably below national average.]

and

(b) because of this low productivity of the natural environment, economic results which are appreciably lower than the mean as regards the main indices characterising the economic situation in agriculture.

[The qualifying criteria are any one of the following to indicate an appreciably lower financial return to farmers (ie less than 80% of the national average):-

(i) value added; or

(ii) gross farm income; or

(iii) net farm income; or

(iv) labour income; or

(v) by more complex indicators made up of several indicators characterising the economic situation on farms.]

and

(c) either a low or dwindling population, whose economy is predominantly dependent on agricultural activity, and the accelerated decline of which would jeopardise the viability of the area concerned and its continued habitation.

[The qualifying criteria are:-

(i) a population density of no greater than 50% of the nationa average or than 75 persons per square kilometre; and

(ii) a proportion of the active population in farming or allied work of not less than 15%.]

Article 3(5) Areas - Other LFAs affected by specific handicaps: these areas, within the meaning of LFAs in this part of the directive, may include small areas where farming is handicapped but needs to be continued in order to conserve the countryside and to preserve the tourist potential of the area (or where it is helping to protect the coastline). Areas so defined may not in total for each member state exceed 2.5% of the geographical area (equivalent to some 600,000 hectares for the UK).

The criteria for "specific handicaps" are as follows. They must arise either:-

(a) from natural conditions unfavourable for production such as:-

(i) poor soil; or

(ii) poor drainage; or

(iii) the presence of excessive salinity in coastal areas or small islands etc;

or

(b) in equal parts from a combination of:-

(i) natural conditions as in (a) above; and

(ii) constraints on farming due to public regulations relating to the preservation of the landscape or due to the requirements of coastal protection, or by constraints due in a more general way to environmental regulations, or to high cost of sea transport in the case of outlying islands.

To demonstrate the handicap (a) or (b), the criteria set out in sub-paragraphs (2)(a) and (b) herein are applied.

Land Improvement Division
June 1984