Countryside Survey

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1978

Field Handbook

UK Ecological Survey

Handbook of field methods

Introduction

The purpose of the Handbook is to define the guidelines to be adopted during the field survey. The circumstances to be covered are so wide, that hard and fast rules cannot realistically be made for all possible eventualities. Where significant divergencies from the basic methodology are made by force of circumstances these should be recorded in the appropriate place. Otherwise in general the methodology is straightforward and will be familiar to most participants. Following this approach all the i's and t's will not be dotted - for example the method of plot location will differ in detail in an area with field boundaries, from the open mountain country of the north west of Scotland.

The objective of the survey is to obtain an overall ecological assessment of a kilometre square sampling unit in as consistent a way as possible. Provided that this is borne in mind throughout the trials and tribulations of bulls, irate landowners and foul weather, all will be well.

The collection of data within one square is designed to take a single day. Hence the programme is as follows:

(1) 5 randomly located 200 m^2 vegetation plots.

(2) 5 randomly located soil pits in the centre of (1).

(3) Linear plots along streams, roads, and hedgerows.

(4) Broad ecological information from the whole kilometre square.

The Handbook progressively covers these topics.

In addition, in the Handbook, keys to information such as cows and sheep are added so that they are all available in one place.

Permission

The first stage in the survey on arrival at a square is to obtain permission. In most cases it is best to obtain all the necessary ownership information before starting work. Experience is the only way of determining which farm owns what and it is important to stress the short period of the visit combined with the minimal disturbance involved. Appropriate handouts are available but these should only be given where there is definite positive interest or a requirement to prove that one is from an official body. Requests for information from the survey are the responsibility of the surveyor and should be followed up by him/her. It is also important to mention that for growing crops the headlands will be used for the soil pit.

Wherever possible it is important to note down the names of owners and any information that has been obtained concerning estates. This information should be entered at the end of the sheets for the information from the whole square.

1. MAIN PLOTS (VEGETATION)

Location of plot

The vegetation plot is 200 m^2 and is set up by using the five posts, with the strings forming the diagonal of the square (Fig. 1). The diagonals should be orientated carefully at right angles. The different plot size markings shown in Fig. 1 are marked by different coloured strings on the appropriate position off the diagonal. The species are recorded progressively from the inner quadrat, with only additional species being noted each time.

The main principle behind the locating of the plot is that it must not be chosen but that it should be determined in an objective manner. The most generally appropriate method is to find the nearest recognisable point on the map to the position of the plot and then navigate to the plot by compass bearing and placing. (On the 1:10,560 map 1 mm = approximately 12 paces unless you are either very small or very large, or are going up a steep hill or are very tired - in which cases make appropriate adjustments. i.e. if you are very small, are very tired and are going up a very steep hill 1 mm = 50 paces.) The plot centre should be at the end of the final stride - minor movements only being allowed for stones or lack of a suitable place to insert the centre pole. In areas of very open country it may not be possible to navigate from a suitable unambiguous feature - in which case an arbitrary number of paces should be taken when one arrives in as near a location as possible as determined by the lie of the land. Excessive concern with the exact locating of the plot is misplaced, since the samples are anyway a random sample from the kilometre square.

The plots are marked on the maps to avoid linear features, (hedgerows, roadsides and streams), and if the pacing leads to one such feature not marked on the map, then the plot should be relocated and marked up on the map accordingly. An arbitrary number of paces should be taken away from the linear feature for the siting of the new plot centre.

The plots should be rejected only if they are in someone's back garden or if life and limb are threatened. If one is in a part of the square where the map has been changed, then relocate the plot by taking an arbitrary number of paces - the rule is, as always, not to choose the actual position of the plot.

Species Data

Five randomised plots are marked on the maps and any alteration to these should be carefully marked up. The species data are recorded from the plot in the usual way as shown in Fig. 2. All vascular plants should be recorded, together with a restricted list of bryophytes and lichens. The list of aggregates and restricted list is given in Tables 1 and 2. Species with identification problems should be collected and mosses/lichens growing on rocks/trees should be ignored.

Estimates of cover should then be made within 5% categories. It is necessary to constantly check with one's partner that there is not a tendency to over or under estimate. The main principle is to aim for the principal species. Cover can be over 100% if several layers are present e.g. Pteridium over Agrostis. Cover of tree species, if present should be put in (   ). Species below 5% are left unattached - because of difficulty in assessing figures below that level and in their later interpretation.

If the plot falls in a field with a growing crop, then the plot should be completed on the edge of the crop - ignoring the first metre with edge species from hedgerow or track. The species list should be compiled from what can be seen in the crop - accuracy is obviously difficult but it is the only alternative open. A diagram of the way the plot should be completed is given in Fig. 3.

Plot Description and habitats

The first stage in the recording of the habitat data is to measure the slope. This is taken from the highest to the lowest point in the square - ingenuity may be required in very difficult terrain in terms of steepness or unsighting of the poles. The best way is to rest the device on one of the poles and sight it on one of other poles. Alternatively, sight on ones partners appropriate anatomical position relative to one's own sight level. The aspect is then measured along the same line.

Attributes on the list should be struck out if within the plot e.g. 85 chicken.

Attributes within 50 metres should be ringed e.g. 85 chicken.

Both can be recorded e.g. 85 chicken.

The majority of the attributes are self explanatory. If there are problems of interpretation a note should be added at the base of the sheet. A few comments on difficult categories are added below. The data sheet is shown in Fig. 4.

Vegetation

1. Woodland: over 5 ha, otherwise 2. Copse. 3. Scrub: more than a single bush, rather a more or less continuous cover over an area of more than c. 20 x 20 m. 4. Isolated tree: separated from the copses/woodland category. 5. Moorland: mainly upland whereas 6. heath is lowland and is predominantly Calluna covered. 7. Bog/marsh, has standing water. 8. Grassland (s.e.). 9. Dense bracken: more than 10 x 10 m. Likewise 10. Brambles. 11. Grazed vegetation: that which has obvious evidence of nibbling. 12. Arable: (s.e.). (N.B. s.e. = self explanatory).

Woodland

13. Hardwood: more than 2/3 broadleaved. 16. Conifer: more than 2/3 conifer. 17. Mixed: neither of previous categories but a mixture. Even aged: either planted conifers or coppice regrowth. 17. Isolated trees: trees separated from main canopy in gaps/glades. 18. Shrub layer: more than just the odd bush of say hazel, but a distinct layer. 19. Regeneration: young trees more than 1 m high i.e. not seedlings. 20. Dead trees: not just saplings but trees over 5 cm diameter. 21. Glade: more than 5 m across between trees. 22. Coppice: multi-stemmed trees. 23. Felling/thinning: trees recently cut, i.e. within the last year. 24. Planting: (s.e.).

Agriculture/human

25. Hay meadow: cut for hay or about to be cut, include silage, if it is obviously to be used. 26. Pasture: improved land or land which is being used intensively, in marginal farms it integrades with 27. Rough grazing but this is unimproved, often on more rugged terrain. 28. Cereal: s.e. but includes maize. 29. Root crop: s.e. 30. Other arable: mention if interesting in comments. 31. Horticulture: s.e. 32. Stored crops: haystack, turnip clump, silage. 33. Farm building: includes barns and pig sties. 34. Enclosure: generally a walled area for collecting sheep but other small fenced areas could be included. 35. Garden: even if it is full of weeds include it, if it has been used for that purpose at one time: Likewise 36. Orchard. 37. Recreation area: football/cricket park or other if found. 38. Drainage: evidence of drainage lines. 39. Domestic rubbish: e.g. bottles, tins, polythene bags, sweet papers. 40. Other rubbish: e.g. tyres, old prams, concrete, old cars.

Boundaries/roads

41. Road: tarmac. 42. Track: hard core only, local material or otherwise. 43. Footpath: for humans includes bridleways. 44. Mainly sheep track but other animals if sufficiently intensively used to be seen. 45. Fence stockproof: well maintained and capable of holding animals whereas 46. Fence not stockproof: is broken down and derelict. Same applies to 47 and 48 except that the completely derelict wall is included in 49. 50. Hedge stockproof is impervious to stock over 90% of its length with living material. Hedge not stockproof has more than 10% holes filled with old bedsteads, wire etc. Hedge derelict: either lines of old trees, once forming a hedge or no longer acting as a hedge through neglect.

Ground

53. Cliff/rock outcrop: actual emergent live rock. 54. Scree: in mountains on slopes. 55. Stones/rocks: below 0.5 m. 56. Boulders. Over 0.5 m. 57. Moss rock: not one tuft of moss but a distinct covering. 58. Excavation/quarry: includes any human activity that involves removal of local material. 59. Cutting: removal of a section to allow for a track. 60. Gorge: precipitous, rocky streamside. 61. Bank: mainly human e.g. beside road but also stream side. 62. Wood: lumps or logs, usually dead. 63. Exposed min soil: more than 1 sq m. continuous cover. 64. Peat. likewise.

Aquatic

65. Stream: flowing less than 2.5 m in average width of water but permanently wet. 66. River: likewise more than 2.5 m. of water. 67. Pond: mainly in agricultural surroundings. 68. Lake: natural feature. Mention of reservoir. 69. Seepage/spring: evidence of continual movement of water. i.e. if recent torrential rain, discount local floods. 70. Marsh. Likewise continual standing water. 71. Standing water: includes floods, puddles and like phenomena. 72. Ditch: an object excavated with the purpose of drainage. Does not therefore have to have water in it.

Figure 1. Plot Layout and Equipment

Right-angle gauge

Cup hook

Screw eye

Corner post
(1"x1"x3'app.)

Centre post
(1"x1"x3'app.)

Polythene distance string
+ coloured marker tag

¼" Whit. stud and nut

Dog lead clip

Split ring

Plot layout
(1 x centre + 4 corner posts)

Sides

2.00m
5.00m
7.07m
10.00m
14.14m

Half-diagonals

1.42m
3.54m
5.00m
7.07m
10.00m

1

2

3

4
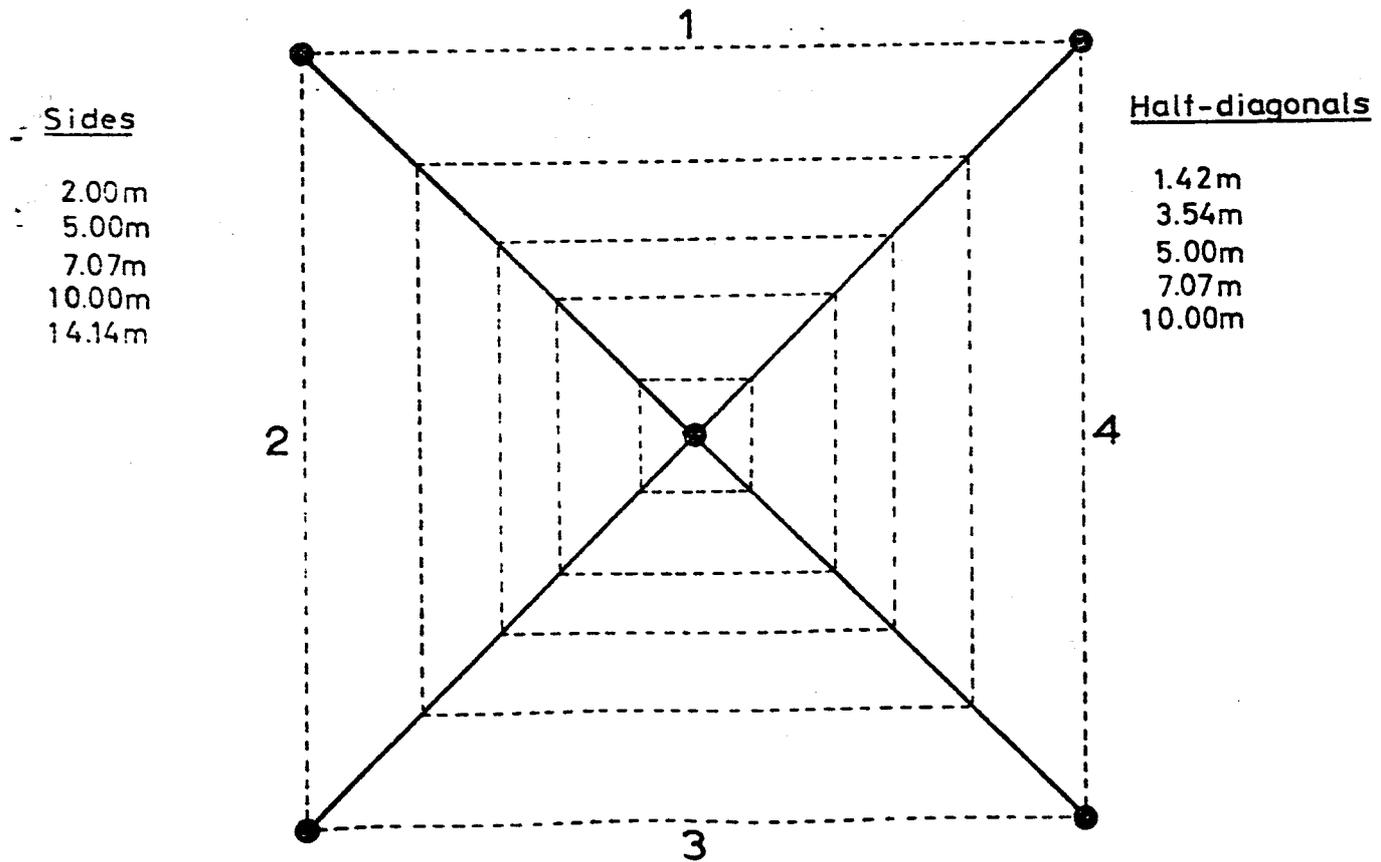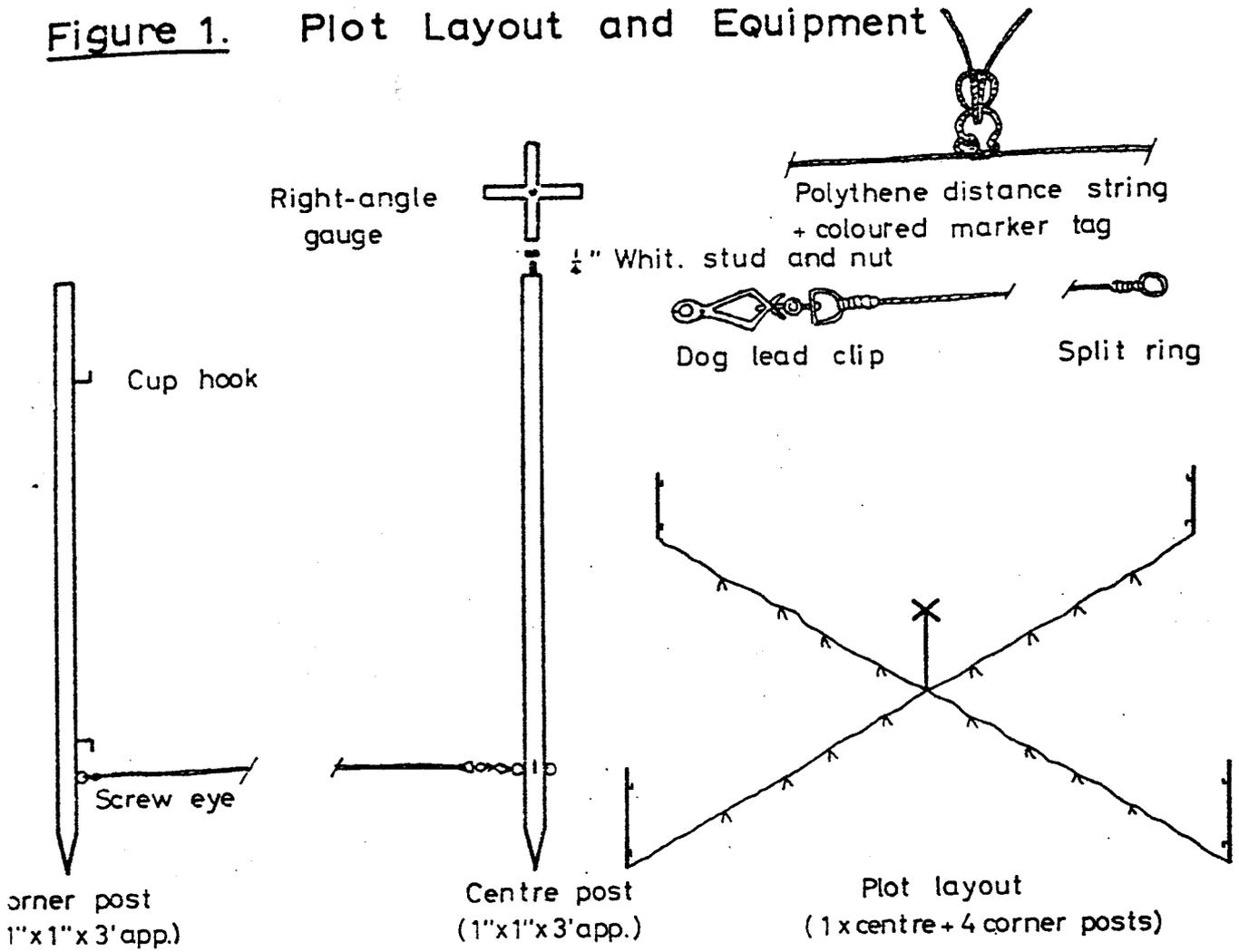
FIGURE 2

PLOT GROUND FLORA DATA

Stratum no.: 617   Plot no.: 1   Recorder: RB   Date:

Code	Species (4 m² quadrat)	C.A. %	Code	Species (50 m² quadrat)	C.A. %
32	Juncus effusus	20	183	Galium sax.	
12	Agrostis tenuis		209	Holcus lanatus	
28	Anthoxanthum	5	497	Lophocol. bid.	
29	Desc. caesp	25			

Code	Species (100 m² quadrat)	C.A. %
337	Potentilla erecta	

Code	Species (25 m² quadrat)	C.A. %
30	Desch. flex.	
65	Festuca ovina	
81	Carex nigra	
331	Polyt. comm	
375	Rumex acetosa	
287	Nardus stricta	

Code	Species (200 m² quadrat)	C.A. %
260	Luzula mult	

%/abundance of)   Rock = —   % Water = —   % Litter = ~~100~~ 95 =

FIGURE 3. Method of layout for the field plot:

CROP.

CROP

CROP.

EDGE OF FIELD

margin for field edge species.
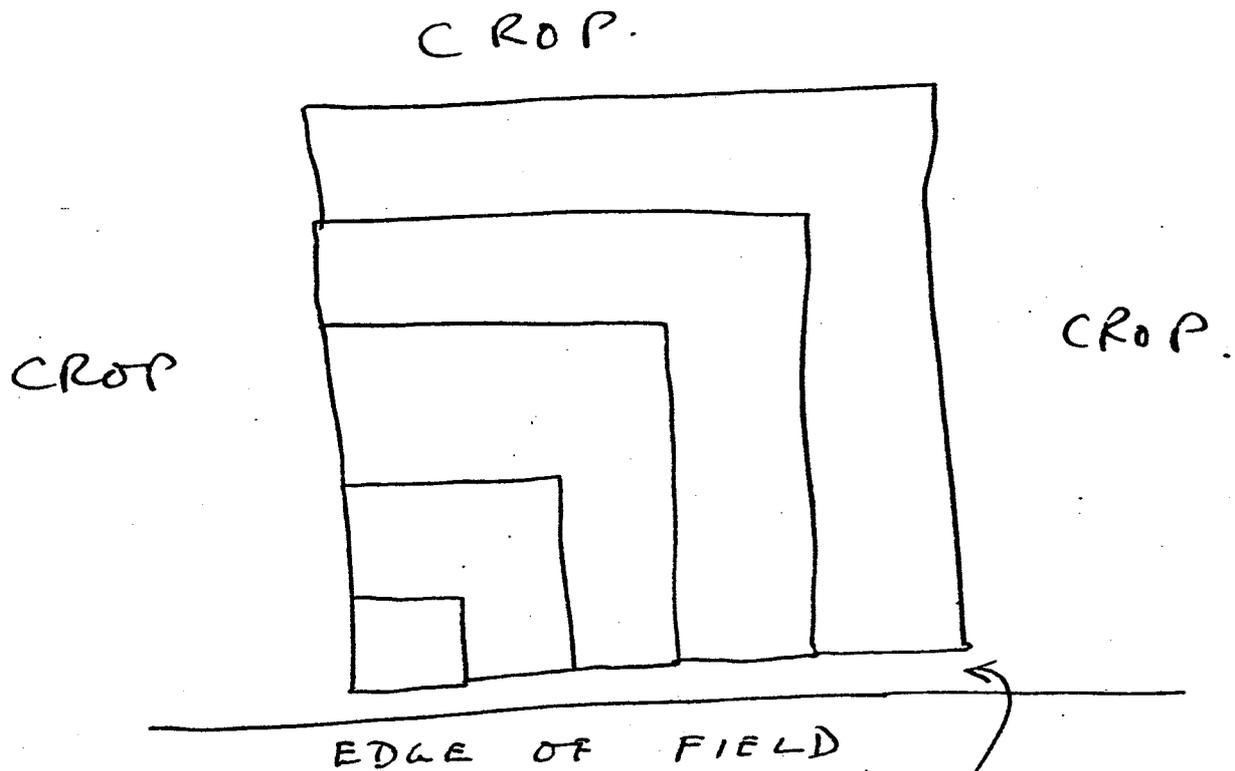
N.B. The plot strings can also be laid out to provide a guideline for the siting of the quadrat.

FIGURE 4

Square number 671   Plot number 2   Date

Slope 20°   Aspect NE   Recorder

VEGETATION

1. Woodland
2. Copse
3. Scrub
4. Isolated tree
5. Moorland
6. Heath
7. Bog/marsh
(8.) Grassland
9. Dense bracken
10. Brambles
(11.) Grazed veg.
12. Arable

WOODLAND

13. Hardwood
14. Conifer
15. Mixed
16. Even-aged
(17.) Isolated trees
18. Shrub layer
19. Regeneration
20. Dead tree
21. Glade
22. Coppice
23. Felling/thinning
24. Planting

AGRICULTURE/HUMAN

25. Hay meadow
26. Pasture
(27.) Rough grazing
28. Cereal
29. Root crop
30. Other Arable
31. Horticulture
32. Stored crops
33. Farm building
34. Enclosure
35. Garden
36. Orchard
37. Recreation area
38. Drainage
39. Domestic rubbish
40. Other rubbish

BOUNDARIES/ROADS

41. Road
42. Track
43. Footpath
44. Animal track
45. Fence stockproof
46. Fence not stockproof
47. Wall stockproof
48. Wall not stock proof
49. Wall derelict
50. Hedge stockproof
51. Hedge not stockproof
52. Hedge derelict

GROUND

53. Cliff/Rock outcrops
54. Scree
55. Stones/rocks
56. Boulders
57. Mossy rock
58. Excavation/quarry
59. Cutting
60. Gorge
61. Bank
62. Wood
63. Exposed min soil
64. Exposed peat

AQUATIC

65. Stream
66. River
67. Pond
68. Lake
69. Seepage/spring
70. Marsh
71. Standing water
72. Ditch

MARINE

73. Sea cliff
74. Rocky shore
75. Pebble shore
76. Sandy shore
77. Muddy shore
78. Saltmarsh
79. Rock pools
80. Dunes

ANIMALS

81. Sheep
82. Cattle
83. Horse/Pony
84. Pig
85. Chicken
86. Red deer
87. Other deer
88. Rabbit/hare
89. Mole
90. Game birds
91. Herb birds
92. Omni. birds

TOPOGRAPHY

93. Complex
94. Variable
(95.) Slightly variable
(96.) Simple

COMMENTS

<u>Marine</u>

73. Sea cliff s.e. 74. Rocky shore s.e. 75. Pebble shore more than 5 sq. m. pebbles. 76. Likewise sand. 77. Likewise mud. 78. Likewise + salt marsh vegetation. 79. Rock pools: s.e. 80. Dunes s.e.

<u>Animals</u>

81. Sheep. s.e. but include if wool present. 82. Cattle: likewise 81 but if cow pats present. 83. Horse/Pony: Same as 82. 84. Pig. s.e. 85. Chicken: see them. 86. Red deer: only if you see them or are able to tell by droppings otherwise put into 87. Other deer. 88. Rabbit/hare: tell by droppings or see. 89. Mole: conveniently makes hills. 90. Game birds: Listen/or gun fire or see evidence of production or actually see grouse/pheasant/partridge/Snipe/Woodcock or great Bustard etc. 91. Herb. birds: Seed eaters e.g. finches or pigeons. 92. Omni birds: Rook, crow i.e. those that eat anything.

<u>Topography</u>

Variation is obviously continuous. Guidelines given below.

93. Complex: numerous variations in slope and aspect, many features such as rocky outcrops and counter slopes i.e. more than 6 different slopes. 94. Variable: Some considerable variation present but not extreme. i.e. 4-6 slopes. 95. Slightly variable: One major slope/aspect but with some minor variations. i.e. 2-3 slopes. 96. Simple. Constant aspect and slope throughout the plot i.e. 1 slope.

<center>2. SOIL PIT</center>

1. <u>Location of the soil pit</u>

The pit should be located at the centre of the quadrat in the quarter containing face number one on the wooden square on top of the centre pole.

If the above position falls on bare rock, a wall, a fence, a hedgerow or hedgebank, or a road the pit should be sited at the end of the string between faces 1 and 2 of the wooded square.

If still on an "obstruction" transfer the pit position to the ends of the strings between faces 2 and 3, then 3 and 4, then 4 and 1. If all the above sites fall on "obstructions" no pit is dug.

When the pit position has to be moved from the centre of the square please record the new position, and the reason for the move in the "Comments" section of the soil data sheet; also, make a record of plots with no soil pit - this would be best done by recording the stratum number and plot number on a soil data sheet and writing "NO PIT" across the sheet.

2. <u>Soil pit</u>

Once the position of the pit has been established its exact orientation will depend on the time of day, site type etc. The pit should always be

sited so that the maximum light falls onto one of the end faces - this face will be used to complete the horizon description. The dimensions of the soil pit will vary somewhat on the soil group but it should usually be 45-60 cm wide and c. 1 m. long. The turfs should be cut out first and laid in order along one side of the pit - the plastic sheet should then be placed on the other side to receive the rest of the soil dug from the hole.

The depth of the pit will also vary with soil group and type but digging should be continued until reaching a C or R horizon or to a depth of 75 cm, whichever is reached first.

When the pit has been completed the end facing the maximum light should be "cleaned up" using a knife or trowel. The constituent horizons should next be identified and their boundaries marked with a matchstick, twig or distinctive stone; horizons are differentiated by changes in colour, texture, stoniness, number of roots, organic matter content, degree of compaction or cementation. Helpful notes are given at the back of the Handbook.

3. Completion of data sheet (Fig. 5)

1. Stratum and plot number (entered once per plot)

As per the vegetation sheets.

2. Horizon thickness

The thickness of the horizon (layer) in centimetres; when horizon boundaries are very irregular select one "line" down the face of the pit and record all thicknesses down this one vertical line.

3. Horizon symbol

Letter symbol from the list provided (i.e. the "Horizon symbols" sheet); if in doubt enter a question mark.

4. Moisture status

Number code based on visual assessment.

5. Colour

Munsell colour code.

6. Mottles

Number code from list on data sheet; "yellow/red" category includes orange, ochreous etc. and the "black" category includes dark brown - if more than one colour is present enter two or more code numbers.

7. Texture

Number code from list on data sheet; two or three figure codes can be used to denote "intermediate" classes, e.g. silty loam = 35, sandy clay = 24. In some extremely stony horizons you may find it impossible to do a texture - in these cases write "too stony" on box.

8. Structure

Number code from list on data sheet; if you consider that one structural type readily breaks to another both codes can be recorded, e.g. agular peds which readily break down to smaller rounded (crumb) units = 21.

9. Stones

Two characteristics are recorded - overall stone content (by percentage cover of the pit face of the particular horizon) and dominant stone size. Recorded as a number code from the list provided on the data sheet; if two sizes of stones are present in roughly equal amounts enter both codes, e.g. small and medium stones = 12. Diagrams showing percentage cover are included at the front of the Japanese colour books.

10. Roots

The amount of roots (as number per 100 cm^2 of the given horizon) and the dominant types are recorded using the number codes listed on the data sheet.

11. Carbonates

Presence or absence in the fine soil, remove stones from a small clod of soil and test the soil with $N/10$ hydrochloric acid and where there is an immediate and obvious effervescence record it as present.

12. Earthworms

Record the presence or absence of worms or wormcasts in the horizon being examined.

13. Iron pan

Record presence or absence of a thin iron pan at the base of the horizon just described.

Completed once per plot

14. Soil group

Number code from list on data sheet - if in doubt enter a question mark.

15. "Parent material"

This is really the nature of the C, Cr or R horizon; recorded as a number code from the list provided - "disturbed" includes mine spoil.

16. Solid geology

Write in the nature of the solid geology if known or if identifiable outcrops are nearby.

17. Additional comments

Please record any feature of the whole soil or an individual horizon which you consider worth noting, e.g. presence of concretions in a horizon, very compacted horizon, very sticky material - sticks to spade, very irregular boundaries between horizons, root mats on stones, root mat on iron pan, humus staining down cracks.

4. Sampling

Collect a small sample (c. 200 g) from the surface horizon where the
Ol or Of horizon is less than 5 cm thick. If an Ol and/or Of horizon
is present sample the next underlying horizon. If the surface horizon
is less than c. 5 cm thick collect the sample from the upper c. 5 cm
(when a horizon is less than c. 5 cm thick it is very difficult and
time-consuming to obtain an uncontaminated sample).

3. LINEAR FEATURES

The plots are not marked up on the maps because of difficulties in inter-
pretation, instead it is left to the recorder to site the plots in the field,
depending upon his observations. The linear plots (2 on each feature) are
10 x 1 m and should be completed from:-

Hedges   Streams   and   Roads

The data sheet is shown in Fig. 5 and method of placement in Fig. 6.

They should be located on the appropriate feature in a direct line from
the two most widely spaced plots in the square and marked on the map in the
appropriate position as shown in Fig. 3. The quadrat string (1 from the 200^{m2}
diagonal) is laid out to the right on reaching the feature and a 1 metre stick
used to trace along the string, allowing for curves.

For hedges: string 1 m. from the centre of the hedge

For roads: along the edge of the road, 1 m in.

N.B. tarmac or if hard core then the material has to have been brought in
from outside.

For streams: along the water's edge

N.B. Only include those that have permanent water course: ditches to be
included but not if dry.

The same rules should be followed for species identification as in the
large quadrat.

Likewise estimate the principal species cover in 5% categories. For hedges
woody species should be included in brackets.

4. KILOMETRE SQUARE DATA

Kilometre Square Data

With such a wide range of conditions it is difficult to make precise rules
but as above guidelines are provided. It is a good general rule to include
information, with comments, rather than to omit, since the data can later
be cleaned up but it cannot be enlarged. Great trouble should not be
taken to examine all the square. The information should be completed whilst
travelling between plots. The coverage of the square will be almost complete
and can anyway be checked by the map. The data sheets are shown in Fig. 7.

Boundaries, walls/fence

Where possible these should be marked in directly on to the map and in this

way measurements can later be made of the various lengths to a high degree
of precision. However, if this is not possible an overall estimate can be
made for the whole square. There is also no reason why both methods need
not be used since the results can later be cross-checked. A further point
is that in very complex squares the categories may need to be simplified for
mapping purposes. In which case the categories should be clearly indicated
in the comments sections. Clearly a great deal of time could be spent on
this section but the golden rule should be to maintain a balanced approach.

The categories in this section are mainly self explanatory but the following
comments may clarify: 1. Old: more than 10 years old with some lichen on.
2. Old dry/lichen moss: not just one tuft but more than 5%. 3. Old
mortarred. 6. New mortarred. Same as above. 7. Brick (s.e.). 8. New
dry: built in last 10 years on the dry principle, even if a bit of cement
has been stuck between the stones because of lack of skill. 7. Turf on
top: either old or new. 8. Cob/mud. Only in SW England once seen obvious.
9. Wall and gaps. More than 5% and more than 2 gaps. 10. Ruined wall:
less than 10% standing. 11. Dyke/stone heap piles of stones in a line or in
a heap. Mainly from clearance for agriculture. 12. Wood post and rail:
wooden posts and barbed wire or ordinary wire. 13. ditto and metal posts (or
concrete). 14. Chain link: s.e. 15. Barbed wire: only bits and pieces
used to block up gaps etc. 16 + 17 + 18. Sheep folds. s.e.

Others inc. Geology

Any other categories not included above and the geology of the walls, if
it is known.

Boundaries: Hedges

19. Complete hedge: s.e. 20. Hedge and gaps: up to 10% gaps. 21.
10-70% gaps otherwise into 30 lines of shrubs. 22. Hedge (managed)
cut or layered in the last 15 years. 23. Hedge neglected overgrown
with no signs of management in the last c. 15 years. 24. Hedge on bank:
even if discontinuous shrubs, still counts. 25. Hedge on wall: if
the bank is stony it does not come into this category - only if it is
actually a built wall. 26. Hedgerow trees. Distinct emergent saplings
less than 5 m. Now rather rare. 27. Hedgerow trees 5 m. Mainly
mature trees within the hedge. 28. Hedge removal (recent) evidence of
removal within last 5 years. 27. Hedge removal old: often all that will
be left is a low bank but if a hedgerow or boundary shown on the map has
now gone this should also be recorded. Species (Hedge) Record the species
that make up the hedgerows - woody plants only. Make an estimate of the
principal species composition, in 5% categories. These will not necessarily
add to 100% since there may be a lot of minor species. Species (Hedge
Trees). Same as for hedge.

Woodland

31. Wood (over 5 ha). List the species present and estimate their pro-
portion within 5% categories. Likewise. 32. and 33. 34. Gillside is
where there is a narrow strip of trees either side of a stream, other
sinuous outline. 35. Shelter belt: Obviously planted of hardwood or
conifer, with straight lines (usually). 36. Walled - wood surrounded
by a wall. 37. Fenced:- wood surrounded by fence (deer or sheep).
38. Open: Wood open to grazing - includes those where there are fence/

walls with big holes. 39. Mixed. Less than 50% either conifers or hardwoods. 40. Polestage: trees less than c. 10 cm. diameter. 41. Mature trees over about 12 m. and over about 50 years old. 42. Felled: recent (within last 10 years). 43. Thinning: recent within last 10 years. 44. Glades. Spaces in trees more than 5 m across. 41. Rides: extraction routes left through plantations. 46. Epiphytes (Moss) not just one patch on one branch but regularly on trees. 47. Ivy: up trees even if only 1. 48. Park land trees: trees set in grass (usually) or arable that are well separated from any woodland blocks. 49. Roadside trees: trees, either planted or present alongside roads. Roadside fl. trees: planted in towns or occasionally in countryside. Other: any other particular feature seen.

Habitats (vegetation)

These will also be indicated on the sketch map of the square. The guideline for all these categories is that the species concerned must dominate in sensu. Tansley, terms of vegetation of an area more than 10 x 10 m. Other species should be included if sufficiently important. There is therefore no need to attach estimates of abundance except that if there is only one or two patches and not sufficient to show in the sketch it should be entered as +. This means that the complete list for the square will probably be longer than that shown in the sketch since small patches are difficult to show in detail.

Crops (Agriculture) + Crops Horticulture

These categories are self explanatory. Add any extra comments on particular features - e.g. farmers comments on varieties.

Sketch map

Some comments have already been made concerning the sketch map. All crops should be recorded - it is important to identify these as far as possible - ask the farmer if necessary. Names should be written straight onto the photocopy and the square should be completed as far as possible. Note woodland species composition and hedgerows/field boundaries if appropriate i.e. put as much detail in as possible without cluttering up the map too much - as someone else will have to interpret it later. Add any notes that will help to provide as good a picture as possible of the square. An example is shown in Fig.7%.

Domestic Animals

This is a whole subject by itself and the simplest way is to ask the farmer, while finding out the permission. If however this fails then one has to resort to working the breeds out oneself. The cattle are fairly straightforward - keys are attached but the sheep are more difficult and the cross breeds really exercise the mind. However do the best possible and if necessary describe. Again keys are provided. Practice is in fact the only answer - many a long journey will then be enlivened by discussions concerning the breed of sheep - points may be scored and good fun enjoyed by all. Eventually we hope to build up a complete collection of pictures. A key to the main types is attached. Use the neighbouring squares to pick out breeds if necessary. Also if cows just happen to be in the next square but have obviously been in the square, then record them.

Habitats (Rock)

These categories have already been covered by the plot sheet. Except for 106 cliff over 5 m - not vertical but rather a line up the cliff. 112. Eroding bank: more than a 1 m length. 113. Eroding peat: more than 1 sq. m. 120. Under the other categories it would be useful to indicate the geology of the area.

Habitats aquatic

Most of these are self explanatory, a few comments are perhaps useful: 127, 128 and 129. More than 1 metre length in the stream/ditch.

Habitats marine

Likewise aquatic. Same comments already made for plot sheet.

Buildings (Domestic)

As with the domestic animals this group of categories can become an interest in itself. The main objective is to produce a statement of the type of building present - qualifications can be added where appropriate. 161. Vernacular (local): buildings of this type are constructed in the local style and also in material of local origin e.g. a traditional slate Cumbrian farmhouse or a Devonshire cob cottage. 162. Vernacular (Non-local): Built in the local style but not of local materials e.g. a Scottish style low built cottage built of concrete and rough cast. 163. Non-vernacular (local): houses not built in the local style but in local materials e.g. limestone houses in a Victorian style in Grange. 164. Non-vernacular (Non-local): houses that do not fit at all into the local surroundings, not built in a local style or with local materials e.g. a bungalow in Shetland. 165. Housing estate s.e. 166. + 67. + 68. Semi-detached house + detached (s.e.) except that 167. stands in its own grounds. 169. Village cottage: part of a matrix of houses in a village or hamlet or group of houses built in local style c.f. 161. 170. Bungalow (s.e.). 171-175. Experience helps with these categories but the time spans are so broad that they should not give trouble. The remaining categories are s.e. - notes on architecture are worth making, if the recorder is interested.

Buildings (industrial)

192. Garage: s.e. 193. Factory: covers all industrial premises including craft work shops, if seen, but specify in such cases. 194. Wasteland: At moment just record + type and mark on map. Further instructions may be given at the start of the survey.

Buildings (urban)

196. Car Park and 197. Lamp posts s.e. 198. Rubbish (Isolated): the odd piece or two rather than a concerted heap. (199). 199. Pylon. s.e. 201. Empty house: s.e.

<u>Buildings (Amenity) + Buildings (farm)</u>

These categories seem clear cut but comment if difficulties are encountered.

<u>Finally</u> add any comments you feel necessary to amplify particular points.
Perhaps if possible add a general description of the square: e.g. characteristic
chalk down land with gently rounded slopes <u>or</u> rugged, mountain scenery with
precipitous slopes and many glacial features.

<u>Conclusions</u>

Having completed the plots and the kilometre square sheet it is advisable
to check that all sheets have been completed and clip them together in the
evening. Sort out any minor problems that may have been encountered e.g.
species identification so that the data is as clean as possible. Finally
a last look through the kilometre square sheet in conjunction with the map
to make sure nothing has been left out.

P.S. At the back of the Handbook are brief summaries of the Land Classes -
necessary modifications or comments would be useful.

FIGURE 3

PLOT NUMBER: 617 / 1

	OF	OL	A	B	C	
HORIZON THICKNESS (cm)	3	4	24	38	10+	
HORIZON SYMBOL	OF	OL	A	B	C	
MOISTURE STATUS 1 dry 2 moist 3 wet 4 waterlogged	2	3	3	4	3	
COLOUR	10YR 5/6	7YR 2/0	10YR 5/2	10YR5/2 7-7YR5/6	7-7YR5/6	
MOTTLES 0 absent 1 yellow/red 2 black 3 blue/green 4 other	0	0	1	1	0	
TEXTURE 1 organic 2 sand 3 silt 4 clay 5 loam	1	1	4	4	4	
STRUCTURE 0 absent 1 rounded 2 angular 3 prismatic 4 platy	0	0	2	2	2	
STONES (% cover) 0 absent 1 (1-5) 2 (6-15) 3 (16-35) 4 (36-70) 5 (>70) Dominant Size (cm) 1 small (<2) 2 medium (2-10) 3 large (10-20) 4 v. large (>20)	0 /	0 /	0 /	4 3	2 3	
ROOTS (per 100 cm^2) 0 absent 1 (1-10) 2 (10-25) 3 (25-200) 4 (>200) Dominant Type(s) 1 fibrous 2 fleshy 3 rhizomatous 4 woody	/ 0	3 1	3 1	2 1	0 0	
CARBONATES 0 absent 1 present	/	/	/	/	/	
EARTHWORMS 0 absent 1 present	/	/	/	/	/	
IRON PAN 0 absent 1 present	/	/	/	/	/	

SOIL GROUP
1 Ranker 2 Rendzina 3 B. Earths
4 Podzols 5 Gleys 6 Peat   **5**

"PARENT MATERIAL"
1 Bedrock 2 Scree 3 Till
4 Fluvioglacial 5 Blown Sand
6 Alluvium 7 Other drift
8 "Disturbed"   **3**

Local measures - sandstone

SOLID GEOLOGY

ADDITIONAL COMMENTS:

FIGURE 6

LINEAR PLOT SPECIES DATA

Stratum No. 617   Linear plot no. R_1 Recorder RB   Date 9/5/78

Code	Species	C.A.%	Code	Species	C.A.%
8	Agropyron repens	30			
322	Poa trivialis	20			
254	Lolium perenne	5			
103	Cirsium arvense				
430	Taraxacum .	5			
339	Potentilla reptans				
456	Tussilago far.				
315	Plant. lanceol				
161	Eur. prael.				
124	Dactis glom.				
166	Festuca rubr.	5			
321	Poa pratensis				
449	Trifolium repens				
495	Tanacetum officinale				
316	Plantago major				
496	Festuca prat				

FIGURE 7

Method n locating the linear plots:
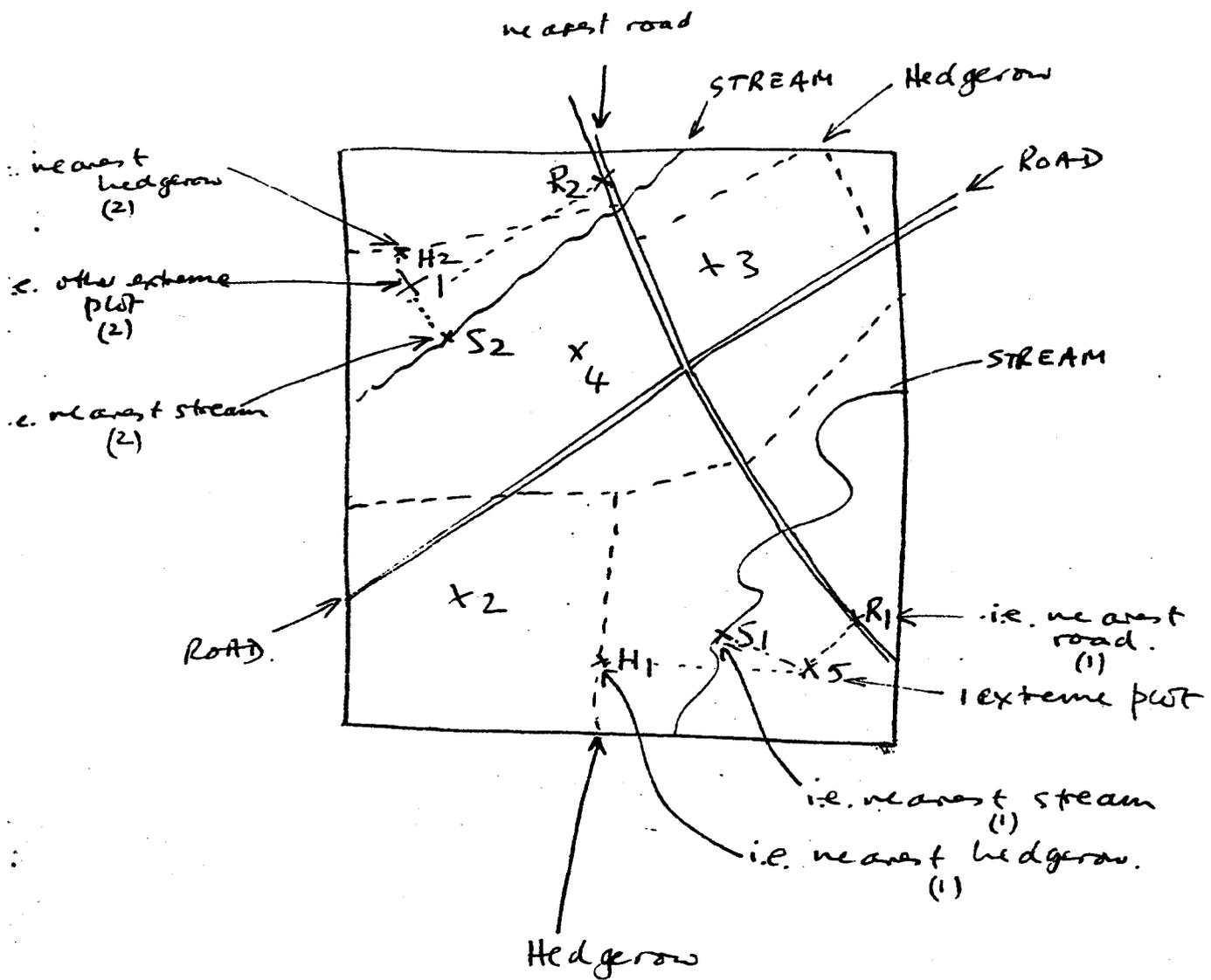
HABITAT DATA FOR KILOMETER SQUARES

STRATUM ~~GULT~~ 1B   SQUARENO: 4 617   RECORDER: RB

Boundaries, Walls/Fence

1 ~~Old Dry Lichen~~ 20	2 Old Dry Lichen/Moss --	3 ~~Old Mortared~~ ±	
4 Brick --	5 New Dry Wall --	6 New Mortared ..	
7 Turf on Top --	8 Cob/Mud --	9 ~~Wall + Gaps~~ 70	
10 Ruined Wall --	11 Dyke/Stone Heap --	12 ~~Wood Post + Rail~~ 10	
13 ~~Metal Post + Rail~~ ±	14 Chain Link --	15 ~~Barbed Wire~~ ±	
16 Sheep Fold (Fence) --	17 Sheep Fold (Wall) --	18 Ruined Sheep Fold ..	
Others (Incl. Geol.) --			

Boundaries: Hedges

19 ~~Complete Hedge~~ ±	20 Hedge + Filled Gaps --	21 Hedge + Gaps --	
22 Hedge (Managed) --	23 Hedge Neglected --	24 Hedge on Bank ..	
25 Hedge on Wall --	26 Hedgerow Trees < 5m --	27 Hedge on Trees / 5m ..	
28 Hedge Removal (Recent) --	29 Hedge Removal (Old) --	30 Lines Shrubs --	

Species (Hedge) --

Species (Hedge Trees) --

Woodland

31 ~~Wood (over 5 ha)~~ Species Oak 40 Beech 40 Syc. 20 W. Elm , + Ash + Yew +

32 ~~Copse (under 5 ha)~~ Species Oak 40 Beech 60 Birch + S. pine +

33 Scrub   Species

34 Gillside   Species

35 Shelter Belt   Species

~~36 Walled~~	37 Fenced	~~38 Open~~
39 Mixed	40 Polestage	~~41 Mature~~
42 Felled	43 Thinning	~~44 Glades~~
45 Rides	46 Epiphytes (Moss)	47 Ivy
~~48 Park/and Trees~~	49 Roadside Trees	Roadside Fl. Trees

Others:

Habitats (Vegetation)

50	Calluna	—	51	Vaccinium	--	52	Agrostis/Fescue	--
~~53~~	~~Pteridium~~	--	54	Juncus sq.	--	~~55~~	~~Juncus eff.~~	—
56	Molinia	—	57	Sphagnum	--	58	Eriophorum	--
~~59~~	~~Rough Mix Grass~~	--	60	Holcus/Cynosurus	--	61	Poa T./Holcus	—
~~62~~	~~Poa T./Lolium~~	--	63	Lolium per.	--	64	Lolium/Dactylis	--
65	Lolium/Phleum	--	66	Dactylis	—	67	Lolium mult	--
68	Herb Rich	--	69	Meadow (Hay)	--	70	Heathland	--

Others -- *Nardus Deschampsia caesp.*

Crops (Agriculture)

71	Wheat	--	72	Barley	--	73	Oats	--
74	Sugar Beet	--	75	Kale	--	76	Roots	--
77	Potatoes	--	78	Beans	--			

Others --

79	Ridge/Furrow	80	Drainage Lines	81	Haystack
82	Strawstack	83	Muck Heap	84	Silo
85	Slurry Pit	86	Silage Pit		

Crops (Horticulture)

87	Cabbage	88	Flowers	89	Lettuce/Veg.
90	Glass	91	Apple Orchard	92	Mixt Orchard
93	Produce for Sale	94	Garden Crops	95	Garden Orchard

Others

Domestic Animals

96 Sheep: Breeds:- *Swaledale,* 70% *Lonk x Swaledale.* 30%

97 Cattle: Breeds:- *Freisian x Hereford* 100%

Horses ~~98 Heavy~~ ~~99 General~~ 100 Pony 101 Donkey 102 Pigs 103 Goats
104 Chickens (Yard) 105 Chickens (Batt)

Habitats (Rock)

106 Cliff > 5m ~~107 Rock Outcrop~~ ~~108 Scree~~ 109 ~~Stones/Rocks~~ 110 ~~Boulders~~

111 Gorge ~~112 Eroding Bank~~ 113 Eroding Peat ~~114 Excavated Bank~~ ~~115 Embankment~~
~~116 Cutting~~ ~~117 Quarry/Mine~~ ~~118 Rock Exposure~~ 120 Others

Habitats (Aquatic)

~~121 Stream <1 m slow~~	~~122 Stream <1 m fast~~	123 Stream >1 m fast
124 Stream >1 m slow	125 Ditch <1 m	126 Ditch >1 m
~~127 Mud Bot~~	128 Peat Bot	~~129 Sand/Gravel/Rock Bot~~
130 Rocky Spring	131 Peat Spring	132 Surface Water
133 Seepage	134 Small Pool 1 m^2	135 Small Pool 1 m^2
136 Pond	~~137 Lake up to 20 m^2~~	138 Lake over 20 m^2
139 Reservoir/dam	~~140 Aquatic Veg.~~	~~141 Marginal Veg.~~
~~142 River Bank~~	143 River Cutting	144 Canal
145 Canalised River	146 Peat Cuts	147 Marshland
148 Culvert	149 Other	

Habitats (Marine)

150 Sea Cliff	151 Sand/Mud Shore	152 Rock Shore
153 Rock Pools	154 Pebble Shore	155 Dunes
156 Salt Marsh	157 Bare Mud	158 Channels
159 Artefacts (Seashore)	159 Artefacts (Groyne)	160 Open Access

Buildings (Domestic)

161 Vernacular (Local)	162 Vernacular (Non-Local)	163 Non-Vernacular (Local)
164 Non-Vernacular (Non-Local)	165 Housing Estate	166 Semi-Detached Ho.
167 Large Detached Ho.	168 Detached Ho.	169 Village Cottage
170 Bungalow	171 Later than 1960	172 1940-1960
173 1900-1940	174 1800-1900	175 Pre 1800
176 Slate roofs	177 Tile roofs	178 Thatch
179 Asbestos	180 Shingles	190 Corrugated Iron
191 Other		

Buildings (Industrial)

192 Garage	193 Factory	194 Wasteland
195 Others		

Buildings/Urban

196 Car Park	197 Lamp Posts	~~198 Rubbish (Isolated)~~
199 Rubbish (Heap)	200 Pylon	201 Empty House

Buildings (Amenity)

202 Green/Common	~~203 Footpath~~	~~204 Footpath~~
205 Games Pitch	206 Shops	207 Pub/Hotel/G. House
207 Accommodation (B/B)	208 Gardens	~~209 Track~~
210 Tents	211 Caravans	212 Ancient Buildings

Buildings (Farm)

213 Farmhouse	214 Barn/Shippon vern.	215 Barn/Shippon non-vern
~~216 Ruined Farm~~	217 Croft	213 Farm Produce

Other comments:-

Stream heavily polluted with Iron
from old mine workings.

Only a very small proportion of good
pasture (See map). The cattle
were seen outside the square but
had been in the square and clearly
use it.

Although on the industrial
margin the square had a rural
appearance – although there
was much litter by the road and
Some evidence of vandalism.

Project 424 - Check list of equipment

Hardware	Software	Forms etc.
Rucksack	Pens/pencils/rubber	Vegetation form
Survey Poles	Plastic bags - soil sample	Soil form
Clipboard	Plastic bags - specimens	Linear plot form
Compass	Plastic bags - clipboard	Habitat form
Slope measurer	Shrub labels	1 km square form
1 meter stick	Herbarium	Species combinations
Spade	Plastic sheet	"Guide to grasses"
Trowel	Munsell chart	Cattle breed sheet
Knife	Observer's Farm Animals	Sheep breed sheet
Tape	Plant ID books	Soil horizon sheet
	6" maps	% Stone sheet
	1" maps	Landowners handout

Cattle Breeds

Red	Red and White	Black and White	Black	Fawn	Whitish
Red Poll (M & B)	Dairy Shorthorn (M & B)	Fresian (M & B)	Welsh Black (M & B)	Guernsey (M)	Charloais (B)
North Devon (B)	Beef Shorthorn (B)	Belted Galloway (B)	Kerry (M & B)	Jersey (M)	
Sussex (B)	Hereford (B)		Aberdeen Angus (B)	Highland (B)	
South Devon (M & B)			Galloway (B)		
Lincoln Red (M & B)			Highland (B)		
Highland (B)					

M = mainly kept for milk production

B = mainly kept for beef production

M & B = used for both beef and milk production

Sheep Breeds

GROUP 1   Horned/Longwool/Non-wooled face/Dark face
DALESBRED, LONK, ROUGH FELL, SCOTTISH BLACKFACE, SWALEDALE

GROUP 2   Hornless/Longwood/Black, non-wooled face
DERBYSHIRE GRITSTONE, LLANWENOG, RADNOR

GROUP 3   Hornless/Longwood/Dark, wooled face
OXFORD DOWN, WENSLYDALE

GROUP 4   Hornless/Longwool/Light, non-wooled face
BORDER LEICESTER, CHEVIOT, HERDWICK, LEICESTER, TEESWATER,
WHITEFACE DARTMOOR, WELSH MOUNTAIN, NORTH COUNTRY CHEVIOT

GROUP 5   Hornless/Longwool/Light, wooled face
DARTMOOR, DEVON LONGWOOL, KENT or ROMNEY MARSH, LINCOLN
LONGWOOL, SOUTH DEVON

GROUP 6   Horned/Shortwool/Light face/Wooled face
DORSET HORN, EXMOOR HORN (coat fairly long)

GROUP 7   Hornless/Shortwool/Dark non-wooled face
SUFFOLK

GROUP 8   Hornless/Shortwool/Dark, wooled face
CLUN FOREST, DORSET DOWN, HAMPSHIRE DOWN, SHROPSHIRE, SOUTHDOWN

GROUP 9   Hornless/Shortwool/Light, wooled face
DEVON, CLOSE WOOL, RYELAND

Table 1.   424 Species List

1	Acer cam	51	Biden cer	101	Chrys opp		
2	pse	52	tri	102	Circa lut		
3	Abies alb	53	Blech spi	103	Cirsi arv		
4	Achil mil	54	Brachyth	104	pal		
5	pta	55	Brach syl	105	vul		
6	Aegop pod	56	Brass rap	106	Clado pyx		
7	Agrim eup	57	Briza med	107	arb		
8	Agrop rep	58	Bromu mol	108	furc		
9	Agros gig	59	rac	109	Cladi mar		
10	Agros can	60	ram	110	Clema vit		
11	sto	61	ster	111	Clino vul		
12	ten	62	Bryon dio	112	Coniu mac		
13	Aira car	63	Calli sp	113	Conop maj		
14	pra	64	Callu vul	114	Convo arv		
15	Ajuga rep	65	Calth pal	115	Coron did		
16	Alche alp	66	Calys sep	116	Coryd cla		
17	vul	67	Campa lat	117	Coryl ave		
18	Allia pet	68	rot	118	Crata mon		
19	Alnus glu	69	Capse bur	119	Crepi cap		
20	Alope gen	70	Carda hirs	120	pal		
21	pra	71	pra	121	sp.		
22	Anaca pyr	72	Carex aqua	122	Cymba mur		
23	Anaga arv	73	big	123	Cynos cri		
24	ten	74	bin	124	Dacty glo		
25	Anemo nem	75	cur	125	mac		
26	Angel syl	76	dem	126	Dact fuc		
27	Anten dio	77	dio	127	Daphn lau		
28	Antho odo	78	ech	128	Daucu car		
29	Anthr syl	79	hos	129	Desch cae		
30	Aphan sp.	80	lep	130	Desch fle		
31	Apium gra	81	nig	131	Dicra sco		
32	nod	82	ova	132	Digit pur		
33	Acti sp	83	pal	133	Dipsa ful		
34	Arcto uva	84	pauc	134	Drep unc		
35	Arena ser	85	pani	135	Dros ang		
36	Armer mar	86	pil	136	Drose rot		
37	Arrhe ela	87	pul	137	Dryop dil		
38	Artem vul	88	rem	138	fil		
39	Asple tri	89	ros	139	vil		
40	Aster tri	90	ser	140	Empet nig		
41	Athyr fil	91	Carum ver	141	Endym non		
42	Atric und	92	Centa nig	142	Epilo ana		
43	Atrip gla	93	sca	143	hir		
44	has	94	Ceras arv	144	pal		
45	Avena sat	95	glo	145	ros		
46	Ballo nig	96	hol	146	sp.		
47	Belli per	97	Chama ang	147	Equis arv		
48	Beta mar	98	Cheno alb	148	pal		
49	Benton off	99	Chrys leu	149	sp.		
50	Betul spp	100	Chrys alt	150	Erica cin		

151	Erica tet	206	Herac sph	261	Luzu pil
152	Eriop ang	207	Hiera pil	262	syl
153	vag	208	sp.	263	Lychn flo
154	Erodi cic	209	Holcu lan	264	Lycop cla
155	Euony eur	210	mol	265	sel
156	Eupat can	211	Horde mur	266	Lycop eur
157	Eupho hel	212	sec	267	Lysim nem
158	agg	213	vul	268	Lythr por
159	pep	214	Humul lup	269	sal
160	Euphr sp.	215	Hydro vul	270	Malus dom
161	Eurynch sp.	216	Hyloc sple	271	Malva mas
162	Fagus syl	217	Hyper mac	272	syl
163	Festu aru	218	hum	273	Matri mat
164	gig	219	per	274	Medic lup
165	ovi	220	pul	275	sat
166	rub	221	tet	276	Menth sp.
167	viv	222	Hypn cup	277	Mercu per
168	Filip ulm	223	Hypoc sp.	278	Mimul gut
169	Fraga ves	224	Ilex aqu	279	Minua hyb
170	Fraxi exc	225	Inula con	280	Mnium hor
171	Fumar bas	226	Iris pse	281	pun
172	cap	227	foe	282	und
173	off	228	Juncu art	283	Molin cae
174	Galeo lut	229	buf	284	Monti fon
175	Galeop spe	230	bul	285	Myoso sp.
176	tet	231	con	286	Myric gal
177	Galiu apa	232	eff	287	Nard stri
178	bor	233	ger	288	Narth oss
179	cru	234	inf	289	Nastu off
180	mol	235	squ	290	Odont ver
181	odo	236	Knaut arv	291	Oenan cro
182	pal	237	Lact ser	292	Ononi rep
183	sax	238	Lamiu alb	293	Onopo aca
184	tri	239	pur	294	Origa vul
185	uli	240	Lapsa com	295	Ornit per
186	ver	241	Larix sp	296	Oxali ace
187	Genis ang	242	Lathy mon	297	Papav dub
188	tin	243	pra	298	rho
189	Geran dis	244	Lemna min	299	Parap str
190	mol	245	Leont aut	300	Parna pal
191	pra	246	Lepid cam	301	Pedic pal
192	pus	247	Leuco alb	302	syl
193	rob	248	gla	303	Phala aru
194	syl	249	Ligus vul	304	Phleu pra
195	Geum urb	250	Limon vul	305	Phrag com
196	Glaux mar	251	Linum cat	306	Phyll sco
197	Glech hed	252	Lipar loe	307	Picea sit
198	Glyce dec	253	Loliu mul	308	Picri ech
199	flu	254	per	309	Pimpi maj
200	max	255	Lonic per	310	sax
201	Gnaph syl	256	Lotus cor	311	Pingu vul
202	uli	257	ten	312	Pinus cont
203	Gymna con	258	uli	313	syl
204	Heder hel	259	for	314	Plagi und
205	Helic pub	260	Luzu mul	315	Plant lan

316	Plant maj	371	Rubus cae	426	Suaed mar
317	mar	372	cha	427	Succi pra
318	Pleuro sc	373	fru	428	Symph off
319	Poa ann	374	ida	429	Tamus com
320	.com	375	Rumex ace	430	Tarax agg
321	pra	376	osa	431	Taxus bac
322	triv	377	con	432	Teucr sco
323	Pol vul	378	cri	433	Thala arv
324	Poly avi	379	lon	434	Thali fla
325	con	380	obt	435	Thely ore
326	hyd	381	Sagin sp.	436	phe
327	lap	382	Salic agg	437	dry
328	per	383	Salix aur	438	Thymu ser
329	Polyp vul	384	cin	439	Thuid tam
330	Polys set	385	nig	440	Thuja sp.
331	Polyt com	386	Sambu nig	441	Toril jap
332	for	387	rac	442	Trago pra
333	jun	388	Sangu off	443	Trich cae
334	Potam pol	389	Sanic eur	444	Trien eur
335	Poten ang	390	Sarot sco	445	Trifo cam
336	ans	391	Saxif opp	446	dub
337	ere	392	ste	447	mic
338	pal	393	Scabi col	448	pra
339	rep	394	Schoe nig	449	rep
340	ste	395	Scirp set	450	Trigl mar
341	Primu ver	396	Scrop nod	451	pal
342	vul	397	Scute gal	452	Trip ino
343	Prune vul	398	min	453	Trise fla
344	Prunu avi	399	Sedum ang	454	Tritic aes
345	lau	400	Selag sel	455	Tsuga het
346	spi	401	Senec jac	456	Tussi far
347	Pseud pur	402	vul	457	Typha lat
348	Pteri aqu	403	Shera arv	458	Ulex eur
349	Pucci dis	404	Siegl dec	459	gal
350	Querc sp.	405	Silen dio	460	Ulmus gla
351	Ranun acr	406	vul	461	Umbil rup
352	aqu	407	Sinap arv	462	Urtic dio
353	bul	408	Sisym off	463	Vacci myr
354	fic	409	Solan dul	464	vit
355	fla	410	tub	465	Valer off
356	hed	411	Solid ver	466	Veron ana
357	rep	412	Sonch arv	467	arv
358	sec	413	asp	468	bec
359	Resed lut	414	ole	469	cha
360	Rhina sp.	415	Sorbu auc	470	mon
361	Rhodo pon	416	Sparg erect	471	off
362	sp.	417	emers	472	ser
363	Rhync alb	418	Sperg arv	473	Vibur opu
364	Rhyt lor	419	Sphag sp.	474	Vicia cra
365	squ	420	Stach syl	475	hir
366	tri	421	Stell als	476	sat
367	Ribes nig	422	gra	477	sep
368	syl	423	hol	478	vil
369	uva	424	med	479	Viola arv
370	Rosa agg	425	neg	480	can

```
481    Viola oda
482          pal
483          rei
484          riv
485          hir
486          tri
487    Vulpi bro
488    Wahle hed
489    Pel can


Additional spp

490    Veron pers
491    Marchant sp
492    Camp pyr
493    Ulmus proc
494    Carex sp.
```

Table 2.   Guidelines for species identification and aggregates

The combinations were determined on the basis of experience, where it is considered that unless good specimens are available it is not possible to identify the species accurately. A number of the species anyway have similar ecological amplitudes e.g. Cardamine hirsuta/flexuosa and it has been found that if the information is confusing, then the analysis stage rejects the species by not selecting it as an indicator.

The codes given refer to the coding list in the previous table

33	Arctium sp
50	Betula sp
63	Callitriche sp.
70	Cardamine hirsuta/flexuosa
142	Epilobium montanum/tetragonum/obscurum/parviflorum
160	Small Euphorbia sp
161	Euphrasia sp
208	Hieracium sp (except pilosella)
223	Hypochaeris sp/Leontodon sp
228	Juncus articulatus/acutiflorus
260	Luzula multiflora/campestris
276	Mentha sp
285	Myosotis sp
322	Poa trivialis/nemoralis
323	Polygala serphyllifolia/vulgaris
350	Quercus sp
360	Rhinanthus sp
370	Rosa sp
377	Rumex conglomeratus/sanguineus
381	Sagina sp
430	Taraxacum sp
484	Viola riviniana/reichenbachiana
485	Viola hirta/odorata
460	Ulmus glab - non suckering elms
493	Ulmus proc - suckering elms

Identify only the following Bryophytes.   <u>Ignore all others</u>

Acroladium cuspidatum	Hylocomium splendens	P. formosum
Atrichum undulatum	Hypnum cupressiforme	P. juniperunum/aloides
Aulacomnium palustre	Leucobryum glaucum	Pseudoscleropodium purum
Brachythecium rutabulum	Lophocolea spp	Rhacocomitrium lanuginosum
Bryum spp	Marchantia spp	Rhacocomitrium spp (other)
Campylopus atrovirens	Mnium hornum	Rhytidiadelphus loreus
C. flexuosus	M. undulatum	R. squarrosus
C. pyriformis	Mnium spp (other)	R. triquetrius
Dicranella heteromalla	Pellia spp	Sphagnum - green/fat
Dicranum majus	Plagiothecum undulatum	- green/thin
D. scoparium	Pleurozium shreberi	- red
Eurhynchium praelongum	Polytrichum commune	Thuidium tam

Identify only the following lichens. Ignore all others.

Cladonia pyxidata/coccifera/fimbriata
Cladonia arbuscula
Cladonia uncialis
Cladonia impexa
Peltigera canina

Preliminary notes on UK land classes

The notes below are made from preliminary experience with the land classes, combined with photographs of most of the types. It is important to emphasize therefore that the full range of variation covered by each land class is not covered. However, the descriptions will provide a guideline and it is noticeable that it is more difficult to describe the lowland than the upland land classes, since they are likely to differ more in land use, than in overall geomorphology.

Land Class 1. England Central South downs.

Gently rolling country with moderate relief. Generally rich farmland with both pastoral and arable. Primarily a hedged landscape, with frequent small woods and copses. Streams usually present but with a rather variable geology.

Land Class 2. England, South-east downs.

Long rounded slopes characterise this type, which is particularly associated with the chalk downs. There are few woods, hedges or streams but with some exceptions. In general the landscapes have sweeping vistas and are usually dominated by extensive arable farming.

Land Class 3. East Anglia Central Plains.

Almost flat plain in East Anglia with intensive arable farming predominating, with its associated landscape features. Some copses and hedgerows but few trees in general.

Land Class 4. East Anglia marginal Plains

Flat and featureless plain, in relief terms, with few hedges or trees providing a monotonous intensively farmed modern arable landscape.

Land Class 5. England Central Plains.

Undulating landscape, with many hedges. Predominantly pastoral but with some arable, mainly for animal feed but locally more important. Many small copses and hedgerows, with small fields often present and often heavy soil.

Land Class 6. England south-west lowlands.

Low emphasis relief but with local variations from streams in small valleys. Hedgerows particularly frequent, often on banks providing a rather closed landscape. Pastoral farming predominates with a variable amount of arable. Some non farmed land occurs in places but the land is mainly intensively farmed.

Land Class 7. England/Wales coastal.

Widely variable coastal type, usually with cliffs or steep slopes but not exclusively so. Usually associated with lowland behind.

Land Class 8. England/Scotland coastal.

A Coastal type usually associated with estuarine conditions and hence with marsh and dunes. Covers a wide degree of variation with mainly arable land behind.

Land Class 9. **Midlands and the North Wolds of England.**

Undulating land; often with contrasts between valleys and slopes.
Mainly arable, but with some pastural. Hedges and fences present
and some woodlands.

Land Class 10. **North-east Wolds of England.**

Similar balance to 9, but rather more pasture present and more hedges
and woodland. Gently rounded slopes, much temporary grass, but also
a certain amount of arable.

Land Class 11. **England South Midlands Plains.**

Contains very gently undulating land with very light relief. Few
hedgerows and trees present and usually intensive arable farming
except on heavy soils where there is some pastural. Generally open
landscape.

Land Class 12. **England North Midlands Plains.**

Almost flat, rather featureless landscape, usually dominated by
intensive arable farming but some woodland. Drains are a frequent
feature and much of the land has therefore perhaps been reclaimed.
A few more trees and hedgerows probably than type 11.

Land Class 13. **North-west Midland Plains of England.**

Level, often alluvial sites, usually with intensive arable. Few
trees, but some hedgerows.

Land Class 14. **North Lowlands of England.**

Mainly coastal, with mud flats or sand on the shore and with level,
exposed inland areas. Can also be inland on very flat, featureless
areas in the north. Few hedges and trees. Much arable, but pasture
is extensive.

Land Class 15. **Midlands and Lowlands of Wales.**

More or less level land at a higher elevation than the previous class;
and not on the coastline. Open countryside mainly, with fences; few
hedges and trees. Intensive agriculture.

Land Class 16. **England North-east/west Plains.**

Often adjacent to conurbations with small rivers and drains widespread
in a generally uniformly gently sloping land surface. Hedgerows and
small woods are quite common and there is some unenclosed land, although
the majority is intensively farmed with a mixture of arable and pastural.

Land Class 17. **Wales central Uplands.**

Gently undulating hills with moderate relief characterise this type,
within which there is a wide degree of variation in farming pattern
depending upon the degree of reclamation and local conditions. Mainly
pastural with few hedges and with some arable for animal feed. The
unenclosed land is variable in native.

Land Class 18.   South-west Uplands of Scotland.

Broad, rounded hills/covered with Calluna.   Some limited reclamation, but few hedges, trees and lowland features.

Land Class 19.   Southern Scotland/Northern England.

Somewhat steeper slopes and higher altitude than 18; and hence less farmed land.   The exposed summits and slopes are often planted with commercial forests; and again the slopes are invariably gentle in mountain terms.

Land Class 20.   South Uplands of Scotland.

The steep slopes of this class mean that there is often a contrast between the mountain features and the lower land; which may contain hedgerows and small woodlands.   Hence, it is variable and ecologically diverse; very little arable therefore - mainly pasture.

Land Class 21.   North-east Highlands of Scotland.

More pronouncedly upland than 20 with only a small proportion of marginal land at the lower levels.   Steep streamsides are frequent; sometimes with trees running up beside them.   Pasture predominates below the mountain wall; above, there are steep, rocky mountain slopes with varied vegetation.

Land Class 22.   South-east Uplands of Scotland.

This class is characterized by rounded hills which can, under suitable conditions, be reclaimed; exceptionally into arable, but more usually in terms of improved pasture.   The majority of this class, however, is open moorland.

Land Class 23.   North-east Highlands of Scotland.

Generally high land; with many steep and rocky slopes characteristic of mountain areas.   It covers a wide range of variation because the high mountains are a relatively limited, but variable class.

Land Class 24.   North-west Highlands of Scotland

Highland particularly characterized by rounded, badly drained slopes; widespread forestry and much surface water; otherwise landscape is open range land with low grazing densities.

Land Class 25.   East Lowlands of Scotland.

Mainly on the coastal plains of low-lying land, but it is a type of contrasts and variable conditions.   On the hill slopes there is grazing or forestry and on the lower land there is mainly pasture, though with limited arable also.

Land Class 26.   South of Scotland/North-east England.

Low elevation land in the north; usually with fertile lowland, but with a limited growing season.   Often intensively farmed and arable land tends to dominate.   Open farmland with few hedges and a few small copses.

<u>Land Class 27.</u>   <u>East Lowlands of England and Scotland.</u>

Northern lowland; gently rolling slopes with some upland influence,
but nevertheless generally intensively farmed; though with pasture
rather than arable.   Mainly stone walls, but with a few hedges and
planted shelter belt.

<u>Land Class 28.</u>   <u>North-east Lowlands of Scotland.</u>

Land on the margins of the high hills in situations where the agricultural
use is variable; depending on inputs.   Mainly sheep grazings, with some
improved land; also extensive plantations and shelter belts.

<u>Type 29.</u> <u>Scotland inner west.</u>

The rugged variable terrain of the inner part of the Western Highlands
is particularly characteristic.   The land surface is highly variable,
with many distinctive features such as rock exposures, streams and
lakes.   Small woodlands are often present and the vegetation is very
variable.

<u>Type 30.</u> <u>Scotland far west.</u>

The outer margin of the western Highlands are more bleak and exposed
than the most sheltered type 29.   Consequently there is less woodland
and more peatland and exposed bare rock.   Many of the features such
as streams and small lochans are still present but the vistas are more
open and the overall environment harsher.

<u>Type 31.</u> <u>Scotland far North-west.</u>

Northern Scotland and Shetland are extremely exposed, with low
emphasis relief and little contrast present in the basic land forms.
The factors leading to peat formation are dominant, unless there is
better drainage or geology.   This type is the coastal margin of
the area, characterised by rocky outcrops and locally by improved
land.

<u>Type 32.</u> <u>Scotland North west Isles.</u>

The inland areas of Shetland and Northern Scotland are bleak and
windswept and represent one of the extreme environments in Britain.
The vegetation varies within narrow limits and invariably is associated
with peatlands.   Small lochans are frequently present and there are
virtually no trees.