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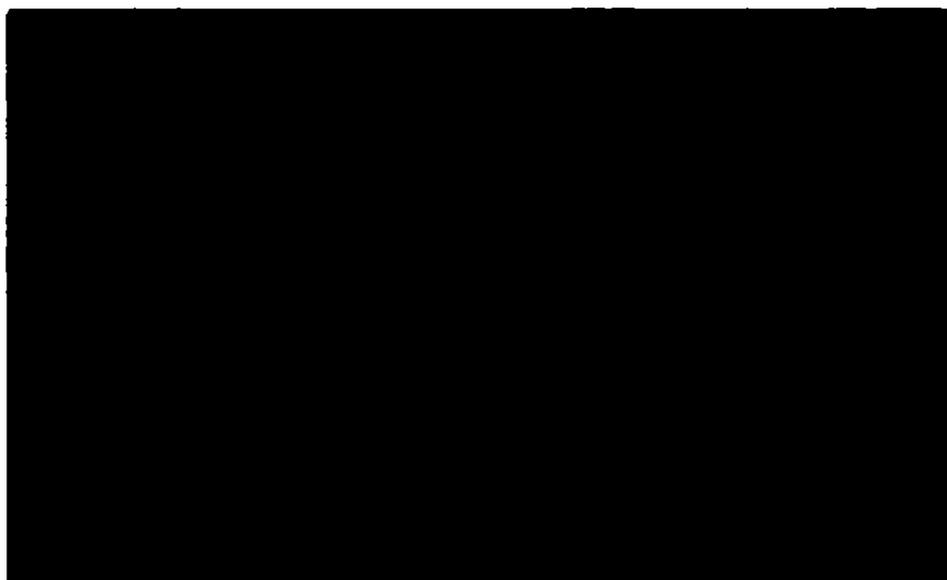


Institute of  
Terrestrial  
Ecology

INSTITUTE OF  
TERRESTRIAL  
ECOLOGY  
MERLEWOOD



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- improving productivity in forestry
- controlling pests
- managing and conserving wildlife
- assessing the causes and effects of pollution
- rehabilitating disturbed sites

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INSTITUTE OF TERRESTRIAL ECOLOGY  
(NATURAL ENVIRONMENT RESEARCH COUNCIL)

Report to the Department of the Environment

DoE / ITE Contract PECD 7/2/127

ITE Project T02071b1

**COMPARISON OF  
LAND COVER DEFINITIONS**

Final Report

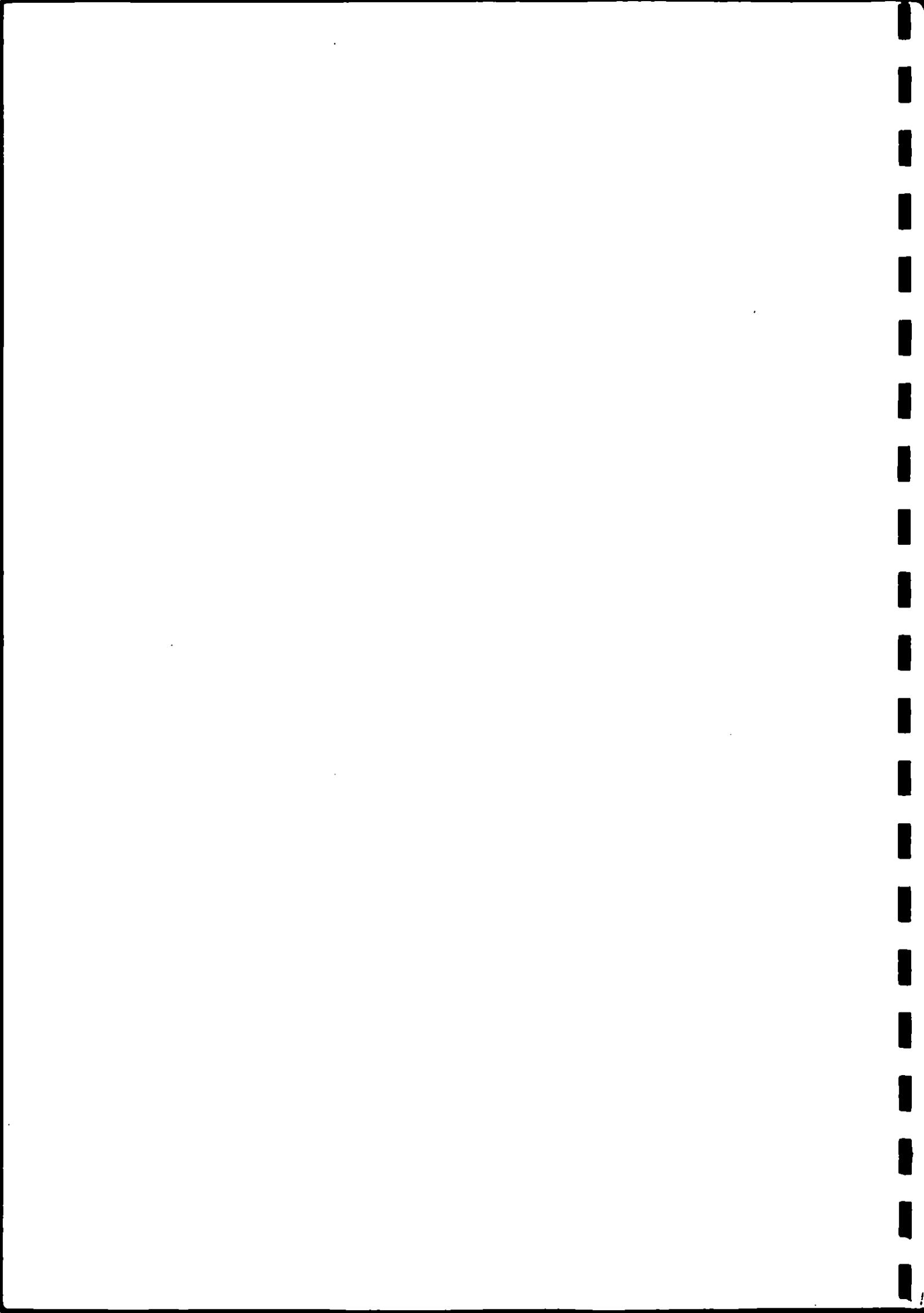
ANNEX 1

DICTIONARY OF SURVEYS AND CLASSIFICATIONS  
OF LAND COVER AND LAND USE

B K Wyatt, N Greatorax Davies, R G H Bunce, R M Fuller, M O Hill

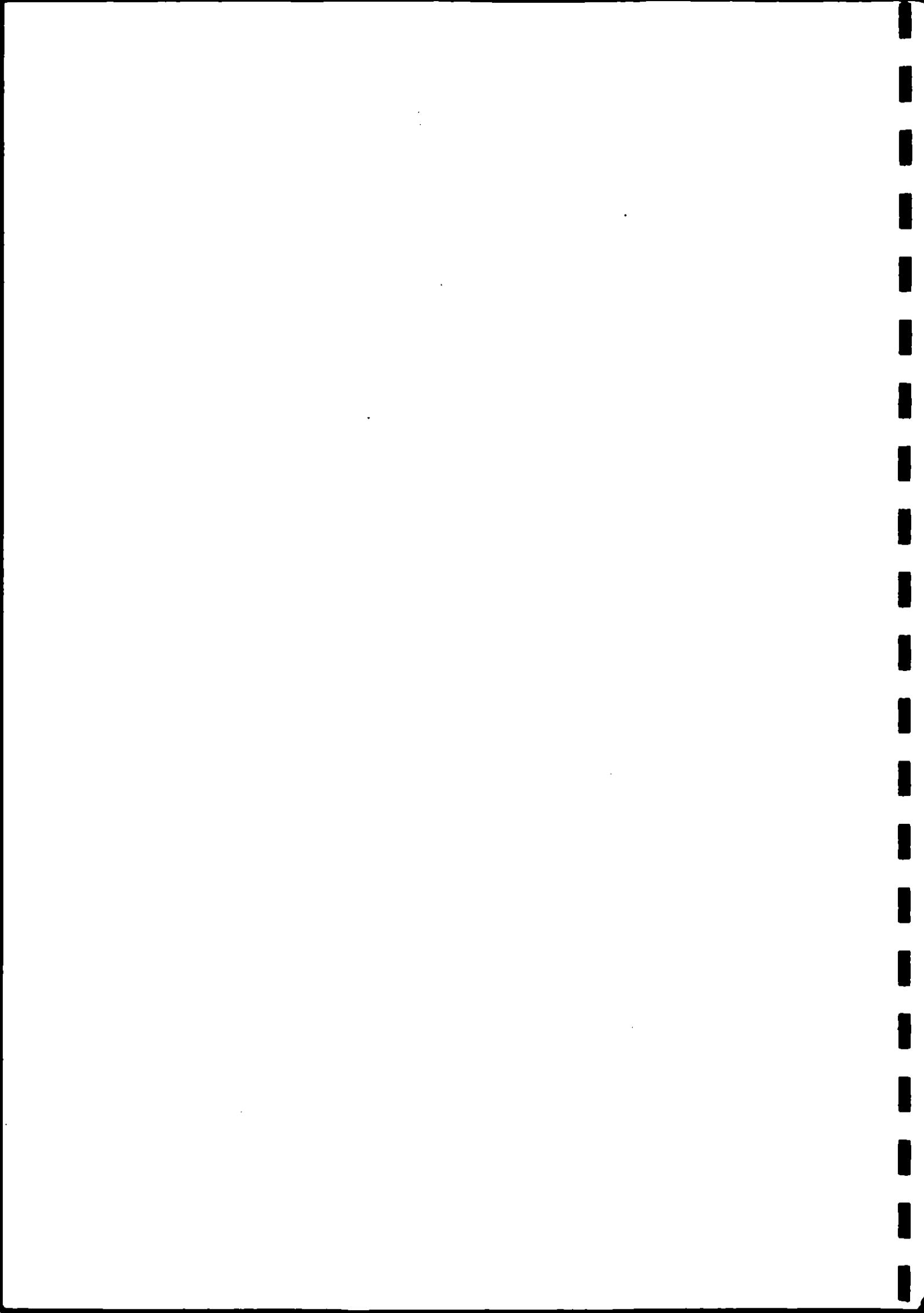
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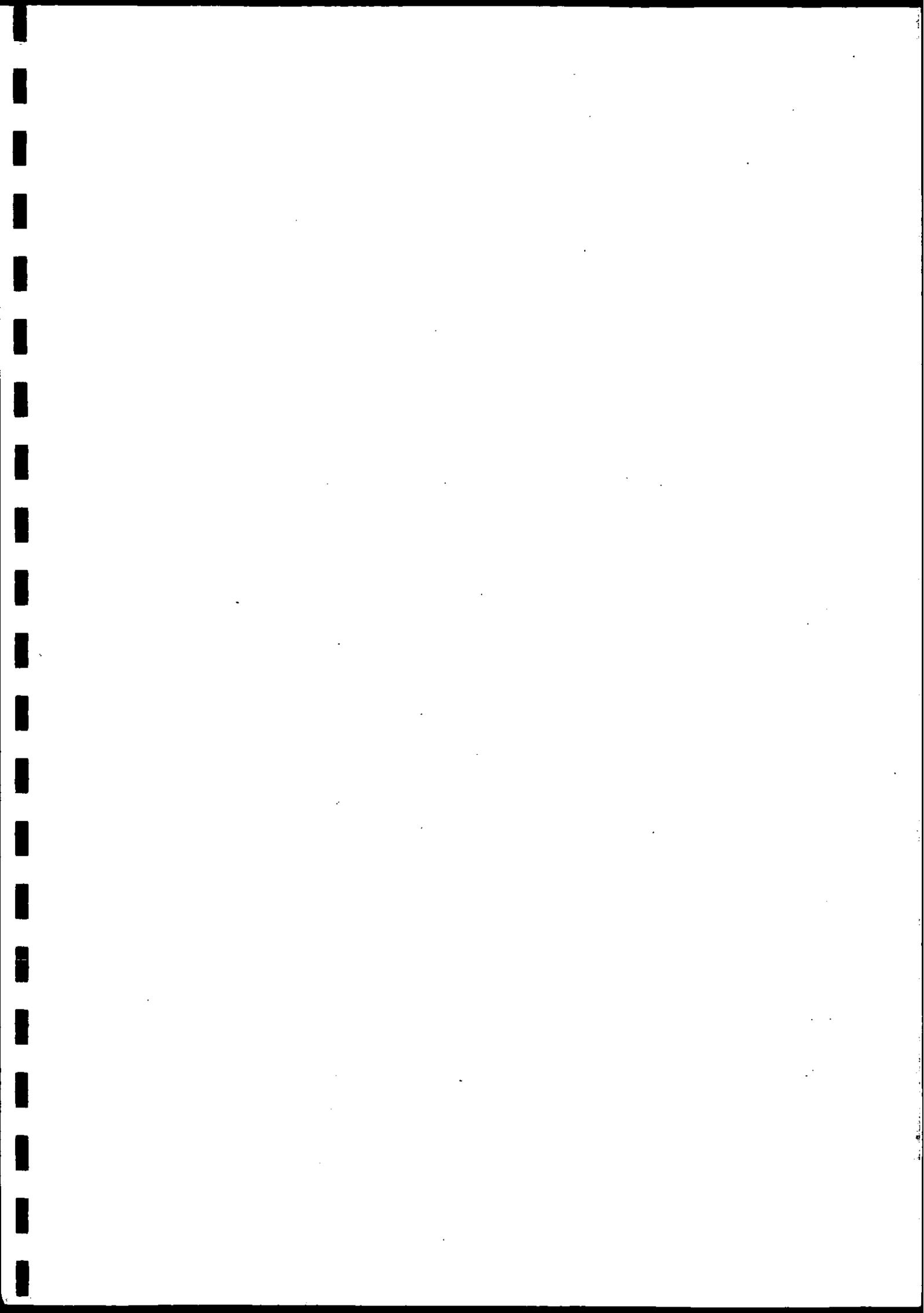
March, 1994

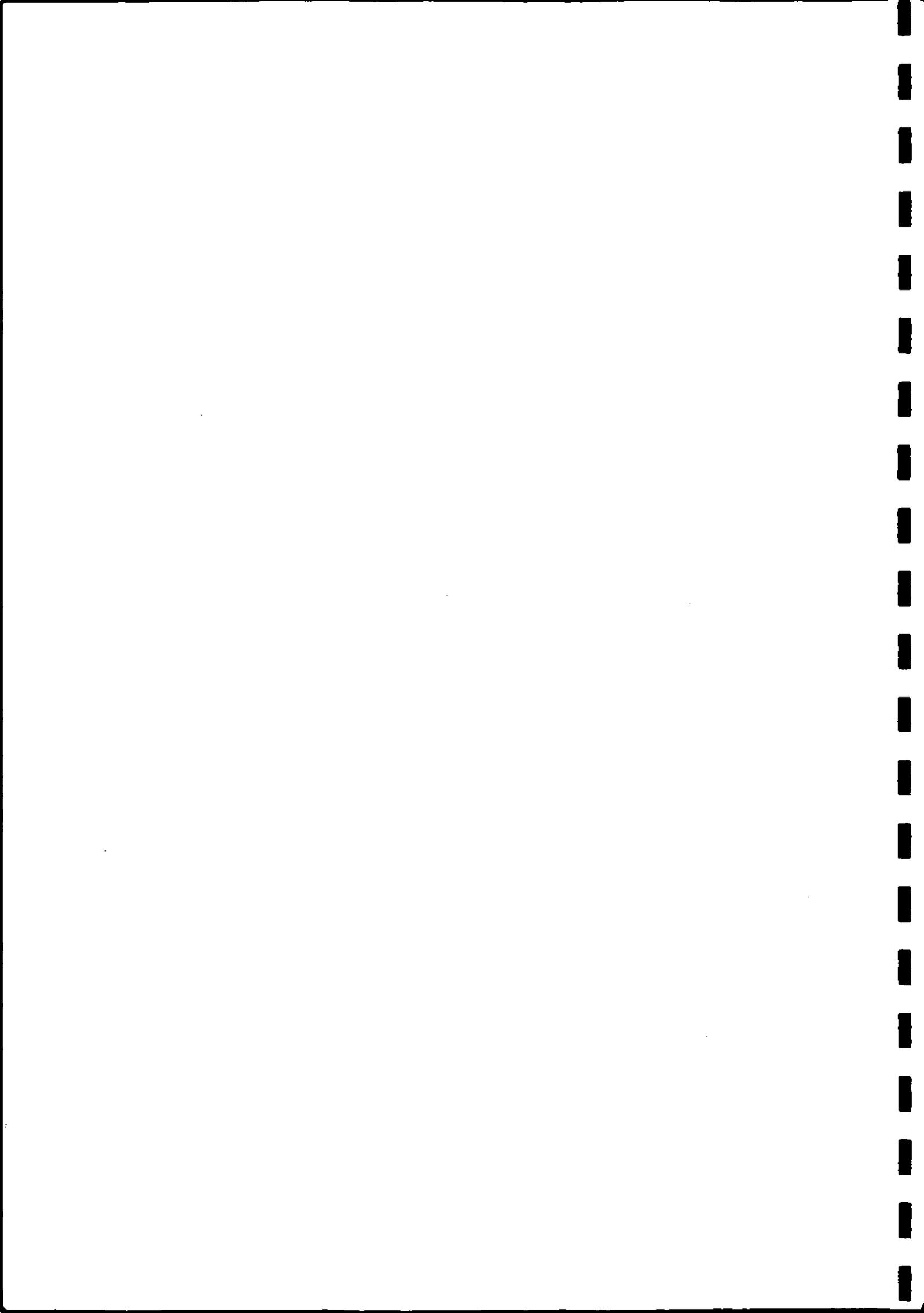


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0 **Baseline survey (Derived from Countryside survey 1990)**

**Land cover/use categories and definitions**

1. **TILLED AND FALLOW LAND**

Includes land under annual tillage including cereals, brassicas, root crops, legumes, other non-horticultural field crops and horticulture, (including flowers). Also includes ploughed and fallow land, including permanent tumbledown setaside. Includes some land with perennial crops, such as strawberries and some flowers. Excludes all ley grassland and land with woody perennial crops.

1.1 **CEREALS**

Land parcels with a single crop species.

1.1.1 **Maize**

1.1.2 **Wheat**

1.1.3 **Barley**

1.1.3.1 **Winter barley**

1.1.3.2 **Spring barley**

1.1.4 **Oats**

1.1.5 **Other cereals**

1.1.5.1 **Rye**

1.1.5.2 **Triticale**

1.1.5.3 **Mixed corn**

1.2 **BRASSICACEAE (EXCEPT HORTICULTURE)**

1.2.1 **Turnips/swedes**

1.2.2 **Kale**

1.2.3 **Oil-seed rape**

1.2.4 **Other crucifer**

Includes Mustard.

1.3 **LEGUMES**

1.3.1 **Peas**

1.3.2 **Field beans**

1.3.3 **Other legumes**

1.3.3.1 **Sainfoin**

1.3.3.2 **Lucerne**

1.3.3.3 **Lupin**

**1.4 ROOTS AND ALLIES (NON-BRASSICA)**

**1.4.1 Sugarbeet**

**1.4.2 Potatoes**

**1.4.3 Other roots and beets**

Includes fodder beet.

**1.5 OTHER NON-HORTICULTURAL FIELD CROPS**

**1.5.1 Linseed**

**1.5.2 Sunflower**

**1.5.3 Other**

**1.6 HORTICULTURE**

Characterised by small plots of widely differing crop types within a small area, probably several crops within one field.

**1.6.1 Flowers**

**1.6.2 Other Horticultural Crops**

Includes cauliflower, lettuce, celery, strawberries, etc. Includes crops grown under cloches and low plastic tunnels.

**1.7 NON-CROPPED**

**1.7.1 Ploughed**

Land ploughed but with no crop apparent at the time of survey.

**1.7.2 Neglected Land**

Agricultural land for which there is no obvious intended change of use, but where the former use has been temporarily neglected (for up to 3 years). Fallow land, unused as a part of agricultural rotation, is included, as also is permanent tumbledown setaside.

**1.7.3 Fallow Land**

Includes rotational Set-aside

**2. CROPLAND WITH WOODY PERENNIAL CROPS**

**2.1 ORCHARD**

Areas with planted broadleaved trees which are, or have been, used for the harvesting of tree fruit crops. They often form a distinct block and display a highly organised (often grid) pattern.

2.2 VINEYARD

2.3 HOPS

2.4 SOFT FRUIT

For example currants, blackberries and raspberries

2.5 TREES AND SHRUBS - NURSERY STOCK

Includes fruit trees, bushes and canes for transplanting. Also includes shrubs, conifers, hedging plants, Christmas trees, ornamental trees and roses grown as nursery stock.

3. GRASS

Includes parkland, tall herbs and bracken but excludes saltmarsh and unimproved dune grassland, (classified as Soft coast - 8.2.2) and swampy grassland, (classified as Marsh - 7.3.1 or Flush - 7.3.2).

3.1 RECREATIONAL AND SIMILAR NON-AGRICULTURAL MOWN GRASS

Where non-intensive, this use can produce forms of Unimproved - 3.3 or Hay-meadow - 3.3 type swards.

3.1.1 Amenity Grass >1 ha

Non-agricultural grass which is clearly being used for amenity purposes (not recreation); and occupies parcels of 1 ha or more. Includes parks, large lawns etc. See also Urban Parks and Gardens - 9.2.

3.1.2 Playing Fields

3.1.3 Golf Course

3.1.4 Touring Caravan park

Where this is main use.

3.1.5 Camp Site

Where this is main use.

3.1.6 Other Non-Agricultural Mown Grass

For example airfields, racecourses and gallops.

3.2 INTENSIVE AND AGRICULTURALLY IMPROVED GRASS

3.2.1 Recently Sown Grass

Including leys which have been reseeded within the last five years at most. They are characterised by evidence of ploughing, bare soil between grass plants, scarcity of broadleaf species and usually being dominated by a single grass species.

3.2.1.1 Perennial Ryegrass >95% cover

3.2.1.2 Italian Ryegrass >95% cover

3.2.1.3 Tall Fescue >95% cover

3.2.1.4 Other leys and newly sown swards

**3.2.2 Established Perennial Ryegrass Swards**

Swards with *Lolium* at 50-95% cover and with <25% white clover or other grass species.

**3.2.3 Well managed Perennial Ryegrass Mixtures and other Sown Grasses**

3.2.3.1 Ryegrass 25-50% + white clover >25%

3.2.3.2 Ryegrass 25-50%

No other species with high cover

3.2.3.3 Cocksfoot 50-100%

3.2.3.4 Timothy 50-100%

**3.2.4 Weedy Swards with Perennial Ryegrass 25-50%**

Swards with 25-50% cover of perennial ryegrass.

3.2.4.1 Ryegrass + non-sown grasses

3.2.4.2 Ryegrass + broadleaved weeds or rushes

**3.3 PERMANENT NON-INTENSIVE GRASS**

Unimproved or little-improved grasslands in an enclosed situation, containing many palatable grasses but without agricultural improvement by the use of fertilisers, pesticides, drainage or reseeding so as to significantly alter the sward composition. Usually with a pH of between 5.5 and 7.0. Excludes Calcareous Grass - 3.4, Acid Grass - 3.5 and Moorland - 3.6. A comparatively rare category, containing species such as *Conopodium majus*, *Plantago lanceolata*, *Lotus corniculatus* etc.

**3.3.1 Lowland Grass with non-sown Grasses >25%**

For example *Agrostis tenuis* or *Holcus lanatus*

**3.3.2 Lowland Grass with 10-25% cover of non-weedy Forbs**

**3.3.3 Lowland Grass with >25% cover of non-weedy Forbs**

Includes most traditional Hay-Meadows

**3.4 SEMI-NATURAL CALCAREOUS GRASS**

Unimproved, often unenclosed, grasslands found on calcareous soils (pH >7.0) and with a high proportion of calcicole species of limestone, chalk, dunes and machair. These grasslands have not undergone agricultural improvement by way of the application of fertilizers, pesticides, drainage or reseeding so as to significantly alter the sward composition. Typical species include *Bellis perennis*, *Lotus corniculatus*, *Linum catharticum*, *Thymus druceii*, *Poterium sanguisorba*, and *Briza media*.

**3.5 ACID GRASS (NON-MOORLAND) AND BRACKEN**

Unimproved natural grassland most frequently in an upland situation but with a high proportion of palatable grasses and usually on a mineral soil (pH <5.5). These grasslands have not undergone agricultural improvement by way of the application of fertilizers, pesticides, drainage or reseeded so as to significantly alter the sward composition. Typical species include *Festuca ovina*, *Agrostis tenuis*, *Anthoxanthum odoratum*, *Galium saxatile*, often with bracken. Moorland - 3.6 types are excluded from this category.

**3.5.1 Upland Grass**

**3.5.2 Bracken (>50% cover)**

Herbaceous vegetation dominated by *Pteridium aquilinum*. Excludes woodland with *Pteridium* dominated ground flora.

**3.6 MOORLAND AND MOUNTAIN GRASS**

Coarse unimproved upland grass in a moorland setting (usually unenclosed), normally dominated by species such as *Nardus*, *Molinia*, *Deschampsia flexuosa*, *Juncus squarrosus*. Soils usually have a peaty top. These grasslands have not undergone agricultural improvement by way of the application of fertilizers, pesticides, drainage or reseeded so as to significantly alter the sward composition.

**3.6.1 Molinia Moor**

Moorland areas, often little grazed, where cover of *Molinia* exceeds 50%.

**3.6.2 Non-Molinia moorland and mountain grass**

**3.6.2.1 Low and medium altitude moorland grass**

Coarse upland grass in a moorland setting, usually dominated by species such as *Nardus*, *Deschampsia flexuosa*, *Juncus squarrosus*.

**3.6.2.2 Alpine and Subalpine Grass and allied vegetation**

**3.6.2.2.1 Carex bigelowii communities**

**3.6.2.2.2 Juncus trifidus communities**

**3.6.2.2.3 Racomitrium "heath"**

**3.6.2.2.4 Salix herbacea communities**

**3.6.2.2.5 Other alpine non-shrubby vegetation**

**3.7 UNMANAGED LOWLAND GRASSLAND AND TALL HERBS**

**3.7.1 False Oat Grass + Couch**

**3.7.2 Tall herbs**

Semi-natural vegetation, often in wet or disturbed positions; dominated by tall herbs (eg *Artemisia vulgaris*, *Anthriscus sylvestris*, *Epilobium hirsutum*, *Heracleum sphondylium*, *Urtica dioica*, etc) but with grasses present.

**3.7.3 Non Aquatic Riparian vegetation**

Areas of vegetation typical of the margins of water bodies, including such species as *Phalaris arundinacea*, *Eupatorium cannabinum*, *Mentha aquatica*, *Lycopus europaeus*, *Filipendula ulmaria*, *Lythrum salicaria* etc. Excluding emergent macrophytes and often including tall herbs - 3.7.2

4. **HEATHLAND AND BOG**

4.1 **HEATHLAND**

Land dominated by (>25% cover) dwarf shrubs. Dominant shrub species are invariably *Calluna* or *Vaccinium*. Heathland is traditionally divided by context into lowland types, usually characterised by dry soils, and moorland, often on peat substrates.

4.1.1 **Dense Heath**

Heathland with >75% cover of *Calluna* and / or *Erica*. Includes dune heath which occurs on consolidated and flattened dunes.

4.1.1.1 **Lowland Dense Heath**

4.1.1.2 **Upland Dense Heath**

4.1.2 **Open-Canopy Heath**

Heathland with 25-75% cover of *Calluna* and / or *Erica*, in a mosaic with grassy herbaceous vegetation. Includes lowland wet heath, where the ericoid element is high.

4.1.2.1 **Lowland Open-Canopy Heath**

4.1.2.2 **Upland Open-Canopy Heath**

4.1.3 **Berry-Bush Heath**

Heathland with >25% cover of *Vaccinium* + *Empetrum* + *Arctostaphylos* and <25% cover of *Calluna* + *Erica*.

4.1.3.1 **Non-Alpine Berry-Bush Heath**

4.1.3.2 **Alpine and Sub-Alpine Heath**

4.1.3.2.1 **Arctostaphylos alpinus Heath**

4.1.3.2.2 **Loiseleuria Heath**

4.1.3.2.3 **Other Sub-Alpine Heath**

4.2 **BOGS**

Bogs occur on deep peat (>0.5 m thick) with the water table at or just below the surface. Generally they are ombrotrophic (fed only by direct precipitation). Minerotrophic (fed by ground water or streams) "bogs" in upland situations are included here if they are on deep peat, otherwise they are classed as flush - 7.3.2. Includes *Trichophorum*-dominated wet heath.

4.2.1 **Drier northern bogs**

Mostly with much *Eriophorum vaginatum* and often *Vaccinium myrtillus*, *Rubus chamaemorus* and extensive peat hags.

4.2.2 **Saturated bogs**

Including very wet heaths with low ericoid cover; typically with pools in winter; vegetation characterized by *Trichophorum*, *Eriophorum angustifolium*, *Erica tetralix* (low cover), *Narthecium*, *Racomitrium lanuginosum*, *Cladonia uncialis*

5. WOODLAND AND SHRUBLAND

5.1 WOODLAND

An area of trees (not coppiced and where rotational felling is still in operation) >5 m high, unless newly planted or felled, covering >0.25ha, with a crown cover of more than 25%. Includes wooded dunes.

5.1.1 Conifer Woodland

Woodland where 80% or more of the tree canopy is of coniferous species.

5.1.1.1 Deciduous Conifer Woodland

In the British context, this class applies only to larch.

5.1.1.2 Evergreen Conifer Woodland

5.1.1.2.1 Evergreen conifer plantation

In which planted trees make up >30% of the total. Regular planting distances and uniform age structure is characteristic.

5.1.1.2.2 Semi-Natural Evergreen Conifer Woodland

Stands of irregularly spaced coniferous trees of which at least 70% originate from natural regeneration. Includes Caledonian forest, self-sown pine and yew (*Taxus baccata*).

5.1.2 Mixed woodland

Mixture of coniferous and broadleaved species (semi-natural or planted), where both comprise >20% of the canopy cover. If the blocks or lines of coniferous or broadleaved trees exceed two trees in width they are recorded as separate feature types if each block or line is >0.25 ha.

5.1.3 Broadleaved woodland

Woodland where 80% or more of the tree canopy is of broadleaved species.

5.1.3.1 Deciduous Broadleaved Woodland

5.1.3.1.1 Plantation Deciduous Broadleaved Woodland

In which planted trees make up >30% of the total. Regular planting distances and uniform age structure is characteristic.

5.1.3.1.2 Semi-Natural Deciduous Broadleaved Woodland

Stands of trees of which at least 70% do not originate from planting. Includes self-sown exotics.

5.1.3.2 Evergreen Broadleaved Woodland

Woodland where >50% of the broadleaved trees are evergreen. *Quercus ilex* etc. Rare in Great Britain.

## 5.2 MANAGED COPPICE

Coppice woodland with rotational felling still in operation.

### 5.2.1 Coppice-with-Standards

Stands of coppiced trees that may or may not originate from planting, with scattered trees left to grow to maturity as timber trees amongst the coppiced underwood.

### 5.2.2 Pure Coppice

Stands of coppiced trees where no trees are left to grow to maturity.

#### 5.2.2.1 Chestnut Coppice

Stands of coppiced sweet chestnut (*Castanea sativa*) trees. Restricted to south-east England and originally planted.

#### 5.2.2.2 Traditional Semi-Natural Coppice

Stands of coppiced trees of which at least 70% do not originate from planting.

#### 5.2.2.3 Short-Rotation Coppice

Planted stands of coppiced trees cut on a 2-5 year rotation, generally for fuel.

## 5.3 SHRUB

Consists predominantly of shrubby species, (even if >5 m tall) often with tree regeneration and brambles. Canopy cover >50%.

### 5.3.1 Shrub on Dry or Moist Ground

Includes species such as *Crataegus monogyna*, *Prunus spinosa*, *Salix cinerea*, (except as in 5.3.2) *Rosa canina*, *Ulex europaeus*, *Sarothamnus scoparius* and *Juniperus communis*. Includes dune scrub dominated by such species as *Hippophaë rhamnoides*.

### 5.3.2 Swampy Shrub and Carr

Semi-natural shrub growing on a waterlogged substrate, particularly peat. Species include *Salix* spp., and *Frangula alnus*. Excludes carr woodland which is dominated by such species as *Betula pubescens* and *Alnus glutinosa* and should be classified as Deciduous Broadleaved Woodland - 5.1.3.1.

## 5.4 FELLED WOODLAND

Areas of felled woodland in which woody regeneration is less than 1 m high; includes felled coppice.

## 5.5 LAND PLOUGHED FOR AFFORESTATION

6. INLAND ROCKS AND SCREES

Areas where >50% of the land surface is covered by rock.

6.1 STABLE ROCK

6.1.1 Inland Cliff

A vertical or near-vertical face of rock >5 m high.

6.1.2 Rock Outcrop

Areas of bare rock. Includes cliffs <5 m high.

6.1.3 Limestone Pavement

6.2 LOOSE ROCK

6.2.1 Scree

6.2.2 Block Litter and Mountain-Top Debris

7. WETLAND AND WATER

Excluding treed swamps; classed as woodland if >5 m, and as shrub if <5 m.

7.1 STILL WATER

Lake, pond, mere, reservoir.

7.1.1 Lake

Any inland water body >0.25 ha in extent.

7.1.1.1 Open Water in Lake

Includes areas of floating aquatic vegetation with such species as *Nuphar*, *Nymphaea*, *Potamogeton* and *Lemna*.

7.1.1.2 Emergent Macrophytes in Lake

Surface plant species characteristic of standing water such as *Typha latifolia*, *Carex riparia*, *Glyceria maxima*, *Sparganium erectum* and *Phragmites communis*.

7.1.2 Reservoir

Artificial inland water body, usually distinguished by the presence of a dam or embankment.

7.1.2.1 Open Water in Reservoir

Includes areas of floating aquatic vegetation with such species as *Nuphar*, *Nymphaea*, *Potamogeton* and *Lemna*.

7.1.2.2 Emergent Macrophytes in Reservoir

Surface plant species characteristic of standing water such as *Typha latifolia*, *Carex riparia*, *Glyceria maxima*, *Sparganium erectum* and *Phragmites communis*.

**7.1.3 Pond**

Any inland water body less than 0.25 ha in extent. \*

**7.1.3.1 Open Water in Pond**

Includes areas of floating aquatic vegetation with such species as *Nuphar*, *Nymphaea*, *Potamogeton* and *Lemna*.

**7.1.3.2 Emergent Macrophytes in Pond**

Surface plant species characteristic of standing water such as *Typha latifolia*, *Carex riparia*, *Glyceria maxima*, *Sparganium erectum* and *Phragmites communis*.

**7.2 RUNNING WATER**

**7.2.1 River**

Channel of moving water >2.5 m wide. Includes canalised rivers - rivers which have been modified (eg sections straightened, banks smoothed) but which still follow the same basic direction as the natural watercourse.

**7.2.1.1 Open Water in River**

**7.2.1.2 Emergent macrophytes in river**

Surface plant species characteristic of the edges of running water such as *Glyceria maxima*, *Apium nodiflorum*, *Veronica beccabunga* and *Phragmites communis*.

**7.2.2 Canal**

Comprises water channels constructed where no watercourse existed previously.

**7.2.2.1 Open water in canal**

**7.2.2.2 Emergent macrophytes in canal**

Surface plant species characteristic of the edges of running water such as *Glyceria maxima*, *Apium nodiflorum*, *Veronica beccabunga* and *Phragmites communis*.

**7.3 WETLAND**

**7.3.1 Fen and marsh**

Fen is identified as lowland peat, usually dominated by sedges or rushes with tall herbs, often with alder or willow. Marsh comprises nutrient-rich wetland on predominantly inorganic soil, dominated by rushes or sedges with tall herbs. Includes areas of reeds not permanently in water.

**7.3.2 Flush**

Localised, wet linear or triangular areas of land associated with moving water, (may include small watercourses) on gently sloping ground which tend to have species which are different from surrounding vegetation. Calcareous flushes are characterised by species such as *Prunella vulgaris*, *Plantago lanceolata*, *Linum catharticum* and *Parnassia palustris* and are relatively rare. Non-calcareous flushes are usually dominated by rushes and small sedges, often with *Sphagnum*.

**8. COASTAL FEATURES**

Excluding wooded dunes, classified as woodland and improved dune grassland, classified as grassland and dune heath, classified as heathland.

**8.0 SEA/ESTUARY**

Open sea and coastal waters. Includes estuaries inland to the point where the waterway becomes strongly constricted to the normal width of the river.

**8.1 INTERTIDAL SOFT COAST WITHOUT VEGETATION**

**8.1.1 Intertidal Mud Flats**

Unvegetated areas of mud between the mean high and low water marks.

**8.1.2 Intertidal Sand Flats**

Unvegetated areas of sand between the mean high and low water marks.

**8.1.3 Sandy Shore**

**8.1.4 Pebble/Gravel Shore**

The average pebble size should be <10 cms, otherwise code as rocky boulder shore - 8.3.2.

**8.2 VEGETATED SOFT COAST**

**8.2.1 Salt marsh**

Intertidal sand-, silt- or mud-based habitats, colonised by halophytic grasses such as *Puccinellia* spp. and *Spartina* spp., rushes such as *Juncus gerardii* and *Blysmus rufus*, and herbs such as *Limonium* spp., *Aster tripolium*, *Salicornia dolichostachya* and *Triglochin maritima*. Includes all flowering plant communities which are submerged by high tides at some stage of the annual cycle. Only applies to vegetated areas; otherwise recorded using Unvegetated Inter-Tidal categories - 8.1.

**8.2.2 Dune**

Onshore wind-carried sand deposits arranged in cordons of ridges parallel to the coast. Also inland wind blown sand deposits. Either open or with semi-natural grassland

**8.2.2.1 Dune with <75% Vegetation Cover**

Includes unstable foredune and partially stabilised yellow dune. Foredune often has a very open plant cover with *Elymus farctus* strongly characteristic, often dominant and sometimes the only species present. Other species may include *Honkenya peploides*, *Atriplex* spp., and *Cakile maritima*. *Ammophila arenaria* may also be present in small quantities. Yellow dune is nearly always dominated by *Ammophila arenaria* although *Leymus (Elymus) arenarius* and/or *Elymus farctus* may be common. A variety of small herbs may also be present.

**8.2.2.2 Dune with >75% Vegetation Cover**

Includes grey dunes. These are almost completely, but variably vegetated. *Ammophila arenaria* is usually present but not dominant. Mosses and lichens may be frequent. Grey dune can be distinguished from fixed dune by being markedly hilly or undulating, and by the sand not being fully consolidated.

**8.2.2.3 Stabilized Dune Grassland**

Grassland occurring on consolidated and flattened dunes (fixed dunes). Generally little *Ammophila arenaria* present. Includes machair.

**8.3 HARD COAST WITH LITTLE OR NO VASCULAR VEGETATION**

**8.3.1 Intertidal seaweed-covered boulders**

Boulders are described as being >50 cms in any direction.

**8.3.2 Rocky/boulder shore (not vegetated)**

Applies to shores of shattered rocks or boulders >10 cm diameter.

**8.3.3 Rocks and cliffs**

Applies to shores where the rock is outcropping base-rock.

**8.4 MARITIME VEGETATION**

Vegetation found in coastal situations. Usually herb-rich and with halophytic species present, due to salt spray. Includes cliff-top grassland and semi-open *Armeria* communities of the spray zone.

**9. TRANSPORT, BUILT, URBAN AND INDUSTRIAL**

Excludes any grassland >1ha in extent.

**9.1 TRANSPORT**

**9.1.1 Railway**

Includes all track and associated land.

**9.1.2 Road**

Includes any road, whether private or not, which is totally tarmac or concrete across its width.

**9.2 DISCONTINUOUSLY BUILT LAND**

Isolated buildings and groups of buildings where gardens and other areas of vegetation cover comprise >50% of the ground in any 0.25ha area.

**9.2.1 Agricultural Buildings**

**9.2.1.1 Sheds, Barns, Silos**

**9.2.1.2 Glasshouses**

Refers to commercial, large-scale enterprises, and not to domestic greenhouses.

**9.2.2 Residential Buildings with Gardens**

**9.2.3 Commercial and Industrial Buildings**

Commercial premises, including shops, garages, hotels, pubs, commercial offices, etc and premises used for the manufacture of goods, including workshops, warehouses and associated buildings such as stores.

**9.2.4 Public Services and Facilities**

Public services and facilities include buildings associated with services available to the public, such as police stations, hospitals, libraries and facilities associated with gas, electricity and telephone. With grounds or gardens.

**9.2.4.1 Institutional**

Includes all buildings belonging to public or private institutions, such as old peoples homes, local government and central government buildings, MOD buildings, crown land, remand homes, prisons and research establishments.

**9.2.4.2 Education and Cultural**

Includes schools, establishments of further education, museums, theatres and cinemas.

**9.2.4.3 Religious**

Places of worship including Churches, Mosques and Synagogues, and their curtilages, eg graveyards, cemeteries etc.

**9.2.4.4 Sporting and Recreational**

Buildings, but excluding Ungrassed Recreational Grounds - 9.5.3 and Recreational Grassland - 3.1.

**9.3 CONTINUOUSLY BUILT LAND**

Groups of buildings where gardens and other areas of vegetation cover comprise <50% of the ground in any 0.25ha area.

**9.3.1 Residential Buildings without Gardens**

**9.3.2 Commercial and Industrial Buildings**

Commercial premises, including shops, garages, hotels, pubs, commercial offices, etc and premises used for the manufacture of goods, including workshops, warehouses and associated buildings such as stores.

**9.3.3 Public Services and Facilities**

Public services and facilities include buildings associated with services available to the public, such as police stations, hospitals, libraries and facilities associated with gas, electricity and telephone. Without grounds or gardens.

**9.3.3.1 Institutional**

Includes all buildings belonging to public or private institutions, such as old peoples homes, local government and central government buildings, MOD buildings, crown land, remand homes, prisons and research establishments.

**9.3.3.2 Education and Cultural**

Includes schools, establishments of further education, museums, theatres and cinemas.

**9.3.3.3 Religious**

Places of worship including Churches, Mosques and Synagogues, and their curtilages, eg graveyards, cemeteries etc.

**9.3.3.4 Sporting and Recreational**

Buildings, but excluding Ungrassed Recreational Grounds - 9.5.3 and Recreational Grassland - 3.1.

**9.4 VEGETATED WASTE LAND, DERELICT LAND AND ALLOTMENTS**

**9.4.1 Domestic and Industrial Waste Land**

**9.4.2 Derelict Urban Land**

Often vacant

**9.4.3 Allotments**

**9.5 HARD AREAS WITHOUT BUILDINGS**

**9.5.1 Unvegetated Derelict Land, Building Sites**

**9.5.2 Car Park**

**9.5.3 Ungrassed Recreational Grounds and Public Spaces**

eg Tennis Courts, all-weather pitches, etc.

**9.5.4 Other**

**9.6 QUARRIES AND OTHER EXTRACTIVE INDUSTRIES**

Usually outside towns.

**9.6.1 Gravel pit**

Not flooded nor revegetated. If vegetated should be classified according to cover.

**9.6.2 Quarry**

**9.6.3 Open-cast Mine**

**10. LINEAR FEATURES**

Not land-cover features. Includes tree lines, hedges, fences, banks, ditches, walls, tracks and streams, but excludes roads, railways and rivers.

**10.1 TREE-LINES AND HEDGES**

**10.1.1 Line of Trees**

A single tree in width and at least 20 m long with crown contact.

**10.1.2 Line of Shrub**

More or less a single shrub width and at least 20 m long with crown contact.

**10.1.3 Hedge**

Woody vegetation that has been subject to a regime of cutting in order to maintain a linear shape.

**10.1.3.1 Hedge with >50% Hawthorn**

**10.1.3.2 Mixed Hedge**

**10.1.3.3 Hedge with >50% of a species other than Hawthorn**

**10.2 WALLS**

**10.2.1 Dry Stone Walls**

**10.2.2 Mortared Walls**

Includes dry-stone walls which have been capped with mortared stone.

**10.3 FENCES**

**10.3.1 Wood only**

**10.3.2 Iron only**

**10.3.3 Wire on posts**

**10.4 BANKS AND DITCHES**

**10.4.1 Stone bank**

**10.4.2 Earth bank**

**10.4.3 Ditches**

Linear excavations with the purpose of drainage.

**10.4.4 Embankments**

Used for any constructed embankment in any situation eg motorway, reservoir etc.

**10.5 GRASS STRIP**

Used where a grass strip separates two fields with no vertical boundary.

**10.6 TRACK**

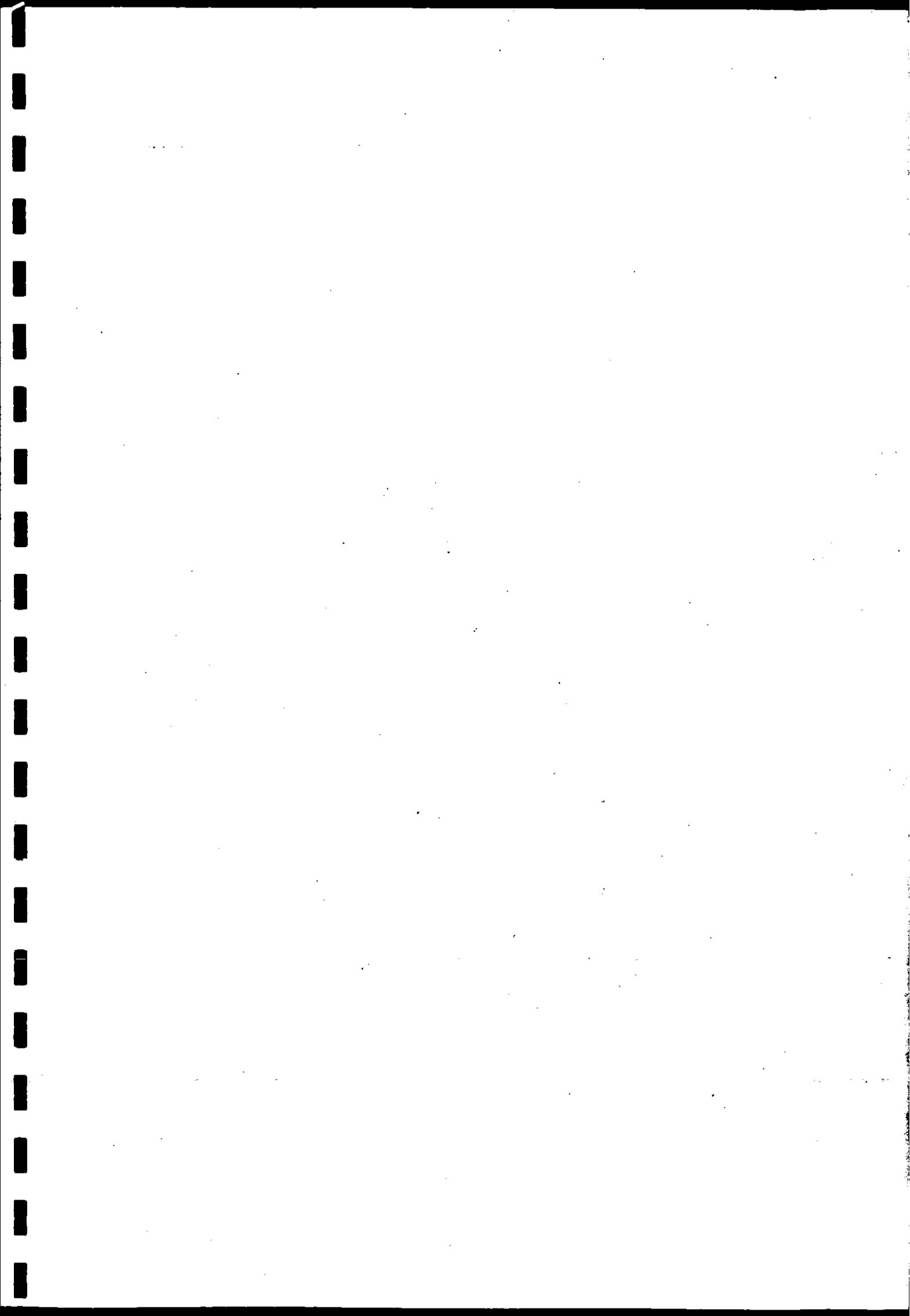
Surfaced or unsurfaced vehicular route. Excludes roads which are tarmac or concrete, see Road - 9.1.2.

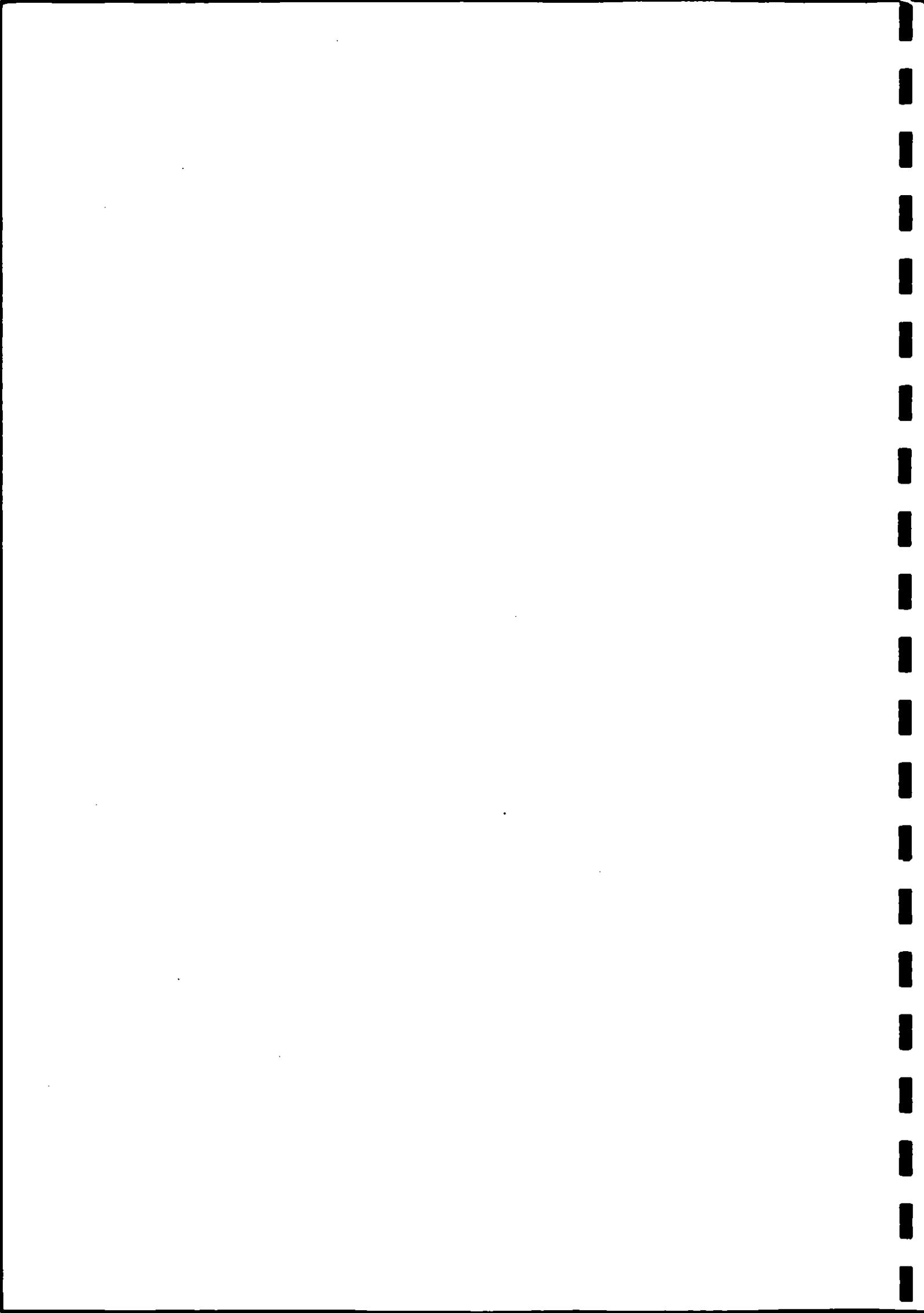
**10.6.1 Constructed Track**

**10.6.2 Unconstructed Track**

**10.7 STREAM**

A natural water course <2.5 m wide.





## Dictionary of Land Cover Surveys & Definitions

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<b>SURVEY NUMBER</b>	1
<b>NAME OF SURVEY</b>	CORINE LAND COVER
<b>COMMISSIONING AGENT</b>	EUROPEAN COMMISSION (DGX1).
<b>EXECUTING AGENT</b>	LAND COVER TEAMS IN THE MEMBER STATES AND REGIONS coordinated by a EUROPEAN ENVIRONMENT AGENCY TASK FORCE, Commission of the European Communities based at Brussels.
<b>CONTACT</b>	European Environment Agency Task Force, DGX1 Commission of the European Communities Rue de la Loi 200 1049 BRUXELLES Belgium  Present contact: M.H. Cornaert & N. Sifakis.
<b>OBJECTIVES</b>	To provide those responsible for and interested in European policy on the environment with quantitative data on land cover, consistent and comparable across the Community. To prepare one land cover data base for the twelve EC countries at an original scale of 1:100,000, using the 44 classes of the CORINE nomenclature. To extend the work to other European and North African Countries.
<b>PERIOD OF SURVEY</b>	A one-year feasibility study was carried out in 1985; this was followed up by pilot studies.
Start	1988 (February 1992 for Northern Ireland).
End	1993
<b>SURVEY METHOD</b>	Computer-assisted photointerpretation of Earth observation satellite images in conjunction with ancillary data, into the categories of the CORINE Land Cover nomenclature. The nomenclature distinguishes 44 classes, which are grouped in a 3-level hierarchy. The main level categories are: artificial surfaces, agricultural areas, forests and semi-natural areas, wetlands and water bodies. A further one or two levels are added to the hierarchy in some countries according to special conditions and priorities.

**GEOGRAPHICAL CHARACTERISTICS**

Area of survey	European Community (subsequently extended to some other European countries).
Sampling frame	Continuous
Sampling unit	Continuous
Recording unit	Land parcels
Scale of input data	Satellite data at 30 m nominal resolution, geometrically corrected to a scale of 1:100,000.
Scale of output	1:100,000
Resolution	25 ha (minimum classified area). Linear features >100 m.
Accuracy and error	89% estimated in the case of Portugal

**DATA STORAGE/ANALYSIS**

Boundaries identified by photo-interpretation in conjunction with ancillary data are digitised and the resultant data are held in Geographical Information Systems (ARC INFO) at the national level and assembled at Community level in the CORINE database using ARC/INFO.

**DATA AVAILABILITY**

Data available in the form of maps, statistics and ARC/INFO datasets from EEA Task Force in DGX1 subject to published conditions of use.

**FORMS OF OUTPUT**

Statistics and cartographic representations at community, national and regional levels.

**PUBLICATION DATE(S)**

1993

**REFERENCES**

European Environment Agency Task Force. (1992). *CORINE Land Cover*. (Brochure realised for a European Community project in the framework of the International Space Year).

1 **Corine Land Cover Project**

**Land cover / Use categories and definitions**

1 **ARTIFICIAL SURFACES**

1.1 **URBAN FABRIC**

1.1.1 **Continuous urban fabric**

Spaces structured by buildings. Buildings, roads and artificially surfaced areas cover almost all the ground. Non-linear areas of vegetation and bare soils are exceptional.

1.1.2 **Discontinuous urban fabric**

Spaces structured by buildings. Buildings, roads and artificially surfaced areas coexist with vegetated areas and bare soils, which occupy discontinuous significant surfaces.

1.2 **INDUSTRIAL, COMMERCIAL AND TRANSPORT UNITS**

1.2.1 **Industrial or commercial units**

Artificially surfaced areas (with cement, asphalt, tarmacadam, or stabilised, e.g. beaten earth) without vegetation, occupy most of the area in question, which also contains buildings and/or vegetated areas.

1.2.2 **Road and rail networks and associated land**

Autoroutes, railways, including associated installations (stations, platforms, embankments). Minimum width to include: 100 m.

1.2.3 **Port areas**

Infrastructure of port areas, including quays, dockyards and marinas.

1.2.4 **Airports**

Airport installations: runways, buildings and associated land.

1.3 **MINE, DUMP AND CONSTRUCTION SITES**

1.3.1 **Mineral extraction sites**

Areas with open-pit extraction of industrial minerals (sandpits, quarries) or other minerals (open-cast mines). Includes flooded gravel pits, except for river-bed extraction.

1.3.2 **Dump sites**

Public, industrial and mine dump sites.

1.3.3 **Construction sites**

Spaces under construction development, soil or bedrock excavations, earthworks.

**1.4 ARTIFICIAL, NON-AGRICULTURAL VEGETATED AREAS**

**1.4.1 Green urban areas**

Areas with vegetation within classes 1.1.1 and 1.1.2. Includes parks and cemeteries with vegetation.

**1.4.2 Sport and leisure facilities**

Camping grounds, sports grounds, leisure parks, golf courses, racecourses, etc. Includes formal parks not surrounded by urban zones.

**2. AGRICULTURAL AREAS**

**2.1 ARABLE LAND**

Cultivated areas regularly ploughed and generally under a rotation system.

**2.1.1 Non-irrigated arable land**

Cereals, legumes, fodder crops, plants grown for industrial processing, root crops, and fallow land. Includes flower and tree (nurseries) cultivation and vegetables, whether open field, under plastic or glass (includes market gardening). Includes aromatic, medicinal and culinary plants. Excludes pastures.

**2.1.2 Permanently irrigated land**

Crops irrigated permanently and periodically, using a permanent infrastructure (irrigation channels, drainage network). Most of these crops could not be cultivated without an artificial water supply. Sporadic irrigation not included.

**2.1.3 Rice fields**

Lands prepared for rice cultivation, grazed to obtain flat surfaces and with irrigation channels. Surfaces regularly inundated.

**2.2 PERMANENT CROPS**

Crops not under a rotation system which provide repeated harvests and occupy the land for a long period before it is ploughed and replanted: mainly plantations of woody crops. Does not include pastures, grazing lands or forests.

**2.2.1 Vineyards**

Areas planted with vines.

**2.2.2 Fruit trees and berry plantations**

Fields planted with fruit trees and shrubs: single or mixed fruit species, fruit trees associated with permanently grassed surfaces. Includes chestnut and walnut trees.

**2.2.3 Olive groves**

Areas planted with olive trees, including mixed olive trees and vines on the same plot.

**2.3 PASTURES**

**2.3.1 Pastures**

Dense grass cover, of floral composition, dominated by Graminaceae, not under a rotation system. Mainly for grazing, but the fodder may be harvested mechanically. Includes permanent and temporary pastures with or without hedges.

**2.4 HETEROGENEOUS AGRICULTURAL AREAS**

**2.4.1 Annual crops associated with permanent crops**

Temporary crops (arable lands or grasslands) associated with permanent crops on one and the same surface.

**2.4.2 Complex cultivation patterns**

Juxtaposition of small units of diverse annual crops, of pastures and permanent crops.

**2.4.3 Land principally occupied by agriculture, with significant areas of natural vegetation**

Areas principally occupied by agriculture, interspersed with areas of natural vegetation.

**2.4.4 Agro-forestry areas**

Annual crops or grazing land under the wooded cover of forestry species.

**3 FORESTS AND SEMI-NATURAL AREAS**

**3.1 FORESTS**

**3.1.1 Broad-leaved forest**

Vegetation formation composed principally of trees, including shrub and bush understories, where broad-leaved species predominate.

**3.1.2 Coniferous forest**

Vegetation formation composed principally of trees, including shrub and bush understories, where coniferous forestry species predominate.

**3.1.3 Mixed forest**

Vegetation formations composed principally of trees, including shrub and bush understories, where broad-leaved and coniferous species co-dominate.

**3.2 SHRUB AND/OR HERBACEOUS VEGETATION ASSOCIATIONS**

**3.2.1 Natural grassland**

Low productivity grassland. Often situated in areas of rough uneven ground. Frequently includes scattered rock outcrops, briars and heath areas.

**3.2.2 Moors and heathland**

Vegetation with low and closed cover, dominated by bushes, shrubs and herbaceous plants (heath, briars, broom, gorse, laburnum etc.).

**3.2.3 Sclerophyllous vegetation**

Bushy sclerophyllous vegetation. Includes maquis and garrigue. Maquis: a dense vegetation association composed of numerous shrubs which cover acid siliceous soils in Mediterranean areas. Garrigue: discontinuous bushy associations of Mediterranean calcareous plateaus. Often composed of kermes oak, junipers, arbutus, lavender, thyme, cistus etc. May include a few isolated trees.

**3.2.4 Transitional woodland/shrub**

Bushy or herbaceous vegetation with scattered trees. Can represent either woodland degradation or forest regeneration / colonisation.

**3.3 OPEN SPACES WITH LITTLE OR NO VEGETATION**

**3.3.1 Beaches, dunes and sand plains**

Beaches, dunes and littoral expanses of sand or pebbles in coastal or continental location including beds of stream channels with torrential regime; minimum width: 100 m.

**3.3.2 Bare rocks**

Screes, cliffs, scarps, rocks, and outcrops.

**3.3.3 Sparsely vegetated areas**

Includes xerophytic steppes, tundra and bad lands.

**3.3.4 Burnt areas**

Areas affected by recent fires, still mainly black.

**3.3.5 Glaciers and permanent snow fields**

Land covered by glaciers or perpetual snow.

4 WETLANDS

4.1 INLAND WETLANDS

Non-forested areas either partially, seasonally or permanently water-logged. The water may be stagnant or running.

4.1.1 Inland marshes

Low-lying land usually flooded in winter, and more or less saturated by fresh water all year round.

4.1.2 Peat bogs

Peatland with water-table at or near the surface; consists of partly decayed vegetable matter. Peat bogs exploited or non-exploited.

4.2 MARITIME WETLANDS

Non-wooded areas either tidally, seasonally or permanently water-logged with brackish or saline water.

4.2.1 Salt marshes

Vegetated low lying areas, above the high tide line, susceptible to flooding by sea water. Often in the process of filling in, gradually being colonised by halophilic plants.

4.2.2 Salines

Salt pans, active or in the process of abandonment. Sections of coastal marsh exploited for the production of salt by evaporation. They are clearly distinguishable from the rest of the marsh by their parcellation and embankment system.

4.2.3 Intertidal flats

Generally unvegetated expanses of mud, sand or rock lying between mean high and low water marks located at 0 m sea-level contour.

5 WATER BODIES

5.1 INLAND WATERS

5.1.1 Water courses

Natural or artificial water-courses serving as water drainage channels. Includes canals. Minimum width to include: 100 m.

5.1.2 Water bodies

Natural or artificial stretches of water.

**5.2 MARINE WATERS**

**5.2.1 Coastal lagoons**

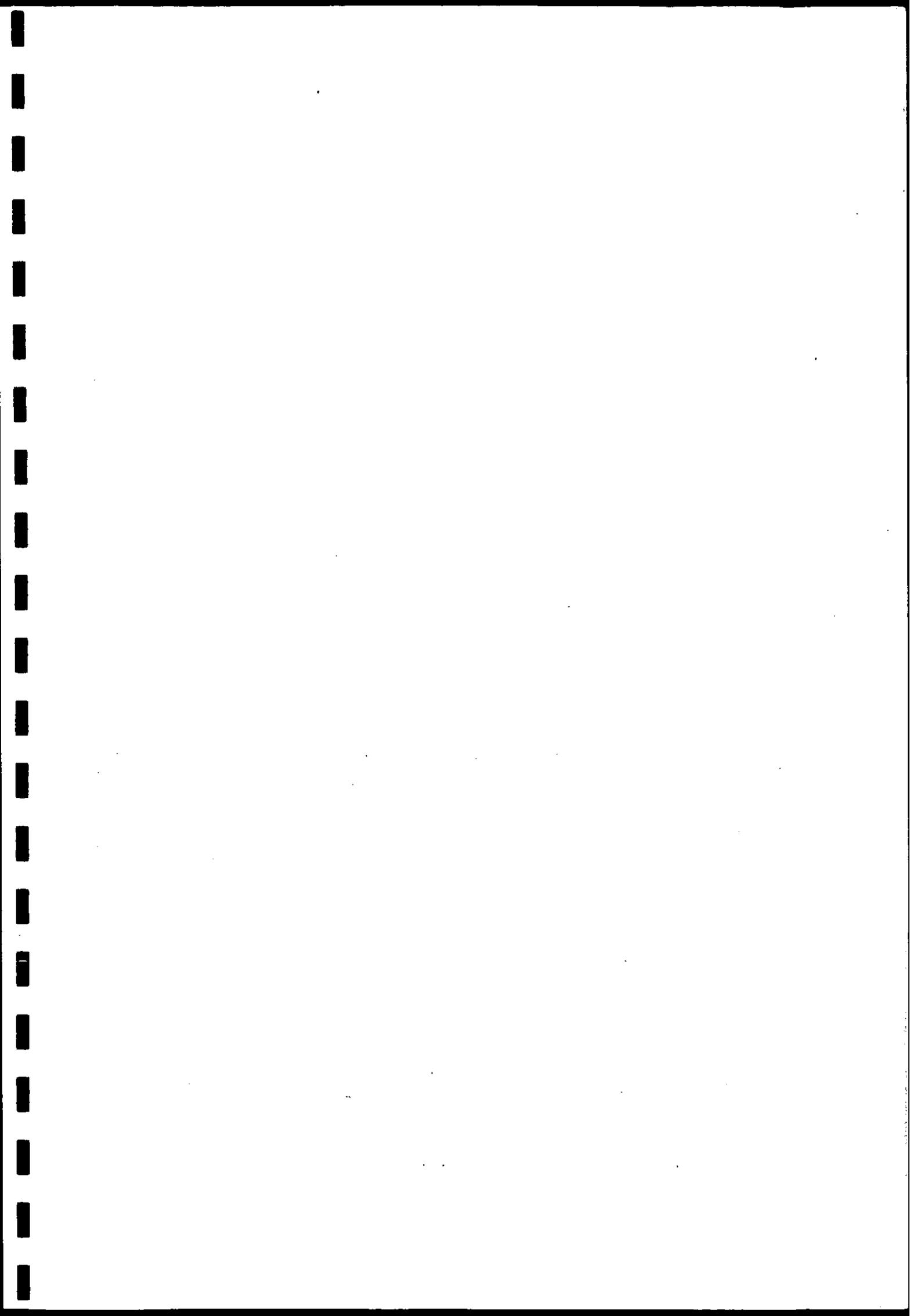
Stretches of salt or brackish waters in coastal areas which are separated from the sea by a tongue of land or other similar topography. These water bodies can be connected with the sea at limited points, either permanently or only seasonally. Frequently grades into 4.2.1 on the landward side.

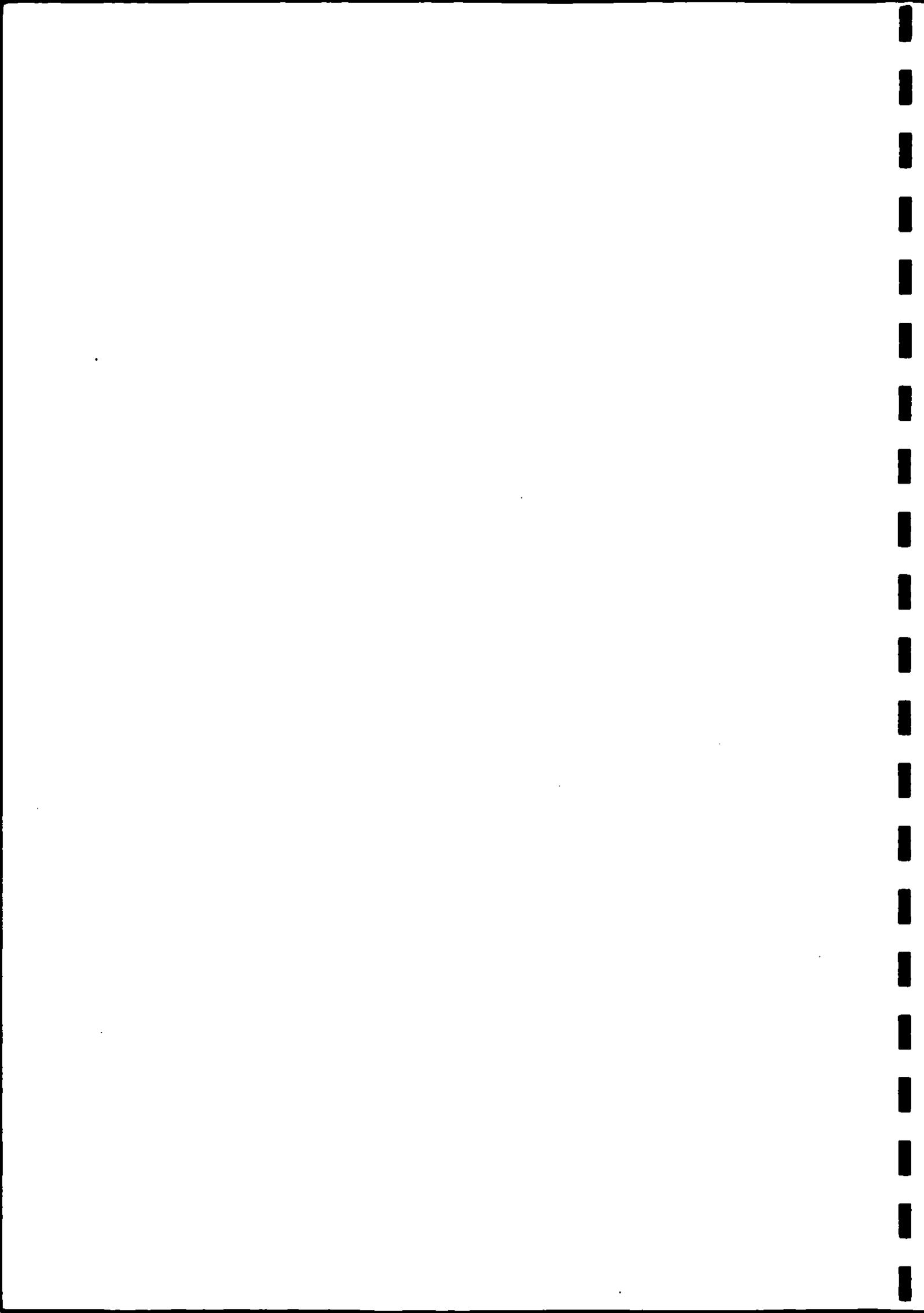
**5.2.2 Estuaries**

The mouth of a river where it broadens into the sea and within which the tide ebbs and flows.

**5.2.3 Sea and ocean**

Zone seaward of the lowest tide limit.





## Dictionary of Land Cover Surveys & Definitions

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**SURVEY NUMBER** 2

**NAME OF SURVEY** COUNTRYSIDE SURVEY 1990

**COMMISSIONING AGENTS** DEPARTMENT OF THE ENVIRONMENT (DOE),  
NATURE CONSERVANCY COUNCIL (NCC) &  
NATURAL ENVIRONMENT RESEARCH COUNCIL (NERC).

**EXECUTING AGENT** INSTITUTE OF TERRESTRIAL ECOLOGY (ITE).

**CONTACT** Institute of Terrestrial Ecology  
Merlewood Research Station  
Windermere Road  
GRANGE-OVER-SANDS  
Cumbria LA11 6JU

Tel: Grange-Over-Sands (05395) 32264  
Fax: .. .. . 34705

Present contact: Mr. Colin J. Barr.

**OBJECTIVES** To provide independent and statistically objective regional and national estimates of landscape features, land cover and land use in the British countryside. To provide detailed information of vegetation in a wide range of habitats. To compare results with previous surveys in order to measure changes that have taken place. To add to and build on baseline data previously collected, against which landscape, land cover and landuse changes can be measured in the future.

The information gained is seen as invaluable for providing a good scientific base (and database) from which land-use science can develop. The DOE requires this information in making and monitoring policy decisions. The NCC (now English Nature, Countryside Council for Wales, Scottish Natural Heritage and the Joint Nature Conservation Committee) need the information in relation to conservation policies.

**PERIOD OF FIELD SURVEY** 1990

Start June

End October

**WORK CARRIED OUT** 1990-1993

## Dictionary of Land Cover Surveys & Definitions

### **SURVEY METHOD**

Field survey involving detailed mapping of landscape features, land cover and land use in five main themes: physiography; agriculture and natural vegetation; forestry, woodland and trees; boundaries; and buildings, communication and recreation. The survey also included detailed botanical recording of a series of permanently marked quadrats in each square km surveyed, representative of a wide range of habitat types.

### **GEOGRAPHICAL CHARACTERISTICS**

Area of survey	Great Britain.
Sampling frame	A gridded stratified random sample of the land surface of Great Britain, based on an objective classification into 32 "land classes" derived from multivariate analysis of environmental characteristics (measured from published cartographic reference sources) of 1,220 one km cells of the British National Grid
Sampling unit	508 one km squares selected by gridded stratified random sampling within land classes.
Recording unit	Land parcels, points and linear features.
Scale of input data	1:10,000.
Scale of output	1 km nationally, 1:10,000 for 508 sample squares.
Resolution	The minimum mappable area was 400 square metres. The shortest mappable length for linear features was 20 m. All other data were recorded as points.
Accuracy and error	Statistical error terms are available for all features and differ according to their extent and incidence in relation to sampling frequency.

### **DATA STORAGE/ANALYSIS**

Field survey data were plotted on 1:10 000 map sheets, which were subsequently digitised and built into a geographical information system (ARC/INFO). This is linked to an Oracle database, which holds summary data for each 1 x 1 km square of the British National Grid, interpolated from the field observations, via the ITE Land Classification system.

### **DATA AVAILABILITY**

Data available from ITE under general conditions outlined in the NERC Corporate Data Policy. For details, consult the designated point of contact.

## Dictionary of Land Cover Surveys & Definitions

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### FORMS OF OUTPUT

National, regional and land class estimates of the various landscape, land cover and land use features measured. Estimates of change in the extent of these features since previous surveys, notably those conducted by ITE in 1978 and 1984.

Detailed descriptions of the vegetation of an extensive range of habitats throughout Great Britain and changes that have taken place since a previous survey in 1978.

Maps of national distributions of landscape characteristics, interpolated from the ITE Land Classification. Maps of regional distributions, by integration of field survey data with the Countryside Survey-1990 Land Cover Map.

Results from the survey may be accessed interactively through the Countryside Information System.

PUBLICATION DATE(S) 1993

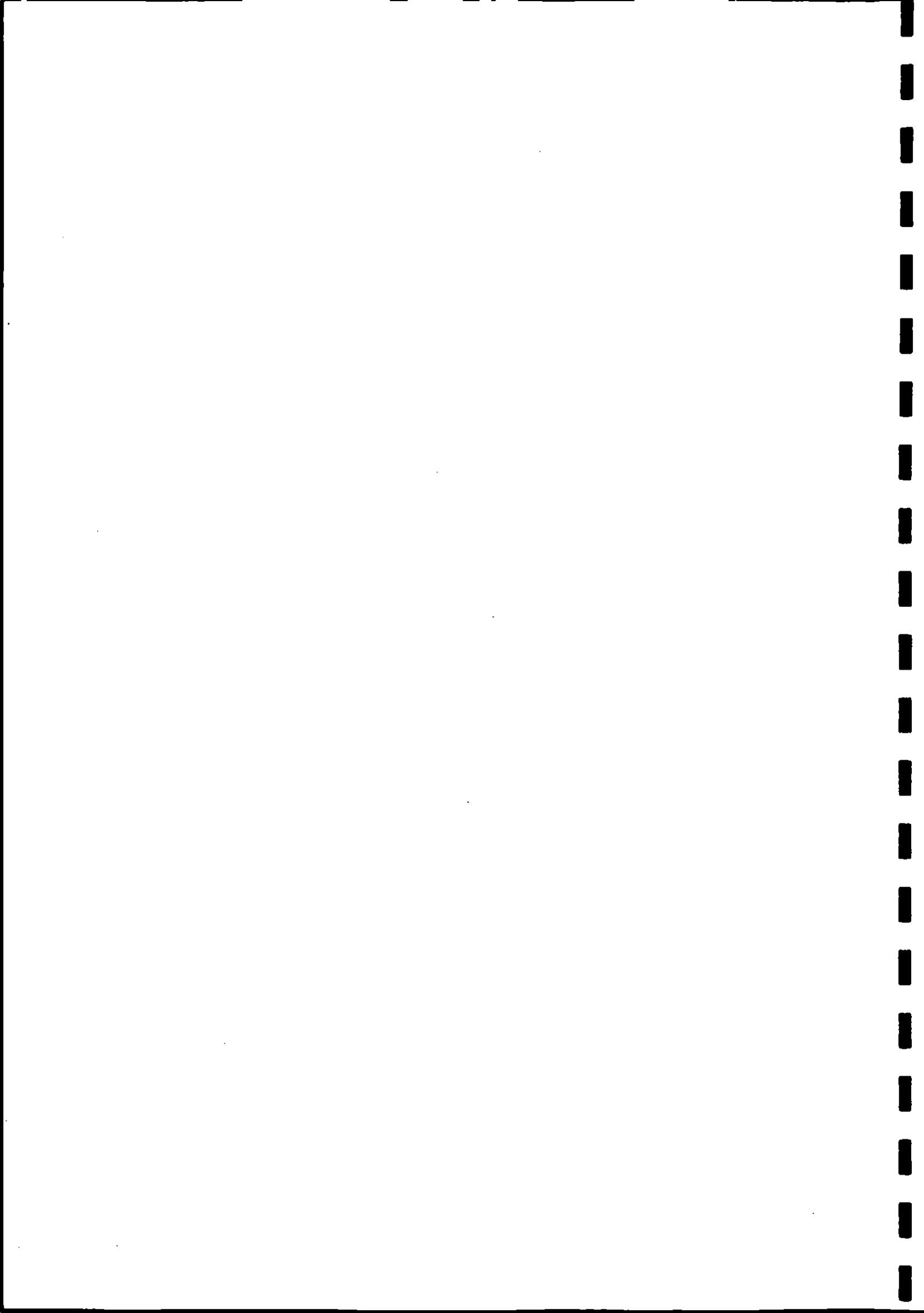
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2 COUNTRYSIDE SURVEY - 1990 FIELD SURVEY REPORTING CLASSES  
LAND COVER/USE CATEGORIES AND DEFINITIONS

1 TILLED AND FALLOW LAND

Includes land under annual tillage including cereals, brassicas, root crops, legumes, other non-horticultural field crops and horticulture, (including flowers). Also includes ploughed and fallow land, including permanent tumbledown setaside. Includes some land with perennial crops, such as strawberries and some flowers. Excludes all ley grassland and land with woody perennial crops.

1.1 CEREALS

Land parcels with a single crop species.

1.1.1 Maize

1.1.2 Wheat

1.1.3 Barley

Includes winter and spring varieties.

1.1.4 Oats

1.1.5 Other cereals

Includes rye, triticale and mixed corn.

1.2 BRASSICACEAE

1.2.1 Turnips / Swedes

1.2.2 Kale

1.2.3 Oil-seed rape

1.2.4 Other Crucifer

Includes mustard.

1.3 LEGUMES

1.3.1 Peas

1.3.2 Field beans

1.3.3 Other legumes

Includes sainfroid, lucerne and lupin.

1.4 ROOTS AND ALLIES

1.4.1 Sugar beet

1.4.2 Potatoes

1.4.3 Other Roots and Beets

Includes fodder beet.

**1.5 OTHER NON-HORTICULTURAL FIELD CROPS**

Includes linseed and sunflowers.

**1.6 HORTICULTURE**

Characterised by small plots of widely differing crop types within a small area, probably several crops within one field. Includes flowers, vegetables, lettuce, celery, strawberries, etc, and crops grown under cloches and low plastic tunnels.

**1.7 NON-CROPPED ARABLE LAND**

Land ploughed but with no crop apparent at the time of survey. Includes:

**Neglected land** - agricultural land for which there is no obvious intended change of use, but where the former use has been temporarily neglected (for up to 3 years),

**Fallow land**, unused as a part of agricultural rotation,

**Permanent tumbledown setaside**

**Rotational setaside.**

**2 CROPLAND WITH PERENNIAL CROPS**

Includes:

**Orchards** - areas with planted broadleaved trees which are, or have been used for the harvesting of tree fruit crops. They often form a distinct block and display a highly organised (often grid) pattern.

**Vineyards**

**Hops**

**Soft Fruit** - for example, currants, blackberries and raspberries.

**Trees and Shrubs - Nursery Stock** - fruit trees, bushes and canes for transplanting, shrubs, conifers, hedging plants, Christmas trees, ornamental trees and roses grown as nursery stock.

**3 GRASS**

Includes parkland, tall herbs and bracken but excludes saltmarsh and unimproved dune grassland (classified as Soft Coast) and swampy grassland (classified as Wetland).

**3.1 RECREATIONAL AND SIMILAR NON-AGRICULTURAL MOWN GRASS**

Where non-intensive, this use can produce forms of unimproved or hay-meadow type swards. Includes:

**Amenity grass** - non-agricultural grass (parks, large lawns etc.), clearly in use for amenity purposes (not recreation) and occupying parcels of 1 ha or more.

**Playing fields**

**Golf courses**

**Caravan parks and camp sites** (where these are the main uses)

**Other non-agricultural mown grass** such as airfields, racecourses and gallops

### 3.2 INTENSIVE AND AGRICULTURALLY IMPROVED GRASS

#### 3.2.1 Recently Sown Grass

Grasslands which have been re-seeded within the last five years at most. They are characterised by evidence of ploughing, bare soil between grass plants, scarcity of broadleaf species and usually being dominated by a single grass species. Includes swards where the dominant species is perennial ryegrass, Italian ryegrass or tall fescue, all leys and newly-sown swards.

#### 3.2.2 Established Ryegrass Swards

Swards with *Lolium* at 50-95% cover and with <25% white clover or other grasses.

#### 3.2.3 Well-managed perennial ryegrass mixtures

Mixtures with other grasses, including cocksfoot, timothy and clover, in which the cover of perennial ryegrass is <50%.

#### 3.2.4 Weedy Perennial Ryegrass Swards

Swards with *Lolium* at 25-50% cover.

### 3.3 PERMANENT NON-INTENSIVE GRASS

Unimproved or little-improved grasslands in an enclosed situation, containing many palatable grasses but without agricultural improvement by the use of fertilisers, pesticides, drainage or re-seeding so as to significantly alter the sward composition. Usually with a pH of between 5.5 and 7.0. Excludes Calcareous Grass, Acid Grass and Moorland. A comparatively rare category, containing species such as *Conopodium majus*, *Plantago lanceolata*, *Lotus corniculatus* etc. Includes *Agrostis tenuis* or *Holcus lanatus* swards and most traditional hay meadows.

### 3.4 SEMI-NATURAL CALCAREOUS GRASS

Unimproved, often unenclosed grasslands found on calcareous soils (pH >7.0) and with a high proportion of calcicole species of limestone, chalk, dunes and machair. These grasslands have not undergone agricultural improvement by way of the application of fertilizers, pesticides, drainage or re-seeding so as to significantly alter the sward composition. Typical species include *Bellis perennis*, *Lotus corniculatus*, *Linum catharticum*, *Thymus druceii*, *Poterium sanguisorba*, and *Briza media*.

### 3.5 UPLAND ACID NON-MOORLAND GRASS AND BRACKEN

#### 3.5.1 Upland grass

Unimproved natural grassland, most frequently in an upland situation but with a high proportion of palatable grasses and usually on a mineral soil (pH <5.5). These grasslands have not undergone agricultural improvement by way of the application of fertilizers, pesticides, drainage or re-seeding so as to significantly alter the sward composition. Typical species include *Festuca ovina*, *Agrostis tenuis*, *Anthoxanthum odoratum*, *Galium saxatile*, often with bracken. Moorland types are excluded from this category.

#### 3.5.2 Bracken

Only where cover exceeds 50%. Herbaceous vegetation dominated by *Pteridium aquilinum*. Excludes woodland with *Pteridium*-dominated ground flora.

### 3.6 MOORLAND AND MOUNTAIN GRASS

Coarse unimproved upland grass in a moorland setting, usually un-enclosed and dominated by species such as *Nardus*, *Molinia*, *Deschampsia flexuosa*, *Juncus squarrosus*. Soils usually have a peaty top. These grasslands have not undergone agricultural improvement by way of the application of fertilizers, pesticides, drainage or re-seeding so as to significantly alter the sward composition.

#### 3.6.1 Molinia Moor

Moorland areas, often little grazed, where cover of *Molinia* exceeds 50%

#### 3.6.2 Non-Molinia moorland and mountain grass

Coarse upland grass in a moorland setting, usually dominated by species such as *Nardus*, *Deschampsia flexuosa*, *Juncus squarrosus*. Includes low- and medium-altitude grass moors, alpine and sub-alpine grasslands, such as *Carex bigelowii*, *Juncus trifidus* and *Salix herbacea* communities, *Racomitrium* 'heath' and other alpine non-shrub vegetation.

### 3.7 UNMANAGED LOWLAND GRASSLAND AND TALL HERBS

Includes:

False oat grass and couch;

Tall herbs - semi-natural vegetation, often in wet or disturbed positions; dominated by tall herbs (*Artemisia*, *Anthriscus*, *Epilobium hirsutum*, *Heracleum*, *Urtica*, etc) but with grasses present;

Non-aquatic riparian vegetation - areas of vegetation typical of the margins of water bodies, including such species as *Phaleris arundinacea*, *Eupatorium cannabinum*, *Mentha aquatica*, *Lycopus europaeus*, *Filipendula ulmaria*, *Lythrum salicaria*, etc. Excludes emergent macrophytes and, often includes tall herbs

## 4 HEATHLAND AND BOG

### 4.1 HEATHLAND

Land dominated by (>25% cover) dwarf shrubs. Dominant shrub species are invariably *Calluna* or *Vaccinium*. Heathland is traditionally divided by context into lowland types, usually characterised by dry soils, and moorland, often on peat substrates.

#### 4.1.1 Dense Heath

Heath with >75% cover of *Calluna* and / or *Erica* in upland and lowland settings. Includes dune heath which occurs on consolidated and flattened dunes.

#### 4.1.2 Open-Canopy Heath

Heath with 25-75% cover of *Calluna* and / or *Erica*, in a mosaic with grassy herbaceous vegetation, whether in upland or lowland settings. Includes lowland wet heath, where the ericoid element is high.

#### 4.1.3 Berry-Bush Heath

Heath with >25% cover of *Vaccinium* + *Empetrum* + *Arctostaphylos* and <25% cover of *Calluna* + *Erica*. Includes non-alpine berry-bush heath, alpine and sub-alpine heaths, comprising *Arctostaphylos alpinus* heath, *Loiseluria* heath and other sub-alpine heaths

### 4.2 BOGS

Bogs occur on deep peat (>0.5m thick) with the water table at or just below the surface. Generally, they are ombrotrophic (fed only by direct precipitation). Minerotrophic (fed by ground water or streams) "bogs" in upland situations are included here if they are on deep peat, otherwise they are classed as Wetland. Includes *Trichophorum*-dominated wet heath.

#### 4.2.1 Drier Northern Bogs

Mostly with much *Eriophorum vaginatum* and often *Vaccinium myrtillus*, *Rubus chamaemorus* and extensive peat hags.

#### 4.2.2 Saturated Bogs

Including very wet heaths with low ericoid cover, typically with pools in winter; vegetation characterised by *Trichophorum*, *Eriophorum angustifolium*, *Erica tetralix* (low cover), *Narthecium*, *Racomitrium lanug* and *Cladonia uncialis*.

5 WOODLAND AND SHRUBLAND

5.1 WOODLAND

An area of trees (not coppiced and where rotational felling is still in operation) >5m high unless newly planted or felled, covering >0.25ha, with a crown cover of more than 25%. Includes wooded dunes

5.1.1 Conifer Woodland

Woodland where 80% or more of the tree canopy is of coniferous species. Includes:

**Deciduous Conifer Woodland** - in the British context, this class applies only to larch.

**Evergreen conifer plantation** - in which planted trees make up >30% of the total. Regular planting distances and uniform age structure are characteristic.

**Semi-Natural Evergreen Conifer Woodland** - stands of irregularly spaced coniferous trees of which at least 70% originate from natural regeneration. Includes Caledonian forest, self-sown pine and yew (*Taxus baccata*).

**Land ploughed for afforestation.**

5.1.2 Mixed Woodland

Mixture of coniferous and broadleaved species (semi-natural or planted), where both comprise >20% of the canopy cover. Includes also managed mixed coppice woodland with rotational felling still in operation, whether planted or semi-natural in origin.

5.1.3 Broadleaved Woodland

Woodland where 80% or more of the tree canopy is of broadleaved species, including broadleaved evergreen species (eg *Quercus ilex*). The category comprises both natural stands and plantations and includes self-sown exotics. Includes also managed coppice woodland with rotational felling still in operation, whether planted or semi-natural in origin.

5.3 SHRUB

Consists predominantly of shrubby species (even if >5m tall), often with tree regeneration and brambles and with canopy cover >50%. Shrub on dry or moist ground comprises species such as *Crataegus monogyna*, *Prunus spinosa*, *Salix cinerea*, *Rosa canina*, *Ulex europaeys*, *Sarothamnus scoparius* and *Juniperus communis* and includes dune scrub dominated by such species as *Hippophae rhamnoides*. Swampy shrub and carr comprises semi-natural shrub growing on a waterlogged substrate, particularly peat. Species include *Salix* spp., and *Frangula alnus*. Carr woodland which is dominated by such species as *Betula pubescens* and *Alnus glutinosa* is classified as Broadleaved Woodland.

5.4 FELLED WOODLAND

Areas of felled woodland in which woody regeneration is less than 1m high; includes felled coppice.

6 INLAND ROCKS AND SCREES

Areas where >50% of the land surface is covered by rock. Includes:

**Inland Cliffs** - vertical or near-vertical rock faces >5m high.

**Rock outcrops** - areas of bare rock, including cliffs <5m high.

**Screes**

**Block litter and mountain-top debris.**

7 WETLAND AND WATER

Excludes treed swamps, which are classed as woodland if >5m high and as shrub if <5m.

7.1 STILL WATER

Lakes, (inland water bodies >0.25ha in extent), ponds, meres and reservoirs (artificial inland water bodies, usually distinguished by the presence of a dam or embankment). This category comprises open water, floating aquatic vegetation (species such as *Nuphar*, *Nymphaea*, *Potamogeton* and *Lemna*) and emergent macrophytes (surface plant species characteristic of standing water such as *Typha*, *Ranunculus fluitans* and *Phragmites*).

7.2 RUNNING WATER

Channel of moving water >2.5 m wide, including natural river channels, canalised rivers and artificial canals, constructed where no watercourse existed previously. This category comprises open water, floating aquatic vegetation (species such as *Nuphar*, *Nymphaea*, *Potamogeton* and *Lemna*) and emergent macrophytes (surface plant species characteristic of standing water such as *Typha*, *Ranunculus fluitans* and *Phragmites*).

7.3 WETLAND

Includes:

**Fen** - lowland peat, usually dominated by sedges or rushes with tall herbs, often with alder or willow.

**Marsh** - nutrient-rich wetland on predominantly inorganic soil, dominated by rushes or sedges with tall herbs, including areas of reeds not permanently in water.

**Flush** - localised wet linear or triangular areas of land associated with moving water (possibly including small watercourses) on gently sloping ground which tend to have species which are different from surrounding vegetation. Calcareous flushes are characterised by species such as *Prunella vulgaris*, *Plantago lanceolata*, *Linum catharticum* and *Parnassia palustris* and are relatively rare. Non-calcareous flushes are usually dominated by rushes and small sedges, often with *Sphagnum*.

8 COASTAL FEATURES

Excluding wooded dunes, classified as Woodland, improved dune grassland, classified as Grassland and Dune Heath, classified as Heathland.

8.0 SEA / ESTUARY

Open sea and coastal waters. Includes estuaries inland to the point where the waterway becomes strongly constricted to the normal width of the river.

8.1 UNVEGETATED INTERTIDAL SOFT COAST

Unvegetated coastal areas, including inter-tidal mud flats, inter-tidal sand flats, sandy shore and shingle (pebble/gravel) beaches. Here, the average pebble size should be <10cm; otherwise treat as Hard Coast

8.2 VEGETATED SOFT COAST

8.2.1 Salt Marsh

Intertidal sand-, silt- or mud-based habitats, colonised by halophytic grasses such as *Puccinellia* spp. and *Spartina* spp., rushes such as *Juncus gerardii* and *Blysmus rufus* and herbs such as *Limonium* spp., *Aster tripolium*, *Salicornia dolichostachya* and *Triglochin maritima*. Includes all flowering plant communities which are submerged by high tides at some stage of the annual cycle. Only applies to vegetated areas; otherwise recorded using unvegetated intertidal categories.

8.2.2 Dune

Onshore wind-carried sand deposits arranged in cordons of ridges parallel to the coast. Also inland wind-blown sand deposits. Either open or with semi-natural grassland. Includes:

**Unstable foredune and partially stabilised yellow dune.** Foredune often has a very open plant cover with *Elymus farctus* strongly characteristic, often dominant and sometimes the only species present. Other species may include *Honkenya peploides*, *Atriplex* spp., and *Cakile maritima*. *Ammophila arenaria* may also be present in small quantities. Yellow dune is nearly always dominated by *Ammophila arenaria* although *Leymus (Elymus) arenarius* and/or *Elymus farctus* may be common. A variety of small herbs may also be present.

**Grey dunes.** These are almost completely, but variably vegetated. *Ammophila arenaria* is usually present but not dominant. Mosses and lichens may be frequent. Grey dune can be distinguished from fixed dune by being markedly hilly or undulating, and by the sand not being fully consolidated.

**Stabilized Dune Grassland.** Grassland occurring on consolidated and flattened dunes (fixed dunes). Generally little *Ammophila arenaria* present. Includes machair.

8.3 **HARD COAST WITH LITTLE OR NO VASCULAR VEGETATION**

Including maritime rocks and cliffs, where the rock is outcropping base-rock, shattered rocks (>10 cm diameter) and boulders (>50cm in any direction), whether unvegetated or seaweed-covered.

8.4 **MARITIME VEGETATION**

Vegetation found in coastal situations. Usually herb-rich and with halophytic species present, due to salt spray. Includes cliff-top grassland and semi-open *Armeria* communities of the spray zone.

9 **TRANSPORT, BUILT, URBAN AND INDUSTRIAL**

Excludes any grassland >1ha in extent

9.1 **TRANSPORT**

9.1.1 Railway

Includes all track and associated land.

9.1.2 Road

Any road, public or private, which is totally tarmac or concrete across its width.

9.2 **BUILT LAND**

Buildings and groups of buildings >0.25ha in extent.

9.2.1 Agricultural buildings

Including sheds, barns, silos and large-scale agricultural or horticultural glasshouses.

9.2.2 Residential Buildings

**9.2.3 Other Buildings**

Includes:

**Commercial premises** - shops, garages, hotels, pubs, commercial offices, etc and premises used for the manufacture of goods, including workshops, warehouses and associated buildings such as stores.

**Public Services and Facilities** - buildings associated with services available to the public, such as police stations, hospitals, libraries, gas, electricity and telephone facilities.

**Institutional buildings** - belonging to public or private institutions, (eg old peoples homes, local government and central government buildings, MOD buildings, crown land, remand homes, prisons and research establishments).

**Educational and cultural buildings** - including schools, establishments of further education, museums, theatres and cinemas.

**Religious buildings** - places of worship including Churches, Mosques and Synagogues, and their curtilages, eg graveyards, cemeteries etc.

**Sporting and Recreational buildings** - excluding Ungrassed Recreational Grounds and Recreational Grassland.

**9.4 VEGETATED WASTE LAND AND DERELICT LAND**

Including domestic and industrial waste land, derelict urban land (often vacant) and allotments.

**9.5 HARD AREAS WITHOUT BUILDINGS**

Includes unvegetated derelict land, building sites, car parks, ungrassed recreational grounds and public spaces (eg Tennis Courts, all-weather pitches, etc.) and all other hard areas without buildings.

**9.6 QUARRIES AND OTHER EXTRACTIVE INDUSTRIES**

Usually occurring outside towns. Gravel pits, where flooded or re-vegetated, should be classified according to cover.

2

**Countryside Survey 1990**  
**Land cover/use categories and definitions**

**DEFINITIONS OF CATEGORIES RECORDED IN THE FIELD**  
**FROM THE FIELD SURVEYERS' HANDBOOK**

**1. PHYSIOGRAPHY/INLAND WATER/COASTAL**

**1.1 INLAND PHYSIOGRAPHIC FEATURES**

**1.1.1 Cliff >30 m high**

A vertical or near-vertical face of rock

**1.1.2 Cliff 5-30 m high**

**1.1.3 Rock outcrop and cliff <5 m**

Areas of bare rock should be included here together with a % cover category (12-14)

**1.1.4 Scree**

**1.1.5 Surface boulders**

Boulders are defined as >50 cms in any direction and should be mapped as an area with a % cover code (12-14)

**1.1.6 Limestone pavement**

**1.1.7 Peat hags**

Includes any bare or eroding peat which is not vegetated

**1.2 INLAND PHYSIOGRAPHY - COVER**

**1.2.12 100% rock**

**1.2.13 >50% rock**

**1.2.14 10-50% rock**

**1.2.15 100% peat**

**1.2.16 >50% peat**

**1.3 COASTAL FEATURES**

**1.3.31 Cliff >30 m high**

**1.3.32 Cliff 5-30 m high**

**1.3.33 Rock outcrop and cliff <5 m**

To be used when the rock is outcropping base-rock.

**1.3.34 Rocky/boulder shore**

Used when the shore is of shattered rocks or boulders >10cm diameter (ie grapefruit size).

**1.3.35 Pebble/gravel shore**

**1.3.36 Sandy shore (or dune)**

1.3.37 Bare mud

1.3.38 Sea

1.4 INLAND WATER FEATURES

1.4.51 Lake - natural

Any inland water body, of any size.

1.4.52 Lake - artificial

Usually distinguished by the presence of a dam or embankment.

1.4.53 River

Defined as being >2.5 m wide.

1.4.54 Canalised river

Rivers which have been modified (eg sections straightened, banks smoothed) but which still follow the same basic direction as the natural watercourse.

1.4.55 Canal

Constructed where no watercourse existed previously.

1.4.56 Stream

Defined as being <2.5 m wide.

1.4.57 Roadside ditch

Linear excavations with the purpose of drainage.

1.4.58 Other ditch

See roadside ditch.

1.4.59 Spring

Usually marked on the map but implies evidence of a continual supply of water at ground surface.

1.4.62 Waterfall

1.4.63 Gorge

1.4.64 Levee

Artificial raised banks at the sides of rivers, characteristic of canalised rivers.

2 AGRICULTURE/NATURAL VEGETATION ETC.

2.1 AGRICULTURAL/NATURAL VEGETATION COVER TYPES

2.1.101 Lowland agricultural grassland

Includes any grass crop or pasture in a generally lowland, or enclosed, situation (ie most grass).

2.1.102 Upland grassland

Natural grassland (unimproved) in an upland situation but with a high proportion of palatable grasses and usually on a mineral soil. Typical species include *Festuca ovina*, *Agrostis tenuis*, *Anthoxanthum odoratum*, *Galium saxatile*, often with bracken.

2.1.103 Moorland - grass

Coarse upland grass in a moorland setting, usually dominated by species such as *Nardus*, *Molinia*, *Deschampsia flexuosa*, *Juncus squarrosus*. Soils usually have a peaty top.

2.1.104 Moorland - shrub heath

Dominated by dwarf shrub species, often growing on peat, invariably dominated by *Calluna* or *Vaccinium*.

2.1.105 Calcareous grassland

Found on calcareous soils and with a high proportion of calcicole species of limestone, chalk, dunes and machair. Typical species include *Bellis perennis*, *Lotus corniculatus*, *Linum catharticum*, *Thymus druceii*, *Poterium sanguisorba*, and *Briza media*.

2.1.106 Maritime vegetation

Found on sea cliffs or other coastal situations and usually herb-rich due to salt spray.

2.1.107 Lowland heath

Shrub heath at low altitudes and in lowland England and Wales, usually characterised by dry soils.

2.1.108 Aquatic macrophytes

Major species characteristic of standing water such as *Typha*, *Ranunculus fluitans* and *Phragmites*.

2.1.109 Aquatic marginal vegetation

Growing at the fringe of open water eg *Valeriana*, *Epilobium hirsutum*, *Filipendula*, *Oenanthe croccata*, etc.

2.1.110 Raised bog

Occurs mainly in lowland situations, often formed in level flood plains of mature rivers; typically convex and gently sloping from the centre to a steep margin and bounded by a watercourse.

2.1.111 Blanket bog

Characteristic of large areas in north-west, upland, high-rainfall parts of Britain. Characterised by *Eriophorum* with or without *Sphagnum*; other species include *Molinia*, *Trichophorum*, *Calluna* and *Erica tetralix*.

2.1.112 Valley bog

(Including basin mires) form in depressions where there is a slow, directional flow of water.

2.1.113 Fen

Lowland peat usually dominated by sedges or rushes often with alder or willow.

## Dictionary of Land Cover Surveys & Definitions

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**2.1.114 Marsh**

Nutrient-rich wetland on predominantly inorganic soil dominated by rushes or sedges.

**2.1.115 Flush**

Localised, narrow areas of moving water which tend to have species which are different from surrounding vegetation. Calcareous flushes are characterised by species such as *Prunella vulgaris*, *Plantago lanceolata*, *Linum catharticum* and *Parnassia palustris* and are relatively rare. Non-calcareous flushes are usually dominated by rushes, often with *Sphagnum*.

**2.1.116 Saltmarsh**

Should only be recorded where the area is vegetated, otherwise bare mud (37) is appropriate.

**2.1.117 Wheat**

**2.1.118 Barley**

**2.1.119 Oats**

**2.1.120 Sugar beet**

**2.1.121 Turnips/swedes/roots**

**2.1.122 Kale**

**2.1.123 Potatoes**

**2.1.124 Field beans**

**2.1.125 Peas**

**2.1.126 Maize**

**2.1.127 Rye**

**2.1.128 Oilseed rape**

**2.1.129 Other crop**

**2.1.130 Flowers**

**2.1.131 Commercial horticulture**

**2.1.132 Orchard**

**2.1.133 Unmanaged grass**

This is grassland that has no obvious use (agricultural, amenity, etc) but which cannot be called an abandoned land use. The code should be used judiciously.

**2.1.134 Tall herb vegetation**

Semi-natural vegetation, often in wet or disturbed positions; dominated by tall herbs but with grasses present.

**2.1.136 Ley**

A short-term grassland, reseeded less than five years previously. Characterised by evidence of ploughing, bare soil between grass plants, scarcity of broadleaf species and is often dominated by a single grass species, eg *Lolium*. This code should only be used if there is absolutely no doubt about these factors (eg from landowner information or recent sowing). Any field with >10% *Lolium multiflorum* (a short-lived ley species) would be included here.

**2.1.137 Unimproved grass**

Pasture in an enclosed situation which contains many palatable grasses but which has not been agriculturally improved by the use of fertilisers or other agricultural inputs. A comparatively rare category, containing species such as *Conopodium majus*, *Plantago lanceolata*, *Lotus corniculatus* etc. Would include most 'hay meadows'.

**2.1.138 Unimproved grass - Forbs >10%**

**2.1.139 Unimproved grass - Forbs >25%**

**2.1.140 Unimproved grass - Forbs >50%**

**2.1.141 Neglected**

Agricultural land for which there is no obvious intended change of use, but where the former use has been temporarily neglected (for up to 3 years). Includes fallow land (which has been unused as a part of agricultural rotation) and setaside.

**2.1.142 Abandoned**

Agricultural land which has been neglected for more than 3 years and in which long-lived perennials and shrubby species are becoming established.

2.2 AGRICULTURE/NATURAL VEGETATION SPECIES If >25%

- 2.2.146 *Lolium multiflorum*
- 2.2.147 *Lolium perenne*
- 2.2.148 *Trifolium repens*
- 2.2.149 *Dactylis glomerata*
- 2.2.150 *Anthoxanthum odoratum*
- 2.2.151 *Phleum pratense*
- 2.2.152 *Cynosurus cristatus*
- 2.2.153 *Holcus lanatus*
- 2.2.154 *Agrostis tenuis*
- 2.2.155 *Festuca ovina*
- 2.2.156 *Pteridium aquilinum* (dense)
- 2.2.157 *Pteridium aquilinum* (scattered)
- 2.2.158 *Juncus effusus*
- 2.2.159 *Deschampsia flexuosa*
- 2.2.160 *Nardus stricta*
- 2.2.161 *Calluna vulgaris*
- 2.2.162 *Vaccinium myrtillus*
- 2.2.163 *Molinia caerulea*
- 2.2.164 *Eriophorum angustifolium*
- 2.2.165 *Eriophorum vaginatum*
- 2.2.166 *Tricophorum caespitosum*
- 2.2.167 *Sphagnum spp.*
- 2.2.168 *Juncus squarrosus*

3. **FORESTRY, WOODLAND TREES**

3.1 **FORESTRY, WOODLAND COVER TYPES**

2.1.201 **Individual trees**

Groups of less than 6 trees are recorded as individuals as are lines of trees of <20 m in length. A coppice stool is recorded as a single tree.

3.1.202 **Scattered trees**

Which do not make a wood or clump because their crowns are not contributing 25% cover of the mapped unit.

3.1.203 **Line of trees**

Must be a single tree width and be at least 20 m long with crown contact.

3.1.204 **Belt of trees**

Two or more trees wide with a width to length ratio quadrat of at least 1:5, parallel-sided and with a maximum width of 50 m.

3.1.205 **Clump of trees**

A small woodland or group of trees (6 or more) and <0.25 ha.

3.1.206 **Woodland/forest**

An area of trees >0.25 ha (but see belt) and a crown cover of >25%.

3.1.207 **Individual scrub**

Consists exclusively of shrubby species often with tree regeneration and brambles. Individual trees of more than twice the average height of the scrub are separately recorded.

3.1.208 **Scattered scrub**

Scattered as for trees.

3.1.209 **Line of scrub**

Line as for trees.

3.1.210 **Patch of scrub**

Area of continuous scrub (canopy >25%) of any size.

3.1.217 **Hedgerow**

Trees in a hedgerow which are twice the average height of the hedge, or where the hedge has been trimmed to favour the growth of a young tree.

3.1.218 **Parkland**

A series of isolated mature trees over usually grazed grassland, often associated with large country houses or recreational areas.

**3.2 FOREST/WOODLAND SPECIES IF >25%**

- 3.2.221 Fir - douglas
- 3.2.222 Larch
- 3.2.223 Pine - corsican
- 3.2.224 Pine - lodgepole
- 3.2.225 Pine - scots
- 3.2.226 Spruce - norway
- 3.2.227 Spruce - sitka
- 3.2.228 Unspecified conifer
- 3.2.231 Alder
- 3.2.232 Ash
- 3.2.233 Beech
- 3.2.234 Birch
- 3.2.235 Bramble
- 3.2.236 Elder
- 3.2.237 Elm
- 3.2.238 Field maple
- 3.2.239 Gorse
- 3.2.240 Hawthorn
- 3.2.241 Hornbeam
- 3.2.242 Lime
- 3.2.243 Oak
- 3.2.244 Poplar
- 3.2.245 Rowan
- 3.2.246 Sweet chestnut
- 3.2.247 Sycamore
- 3.2.248 Willow
- 3.2.250 Mixed broadleaves
- 3.2.251 Mixed conifers
- 3.2.252 Unspecified broadleaf

4. BOUNDARIES

4.1 WALLS

4.1.301 Dry-stone walls

4.1.302 Mortared walls

Includes dry-stone walls which have been capped with mortared stone.

4.1.303 Other walls

4.2. FENCES

4.2.311 Wood only fences

4.2.312 Iron only fences

4.2.313 Wire on posts fences

4.2.314 Other fences

4.3 HEDGES

4.3.321 Hedges with >50% Hawthorn

Only used if Hawthorn constitutes more than half of the length of hedge under consideration.

4.3.322 Hedges with >50% other

4.3.323 Mixed hedge

Used for any length of hedge where no single species dominates.

4.4 OTHER

4.4.331 Stone bank

4.4.332 Earth bank

Stone and earth banks are coded as 331/332.

4.4.333 Grass strip

Used where a grass strip separates two fields with no vertical boundary.

5. BUILDINGS, STRUCTURES AND COMMUNICATIONS

5.401 Buildings

5.402 Garden/grounds with trees

Gardens/grounds with trees includes those curtilages or mapped group of curtilages, which have a cover of 10% or more.

5.403 Garden/grounds without trees

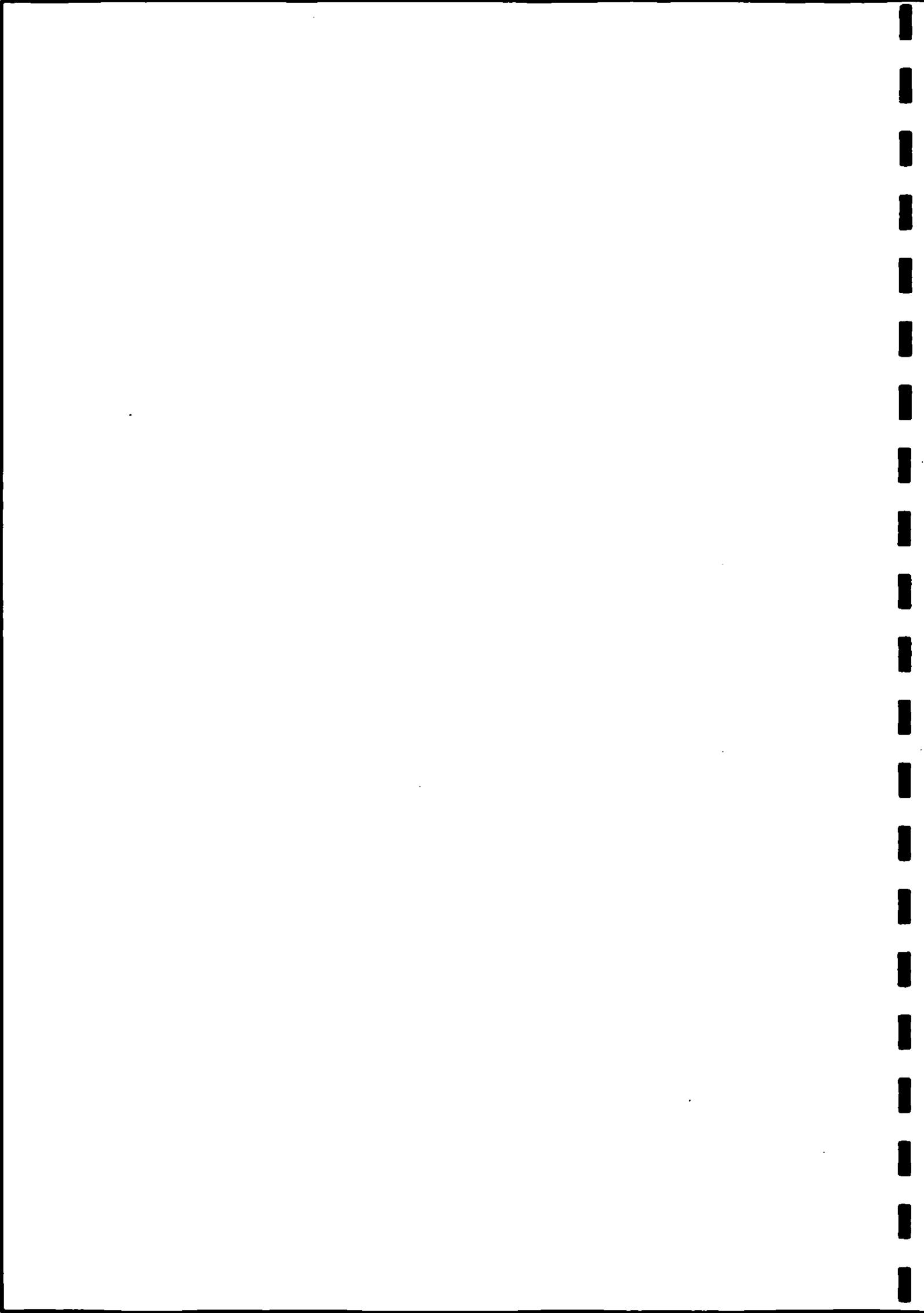
- 5.404 Public open space**  
Includes parks, ornamental gardens, and accessible common land, especially near large conurbations.
- 5.405 Amenity grass >1ha**  
Non-agricultural grass which is clearly being used for amenity purposes (not recreation); to be recorded in units of 1 ha or more eg parks, large lawns etc (but see 404).
- 5.406 Allotments**
- 5.407 Car park**
- 5.408 Glasshouse**  
Refers to commercial, large-scale enterprises, not greenhouses at the bottom of gardens.
- 5.409 Garden centre/nursery**
- 5.410 Embankment**  
Used for any constructed embankment in any situation eg motorway, reservoir etc.
- 5.411 Other built land**  
For use in exceptional circumstances and always qualified.
- 5.421 Residential**  
Covers all domestic living area.
- 5.422 Commercial**  
Includes all buildings devoted to selling things, including shops, garages, hotels, pubs, commercial offices, etc.
- 5.423 Industrial**  
Premises used for the manufacture of goods, includes workshops, warehouses and associated buildings such as stores.
- 5.424 Public services and facilities**  
Public services and facilities are those buildings which are associated with services available to the public, such as police stations, hospitals, libraries and facilities associated with gas, electricity and telephone.
- 5.425 Institutional**  
Includes all buildings belonging to forms of public or private institutions, such as old peoples homes, local government and central government buildings, MOD buildings, crown land, remand homes, prisons and research establishments.
- 5.426 Educational/cultural**  
Includes schools, establishments of further education, museums, theatres and cinemas.
- 5.427 Religious**  
Places of worship including Churches, Mosques, Synagogues, and their curtilages, eg graveyards, cemeteries etc.
- 5.428 Agricultural**

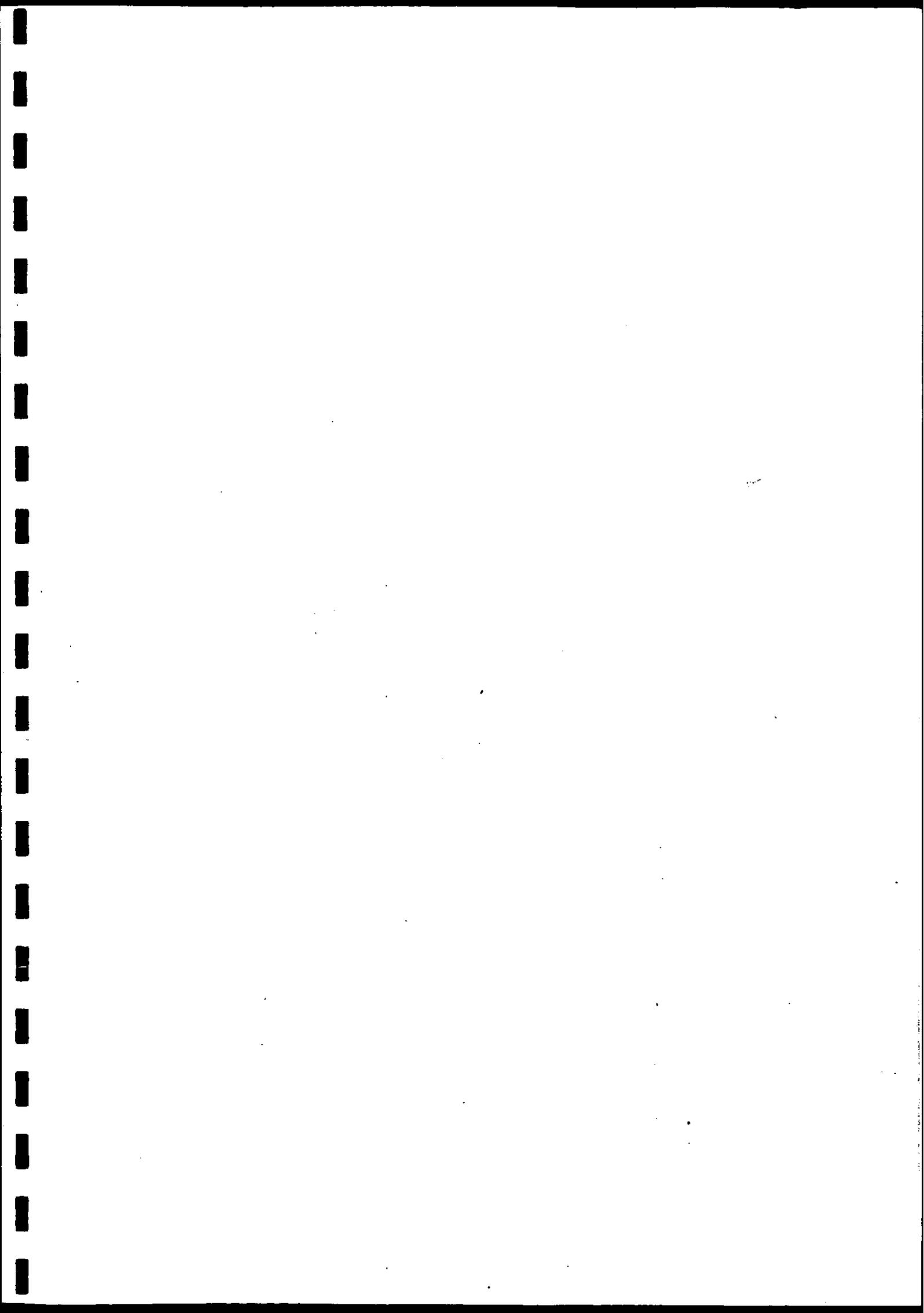
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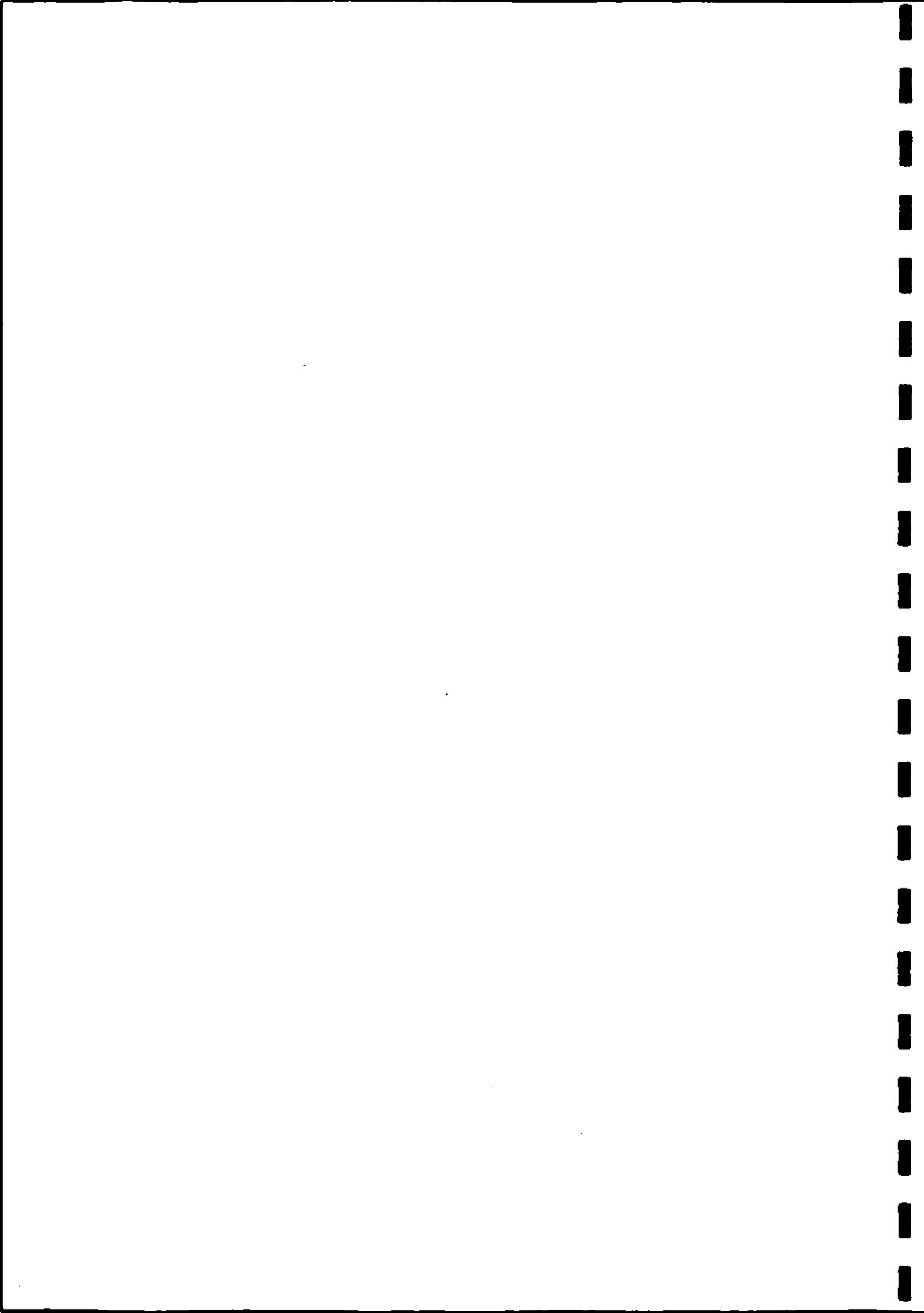
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- 5.429 Sporting/recreational
- 5.430 Waste - domestic
- 5.431 Waste - industrial
- 5.432 Quarry/mine
- 5.433 Gravel pit
- 5.451 Railway track/land
- 5.452 Road (tarmac)  
Includes any road, whether private or not, which is totally tarmac across its width.
- 5.453 Verge <1 m
- 5.454 Verge <5 m
- 5.455 Verge >5 m
- 5.456 Constructed track  
Includes any track which has been manufactured using stone or hard material.
- 5.457 Unconstructed track  
Those tracks which are not defined as above ie no construction has been involved along their length.
- 5.458 Footpath (exclusive)  
A path which uses land area for the purposes of a footpath only - often walled or fenced.
- 5.459 Footpath (other)  
Those which are shared with some other land use, such as a path across a grazed field.
- 5.501 School playing fields
- 5.502 Other playing fields
- 5.503 Golf course
- 5.504 Race track
- 5.505 Tennis courts
- 5.506 Boating area
- 5.507 Static caravan(s)
- 5.508 Touring caravan park
- 5.509 Camp site
- 5.510 Launch site
- 5.511 Other designated area

Provision was made to allow surveyors to specify additional categories to describe situations encountered in the field which were not covered adequately by the above categories, but only where it proved impossible to make use of an existing pre-determined code.







## Dictionary of Land Cover Surveys & Definitions

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<b>SURVEY NUMBER</b>	3
<b>NAME OF SURVEY</b>	COUNTRYSIDE SURVEY 1990 - LAND COVER MAP
<b>COMMISSIONING AGENT</b>	NATURAL ENVIRONMENT RESEARCH COUNCIL, BRITISH NATIONAL SPACE CENTRE (DEPARTMENT OF TRADE AND INDUSTRY) & DEPARTMENT OF THE ENVIRONMENT.
<b>EXECUTING AGENT</b>	INSTITUTE OF TERRESTRIAL ECOLOGY
<b>CONTACT</b>	<p>The Institute of Terrestrial Ecology, Monks Wood, Abbots Ripton, HUNTINGDON, Cambridgeshire. PE17 2LS.</p> <p>Tel: Abbots Ripton (04873) 381 Fax: .. .. 467</p> <p>Present contact: Mr. Robin M. Fuller.</p>
<b>OBJECTIVES</b>	<p>To compile a digital map of land cover in Great Britain from remote sensing, based on a hierarchical classification of major land cover types. To make quantitative assessments of its accuracy. To integrate the map with field survey data from Countryside Survey 1990 and with other topographic and thematic data in a Geographical Information System (GIS) environment. To produce demonstrator GIS output in vector format.</p>
<b>PERIOD OF SURVEY</b>	
Start	1990
End	1993
<b>SURVEY METHOD</b>	<p>Maximum likelihood supervised classification of multi-date Landsat Thematic Mapper data. Land cover is recorded in 25 classes based on spectral temporal signature. Initial classification verified against field observations and refined using simple knowledge-based contextual processing. Validated against field data collected for the Countryside Survey 1990.</p>

**GEOGRAPHICAL CHARACTERISTICS**

Area of survey	Great Britain
Sampling frame	Complete census
Sampling unit	Complete census
Recording unit	25 m pixels
Scale of input data	Landsat TM imagery at 30 m nominal resolution, resampled to 25 m pixels.
Scale of output	Principal scales 25 m and 1 km rasters, though in principle, data can be summarised to any resolution >25 x 25 m.
Resolution	Minimum mapped area 0.125 ha, (i.e. two pixels). In practice it cannot be said that all 0.125 ha features will be shown, this will depend on how strong the spectral signature of a feature is and how pixels fall with respect to the feature. Minimum consistently mappable area could be 5 ha. In practice, the real value is probably between 0.5 and 1.0 ha.
Accuracy and error	To be determined

**DATA STORAGE/ANALYSIS**

Image processing carried out using IIS System-600. Data held in digital byte array (each byte records land cover in one 25 x 25 m pixel). Database is stored in tiles corresponding to 100 x 100 km cells of British National Grid, but any area of interest can be generated.

Data can also be processed to other resolutions (eg 1 x 1 km).

Output formats include:

Image format (byte array);  
ARC/INFO;  
LaserScan HORIZON;  
ORACLE (generalised data only)

**DATA AVAILABILITY**

Data available from ITE under general conditions outlined in the NERC Corporate Data Policy. For details, consult the designated point of contact.

**FORMS OF OUTPUT**

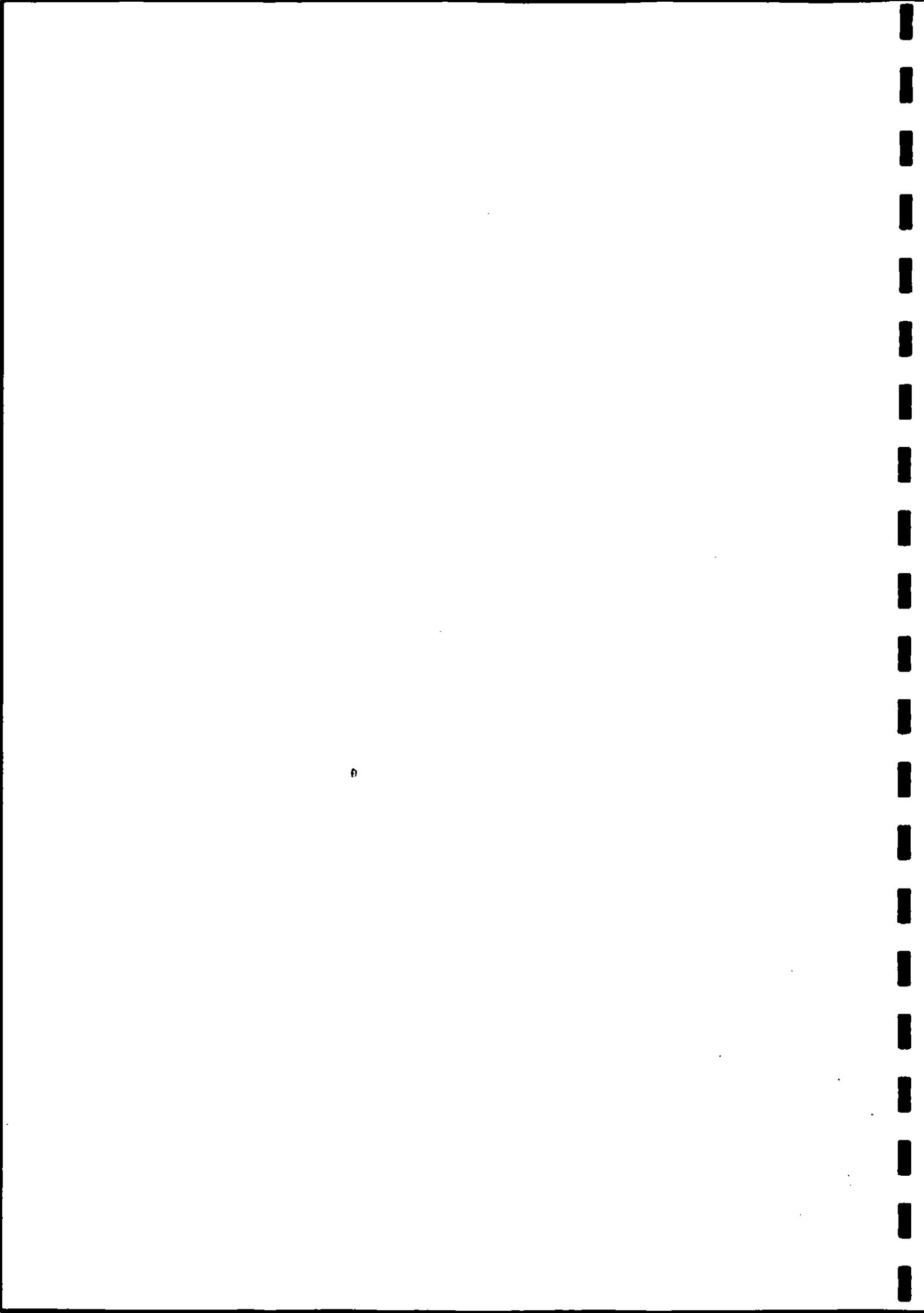
Digital and hard copy maps of land cover at various scales. National, regional and local statistics of land cover. Estimates of proportion of land cover types per 1 x 1 km square.

**PUBLICATION DATE(S)**

1993

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3

**ITE Land Cover Map**

**Land cover/use categories and definitions**

**A SEA / ESTUARY**

Open sea and coastal waters, including estuaries, normally inland to the point where the waterway is constricted to 1 pixel or its continuity is broken by a bridging point. An exception is where waterways open up again into major estuarine features, such as Breydon water near Great Yarmouth or many of the sea lochs on the north-west Scottish coast. It is not intended to show accurately the limit of saline or tidal waters, which may extend much further inland.

ITE Land Cover Map Class 1

**B INLAND WATER**

Permanent fresh waters and estuaries excluded from Category A. Only those areas which are water-covered throughout the year are mapped. Thus, reservoirs with summer draw-down, or winter-flooded meadows are classified under the appropriate terrestrial class (ie bare or grassland in these examples).

ITE Land Cover Map Class 2

**C BEACH / MUDFLAT / CLIFFS**

Intertidal mud, silt, sand, shingle, rocks and other bare maritime habitats above the tide-line, (eg shingle beaches, mobile sand dunes and bare rocks or soil of coastal cliffs). A covering of sparse vegetation, such as pioneer saltmarsh, dune or shingle species will not put the beach into a vegetated class unless the majority of the substratum is covered.

ITE Land Cover Map Class 3

**D SALTMARSH**

Includes:

- Saltmarshes (intertidal sand-, silt- or mud-based habitats, colonised by halophytic grasses such as *Puccinellia* spp, and herbs such as *Limonium* spp., *Aster tripolium* and *Triglochin maritima*, remaining mostly green in winter). Only those marshes up to normal high water spring tides (ie those flooded monthly) are included in this category. The upper saltmarsh, inundated only on extreme high-water spring tides, and

dominated by coarse grasses such as *Agropyron* spp.. are classified as rough grasslands (category G).

- Areas of seaweeds, sufficiently extensive to show as vegetated intertidal plant communities and usually comprising the green alga *Enteromorpha intestinalis* or the brown wracks (*Pelvetia canaliculata*, *Fucus* spp. and *Ascophyllum nodosum*) growing on rocks, boulders and sometimes gravels, sands and muds.

ITE Land Cover Map Class 4

**E     ROUGH PASTURE / DUNE GRASS / GRASS MOOR**

Includes:

- Coastal dunes and inland grasslands typically growing on sandy soils, usually acid in character. The species might include, on coastal dunes, *Ammophila arenaria*, *Festuca rubra* and *Carex arenaria* and a wide variety of herbaceous species, often winter annuals. Inland, and on mature 'grey' dunes, all but *Ammophila* might be present, but acid-loving species are typical, including *Festuca ovina*, *Agrostis* spp. and *Deschampsia flexuosa* set in a carpet of lichens and mosses.

ITE Land Cover Map Class 5

- Upland swards, mostly of deciduous grasslands, often referred to as grass moorland or upland grassy heath. They are typically dominated by *Nardus stricta* and/or *Molinia caerulea*, with *Festuca ovina*, *Deschampsia caespitosa*, *Juncus* spp. often including sparse cover of upland dwarf shrubs. These swards form large tracts of mostly unenclosed hill-grasslands, lightly grazed often by sheep.

ITE Land Cover Map Class 9

**F     PASTURE / MEADOW / AMENITY GRASS**

Includes:

- Pastures and amenity turf grasslands, managed either as agriculturally productive swards or mown as amenity grasslands. They are mostly agriculturally 'improved' by reseeded and/or fertiliser use and would normally contain high quantities of *Lolium perenne* and/or other preferred species.

ITE Land Cover Map Class 6

- Meadows and verges comprising grasslands managed at a lesser intensity. Partial improvement favours productive species such as *Lolium perenne*, and herbicide treatment may reduce the content of broadleaved 'weeds' but some of the swards in this category represent the traditional hay meadows which have escaped improvement. The swards may be mown for hay and perhaps aftermath-grazed. Also, seminatural swards of similar appearance, including: i) *Festuca/Agrostis* swards, typical of the indigenous, essentially unimproved grasslands, of neutral to acid soils, mostly enclosed, formerly covering much of Britain's grazing land, but now restricted to upland margins and odd pockets of lowlands, usually on floodplains. The swards are characterised by *Festuca rubra* and/or *ovina*, *Agrostis stolonifera*, *A. tenuis* and/or *A. canina*, often with substantial quantities of rushes (*Juncus* spp.), sedges (*Carex* spp.) and broadleaved plants. ii) agriculturally non-productive swards which are managed by occasional cutting to prevent excessive weed or scrub growth, eg roadside verges, country parks, golf course semi-rough areas.

ITE Land Cover Map Class 7

**G**     MARSH / ROUGH GRASS

Includes:

- Lowland herbaceous vegetation of fens, marshes, upper saltmarshes, and rough or derelict ground, mostly unenclosed grasslands, abandoned from economic use and not significantly cropped by mowing or grazed by stock and with a high standing crop of vegetation, most of which dies back in winter, leaving a dense plant litter.

ITE Land Cover Map Class 8

- Bare ground being colonised by annual and short-lived perennial plants, usually with a considerable remnant of bare ground, especially in winter. The ground may be naturally bare, eg shingle beaches, or abandoned arable land, eg setaside, or derelict industrial works such as demolished factories, gravel pits etc.

ITE Land Cover Map Class 19

- Recently felled forest, still bare from felling and the associated disturbance, usually with large quantities of brush-wood and litter. As they revegetate, felled areas recolonise and enter other classes: generally they pass through a short phase (perhaps one year) as ruderal weeds, then become rough grassland, later scrub, and, if replanted, after perhaps ten years, felled areas take the appropriate deciduous or evergreen class.

ITE Land Cover Map Class 23

**H**     GRASS / SHRUB HEATH

Includes:

- Dwarf shrub and grass moorland, commonplace on marginal hill grazing land, especially in northern and western parts of Britain, where grazing prevents the dominance of dwarf shrub species. It is also extensive in *Calluna* moorland, as a result of muir-burning to maintain young heather regrowth to promote grouse populations. Initial regrowth produces grassy swards, which over a period of years revert to heather-cover. As the heather senesces, so moorland is re-burnt, with a repeat cycle of perhaps 10 years. Whereas other transient cover-features of management (eg haycutting, arable crop-type) are not defined because of their short-lived nature, the 10-year cycle is long enough to justify the distinction between currently managed and unmanaged areas.

ITE Land Cover Map Class 10

- Comparably managed areas of lowland heath, giving rise to similar dwarf shrub and grass mixtures. Because intensive grazing of lowland heaths is no longer practiced, the incidence of this class is rare.

ITE Land Cover Map Class 25

**I     SHRUB HEATH**

Includes:

- Upland dwarf shrub moorlands, characterised by communities including heather (*Calluna vulgaris*), ling (*Erica* spp.) and bilberry (*Vaccinium* spp.). Though dominated by woody shrubs, these may be mixed with herbaceous species, especially those of the montane grasslands. The dwarf shrub moorlands may be managed by muir-burning, in which case they may be bare for most of the first year after burning (category Q); succession continues through dwarf-shrub/grass communities (category H) until dwarf shrub growth again dominates.

ITE Land Cover Map Class 11

- Lowland heath, characterised by communities with high proportions of heather (*Calluna*), ling (*Erica* spp.) but perhaps mixed with broom (*Cytisus scoparius*) and gorse (*Ulex* spp.). Mostly evergreen and hence different from other scrub communities. Almost invariably, it represents vegetation on sandy soils, in characteristic sites like the Brecklands, and the Dorset and Surrey Heaths, or on extensive coastal dune systems.

ITE Land Cover Map Class 13

**J     BRACKEN**

Herbaceous vegetation dominated by *Pteridium aquilinum*. It may be upland or lowland, mixed with grass and other species.

ITE Land Cover Map Class 12

**K     DECIDUOUS / MIXED WOOD**

Includes:

- Deciduous woodland, including all deciduous trees, broadleaved and coniferous. Mixed woodland may be included in this category, though continuous evergreen stands greater than minimum mappable area are separately mapped as category L.

ITE Land Cover Map Class 15

- Orchards and areas of deciduous scrub, often with high proportional cover of herbaceous vegetation. Typical species include willow (*Salix* spp.) in wetlands, or hawthorn (*Crataegus monogyna*), brambles (*Rubus fruticosus* agg.) and saplings or small trees: these include, of course, fruit trees.

ITE Land Cover Map Class 14

**L     CONIFEROUS / EVERGREEN WOOD**

Mainly coniferous woodland, but including also other evergreens such as holly (*Ilex aquifolium*), Rhododendron (*R. ponticum*), yew (*Taxus baccata*) and Holm oaks (*Quercus ilex*).

ITE Land Cover Map Class 16

**M**     BOGS (HERBACEOUS)

Areas of permanently waterlogged vegetation, resulting in depositions of acidic peat. Includes:

- Upland bogs, with communities comprising many of the species typical of grass and dwarf shrub heaths and moors, but characterised by water-logging, perhaps with surface water, especially in winter. The water-logging promotes species such as bog myrtle (*Myrica gale*) and cotton grass (*Eriophorum* spp.) in addition to the species of grass and dwarf shrub moorlands.

ITE Land Cover Map Class 17

- Lowland bogs, rare in much of Britain, due to drainage and peat extraction but widespread and locally extensive on the west coast of Scotland. They carry most of the species of upland bogs, but in a lowland setting, with *Myrica gale* and *Eriophorum* spp. being highly characteristic.

ITE Land Cover Map Class 24

**N**     TILLED (ARABLE CROPS)

Includes all land under annual tillage, especially for cereals, horticulture etc. Also includes leys in their first year. Any other seasonally-bare land, such as temporarily bare ground from scrub-clearance, development, mining, soil tipping, etc, is included in this category.

ITE Land Cover Map Class 18

**O**     SUBURBAN / RURAL DEVELOPMENT

Includes all areas with a mixture of built-up land and permanent vegetation at scale lengths shorter than the minimum resolution of the map. Most suburban and rural developments are included in this category. Small rural industrial estates, glasshouses, railway stations, larger rural roads, villages and small retail sites are also included.

ITE Land Cover Map Class 20

**P**     URBAN DEVELOPMENT

All built developments larger than the minimum resolution of the map and without significant cover of permanent vegetation. Includes the centres of cities and large towns, major industrial and commercial sites, major areas of concrete and tarmac, plus permanent bare ground associated with these developments, such as car-parks and tips.

ITE Land Cover Map Class 21

**Q**     INLAND BARE GROUND

All 'natural' surfaces such as rock, sand, gravel or soil, even if their origin has often not been natural. Thus, ground bared by human activities, or by livestock is included, as are surfaces of sand or gravel (eg car parks) which have been artificially introduced from elsewhere. Note that unvegetated coastal features are included in category C.

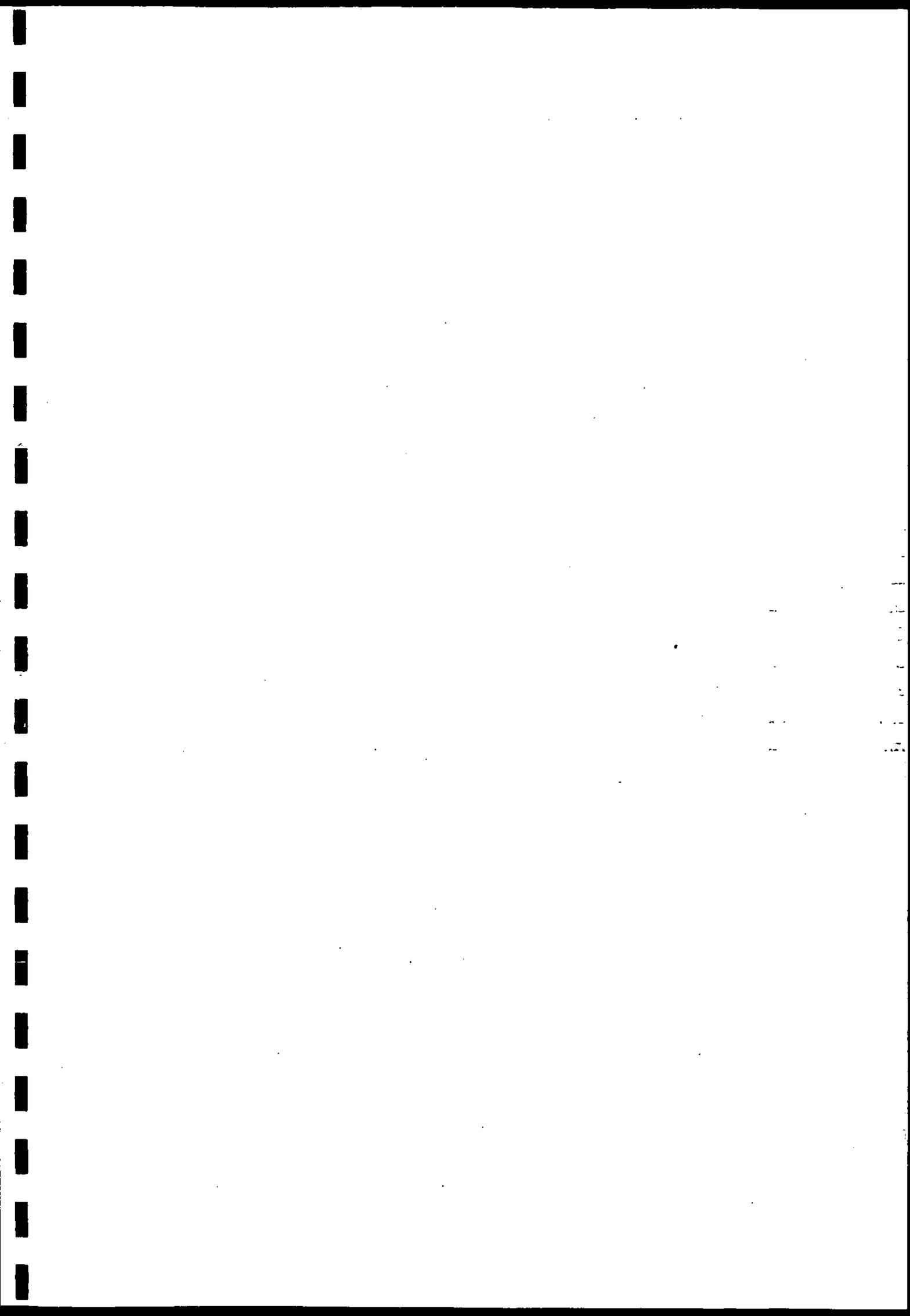
ITE Land Cover Map Class 22

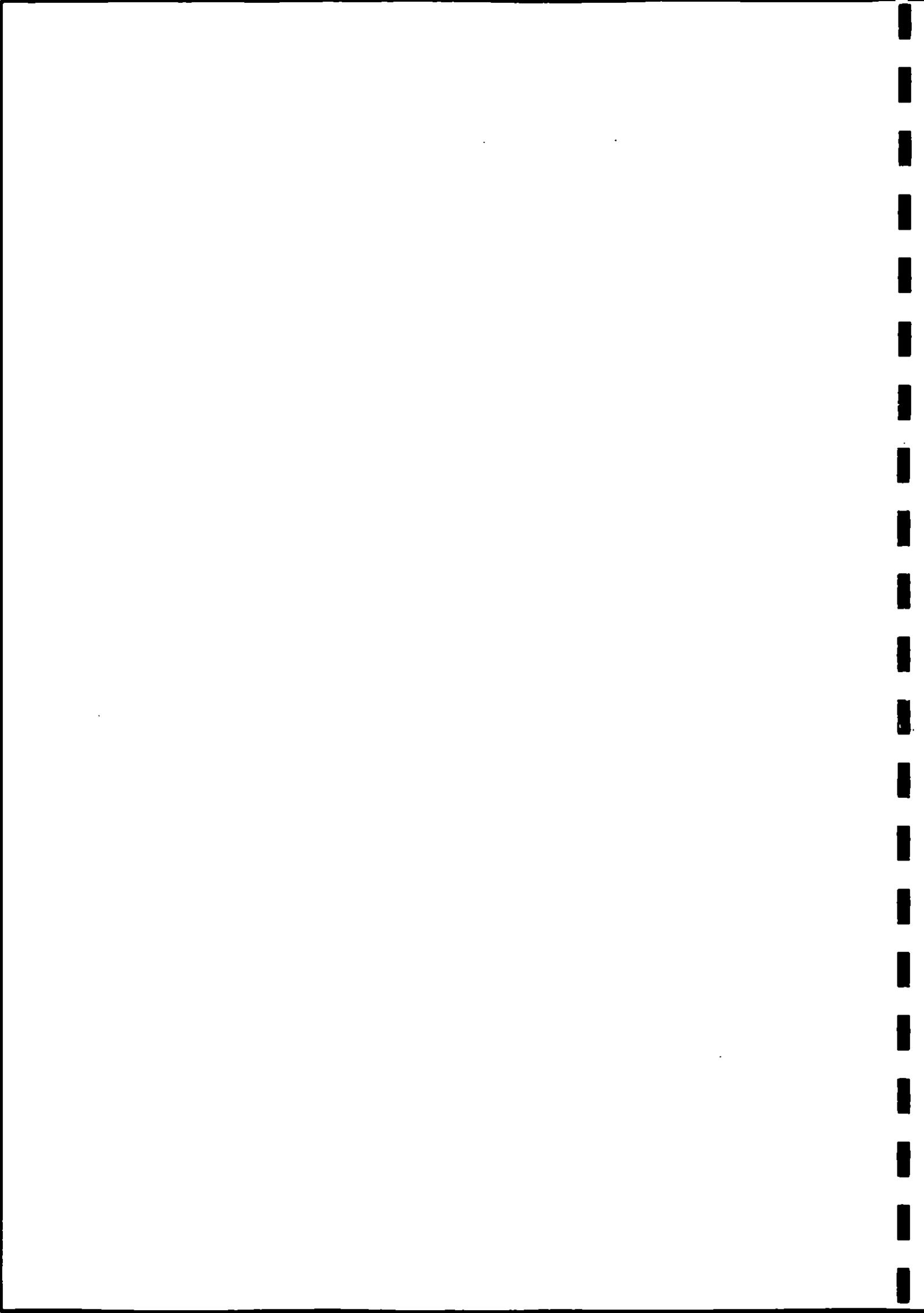
## Dictionary of Land Cover Surveys & Definitions

### THE LAND COVER MAP - ORIGINAL MAP CLASSES

The results of Land Cover Mapping from remote sensing were initially presented as 25 categories; these were subsequently condensed into the 17 classes identified here. The relationship of the 17 classes to the original 25 is shown in the following Table:

Land Cover Category (17 class system)	Target Cover (25 class system)
A Sea / Estuary	Sea / Estuary
B Inland Water	Inland Water
C Beach / Mudflat / Cliffs	Beach and Coastal Bare
D Saltmarsh	Saltmarsh / Intertidal Vegetation
E Rough Pasture / Dune Grass / Grass Moor	Grass Heath
	Moorland Grass
F Pasture / Meadow / Amenity Grass	Mown / Grazed Turf
	Meadow / Verge / Semi-Natural
G Marsh / Rough Grass	Ruderal Weed
	Felled Forest
	Rough / Marsh Grass
H Grass / Shrub Heath	Open Shrub Heath
	Open Shrub Moor
I Shrub Heath	Dense Shrub Heath
	Dense Shrub Moor
J Bracken	Bracken
K Deciduous / Mixed Wood	Scrub / Orchard
	Deciduous Woodland
L Coniferous / Evergreen Woodland	Coniferous Woodland
M Bog (Herbaceous)	Lowland Bog
	Upland Bog
N Tilled (Arable Crops)	Tilled Land
O Suburban / Rural Development	Suburban / Rural Development
P Urban Development	Continuous Urban
Q Inland Bare Ground	Inland Bare Ground





## Dictionary of Land Cover Surveys & Definitions

<b>SURVEY NUMBER</b>	4
<b>NAME OF SURVEY</b>	MONITORING LANDSCAPE CHANGE
<b>COMMISSIONING AGENT</b>	DEPARTMENT OF THE ENVIRONMENT & COUNTRYSIDE COMMISSION FOR ENGLAND AND WALES
<b>EXECUTING AGENT</b>	HUNTING SURVEYS AND CONSULTANTS LTD. Subcontracts were let to the Forestry Commission and the Institute of Terrestrial Ecology (ITE).
<b>CONTACT</b>	Hunting Technical Services Thamesfield House Boundary Way HEMEL HEMPSTEAD Hertfordshire HP2 7SR  Tel: Hemel Hempstead (0442) 231800 Fax: .. .. 219886  Present contact: Mr. Graham Deane
<b>OBJECTIVES</b>	To obtain reliable information on the current and past distribution and extent of landscape features of major policy importance; to determine the magnitude of any change in distribution and extent of these features between specific points in time, thus defining rates of change and possible bases for the prediction of trends; and to develop methods by which future changes in the extent of features can be monitored.
<b>PERIOD OF SURVEY</b>	Three survey periods: 1945-49 (target date 1951); 1968-72 (target date 1971); 1978-82 (target date 1981).
<b>WORK CARRIED OUT</b>	1984 (March) - 1986.
<b>SURVEY METHOD</b>	Aerial photographic interpretation (API), satellite data analysis and field data collection.  API was carried out for a total of 707 sites for area features, and 104 sites for linear features.  Features were recorded using a three tier hierarchical classification based on seven major categories; linear features, small or isolated features, woodland, semi-natural vegetation, farmed land, water and wet lands and other land.  The analysis of satellite data (primarily Landsat Thematic Mapper imagery) was carried out as a census.  The interpretations based on the API and satellite imagery were supported by field observations at more than 200 sites along with detailed checking of the accuracy and reliability of the results.

## Dictionary of Land Cover Surveys & Definitions

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### GEOGRAPHICAL CHARACTERISTICS

Area of survey	England and Wales
Sampling frame	API samples were selected by stratified random sampling within two strata; soil groups and counties. For area features at least 10 sites were selected in each county and two sites within each soil stratum within each county.
Sampling unit	5 x 5 km square (approx) for area features and 12 x 12 km squares for linear features.
Recording unit	Land parcels, linear and point features.
Scale of input data	Air-photo scales from 1:3,000 to 1:60,000. Most commonly 1:10,000 to 1: 25,000.
Scale of output	1:25,000 (area features), 1:10,000 (linear features).
Resolution	Change detection based on pixels 0.25 ha in extent
Accuracy and error	Accuracy of manual image interpretation, digitising and satellite image analysis were assessed using a variety of techniques.

### DATA STORAGE/ANALYSIS

**DATA AVAILABILITY** Data available from the ESRC Data Archive

**FORMS OF OUTPUT** National and regional statistics for the various area and linear features measured. Data in the report are presented down to county level. Estimates of change in the extent of these features over the time periods of the survey.

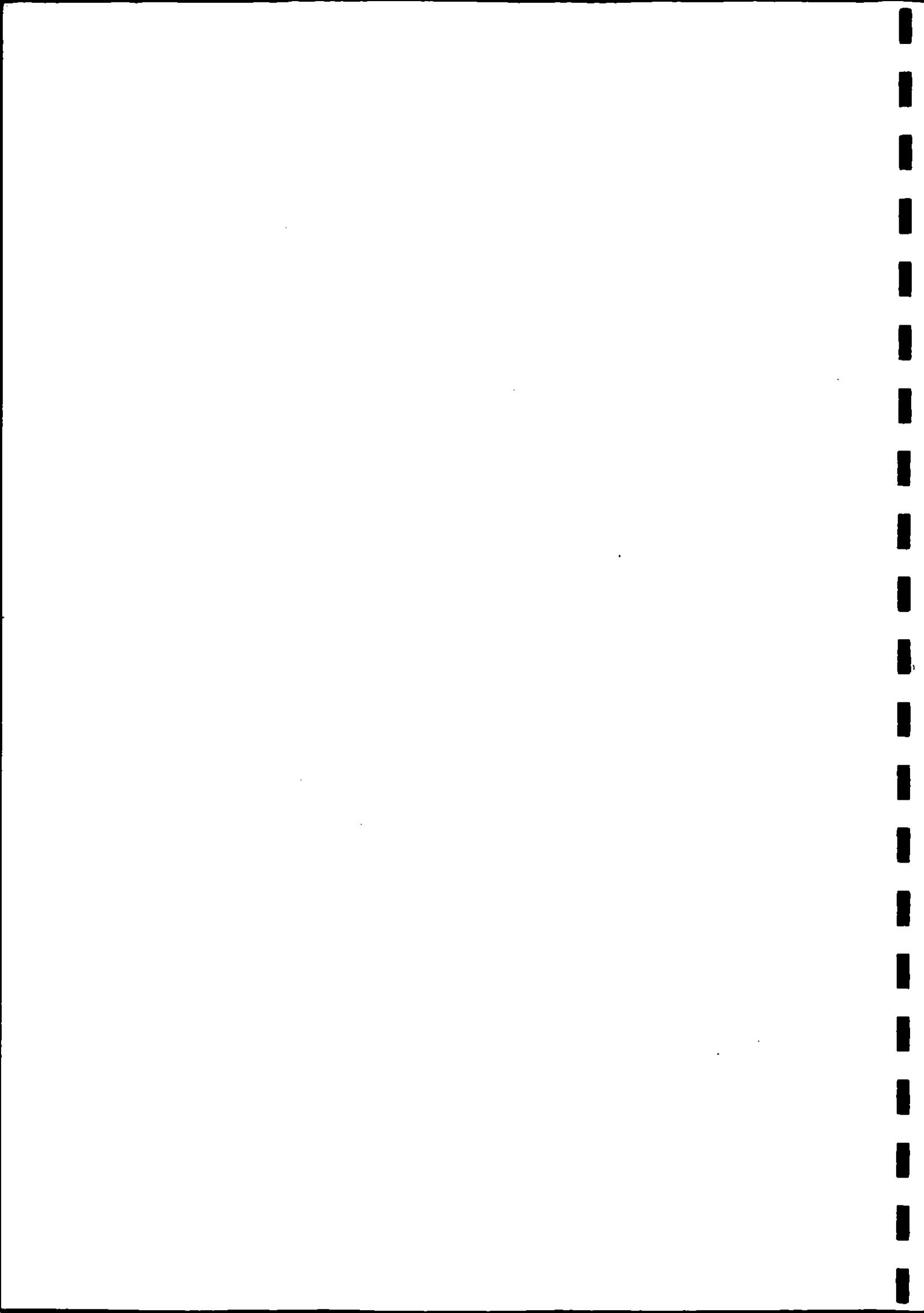
**PUBLICATION DATE(S)** 1986

## Dictionary of Land Cover Surveys & Definitions

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4

**Monitoring Landscape Change**

**Land cover/use categories and definitions**

**A LINEAR FEATURES**

**A1 HEDGEROWS**

**A2 FENCES AND INSUBSTANTIAL FIELD BOUNDARIES**

**A3 WALLS**

**A4 BANKS WITH OR WITHOUT LOW HEDGES**

**A5 OPEN DITCHES**

**A6 WOODLAND FRINGE**

**A7 URBAN BOUNDARY**

**B SMALL OR ISOLATED FEATURES**

**B1 ISOLATED TREES IN HEDGES**

**B2 ISOLATED TREES OUTSIDE HEDGEROWS**

**B3 GROUP OF TREES, MAINLY BROADLEAVED (<0.25 ha)**

**B4 GROUP OF TREES, MAINLY CONIFEROUS (<0.25 ha)**

**B5 LINEAR FEATURES**

Strips of woody vegetation <20 m width and >25 m length.

**B6 FARMLAND PONDS**

**C WOODLAND**

**C1 BROADLEAVED HIGH FOREST**

Areas of at least 0.25 ha in extent with a width of 20 m or more which are at least 20% tree covered by area and 80% of those trees are broadleaved.

**C2 CONIFEROUS HIGH FOREST**

Areas of at least 0.25 ha in extent with a width of 20 m or more, which are at least 20% tree covered by area and 80% of the trees are coniferous.

**C3 MIXED HIGH FOREST (INTIMATE MIXTURE)**

An intimate mixture of broadleaved and coniferous species where both categories occupy 20% or more of the canopy.

**C4 SCRUB**

Communities of bushes, shrubs and widely spaced trees which may be interspersed with rough grassland, bracken and heather. Contains species of low timber potential including gorse, broom, bramble, hawthorn, hazel, young birch and willow.

**D SEMI-NATURAL VEGETATION**

**D1 UPLAND HEATH**

Heathland shrub communities of ling (*Calluna*) and bell heather (*Erica*). Frequently associated with rough grassland and bilberry (*Vaccinium*) in a complex mosaic of communities on acid heathland soils, steep rocky fellsides and crags, and peat-covered moorlands. May include burnt areas resulting from management for grouse shooting.

**D1b Bilberry (*Vaccinium*)**

Subsequently amalgamated with D1a

**D2 UPLAND GRASS MOOR**

**D2a Smooth grassland; fescues/bents (*Festuca, Agrostis*)**

Upland grass moor - smooth grassland (*Fescues* and *Bents*). Smooth grassland occurs on well-drained calcareous rich upland parent materials or steep valley sides.

**D2b Coarse grassland; purple moor grass (*Molinia caerulea*)**

Upland grass moor - coarse grassland. Coarse grassland is dominated by *molinia caerulea* (purple moor grass or flying bent), and occurs on intermediate acid slopes in high rainfall areas. This category also includes Mat grass (*Nardus stricta*).

**D2c Blanket Bog**

This community includes two distinct forms, rushes (*Juncus*) and peat-forming species (cotton grasses (*Eriophorum* spp.) and *Sphagnum*). The former occupy wet flushes of ill-drained sites, whilst the latter are found on the broad upland plateaux and form part of extensive peat deposits.

**D3 BRACKEN**

**D4 LOWLAND HEATH**

**D4a Rough grassland**

Dominated by coarse grassland species. Often forms mosaic community with heather and other species on dry sites and contains scattered trees, rushes and bracken.

**D4b Heather**

Heather species on well drained soils of low fertility.

**D5 GORSE**

## Dictionary of Land Cover Surveys & Definitions

### E FARMED LAND

#### E1 CULTIVATED LAND

This category includes all ploughed and cropped land including cereals, ley grasses, legumes, field vegetables, potatoes and root crops, rape and fodder crops and commercial/industrial crops such as sugar beet.

##### E1a Ploughed/cropped land

Cereals, ley grasses, legumes.

##### E1b Market gardens

This category is characterised by very small plots of widely differing crop types within a small area, probably several crops within one "field" in contrast to large vegetable fields assigned to category E1A. Include some allotments on edges of major settlements; also nurseries, glasshouses and soft fruit farms.

##### E1c Orchards

Subsequently amalgamated with E1c.

##### E1d Hops

#### E2 GRASSLAND

##### E2a Improved pasture

Characterised by the presence of introduced species of high agricultural value eg rye grasses and clover. Weed species such as rushes, thistles and bracken are normally eradicated. Improved pastures frequently show signs of ploughing, reseeded and drainage on airphotos.

##### E2b Rough pasture

Less intensively managed permanent grassland which may result from deterioration of former improved grassland or partial upgrading of moorland. Characterised by a high density of native species and often containing invasive weed species such as bracken, bramble, thistle, rushes and scattered trees. Frequently occurs on steep slopes, poorly drained sites and soils of low fertility.

##### E2c Neglected pasture

This is an intermediate category between improved and rough pasture, and may result from the deterioration of former improved grassland or partial upgrading of moorland. Characterised by a mixture of improved and native grass species, with invasive weed species such as thistle, rushes and bracken prominent. This type of pasture is not typically cut for hay silage. The period between improvement (E2A) and degeneration to the E2C category will vary according to location and farming methods, but a time span of 5/6 years is typical. At present time much of this type of neglected pasture is under improvement, particularly in the upland margins, and is therefore returning to its former improved state.

**F**     **WATER AND WET LANDS**

**F1**     **OPEN WATER-COASTAL OR ESTUARINE**

Usually inlets mostly surrounded by land and with extensive areas of saltmarsh exposed at low water.

**F2**     **OPEN WATER-INLAND (NOT RIVERS)**

Reservoirs and lakes but not rivers.

**F3**     **WETLAND VEGETATION**

**F3a**     **Peat bog (valley raised moss)**

Localised occurrence in valley bottoms and enclosed drainage basins. To include the "carr"s of East Anglia and "mosses" of Lancashire.

**F3b**     **Freshwater marsh (reed swamp)**

**F3c**     **Saltmarsh**

Estuarine/coastal location.

**G**     **OTHER LAND**

**G1**     **NON-VEGETATED PEAT**

Upland eroded sites, eg parts of N York moors (subsequently amalgamated with F3a).

**G2**     **BARE ROCK**

**G3**     **SAND**

Dunes, dune slack, shingle.

**G4**     **DEVELOPED LAND**

**G4a**     **Built-up land**

Includes settlements of all sizes, factories, utilities, and farm buildings. In residential areas also includes gardens.

**G4b**     **Urban open space**

Golf courses, playing fields, zoos, parks and cemeteries. "Parkland" on country estates would be included as grassland.

**G4c**     **Transport routes**

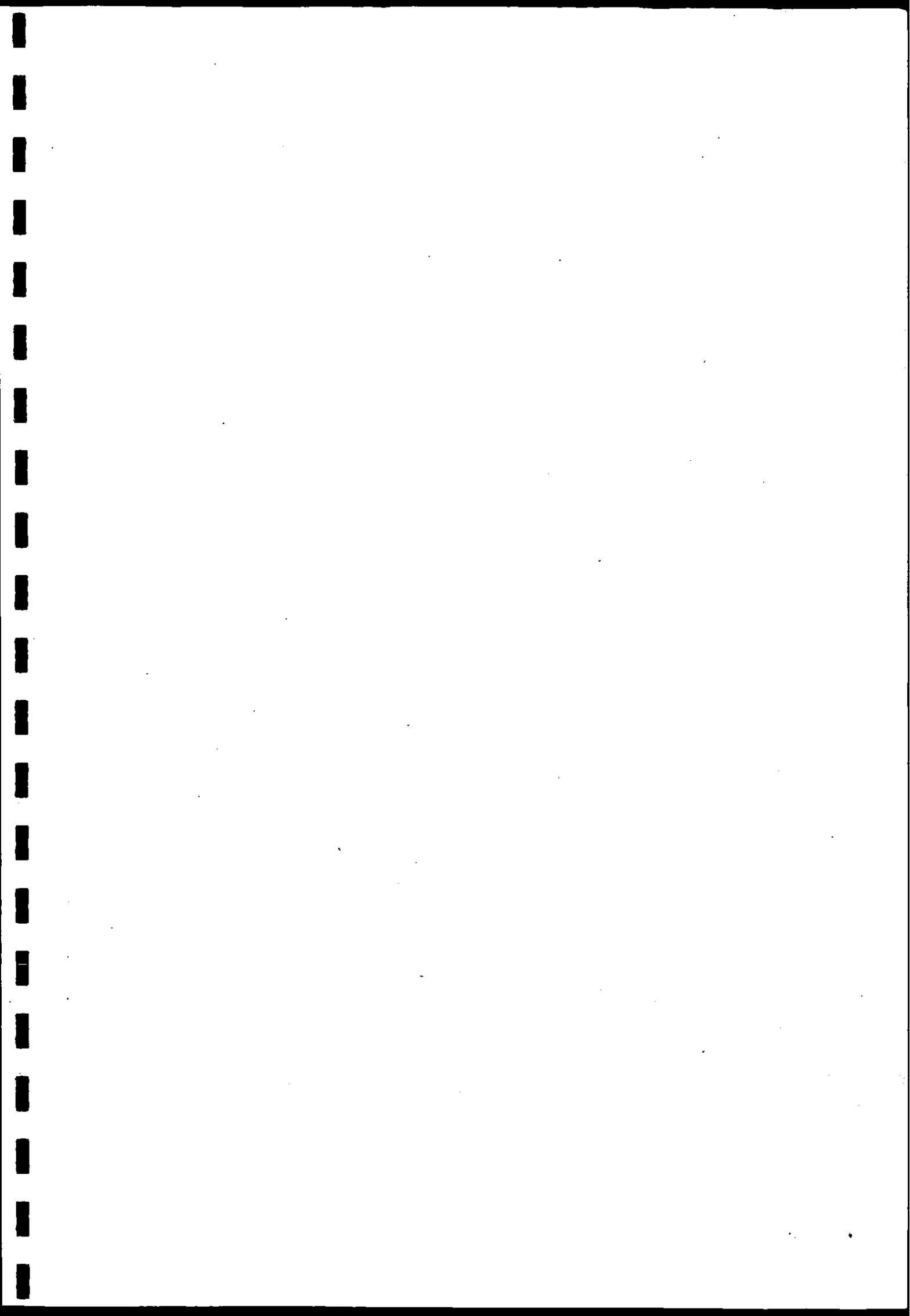
Major roads and railways (including goods yards) and airports.

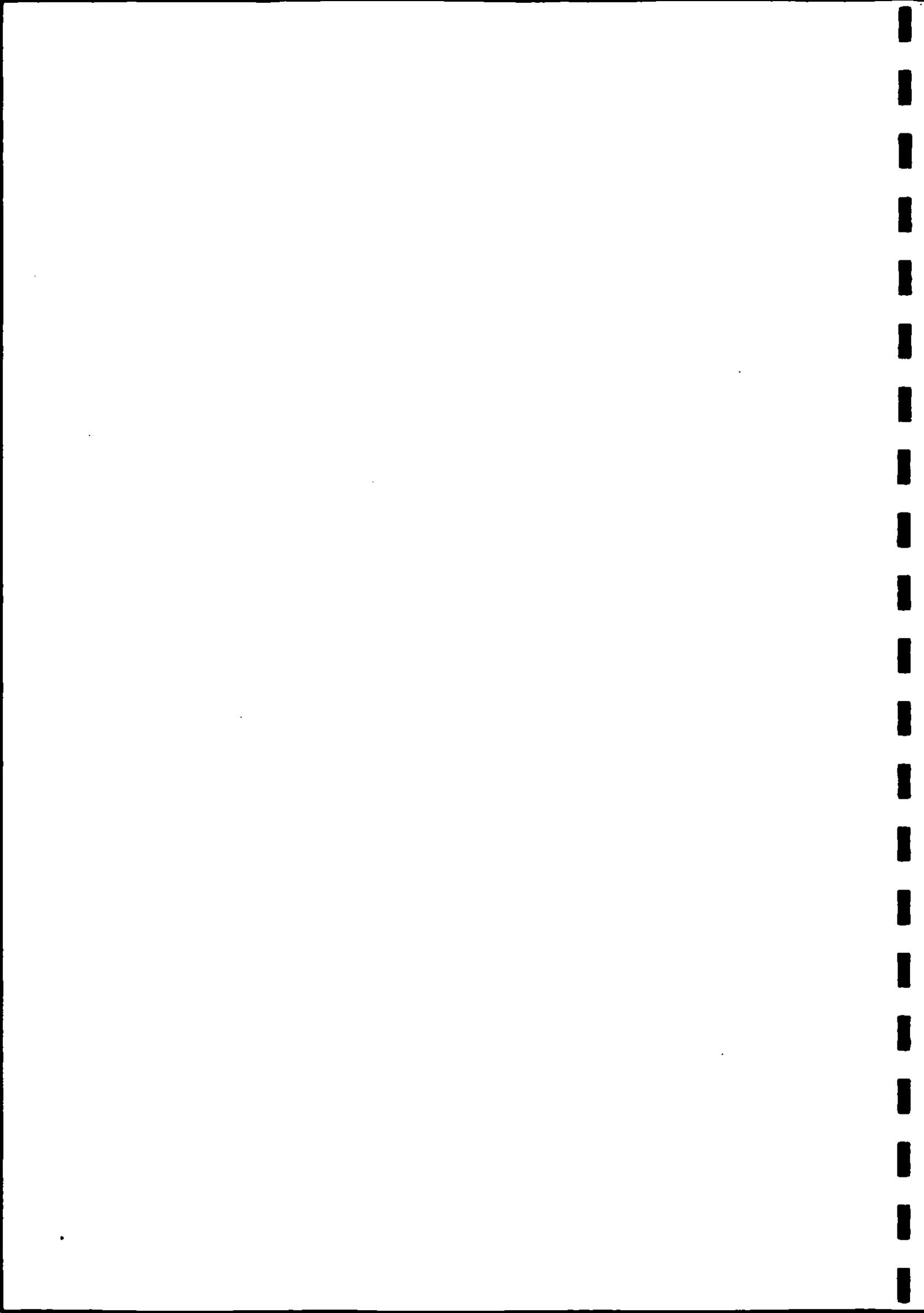
**G4d**     **Quarries mineral workings**

Open cast mining for stone, coal, minerals and gravel.

**G4e**     **Derelict land**

Disused industrial sites and abandoned mineral workings, public waste tips.





## Dictionary of Land Cover Surveys & Definitions

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<b>SURVEY NUMBER</b>	5
<b>NAME OF SURVEY</b>	NATIONAL COUNTRYSIDE MONITORING SCHEME (Scotland)
<b>COMMISSIONING AGENT</b>	SCOTTISH NATURAL HERITAGE
<b>EXECUTING AGENT</b>	SCOTTISH NATURAL HERITAGE
<b>CONTACT</b>	Scottish Natural Heritage Research and Advisory Services 2/5 Anderson Place EDINBURGH EH6 5NP  Tel: Edinburgh (031) 554 9797 Fax: .. 031 554 7900  Present contact: Dr. Gavin Tudor. Environmental Audit Unit.
<b>OBJECTIVES</b>	To establish a standard, technically robust system for providing quantitative data on the distribution and extent of defined structural components of the rural landscape. This is used to measure changes in 32 areal and 5 linear features which have occurred from the immediate post-war period to the present day, and to follow future trends as they occur. Importance is placed on obtaining data about changes in the countryside that are comprehensive, covering all the main rural land cover and land uses with the emphasis on natural and semi-natural wildlife habitats.
<b>PERIOD OF SURVEY</b>	Three survey periods: 1947, 1973 and 1989 (target dates).
<b>WORK CARRIED OUT</b>	1983 - continuing
<b>SURVEY METHOD</b>	Aerial photographic interpretation (API) supplemented by field checking. Samples were selected by stratified random sampling within each Scottish Region/District.  The total area of each of the features sampled within each stratum is weighted according to the relative extent of the stratum in each District of the Region. The weighted estimates are then combined to provide an overall estimate for each land type and also for the whole Region.

## Dictionary of Land Cover Surveys & Definitions

### GEOGRAPHICAL CHARACTERISTICS

Area of survey	Scotland.
Sampling frame	Sampling was carried out on a Region/District basis and further stratified by broad land types; usually upland, lowland, intermediate, and urban, derived from land cover, as represented by the spectral characteristics recorded in remote sensing satellite imagery. Each 5 x 5 km square of a region (based on the Ordnance Survey grid) was allocated to its appropriate land type on the basis of the predominant land class of the 25 individual 1 x 1 km squares from which it was composed.
Sampling unit	5 x 5 km squares. Data were recorded separately for each 1 km square of the sample 5 x 5 km squares.
Recording unit	Area and linear features
Scale of input data	Variable. 1940's: 1:10,000 - 1:26,000; 1970's: 1:25,500 - 32,000, 1980's: 1:24,000.
Scale of output	1:10,000 scale OS based maps
Resolution	0.1 ha
Accuracy and error	The principal criterion adopted was that a net change of 10% or more in extent of the major feature types would be detected with 95% confidence. A sample of 10% of the total area of the Regions surveyed was found to be sufficient to reduce standard errors to the required level for most of these features. No estimates for areas totalling <5 km <sup>2</sup> have been calculated with 95% confidence because of the small areas covered by these features.

### DATA STORAGE/ANALYSIS

Land cover data were captured digitally using a photogrammetric plotter and digitising tablets. Digital mapping and statistical software, written specifically for the project and run on PC's, was used to analyse the data for Phase I. Phase II data are being captured and analysed using an Intergraph GIS system.

### DATA AVAILABILITY

### FORMS OF OUTPUT

Estimates of Regional totals for the various landscape and land cover features measured, and estimates of change in these features over the period of the survey.

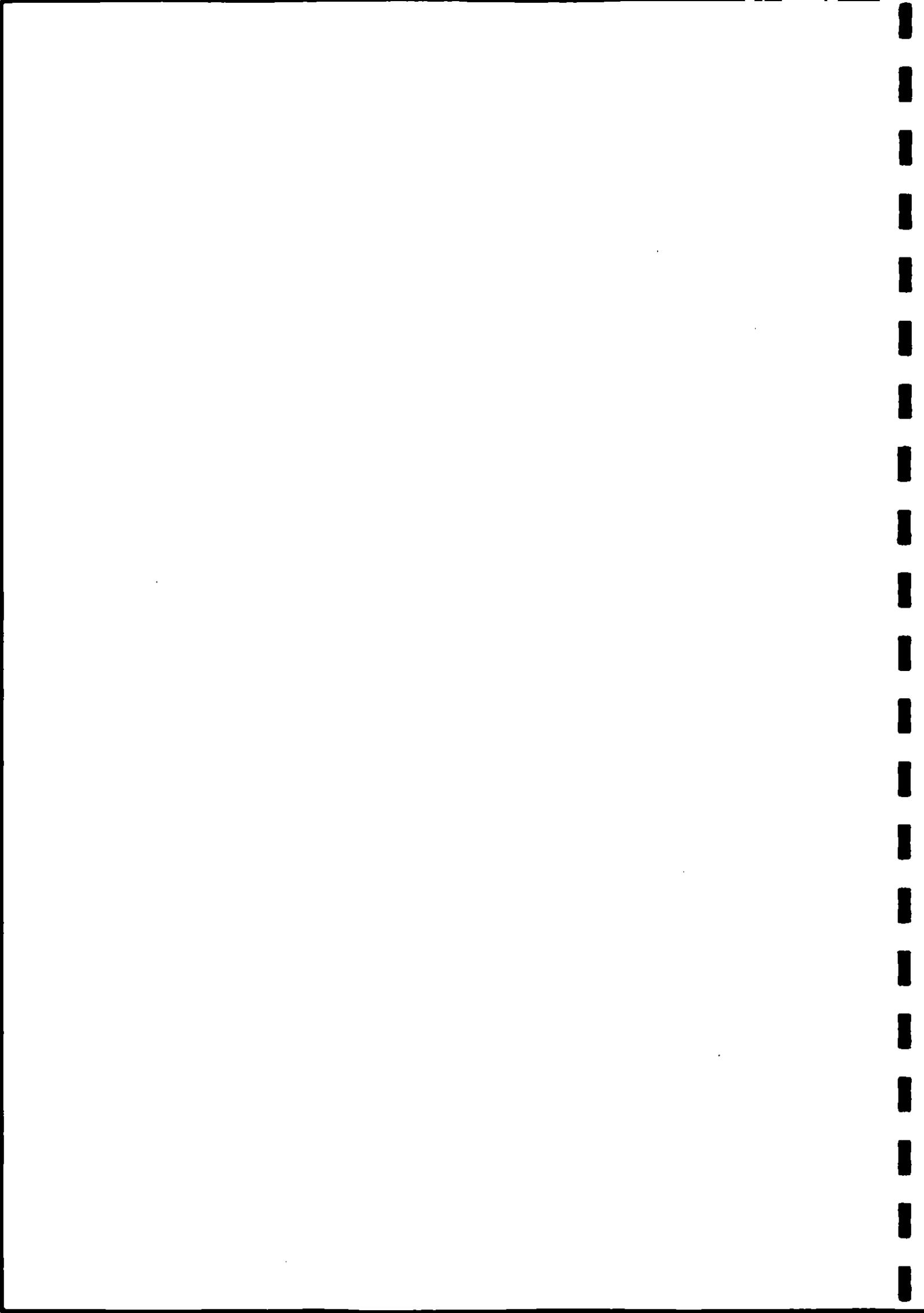
### PUBLICATION DATE(S)

## Dictionary of Land Cover Surveys & Definitions

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**5 National Countryside Monitoring Scheme**  
**Land cover/use categories and definitions**

**1 LINEAR FEATURES**

**1.1 HEDGEROW**

Hedgerow <4 m high. Classified as continuous if gaps are <10 m wide. Maximum width is 5 m. Hedgerows may contain isolated trees.

**1.1.1 Hedgerow without trees**

**1.1.2 Treeline, including hedgerow with trees**

Line of single trees (minimum of three) >4 m high and less than two canopy widths apart. Hedges may be associated with treelines.

**1.2 WATER**

**1.2.1 Running natural water**

Running water having a width <10 m and no evidence of canalization.

**1.2.2 Running canalised water**

Canalised water with a width of <10 m.

**1.3 UNSURFACED VEHICULAR TRACKS**

Unsurfaced routeways <3 m wide, but constructed to be wide enough for use by wheeled vehicles and showing signs of such use.

**2 AREA FEATURES**

**2.1 WOODLAND**

**2.1.1 Semi-natural broadleaved woodland**

More than 50% broadleaved woodland with a tree height >5 m, with semi-natural/natural growth.

**2.1.2 Broadleaved plantation**

More than 50% planted broadleaved trees. Species not native to the site and of even age.

**2.1.3 Semi-natural coniferous woodland**

More than 50% coniferous woodland of any height, with semi-natural/natural patterns of growth and distribution.

**2.1.4 Coniferous plantation**

More than 50% planted coniferous trees.

**2.1.5 Mixed woodland**

More than 25% broadleaved and more than 25% coniferous woodland, of planted or semi-natural origin. If the blocks or lines of coniferous or broadleaved trees exceed two trees in width they are recorded as separate feature types.

## Dictionary of Land Cover Surveys & Definitions

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### 2.1.6 Young plantation

Young trees both coniferous and broadleaved which have been planted. Height of trees up to 3 m.

### 2.1.7 Recently felled woodland

Area for which there is evidence that woodland has been felled recently, eg trees stumps/felled trees.

## 2.2 PARKLAND

Group of isolated trees, the majority of trees being separated by at least one canopy width (30 m) and <70 m. Minimum of two trees per hectare. Minimum number of trees ten. Includes coniferous and broadleaved trees. Tree cover must be <30%.

## 2.3 ORCHARD

An arrangement of broadleaved trees for the purposes of cultivated fruit production which form a distinct block and usually display a highly organised (often grid) pattern.

## 2.4 SCRUB

### 2.4.1 Scrub, tall

Between 3 and 5 m in height and can have a closed canopy. Stands <5 m tall are classified as woodland rather than scrub when composed mostly of tree species (i.e. >50% immature canopy cover).

### 2.4.2 Scrub, low

Scrub species with no distinct canopy and vegetation <3 m tall.

## 2.5 BRACKEN

Land dominated by bracken with at least 75% cover.

## 2.6 HEATHER MOORLAND

Areas with >25% dwarf shrubs. Burnt patches are included as dwarf shrub heath if there is sufficient evidence they will regenerate.

## 2.7 MIRE

### 2.7.1 Blanket mire - heather dominated

Peat to a depth of >0.5 m. Open treeless moorland characterised by "hummock - hollow" morphology and peat hags. Surface vegetation dominated by heather species.

### 2.7.2 Grass dominated blanket mire

As for heather dominated blanket mire except that surface vegetation is dominated by grass and sedge species.

### 2.7.3 Lowland raised mire

Peat, >0.5 m, formed into a shallow dome of ombrotrophic bog.

## 2.8 WET GROUND

Areas of wet land found in association with other habitats, for example wet areas in a grassland field or flushes in upland areas.

**2.9 MARGINAL INUNDATION**

Swamp/fen, excluding coastal marsh. Also includes areas of regular inundation.

**2.10 OPEN WATER**

**2.10.1 Standing natural water**

Areas of open inland water where there is no evidence of damming.

**2.10.2 Standing man-made water**

Reservoirs and impoundments which have been artificially created.

**2.10.3 Running natural water**

Running water having a width >10 m and no evidence of canalization.

**2.10.4 Running canalised water**

Canalised water with a width of >10 m.

**2.11 GRASSLAND**

**2.11.1 Unimproved grassland**

Grassland which is regularly grazed or mown but may be neglected. It may be treated with a farm manure, but has not been improved by the application of fertilisers or herbicides so as to significantly alter the sward composition.

**2.11.2 Semi-improved grassland**

Includes those fields or areas of grassland which have been slightly modified by fertiliser or herbicide application or perhaps by heavy grazing pressure and/or drainage.

**2.11.3 Improved grassland**

Grassland that has had regular treatment of artificial fertilisers and/or herbicides and has been reseeded. Does not include monoculture grassland i.e. grassland ley.

**2.12 ARABLE**

All classes of arable crops including grassland ley and horticulture.

**2.13 BARE ROCK AND SOIL**

**2.13.1 Unquarried inland cliff and rock outcrop**

Unvegetated rock (or other mineral substrate) >2 m in height and at an angle of at least 60°. Includes scree.

**2.13.2 Quarries and open-cast mines**

Any artificial excavation (i.e. gravel pits, chalk pits, etc). Includes unvegetated spoil heaps. (If vegetated should be classified according to cover).

**2.13.3 Other bare ground**

Bare soil or ground excluding cliffs, rock outcrops, quarries and land under agricultural rotation.

**2.14 BUILT LAND**

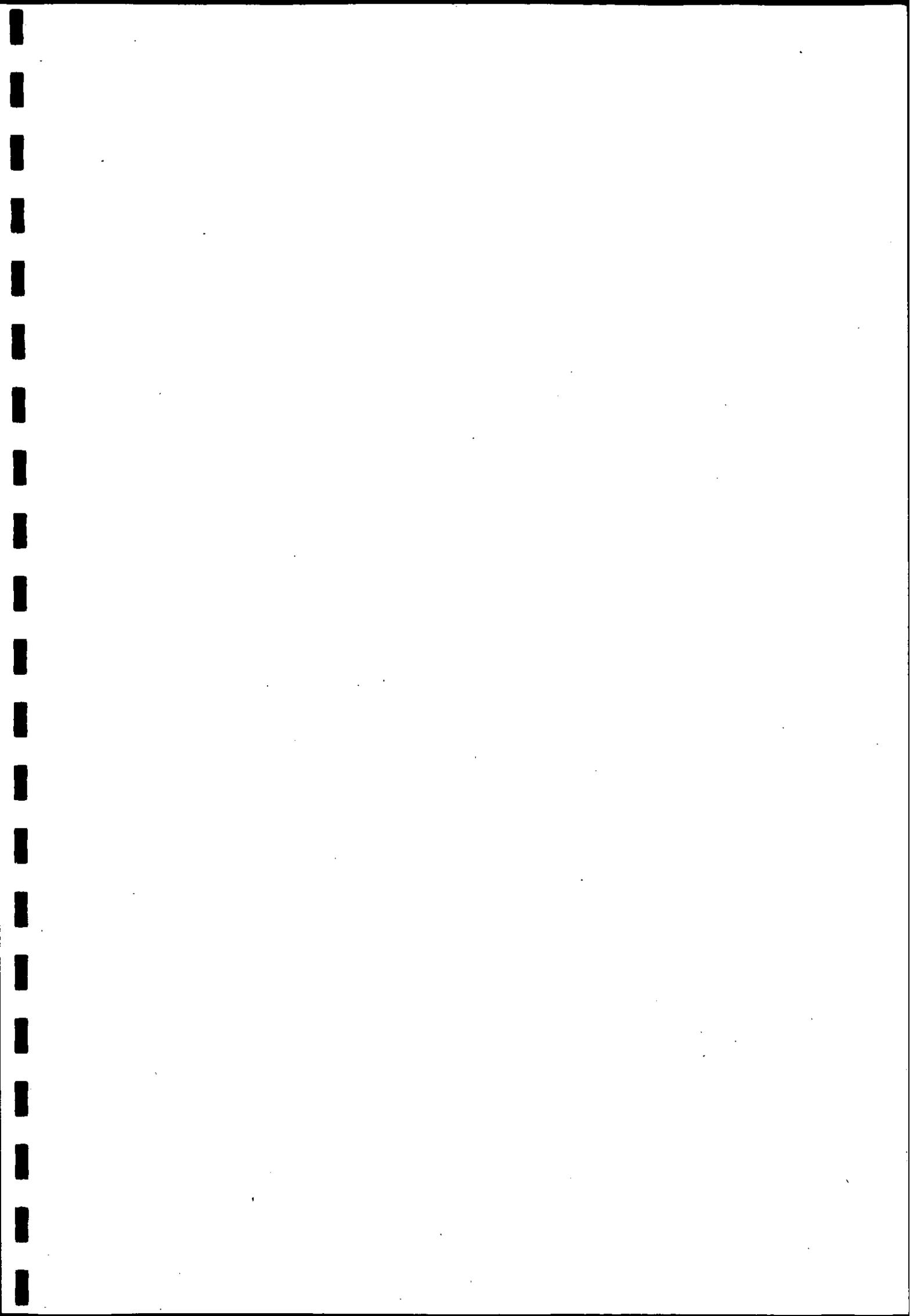
Any urban area, including gardens, parks, golf courses and transport corridors which are totally enclosed by built development. Outside urban areas, individual buildings are included.

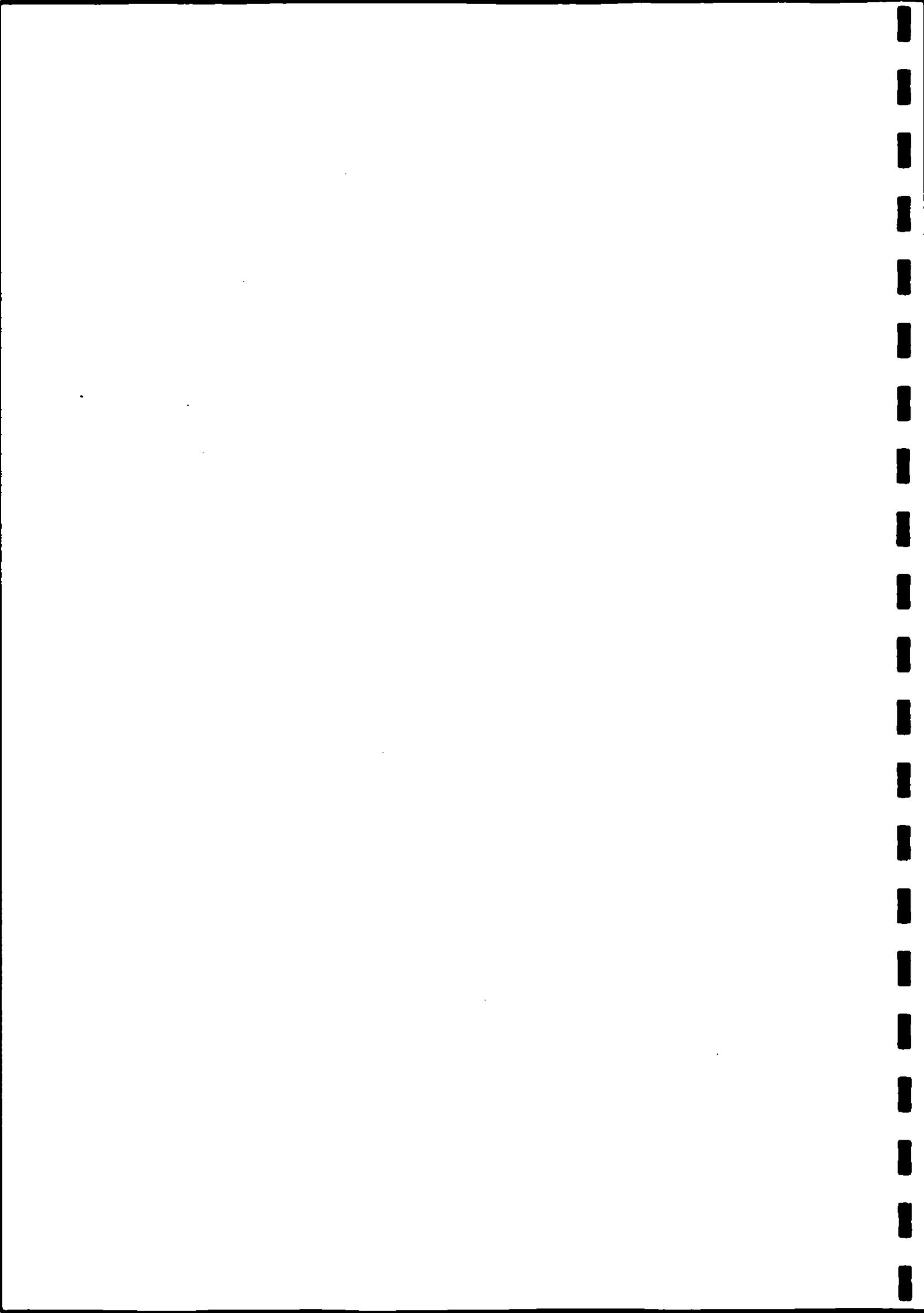
**2.15 TRANSPORT CORRIDOR**

Metalled roads or railways >3 m wide and outside of built-up areas. Includes features such as overbridges, carriageways, hard shoulders, central reservations and cuttings (where unvegetated).

**2.16 RECREATIONAL LAND**

Land which is in formal recreational use; occurring in the countryside, normally adjacent to built development. Includes sports fields, playing fields, golf courses, camping and caravan sites, ski runs and motorcycle circuits.





## Dictionary of Land Cover Surveys & Definitions

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<b>SURVEY NUMBER</b>	6
<b>NAME OF SURVEY</b>	LAND COVER OF SCOTLAND
<b>COMMISSIONING AGENT</b>	SCOTTISH OFFICE. Scottish Office Environment Department (SOEnD); Scottish Office Agriculture and Fisheries Department (SOAFD).
<b>EXECUTING AGENT</b>	THE MACAULAY LAND USE RESEARCH INSTITUTE
<b>CONTACT</b>	Head, Computing and Information Services, Land Use Division, Macaulay Land Use Research Institute, Craigiebuckler, ABERDEEN. AB9 2QJ.  Tel: Aberdeen (0224) 318611.  Present contact: Dr. C.H. Osman.
<b>OBJECTIVES</b>	To provide baseline information on land cover for the whole of Scotland to enable both prospective and retrospective studies of land cover/environmental change, and to provide a basic land cover inventory.  To provide this information in the form of a high spatial resolution digital dataset for input to proprietary Geographic Information System facilities.
<b>PERIOD OF SURVEY</b>	
Start	1987
End	1992
	(note: specially commissioned aerial photography mainly flown in 1988; interpretation and digitising 1989-92).
<b>SURVEY METHOD</b>	API - interpretation of 1:24,000 panchromatic aerial photography onto acetate overlays transferred to 1:25,000 O/S Pathfinder bases. A hierarchical land cover classification was used, with 6 principal features (farms and developed rural land; bare ground; miscellaneous features e.g. built-up land; woodland; agricultural land; semi-natural ground vegetation) 127 classes with additional 2 class mosaics. Maps were digitised using TYDAC SPANS. Photointerpretations were validated against ground survey of 702 1km x 1km squares within a stratified random sampling scheme.

## Dictionary of Land Cover Surveys & Definitions

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### GEOGRAPHICAL CHARACTERISTICS

Area of survey	Scotland
Sampling frame	Complete census
Sampling unit	Complete census
Recording unit	Land parcels, linear features and points.
Scale of input data	1:24,000.
Scale of output	1:25,000 (vector) 10 m, 20 m and 50 m raster.
Resolution	Points: 10 m minimum size Lines: 15 m minimum size Polygons: >2 ha - woodland >5 ha - built-up land >10 ha semi-natural land
Accuracy and error	Mapping accuracy to +/-0.1 mm locational resolution.

### DATA STORAGE/ANALYSIS

Data stored and manipulated within the Macaulay Land Use Information System using SPANS, ARC-INFO and ERDAS software. In raster form, variants are held separately at 10 m, 20 m and 50 m resolutions.

Export formats offered include:  
SPANS/TYDIG vector (VEC/VEH)  
DXF (vector)  
TIFF (raster) 20 m or 50 m  
ARC/INFO (coming)

Geographical referencing is by means of the GB National Grid.

### DATA AVAILABILITY

### FORMS OF OUTPUT

Statistical summaries of land cover of Scotland by Region/District.  
Digital cartographic datasets.

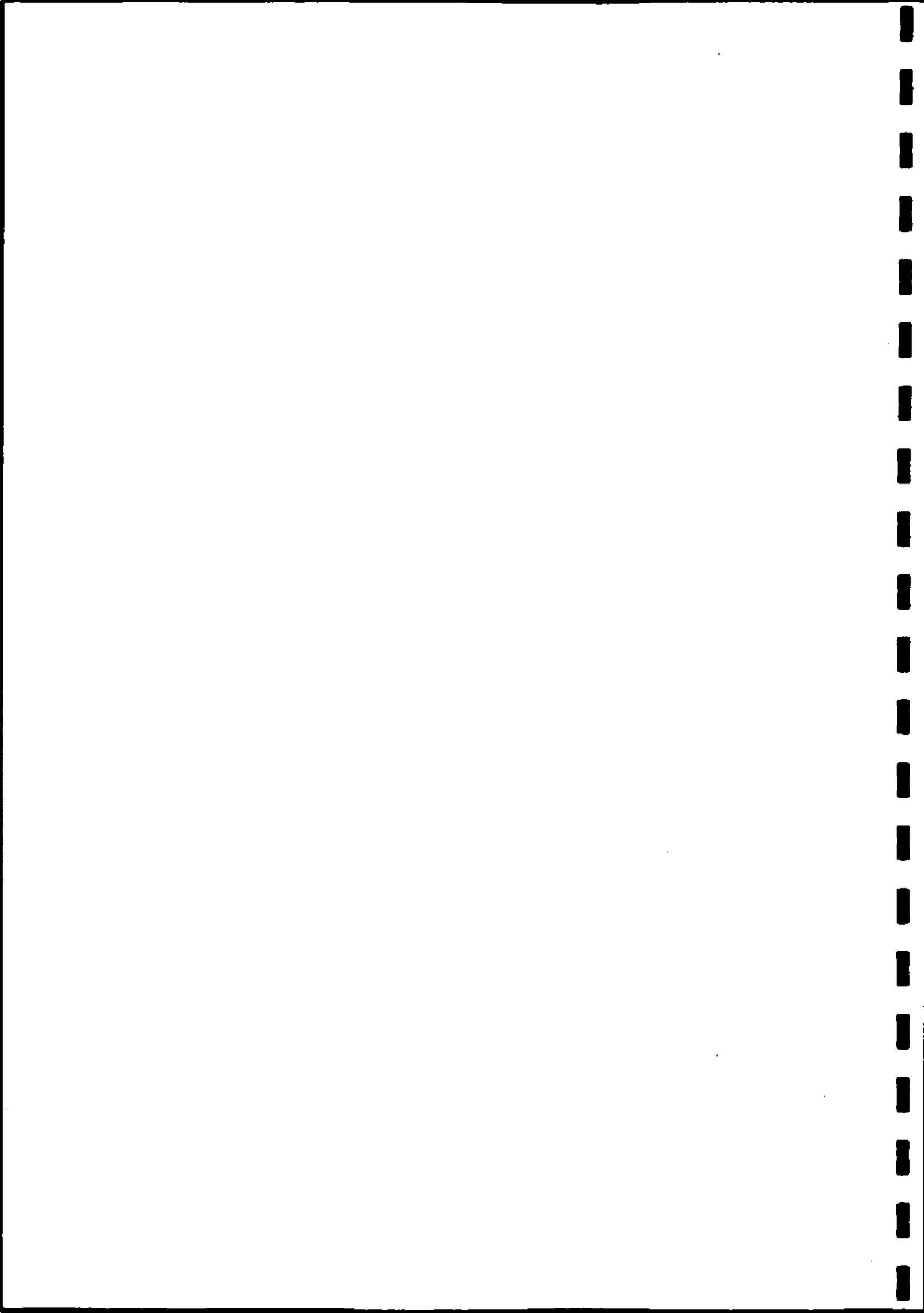
### PUBLICATION DATE(S)

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**The Land Cover of Scotland**

**Land cover/use categories and definitions**

**1. FARMS AND DEVELOPED RURAL LAND**

**1.1 ISOLATED FARMS AND OTHER BUILDINGS**

Farms, farm cottages, residences or other buildings in the countryside not contiguous with or part of built-up areas. The upper limit for the area of groups of farm buildings is 5 ha. Buildings with associated trees are recorded as points (code for with trees, another for without) but if trees occupy more than 2 ha they are mapped separately as woodland.

**1.2 MISCELLANEOUS DEVELOPED FEATURES**

**1.2.1 Factories**

**1.2.2 Airfields**

Airfields, both in current use or abandoned.

**1.2.3 Golf Courses**

**1.2.4 Cemeteries**

**1.2.5 Recreational Land**

Wildlife parks, caravan sites etc.

**2 BARE GROUND**

Land surfaces without significant vegetation cover, other than developed land.

**2.1 CLIFF, CRAGS AND SCREE**

Large areas of rock or scree with little vegetation and not forming part of a pattern of rocky ground. Areas >2 ha are mapped, those <2 ha are recorded as linear features.

**2.2 QUARRIES AND OPENCAST**

Includes quarries and gravel pits, both active and abandoned, but very small grassed over depressions often represented on OS maps as "gravel pits" are excluded. Areas >2 ha are mapped, smaller pits are represented as points.

**2.3 BINGS AND REFUSE TIPS**

Comprises large heaps of mining and industrial spoil with little vegetation cover. Areas >2 ha are mapped, smaller areas are represented as points.

**2.4 PATHS**

Lines of well marked paths in areas of semi-natural vegetation which are discernible on airphotos.

**2.5 HILL ROADS**

Lines of un-metalled hill roads or tracks passable by vehicles or carts in hill and upland areas of semi-natural vegetation beyond the "head dyke" of improved pasture. This category excludes forestry roads.

**2.6 WATER**

Areas of open fresh water, including lochs and reservoirs of >2 ha are mapped with smaller bodies of water recorded as points. Rivers more than 50 m in width are also mapped up to N.T.L.

**3 MISCELLANEOUS FEATURES**

**3.1 BUILT-UP LAND**

Land surfaces occupied by houses or other buildings and occupying areas >5 ha. Small villages, occupying <5 ha, or lines of contiguous houses are also mapped.

**3.2 TRANSPORT FEATURES IN A RURAL CONTEXT**

**3.2.1 Road**

Motorway intersections, large roundabouts and other road transport-related features >2 ha are mapped.

**3.2.2 Rail**

Railway junctions, marshalling yards and other rail transport-related features >2 ha are mapped.

**3.3 SNOW-OBSCURED AREAS**

Areas covered, or predominantly covered, with snow at time of survey.

**3.4 SKI TOWS**

**4 WOODLAND**

Areas having greater than 50% cover by tree crowns. Where trees cover less than 50% of an area they are classified with the underlying ground cover as a category with scattered trees. Lines of trees and small patches of woodland are included as linear and point features respectively, but individual trees are not recorded.

**4.1 CONIFEROUS WOODS**

**4.1.1 Plantations**

Plantations of coniferous species with trees in regular rows and having clearly defined edges.

**4.1.2 Seminatural**

Seminatural coniferous woodlands are not extensive and consist principally of mature Scots pine (*Pinus sylvestris*) as in the remnants of the former Caledonian Forest.

**4.2 BROADLEAVED WOODS**

Woodland in which broadleaved species are dominant. The category includes tall scrub, such as birch, alder or willow.

**4.3 MIXED WOODS**

Woods comprising an intimate mixture of broadleaved and coniferous trees with at least 20% of each type.

**4.4 UNDIFFERENTIATED LOW SCRUB**

Occurring mainly on steep slopes or in rugged terrain on brown forest soils or humus-iron podzols, the principal forms consist of gorse (*Ulex europaeus*), broom (*Sarothamnus scoparius*) or occasionally juniper (*Juniperus communis*) giving more than 50% ground cover. Gorse or broom are rarely more than 2 m in height and have an irregular clumped distribution. Frequently, however, this vegetation occurs as small scattered clumps with less than 50% cover and forms an element as scattered low scrub in a category of indigenous ground vegetation or improved pasture. Furthermore this feature can be confused with smooth grassland, low scrub and scattered trees.

**4.5 RHODODENDRON SCRUB**

Rhododendrons, generally more than 2 m in height.

**4.6 MANAGEMENT FEATURES**

**4.6.1 Recently Ploughed Land**

Land recently ploughed in preparation for tree planting; includes all ploughed land of this type in which young trees cannot be discerned.

**4.6.2 Former Woodland Recently Felled / Open Canopy Young Plantation**

A high proportion of woodland felling is the harvesting of trees from coniferous plantations, when after a brief lapse of time the felled areas are replanted. This category encompasses areas of 2 ha or more where woodland has been felled within a few years and evidence of replanted trees cannot be seen. Areas of windblow are included in this category, but former woodland cleared some years previously and now having a re-established ground vegetation, is excluded.

Open canopy young woodland, encompasses mainly coniferous plantation, between the stages of ground preparation by ploughing when no trees are evident and when the canopy of the developing wood closes.

**5 AGRICULTURAL LAND**

**5.1 IMPROVED PASTURE**

Improved pastures have species of grass and clover of high palatability and grazing value and are generally established by reseeding and maintained by grazing control and use of lime and fertilisers. These latter measures can, if followed over a period of time, achieve effects on semi-natural grassland similar to those of reseeding. The land is generally enclosed by walls, fences or hedges and pastures may be used for hay or silage. Permanent and long-ley grassland broken up only infrequently for break crops and renewal is in this category. Subcategories with rock outcrops, scattered farms and trees are recognised.

**5.2 ARABLE LAND**

This category comprises land farmed in a rotation of arable crops and short-ley grassland. Crops include cereals, potatoes, root crops, field vegetables, oil seed rape, field soft fruits and fodder crops. Subcategories with rock outcrops, scattered farms and trees are recognised.

**6 SEMINATURAL GROUND VEGETATION**

**6.1 HEATHER AND DWARF SHRUB HEATHLAND**

**6.1.1 Dry Heather Moor**

Areas with strongly dominant dense heather with few grasses; the vegetation includes boreal heather moor and Atlantic heather moor, principally the dry Atlantic heather moor subassociation, with the most heather rich examples of moist Atlantic heather moor. The category is most widespread in eastern areas, particularly on hillslopes within the Grampians and Southern Uplands. It is often intergradational with Wet Heather Moor (6.1.2) and Undifferentiated Heather Moor (6.1.3) categories. Also included within this feature are extensive areas of blaeberry heath, characteristic of steep hillsides or areas of stabilised scree.

**6.1.2 Wet Heather Moor**

Dwarf ericaceous shrubs are abundant, but notable admixtures of grasses or other species are present; the vegetation includes moist Atlantic heather moor and bog heather moor. The category is most common in western and northern hill areas. The category can be intergradational with Dry Heather Moor (6.1.1), Undifferentiated Heather Moor (6.1.3), Undifferentiated Coarse Grassland (6.2) or Blanket Bog (6.4).

**6.1.3 Undifferentiated Heather Moor**

Areas intermediate in character between dry and wet heather moors, having dominant heather with a variable admixture of coarse grasses; the vegetation includes Atlantic heather moors, bog heather moors and boreal heather moors. Intergradations to Dry and Wet Heather Moors (6.1.1, 6.1.2), Undifferentiated Coarse Grasslands (6.2) and Blanket Bog (6.4) occur.

**6.2 UNDIFFERENTIATED COARSE GRASSLANDS**

Flying bent (*Molinia caerulea*) or white bent (*Nardus stricta*) predominate and plant communities include common white bent grassland and flying bent grassland with some bog myrtle (*Myrica gale*) present in western areas. The category occurs mainly in the hills with flying bent predominant on wet soils in western areas and white bent more evident on drier soils in the east. The main intergradational forms are with Heather Moors (6.1) and Blanket Bog (6.4).

**6.3 SMOOTH GRASSLANDS**

**6.3.1 Smooth Grasslands with Rushes**

Areas with rushes, principally the sharp-flowered rush pasture community, having sharp-flowered rush (*Juncus acutiflorus*), Yorkshire fog (*Holcus lanatus*), sweet vernal (*Anthoxanthum odoratum*) and sheep's fescue (*Festuca ovina*) as common species. Some areas with soft rush (*Juncus effusus*) and other rush species are included also. The category occurs mainly on noncalcareous gleys on hillslopes, which are often concave, in the west and south-west of Scotland. Patterns of ditches are often characteristic.

## Dictionary of Land Cover Surveys & Definitions

### 6.3.2 Smooth Grasslands with Low Scrub

Areas with common bent (*Agrostis tenuis*), sheep fescue (*Festuca ovina*) and sweet vernal (*Anthoxanthum odoratum*) together with gorse (*Ulex europaeus*) or broom (*Cytisus scoparius*) scrub forming less than 50% cover. It occurs principally in rugged landscapes with rock outcrops. Can grade into Low Scrub (4.4) or broadleaf woodlands (4.2).

### 6.3.3 Undifferentiated Smooth Grasslands

Principally areas with bent-fescue grassland communities on rugged terrain or narrow stream channels. Includes also some areas of meadow-grass - bent pasture. Can intergrade with Undifferentiated Coarse Grasslands, (6.2), particularly mat-grass areas. Is often associated with bracken.

### 6.3.4 Undifferentiated Bracken

Areas dominated by bracken (*Pteridium aquilinum*) forming greater than 50% ground cover.

## 6.4 BLANKET BOG AND OTHER PEATLAND VEGETATION

This category includes the vegetation of blanket bogs on hills and uplands and raised bogs of the lowlands. Blanket bog and bog heather moor are the principal plant communities, with heather (*Calluna vulgaris*), bog heather (*Erica tetralix*), cotton grasses (*Eriophorum* spp.) deer-grass (*Trichophorum cespitosum*), flying bent (*Molinia caerulea*) and bog mosses (*Sphagnum* spp.) the predominant species. Scattered trees giving less than 50% ground cover can occur on some lowland bogs reflecting the stage of development and areas with dubh lochans are included. This category can be gradational to Undifferentiated Coarse Grassland (6.2) or Wet Heather Moor (6.1.2).

## 6.5 UNDIFFERENTIATED SALT MARSH

This very specialised distinctive category is restricted to coasts generally in estuaries where it occurs below the high water mark or ordinary spring tides on saline alluvial soils. The wide range of sea water tolerant plants include glasswort (*Salicornia dolichostachya*), sea poa (*Puccinellia maritima*), mud rush (*Juncus gerardii*), narrow club rush (*Blasmus rufus*) and sea lavender (*Limonium humile*).

## 6.6 MARITIME GRASSLAND

Grassland on cliff fringes affected by salt-spray (common in Northern Isles and the north coast of mainland Scotland and the Hebrides).

## 6.7 WET LANDS

Land with water-tables at or near the surface for most of the year, that is generally lowlying and is frequently in association with stretches of open water. The range of vegetation is very wide and can include reedgrass (*Phalaris arundinacea*), yellow flag (*Iris pseudacorus*), reeds (*Phragmites communis*), meadow-sweet (*Filipendula ulmaria*), great reed mace (*Typha latifolia*) and marsh marigold (*Caltha palustris*). Some scattered willow (*Salix* spp.) and alder (*Alnus glutinosa*) can be present also. Large ditches are distinguished readily and ditched wetlands will be recorded.

**6.8 DUNE LANDS**

Areas of windblown sands, generally near coasts and having distinctive, though varied dune landforms.

**6.8.1 Bare Dunes**

Dunes lacking vegetation cover

**6.8.2 Partially Stabilised Dunes**

Dunes partially stabilised by grass, principally marram grass (*Ammophila arenaria*).

**6.8.3 Links with Grassland**

Stabilised links areas, generally low dunes with grassland, including plants such as fescues (*Festuca* spp.) eyebrights (*Euphrasia* spp.) and lady's bedstraw (*Galium verum*).

**6.8.4 Links with Heathland**

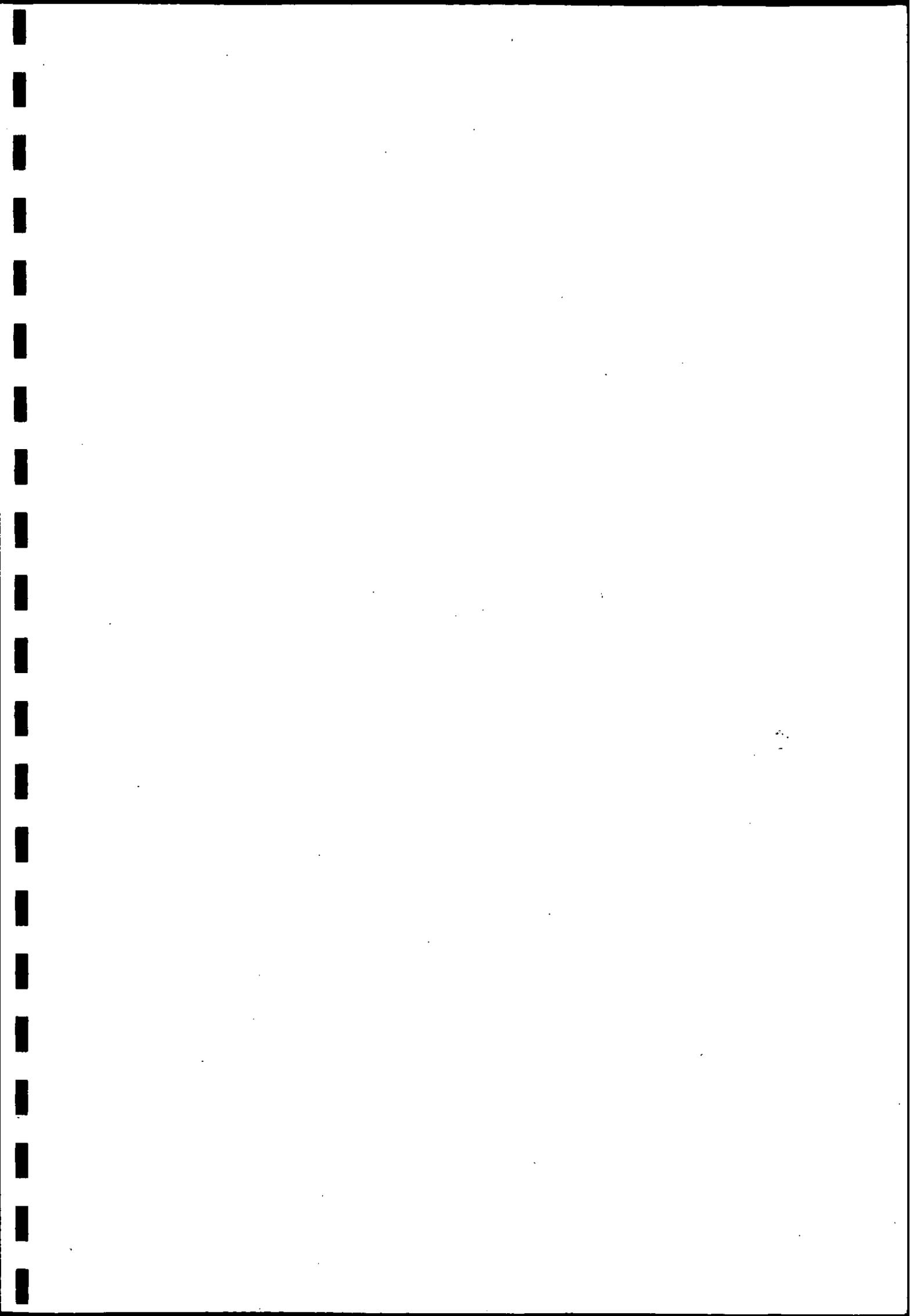
Stabilised links areas with heather (*Calluna vulgaris*) dominant.

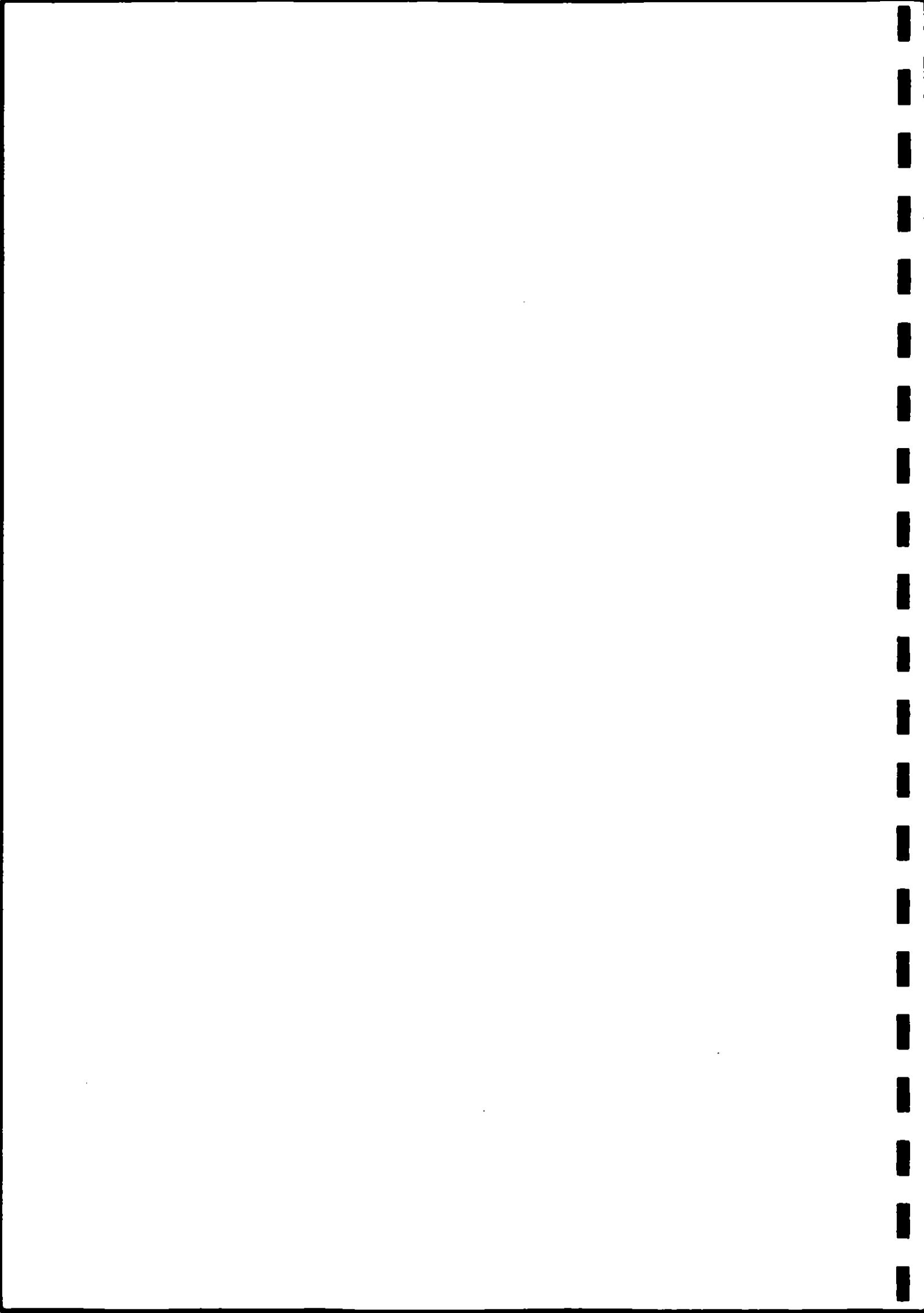
**7.9 MONTANE VEGETATION**

Defined as land within the montane zone, where the wind-cut nature of the vegetation cover and patterned ground are both distinctive. Includes areas of blanket bog, both hagged and not hagged, assigned to the relevant peatland community.

N.B. Secondary descriptors are used where appropriate to further define landcover types with or without: trees; scattered trees; rock; clustered farmsteads; burning; erosion; drains.

Mosaics are also recognised in order to avoid undue complexity where there is a strong short-range variation in vegetation or other features. Where mosaics are recorded they are double coded for two land cover features.





## Dictionary of Land Cover Surveys & Definitions

<b>SURVEY NUMBER</b>	7
<b>NAME OF SURVEY</b>	NORTHERN IRELAND COUNTRYSIDE SURVEY
<b>COMMISSIONING AGENT</b>	COUNTRYSIDE AND WILDLIFE BRANCH (C&WB) OF THE DEPARTMENT OF THE ENVIRONMENT (N.I.).
<b>EXECUTING AGENT</b>	UNIVERSITY OF ULSTER (DEPARTMENT OF ENVIRONMENTAL STUDIES), in consultation with the C&WB and the Institute of Terrestrial Ecology (Merlewood).
<b>CONTACT</b>	<p>University of Ulster, COLERAINE, Co. Londonderry, Northern Ireland. BT 52 1SA.</p> <p>Tel: Coleraine (0265) 44141.</p> <p>Present Contact: Dr. Alan Cooper.</p> <p>The Institute of Terrestrial Ecology, Merlewood, GRANGE-OVER-SANDS, Cumbria. LA11 6JU.</p> <p>Tel: 05395 32264.</p> <p>Present contact: Mr. Colin J. Barr.</p>
<b>OBJECTIVES</b>	<p>To produce a multivariate land classification and framework for the assessment of ecological and landscape resources. To quantify the distribution of land use, ecological resources and landscape attributes. To describe the structure, composition and management of resources. To identify environmental problems and suggest management options. To prepare a database and map archive for monitoring environmental change.</p> <p>Much of this work, especially in Areas of Outstanding Natural Beauty, has already been accomplished in four previous studies carried out by the University of Ulster under contract to the C&amp;WB. The aim of this study was to extend the work to areas previously unsampled and to produce resource estimates for Northern Ireland as a whole for use in developing countryside management policy.</p>
<b>PERIOD OF SURVEY</b>	February 1991 - October 1992
Start	May 1991 (Field work).
End	September 1992.

## Dictionary of Land Cover Surveys & Definitions

### SURVEY METHOD

Multivariate classification was used to generate a Northern Ireland Land Classification (Cooper 1986). This was based on the classification system developed by the Institute of Terrestrial Ecology at Merlewood, further stratified geographically by combining groups of land classes. On the basis of this classification, a stratified sample of Ordnance Survey grid squares was defined, in which field survey was carried out to determine land use, ecological resources and landscape attributes.

Field survey included detailed recording of land cover, ecological and landscape features in five main categories; woodland, agriculture, semi-natural vegetation, field boundaries and landscape attributes.

### GEOGRAPHICAL CHARACTERISTICS

Area of Survey	Northern Ireland.
Sampling frame	A stratified random sample of the land surface of Northern Ireland, based on an objective classification into 23 "land classes" derived from multivariate analysis of environmental characteristics (measured from published cartographic reference sources) of all 1 km cells of the Ordnance Survey Grid of Northern Ireland.
Sampling unit	A total of 628 25 ha squares (1/4 km <sup>2</sup> ), based on the Irish Ordnance Survey grid, were selected by stratified random sampling within land classes and geographical units. Sampling density was dependent on the nature and scale of landscape and ecological variation. Sampling density was 1% overall, (varying from 0.5 - 7.5%); about 2% in designated areas (Areas of Outstanding Natural Beauty and Environmentally Sensitive Areas) and 0.5% in the wider countryside.
Recording unit	Land parcels, linear features and points.
Scale of input data	1:10,000 and 1:10,560
Scale of output	1 km square regionally and 1:10,000 or 1:10,560 for 628 sample squares.
Resolution	Minimum mappable area was 100 m <sup>2</sup> and the shortest mappable length was 10 m.
Accuracy and error	Preliminary estimates of accuracy from a resampling program designed to check the accuracy of the field survey teams, indicated that the correspondence between recording for the field parcel type categories is 74% and for field boundary type categories 79%. Statistical error terms have been calculated for resource estimates.

### DATA STORAGE/ANALYSIS

Information was digitised from field data sheets using a digitizing tablet linked to an IBM PS2 microcomputer. Data are stored on disk and analysed with the database software package dBASE III PLUS.

## Dictionary of Land Cover Surveys & Definitions

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### DATA AVAILABILITY

#### FORMS OF OUTPUT

Regional and land class estimates of the various ecological, land cover and landscape features recorded. Land class distribution maps covering the whole of Northern Ireland.

#### PUBLICATION DATE(S)

October 1992.

### REFERENCES

Cooper, A. (1986). *The Northern Ireland Land Classification*. Report to the Countryside and Wildlife Branch, Department of the Environment for Northern Ireland. University of Ulster. 63pp.

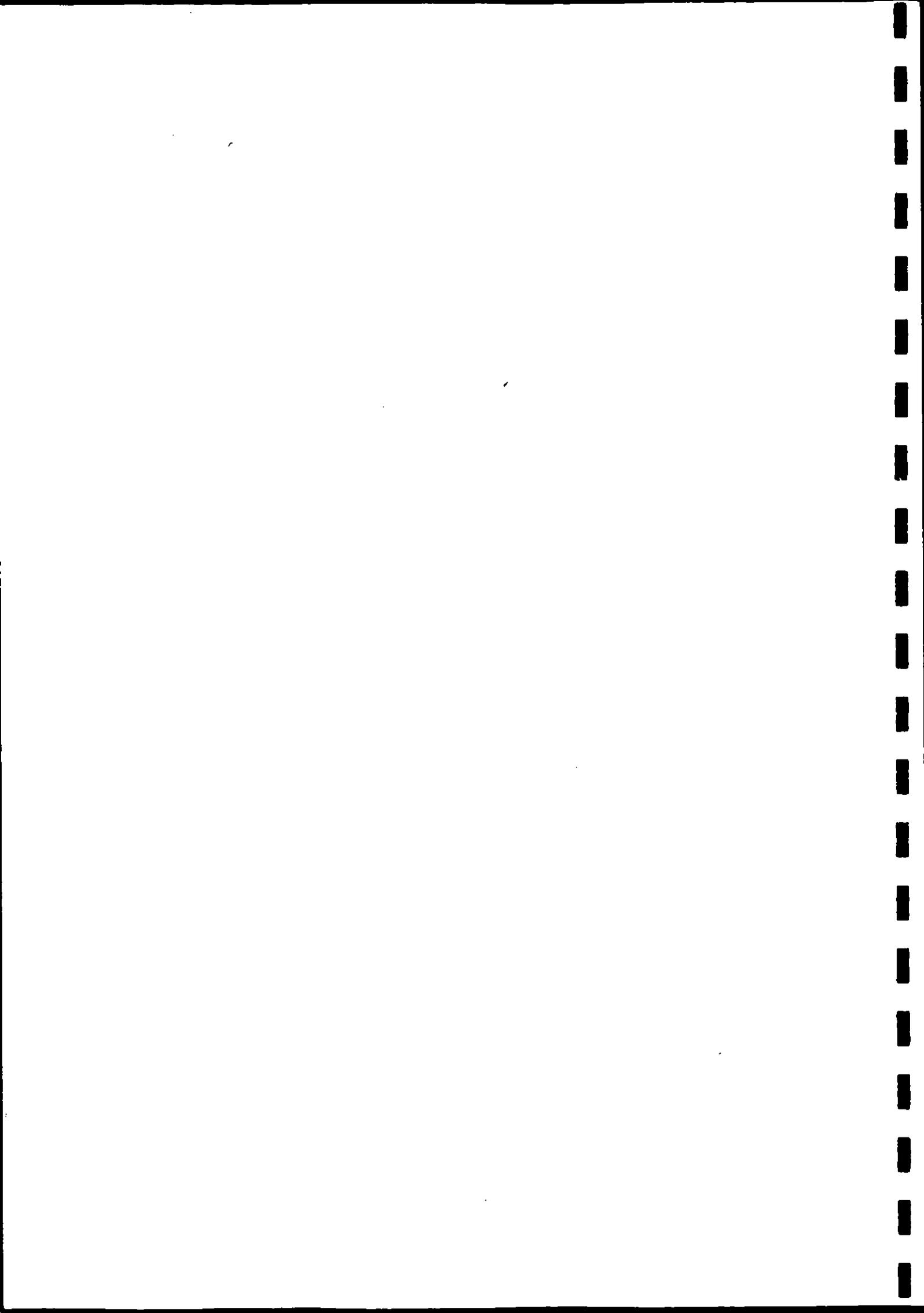
Cooper, A. & Murray R. (1986). *A landscape ecological study of the Mourne Areas of Outstanding Natural Beauty*. Report to the Countryside and Wildlife Branch, Department of the Environment for Northern Ireland. University of Ulster. 62pp.

Cooper, A. & Murray R. (1987). *A landscape ecological study of the Antrim Coast and Glens and Causeway Coast Areas of Outstanding Natural Beauty*. Report to the Countryside and Wildlife Branch, Department of the Environment for Northern Ireland. University of Ulster. 143pp.

Cooper, A. Murray R., McCann, T. & Forsythe, J. (1988). *A landscape ecological study of the Sperrins and North Derry Areas of Outstanding Natural Beauty*. Report to the Countryside and Wildlife Branch, Department of the Environment for Northern Ireland. University of Ulster. 181pp.

Department of Environmental Studies, University of Ulster. (October 1991). *Northern Ireland Countryside Surve. Advisory Group Documents*.

Department of Environmental Studies, University of Ulster. (April 1992). *Northern Ireland Countryside Survey. Advisory Group Documents*.



7

**Northern Ireland Countryside Survey**

**Land cover/use categories and definitions**

**1 WOODLAND**

Sub-categories are used to record management, eg coppice, felling, planting etc.

**1.1 SEMI-NATURAL BROADLEAF WOODLAND**

Woodland, excluding Fen Carr (category 1.12), which has not been planted and where conifers comprise <10% of trees. Includes planted woodlands where there has been secondary tree and shrub colonisation (in particular by ash, hawthorn, hazel and sycamore). Also includes semi-natural woodlands with species such as beech and other introduced species planted into it. Hazel woodland is classified in this category (not as Dense Scrub (1.7)).

**1.2 BROADLEAF WOODLAND, PLANTATION**

Planted stands of broadleaf trees with <10% conifers. Regular planting distances and uniform age structure are characteristic.

**1.3 CONIFEROUS WOODLAND, SEMI-NATURAL**

Woodland which has not been planted and where conifers comprise >90% of trees, for example, colonising Scots pine.

**1.4 CONIFEROUS PLANTATION**

Planted stands with uniform age structure, primarily >90% of conifer species: includes new plantings and mature plantations.

**1.5 MIXED WOODLAND, SEMI-NATURAL**

Woodland which has not been planted, mainly comprising broadleaf species with planted conifers as a more minor component but >10% of trees.

**1.6 MIXED WOODLAND, PLANTATION**

Primarily planted stands comprising 10-90% broadleaf or conifer species.

**1.7 DENSE SCRUB**

Continuous or near continuous immature semi-natural broadleaf woodland and scrub cover, including poorly developed mature woodland. Common species include hawthorn, blackthorn and gorse scrub. Tree species are often a more minor component. Excludes Gorse Scrub (3.1, 3.2) when it has no trees, which is considered as semi-natural vegetation.

**1.8 SCATTERED SCRUB**

Differs from dense scrub in that the cover is not continuous, but forms a mosaic with other vegetation types, though the scrub is dominant.

**1.9 PARKLAND**

Scattered individual trees, usually mature and mainly >10m apart with pasture or amenity grassland beneath.

**1.10 SCATTERED, ISOLATED TREES**

Trees, irrespective of the species, which occur singly or scattered in small groups.

**1.11 LINES OF TREES**

A distinct line one tree wide.

**1.12 FEN CARR**

Semi-natural broadleaf woodland on fen peat with a ground flora of wetland species and either willow, alder or birch as dominant trees.

**2 SEMI-NATURAL GRASSLAND**

**2.1 SPECIES-RICH DRY GRASSLAND**

Unimproved grassland, including species rich bent/fescue hill pasture, moderately well drained and forb-rich. Ryegrass species are usually absent. The grasses crested dog's-tail, bent and fescue are usually conspicuous with a variety of forbs such as yellow vetchling, greater bird's-foot-trefoil, cats-ear, yellow rattle, red clover, ribwort plantain, hawkweed and ox-eye daisy. Similar to Mixed Species Agricultural Grassland (8.4) but much richer in forbs.

**2.2 SPECIES-RICH WET GRASSLAND**

Unimproved, poorly drained grassland containing soft rush, sharp-flowered or jointed rush with an abundance of forbs including creeping buttercup, cuckoo flower, lesser spearwort, yellow flag, marsh marigold, creeping Jenny, marsh cinquefoil, water mint, sedges, ragged robin, marsh violet and meadowsweet. The grasses Yorkshire-fog, sweet vernal-grass and bent commonly occur. There is often considerable variation in species composition. Distinguished from similar Agricultural Grassland (8.6) and Poor-Fen (4.3) by its much greater richness in forbs.

**2.3 BENT/FESCUE HILL PASTURE**

Moderately well-drained grassland where bent and fescue are dominant, commonly infested by rushes or thistles. Fescue must be present. If absent the most appropriate category is probably Other Agricultural Grassland (8.6). If there is an abundance of forbs, classify as Species-rich Dry Grassland (2.1).

**2.4 MAT-GRASS HILL PASTURE**

Grassland where mat-grass is dominant or co-dominant or in a mosaic with bent/fescue hill pasture. The presence of mat-grass has precedence over bent/fescue for the purposes of classification. This type is not species rich and often grades to Dry Bog (4.2) or Poor-Fen (4.3).

**2.5 MOLINIA GRASSLAND**

Grassland where *Molinia caerulea* is monodominant or occurring with few other species.

**2.6 CALCAREOUS GRASSLAND**

Species rich grassland on chalk or limestone outcrops, rocks, pavements or escarpments or very thin soil with a characteristic limestone flora. Typical species include crested dog's-tail, bent, fescue, quaking-grass, bird's-foot-trefoil, lady's mantle, thyme, yarrow and ladies bedstraw. Often occurs in a mosaic with other types of grassland or heath and can also be weed and rush infested. Species rich parcels where the limestone is covered in topsoil and not outcropping are classified as Species-rich Dry Grassland (2.1). If the limestone is covered and not species rich, other categories, eg Bent/fescue Hill Pasture (2.3), Other Agricultural Grassland (8.6), are used as appropriate.

**2.7 RUSH PASTURE**

Vegetation at the lakeland water margin or sometimes in field parcels usually near lakes where hard rush is a major dominant. Soft rush may be co-dominant. Associated species include sedges, water mint, selfheal, meadowsweet, marsh ragwort and creeping buttercup. This category is not always species rich.

**3 HEATH**

**3.1 GORSE HEATH - CONTINUOUS**

Areas where European or dwarf gorse is dominant. Classified as Woodland if tree species are present.

**3.2 GORSE HEATH - SCATTERED**

Areas where European or dwarf gorse is more dispersed or invading other vegetation types. Used except where gorse is very much a minor component, the invaded type is used to determine the class and gorse is entered as a weed species.

**3.3 ERICACEOUS HEATH**

An even, dominant cover of ling heather, bell heather or cross-leaved heath alone or with grassland species such as fescue or mat-grass as a sub-dominant component. Heath cover should be greater than 80%. Ling heather is usually the main species except in the south-west (Mournes) where bell heather is more abundant. Cross-leaved heath is often present as a sub-dominant component and is more prominent after burning and on wetter sites. This category grades to Dry Heath Mosaic (3.6).

**3.4 WET HEATH**

An even dominant cover of ling heather (>80%) in association with wetland species as a sub-dominant component. Cottongrasses, purple moor-grass, heath rush, deergrass, wavy hair-grass, sedges and mosses are commonly present but not dominant. This category grades to Wet Heath Mosaic (3.7) and Fen Meadow (4.5). Differs from the similar category Wet Bog (4.1) in the greater abundance of heath rush and/or deergrass, while *Sphagnum* spp. are less abundant. The peaty substrate in wet heath is usually thinner, firmer and better drained.

**3.5 LICHEN/BRYOPHYTE HEATH**

Associated with exposed wind swept mountains at high elevations. Hypnaceous mosses are common.

**3.6 DRY HEATH MOSAIC**

Either ling heather, bell heather or crossed-leaved heath forming a patchy mosaic (<80% cover) with Bent-fescue Hill Pasture (2.3) or other lowland grassland types. Patchiness may be due to disturbance, grazing or other factors.

**3.7 WET HEATH MOSAIC**

Ling heather, bell heather or crossed-leaved heath forming a patchy mosaic (<80% cover) with wetland species (see Wet Heath (3.4)). Patchiness may be due to disturbance, grazing or other factors.

**3.8 MIXED UPLAND VEGETATION**

Moderately wet sites, usually with shallow peat, comprising a mixture of wetland species from more distinct vegetation types, usually a grass component and bilberry as a major dominant. Common species include *Sphagnum* spp. *Polytrichum*, heath rush, deergrass, sweet vernal-grass, wavy hair-grass, mat-grass and purple moor-grass. This type is differentiated from Dry Bog (4.2) by the presence of bilberry.

**3.9 GORSE HEATH/BRACKEN MOSAIC**

A mosaic of both vegetation types. It is most common in the east of the province.

**4 MIRES**

**4.1 WET BOG**

Waterlogged, generally deep peat comprising *Sphagnum* spp. and cottongrasses as dominants (see Wet Heath (3.4)). There is often an ericaceous component, principally ling heather. Deergrass, bog asphodel, heath rush and purple moor-grass may also occur. Draining of wet bog causes loss of *Sphagnum* spp. and creates a firmer, drier soil structure. When the affinity with bog has clearly been lost, the Wet Heath (3.4) is used.

**4.2 DRY BOG**

Less wet, deeper peat comprising a mixture of wetland species from other vegetation types and a grass component. *Polytrichum*, *Sphagnum* spp., cottongrasses, heath rush, deergrass, sweet vernal-grass, wavy hair-grass, mat-grass and purple moor-grass are the main species. This type is similar to Mixed Upland Vegetation (3.8) but does not contain bilberry as a major component. It is also similar to Wet Heath (3.4) in species composition without an ericaceous component and firmness of peat. Only classified as Dry Bog if heather is absent or only very occasional. Otherwise, classed as Wet Heath (3.4) or Wet Heath Mosaic (3.7).

**4.3 POOR-FEN**

Rush-dominated vegetation over wet peaty soils. Jointed or sharp-flowered rush is dominant and may occur together with soft rush. Sedges, *Rhytidiadelphus* and other mosses, bent grasses and Yorkshire-fog are usually present. A subtype, transitional to wet bog and comprising *Sphagnum* spp. and jointed/sharp-flowered rush is included here if rushes and other species are dominant to *Sphagnum*. Poor-Fen is transitional to Other Agricultural Grassland (8.6) and Species Rich Wet Grassland (2.2) (where soft rush is more dominant) and is distinguished by its more acid ground flora (mosses, sedges, jointed/sharp-flowered rush) and absence of the lowland forb component associated with the other types (eg buttercup, marsh marigold, lesser spearwort, marsh ragwort). Parcels dominated by soft rush with an acid ground flora are categorised as Poor-Fen. Poor Fen also grades to Fen Meadow (4.5) but lacks certain characteristic species associated with the latter ie bog thistle and devils'-bit scabious.

**4.4 SEDGE MARSH**

Wet shallow peat or mineral soil comprising a carpet of sedges.

**4.5 FEN MEADOW**

Vegetation on mineral soils, often with a thin surface layer of peat. Jointed or sharp-flowered rush, devil's-bit scabious, bog thistle and sedges are dominants. Purple moor-grass, grass-of-Parnassus and compact rush are also characteristic species. A sub type with ericaceous shrubs, notably ling heather, is included. Classified as Wet Heath (3.4) if both the characteristic forbs, devil's-bit scabious and bog thistle are absent.

**4.6 REEDBEDS**

Stands of common reed or reedmace occurring on waterlogged mineral soils and usually associated with the lakeside water margin interface.

**4.7 FEN**

Primarily found on low lying waterlogged peaty ground behind the reedbed and swamp zone at lake margins. Common species include sedges, yellow flag, forget-me-not, creeping Jenny, marsh horsetail, marsh pennywort and bogbean. Some inland parcels may fit into this category particularly isolated stands of yellow flag in field parcels.

**4.8 FRESHWATER VEGETATION**

Vegetation of open water and permanently inundated areas beyond the land zone. Common species include yellow water-lily and pondweed.

**4.9 SWAMP**

Vegetation of the waterlogged mineral soils associated with the lakeside water margin interface other than Reedbeds (4.6). Dominant species include bulrush, marsh horsetail, common spike-rush, lesser water plantain and sedges.

**4.10 DITCH VEGETATION**

Vegetation associated with ditch sides or shallow bottoms. Common species include yellow flag, bur-reed, sweet-grass, marsh horsetail, canary-grass, bogbean and creeping bent. Includes only ditches that are species rich and contain fen or swamp type species. If the vegetation is more like Species Rich Wet Grassland (2.2) it is classified as such.

**4.11 WATER INUNDATION VEGETATION**

Ruderal vegetation of rocky freshwater shores, usually disturbed by wave action or seasonally inundated. Common species include silverweed, tussock sedge, creeping bent, water mint, creeping Jenny and white clover.

**5 COASTAL**

**5.1 INTERTIDAL**

Saline muds and muddy sand (only where vegetation is present) with species such as glasswort.

**5.2 SALTMARSH**

Common species include saltmarsh grass, scurvygrass, sea aster, sea plantain and sea rush.

**5.3 SHINGLE/GRAVEL RIDGE**

Only where vegetation is present.

**5.4 STRANDLINE**

Areas of vegetation on the foreshore, excluding shingle and gravel ridges. The category can be similar in vegetation composition to Ruderal Vegetation (6.3) occurring elsewhere but also includes halophytes.

**5.5 FOREDUNE**

Unstable new dunes, probably with marram grass as a dominant and only where vegetation is present.

**5.6 DUNE GRASSLAND**

Stable dunes colonised by grasses and forbs. Bent and fescue are likely to be major components.

**5.7 DUNE HEATH**

Stable dunes colonised by ericaceous shrubs.

**5.8 DUNE SCRUB**

Stable dunes colonised by scrubby woodland.

**5.9 COASTAL CLIFF VEGETATION**

Only if there is an abundance of vegetation.

**5.10 DUNE SLACK VEGETATION**

Occurs in wet dune hollows.

**6 TALL HERB/FERN/OTHER**

**6.1 BRACKEN-CONTINUOUS**

Areas where bracken is dominant.

**6.2 BRACKEN-SCATTERED**

Areas where bracken is more dispersed or invading other vegetation types, principally grassland. Presence of bracken determines the classification, except where it is very much a minor component, when the record is the invaded vegetation type and bracken infestation is noted.

**6.3 RUDERAL VEGETATION**

Vegetation associated with disturbed or waste ground. Species commonly found include nettle, bramble, thistle and dock.

**6.4 CREVICE/LEDGE VEGETATION**

Inland cliff vegetation.

**7      FIELD BOUNDARIES**

**7.1     HEDGEBANK**

A linear boundary comprising planted shrubs associated with either an earth bank or a wall bank. Banks can be quite small.

**7.2     HEDGEROW**

A linear boundary comprising planted shrubs not associated with a bank.

**7.3     DRY STONE WALL - OLD**

An old stone wall constructed without mortar.

**7.4     DRY STONE WALL - NEW**

A new stone wall constructed without mortar.

**7.5     RUINED DRY STONE WALL**

A mainly derelict wall with no agricultural function. Where ruined walls become earthed, they are recorded as banks.

**7.6     MORTAR/BRICK/CONCRETE WALL**

A stone wall constructed with mortar or made from brick or concrete. These are particularly associated with bridges over streams.

**7.7     HEDGE ON WALL**

A hedge planted on top of a dry stone wall.

**7.8     STONE HEAP**

Occurring singly or in association with boundary walls.

**7.9     EARTH/WALL BANK**

An earth bank or an earth bank with a dry stone component on one side with no accompanying planted shrubs. Banks may include planted hedgebanks where the planted shrubs have been lost. Boundaries are recorded in this category where there is a bank and unplanted shrubs.

**7.10    WOOD POST AND WIRE FENCE**

Fences of wood post and wire, including sheep wire, chain link, stick, fences with wire and other types when strung between wood posts but excluding temporary electric fences or fences with no wire.

**7.11    OTHER FENCE**

All other fences, including wire fences strung between concrete or metal posts and wood post fences with a wooden rail.

**8      AGRICULTURE**

**8.1    ARABLE CROPS**

**8.2    ITALIAN RYEGRASS**

Comprising only those swards where the species is a dominant.

**8.3    PERENNIAL RYEGRASS**

Swards in which perennial ryegrass is dominant.

**8.4    MIXED SPECIES GRASSLAND**

Long established grassland on drier soils comprising crested dog's-tail as a dominant usually along with various forbs eg buttercup, ribwort plantain. This type is less species rich than Species-rich Dry Grassland (2.1) into which it grades.

**8.5    PLOUGHED/FALLOW**

Land not under crop at the time of survey.

**8.6    OTHER AGRICULTURAL GRASSLAND**

Long established grassland on less well drained soils or wetter peat. The principal species are sweet vernal-grass, meadow fescue, bent, Yorkshire-fog, white clover, rough meadow-grass and creeping buttercup.

**8.7    HORTICULTURE**

Includes vegetables, soft fruit and orchards. Excludes crops grown in garden plots.

**9      URBAN/INDUSTRIAL**

**9.1    URBAN AREA**

Land forming part of towns or areas developed for housing other than isolated groups which comprise rural domestic buildings.

**9.2    NEW URBAN AREA**

Urban areas as described above but not present on reference maps.

**9.3    INDUSTRIAL AREA**

Land forming part of towns or areas developed for industry.

**9.4    NEW INDUSTRIAL AREA**

Industrial areas as described above but not present on reference maps.

**10**     **BUILDINGS**

**10.1**    **NEW DOMESTIC BUILDING**

Domestic buildings not present on reference maps.

**10.2**    **NEW AGRICULTURAL BUILDING**

Agricultural buildings not present on reference maps.

**10.3**    **NEW INDUSTRIAL BUILDING**

Industrial buildings not present on reference maps.

**10.4**    **OTHER NEW BUILDINGS**

Buildings, neither domestic, agricultural nor industrial, not present on reference maps.

**10.5**    **SILO**

Usually feed silos associated with farms.

**10.6**    **DERELICT VERNACULAR BUILDING**

An unoccupied traditionally designed building.

**10.7**    **DERELICT MODERN BUILDING**

An unoccupied building of modern design.

**10.8**    **DERELICT INDUSTRIAL BUILDING**

An unoccupied building intended for industrial use.

**11**     **MONUMENTS**

**11.1**    **INTACT HISTORIC MONUMENT**

A monument largely in place and not showing signs of erosion.

**11.2**    **DAMAGED HISTORIC MONUMENT**

A monument showing signs of erosion, dilapidation or dereliction. Raths, in particular, may be eroded.

**11.3**    **ABSENT HISTORIC MONUMENT**

A monument marked on the reference map but missing or removed at the time of survey.

**12     COMMUNICATIONS**

**12.1    NEW METALLED ROAD**

A road or farm track constructed of concrete, asphalt or other such similar surface, present at the time of survey but not marked on the reference map.

**12.2    NEW UNMETALLED ROAD**

An unsurfaced road or farm track not marked on the reference map.

**12.3    ABANDONED ROAD/TRACK**

A road or track, no longer used for vehicular access.

**12.4    ABANDONED RAILWAY**

Any unused railway line.

**12.5    PYLON**

Main power lines from substations only.

**13     AMENITIES**

Recreation trails, managed footpath, amenity grassland, parking, camping, caravans, layby, roadside verge, fishing, hide.

**14     MINERAL WORKINGS**

Hard and soft rock quarries, both used and disused.

**14.1    USED HARD ROCK QUARRY**

**14.2    DISUSED HARD ROCK QUARRY**

**14.3    USED SOFT ROCK QUARRY**

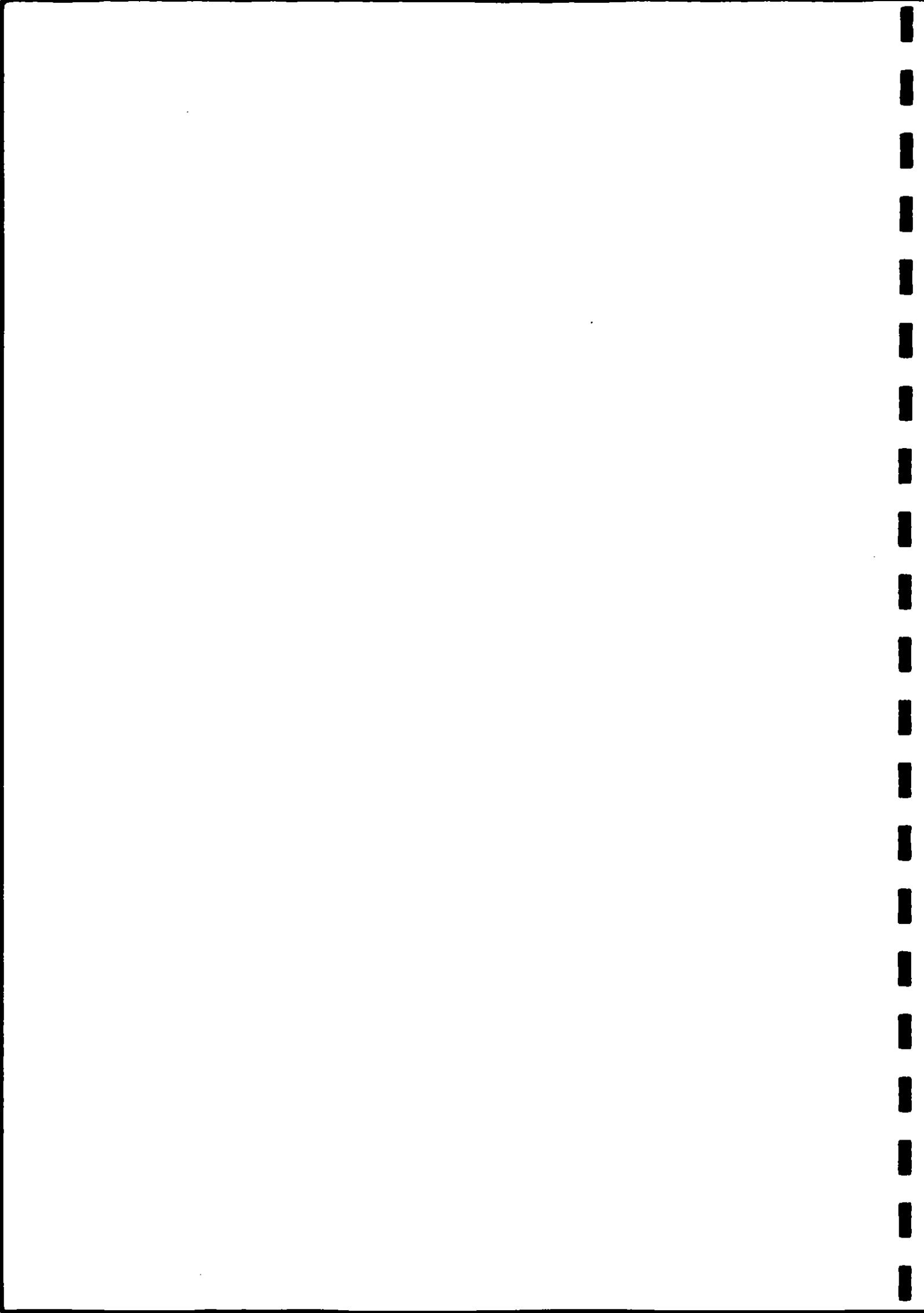
**14.4    DISUSED SOFT ROCK QUARRY**

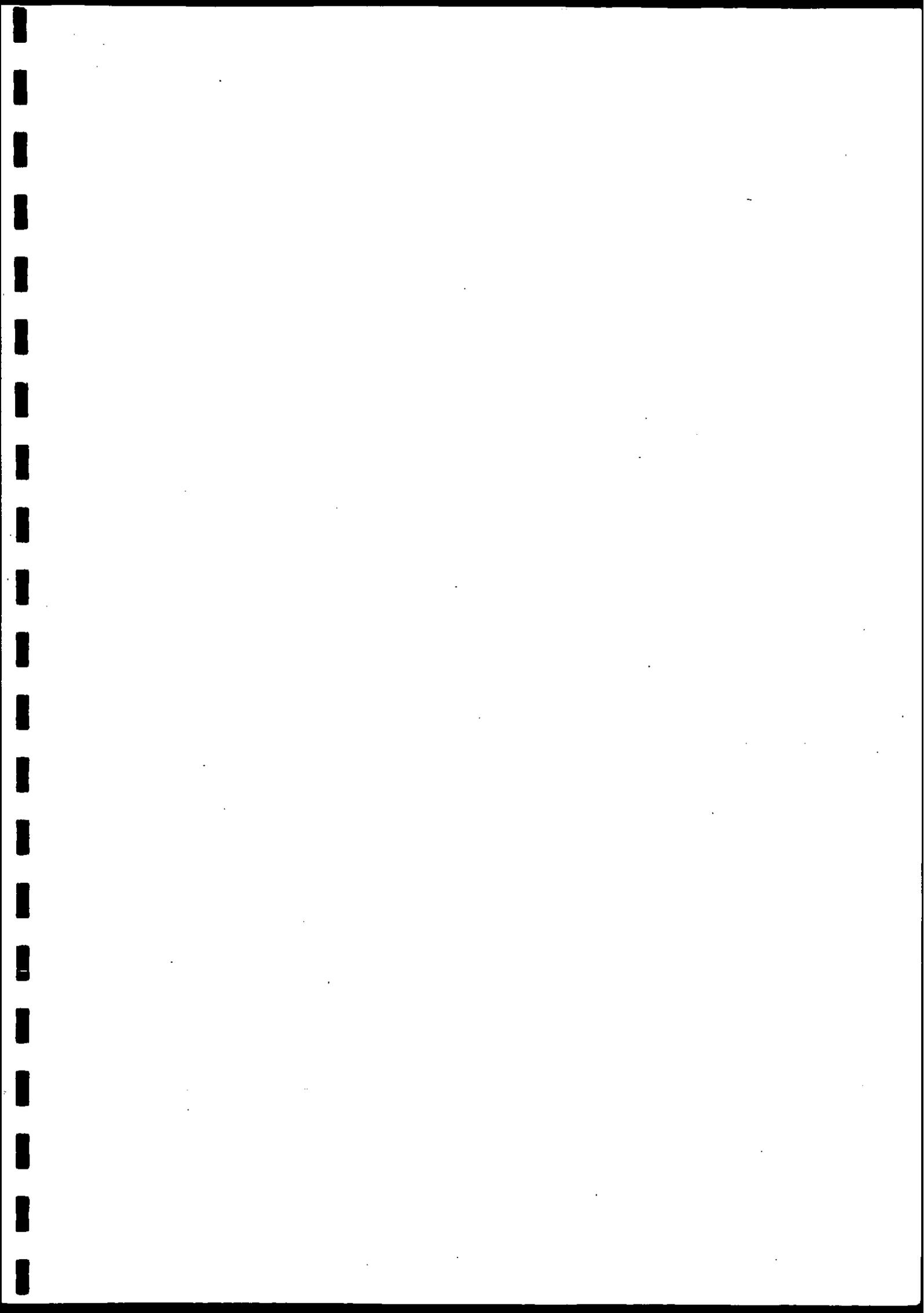
**15     WASTE DISPOSAL/DISTURBANCE**

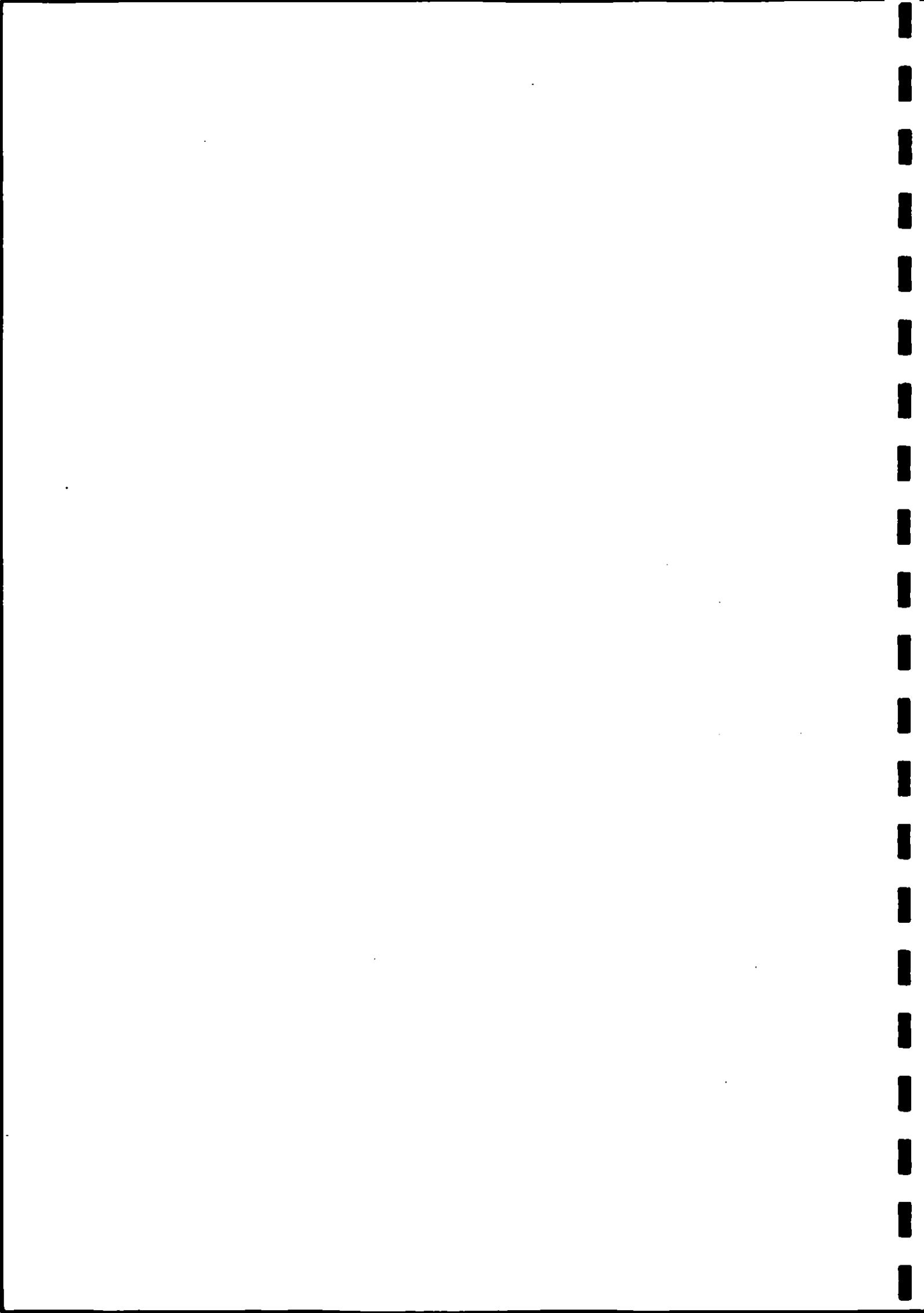
Includes rubbish tips, spoil heaps, landfill, concrete standings and bare/disturbed ground.

- 16 **GEOLOGY**
- 16.1 **INLAND CLIFF**
- 16.2 **SCREE**
- 16.3 **ROCK OUTCROPS**
- 16.4 **SURFACE BOULDERS**
- 16.5 **CANALISED RIVER BANK**
- 16.6 **MORAINE**
- 16.7 **SINK HOLE**
- 16.8 **CAVES**
- 16.9 **LIMESTONE PAVEMENT**
- 16.10 **GORGE**

N.B. Landcover/use categories are further defined, where appropriate, as part of a structured field data sheet matrix, using records of structure, management and dominant species. The datasheet matrix corresponds with the field structure of a computer database.







## Dictionary of Land Cover Surveys & Definitions

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<b>SURVEY NUMBER</b>	8
<b>NAME OF SURVEY</b>	NATIONAL PARKS MONITORING SCHEME
<b>COMMISSIONING AGENT</b>	COUNTRYSIDE COMMISSION and the 11 NATIONAL PARK AUTHORITIES including the BROADS AUTHORITY.
<b>EXECUTING AGENT</b>	SILSOE COLLEGE, CRANFIELD INSTITUTE OF TECHNOLOGY.
<b>CONTACT</b>	<p>Silsoe College Cranfield Institute of Technology Silsoe BEDFORD MK45 4DT</p> <p>Tel: Silsoe (0525) 860428.</p> <p>Present contact: Dr. John Taylor.</p> <p>Countryside Commission John Dower House CHELTENHAM GL50 3RA</p> <p>Present contact: R. Lloyd.</p>
<b>OBJECTIVES</b>	To obtain and present basic factual statistical and mapped information on the extent, distribution and change over time, of a wide range of land cover types that constitute the land surface of the National Parks, at two target dates. This is designed to provide information that will help in the preservation and enhancement of the natural beauty of these areas.
<b>PERIOD OF SURVEY</b>	
Start	1988
End	1991
<b>SURVEY METHOD</b>	<p>Aerial photographic interpretation and sample ground survey to check the findings of the former.</p> <p>Aerial photographs covering the whole of each Park, taken in the 1970's and the late 1980's, were compared in order to identify changes that had occurred between these two dates. A hierarchical land cover classification was used consisting of six main categories and subdivided to give a total of 37 classes.</p> <p>A minimum of 2% of the one km grid squares in each Park were selected for ground survey.</p>

## Dictionary of Land Cover Surveys & Definitions

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### GEOGRAPHICAL CHARACTERISTICS

Area of survey	National Parks of England and Wales
Sampling frame	Complete census, 2% random sample taken for verification by ground survey.
Sampling unit	Complete census, 2% random sample taken for verification by ground survey.
Recording unit	Land parcels, linear features and points.
Scale of input data	1:10,000.
Scale of output	Pixels equivalent to a 20 x 20 m grid on the ground.
Resolution	
Accuracy and error	The detailed reports for each Park summarise accuracy assessments. Overall it seems that the results of the study fall within acceptable confidence limits, and that the results compare favourably with other studies of this type.

**DATA STORAGE/ANALYSIS** A Geographical Information System (SPANS) was used for recording, storing, analyzing and mapping information.

### DATA AVAILABILITY

**FORMS OF OUTPUT** SPANS GIS data files held by Silsoe College.

**PUBLICATION DATE(S)** 1992

## Dictionary of Land Cover Surveys & Definitions

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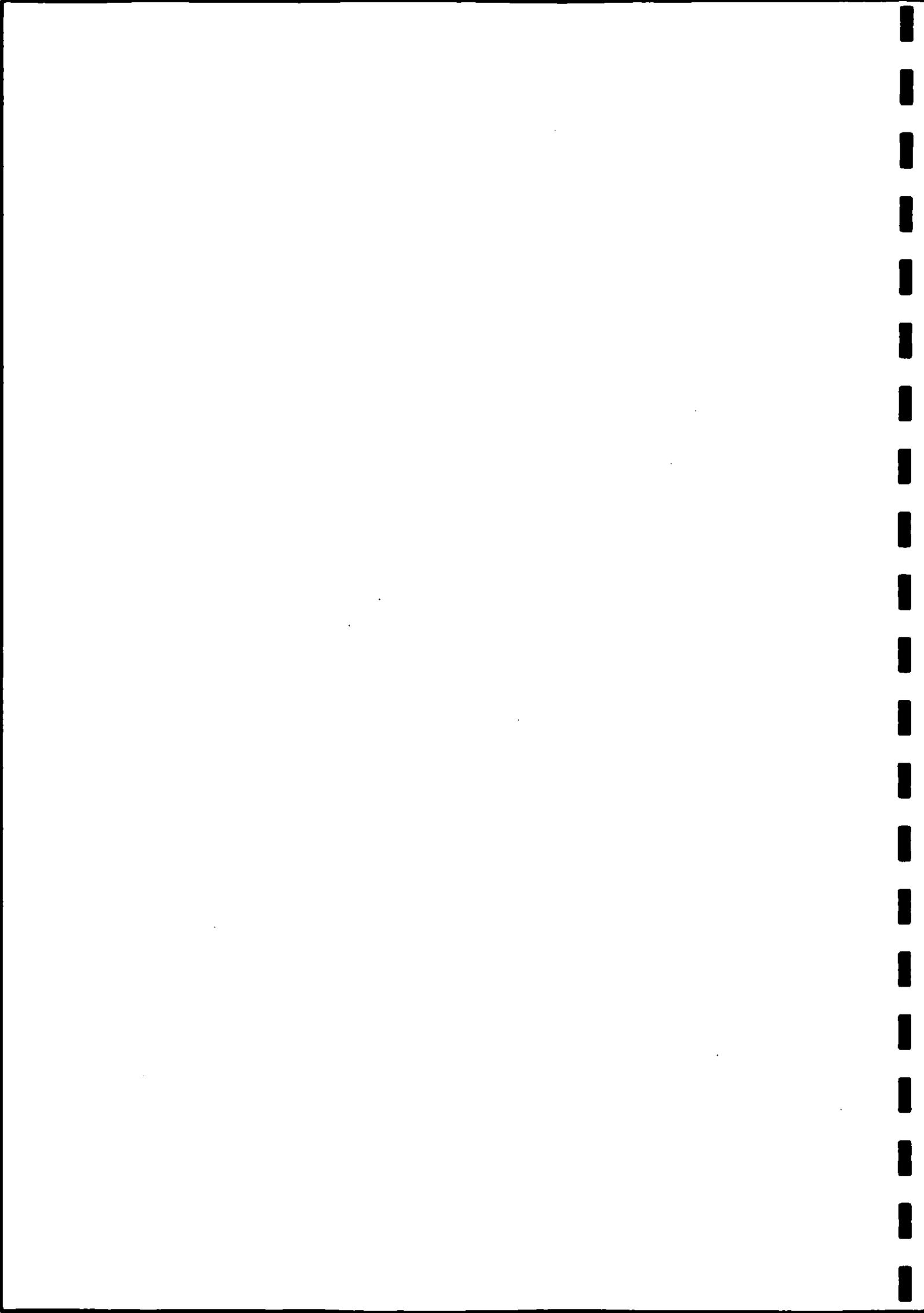
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Countryside Commission (1991). *Landscape change in National Parks*. (Technical report). Countryside Commission Publications, Levenshulme, Manchester.

Countryside Commission. (1984). *Mid Wales uplands study*. Countryside Commission, CCP 177.

Silsoe College. (1991). 14 technical reports of monitoring landscape change in the National Parks of England and Wales, Silsoe College.

Volume 1	Main report
" II	Methodology
" III	The Brecon Beacons
" IV	The Broads
" V	Dartmoor
" VI	Exmoor
" VII	The Lake District
" VIII	Northumberland
" IX	The North York Moors
" X	The Peak District
" XI	The Pembrokeshire Coast
" XII	Snowdonia
" XIII	The Yorkshire Dales
" XIV	Application for satellite remote sensing



8

**National Parks Monitoring Scheme**

**Land cover / use categories and definitions**

**1 LINEAR FEATURES**

These incorporate all the main boundary features in the Parks, including hedges, walls, fences, banks, ditches and woodland edges. They also include other linear features typical of certain land cover types, notably moorland grips. They were recorded as lengths in km squares, apart from grips, which were just recorded as present or absent from each km square.

**1.1 HEDGEROWS**

Any amount of hedge, however discontinuous and in any condition, is classified as hedgerow unless it can be classified as point 2.2 and 2.3. Characteristically found as field boundaries, they may have been replaced or supplemented by fences for stock control purposes.

**1.2 FENCES AND INSUBSTANTIAL FIELD BOUNDARIES**

Field boundaries formed by fences, not associated with other linear features.

**1.3 WALLS**

A wall in any condition where the stone line is still visible. They may have been supplemented by fences for stock control purposes.

**1.4 BANKS**

Banks which in themselves form the main part of field boundaries. Low banks, such as those along root lines of hedges, are not included and banks with hedgerows on top (as defined in 1.1) are classified as hedgerows. Banks may have been replaced or supplemented by fences alongside or on top for stock control purposes.

**1.5 OPEN DITCHES**

Substantial man-made ditches that form field boundaries. Ditches beside hedges or walls are not included. Ditches may have been supplemented by fences for stock control purposes. If a fence exists beside the ditch it is still classified as 1.5.

**1.6 WOODLAND EDGE**

Boundaries around wood and forest land. The types of boundaries (hedge, wall, etc) are not defined since they are usually obscured on aerial photography by tree canopies.

**1.7 STRIP WOODLAND**

Isolated strips of woody vegetation with more than a single line of trees, which are >50 m long, but <20 m wide.

**1.8 GRIPS**

Open drainage channels in moorland. Recorded on the basis of presence or absence in each km grid square.

**2      SMALL OR ISOLATED FEATURES**

Individual trees, trees in boundaries, groups of trees, and ponds were all treated as point features and were recorded by counting rather than measuring. These features were counted in all km squares, except in the case of individual trees, which were only counted for a sample of squares.

**2.1      INDIVIDUAL TREES INSIDE LINEAR FEATURES**

All trees that can be distinguished as individuals that occur along a linear feature and are not included in the wood or forest categories. Counted from aerial photography only for the sample areas used for ground survey.

**2.2      INDIVIDUAL TREES OUTSIDE LINEAR FEATURES**

As 2.1 for trees outside linear features. Large bushes are also included.

**2.3      GROUPS OF TREES, ALL SPECIES**

Groups of trees covering an area of <0.25 ha.

**2.4      INLAND WATER**

Farmland ponds, small reservoirs, natural water bodies, etc, which are <0.25 ha.

**3      WOOD AND FOREST LAND**

**3.1      BROADLEAVED HIGH FOREST**

Areas >0.25 ha, and >20 m wide and having a tree canopy cover of at least 20% by area. At least 80% of the canopy should be of broadleaved species.

**3.2      CONIFEROUS HIGH FOREST**

Area >0.25 ha, and >20 m wide and having a tree canopy cover of at least 20% by area. At least 80% of the canopy should be of coniferous species.

**3.3      MIXED HIGH FOREST**

Areas >0.25 ha, and >20 m wide and have a tree canopy cover of at least 20% by area. Composed of an intimate mixture of broadleaved and coniferous species, where the minority group comprises >20%.

**3.4      SCRUB**

Areas with diffuse boundaries with <20% cover by area of mature timber species with a rough understorey of shrubs and grasses. Trees such as birch, alder, willow and hazel must <3.5 m high, although shrubs such as Blackthorn and Hawthorn may be higher.

**3.5      CLEAR FELLED/NEWLY PLANTED AREAS**

Areas with distinct boundaries, generally integral with stands of high forest, that have recently been felled or planted. Evidence of logging, rowing up of trash and drainage may be present.

**4 MOOR AND HEATH LAND**

**4.1 UPLAND HEATH**

Areas with >80% cover of heather and/or bilberry species. Characteristically found on acid heathland soils, steep rocky hillsides and crags, and peat covered moorlands, this type may be burned in patches or strips for grouse moor. Areas that have been burnt, but which it can be assumed will regenerate as heath, are included.

**4.2 UPLAND GRASS MOOR**

Unenclosed upland areas with >80% cover of grass species.

**4.2.1 Grass moor**

Including fescues, bents, purple moor grass, and matt grass.

**4.2.2 Blanket peat grass moor**

Overlying a peat substrate, usually found on plateaux, dominated by cotton-grass. These areas are in general unenclosed for the purpose of controlling livestock grazing, although property boundaries around large areas may be present.

**4.3 BRACKEN**

Areas having at least 80% cover of bracken.

**4.4 UNENCLOSED LOWLAND AREAS**

Lowland areas that are not enclosed for stock control purposes, likely to contain some scattered trees, rushes and bracken and sometimes grazed. Occur on land with an elevation equal to or below surrounding farm land.

**4.4.1 Rough grassland**

Unenclosed lowland areas dominated by grass species.

**4.4.2 Heath**

Unenclosed lowland areas dominated by mixed heath species, e.g. gorse.

**4.5 UPLAND MOSAICS**

Areas of transition between Upland Heath (4.1) and other moor and heath categories. The boundary with heath is drawn where heath species comprise >80% of the cover and with the other categories where they in turn constitute >80% of the cover.

**4.5.1 Heath/upland grass moor**

**4.5.2 Heath/bracken**

**4.5.3 Heath/blanket peat grassland**

**4.6 ERODED AREAS**

**4.6.1 Eroding peat**

In upland situations where bare peat is the dominant cover type, or where there is heavy dissection by eroding channels to give a mosaic appearance. The associated cover types are variable.

**4.6.2 Eroding mineral soils**

**4.7 COASTAL HEATH**

Areas of mixed heath species along coastal slopes and exposed headlands. The lower limits of coastal heath are 7.1.2 or 7.2 categories, or the sea. The upper limits are 3 and 5 categories or when the change to 4.1 can be interpreted. The upper limits may be somewhat subjective in the transition to 4.1.

**5 AGRO-PASTORAL LAND (ENCLOSED FARMLAND)**

**5.1 CULTIVATED LAND**

Areas of ploughed and cropped land, including cereals, ley grasses, legumes, field vegetables, potatoes and root crops, rape and fodder crops. The category also covers market gardens, orchards, etc. Ley grasses are difficult to discern and impossible after the first year when they will be classified as 5.2.1 (Improved Pasture). They are indicated by drilling rows, uniformity of species composition and are usually to be found in situations where there is arable cropping.

**5.2 GRASSLAND**

Areas that show evidence of being enclosed for stock control purposes.

**5.2.1 Improved pasture**

Grassland that is intensively managed for grazing and/or fodder production. Characterised by significantly modified swards produced by the use of fertilizers, herbicides, drainage and/or occasional reseeded. Species such as rushes, thistles and bracken are normally eradicated but could be present in small quantities. However, daisies, buttercups, etc. may be present. It does not cover grass leys and generally occurs within the limits of mechanical operations. The sward may be lumpy due to uneven fertilisation from cow pats, and may have artificial boundaries caused by strip grazing. From spring to late summer cutting for hay or silage may occur.

**5.2.2 Rough pasture**

Enclosed areas subject to little or no management. Characterised by a high density of native grasses and often containing invasive species such as bracken, bramble, thistle, rushes and scattered trees. Tussocks may also be in evidence. Generally occurs on steep slopes, poorly drained sites and soils of low fertility. Frequently includes areas that can be accessed by farm machinery, indicating that it may have been managed in the past.

Both these categories can and do exist within the same field in such cases they are separated.

**6 WATER AND WETLAND**

**6.1 OPEN WATER, COASTAL**

The area to sea-ward of the mean low water mark. If photography coincides with high tide the area between the low tide mark and the water boundary on the photography will be included in 6.1.

**6.2 OPEN WATER, INLAND**

Natural and man-made water bodies >0.25 hectares in extent. This category does not include rivers.

**6.3 WETLAND VEGETATION**

Areas of vegetation that are controlled by the permanent or frequent periodic presence of water.

**6.3.1 Peat bog**

**6.3.2 Freshwater marsh**

**6.3.3 Saltmarsh**

**7 ROCK AND COASTAL LAND**

**7.1 BARE ROCK**

Any significant areas of bare rocks, such as scree, cliffs and limestone pavements. Only the plan area is mapped, so large but near-vertical cliffs may cover a small area when mapped, or even be missed.

**7.1.1 Inland bare rock**

**7.1.2 Coastal bare rock**

**7.2 OTHER COASTAL FEATURES**

This category includes a variety of coastal features. These may not be mapped if photography coincides with high tide. As in the case of category 6.1, only those areas visible on the photography are mapped depending on the tidal conditions.

**7.2.1 Dunes (bare or vegetated with coastal grasses)**

**7.2.2 Sand beach**

**7.2.3 Shingle beach**

**7.2.4 Mud flats**

**8      DEVELOPED LAND**

**8.1    BUILT-UP LAND**

**8.1.1   Urban area**

Areas of buildings, including gardens, car parks, etc, and urban open spaces such as parks, playing fields, etc. Any settlement consisting of more than one group of buildings will be included.

**8.1.2   Major transport routes**

Transport routes that cover a significant area, defined as multi-carriageway roads, functioning multi-track railways, railyards, and airports. Grass verges obviously associated with transport routes are included.

**8.2    QUARRIES, MINERAL WORKINGS AND DERELICT LAND**

**8.2.1   Quarries and mineral workings**

Where these are active and still in regular use.

**8.2.2   Derelict land**

Disused quarries and mineral workings, and other significantly disturbed land that would need reclamation before it could be used.

**8.3    ISOLATED RURAL DEVELOPMENTS**

Developments consisting of only one group of buildings but covering an area >0.25 ha.

**8.3.1   Farmsteads (> 0.25 ha)**

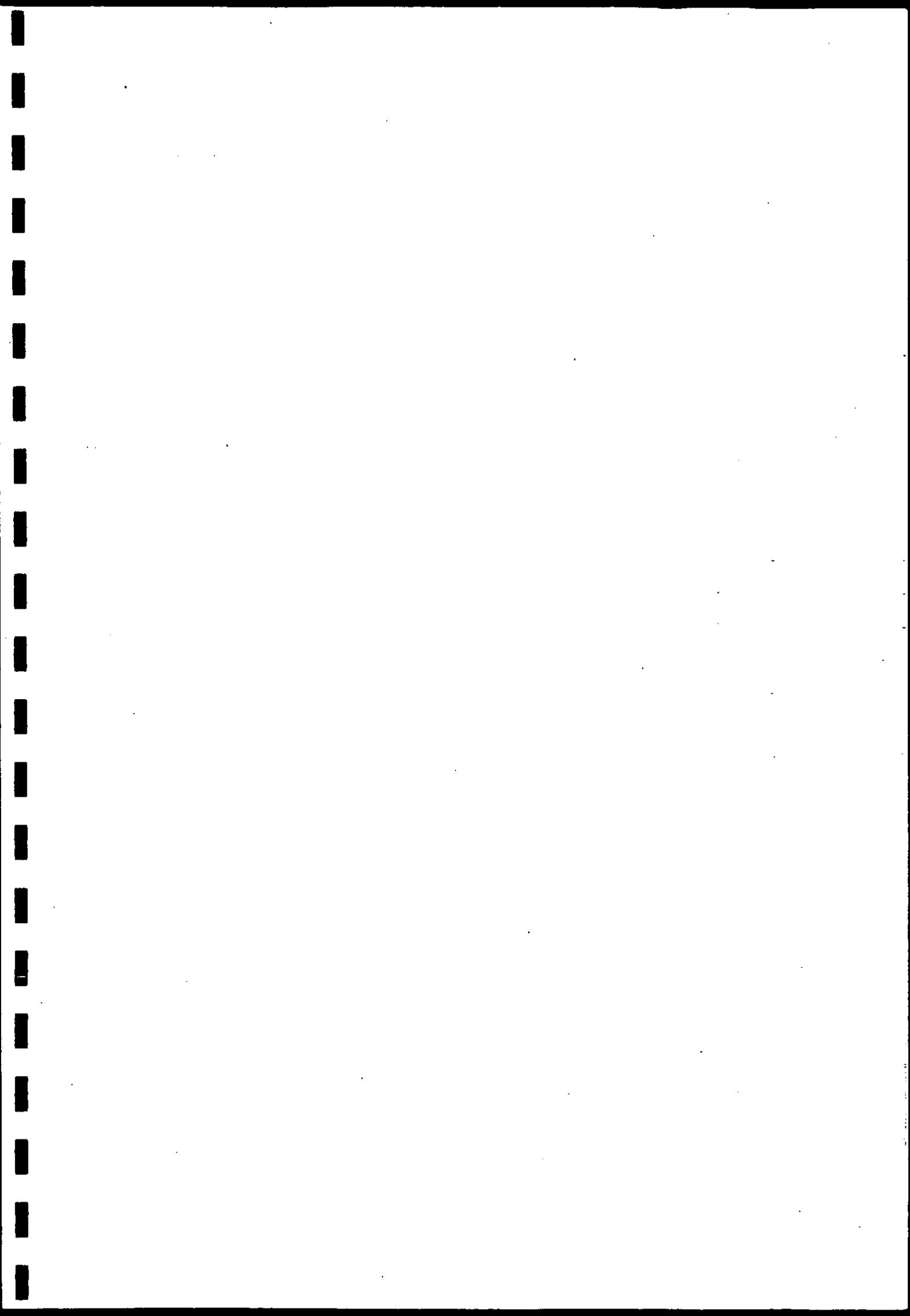
Farmhouses and associated farm buildings.

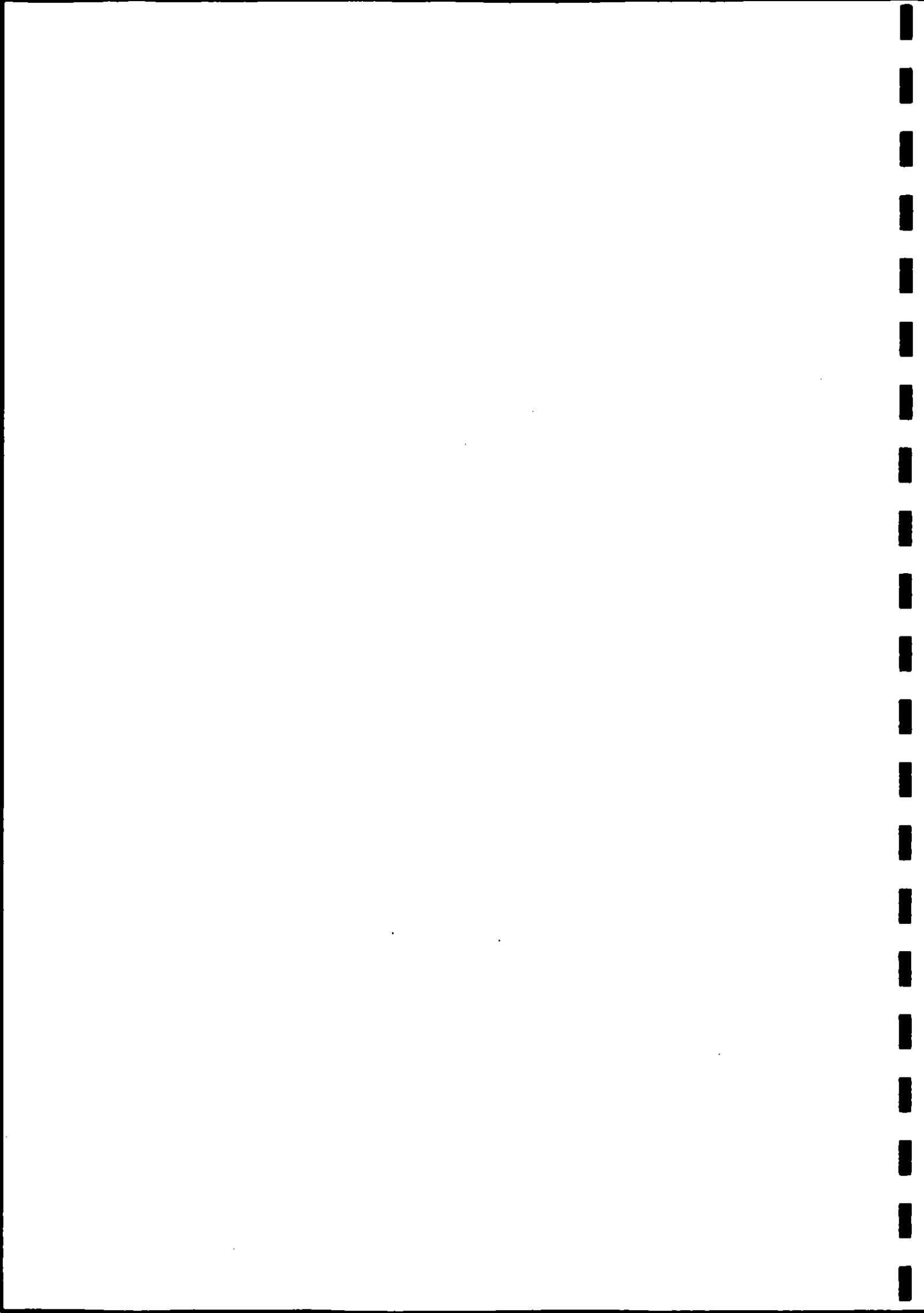
**8.3.2   Other (> 0.25 ha)**

Any other type of isolated rural development e.g. garages and public houses, etc.

**9      UNCLASSIFIED LAND**

Areas that cannot be legitimately included in any other category, e.g. rivers, or areas that cannot be reliably identified on the photographs due to cloud, shadow, military restrictions, lack of photographic coverage, etc.





## Dictionary of Land Cover Surveys & Definitions

<b>SURVEY NUMBER</b>	9
<b>NAME OF SURVEY</b>	ENVIRONMENTALLY SENSITIVE AREAS MONITORING.
<b>COMMISSIONING AGENT</b>	MINISTRY OF AGRICULTURE, FISHERIES AND FOOD
<b>EXECUTING AGENT</b>	ADAS
<b>CONTACT</b>	ADAS Block C Government Buildings Brooklands Avenue CAMBRIDGE CB2 2BL  Tel: (0223) 462762. Fax: (0223) 455911.  Present contact: Mr. Alan J. Hooper
<b>OBJECTIVES</b>	<p>To evaluate environmental impact resulting from the ESA scheme. The survey involved the establishment of a baseline record of the extent, distribution and condition of landscape elements (such as land cover, linear and point features) followed by resurvey to establish change. These changes were then evaluated to assess the effect on landscape quality and the extent to which they were attributable to the scheme.</p> <p>(The main purpose of the ESA's is to encourage the maintenance of and, in some places, the return to traditional farming practices).</p>
<b>PERIOD OF SURVEY</b>	<p>1st tranche ESA's</p> <p>Start 1986/87 baseline (aerial photography) End 1989/90 resurvey (aerial photography) Relaunched 1992 - monitoring will be continued.</p> <p>2nd tranche</p> <p>Start 1987/88 baseline (aerial photography) End 1990/91 resurvey (aerial photography)</p> <p>In some cases the resurvey was a sample of the ESA (e.g. Broads ESA - 20% resurveyed).</p>
<b>SURVEY METHOD</b>	Aerial photographic interpretation (API) using a land cover (one or two tiered), linear and point feature classification. The types of features monitored varied according to the objectives of the particular ESA. Baseline maps produced from the 1986/87 photos were compared with resurvey photography to identify land cover change. An accuracy assessment based on ground survey by an independent surveyor was carried on baseline and resurvey maps. 0.25 x 0.25, 0.5 x 0.5 or whole km squares were selected generally by stratified random sampling.

**DATA STORAGE & ANALYSIS**

**GEOGRAPHICAL CHARACTERISTICS**

Area of survey	All 10 designated ESA's in England.
Sampling frame	Almost complete coverage of the 10 ESA's in England for the baseline surveys. For some of the ESA's samples only were taken for the resurvey.
Sampling unit	Complete census
Recording unit	Land parcels, linear features and points, reported by individual ESA.
Scale of input	Most at 1:10,000 (some at between 1:8,500 and 1:13,000 scale).
Scale of output	1:10,000
Resolution	Variable for land cover and linear feature classes and particular ESA. <0.25 ha for some land cover classes (eg. scrub in South Downs ESA). Some linear features may be mapped to between 30-50 m.
Accuracy and error	From the field checks the overall accuracy of the land cover was between 79-97% (depending on survey). Accuracy assessments for linear features were only carried out in certain cases and proved to be less accurate than for land cover (e.g. 73% accuracy for the South Downs ESA).

**FORMS OF OUTPUT**

A series of baseline maps. These are stored digitally on microcomputer and are linked to a digital database in which areas and lengths of features are stored and readily accessible for analysis.

**PUBLICATION DATE(S)**

1st tranche - 1991  
2nd tranche - 1992 (to be confirmed)

**REFERENCES**

- Ministry of Agriculture Fisheries and Food. (1991). *The Pennine Dales Environmentally Sensitive Area*. (Report of Monitoring). HMSO, London.
- Ministry of Agriculture Fisheries and Food. (1991). *The Broads Environmentally Sensitive Area*. (Report of Monitoring). HMSO, London.
- Ministry of Agriculture Fisheries and Food. (1991). *The Somerset Levels and Moors Environmentally Sensitive Area*. (Report of Monitoring). HMSO, London.
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- Ministry of Agriculture Fisheries and Food. (1991). *West Penwith Environmentally Sensitive Area*. (Report of Monitoring). HMSO, London.
- Ministry of Agriculture Fisheries and Food. (1993). *The Test Valley Environmentally Sensitive Area*. (Report of Monitoring). HMSO, London.
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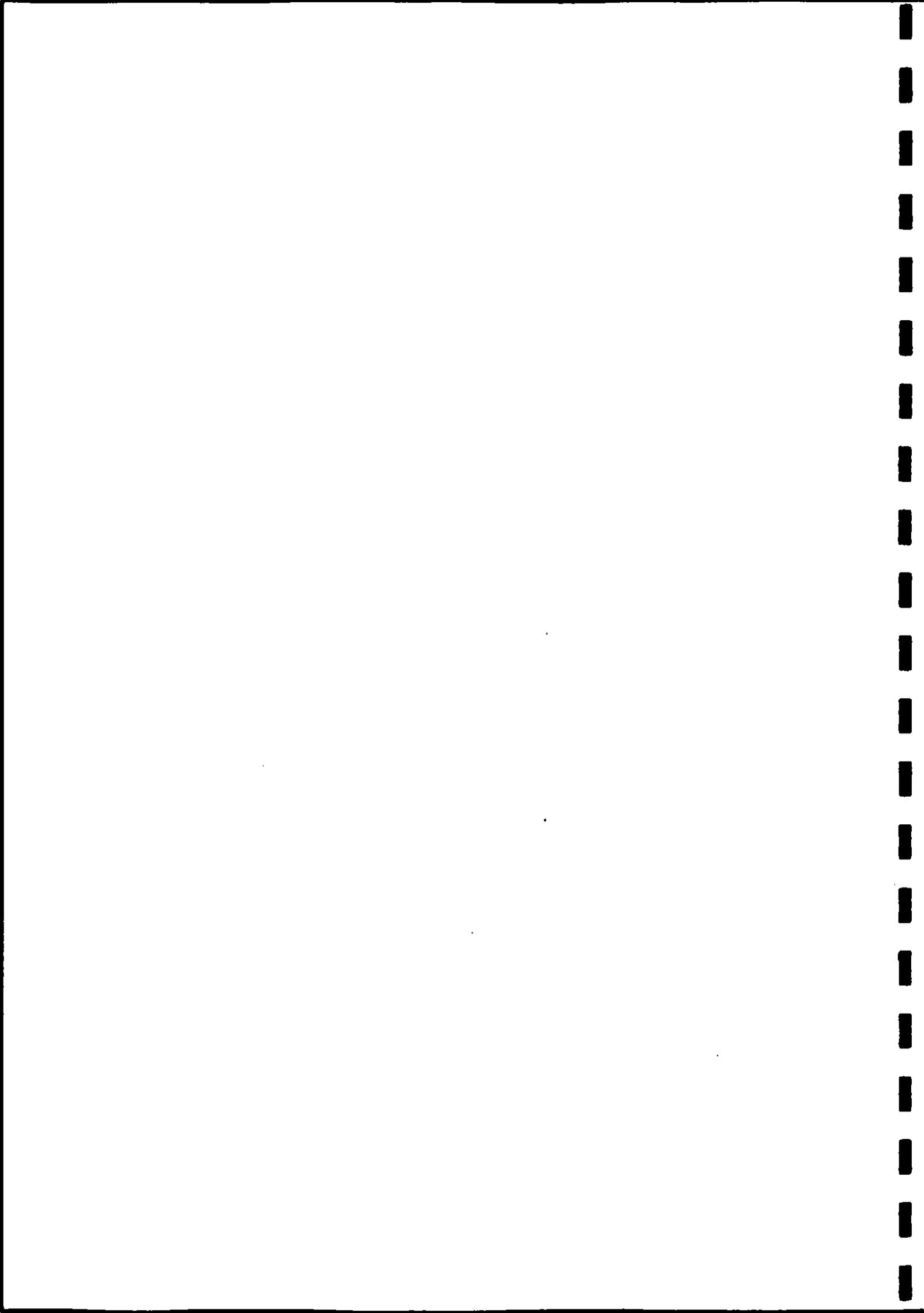
## Dictionary of Land Cover Surveys & Definitions

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Ministry of Agriculture Fisheries and Food. (1993). *The North Peak Environmentally Sensitive Area*. (Report of Monitoring). HMSO, London.

Ministry of Agriculture Fisheries and Food. (1993). *The Suffolk River Valleys Environmentally Sensitive Area*. (Report of Monitoring). HMSO, London.

Ministry of Agriculture Fisheries and Food. (1993). *The Brecklands Environmentally Sensitive Area*. (Report of Monitoring). HMSO, London.



## Dictionary of Land Cover Surveys & Definitions

<b>SURVEY NUMBER</b>	9
<b>NAME OF SURVEY</b>	ENVIRONMENTALLY SENSITIVE AREAS MONITORING
<b>COMMISSIONING AGENT</b>	WELSH OFFICE AGRICULTURE DEPARTMENT (WOAD)
<b>EXECUTING AGENT</b>	AGRICULTURE AND DEVELOPMENT ADVISORY SERVICE
<b>CONTACT</b>	ADAS Government Buildings St Agnes Road Gabalfa Cardiff CF4 4YH  Tel: (0222) 586000  Present contact: Mr K G Pugh
<b>OBJECTIVES</b>	<p>The aim of this survey was to establish a baseline record of the extent, distribution and condition of land cover and landscape features in ESAs and to monitor changes over time in these features in order to assess the impact of the ESA scheme on the character and quality of the landscape and also the schemes impact on other aspects of environmental interest.</p> <p>(The main purpose of the ESA's is to encourage the maintenance of and, in some places, the return to traditional farming practices).</p>
<b>PERIOD OF SURVEY</b>	
Start	1987 (Cambrian Mountains), 1989 (Lleyn Peninsula)
End	Resurveyed in 1991 by stratified random sampling (approximately 4% of the individual ESA area). Further surveys scheduled for the future.
<b>SURVEY METHOD</b>	<p>i. Cambrian Mountains ESA</p> <p>Aerial Photographic Interpretation (API) along with field surveys for land cover mapping. A significant amount of this work was conducted in connection with ESA operational purposes. Due to the nature of the ESA, point/linear feature analysis was limited.</p> <p>ii. Lleyn Peninsula ESA</p> <p>Aerial Photographic Interpretation (API) for land cover mapping, supplemented by selected field checking. Field surveys and ground photography used for point/linear and detailed land cover assessment in 65 stratified random samples areas.</p>
<b>DATA STORAGE &amp; ANALYSIS</b>	

**GEOGRAPHICAL CHARACTERISTICS**

Area of survey	Cambrian Mountains and Lleyn Peninsula ESAs.
Sampling frame	Complete coverage for the above ESAs at baseline. Resurvey information at sample level only.
Sampling unit	Individual ESAs.
Recording unit	Area, linear and point features.
Scale of input	Baseline land cover at 1:10,000. Point/linear features and detailed land cover on Lleyn Peninsula sample areas at 1:2500.
Scale of output	As above.
Resolution	
Accuracy and error	From accuracy assessment, the overall accuracy of land cover varied depending on class. Accuracy assessment not carried out on field survey/photographed sample areas.

**OUTPUT** A series of baseline maps, stored digitally on microcomputer. These are linked to a digital database in which areas and lengths of features are stored and readily accessible for analysis.

**PUBLICATION DATE(S)**

**REFERENCES**

9 Environmentally Sensitive Area Monitoring - Composite classification

Land cover / use categories and definitions

1 ARABLE

Land under agricultural (eg cereals, roots and brassicas) and horticultural crops, short-term grass leys (when part of a rotation), recent fallow land, cultivated bare, game cover and forage crops. Includes vineyards but excludes orchards.

2 GRASSLAND

2.1 RECREATIONAL GRASS

Grassland outside the urban envelope that is used for recreation.

2.2 IMPROVED GRASS

Enclosed grassland which has been agriculturally improved and / or intensively managed in the recent past by the application of fertilizers, pesticides, reseeding, drainage or stock grazing. Includes established grass leys. Swards are typically poor in species diversity and characteristically dominated by perennial ryegrass and clover. These grasslands are used for hay and / or stock grazing. More intensively managed grasslands are used for silage or high density grazing. Swards are usually bright green in colour with a relatively uniform sward height.

2.3 SEMI-IMPROVED PASTURE

Usually enclosed agriculturally managed grasslands which have been only slightly modified by the application of fertilizers, pesticides, drainage or stock grazing. These grasslands still retain at least some of the plant species typical of unimproved grasslands. Typically used for a single hay cut and / or stock grazing.

2.3.1 Acidic semi-improved pasture

Grasslands on an acidic substrate still retaining plants characteristic of these conditions, eg., the grasses fescues, bents and mat grass.

2.3.2 Neutral semi-improved pasture

Grasslands on a neutral substrate still retaining plants characteristic of these conditions.

2.3.3 Calcareous grass - semi-improved

Grasslands on a basic substrate still retaining plants characteristic of these conditions.

2.4 SEMI-IMPROVED ROUGH GRASS

Grasslands modified by grazing but not generally by the application of fertilizers, pesticides, drainage or reseeding.

2.4.1 Acidic semi-improved rough pasture

Contains species such as purple moor grass, mat grass, rushes and sedges.

2.4.2 Neutral semi-improved rough grass

**2.5 UNIMPROVED PASTURE**

Often unenclosed. Grassland which has not undergone any agricultural improvement by way of the application of fertilizers, pesticides, drainage or reseeded. These grasslands are grazed at a relatively low intensity and may be cut for hay. Often botanically rich especially on neutral or basic soils.

**2.5.1 Acidic unimproved pasture**

Grasslands on an acidic substrate with plants characteristic of these conditions, eg., the grasses fescues, bents and mat grass.

**2.5.2 Neutral unimproved pasture**

Grasslands on a neutral substrate with plants characteristic of these conditions.

**2.5.3 Calcareous grass - unimproved**

Grasslands on a basic substrate with plants characteristic of these conditions.

**2.5.4 Neutral/calcareous grass mosaic**

**2.5.5 Marsh rough grass**

Land dominated by such species as purple moor grass, mat grass, rushes and sedges. It often has a mix of shrub species and bracken in a mosaic. Often found on poorly drained sites (such as along lower valley slopes) and steep slopes.

**2.6 BRACKEN**

**2.6.1 Continuous bracken**

Areas dominated by dense bracken, often forming an almost closed canopy.

**2.6.2 Scattered bracken**

Areas where bracken fronds do not form a closed canopy and other plants grow in association. Limited amount of bracken litter.

**3 HEATH AND BOG**

**3.1 HEATHLAND**

Areas characterised by dwarf shrub species. Typical species include heather, bilberry and gorse species (*Ulex galii* and *U. minor*) which collectively comprise 25% or more of the vegetation cover in the mapping unit.

**3.1.1 Dry Shrub Heath**

>50% cover of dwarf shrub species. May be managed a slow input grazing land.

**3.1.2 Dry Heath/Grass Mosaic**

>50% cover of non-dwarf shrub species.

**3.1.3 Dry bilberry/crowberry mosaic**

>25% cover of dwarf shrubs which are dominated by bilberry and / or crowberry.

**3.2 BOG**

**3.2.1 Dry Bog**

**3.2.1.1 Dry Bog (heather dominant)**

Bog vegetation growing on deep peat (>50 cms deep) with heather forming >50% of the vegetation cover.

**3.2.1.2 Dry Bog (non-heather dominant)**

Bog vegetation growing on deep peat (>50 cms deep) with dwarf shrubs dominated by bilberry and / or crowberry and forming >50% of the vegetation cover.

**3.2.1.3 Dry Bog (grass predominant)**

Bog vegetation growing on deep peat (>50 cms deep) with cotton grass forming >50% of the vegetation cover.

**3.2.2 Wet Bog**

**3.2.2.1 Wet Bog (shrub predominant)**

>50% cover of dwarf shrub species, with *Sphagnum*.

**3.2.2.2 Wet Bog (grass predominant)**

>50% cover of non-dwarf shrub species, with *Sphagnum*.

**4 TREES WITH GRASS**

**4.1 PARKLAND**

**4.2 SCATTERED TREES**

Area where the tree canopy in woodland categories cover 5-30% of a mapped unit. Mapped as secondary code, ie. in addition to the predominant underlying land cover.

**5 WOODLAND, SCRUB & ORCHARDS**

Land where tree canopy accounts for >30% of a mapped unit (>0.25 ha). Includes broadleaved and coniferous woodlands, both semi-natural and plantations. Includes newly planted areas, shrub and carr, orchards and recently felled and cleared areas.

**5.1 BROADLEAVED WOODLAND**

Woodland where 70% or more of the tree canopy is of broadleaved tree species.

**5.1.1 Semi-natural Broadleaved Woodland**

**5.1.2 Plantation Broadleaved Woodland**

**5.1.3 Felled Broadleaved Woodland**

**5.2 CONIFEROUS WOODLAND**

Woodland where 70% or more of the tree canopy is of coniferous tree species.

**5.2.1 Semi-natural Coniferous Woodland**

Coniferous woodland comprising irregularly spaced groups of naturally regenerating trees.

**5.2.2 Plantation coniferous woodland**

Planted coniferous woodland usually comprising of geometric plantation blocks of evenly spaced trees placed in rows parallel to block edges.

**5.2.3 Felled Coniferous Woodland**

**5.3 MIXED WOODLAND**

Woodland with a canopy cover of at least 30% of each conifers and broadleaved trees present.

**5.3.1 Semi-natural Mixed Woodland**

**5.3.2 Planted Mixed Woodland**

**5.3.3 Felled Mixed Woodland**

**5.4 ORCHARDS**

Areas with planted trees which are, or have been, used for the harvesting of tree fruit crops.

**5.5 SCRUB**

Communities of shrub species usually <5 m high, sometimes with occasional taller scattered trees and may have an understorey of bracken and / or grasses. Includes such species as European gorse, broom, bramble, hawthorn, blackthorn, hazel, birch and willows.

**5.5.1 Dense Scrub**

>80% of the ground area covered by scrub

**5.5.2 Scattered Scrub (scrub predominant)**

50-80% of the ground area covered by scrub

**5.5.3 Scattered Scrub (grass predominant)**

Between 10% and 50% of ground area covered by scrub.

**5.6 WITHY BEDS**

Willows grown for wickerwork. Harvested annually.

**6**      **UNVEGETATED**

Areas of bare soil, rock or other substrate with <10% vegetation cover. Excludes mineral extraction sites eg quarries and gravel pits.

**6.1**    **ARTIFICIAL ROCK EXPOSURE**

**6.2**    **NATURAL ROCK EXPOSURE**

**6.3**    **INLAND CLIFF**

**6.4**    **SCREE**

**6.5**    **LIMESTONE PAVEMENT**

**6.6**    **DISTURBED/BURNT**

Disturbed areas include bare ground resulting from bracken spraying. Burnt areas show clear evidence of recent burning.

**6.7**    **ERODED PEAT**

Areas of bog vegetation where >90% of the vegetation has been removed by erosion.

**6.8**    **PEAT WORKINGS**

Land used for the extraction of peat on a commercial basis.

**6.9**    **MUD FLAT AND SEA SHORE**

Occurs inside or outside the sea defenses but above Mean High Water. Comprises a mosaic of flooded areas, marram grass, reeds and other halophytic vegetation. Also includes dunes and seashore sand and shingle, which may be thinly grassed.

**7**      **WETLANDS**

**7.1**    **FEN VEGETATION**

Includes areas consisting of a mixture of tall grasses, sedges, rushes, and carr woodland - where carr exceeds 30% of the cover of an area it should be classed as scrub or woodland. Includes stands of tall herbaceous vegetation growing in usually permanently waterlogged ground. The plant communities intergrade and can form complex species mosaics. Can be botanically species-poor.

**7.2**    **FLUSHES**

**7.3**    **REEDBED**

Beds of tall reeds, sedges and carr woodland with a reed component of >60% and a woodland component of <30%.

**7.4**    **RIVER/EMBANKMENT VEGETATION**

Vegetation cover typically varies both along the length and across the width of the areas.

**8      WATER**

Includes tidal and non-tidal stretches of rivers and their main tributaries, lakes, ponds, meres and other flooded areas.

**8.1     STANDING WATER**

**8.2     RUNNING WATER**

**9      BUILT LAND**

All land within town and village "envelopes". Includes developed land (buildings with associated yards, gardens etc.) outside these "envelopes". Also includes active and derelict mineral extraction sites such as quarries and gravel pits (not water filled).

**9.1     URBAN**

Includes residential and industrial buildings and associated gardens yards etc., areas of industrial open space water treatment works, military bases, roads railway land etc. Includes sports fields, parks and other recreational land where these occur within the urban "envelope".

**9.2     FARMSTEADS**

All farmhouses, farm storage sheds, animal housing and farm yards.

**9.3     HORTICULTURAL BUILDINGS**

All glass and polythene greenhouse for large scale horticultural production.

**9.4     SPOIL**

**9.5     MINE**

**9.6     QUARRY**

9a

**Environmentally Sensitive Area Monitoring - Broads**

**Land cover/use categories and definitions**

**1 ARABLE**

Winter cereals, oilseed rape, winter beans and horticultural crops. New grass leys, where drill lines are still apparent are classed as arable, as is recent fallow land, showing the patterns associated with its previous arable use. Also includes bare soil, which may have been sown or drilled with a spring crop.

**2 BROADS GRASSLAND - TYPE A**

Agriculturally managed grasslands which have been only slightly modified by fertilisers, pesticides, drainage or stock grazing. Includes the most botanically diverse grasslands in the ESA, and which is typically used for a single cut of hay and/or stock grazing.

**3 BROADS GRASSLAND - TYPE B**

Grasslands that have been improved by the application of fertilisers, pesticides, drainage, stock grazing or reseeded. Includes established grass leys. Swards are typically poor in species diversity and the grass is used for hay or stock grazing. More intensively managed grasslands are used for silage or high density grazing. Overgrazed pony paddocks, with a high content of unpalatable species such as nettles and docks, are included in this category.

**4 WOODLAND**

Land where the tree canopy accounts for >30% of the mapped area. Includes orchards, broadleaved and coniferous plantations, tall broadleaved woodlands, carr and scrub. Recently felled and cleared areas are also classed as woodland.

**5 FEN VEGETATION**

Typically consists of a mixture of tall grasses, sedges, rushes, reeds and carr woodland. Where carr exceeds 30% cover the area is classed as woodland. Some very small areas of salt marsh, adjacent to Breydon Water, are also included in this class.

**6 REEDBED**

Typically consists of tall reeds, sedges and carr woodland, with a reed component of >60% and woodland component of <30%. Blocks are harvested on a regular basis to provide thatching materials.

**7 RIVERBANK/EMBANKMENT VEGETATION**

The vegetation cover typically varies both along the length and across the width of the areas. The full range of vegetation types (except for arable crops) may be represented. In some areas embankments are grazed.

**8 RECREATIONAL LAND**

Only identified where it occurs outside the urban "envelope".

9      WATER BODIES

Excludes rivers and tidal areas (ic. Breydon Water).

10     URBAN

Within town and village envelopes all land is classified as urban. Outside these "envelopes", developed land (buildings with associated yards, gardens etc) are also included in this urban category, as are active mineral extraction and landfill sites.

9b Environmentally Sensitive Area Monitoring - Pennine Dales

Land cover / use categories and definitions

1 MEADOW/PASTURE

1.1 ACIDIC GRASSLAND- SEMI-IMPROVED

1.2 NEUTRAL GRASSLAND - UNIMPROVED AND SEMI-IMPROVED

1.3 CALCAREOUS GRASSLAND

1.4 NEUTRAL/CALCAREOUS GRASSLAND MOSAIC

1.5 IMPROVED GRASSLAND

2 ROUGH PASTURE

2.1 NEUTRAL GRASSLAND - SEMI-IMPROVED ROUGH PASTURE

2.2 MARSH GRASSLAND

3 BRACKEN

3.1 CONTINUOUS BRACKEN

3.2 SCATTERED BRACKEN

4 ACIDIC GRASS MOOR

4.1 ACIDIC GRASSLAND - SEMI-IMPROVED ROUGH PASTURE

4.2 ACIDIC GRASSLAND - UNIMPROVED

4.3 WET BOG - WHERE OVER 50% COVER IS NON DWARF SHRUB SPECIES

4.4 ACIDIC DRY HEATH/ACIDIC GRASSLAND MOSAIC - WHERE OVER 50% COVERS NON-DWARF SHRUB SPECIES

4.5 FLUSHES

5 HEATHER AND OTHER DWARF SHRUBBY VEGETATION

5.1 ACIDIC DRY HEATH

5.2 ACIDIC DRY HEATH/ACIDIC GRASSLAND - WHERE OVER 50% COVER IS DWARF SHRUB SPECIES

5.3 WET BOG - WHERE OVER 50% COVER IS DWARF SHRUB SPECIES

**6**     SCRUBLAND

**6.1**    DENSE SCRUB

**6.2**    SCATTERED SCRUB

**7**     SCATTERED TREES

**7.1**    PARKLAND

**7.2**    SCATTERED TREES

**8**     BROAD-LEAVED WOODLAND

**8.1**    SEMI-NATURAL BROAD-LEAVED WOODLAND

**8.2**    BROAD-LEAVED PLANTATION

**9**     CONIFEROUS WOODLAND

**9.1**    CONIFEROUS WOODLAND, SEMI-NATURAL AND PLANTATION

**9.2**    FELLED CONIFEROUS PLANTATION

**10**    MIXED WOODLAND

**10.1**   SEMI-NATURAL MIXED WOODLAND

**10.2**   PLANTED MIXED WOODLAND

**10.3**   FELLED MIXED WOODLAND

**11**    ARABLE

**12**    OPEN WATER

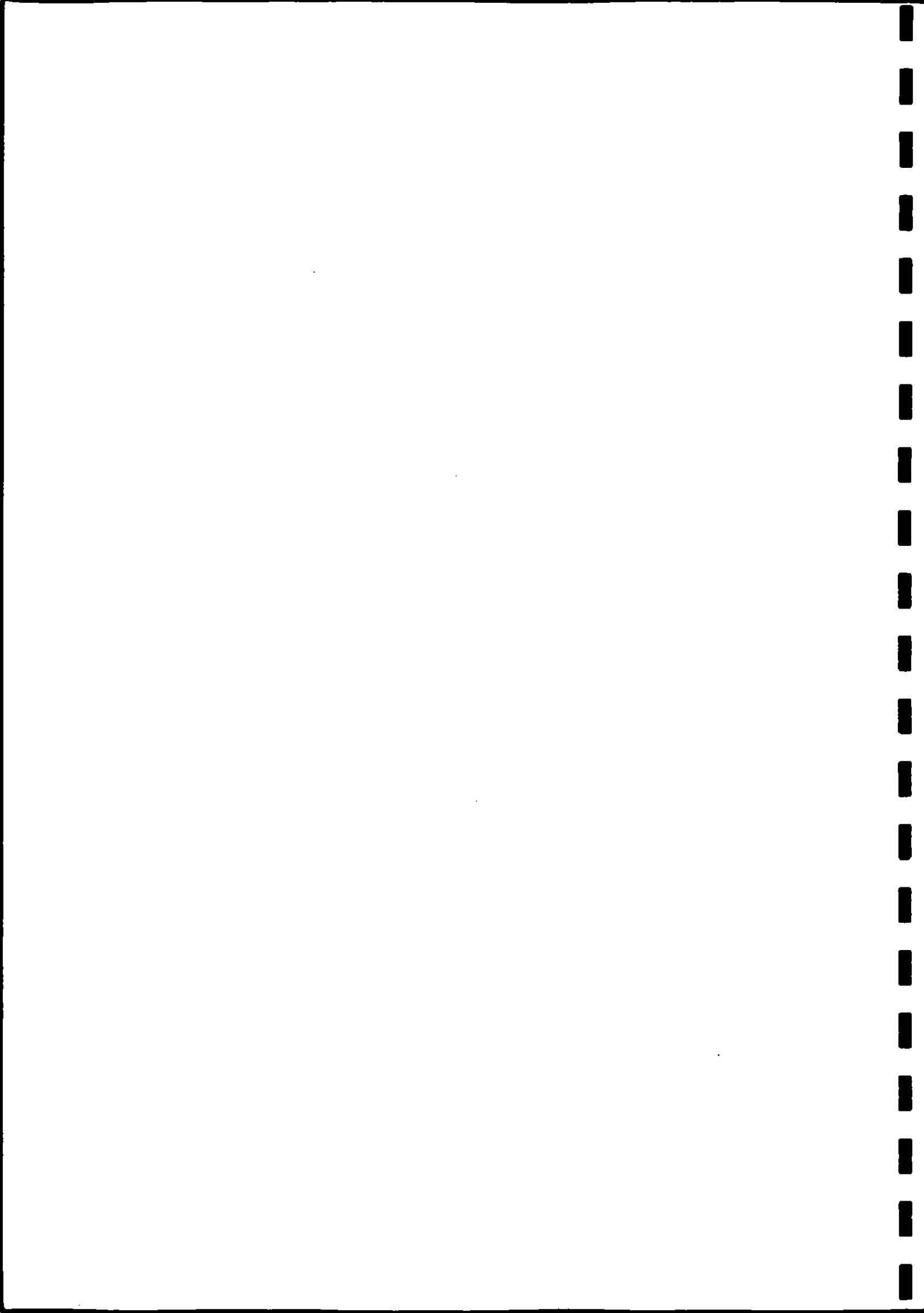
**12.1**   WATER

Dictionary of Land Cover Surveys & Definitions

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- 13    BARE ROCK
- 13.1    ARTIFICIAL EXPOSURE
- 13.2    NATURAL EXPOSURE
- 13.3    INLAND CLIFF
- 13.4    SCREE
- 13.5    LIMESTONE PAVEMENT
- 13.6    SPOIL
- 13.7    MINE
- 13.8    QUARRY
- 13.9    DISTURBED
  
- 14    URBAN

Note: Some categories are based on categories of the Nature Conservancy Council's Phase 1 Habitat survey.



9c

**Environmentally Sensitive Area Monitoring -  
Somerset Levels and Moors**

**Land cover/use categories and definitions**

**1 IMPROVED GRASSLAND**

Grassland with <35 species in the sward (excluding field edge/ditch species). Few sedges and no indicators of traditionally managed grassland. Managed drainage system and artificial fertilisers used. Intense utilisation for grazing and/or grass conservation.

**2 TRADITIONALLY MANAGED GRASSLAND**

Grassland with >35 species in the sward. Sedges common. Some underdrainage may be present. Little or no fertiliser application. Generally only farmyard manure used although artificial fertiliser used occasionally in some fields. Less intense utilisation for grazing and hay.

**3 ARABLE**

Ploughed fields or fallow. Planted crops, cereals, root crops and brassicas. Grassland which has been reseeded in the current season.

**4 SCRUB**

Bracken, bushes on unimproved grassland.

**5 PEAT WORKINGS**

Land used for the extraction of peat on a commercial basis.

**6 WATER**

Open pools of water. Main rivers.

**7 ORCHARDS**

Areas with trees which are, or have been, used for the harvesting of tree fruit crops.

**8 DECIDUOUS WOODLAND**

Groupings of deciduous trees.

9 WITHY BEDS

Willows grown for wickerwork. Harvested annually.

10 NON-AGRICULTURAL LAND/URBAN

All industrial buildings and residential areas with their associated yards and gardens. Sports fields and parks. Main lines of communication including all tarmac roads, drives whether surface is hardcore, tarmac or grass. Railway lines.

11 FARMSTEADS

All farmhouses, farm storage sheds, animal housing and farmyards.

12 HORTICULTURAL BUILDINGS

All glass and polythene greenhouses for large scale horticultural production.

9d **Environmentally Sensitive Area Monitoring - South Downs**

**Land cover/use categories and definitions**

1 **ARABLE**

Land under agricultural crops and short-term ley pasture as part of a rotation. Includes game cover crops, vineyards and horticultural land.

2 **IMPROVED GRASSLAND**

Grassland which has been agriculturally improved and/or intensively managed in the recent past. Usually bright green in colour with relatively uniform sward height. Sward has low plant species diversity, dominated by grasses with only a small proportion of herbs. Includes most amenity grassland (if not recorded as non-agricultural).

3 **SEMI-IMPROVED GRASSLAND**

Grassland which, although retaining some of the plant species typical of unimproved grassland, has been affected by agricultural operations. Includes "neglected" grassland which would otherwise be included in the unimproved category. Usually has a greater proportion of herbs in sward than improved grassland.

4 **UNIMPROVED GRASSLAND**

Grassland which has not undergone any agricultural improvement. On chalk, often occurs on steep slopes. Dull brownish green in colour (never bright green) and has varied sward height. The presence of anthills and/or scrub are good indicators. On both chalk and neutral soils are usually botanically rich and contain "indicator" species. Chalk grassland usually supports over 30 plant species per square metre, and neutral grassland over 25.

5 **SCRUB**

Seral or climax vegetation dominated by locally-native shrubs, usually <5 m tall, occasionally with a few scattered trees. The shrub species present are predominantly Hawthorn (*Crataegus monogyna*), Blackthorn (*Prunus spinosa*), Gorse (*Ulex europaeus*), and Juniper (*Juniperus communis*), together with areas of brambles (*Rubus fruticosus*).

5.1 **DENSE SCRUB**

Over 80% of ground area covered by scrub.

5.2 **SCATTERED SCRUB WITH GRASSLAND**

Between 50% and 80% of ground area covered by scrub.

5.3 **GRASSLAND WITH SCATTERED SCRUB**

Between 10% and 50% of ground area covered by scrub.

6 **WOODLAND**

Canopy comprising coniferous and/or broadleaved trees.

7 **SWAMP AND MARGINAL**

Reed (*Phragmites* spp.) or Sedge (*Carex* spp.) beds or stands of tall herbaceous vegetation growing in usually permanently waterlogged ground or along margins of water courses. The plant communities intergrade and can form complex mosaics. Can be botanically species-poor.

8 **OPEN WATER**

All rivers and lakes featured on OS maps and obvious on aerial photographs. Small features such as farm ponds or small streams are not recorded. Ditches <3 m wide and not shown on OS maps are mapped as linear features.

9 **NON-AGRICULTURAL**

Built-up areas including farm complexes, quarries, roads and tracks, golf and race courses and other sporting complexes.

9e **Environmentally Sensitive Area Monitoring - West Penwith**

**Land cover/use categories and definitions**

1 **SEMI-NATURAL AND SEMI-IMPROVED GRASSLAND**

Grassland in which improved agricultural grasses are sub-dominant. It includes *Molinia* grassland and areas of grassland with <50% bracken cover.

2 **DENSE HEATHLAND**

Dwarf shrub heath, typically comprising Western gorse and heathers with <50% grass content.

3 **HEATHLAND MIX**

Dwarf shrub heath mixed with, or in a mosaic, with grassland species, bracken or gorse.

4 **BRACKEN**

Areas dominated by bracken, often with *Molinia* or other semi-natural grasses.

5 **SCRUB**

European gorse, willow, blackthorn and other scrub vegetation, often with an understorey of bracken or grasses.

6 **WOODLAND**

Broadleaved and coniferous woodland.

7 **CULTIVATED LAND**

Improved grassland and arable land.

8 **BURNT**

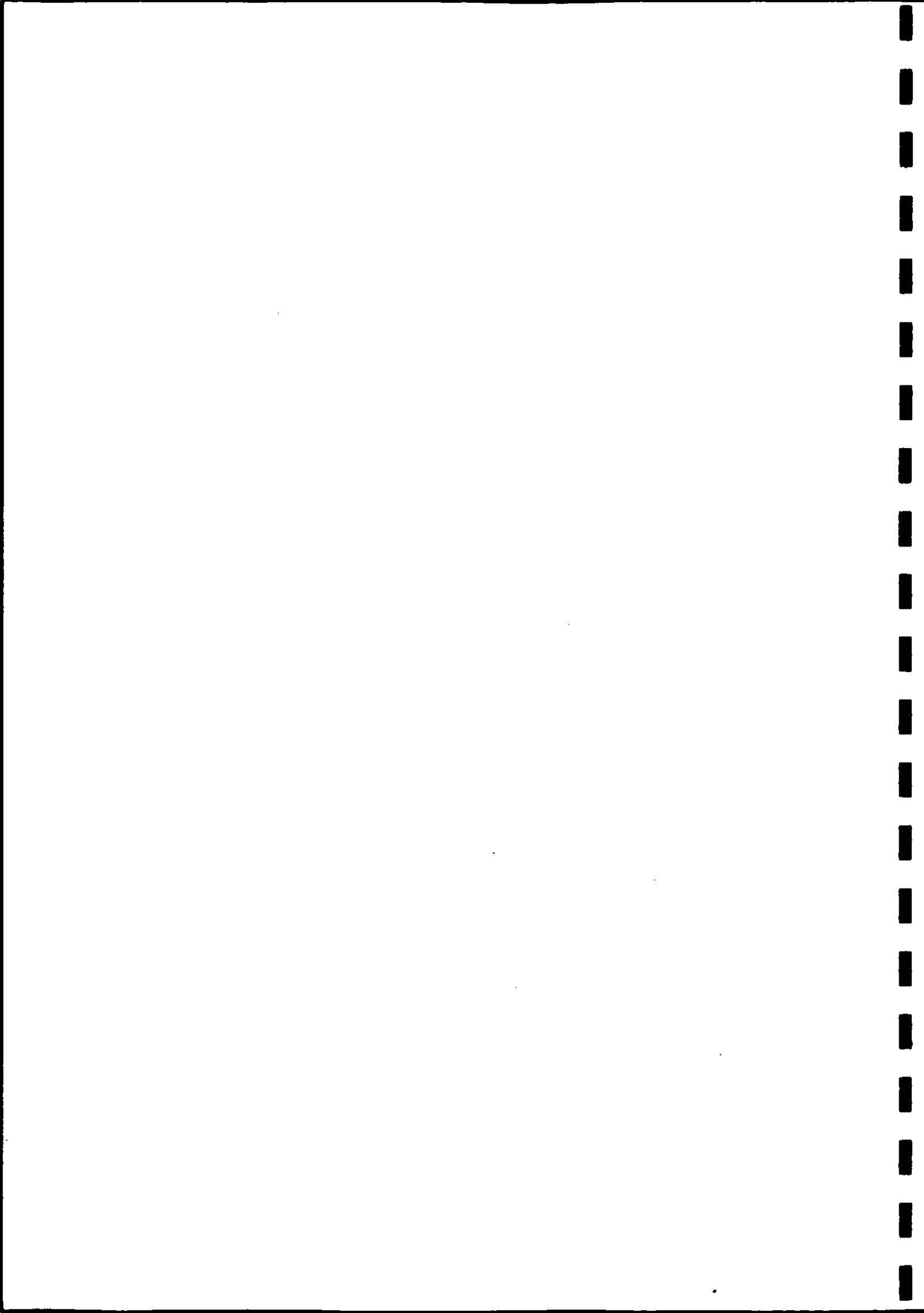
Areas with clear evidence of recent burning.

9 **URBAN**

Farm buildings, non-farm buildings, roads.

10 **OTHER**

Quarries, spoil, tors, maritime cliffs, open water, mires.



9f Environmentally Sensitive Area Monitoring - Breckland

Land cover/use categories and definitions

1 ARABLE

Includes agricultural land, horticultural land, short term leys, orchards and short term pig and poultry grazing.

2 GRASSLAND

2.1 SEMI-IMPROVED DRY GRASSLAND

Relatively low management input grazing land, usually on freely draining soil away from the river floodplains. Typically dry in character with a wide diversity of plant species. Heather may extend to 10% cover.

2.2 FLOODPLAIN GRASSLAND

Grassland lying within the floodplain. Typically wet in character, but small areas of dry grassland can exist. Generally low to moderate input grazing land; includes a small amount of reedbed.

2.3 OTHER GRASSLAND

Moderate to high input wet or dry grassland occurring outside the floodplain; includes traditionally managed valley slopes grazing land, improved stud farm grassland and some long term sheep leys.

3 HEATHLAND

3.1 DRY GRASSLAND/*CALLUNA* MOSAIC

Heathland comprising a mosaic of semi improved dry grassland and *Calluna*. (*Calluna* cover ranges from 10 to 50%). Typically low input rich grazing land occurring on the plateau and upper valley sides.

3.1 *CALLUNA* HEATH

Heathland dominated by *Calluna* in the range of 50 to 100% cover. Managed as low input grazing land on the central Breckland plateau.

4 WOODLAND

4.1 CONIFEROUS WOODLAND

Geometric plantation blocks of evenly spaced conifers placed in rows parallel to block edges. Occasionally located on the heaths, as irregularly spaced groups of naturally regenerating conifers.

4.2 MIXED/BROADLEAF WOODLAND

Includes broadleaf woodland species or mixed woodland with at least 30% conifers or 30% broadleaf trees present. Typically boundaries and rows are irregular but plantation blocks also exist, mainly as stands of monoculture eg poplars in the river valleys.

**5      WATER BODIES**

Ponds, lakes, rivers and meres.

**6      URBAN AND ASSOCIATED LAND**

Includes urban land, golf courses, public open space, recreational grounds, military bases, active mineral workings, derelict and vacant land and transport land.

9g **Environmentally Sensitive Area Monitoring - North Peak ESA**

**Land cover/use categories and definitions**

**1 HEATHER MOORLAND DOMINANT**

**1.1 DRY DWARF SHRUB HEATH - HEATHER DOMINANT**

Vegetation with >25% cover of ericoids or small gorse species. Heather constitutes >50% of the dwarf shrubs present. Usually found on unenclosed moorland on thin peat (<50 cms deep) or mineral soils.

**1.2 DRY BOG WITHOUT SPHAGNUM - HEATHER DOMINANT**

Bog vegetation growing on deep peat - (> 50 cm deep) with heather forming >50% of the vegetation present. Usually found on higher wetter areas than previous and next habitat.

**2 BILBERRY/CROWBERRY MOORLAND**

**2.1 DRY DWARF SHRUB HEATH - NON HEATHER DOMINANT**

Description as 1.1 but dominated by bilberry and/or crowberry. Heather is often found but is <50% of dwarf shrubs.

**3 BILBERRY/CROWBERRY/COTTON GRASS MOORLAND**

**3.1 DRY BOG WITHOUT SPHAGNUM - NON HEATHER DOMINANT**

Bog vegetation growing in deep peat with >50% - dwarf shrubs dominated by bilberry and/or crowberry.

**3.2 WET BOG WITH SPHAGNUM**

**4 COTTON GRASS MOORLAND**

**4.1 DRY BOG WITHOUT SPHAGNUM - COTTON GRASS DOMINANT**

Bog vegetation growing on deep peat (> 50 cms deep) with cotton grass forming >50% of the plant cover. Usually found on level areas where water collects and is generally wetter than 1.2 and 3.1.

**5 ERODING MOORLAND**

Areas of bog vegetation with a dense network of exposed and eroding peat channels covering >25% of the area.

**6 BARE PEAT**

Areas of bog where >90% of the vegetation has been removed by erosion.

**7 BARE GROUND**

An area of bare soil or other substrate with <10% vegetation cover. Many areas of bare ground recorded as habitat change result from bracken spraying destroying the bracken canopy exposing areas with <10% vegetation cover.

8 BRACKEN

8.1 CONTINUOUS BRACKEN

Areas dominated by bracken which forms a dense closed canopy often on rich mineral soils on steep slopes.

8.2 SCATTERED BRACKEN

Areas where bracken fronds do not form a closed canopy and other plants grow in association. Limited amount of bracken litter.

9 ACID GRASSLAND - UNIMPROVED

9.1 UNIMPROVED ACIDIC GRASSLAND

Unimproved, unenclosed grassland dominated by plants which tolerate low fertility and acidic soils.

9.2 MARSHY GRASSLAND - PURPLE MOOR GRASS DOMINANT

Unenclosed grassland with a high proportion of rushes, sedges and purple moor grass. Often very species poor with purple moor grass dominant. Commonly found in water receiving sites along lower valley slopes.

10 MEADOW/PASTURE

10.1 SEMI-IMPROVED ACIDIC GRASSLAND

Usually enclosed grassland which has been slightly improved. More species diversity than unimproved acidic grassland but retains species indicative of acidic conditions. Often found on less accessible inbye.

10.2 SEMI-IMPROVED NEUTRAL GRASSLAND

Usually enclosed managed grassland which has been improved. This is the most variable inbye habitat ranging from relatively species poor grassland to areas verging on unimproved neutral grassland.

10.3 IMPROVED GRASSLAND

Enclosed and intensively managed grassland. Usually receives regular treatment with fertilisers and is a species poor sward and of little wildlife interest. Typically this is found on some of the best inbye and is often cut for silage.

11 ROUGH PASTURE

11.1 SEMI-IMPROVED ACIDIC GRASSLAND ROUGH PASTURE

11.2 SEMI-IMPROVED NEUTRAL GRASSLAND ROUGH PASTURE

11.3 MARSH/MARSHY GRASSLAND - RUSH DOMINANT

12 SCRUB

12.1 CONTINUOUS SCRUB

12.2 SCATTERED SCRUB

Dictionary of Land Cover Surveys & Definitions

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- 13     BROADLEAVED WOODLAND
- 13.1   SEMI-NATURAL BROADLEAVED WOODLAND
- 13.2   PLANTATION BROADLEAVED WOODLAND

- 14     CONIFEROUS WOODLAND
- 14.1   PLANTATION CONIFEROUS WOODLAND

- 15     MIXED WOODLAND
- 15.1   SEMI-NATURAL MIXED WOODLAND
- 15.2   PLANTATION MIXED WOODLAND

- 16     ACIDIC FLUSH

- 17     ROCK EXPOSURE AND WASTE

- 17.1   CLIFF
- 17.2   SCREE
- 17.3   QUARRY
- 17.4   SPOIL

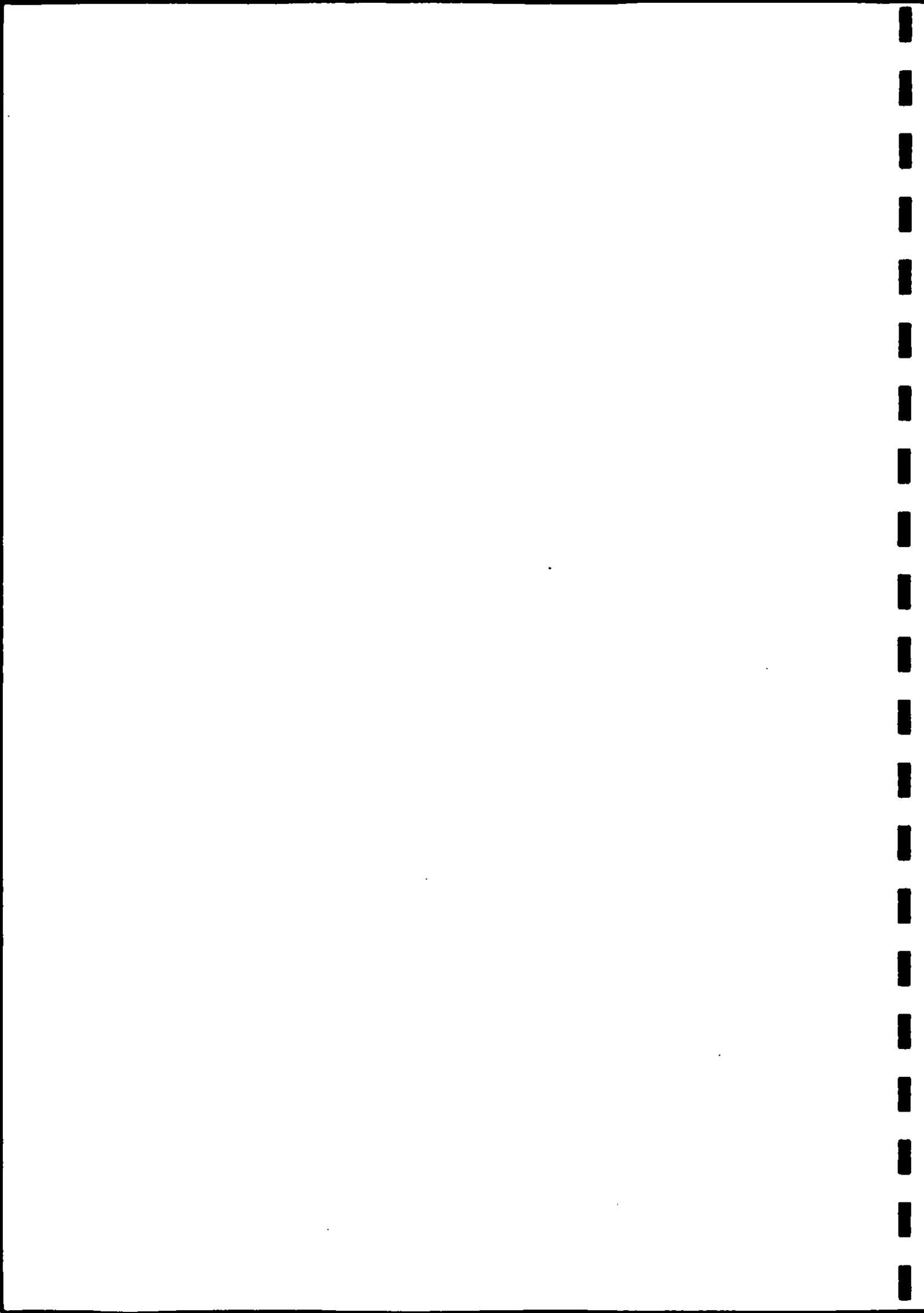
- 18     OPEN WATER
- 18.1   STANDING WATER
- 18.2   RUNNING WATER

- 19     CULTIVATED LAND
- 19.1   AMENITY GRASSLAND
- 19.2   ARABLE

Includes all arable land mainly recently reseeded grass leys with occasional fields of forage crops.

- 20     URBAN

Note: Some categories are based on categories of the Nature Conservancy Council's Phase 1 Habitat survey.



9h Environmentally Sensitive Area Monitoring - Shropshire Borders

Land cover/use categories and definitions

1 ARABLE

All non-grass farm crops cultivated annually, such as cereals and root crops. Includes any cultivated areas of bare earth not yet vegetated.

2 GRASSLAND

All grass, except rough grazing.

Embraces all grassland that is intensively managed by drainage, reseeding, fertiliser application or intensive stocking. Includes all ley grassland whether part of the 8-10 year arable rotation or not. Areas of nettles, thistles or rushes do not affect the classification where they are isolated and not widespread. This grassland is characteristically dominated by ryegrass and clover swards.

Also includes unimproved grassland and grassland that has been somewhat modified by grazing pressure, fertilisers, herbicides or past drainage and includes older reseeded fields and those with coarse grasses and tussocks. Rushes are often evident and widespread though not dominant. It is land not regularly ploughed, levelled, reseeded, drained or treated with fertilisers, lime, slag, herbicides or pesticides.

3 ROUGH GRAZING

Land dominated by less palatable semi-natural grass species such as mat grass and purple moor-grass. It often has a mix of scrub species, bracken and rushes in a mosaic with the semi-natural grass species. Often found on steep slopes, poorly drained sites and soils of lower fertility.

4 BROADLEAVED WOODLAND

Land where the tree canopy accounts for >30% of the mapped area, where trees are >5 m in height and where 90% or more of the tree canopy is broad-leaved.

5 CONIFEROUS WOODLAND

Land where the tree canopy accounts for >30% of the mapped area, and where conifers form 90% or more of the canopy.

6 MIXED WOODLAND

Land where the tree canopy accounts for >30% of the mapped area, and is mix of broadleaved and coniferous woodland with >10% of each woodland type.

7 RECENTLY FELLED WOODLAND

## Dictionary of Land Cover Surveys & Definitions

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### 8 SCRUB

Communities of bushes, shrubs and trees <5 m high with occasional taller scattered trees. Includes European gorse (*Ulex europeus*), broom, bramble, hawthorn, hazel, birch and willow.

### 9 BRACKEN

Land where bracken is dominant.

### 10 HEATHLAND

Areas characterised by dwarf shrub heath species. It includes heather, bilberry and gorse species (*Ulex gallii* and *Ulex minor*) which collectively comprise 25% or more of the vegetation cover in a mapping unit.

### 11 RUNNING WATER

All streams shown as a double line on Ordnance Survey 1:10,000 maps are identified as a cover feature.

### 12 URBAN

All built up areas and metalled roads, including farmsteads and hardstandings. Groups of farm buildings are identified, isolated buildings are not. Also included are quarries, where these are predominantly unvegetated.

### 13 SCATTERED TREES

Areas where the tree canopy in the woodland classes covers 5%-30% of a mapping unit. It is mapped in addition to the predominant underlying land cover.

9i **Environmentally Sensitive Area Monitoring - Suffolk River Valleys**

**Land cover/use categories and definitions**

1 **ARABLE**

Comprises agricultural and horticultural land including arable ley, but excludes orchards. Also includes recent fallow, and cultivated bare soil.

2 **GRASSLAND**

Ranges from low input extensively managed grassland, often found on river floodplains and coastal marshes to intensively managed high input grassland. Includes newly established Tier 3 grassland, but excludes arable ley.

3 **REEDBED AND ABANDONED PASTURE**

Includes reedbeds and undergrazed former wet grassland or grazed marsh in coastal/inland locations which has been neglected and overgrown by a few relatively tall herbaceous species.

4 **WOODLAND**

Woodland is identified where the tree canopy accounts for >50% of the area, and the area extends to at least 0.25 hectares. It includes orchards, broadleaved and coniferous woodlands and plantations, and also newly planted, recently felled and cleared areas. Also includes scrub.

5 **HEATH**

Comprises mostly bracken together with areas of *Calluna*, dry grassland and scrub. Typically found near the coast, but may occur in smaller areas on some inland valley shoulders.

6 **MUDFLAT & SEASHORE**

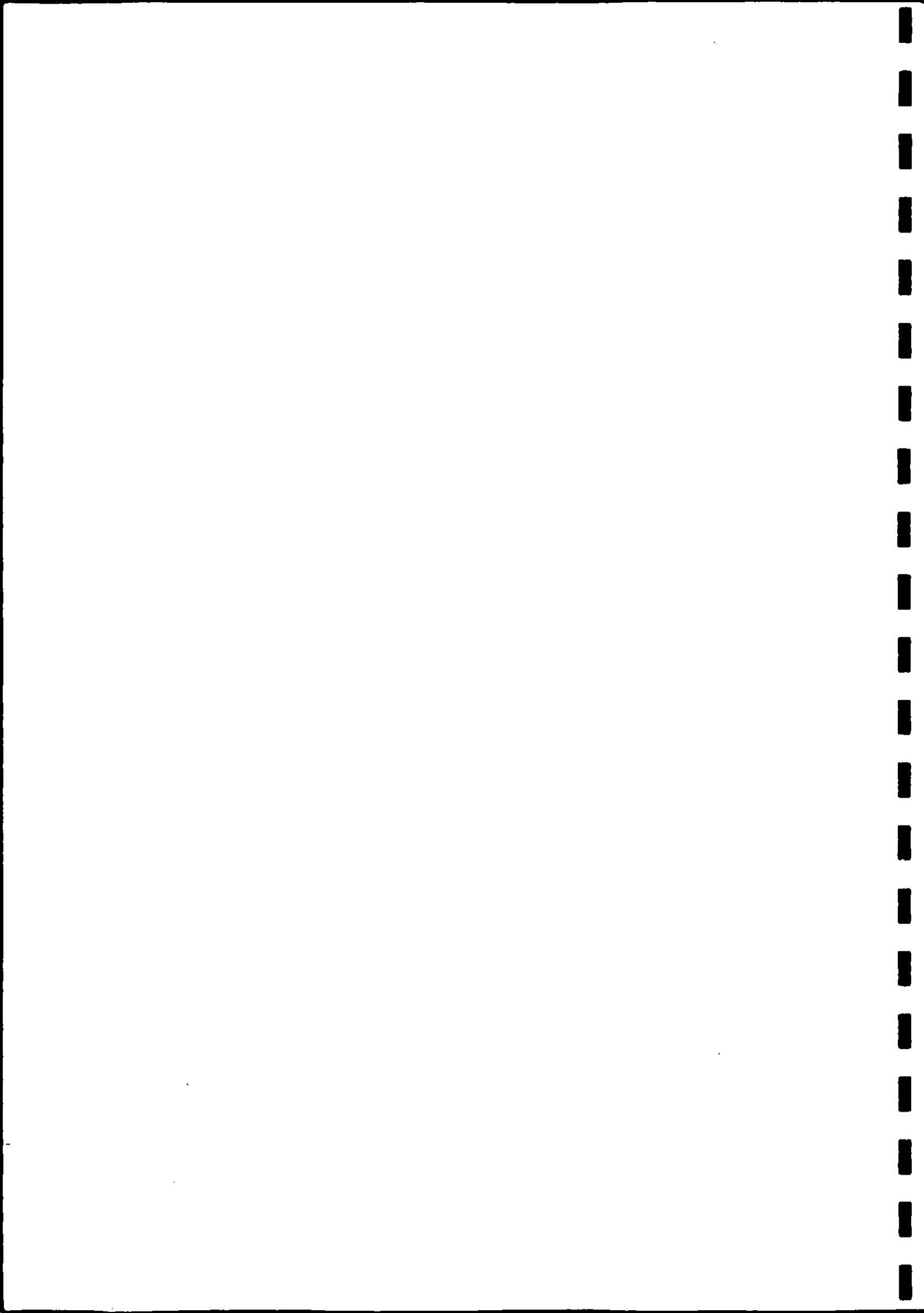
Occurs inside or outside the sea defences but above Mean High Water. Comprises a mosaic of flooded areas, marram grass, reeds and other halophytic vegetation. Also includes dunes and seashore sand and shingle, which may be thinly grassed.

7 **OPEN WATER**

Includes tidal and non-tidal stretches of rivers, lakes, ponds and flooded areas.

8 **URBAN & ASSOCIATED LAND**

Includes buildings and associated gardens, areas of industrial open space, water treatment works, road and railway embankments. School grounds and recreational land are included in this category as are military bases, current mineral workings and derelict and vacant land (including disused quarries with partial grass or scrub cover).



9j **Environmentally Sensitive Area Monitoring - Test Valley**

**Land cover/use categories and definitions**

1 **ARABLE**

Land under agricultural crops, short-term ley pasture as part of a rotation, recent fallow land, cultivated bare soil and game cover crops.

2 **IMPROVED GRASSLAND**

Grassland which has been agriculturally improved and/or intensively managed in the recent past. Usually bright green in colour with relatively uniform sward height. Sward has low plant species diversity, dominated by grasses with herbs only present in small amounts.

3 **SEMI-IMPROVED GRASSLAND**

Grassland which, although retaining some of the less sensitive plant species typical of unimproved grassland, has been affected by agricultural operations. Often low-lying with ridge and furrow drainage system still evident. This category includes "neglected" grassland which would otherwise have been included in the unimproved category. Usually has a greater proportion of herbs in sward than improved grassland.

4 **UNIMPROVED GRASSLAND**

Grassland which has not undergone any agricultural improvement or been drained. Dull green in colour (never bright green) and has varied sward height. Presence of anthills is a good indicator on drier areas. Very rich botanically with many "indicator" species present; usually supports >25 plant species per square metre. Three types of grassland are included in this category: wet neutral meadows, marsh/marshy grassland and calcareous grassland (on higher ground).

5 **DENSE SCRUB**

Complete canopy of scrub with no underlying vegetation visible on aerial photographs.

6 **WOODLAND**

Canopy comprising broadleaved and/or coniferous trees. Includes carr and recently felled or cleared areas.

7 **SWAMP AND MARGINAL**

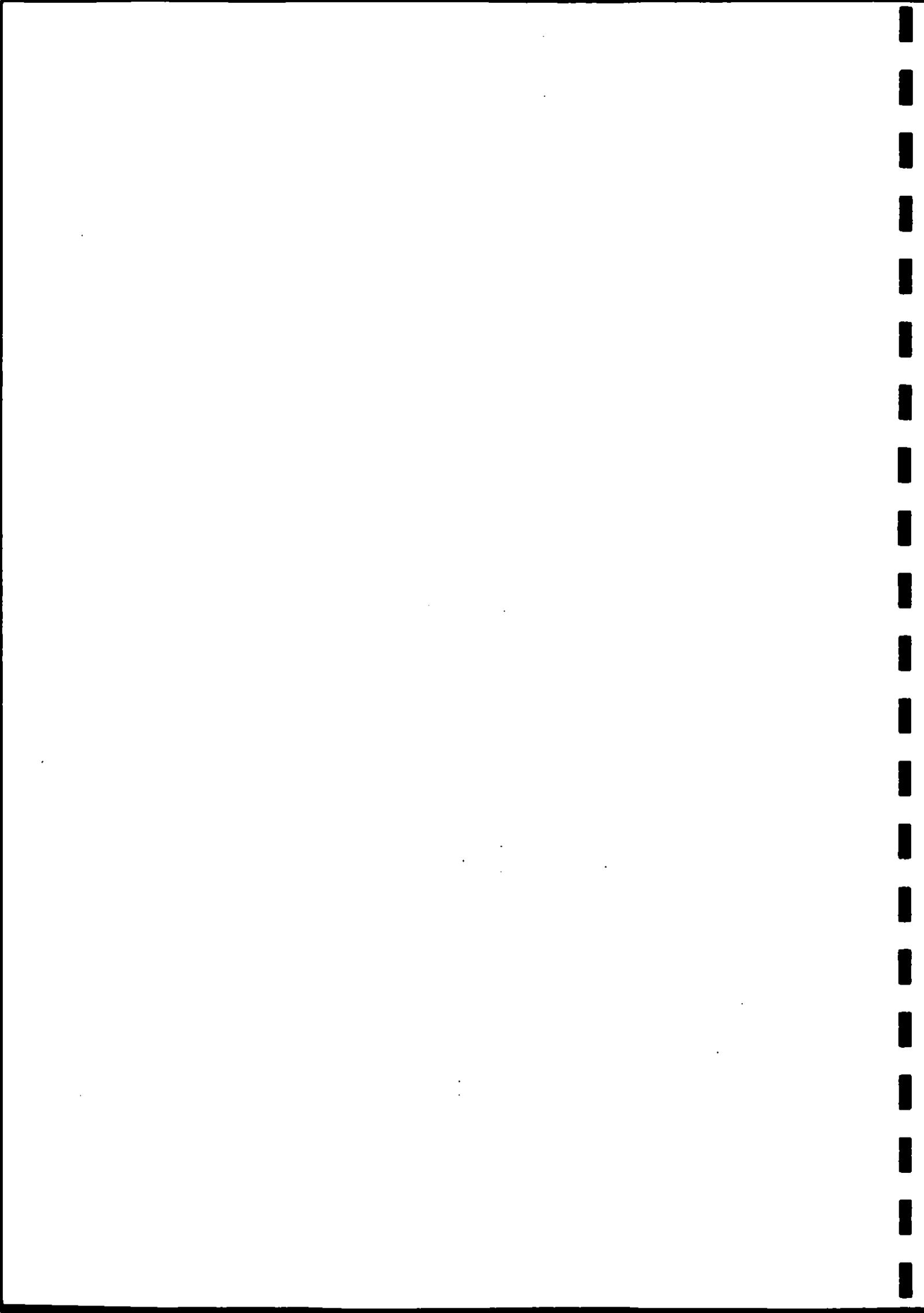
Reed (*Phragmites*) or Sedge (*Carex spp.*) beds or stands of tall herbaceous vegetation growing in usually permanently waterlogged ground or along margins of water courses. The plant communities intergrade and can form complex mosaics. Can be botanically species-poor.

8 **OPEN WATER**

The river, its main tributaries and channels and lakes and ponds.

9 **NON-AGRICULTURAL**

Built-up areas, gardens, amenity areas, roads and quarries.



9k

**Environmentally Sensitive Area Monitoring - Cambrian Mountains**

**Land cover/use categories and definitions**

**1 SEMI-NATURAL ROUGH GRAZING**

Unimproved land characterised by a predominance (75% cover or more) of semi-natural vegetation species. These are mainly:- semi-natural grasslands comprised of purple moor grass, mat grass, bents and fescues; boggy areas of cotton sedge, deer grass, bog mosses, sedges and rushes; heather and bilberry or crowberry heaths; and bracken and scrub.

**2 IMPROVED LAND**

Land consisting predominantly of improved grassland, although may include areas transitional with SNRG containing up to 25% semi-natural vegetation.

**3 BROADLEAVED WOODLAND**

Woodlands where more than 50% by area is composed of broadleaved species of tree.

**4 CONIFEROUS WOODLAND**

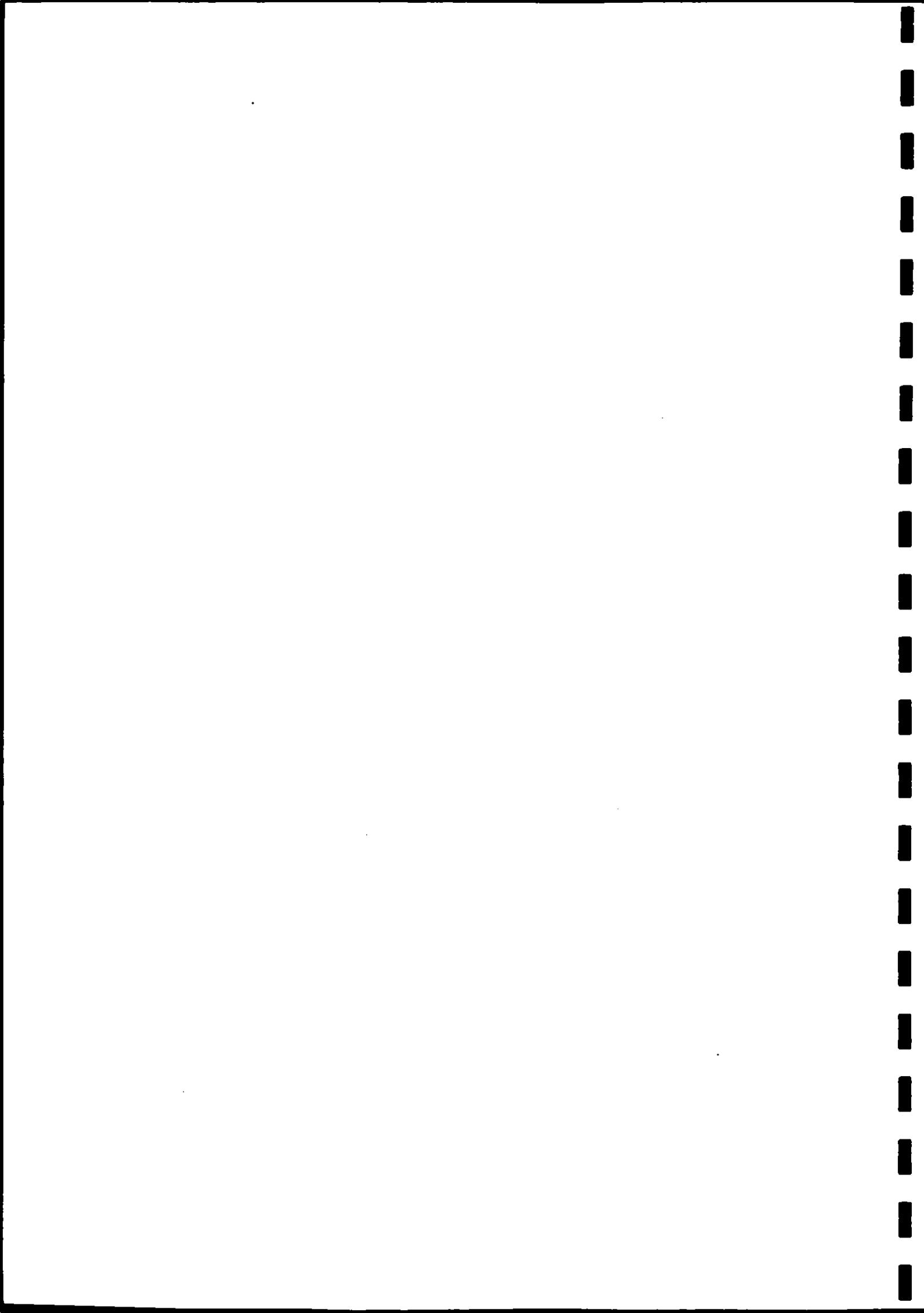
Woodlands where more than 50% by area is composed of coniferous species of tree.

**5 STANDING WATER**

Reservoirs and lakes but excluding farm ponds.

**6 SETTLEMENT AND UNVEGETATED GROUND**

Towns and villages, but excluding farmsteads and isolated buildings; remains of industrial activity such as lead mining spoil.



91

**Environmentally Sensitive Area Monitoring - Lleyn Peninsula**

**Land cover/use categories and definitions**

**1 IMPROVED LAND**

Agricultural land which has been improved and is normally managed to a moderate or high intensity. Most is under permanent pasture, though arable land is also included, as well as bare ground where pastures were being reseeded.

**2 MARSHY GRASSLAND AND WETLAND**

Land ranging from marshy grassland consisting of wet meadows and pastures, normally on shallow peats or soils with impeded drainage, to wetland where the water table is at or close to the surface. Typically marshy grassland contains more than 25% cover of rushes or purple moor grass with a range of wet ground herbs. On more water logged ground the vegetation is characterised by rushes, sedges, cotton grass, mosses and reeds.

**3 UNIMPROVED AND SEMI-IMPROVED GRASSLAND**

Land with more than 50% cover of grass species which has either never been agriculturally improved such as the unenclosed semi-natural grassland on steep coastal slopes or mountainous areas, or which occurs in enclosures which exhibit signs of some level of improvement in the past but not so in recent years. The latter is typically of a neglected or little managed appearance and commonly shows evidence of invasion by bracken, scrub or rushes. Rush infestation is a common indicator of pasture reversion on the Lleyn and grassland of this type is included in this category even where the rush cover exceeds 50%.

**4 DWARF SHRUB HEATH**

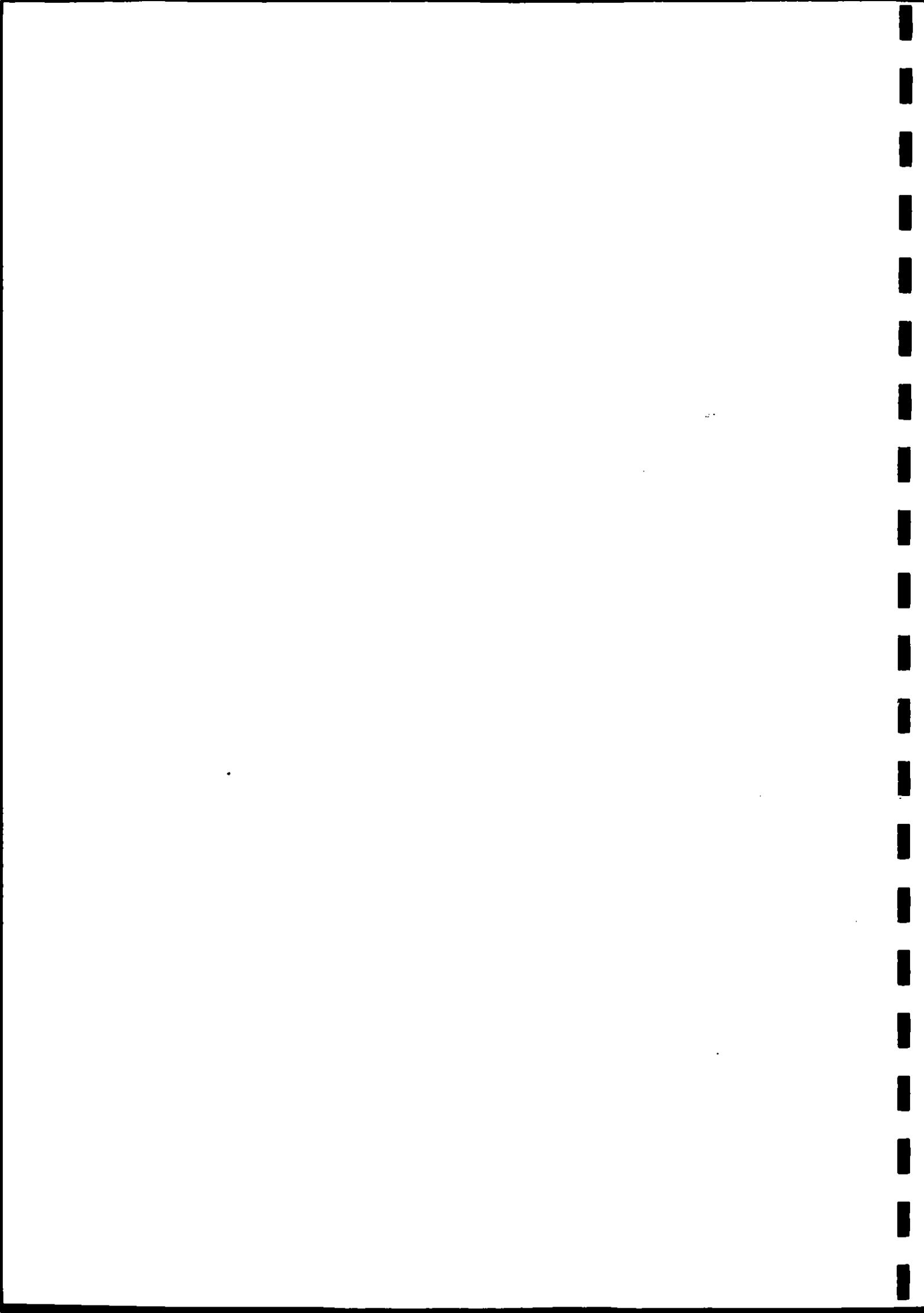
Land with greater than 25% cover of heather, western gorse, or bilberry. It is normally unenclosed, occurring mainly on the higher ground of the uplands and as coastal heaths.

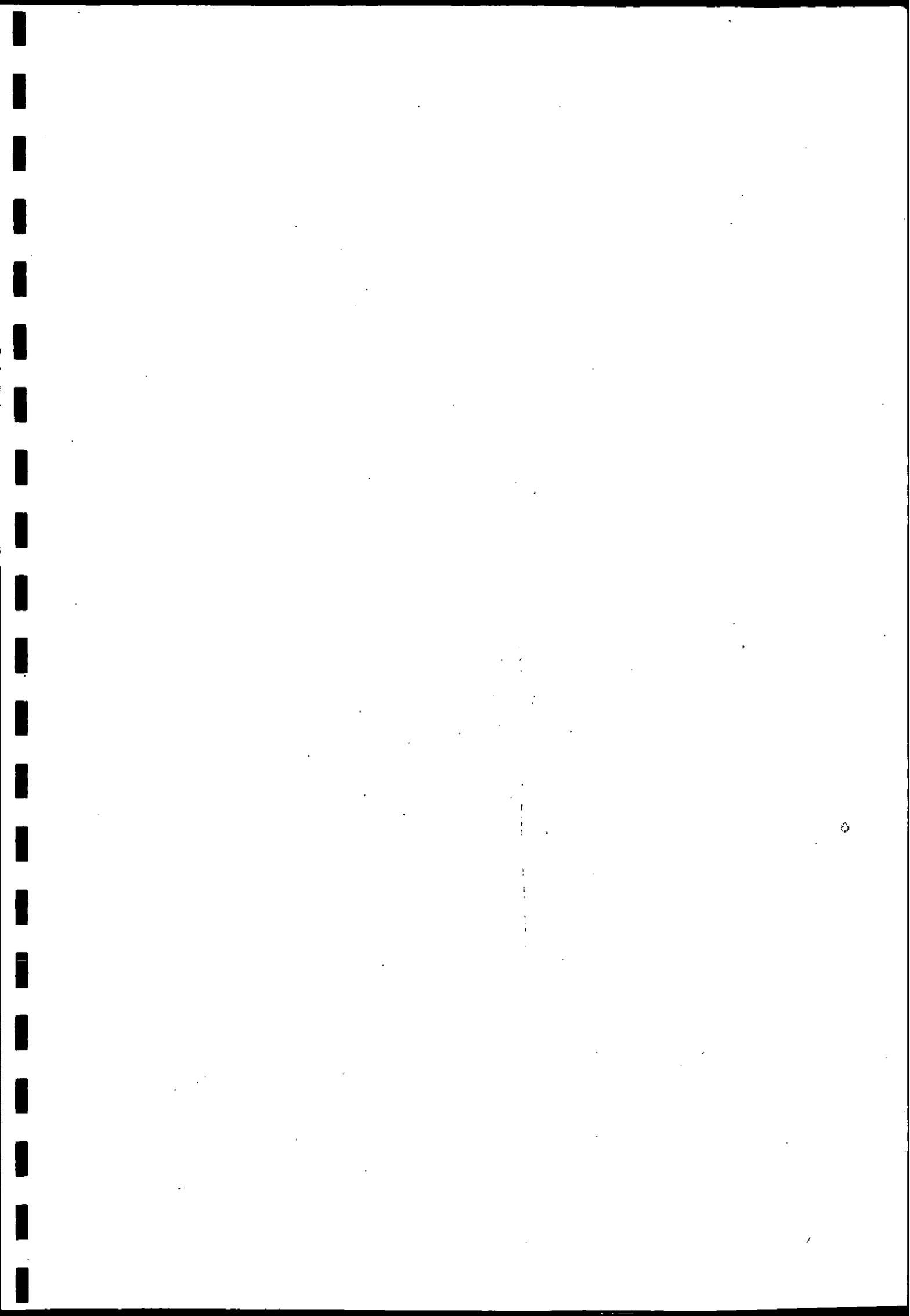
**5 SCRUB**

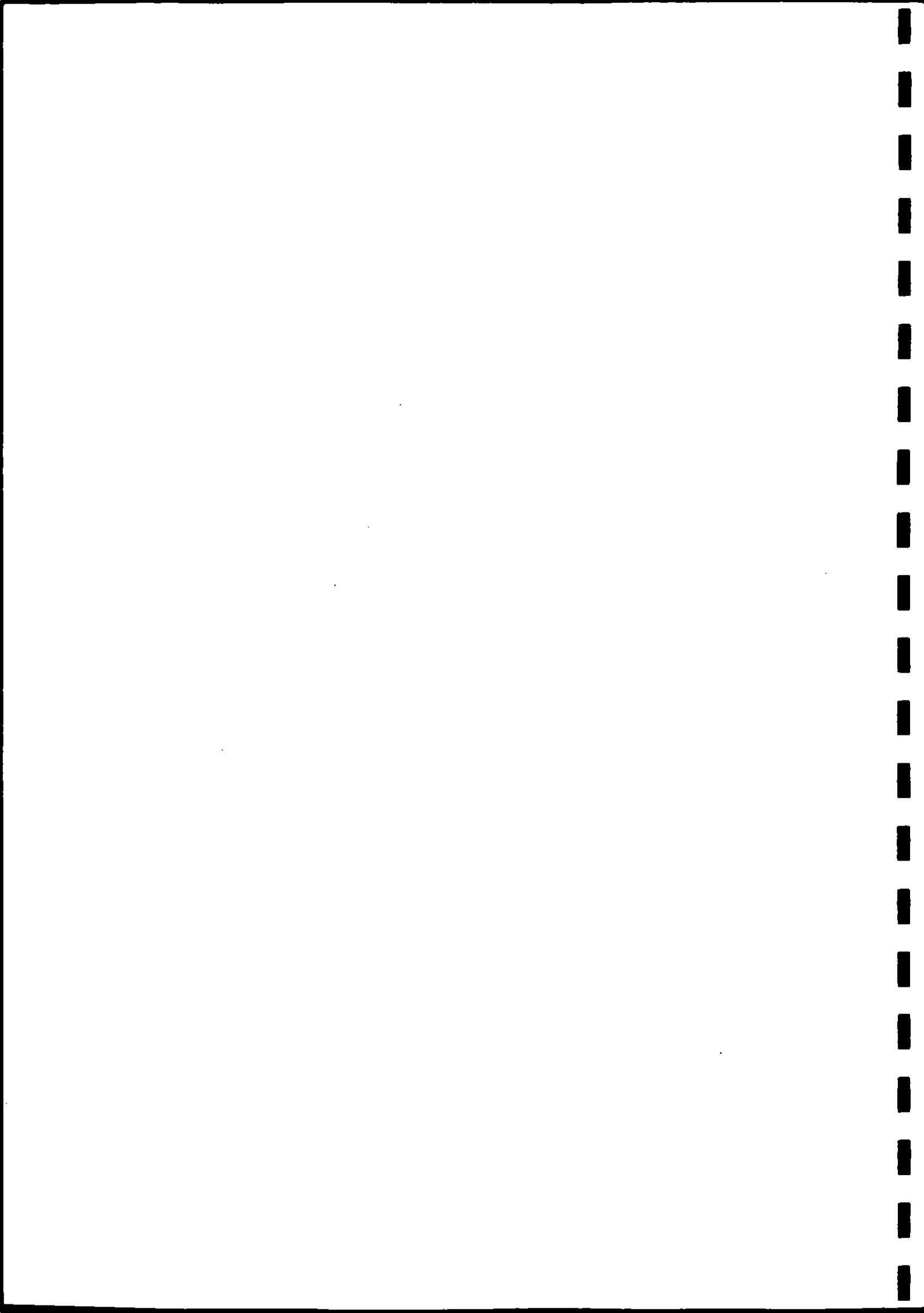
Land with greater than 50% cover of scrub vegetation, including European gorse, scrub willow hawthorn, blackthorn, bramble, elder and scrub birch.

**6 BRACKEN**

Land comprising greater than 50% cover of bracken. It most frequently occurs on sloping terrain which is difficult to manage.







## Dictionary of Land Cover Surveys & Definitions

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**SURVEY NUMBER** 10a

**NAME OF SURVEY** MAFF AGRICULTURAL AND HORTICULTURAL CENSUS - England

**COMMISSIONING AGENT** MINISTRY OF AGRICULTURE FISHERIES AND FOOD (MAFF)

**EXECUTING AGENT** MAFF

**CONTACT** Ministry of Agriculture Fisheries and Food, Government Buildings  
Epsom Road  
GUILDFORD  
Surrey GU1 2LD

Tel: Guildford (0483) 68121  
Fax: .. .. 37396

Present contact: Mr. D. Bradbury, Chief Statistician, Statistics Branch.

**OBJECTIVES** To provide an annual statistical analysis of agriculture and horticulture in England reflecting the situation at the beginning of June each year.

**PERIOD OF SURVEY** Census annually in June

Start 1866

End Continues

**SURVEY METHOD** Questionnaire sent to individual farmers asking for details of crops grown (type and extent), other land use (specified and extent), livestock kept (type and numbers) and labour force employed.

**GEOGRAPHICAL CHARACTERISTICS**

Area of survey	England
Sampling frame	All agricultural holdings. (Exceptions are those regarded as being of minor statistical significance - a simplified census of these is conducted every five years. These represent 1% of the total agricultural area).
Sampling unit	Individual agricultural holdings
Recording unit	Individual agricultural holdings
Scale of input data	Individual agricultural holdings
Scale of output	Parish group (about 100 holdings)
Resolution	0.1 ha
Accuracy and error	The physical location of crops is not recorded. Their location is defined only as being on a holding which lies (mainly) within a particular parish. Accuracy depends on the accuracy of individual returns including estimates of non-response: non response is dealt with by substituting the latest available data for that holding.

**DATA STORAGE/ANALYSIS**

Data are held on magnetic media at the level of collection, ie the agricultural holding. Aggregations are made for publication at county, regional and country level. The lowest level of aggregation is to groups of parishes (c. 100 holdings). The system also provides for analysis by any other specified groups of parishes and data items. In all cases, data are provided only if there is no risk of disclosure of information for individual holdings.

**DATA AVAILABILITY**

**FORMS OF OUTPUT**

National, Regional and County statistics for all the recorded census details are published, subject to confidentiality considerations, each year. MAFF is also responsible for aggregating the results of the England Census with the June Agricultural Censuses in the other three UK countries (see survey numbers 5b-d) for publication of results at UK level.

**PUBLICATION DATE(S)**

Provisional results, raised from a 60% response, are published towards the end of August following each June Census, at national level only. Final results are published at national level in December, and at Regional and County level by about April. Results at lower level will be available twelve months after each census.

UK provisional results are normally published with those for England. UK final results are published in the January following the June Censuses.

Selected results and analyses are also included in "Agricultural Statistics in the United Kingdom". A new publication will replace this volume in the autumn of 1992. It will contain data from the June Census at UK, the four UK countries, regional and county level.

## Dictionary of Land Cover Surveys & Definitions

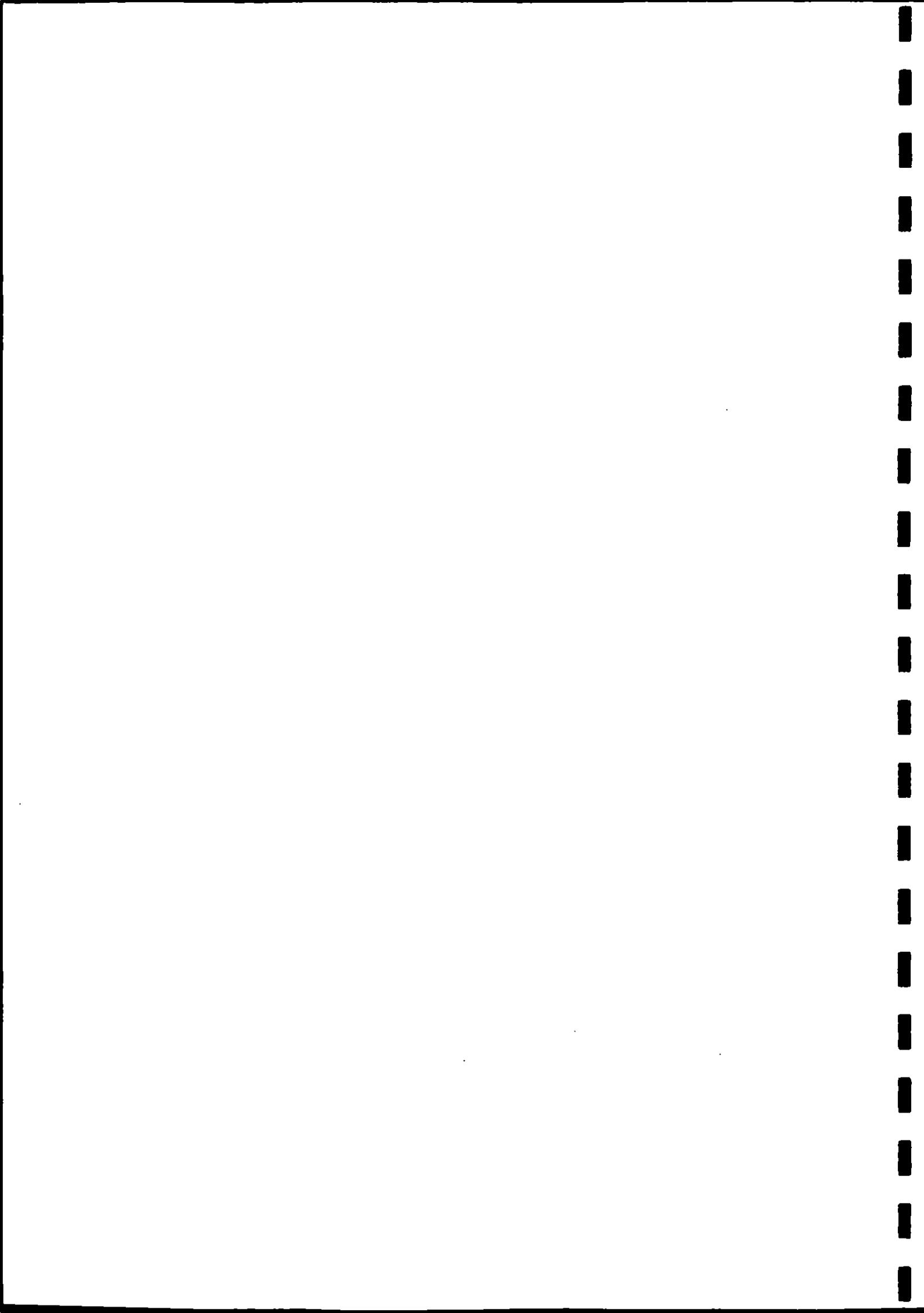
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### REFERENCES

Ministry of Agriculture Fisheries and Food. (1989). *Agricultural Statistics United Kingdom 1991*. H.M.S.O.

Ministry of Agriculture Fisheries and Food. (1991). *Agricultural and Horticultural Census: 3 June 1991 - England, final results. MAFF Statistics Notice 218/91, 23 December 1991*. MAFF, Epsom Road, Guildford GU1 2LD.

Ministry of Agriculture Fisheries and Food. (1992). *Agricultural and Horticultural Census: June 1991 - United Kingdom, final results. MAFF Statistics Notice 19/92, 29 January 1992*. MAFF, Epsom Road, Guildford GU1 2LD.



## Dictionary of Land Cover Surveys & Definitions

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<b>SURVEY NUMBER</b>	10b
<b>NAME OF SURVEY</b>	WELSH OFFICE AGRICULTURAL AND HORTICULTURAL CENSUS - Wales
<b>COMMISSIONING AGENT</b>	WELSH OFFICE
<b>EXECUTING AGENT</b>	WELSH OFFICE
<b>CONTACT</b>	Welsh Office Government Buildings Cathays Park CARDIFF CF1 3NQ  Tel: Cardiff (0222) 825111 Fax: .. .. 823036  Present contact: Mr. P. Demery, Statistician, Economic and statistical services division.
<b>OBJECTIVES</b>	To provide an annual statistical analysis of agriculture and horticulture in Wales reflecting the situation at the beginning of June each year.
<b>PERIOD OF SURVEY</b>	Census annually in June
Start	1866
End	Continues
<b>SURVEY METHOD</b>	Questionnaire sent to individual farmers asking for details of crops grown (type and extent), other land use (specified and extent), livestock kept (type and numbers) and labour force employed.

## Dictionary of Land Cover Surveys & Definitions

### GEOGRAPHICAL CHARACTERISTICS

Area of survey	Wales
Sampling frame	All agricultural holdings. (Exceptions are those regarded as being of minor statistical significance - a simplified census of these is conducted every five years. These represent 1% of the total agricultural area).
Sampling unit	Individual agricultural holdings
Recording unit	Individual agricultural holdings
Scale of input data	Individual agricultural holdings
Scale of output	Parish group (about 100 holdings)
Resolution	0.1 ha
Accuracy and error	The physical location of crops is not recorded. Their location is defined only as being on a holding which lies (mainly) within a particular parish. Accuracy depends on the accuracy of individual returns including estimates of non-response: non response is dealt with by substituting the latest available data for that holding.

**DATA STORAGE/ANALYSIS** Data are held on magnetic media at the level of collection, ie the agricultural holding. Aggregations are made for publication at county and country level. The lowest level of aggregation is to groups of parishes (c. 100 holdings). The system also provides for analysis by any other specified groups of parishes and data items. In all cases, data are provided only if there is no risk of disclosure of information for individual holdings.

### DATA AVAILABILITY

**FORMS OF OUTPUT** National, Regional and County statistics for all the recorded census details are published, subject to confidentiality considerations, each year.

**PUBLICATION DATE(S)** Provisional results, raised from a 60% response, are published towards the end of August following each June Census, at national level only. Final results are published at national level in January. County level data for Wales are published by MAFF by about April. Results at lower level will be available twelve months after each census.

More detailed analyses are published annually in "Welsh Agricultural Statistics" in November, some 17 months after the census date.

Selected results and analyses are also included in "Agricultural Statistics in the United Kingdom". A new publication will replace this volume in the autumn of 1992. It will contain data from the June Census at UK, the four UK countries, regional and county level. This will be published jointly by the UK Agricultural Departments.

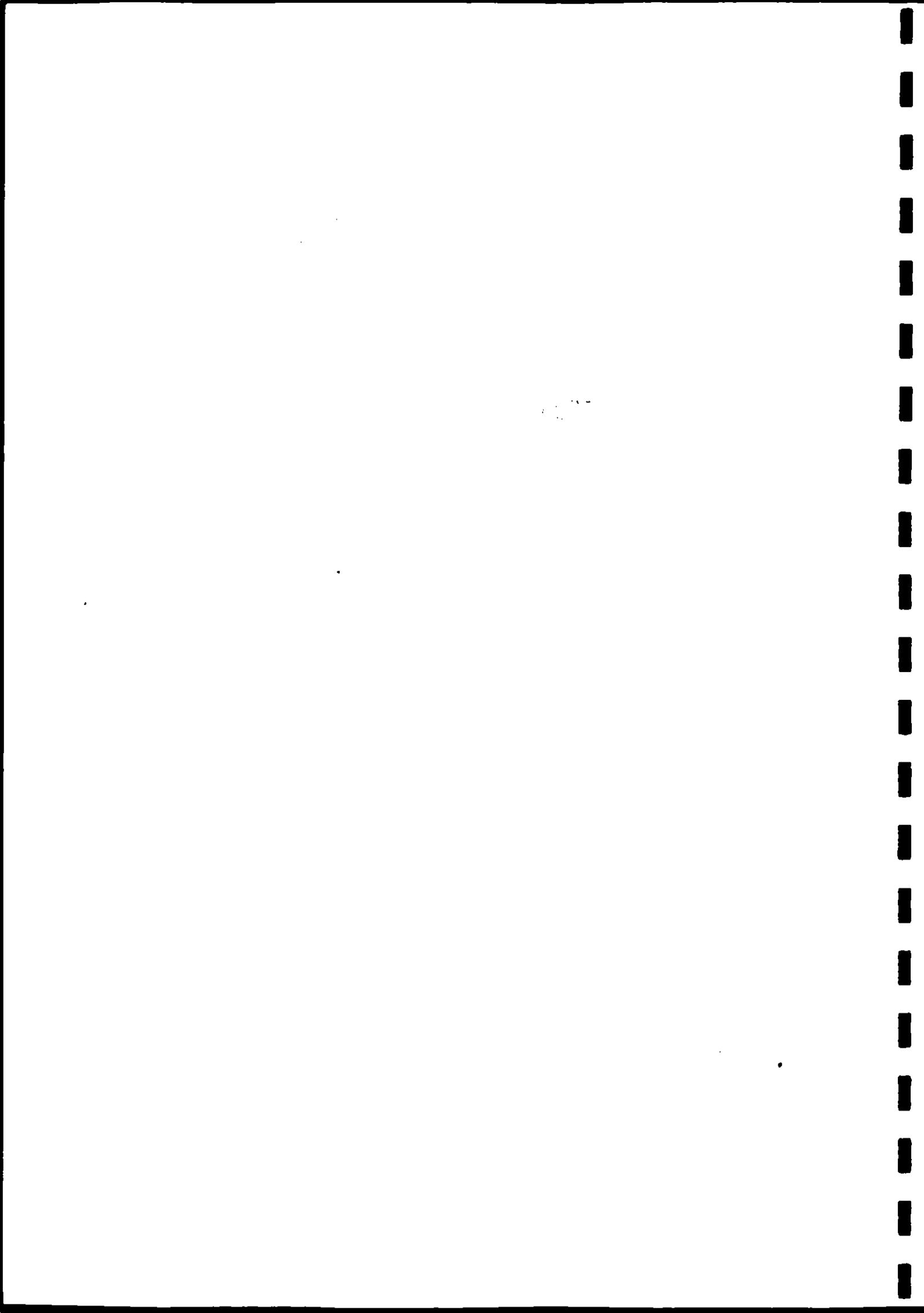
## Dictionary of Land Cover Surveys & Definitions

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### REFERENCES

Welsh Office. (1991). *Welsh Agricultural Statistics 1991*. Welsh Office Publications Unit.

Welsh Office. (1992). Agricultural and Horticultural Census; 3 June 1991 - Wales. Final results. *Welsh Office Statistics Notice*. 7 January 1992. Welsh Office, Cathays Park, Cardiff CF1 3NQ.



Dictionary of Land Cover Surveys & Definitions

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<b>SURVEY NUMBER</b>	10c
<b>NAME OF SURVEY</b>	AGRICULTURAL CENSUS - Scotland
<b>COMMISSIONING AGENT</b>	SCOTTISH OFFICE, AGRICULTURE AND FISHERIES DEPARTMENT (SOAFD)
<b>EXECUTING AGENT</b>	SOAFD
<b>CONTACT</b>	SOAFD Room 154 Robb's Loan EDINBURGH EH14 1TW  Tel: Edinburgh (031) 556 8400 Fax: .. .. 244 6001  Present contact: Mr. Peter R. McGill
<b>OBJECTIVES</b>	To provide an annual statistical analysis of agriculture and horticulture in Scotland reflecting the situation at the beginning of June each year. To maintain records of occupiers names/addresses.
<b>PERIOD OF SURVEY</b>	Census annually in June
Start	1860's
End	Continues
<b>SURVEY METHOD</b>	Questionnaire sent to individual farmers asking for details of crops grown (type and extent), other land use (specified and extent), livestock kept (type and numbers), labour force employed and movement of land in and out of agriculture.

## Dictionary of Land Cover Surveys & Definitions

### GEOGRAPHICAL CHARACTERISTICS

Area of survey	Scotland
Sampling frame	All main agricultural holdings. Exceptions are minor holdings below a certain physical or economic size. Minor holdings are surveyed over a three year cycle with about one third being surveyed each year.
Sampling unit	Individual agricultural holdings
Recording unit	Individual agricultural holdings
Scale of input data	Individual agricultural holdings
Scale of output	Parish group (about 100 holdings)
Resolution	0.1 ha
Accuracy and error	The physical location of crops is not recorded. Their location is defined only as being on a holding which lies (mainly) within a particular parish. Accuracy depends on the accuracy of individual returns including estimates of non-response: non response is dealt with by substituting the latest available data for that holding. Data are collected under statute and response is about 90%.

### DATA STORAGE/ANALYSIS

Data are held on magnetic media at the level of collection, ie the agricultural holding. Aggregations are made for publication at county, regional and country level. The lowest level of aggregation is to groups of parishes (c. 100 holdings). The system also provides for analysis by any other specified groups of parishes and data items. In all cases, data are provided only if there is no risk of disclosure of information for individual holdings.

### DATA AVAILABILITY

#### FORMS OF OUTPUT

National and Regional statistics are published. Output is subject to confidentiality considerations. Most output is ad hoc and depends on demand.

Results of the June Agricultural Censuses from the four UK countries are aggregated by MAFF for publication of results at UK level.

#### PUBLICATION DATE(S)

Provisional results are published in August following each June Census. The census closes in about November and final results are published by about the end of November. Ad hoc analyses are available from the close of the census. An economic report on Scottish Agriculture, which contains economic and census statistics, is published about one year later.

UK provisional results are normally published with those for England. UK final results are published in the January following the June Censuses.

Selected results and analyses are also included in "Agricultural Statistics in the United Kingdom". A new publication will replace this volume in the autumn of 1992. It will contain data from the June Census at UK, the four UK countries, regional and county level.

## Dictionary of Land Cover Surveys & Definitions

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### REFERENCES

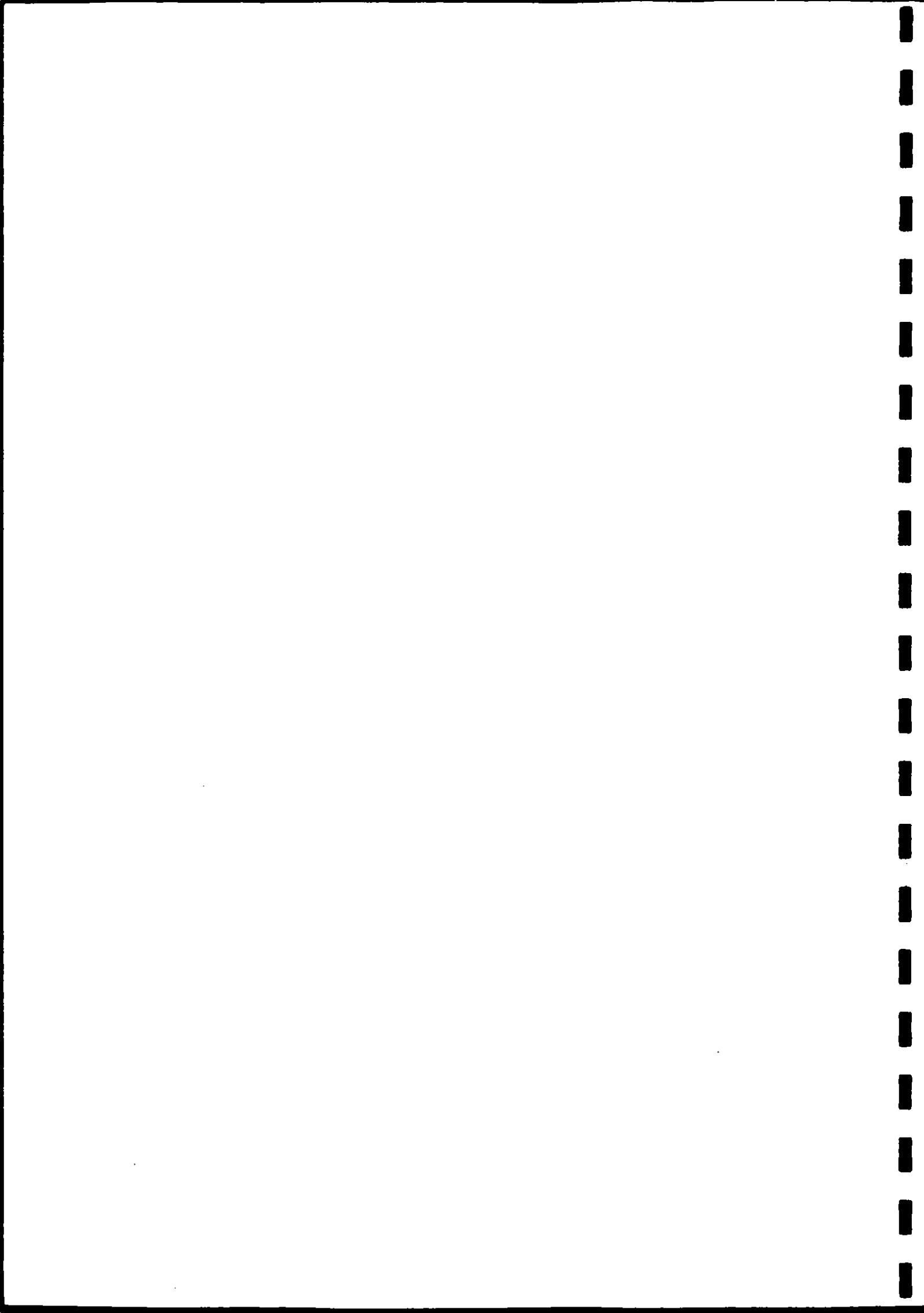
News release "Provisional results of the June 1992 Census, Scotland", available from contact.

Scottish Office. Economic report on Scottish Agriculture, 1991.

Ministry of Agriculture Fisheries and Food. (1989). *Agricultural Statistics United Kingdom 1991*. H.M.S.O.

Ministry of Agriculture Fisheries and Food. (1991). Agricultural and Horticultural Census: 3 June 1991 - England, final results. *MAFF Statistics Notice 218/91, 23 December 1991*. MAFF, Epsom Road, Guildford GU1 2LD.

Ministry of Agriculture Fisheries and Food. (1992). Agricultural and Horticultural Census: June 1991 - United Kingdom, final results. *MAFF Statistics Notice 19/92, 29 January 1992*. MAFF, Epsom Road, Guildford GU1 2LD.



Dictionary of Land Cover Surveys & Definitions

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<b>SURVEY NUMBER</b>	10d
<b>NAME OF SURVEY</b>	AGRICULTURAL CENSUS - Northern Ireland
<b>COMMISSIONING AGENT</b>	DEPARTMENT OF AGRICULTURE FOR NORTHERN IRELAND (DANI)
<b>EXECUTING AGENT</b>	DANI
<b>CONTACT</b>	Department of Agriculture for Northern Ireland Economics and Statistics Division Farm Census Branch Annexe B Dundonald House BELFAST BT4 3TB  Tel: Belfast (0232) 760771 extn. 2498/2499. Fax: ..  Present Contact: Mrs S Magee, Principal Economist. (Tel: 0232 650111 extn. 427).
<b>OBJECTIVES</b>	To provide an annual statistical analysis of agriculture in Northern Ireland reflecting the situation at the beginning of June each year.
<b>PERIOD OF SURVEY</b>	Census annually in June
Start	1847
End	Continues
<b>SURVEY METHOD</b>	Questionnaire sent to individual farmer asking for details of crops grown (type and extent), other land use (specified and extent), livestock kept (type and numbers) and labour force employed.

## Dictionary of Land Cover Surveys & Definitions

### GEOGRAPHICAL CHARACTERISTICS

Area of Survey	Northern Ireland
Sampling frame	All agricultural holdings are surveyed annually apart from the smallest, which together represent only 1% of the total agricultural area. A rotational sample survey of one-third of these "minor" holdings is conducted every year.
Sampling unit	Individual agricultural holdings
Recording unit	Individual agricultural holdings
Scale of input data	Individual agricultural holdings
Scale of output	Data are published to Rural District level but are available for any given area, subject to confidentiality considerations. Each holding is grid-referenced to 100 m resolution (targeted to the main farm buildings).
Resolution	0.1 ha
Accuracy and error	The physical location of crops is not recorded.

### DATA STORAGE/ANALYSIS

Data are held on magnetic media at the level of collection ie the agricultural holding. Aggregations are made for publication at rural districts, county and country level (district council data also available). Data may be provided to any geographical specification provided there is no risk of disclosure of information for individual holdings.

### DATA AVAILABILITY

#### FORMS OF OUTPUT

Country, county and rural districts statistics for all the recorded census details are published, subject to confidentiality considerations, each year. The results go forward to MAFF which combines the Northern Ireland results with data from the June Agricultural Censuses in the other three UK countries for publication of results at UK level.

#### PUBLICATION DATE(S)

Provisional results, raised from a 50% response in Northern Ireland are published towards the end of August following each June Census, at country level only. Final results are published at country level in November, and at county and rural district level by December.

Selected results and analyses are also included in "The Statistical Review of Northern Ireland Agriculture".

## Dictionary of Land Cover Surveys & Definitions

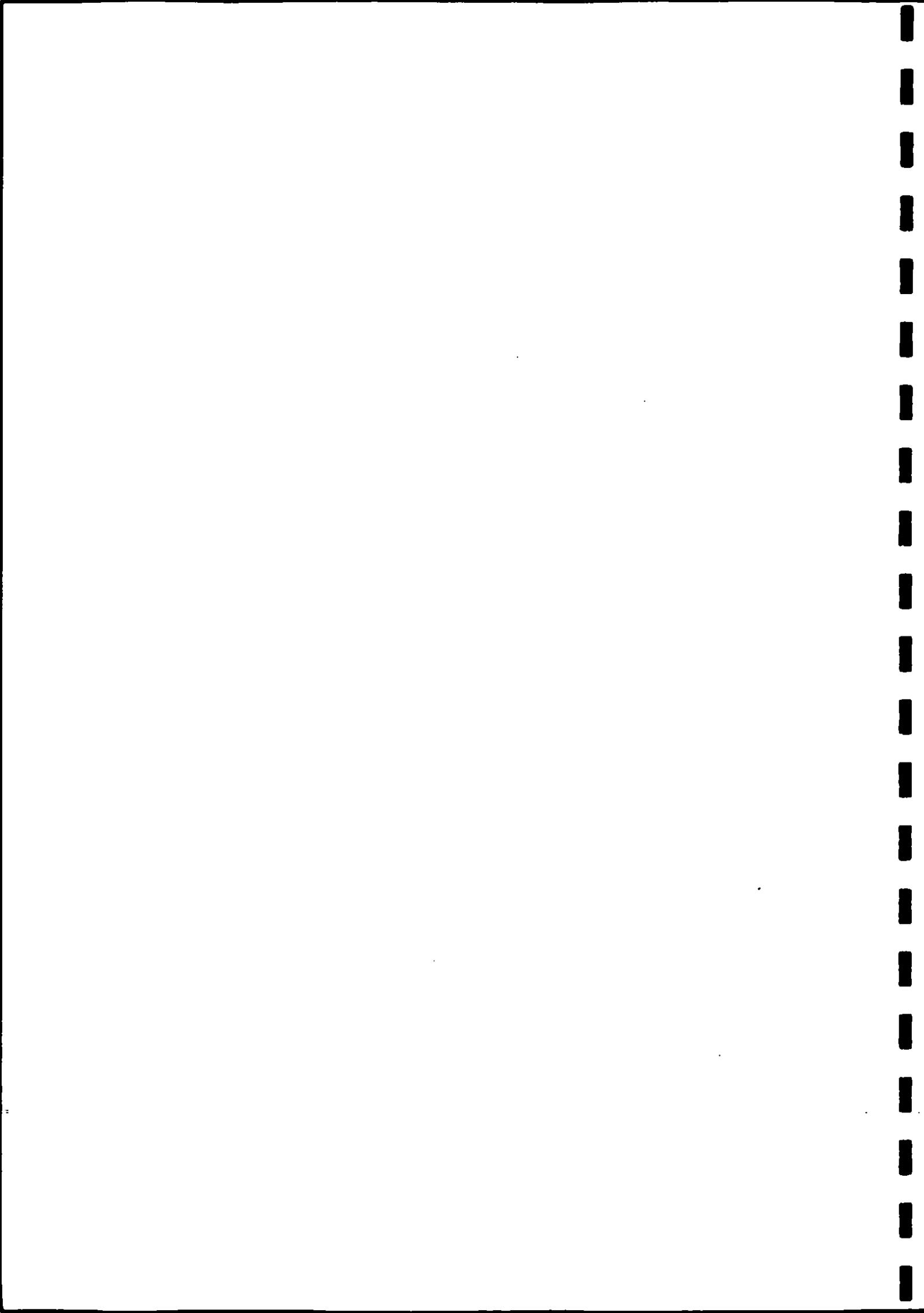
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### REFERENCES

Department of Agriculture for Northern Ireland. (1992). *Agricultural Census results, Northern Ireland*. June 1992 final. DANI, Economics and Statistics Division, Farm Census Branch, Annexe B, Dundonald House, Belfast BT4 3SB.

Department of Agriculture for Northern Ireland. (1992). Final June 1992 Agricultural Census Results. *DANI Press Article 288/92, November 10, 1992*. DANI, Dundonald House, Belfast BT4 3SB.

Department of Agriculture for Northern Ireland. (1992). *A Statistical Review of Northern Ireland Agriculture 1991*. DANI, Economics and Statistics Division, Dundonald House, Belfast BT4 3SB.



10                    **MAFF Agricultural and Horticultural Census - England**

**Land cover/use categories and definitions**

4            **CROPS AND BARE FALLOW (See below)**

5            **GRASSLAND PUT DOWN IN 1987 OR LATER**

6            **ALL OTHER GRASSLAND EXCLUDING ROUGH GRAZING**

7            **ROUGH GRAZING**

8            **WOODLAND**

Including grazed woodland.

9            **ALL OTHER LAND**

Land not included in the above, eg farm roads, yards, buildings, gardens, ponds, and derelict land, etc.

(4)        **CROPS AND BARE FALLOW**

11        **WHEAT**

12        **WINTER BARLEY**

13        **SPRING BARLEY**

14        **OATS**

15        **MIXED CORN**

16        **RYE**

17        **MAIZE**

For threshing or stockfeeding.

19        **POTATOES**

Early and maincrop.

**20 SUGAR BEET**

Not for stock feeding.

**21 HOPS**

**22 HORTICULTURAL CROPS (See below)**

Excluding mushrooms.

**23 FIELD BEANS**

**24 TURNIPS AND SWEDES**

For stockfeed.

**25 FODDER BEET AND MANGOLDS**

For stockfeed.

**26 KALE, CABBAGE, SAVOY, KOHL RABI, AND RAPE**

For stockfeed.

**27 PEAS FOR HARVESTING DRY**

Human consumption or stockfeed.

**28 OTHER CROPS GROWN FOR STOCKFEED**

Not grass.

**29 RAPE GROWN FOR OILSEED**

**30 LINSEED**

**31 OTHER CROPS**

Not for stockfeeding.

**32 BARE FALLOW**

Not including Set-aside land.

**33 TRITICALE**

**SET-ASIDE SCHEME**

**34 SET-ASIDE LAND**

Land subject to an official agreement effective on or before 1 October 1990.

(4.22) HORTICULTURAL CROPS

(4.22.1)

Vegetables grown in the open - for human consumption

- 170 Brussels Sprouts for fresh market
- 171 Brussels Sprouts for processing  
eg freezing.
- 172 Cabbage  
Summer and Autumn.
- 173 All other Cabbage  
Including Spring cabbage.
- 174 Cauliflower  
Summer and Autumn maturing only.
- 175 Calabrese  
Green sprouting broccoli (often marked as broccoli).
- 178 Carrots
- 181 Parsnips
- 182 Beetroot  
Red beet, not sugar beet or fodder beet.
- 185 Onions for salad
- 186 Dry bulb onions (including previous autumn plantings)
- 187 Broad beans
- 189 Runner beans (pinched)
- 190 Runner beans (climbing)
- 192 French beans
- 195 Green peas for fresh market
- 196 Vining peas for processing

## Dictionary of Land Cover Surveys & Definitions

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- 197      **Field celery**  
Self-blanching. (Excluding wide row main crop).
- 198      **Lettuce**  
Not under glass.
- 199      **Sweet corn**
- 200      **All other vegetables**  
Including watercress, rhubarb and mixed areas.
- (4.22.2)      **Glasshouse area**
- 205      **Glasshouse**  
Total area under glass or plastic structures excluding lights, cloches and low plastic tunnels.
- (4.22.3)      **Orchards**
- 207      **Orchards not grown commercially**
- 208      **Desert apples - Cox's Orange, Pippin and other Cox clones**
- 209      **All other varieties desert apples**
- 210      **Bramley's seeding cooking apples**
- 211      **All other varieties of cooking apples**
- 212      **Cider apples and Perry pears**
- 213      **Pears**
- 214      **Plums**
- 215      **Cherries**
- 216      **Other top fruit**  
Including nuts.

## Dictionary of Land Cover Surveys & Definitions

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### (4.22.4)

#### Small fruit and grapes

- 218 Open grown strawberries
- 219 Strawberries grown under cloches or low tunnels
- 220 Raspberries
- 221 Blackcurrants for market
- 222 Blackcurrants for processing
- 223 Gooseberries
- 224 Wine grapes
- 225 Other small fruit

### (4.22.5)

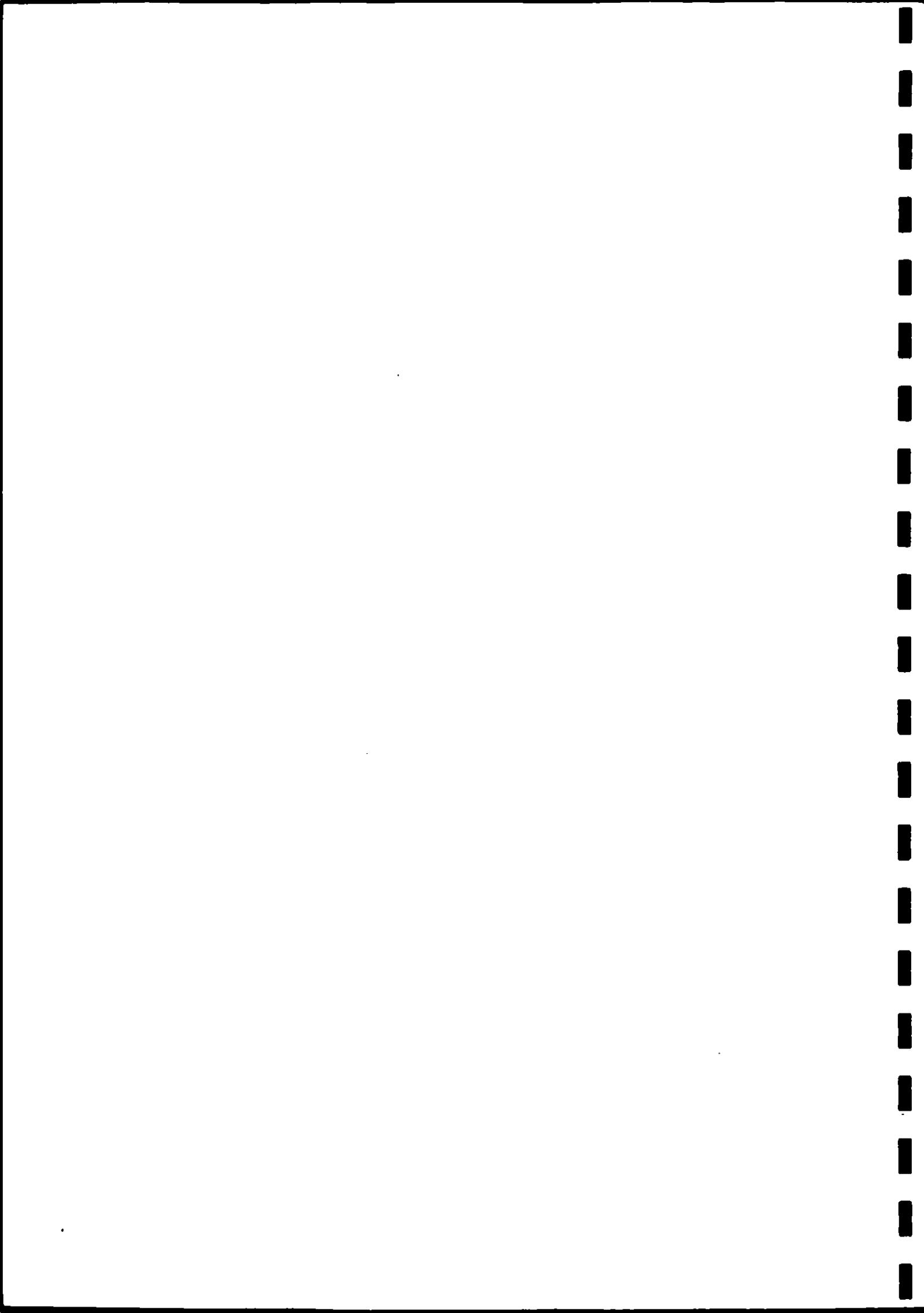
#### Hardy nursery stock

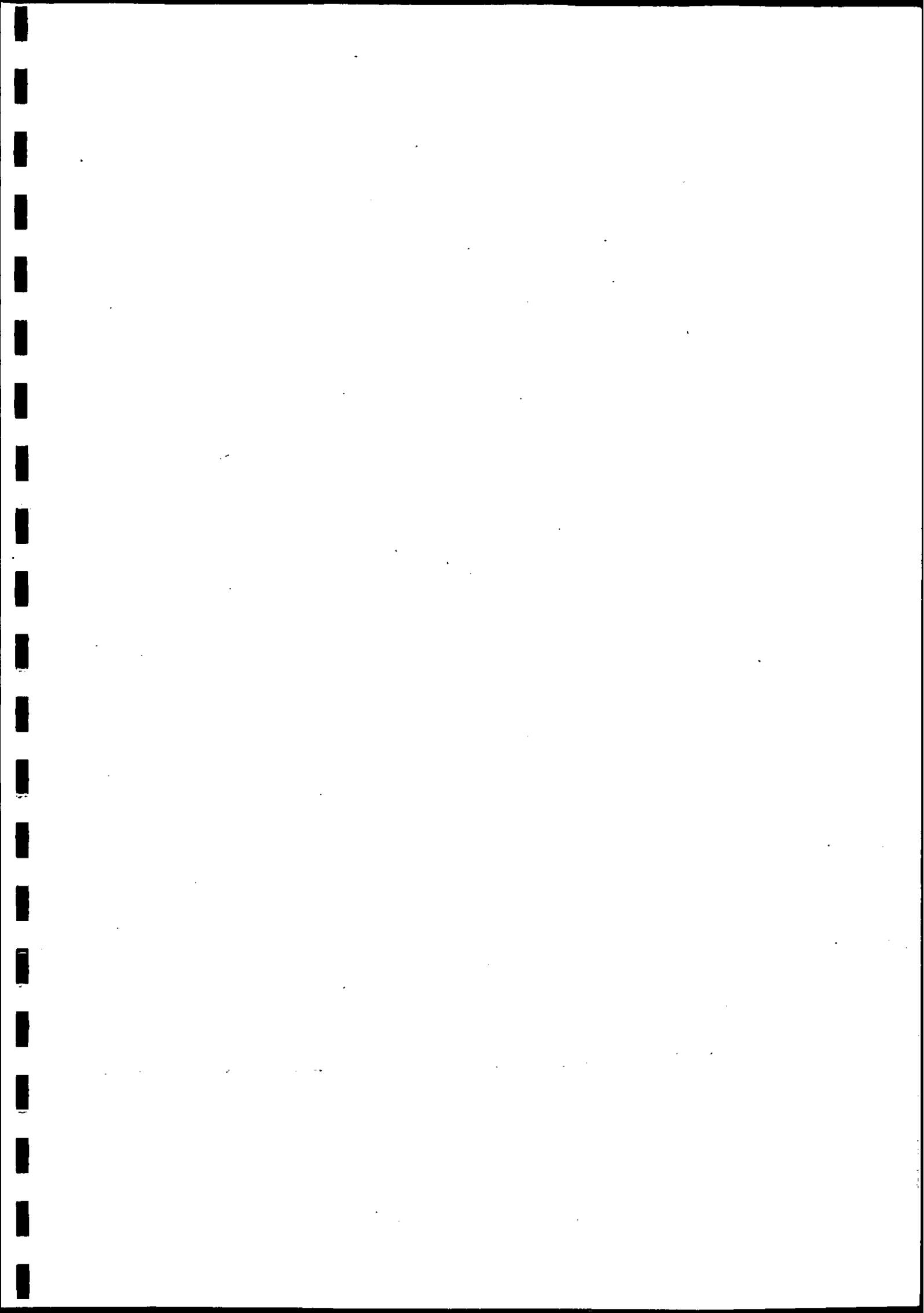
- 230 Fruit trees, bushes and canes, strawberries for runner production and other fruit stock for transplanting.
- 231 Roses  
Including stock for budding.
- 232 Shrubs, conifers, hedging plants and Christmas trees
- 233 Ornamental trees
- 234 Perennial herbaceous plants  
Not cut for flowers
- 235 Other hardy nursery stock and mixed areas  
Include land for container-grown plants.

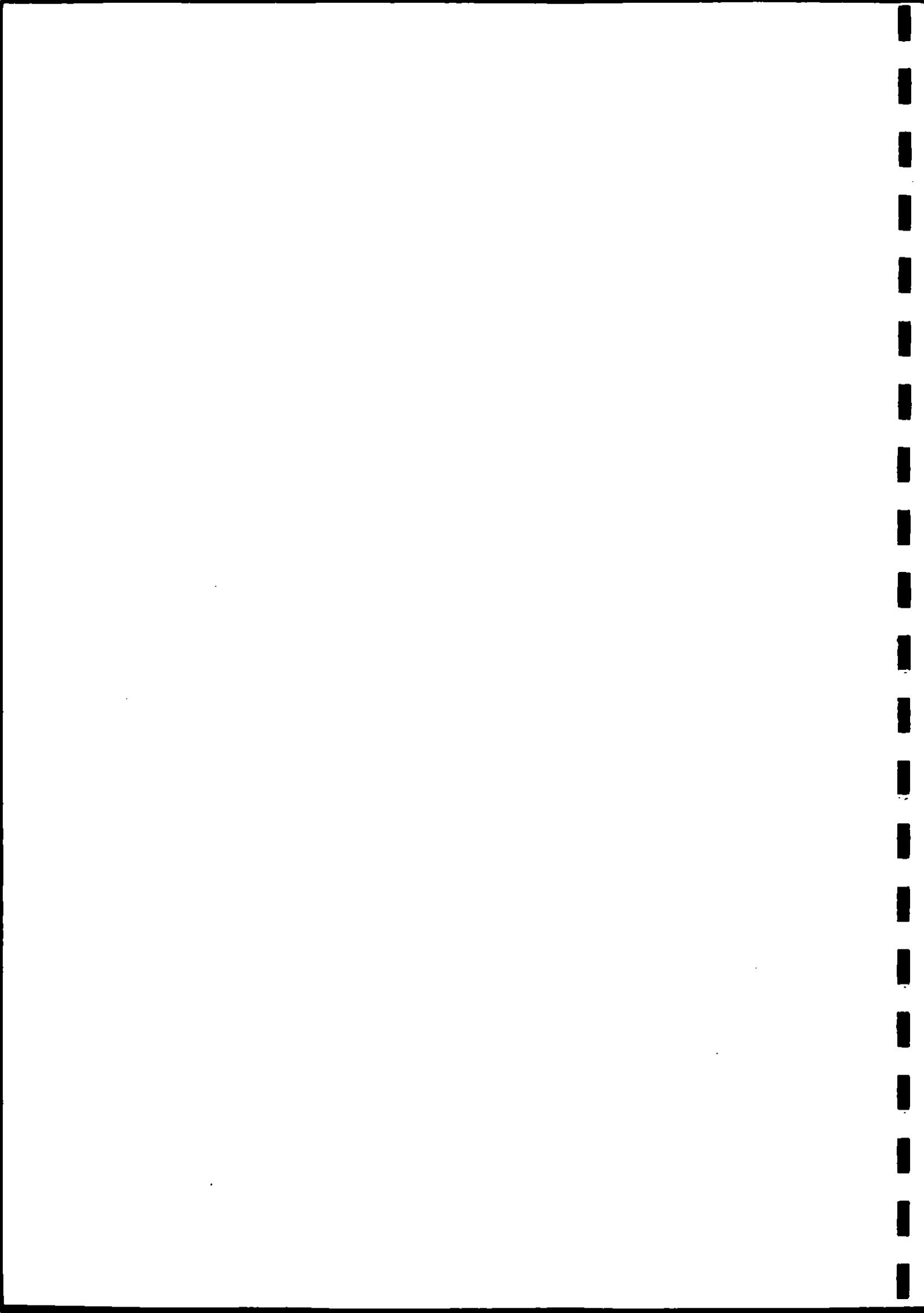
### (4.22.6)

#### Bulbs and flowers grown in the open

- 240 Bulbs, corms, tubers (except dahlias) and rhizomes for cut flowers or bulbs
- 241 Dahlias
- 242 Chrysanthemums
- 243 All other flowers for cutting







## Dictionary of Land Cover Surveys & Definitions

<b>SURVEY NUMBER</b>	11
<b>NAME OF SURVEY</b>	FORESTRY COMMISSION CENSUS OF WOODLANDS AND TREES
<b>COMMISSIONING AGENT</b>	FORESTRY COMMISSION
<b>EXECUTING AGENT</b>	FORESTRY COMMISSION
<b>CONTACT</b>	Forestry Commission 231 Corstorphine Road EDINBURGH EH12 7AT Tel: Edinburgh (031) 334 0303 Fax: .. .. 3047  Present contact: Mr. R. Selmes
<b>OBJECTIVES</b>	<p>To meet the statutory requirement of the Forest Act of 1919 to collect statistics on the country's stock of woodlands and trees.</p> <p>To provide up-to-date information on trees and woodlands for such organisations as the Home Timber Merchants' Association, Department of the Environment, Nature Conservancy Council, Countryside Commission, local authorities and other appropriate bodies as well as the Forestry Commission itself.</p> <p>To provide information for the general public on the state of trees in the British countryside.</p>
<b>PERIOD OF SURVEY</b>	The first census was in 1924, subsequently in 1938, 1947, 1951 and 1965. Another survey is about to begin.
Start	Most recent started in 1979.
End	1982.
<b>SURVEY METHOD</b>	<p>Based on air photo interpretation (API) to include all trees (including isolated trees) in Great Britain except those in Forestry Commission forests and those covered by the Dedication and Approved Woodlands scheme (for which data were already available). Some islands were omitted where tree density is very low. Also excluded were trees in towns that were not readily accessible.</p> <p>Total woodland area was calculated by digitising all non FC, Dedicated or Approved woodland blocks represented on the 190 1:50,000 Ordnance Survey maps for mainland Britain. This estimate was refined from aerial and ground survey samples.</p> <p>Woodland was considered to be any block of trees of &gt;0.25 ha in extent. Other trees, such as clumps, lines, hedgerow trees, isolated trees and parkland trees were considered as non-woodland trees and surveyed as a separate exercise.</p> <p>A range of features was assessed for woodland and non-woodland trees as appropriate such as: location, area, forest type, species, age, diameter, height, volume and health.</p>

**GEOGRAPHICAL CHARACTERISTICS**

Area of survey	Great Britain (excluding many islands).
Sampling frame	Stratified random sampling within counties/districts, (counties in England and Wales and Forestry Commission Conservancies in Scotland) and soil groups. For woodlands, samples were further stratified into six size categories.
Sampling unit	Individual woodland blocks.
Recording unit	Land parcels, linear and point features.
Scale of input data	1:10,000, 1:50,000 & 1:100,000.
Scale of output	Output takes the form of statistics, eg. nationally, by county or by Conservancy in Scotland
Resolution	Minimum parcel size considered 0.25 ha (as woodland).
Accuracy and error	Precision of the estimate of woodland area at county (or Conservancy in Scotland where there were four Conservancies at the time) level to be within $\pm 5\%$ . Precision of the estimate of the predominant forest type to be $\pm 15\%$ . Standard errors were set not to exceed $\pm 25\%$ and $\pm 30\%$ at county or Conservancy level for the number of measurable isolated trees and the number of trees of the most widely represented species of isolated tree respectively.

**DATA STORAGE/ANALYSIS**

Data are mainly presented as tables by county/Region. Summary reports are available from the Forestry Commission. In Scotland unpublished tables are also held by the Forestry Commission for Local Authority Districts. See also output below.

**DATA AVAILABILITY**

**FORMS OF OUTPUT**

Estimates of recorded elements summarised by counties in England and Wales and by Districts and by Regions in Scotland, Conservancies, countries and for Great Britain as a whole, and for special areas such as National Parks.

**PUBLICATION DATE(S)**

1987.

**REFERENCES**

Locke G.M.L. (1987). Census of woodlands and trees 1979-1982. *Forestry Commission Bulletin 63*. Her Majesty's Stationary Office, London.

Rennolls, K. (1989). *Design of the census of woodlands and trees 1979-82. (Occasional Paper 18)*. Forestry Commission, Farnham.

11 Forestry Commission Census of Woodlands and Trees - 1979-82

Land cover/use categories and definitions

1 CONIFEROUS HIGH FOREST

High forest containing more than 50% by area of coniferous species. High forest is defined as stands of trees having a canopy of 20% or more, or, in the case of young stands which have not closed canopy, occupying 20% or more of the ground at normal spacing. More than half of the crops should be capable of producing 3 m timber lengths of good form and be of merchantable species.

2 BROADLEAVED HIGH FOREST

High forest (q.v.) containing 50% or more by area of broadleaved species.

3 BROADLEAVED HIGH FOREST OF COPPICE ORIGIN

Crops of coppice origin which have a mean breast height diameter of more than 15 cm and are assessed by the same criteria as broadleaved high forest.

4 MIXED HIGH FOREST

Data was collected under this heading but was allocated prior to publication of the reports to either "coniferous high forest" or "broadleaved high forest" depending on which type was in the majority.

5 MIXED HIGH FOREST OF COPPICE ORIGIN

Data was collected under this heading but was allocated prior to publication of the reports to either "coniferous high forest" or "broadleaved high forest" depending on which type was in the majority.

6 COPPICE

Crops of marketable broadleaved species that have at least two stems per stool and are either being worked or are capable of being worked on rotation. With the exception of hazel coppice, more than half the stems should be capable of producing 3 m timber lengths of good form. Coppice crops with a mean breast height diameter greater >15 cm are assessed as Broadleaved high forest of coppice origin.

7 COPPICE WITH STANDARDS

Two-storey stands where the overstorey consists of at least 25 stems per hectare that are older than the understorey of worked Coppice by at least one Coppice rotation.

**8**      **SCRUB**

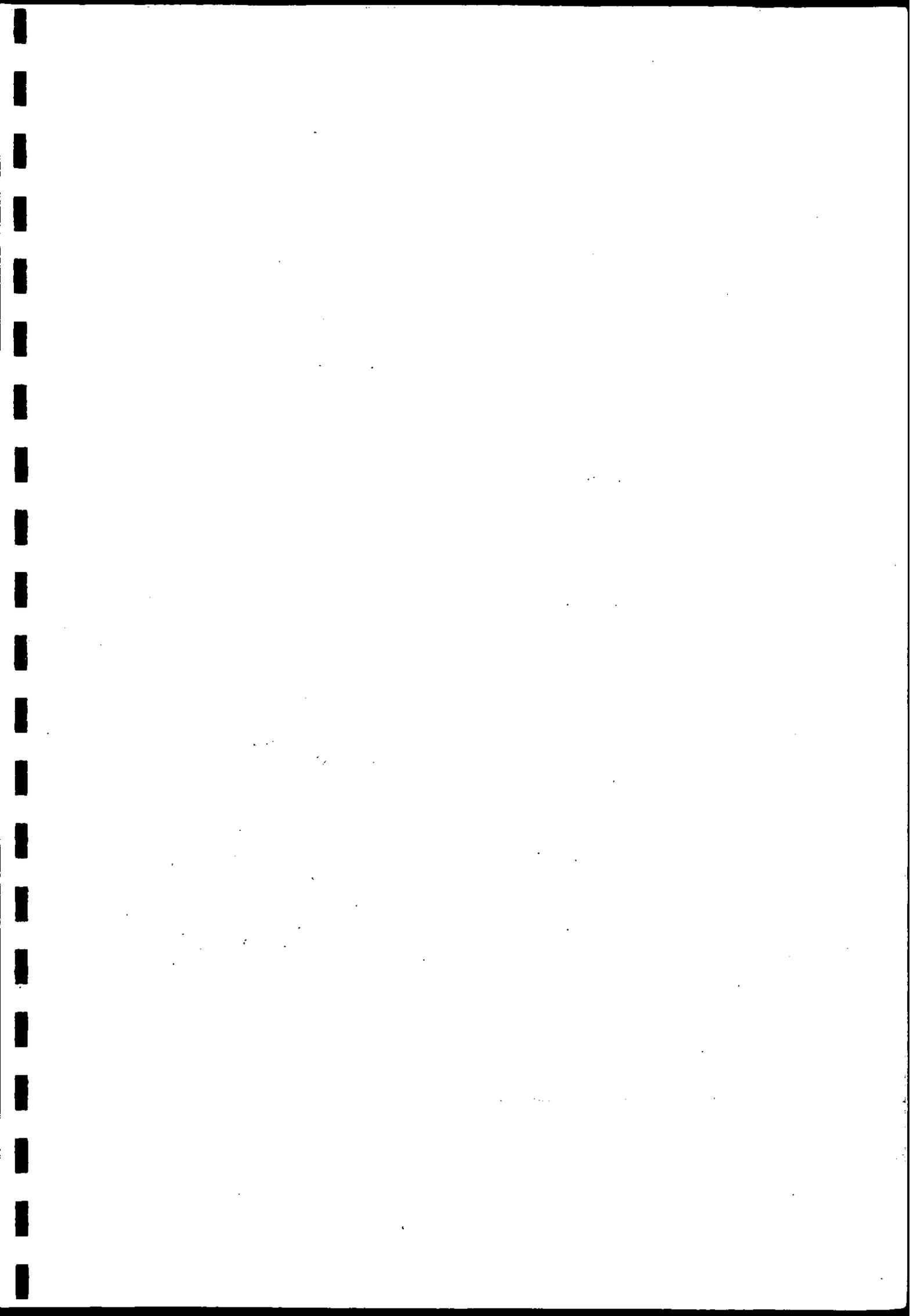
All inferior crops where more than half the trees are of poor form, poor timber potential or composed of unmarketable species and so do not qualify as either High Forest or Coppice.

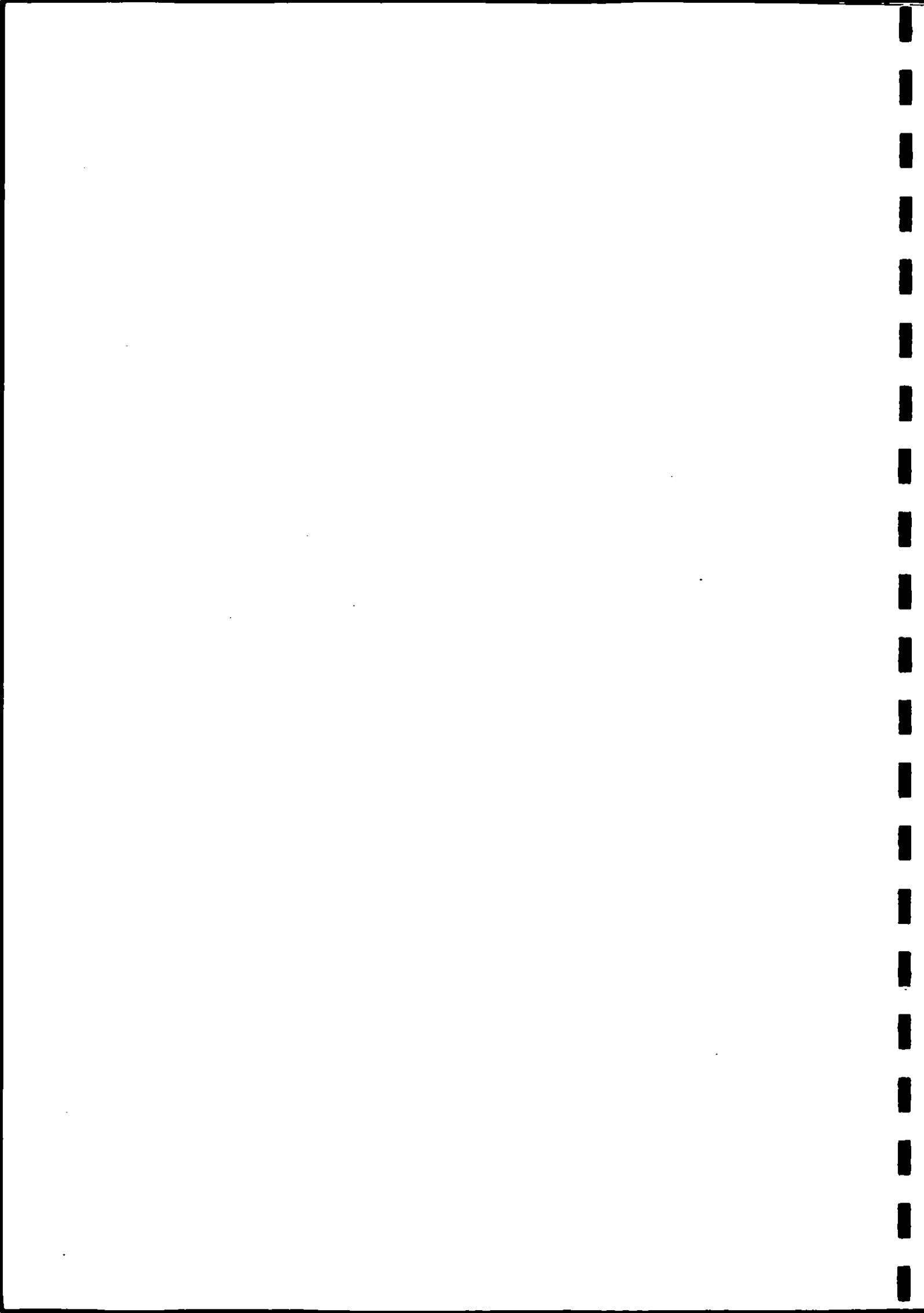
**9**      **CLEARED**

Woodland areas which are marked green on the OS 1:50 000 map. Woodland crops that have been felled and also areas where the canopy stocking was found to be <20% at the time of the survey. No evidence of conversion to another land use.

**10**     **DEFORESTED**

Woodland areas which are marked green on the OS 1:50 000 map, but at the time of survey were found to be under another land use, eg agricultural, buildings.





Dictionary of Land Cover Surveys & Definitions

<b>SURVEY NUMBER</b>	12
<b>NAME OF SURVEY</b>	UN/ECE (UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE) STATISTICAL CLASSIFICATION OF LAND USE.
<b>COMMISSIONING AGENT</b>	UNITED NATIONS (ECONOMIC AND SOCIAL COUNCIL).
<b>EXECUTING AGENT</b>	UNITED NATIONS (ECONOMIC AND SOCIAL COUNCIL).
<b>CONTACT</b>	Land and General Statistics Division Department of the Environment Room P1/170A 2 Marsham Street LONDON SW1P 3EB  Tel: London (071) 276 4171. .. .. 3000 (switchboard). Fax: .. .. 4912.  Present contact: Dorothy Salathiel, (Address as above except: Room P1/170. Tel: 071 276 4166).
<b>OBJECTIVES</b>	To create a classification that provides a structure into which national information on land cover and land use can be compared at an international level. This information can be used for comparative descriptions and analyses of national land cover/use patterns by, for example, agriculturalists, foresters, ecologists and physical planners.
<b>PERIOD OF SURVEY</b>	Simply a classification - no survey carried out.
Start	
End	
<b>SURVEY METHOD</b>	This is a three tier hierarchical classification which breaks down into 49 tertiary level classes designed to compare survey information from different surveys conducted in different countries.

a)

**GEOGRAPHICAL CHARACTERISTICS**

Area of survey	N/A
Sampling frame	N/A
Sampling unit	N/A
Recording unit	Intended for recording land parcels.
Scale of input data	N/A
Scale of output	N/A
Resolution	Intended to be applied at resolution of 0.5 ha.
Accuracy and error	N/A

**DATA STORAGE/ANALYSIS** N/A

**DATA AVAILABILITY** N/A

**FORMS OF OUTPUT**

**PUBLICATION DATE(S)**

**REFERENCES**

Wright, R. (1985). A critique of the ECE draft Standard International Classification of Land Use. *Statistical Journal of the United Nations ECE*, 3, 403-41.

United Nations Economic and Social Council (Statistical Commission and Economic Commission for Europe). (1989). *ECE Standard Statistical Classification of Land Use*. Thirty-seventh plenary session (12-16 June 1989) of the Conference of European Statisticians. CES/637. 16 pp.

12

**ECE Standard Statistical Classification of Land Use**

**Land cover/use categories and definitions**

**1. AGRICULTURAL LAND**

The major classes of land use on agricultural holdings. Agricultural land includes land under scattered farm buildings, yards and their annexes, permanently uncultivated land, such as uncultivated patches, banks footpaths, ditches, headlands and shoulders.

**1.1 ARABLE LAND**

All land generally under rotation whether for temporary crops or meadows, or left fallow.

**1.2 LAND UNDER PERMANENT CROPS**

Land under crops for extended periods and which do not have to be planted for several years after each harvest. Includes land under trees and shrubs producing flowers, such as roses and jasmine, and nurseries (except those for forest trees, which should be classified under "forests and other wooded land"). Excludes permanent meadow and pastures.

**1.3 LAND UNDER PERMANENT MEADOWS AND PASTURES**

Land used permanently (i.e. for five years and more) for herbaceous forage crops. Permanent meadows and pastures on which trees and shrubs are grown are recorded under this heading only if the growing of forage crops is the most important use of the area. Measures may be taken to keep or increase productivity of the land (i.e. use of fertilisers, mowing or systematic grazing by domestic animals).

**1.4 ALL OTHER AGRICULTURAL LAND NOT ELSEWHERE SPECIFIED**

Includes all agricultural land, which is not specified previously. Such land may or may not be potentially productive. Included are scattered farm buildings, i.e. isolated buildings not belonging to closed villages or similar rural localities.

**1.5 FALLOW AGRICULTURAL LAND**

Arable land not under rotation that is set at rest for a period of time ranging from one to five years before it is cultivated again, or land usually under permanent crops, meadows or pastures, which is not being used for that purpose for a period of at least one year. Also included is arable land which is normally used for the cultivation of temporary crops, but which is being temporarily used for grazing.

**2 FOREST AND OTHER WOODLAND**

Forest and other wooded land, excluding woodland used primarily for agricultural purposes such as grazing (coded under agricultural land) and amenity woodland in city parks and gardens (included in category 3), etc.

The category comprises:

Forest: All land where crown cover (stand density) is usually >20% of the area and at least >10%, including:

- (a) All plantations including one-rotation plantations, primarily used for forestry purposes;
- (b) Areas normally forming part of the forest area which are unstocked either through human action or natural causes but which are expected to revert sooner or later to forest;
- (c) Young natural stands and all plantations established for forestry purposes which have not yet reached a crown density of more than about 20%;
- (d) Forest roads, cleared tracks, firebreaks and other small open areas, as well as forest nurseries, that constitute an integral part of the forest;
- (e) Forest in national parks and nature reserves;
- (f) Areas of windbreak and shelterbelt trees >0.5 ha in extent.

but excluding:

- (a) Trees in hedgerows and boundaries; scattered trees, tree crops such as fruit tree orchards, etc; trees in city parks and gardens, etc.
- (b) Areas not meeting the conditions of forest as described above even if administered by a Forest Authority.

Other wooded land: Land which has some forestry characteristics but is not forest as defined above. It includes:

- (a) Open woodland: Land with trees whose crowns cover 5-20% of the area (or with a stand density of <20%)
- (b) Scrub, shrub and brushland: Land with shrubs or stunted trees where the main woody elements are shrubs (usually more than about 50 cm or <7 m in height), with crown cover usually >20% and in any case >5%.

but excluding the above tree categories which do not qualify as forest.

**2.1 LAND UNDER CONIFEROUS FOREST**

Land covered by forest as defined above, in which around 70-75% or more of the volume of growing stock is of coniferous species (Gymnospermae).

**2.1.1 Coniferous forest with wood production the recognized major function**

Coniferous forest or other wooded land, predominantly used for the production of timber or other forestry products.

## Dictionary of Land Cover Surveys & Definitions

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### **2.1.2 Coniferous forest with protection, conservation and biological use the recognized functions**

Coniferous forest or other wooded land, the predominant function of which is - whether individually or in combination - the protection of soil against erosion, watershed, water flow control, air purification, wind shelter, noise abatement, etc, the preservation of habitats, the protection of fauna and flora species, the preservation of wildlife forage grounds and other biological use.

### **2.1.3 Coniferous forest with recreation the recognized major function**

Coniferous forest or other wooded land which is predominantly used for recreational activities by the general public.

## **2.2 LAND UNDER NON-CONIFEROUS FOREST**

Land covered by forest as defined above, in which around 70-75% or more of the volume of growing stock is of non-coniferous species (Angiospermae).

### **2.2.1 Broadleaved forest with wood production the recognized major function**

### **2.2.2 Broadleaved forest with protection, conservation and biological use the recognized functions**

### **2.2.3 Broadleaved forest with recreation the recognized major function**

## **2.3 LAND UNDER MIXED FOREST**

Forest in which neither coniferous nor broadleaved species account for >70% of the volume of growing stock.

### **2.3.1 Mixed forest with wood production the recognized major function**

### **2.3.2 Mixed forest with protection, conservation and biological use the recognized functions**

### **2.3.3 Mixed forest with recreation the recognized major function**

## **2.4 OTHER WOODED LAND**

### **2.4.1 Other woodland with wood production the recognized major function**

### **2.4.2 Other woodland with protection, conservation and biological use the recognized functions**

### **2.4.3 Other woodland with recreation the recognized major function**

## **3 BUILT-UP AND RELATED LAND (EXCL. SCATTERED FARM BUILDINGS)**

Land under houses, roads, mines and quarries and any other facilities, including their auxiliary spaces, deliberately installed for the pursuit of human activities. Included are also certain types of open land (non-built-up land) which are closely related to these activities, such as waste tips, derelict land in built-up areas, junk yards, city parks and gardens, etc. Land under closed villages or similar rural localities is also included. Excluded is land occupied by scattered farm buildings, yards and their annexes (classified in category 1.4).

**3.1 RESIDENTIAL LAND**

Land which is mainly covered by residential or mainly residential buildings irrespective of whether they are actually occupied or temporarily vacant. Includes attached private gardens and small green areas, which are mainly used by the inhabitants of the buildings to which they are attached. Also includes parking facilities and small playgrounds, which are essentially reserved for use by the local population. Excluded is land used for purposes specified elsewhere, even if it is mainly used by the local population.

**3.1.1 Residential land with mainly one or two-storey buildings**

Residential land, which is covered by residential or mainly residential buildings of not more than two storeys. Excluded is land mainly occupied by secondary residences or vacation houses (to be included in category 3.9).

**3.1.2 Residential land with mainly three or more storey buildings**

Residential land which is covered by residential or mainly residential buildings of more than two storeys.

**3.2 INDUSTRIAL LAND, EXCLUDING QUARRIES, PITS, MINES AND RELATED FACILITIES**

Land on which mainly manufacturing activities are pursued, including all auxiliary grounds, such as private roads, parkings, storage grounds, office grounds, etc. Includes land used by enterprises primarily engaged in construction work. However, actual construction sites are to be classified in category 3.9.3. Harbour areas and their storage facilities, although possibly extending to industrial premises, are excluded. Also excluded is land used for quarries, mines, pits and related facilities (classified in 3.3).

**3.3 LAND USED FOR QUARRIES, PITS, MINES AND RELATED FACILITIES**

Land which is used in connection with mining and quarrying activities, including abandoned mines and quarries not put to different use.

**3.3.1 Land used for peat cutting**

Land area on which cutting of peat actually takes place.

**3.3.2 Land used for other open-cast mining and quarrying**

Land area used in connection with all mining and quarrying activities in open pits and quarries, except the cutting of peat.

**3.3.3 Land used for other mineral extraction not elsewhere specified.**

This category establishes the balance between category 3.3 on one hand and categories 3.3.1 - 3.3.2 on the other.

**3.4 COMMERCIAL LAND**

Land mainly used for commerce, trade and related services, such as shopping centres, banks, commercial garages, repair shops, commercial storage facilities, related office buildings, etc. Also included are private roads and other auxiliary spaces located in the areas concerned.

**3.5 LAND USED FOR PUBLIC SERVICES, EXCLUDING TRANSPORT, COMMUNICATION AND TECHNICAL INFRASTRUCTURE**

Land mainly used for national, provincial or local public services, including, schools, hospitals, churches and other social and cultural facilities, irrespective of whether these functions are provided by the government, institutions or private persons. Included is land used for their auxiliary purposes. Excluded is land used for purposes specified elsewhere, in particular land under technical infrastructures and land used for public transport and communication facilities.

**3.6 LAND OF MIXED USE**

This category is reserved for land, to which no single main use can be ascribed.

**3.7 LAND USED FOR TRANSPORT AND COMMUNICATION**

Land used for public and private railways, operating on a commercial basis, public roads, land used for surface pipelines for the transport of fuels and other products, airports, land used for installations of the telecommunications system, etc. Also includes the land used for transport-related offices and other service buildings and installations, such as stations, airport buildings, storage facilities for equipment and repair workshops, space used for sidewalks, grass slopes along railways, windshelter belts along roads, open noise abatement areas around airports as well as any other space needed, according to national practices, for the provision of the related infrastructure. Waterways are classified under category 7.

**3.7.1 Land under roads**

Public roads, including motorways, and their auxiliary services, including pavements, public parking lots along roads and similar spaces.

**3.7.2 Land under railways**

Public railways and private rail systems which operate on a commercial basis. Includes land used for their auxiliary services, such as stations, related administrative buildings, storage yards, installations for repair and maintenance of equipment and the like.

**3.7.3 Land under airports and related facilities**

Airports and air-fields of all kinds and their related buildings or installations.

**3.7.4 Land used for transport and communication, not elsewhere specified.**

Transport land other than that included in categories 3.7.1 - 3.7.3, including land under (surface) pipelines for the transport of fuels and other products and land officially designated as harbour area, even if used for industrial or commercial premises. However, the water area of harbours is classified under category 7.

**3.8 LAND USED FOR TECHNICAL INFRASTRUCTURE**

Land used for technical installations that serve the generation and transmission of electricity, the treatment and disposal of wastes, supply and distribution of water, collection and treatment of waste water and related activities. Also includes the land used for related offices and other service buildings and installations, as well as any space needed, according to national practices, for the operation of such technical infrastructure.

**3.8.1 Land used for the disposal of wastes**

Land used for waste treatment installations and their auxiliary grounds and waste tips of all kinds (including junk yards), except installations for the collection and treatment of waste-water.

**3.8.2 Land used for water supply and waste water treatment**

Land used for water supply, sewerage and waste-water treatment installations.

**3.8.3 Land used for electricity generation and distribution**

Land used for the generation of electricity and to the exclusive use of high-voltage transmission of electricity.

**3.8.4 Land used for technical infrastructure, not elsewhere specified.**

Land used for technical infrastructure other than that included in categories 3.8.1 - 3.8.3.

**3.9 RECREATIONAL AND OTHER OPEN LAND**

Land used for purposes of recreation, e.g. sports fields, gymnasias, major playgrounds, major public parks and green areas, public beaches and swimming pools, camping sites, areas mainly occupied by facilities for tourism, secondary residences or vacation houses, hobby gardening, cemeteries, open land currently under construction or destined for future construction, etc.

**3.9.1 Parks, green areas, hobby gardens, cemeteries, etc.**

Including major playgrounds, sportsfields, etc. and their auxiliary spaces.

**3.9.2 Recreational land mainly occupied by camping sites, secondary residences or vacation homes**

Land mainly used for camp sites, secondary residences or vacation homes.

**3.9.3 Land under current construction**

Open land on which construction is currently in process.

**3.9.4 Land intended for future construction**

Land designated in public plans for construction, but where construction works have not yet started.

**3.9.5 Other recreational and open land not elsewhere specified**

Recreational and open land other than that included in categories 3.9.1 - 3.9.4.

**4 WET OPEN LAND**

Non-wooded sites, either partially, temporarily or permanently water-logged. The water, which may be fresh, brackish or saline, on blanket or raised peatlands, may be either stagnant or running, and is usually shallow, especially if it is saline.

**4.1 MIRES**

Transitional phase between land and water, includes blanket or raised peatlands. Depending on elevation, mires may be more or less regularly flooded. In the non-flooded state, the ground is wet and spongy. Vegetation consists chiefly of decayed moss and other vegetal matter.

**4.1.1 Ombrogenous mires (Upland moors)**

Mires obtaining water from precipitation and comprising acid raised and blanket bogs, often rich in Spagnum.

**4.1.2 Soligenous mires (Lowland bogs)**

Mires, which are under the influence of ground water in addition to precipitation. They produce various forms of peat of low organic content.

**4.2 WET TUNDRA**

Temporarily inundated, treeless flood region with arctic climate and vegetation.

**4.3 OTHER WET OPEN LAND NOT ELSEWHERE SPECIFIED**

Wet land other than categories 4.1 - 4.2.

**5 DRY OPEN LAND WITH SPECIAL VEGETATION COVER**

Non-wooded land which is covered by low (<2 metres) vegetation

**5.1 HEATHLAND**

Uncultivated open land, covered with vegetation often with 25% or more ligneous and semi-ligneous plants (fern, heather, furze, genista, etc.) as well as of herbaceous plants of generally low pastoral value.

**5.2 DRY TUNDRA**

Dry, treeless flat regions with arctic climate and vegetation. May or may not be grazed by domestic animals.

**5.3 MONTANE GRASSLAND**

Natural grassland in mountainous areas, which may or may not be used for the grazing of domestic animals.

**5.3.1 Montane pastures**

Land on which domestic animals are periodically grazed, usually seasonally.

**5.4 DRY OPEN LAND NOT ELSEWHERE SPECIFIED**

Dry open land other than in categories 5.1 - 5.3. Includes Prairie Grasslands, Savannah/Portland and Chepperal/Mediterranean Crops.

**6 OPEN LAND WITHOUT, OR WITH INSIGNIFICANT, VEGETATION COVER**

Unbuilt land, the surface of which is vegetation or sparsely vegetated that it is precluded from inclusion in other categories of the classification.

**6.1 BARE ROCKS, PERMANENT ICE AND SNOW**

**6.1.1 Bare rocks**

**6.1.2 Glaciers and perpetual snow**

**6.2 SAND-BEACHES, DUNES AND OTHER SANDY LAND**

Beaches, dunes, deserts and desertified areas, etc.

**6.3 OTHER UNVEGETATED LAND NOT ELSEWHERE SPECIFIED.**

Unvegetated land not included in categories 6.1 - 6.2.

**7 WATERS**

Land covered by surface waters, extending seaward to the normal low-water base-line.

**7.1 INLAND WATERS**

All waters on the landward side of the line of the mean tidal level.

**7.1.1 Natural watercourses**

Natural or to some extent artificially constructed watercourses, including the (generally broad) portions near their outlets. The mean tidal level in estuaries determines the borderline between a watercourse and the sea into which it flows. The (imaginary) shoreline of a natural watercourse determines its borderline with an artificial watercourse, where applicable.

**7.1.2 Artificial watercourse**

Artificial watercourses, constructed for navigation, water management, irrigation and the like. The mean tidal level determines the borderline between an artificial watercourse and the sea. The (imaginary) shoreline of the natural watercourse determines the borderline between an artificial and a natural watercourse, where applicable.

**7.1.3 Inland sea (freshwater or saline), lakes, ponds, coastal land-locked bodies of water**

Natural water bodies (freshwater or saline) surrounded more or less completely by land. The water body may have one or more inlets or outlets in the form of natural or artificial drainage channels (i.e. rivers, streams, brooks or channels). Bodies of water included in this category are always separated from the open sea.

**7.1.4 Artificial water impoundment**

A water body impounded by a dam, which is used for the supply of drinking water, electricity generation, irrigation or animal husbandry. Watercourses being part of a reservoir system are included.

**7.1.5 Other inland waters not elsewhere specified**

Inland waters not included in categories 7.1.1 - 7.1.4.

**7.2 TIDAL WATERS**

All waters (other than inland waters), brackish or marine, lying on the landward side of the "normal low-water base-line" along the coast, and in estuaries between this low-water mark base-line and the seaward side of the line at the mean tidal level.

**7.2.1 Coastal lagoons**

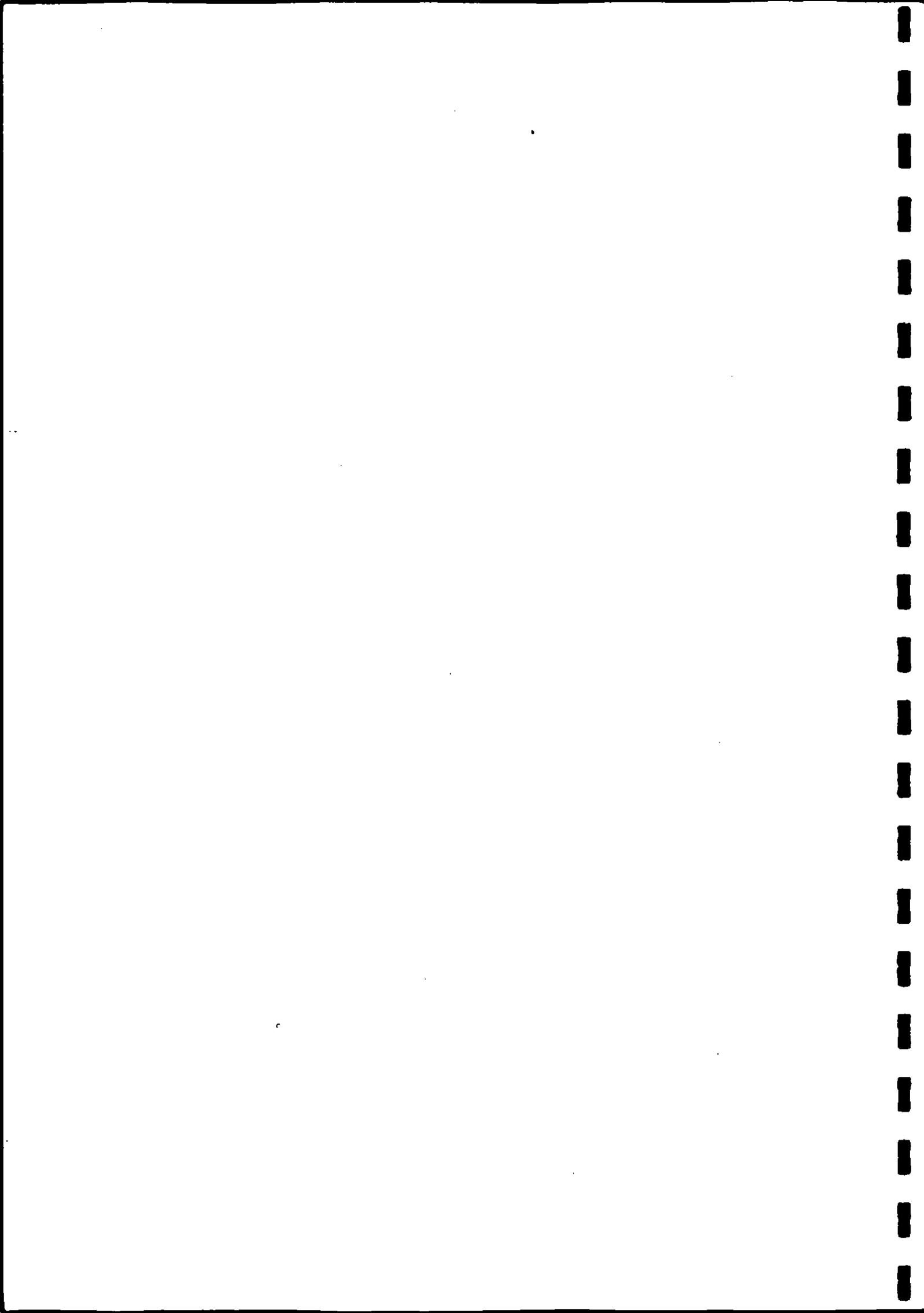
Seawater bodies at the coast, but separated from the sea by land spits or similar land features. Coastal lagoons are open to the sea in restricted spaces.

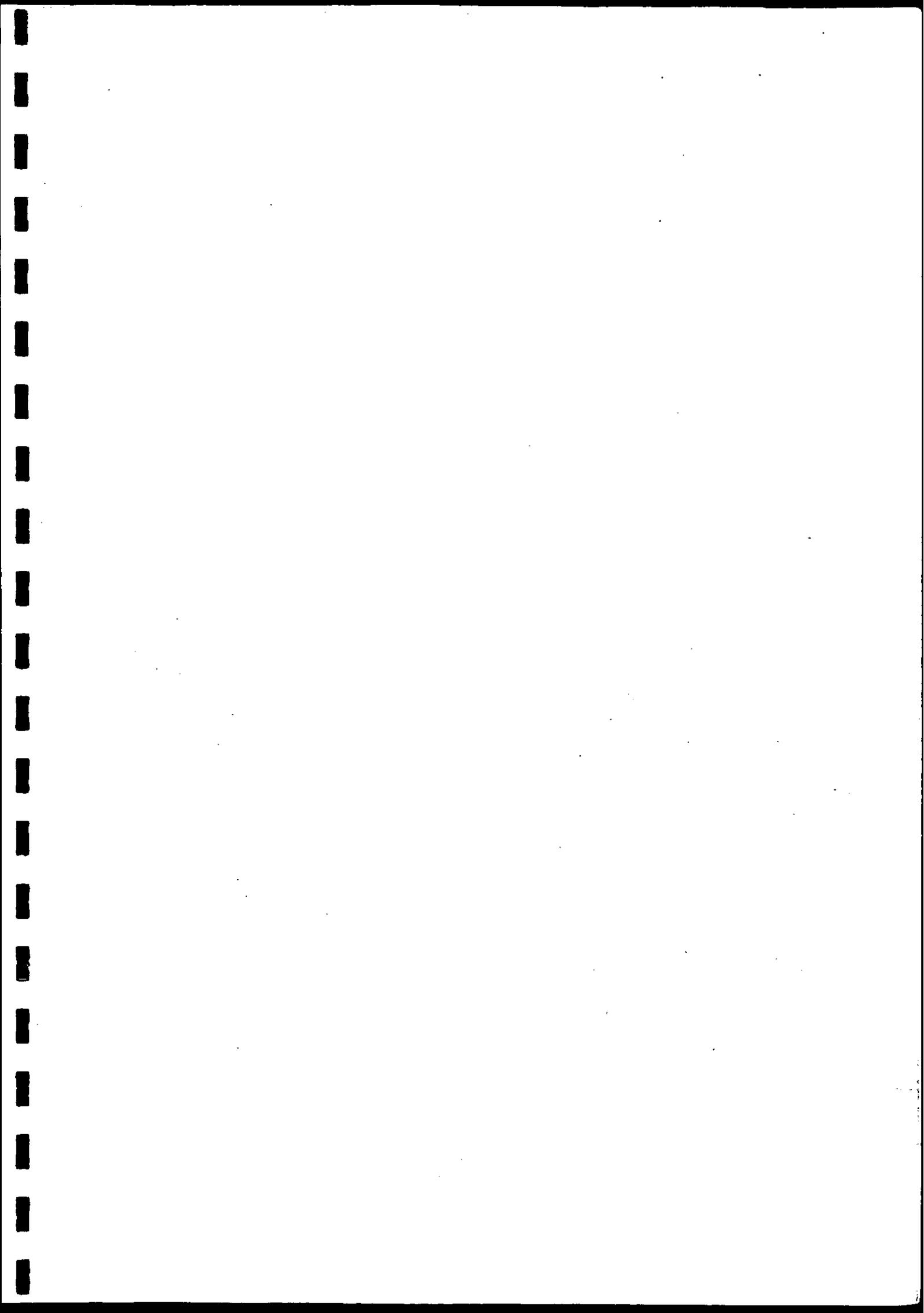
**7.2.2 Estuaries**

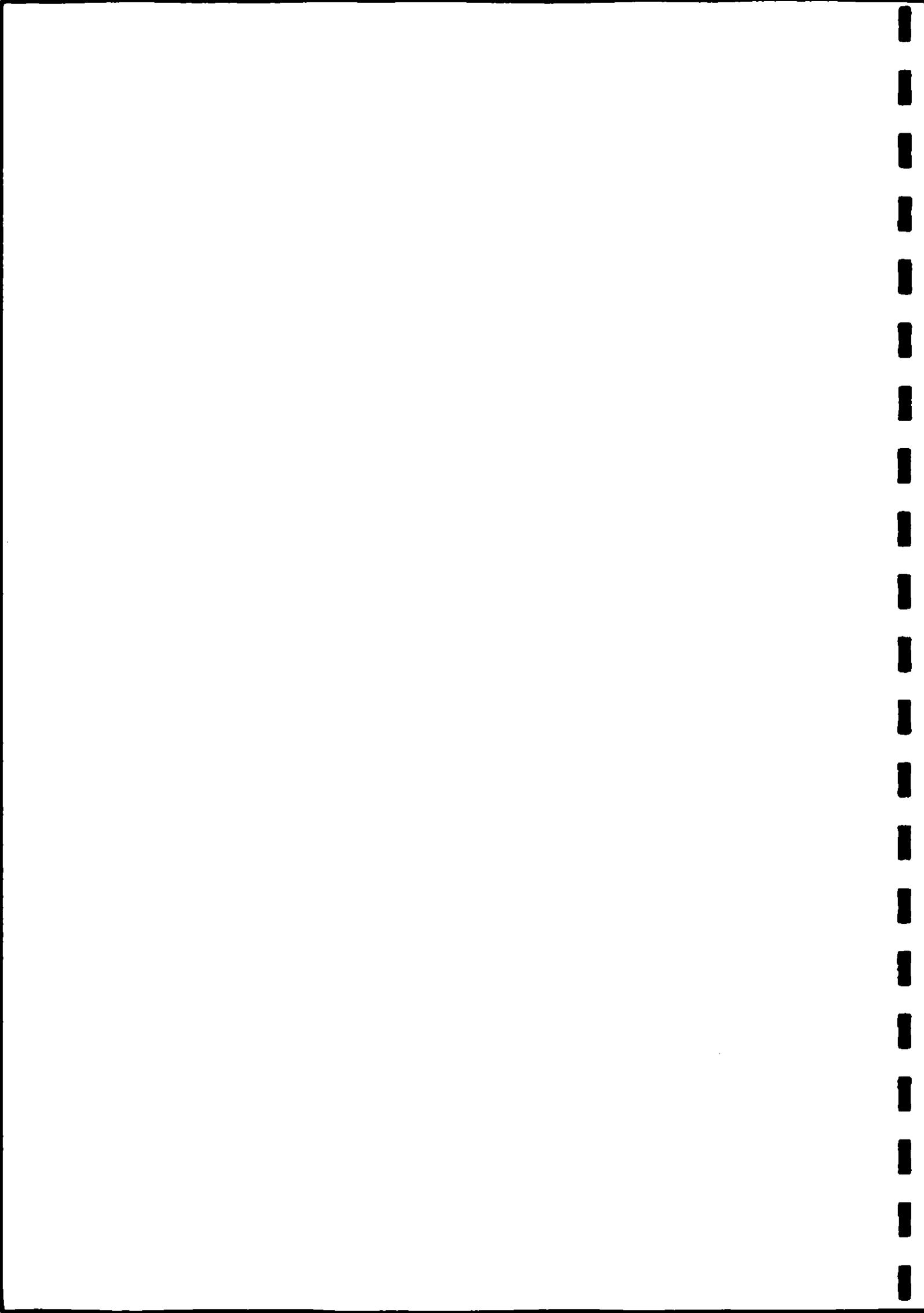
Those (generally broad) portions of a river, stream, brook or torrent near its outlet, which are influenced by the marine water body into which it flows. The demarcation line is generally the mean tidal level.

**7.2.3 Other tidal waters not elsewhere specified**

Tidal waters not included in categories 7.2.1 - 7.2.2.







Dictionary of Land Cover Surveys & Definitions

<b>SURVEY NUMBER</b>	13
<b>NAME OF SURVEY</b>	NATIONAL LAND USE CLASSIFICATION.
<b>COMMISSIONING AGENT</b>	JOINT LOCAL AUTHORITY, LOCAL AUTHORITIES' MANAGEMENT SERVICES AND COMPUTER COMMITTEE, SCOTTISH DEVELOPMENT DEPARTMENT AND DEPARTMENT OF THE ENVIRONMENT.
<b>EXECUTING AGENT</b>	SCOTTISH DEVELOPMENT DEPARTMENT, GREATER LONDON COUNCIL, LOCAL AUTHORITIES MANAGEMENT SERVICES AND COMPUTER COMMITTEE, MINISTRY OF HOUSING AND LOCAL GOVERNMENT AND THE DEPARTMENT OF THE ENVIRONMENT.
<b>CONTACT</b>	Land and General Statistics Division Department of the Environment Room P1/170A 2 Marsham Street LONDON SW1P 3EB  Tel: London (071) 276 4171. .. .. 3000 (switchboard). Fax: .. .. 4912.  Present contact: Dorothy Salathiel, (Address as above except: Room P1/170. Tel: 071 276 4166).
<b>OBJECTIVES</b>	To devise a standard classification of land use which would aid the flow of information about land use within and between planning authorities and, as far as possible, other bodies as well.  To provide for the information needs of planning authorities. To produce a standard land use classification which would serve the various purposes of planning throughout the country and would also have regards for the needs of other users of land use data.
<b>PERIOD OF SURVEY</b>	Simply a classification - no survey carried out.
Start	
End	

## Dictionary of Land Cover Surveys & Definitions

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### **SURVEY METHOD**

An appraisal of current classification practice was carried out and the views about future needs of a wide range of users of land use data in central and local government and other bodies (such as government departments, universities, professional institutions and statutory bodies who were thought to have an interest in the subject) were canvassed.

### **DATA STORAGE/ANALYSIS**

### **GEOGRAPHICAL CHARACTERISTICS**

Area of survey	N/A
Sampling frame	N/A
Sampling unit	N/A
Recording unit	N/A
Scale of output data	N/A
Scale of input	N/A
Resolution	N/A

### **FORMS OF OUTPUT**

Published classification

### **PUBLICATION DATE(S)**

1975

### **REFERENCES**

Department of the Environment. (1975). *National Land Use Classification*. H.M.S.O.

13

National land use classification

Land cover/use categories and definitions

AG AGRICULTURE AND FISHERIES

AG01 ANIMAL SERVICE PLACES

AG02 ANIMAL LIVING PLACES

AG03 ANIMAL PRODUCT PROCESSING PLACES

AG04 WILD LIFE CAPTURING PLACES

AG05 AGRICULTURAL RESEARCH

AG06 CULTIVATED PLACES

AG06A Arable Farm places

- AG06A-A Cereal Crops
- AG06A-B Fallow
- AG06A-C Green Forage Crops
- AG06A-D Pulse Crops
- AG06A-E Root Crops

AG06B Horticultural Places

- AG06B-A Allotment Garden
- AG06B-B Flower Bed
- AG06B-C Glass House
- AG06B-D Hop Field
- AG06B-E Mixed Market Garden
- AG06B-F Nursery
- AG06B-G Orchard with Arable Land
- AG06B-H Orchard with Grass
- AG06B-I Orchard with Market Garden
- AG06B-J Soft Fruit
- AG06B-K Vegetable Field

**AG07 CROP PROCESSING PLACES**

**AG08 NON-CULTIVATED PLACES**

**AG08A Grazing Places**

**AG08A-A Permanent Pasture**

**AG08A-B Rough Grazing**

**AG08B Forestry Places**

**AG08B-A Coniferous Forest**

**AG08B-B Coppice**

**AG08B-C Coppice with Standards**

**AG08B-D Deciduous Forest**

**AG08B-E Mixed Forest**

**AG08B-F Tree Nursery**

**CM COMMUNITY AND HEALTH SERVICES**

**DF DEFENCE**

**ED EDUCATION**

**ED01 EDUCATION PLACES**

**ED02 RESEARCH PLACES**

**ED02A Research Establishments**

**ED02B Nature Reserves and Sanctuaries**

**LE RECREATION AND LEISURE**

**LE01 AMENITY, AMUSEMENT AND SHOW PLACES**

**LE01A Outdoor Amenity Places**

**LE01B Monuments**

**LE01C Amusement Places**

**LE01D Show Places**

**LE02 LIBRARIES, MUSEUMS AND GALLERIES**

**LE03 LAND SPORT PLACES**

**LE03A Ball Game Pitches and Grounds**

**LE03B Ball Game Greens and Courts**

**LE03C Ball Game Courses**

**LE03D Athletic Games Arenas**

**LE03E Athletic Games Courses**

**LE03F Climbing, Rambling and Caving Places**

**LE03G Target Shooting Places**

**LE03H Land Vehicle Performance Places**

**LE03I Animal Training and Competing Courses**

**LE03J Hunting and Shooting Places**

**LE04 WATER SPORTS PLACES**

**LE04A Swimming and Bathing Places**

**LE04B Water Craft Places**

**LE04C Water Recreation Places**

**LE05 HOLIDAY CAMPS**

**LE05A Holiday Camps**

**LE05A-A      Camping Site**

**LE05A-B      Holiday Camp**

**LE05A-C      Holiday Caravan Site**

**LE05A-D      Youth Hostel**

**MA MANUFACTURING**

**MI MINERAL EXTRACTION**

**MI01 MINERAL EXTRACTION PLACES**

**MI01A Surface Mineral Workings**

**MI01B Surface Installations for Underground Mineral Workings**

**MI01C Waste Disposal Areas from Mineral Working and Processing**

**MI01D Mineral Handling Installations**

OF OFFICES

OF01 GENERAL OFFICES

OF01A General Offices

- OF01A-A Central Government Administration
- OF01A-B Local Government Administration
- OF01A-C Manufacturing Administration
- OF01A-D Professional Services
- OF01A-E Other General Offices

OF02 FINANCIAL SERVICE OFFICES

OF03 BUSINESS MEETING PLACES

OF04 STUDIOS

RS RESIDENCES

RS01 GROUP RESIDENCES

RS01A Hotels

RS01B Communal Homes

- RS01B-A Barracks
- RS01B-B Residential Retreat
- RS01B-C School Boarding House
- RS01B-D Staff Hostel
- RS01B-E Other Communal Home

RS01C Movable Dwelling Site

RS02 SELF-CONTAINED RESIDENCES

RT RETAIL DISTRIBUTION AND SERVICING

**ST    STORAGE**

**ST01    EQUIPMENT STORES**

**ST01A    Equipment Stores**

- ST01A-A        Agricultural Machinery**
- ST01A-B        Building Equipment**
- ST01A-C        Engineering Equipment**
- ST01A-D        Industrial and Office Machinery**
- ST01A-E        Sports Equipment**
- ST01A-F        Other Equipment Store**

**ST02    MATERIALS STORES**

**ST03    OTHER STORES**

**TR    TRANSPORT TRACKS AND PLACES**

**TR01    LAND TRANSPORT TRACKS**

**TR01A        Footpaths**

**TR01B    Cycle Tracks**

**TR01C        Bridleways**

**TR01D        Bus Ways**

**TR01E    Roads**

**TR01F    Railways**

**TR02    LAND TRANSPORT PLACES**

**TR03    WATER TRANSPORT TRACKS**

**TRO3A        Water Tracks**

**TRO3A-A        Canal**

**TRO3A-B        River**

**TR04    WATER TRANSPORT PLACES**

**TR05    MECHANICAL HANDLING PLACES**

**TR06    GOODS HANDLING PLACES**

**UT    UTILITY SERVICES**

**UT01    GAS SUPPLY SERVICES**

**UT02    ELECTRICITY SUPPLY SERVICES**

**UT03    WATER SUPPLY PLACES**

**UT03A        Water Storage and Treatment Places**

**UT03A-A        Reservoir**

**UT03A-B        Water Tower**

**UT03A-C        Water Treatment Works**

**UT03B Water Distribution Places**

**UT03C        Water Extraction Places**

**UT04    SEWAGE DISPOSAL PLACES**

**UT05    REFUSE DISPOSAL PLACES**

**UT06    DISTRICT HEATING PLACES**

**UT07    DEAD BODIES STORAGE AND DISPOSAL PLACES**

**UT08    POSTAL SERVICE, SIGNALLING AND TELECOMMUNICATIONS PLACES**

**WH    WHOLESALE DISTRIBUTION**

**UL    UNUSED LAND, WATER AND BUILDINGS**

**UL01    UNUSED LAND AND WATER**

**UL01A        Unused Land in Natural or Semi-Natural State**

**UL01A-A        Beach or Sand Dune**

**UL01A-B        Cliff or Natural Outcrop**

**UL01A-C        Grass Land**

**UL01A-D        Heath and Moorland**

**UL01A-E        Peat, bog, freshwater marsh and swamp**

**UL01A-F        Salt Marsh**

**UL01A-G        Woodland and Scrub**

**UL01A-H        Other Land in Natural State**

## Dictionary of Land Cover Surveys & Definitions

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### **UL01B Unused Formerly Developed Land**

<b>UL01B-A</b>	<b>Cleared Site</b>
<b>UL01B-B</b>	<b>Mineral Excavation or pit (dry)</b>
<b>UL01B-C</b>	<b>Protected Land</b>
<b>UL01B-D</b>	<b>Spoilt Land</b>
<b>UL01B-E</b>	<b>Waste Heap or Tip</b>
<b>UL01B-F</b>	<b>Other Formerly Developed Land</b>

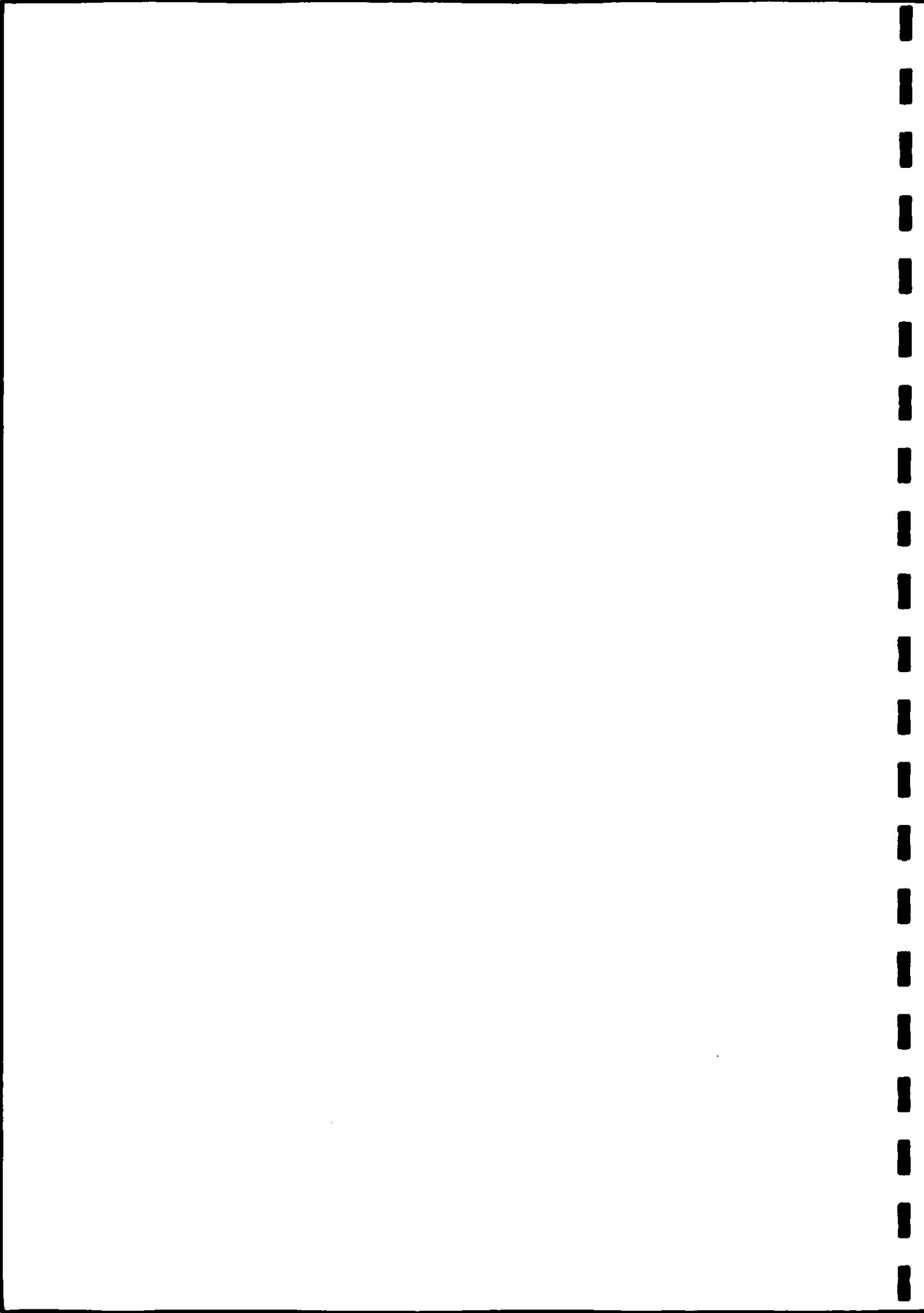
### **UL01C Unused Water**

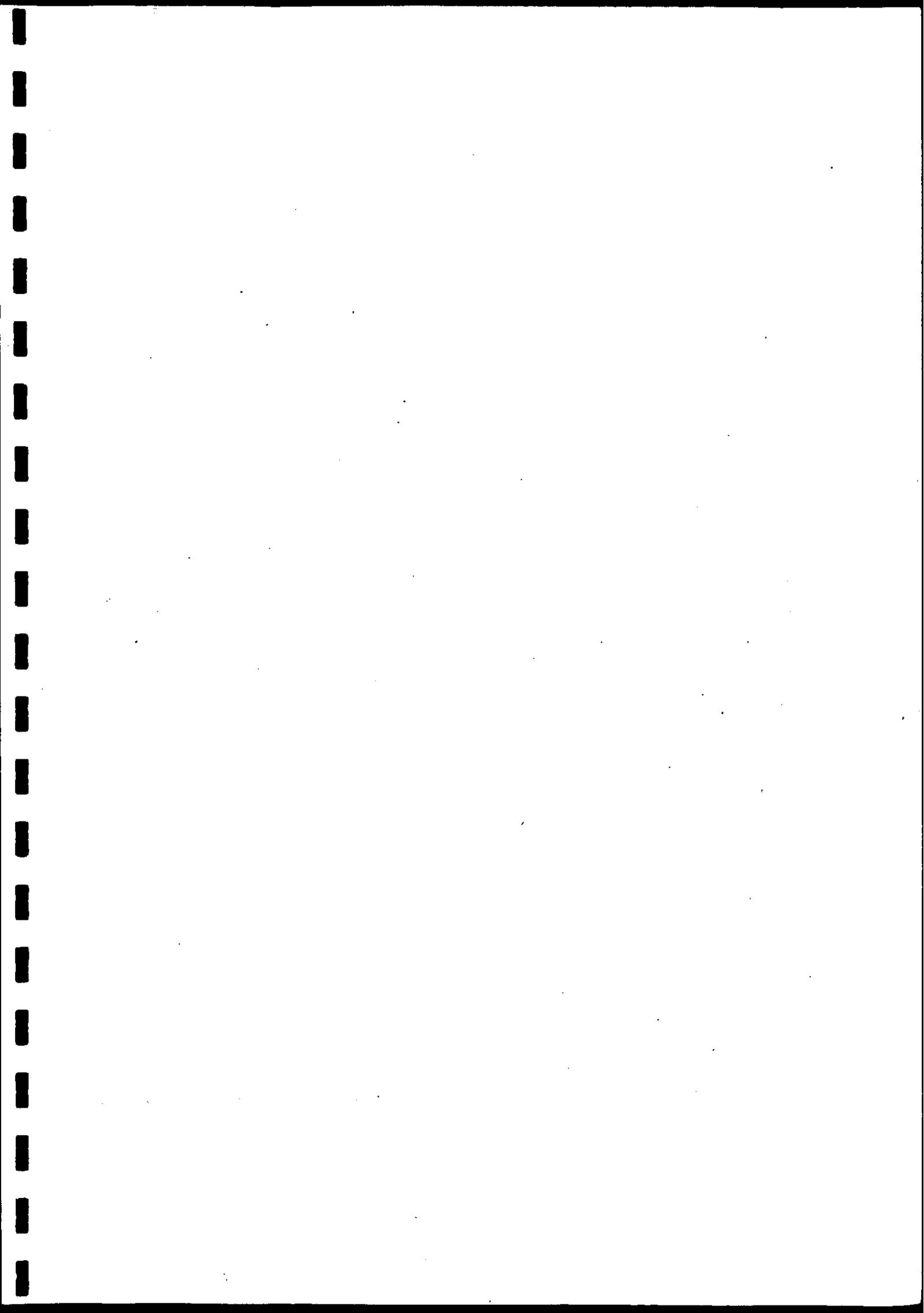
<b>UL01C-A</b>	<b>Canal</b>
<b>UL01C-B</b>	<b>Dock</b>
<b>UL01C-C</b>	<b>Mineral Excavation or Pit (Wet)</b>
<b>UL01C-D</b>	<b>Pond or Lake</b>
<b>UL01C-E</b>	<b>Water Course</b>
<b>UL01C-F</b>	<b>Other Water</b>

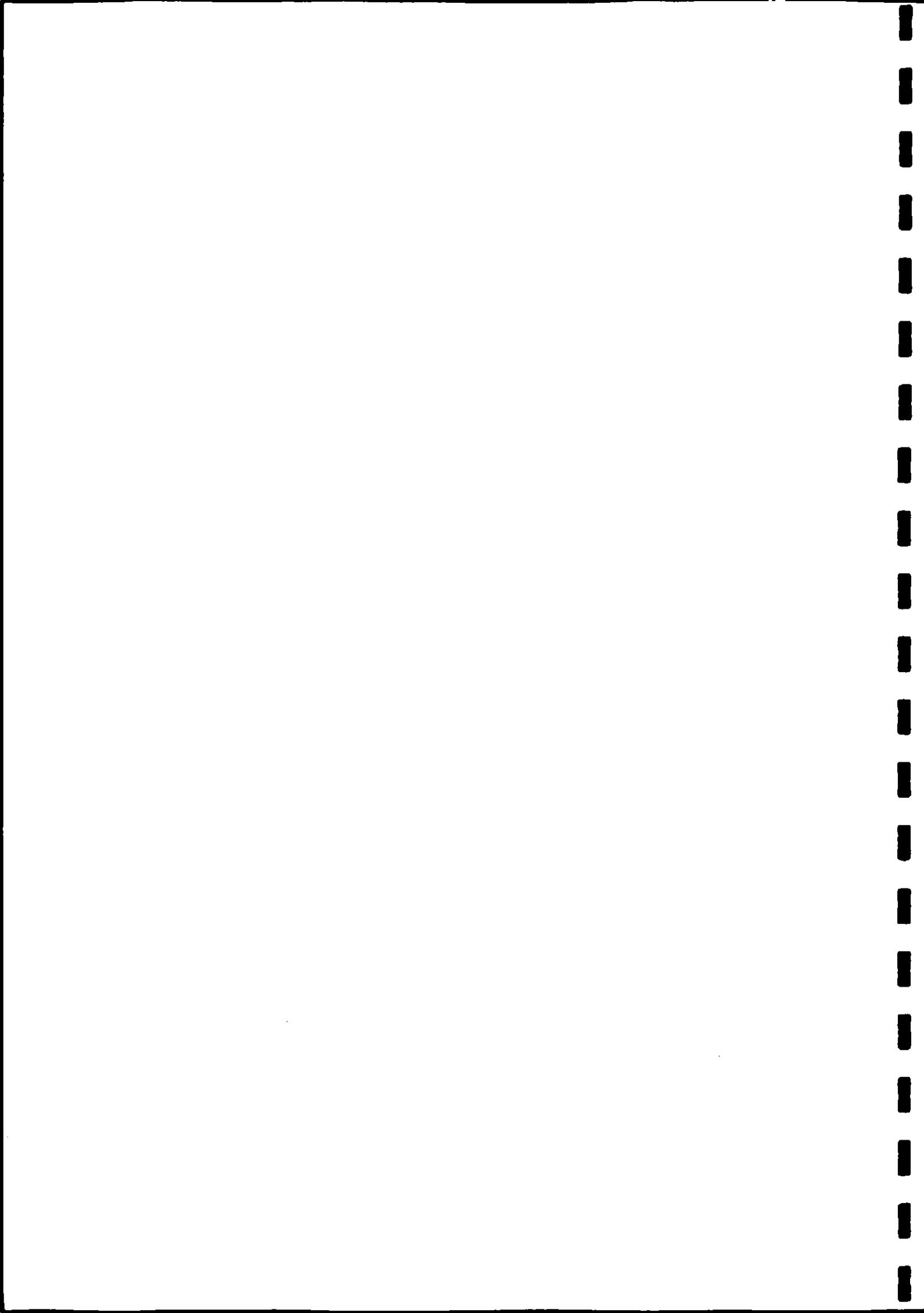
### **UL02 UNUSED BUILDINGS**

#### **UL02A Unused Buildings**

<b>UL02A-A</b>	<b>Abandoned Building or Ruin</b>
<b>UL02A-B</b>	<b>Vacant Building</b>







## Dictionary of Land Cover Surveys & Definitions

<b>SURVEY NUMBER</b>	14
<b>NAME OF SURVEY</b>	DOE LAND USE CHANGE STATISTICS
<b>COMMISSIONING AGENT</b>	DEPARTMENT OF THE ENVIRONMENT (DOE).
<b>EXECUTING AGENT</b>	ORDNANCE SURVEY (OS) AND THE DEPARTMENT OF THE ENVIRONMENT.
<b>CONTACT</b>	<p>Land and General Statistics Division Department of the Environment Room P1/170A 2 Marsham Street LONDON SW1P 3EB</p> <p>Tel: London (071) 276 4171. .. .. 3000 (switchboard). Fax: .. .. 4912.</p> <p>Present contact: Dorothy Salathiel, (Address as above except: Room P1/170. Tel: 071 276 4166).</p>
<b>OBJECTIVES</b>	To provide reliable and detailed information about the national or regional pattern of land use change both to inform planning policy and to contribute to the wider debate on national land use policy issues.
<b>PERIOD OF SURVEY</b>	
Start	1985.
End	Continues.
<b>SURVEY METHOD</b>	<p>Field survey by the Ordnance Survey (OS) as part of its ongoing map revision work throughout Great Britain. Details of changes in land use are recorded annually for the DOE by OS. Land use change statistics are then derived from this information.</p> <p>A hierarchical classification that splits down into 24 classes is used to record different types of land use. This classification reflects, to some extent, OS practice.</p> <p>The OS map revision programme is determined by the amount of change taking place on the ground and its relative importance to the national archive. Consequently change in some areas (particularly urban areas and their fringes) will be surveyed much more quickly than others (eg remote rural areas), but over time all maps covering the country are revised (planned to be on average once every 40 years). The most important changes are recorded within about 6-18 months of the change taking place.</p> <p>Information about change comes from a variety of sources including local authorities, the Forestry Commission and surveyors' first-hand knowledge of the areas for which they are responsible.</p>

## Dictionary of Land Cover Surveys & Definitions

### GEOGRAPHICAL CHARACTERISTICS

Area of survey	Great Britain: Wales 1985-92; Scotland 1985-92; England 1985 onwards.
Sampling frame	Comprehensive over time; random in any one year.
Sampling unit	500 x 500 m squares (25 ha) at 1:1250 scale.
Recording unit	Land parcels
Scale of input data	10 m grid reference. (100 m prior to 1989).
Scale of output	10 m grid reference but only published down to county level.
Resolution	To the nearest 0.1 ha.
Accuracy and error	Data collection is of high quality; robustness depends on category and geographic area being measured because of differences in data collection methods.

The surveyors receive comprehensive briefing and formal instruction sessions. Their work is subjected to desk monitoring and computer validation checks. Forms completed by the OS local offices are "spot checked". Verification checks are carried out on grid references and local authority district codes etc. Comparisons with up-to-date OS changes are made with their own master maps, visits by DOE staff to OS local offices, "ground truth" checks and independent validations of surveyors' reporting accuracy are also undertaken, but on a more *ad hoc* basis. In addition several local authorities have compared the OS changes with their own land systems and local information; several county councils have reported encouraging levels of consistency. Finally, the brief written descriptions provided by the OS surveyors in some line entries are also used for validation purposes, to test specific classification questions and for other *ad hoc* queries.

### DATA STORAGE/ANALYSIS

Data are analysed using the Scientific Information Retrieval DBMS package.

### DATA AVAILABILITY

### OUTPUT

Summary statistics of changes from, to and within each of the separate land use categories at national, regional and county levels.

### PUBLICATION DATE(S)

Annual (June).

## Dictionary of Land Cover Surveys & Definitions

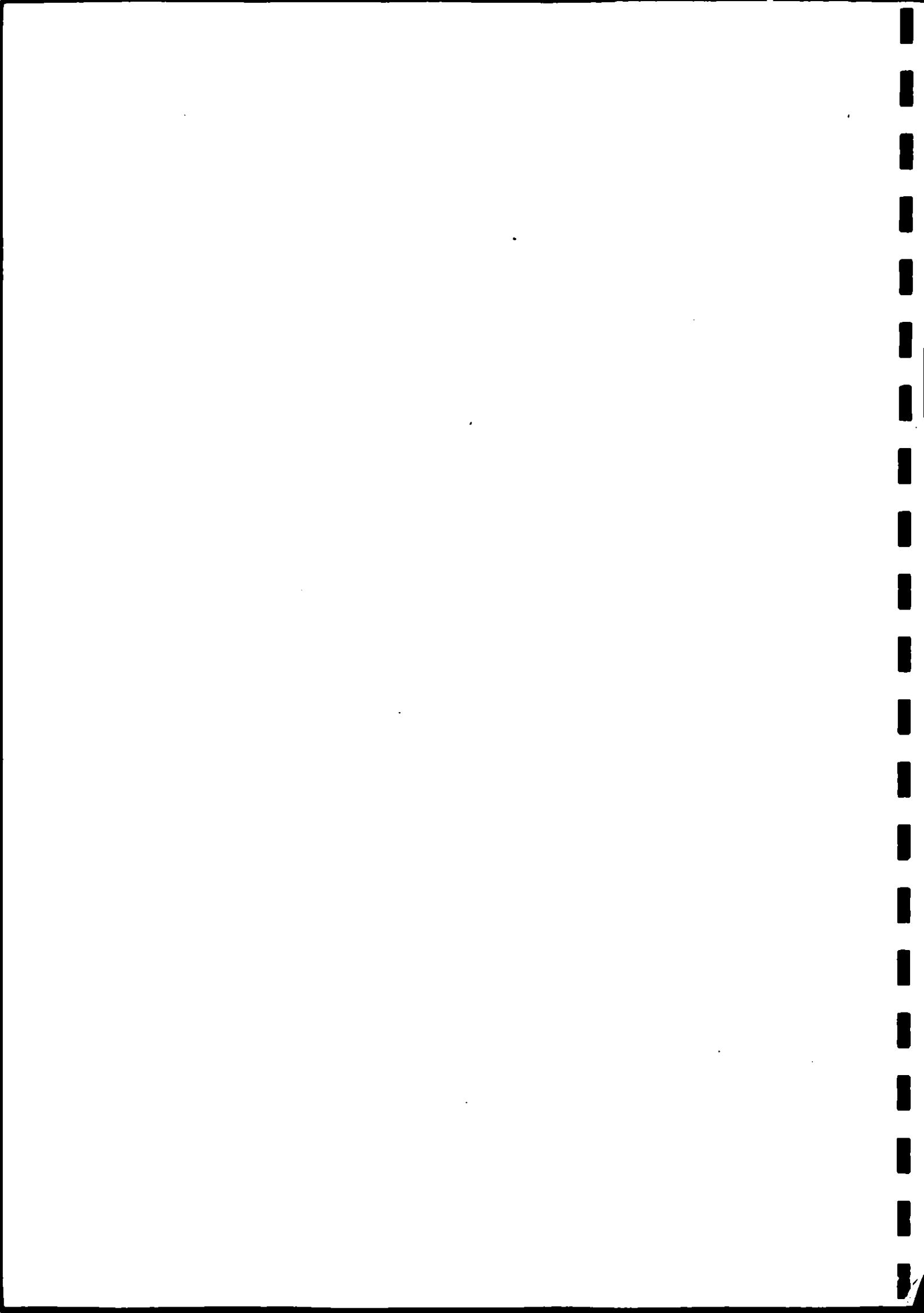
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### REFERENCES

Sellwood, R. (1987). Statistics of changes in land use: a new series. *Statistical News*, 79, 11-16.

Department of the Environment. (1992). Land use change in England No 7. *Department of the Environment Statistical Bulletin*, (92)4. DOE.

Department of the Environment. (1993). *Analysis of land use change statistics*. (SERRL/HFA) 1993.



14 Department of the Environment Land Use Change Statistics

Land use/cover categories and definitions

1 RURAL LAND USES

1.1 AGRICULTURE

1.1.1 Agricultural land

Areas of crops, grassland, hop fields and fruit bushes, etc, corresponding to "white" areas without symbol or annotations on the OS Master Survey Drawing (MSD). Orchards and nurseries shown by symbols or annotations (as applicable) on the MSD.

1.1.2 Agricultural buildings

Buildings, hard surface areas and farm roads found on farm holdings.

(Note - farm houses are classified as residential and farm shops are classified as retailing).

1.2 FORESTRY, OPEN LAND AND WATER

1.2.1 Forestry/woodland

Areas marked with woodland symbols or annotations on the MSD including woodland on farm holdings and woodland used for recreation.

1.2.2 Rough grassland and bracken

Areas of rough grassland and bracken shown by annotation or symbol on the MSD and areas of scrub, with no other woodland classification, occurring outside areas of forestry and woodland. If used for recreation then classified to this category.

1.2.3 Natural and semi-natural land

Land which is not being cultivated or grazed and which has never been used for development, including scree, cliff, dunes, marsh and beach and land reclaimed from the sea or estuaries which has not yet been grazed or developed. If used for recreation then classified to this category.

1.2.4 Water

Lakes, canals, reservoirs, etc whether man made or occurring naturally, including those used for recreation.

(Note - water filled gravel pits where extraction is still taking place are included in minerals).

1.3 MINERALS AND LANDFILL

1.3.1 Minerals

Areas of surface mineral working including spoiltips together with all buildings and installations for surface and underground mineral workings.

1.3.2 Landfill waste disposal

Rubbish tips and former mineral workings which are used for land being reclaimed by the tipping of domestic and industrial waste.

(Note - waste transfer stations, incinerators and household waste sites where these are used purely for transit or processing are classified as utilities).

**1.4 OUTDOOR RECREATION**

Outdoor recreation areas such as playing fields and sports grounds, including those in schools and industrial sites, football pitches, golf courses, country parks and allotment gardens.

(Note - buildings such as stables, club houses and pavilions, associated with outdoor recreation are classified as leisure and recreational buildings. If an area is designated as a nature reserve, the land use grouping is unaffected - any changes within these areas are classified in the normal way).

**1.5 DEFENCE**

Defence establishment land, barracks, buildings, airfields and firing ranges which are shown as such on the MSD.

(Note - married quarters are classified as residential).

**2 URBAN LAND USES**

**2.1 RESIDENTIAL**

**2.1.1 Residential**

Houses, flats and adjoining garages, gardens, estate roads and pathways, sheltered accommodation where residences have separate front entrances.

**2.1.2 Institutional and communal accommodation**

Buildings that provide communal accommodation including residential institutions that are not classified as community buildings or leisure and recreational buildings. Included are hotels, hostels, old people's homes, children's homes, monasteries and convents, etc.

**2.2 TRANSPORT AND UTILITIES**

**2.2.1 Highways and road transport**

Roads as through routes, including distributor roads in housing estates, bus stations and public car parks.

(Note - Roads in housing or industrial estates which are primarily a means of access to properties are classified as residential or industry as appropriate. Car parks not open to the public are classified with the buildings or activities they serve).

**2.2.2 Transport (Other)**

Non-highway transport routes and places, e.g. railways, airports and dockland, including all installations within the perimeter of the establishment, e.g. warehouses, dry docks, wharves, internal roads, etc.

(Note - canals and rivers are classified as water. Warehousing and industrial sites built on former dockland are classified as storage and warehousing or industry as appropriate).

**2.2.3 Utilities**

Facilities for post and telecommunications, the production and distribution of gas and electricity, the treatment and disposal of sewage, and cemeteries and crematoria. It includes power stations, water works, gas works, refuse disposal places (except those in Landfill waste disposal), TV masts and electricity sub-stations etc.

**2.3 INDUSTRY AND COMMERCE**

**2.3.1 Industry**

Works, refineries, shipbuilding yards, mills and other industrial sites.

(Note - where these are part of a public utility, e.g. gas works or water works, they are classified as utilities).

**2.3.2 Offices**

Local and central government offices, banks, building societies and other offices, etc.

**2.3.3 Retailing**

Shops, garages, public houses, restaurants, post offices, etc.

**2.3.4 Storage and warehousing**

Depots, scrap and timber yards, warehousing, etc.

**2.4 COMMUNITY SERVICES**

**2.4.1 Community buildings**

Health, educational, community and religious buildings and police stations, prisons, fire stations, etc.

**2.4.2 Leisure and recreational buildings**

Buildings associated with leisure and recreation such as museums, cinemas, theatres, bowling alleys, sports halls, holiday camps, amusement arcades, etc and buildings associated with outdoor recreation.

**2.5 VACANT**

**2.5.1 Vacant land previously developed**

Land which was previously developed and is now vacant which could be developed without further demolition or treatment.

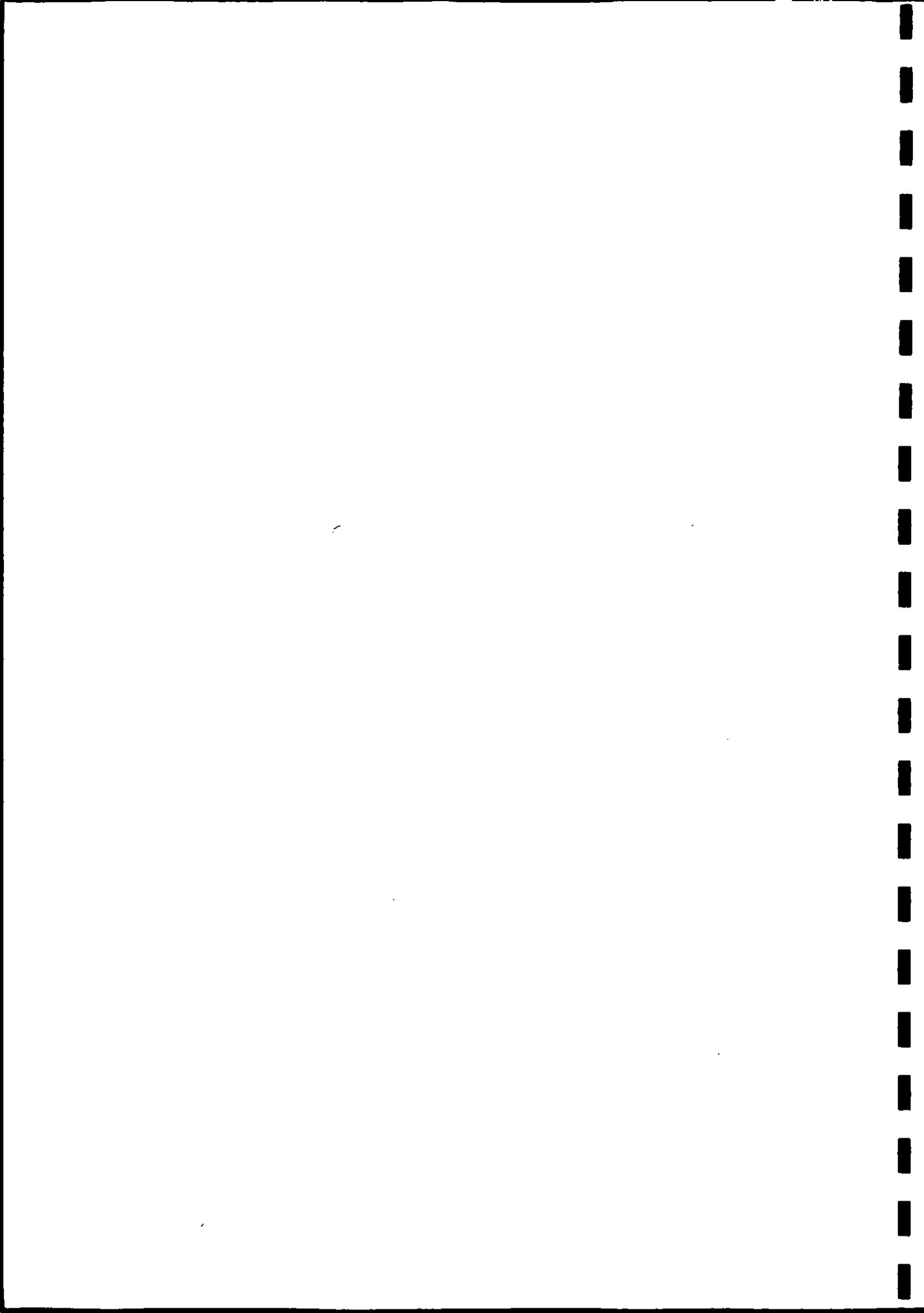
**2.5.2 Despoiled land**

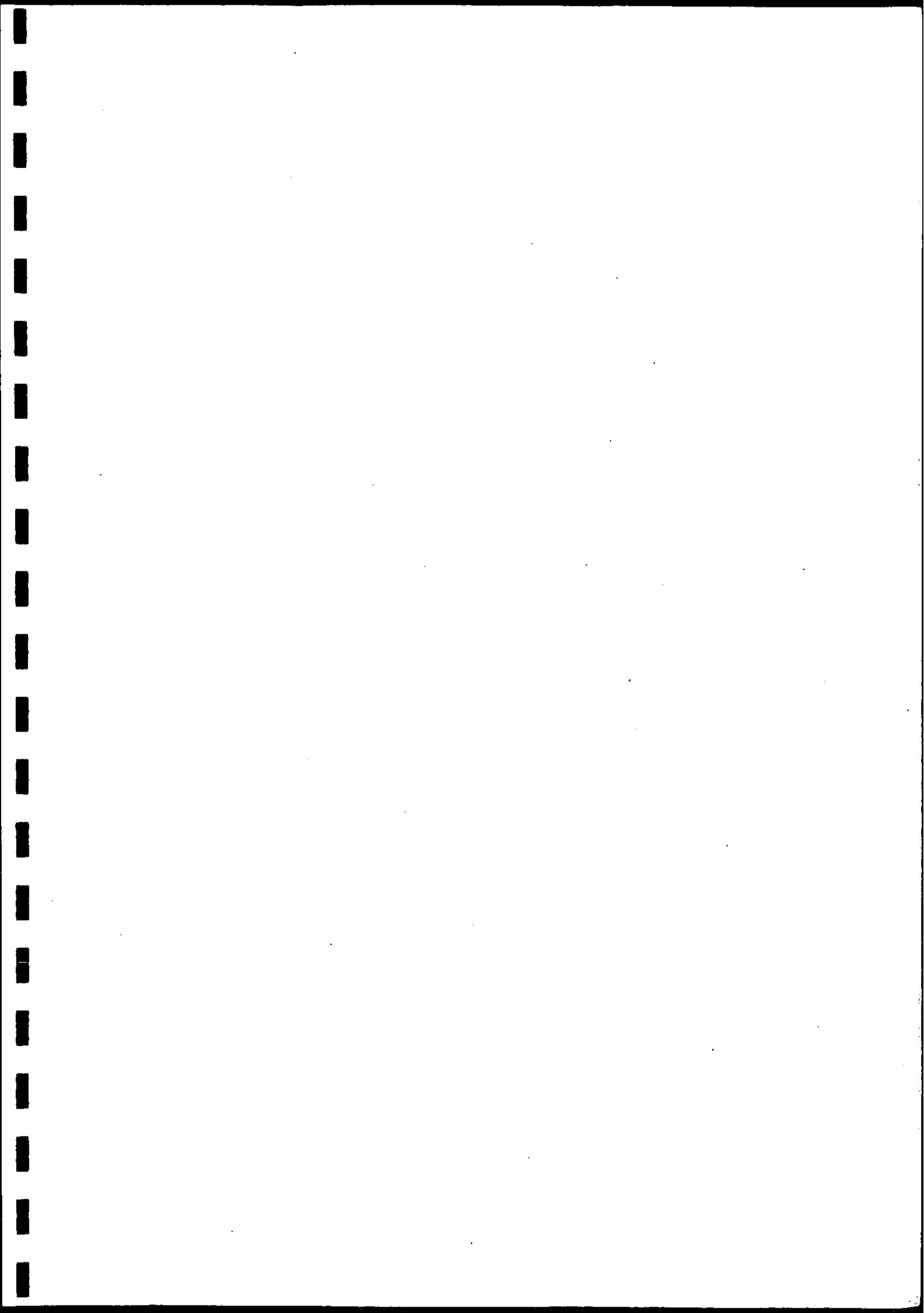
Land previously developed but currently unused which requires some demolition work or other treatment before it could be developed.

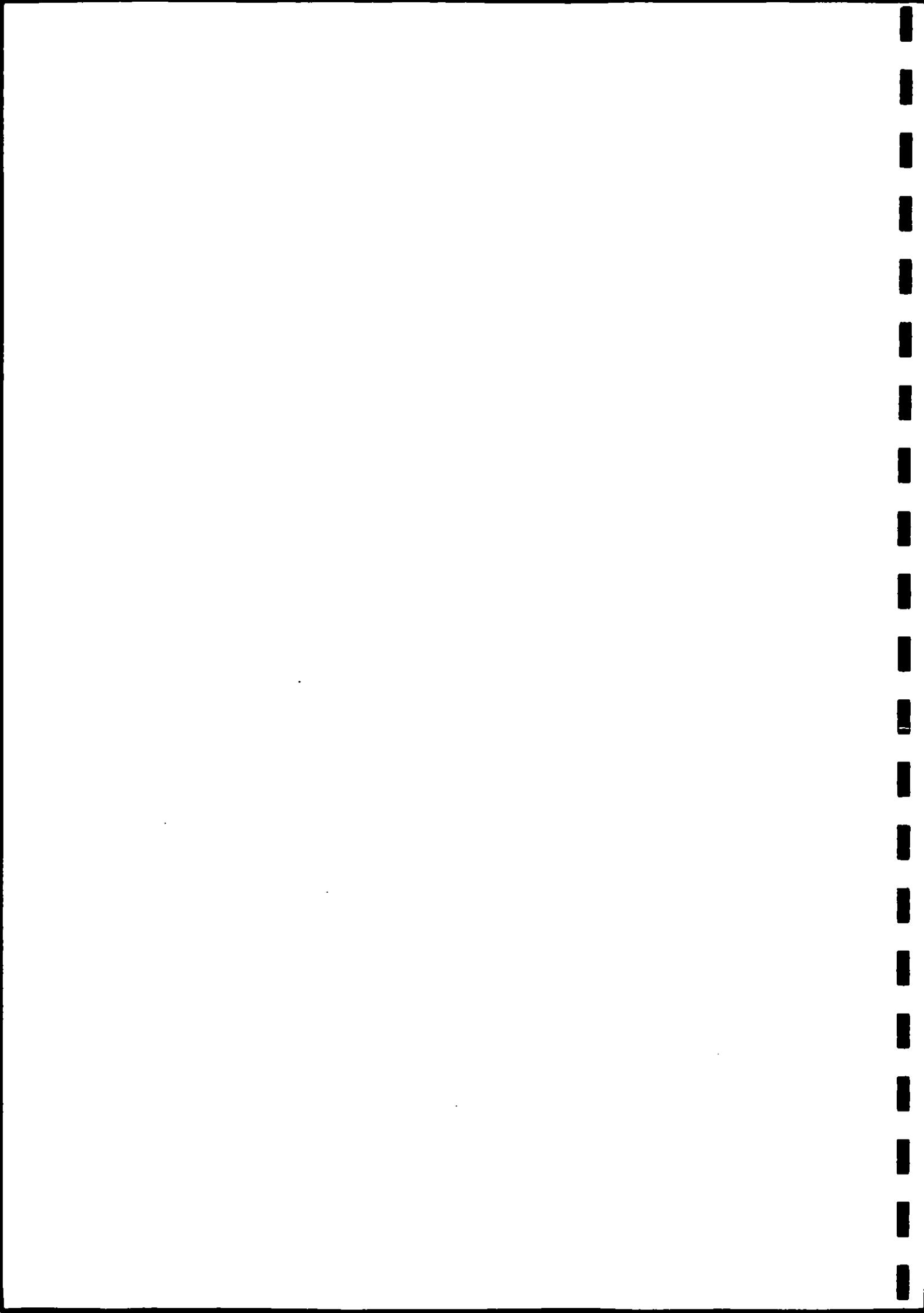
**2.5.3 Urban land not previously developed**

Land in built-up areas which has not been developed previously and which is not currently used for agriculture. It is shown on the MSD as a "white" area without symbols or annotation.

(Note - if it was not in a built-up area (or if it was being used for agriculture), it would be classified as Agricultural Land).







Dictionary of Land Cover Surveys & Definitions

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<b>SURVEY NUMBER</b>	15
<b>NAME OF SURVEY</b>	CORINE BIOTOPES PROJECT HABITAT CLASSIFICATION.
<b>COMMISSIONING AGENT</b>	EUROPEAN COMMISSION (DGXI).
<b>EXECUTING AGENT</b>	THE INSTITUTE OF TERRESTRIAL ECOLOGY and INSTITUT ROYAL DES SCIENCES NATURELLES DE BELGIQUE, coordinated by the European Environmental Agency Task Force, Commission of the European Communities.
<b>CONTACT</b>	<p>The Institute of Terrestrial Ecology Environmental Information Centre Monks Wood Abbots Ripton HUNTINGDON Cambridgeshire PE17 2LS</p> <p>Tel: Abbots Ripton (04873) 381 Fax: .. 467</p> <p>Present contact: Dr. Dorian Moss.</p> <p>Institut Royal des Sciences Naturelles rue Vautier 29 B-1040 BRUXELLES Belgium</p> <p>Tel: (+32) 2-627 4354.</p> <p>Koninklijk Belgisch Instituut voor Natuurwetenschaps Wetstraat 200 B1049 BRUXELLES Belgium</p> <p>Current contact: Dr. P. Devillers.</p>
<b>OBJECTIVES</b>	To provide a systematic descriptive framework for the natural and semi-natural habitats of western and central Europe and for managed landscapes of importance for nature conservation.
<b>PERIOD OF SURVEY</b>	Simply a classification, no survey carried out.
Start	
End	

## Dictionary of Land Cover Surveys & Definitions

### **SURVEY METHOD**

The CORINE Biotopes Habitat Classification is a framework for describing habitats, used in the Biotopes inventory to describe specific sites of nature conservation importance. It has not yet been used to survey vegetation or land cover. The classification is designed to encompass all major habitat types encountered in the European Community, and is being extended to include the whole of Europe except European Russia.

### **GEOGRAPHICAL CHARACTERISTICS**

Area of survey	N/A
Sampling frame	N/A
Sampling unit	N/A
Recording unit	N/A
Scale of input data	N/A
Scale of output data	N/A
Resolution	N/A
Accuracy and error	

### **DATA STORAGE/ANALYSIS**

Classification details, including extensive text definitions are available in word processor formats and as VAX-VMS ASCII files. Descriptions of 6000 European sites, using the CORINE Biotopes Habitat classification, are held as VAX-VMS files, also available in DBase-IV

### **DATA AVAILABILITY**

Data available in the form of maps and listings for EEA Task Force in DGIX, subject to published conditions of use.

### **FORMS OF OUTPUT**

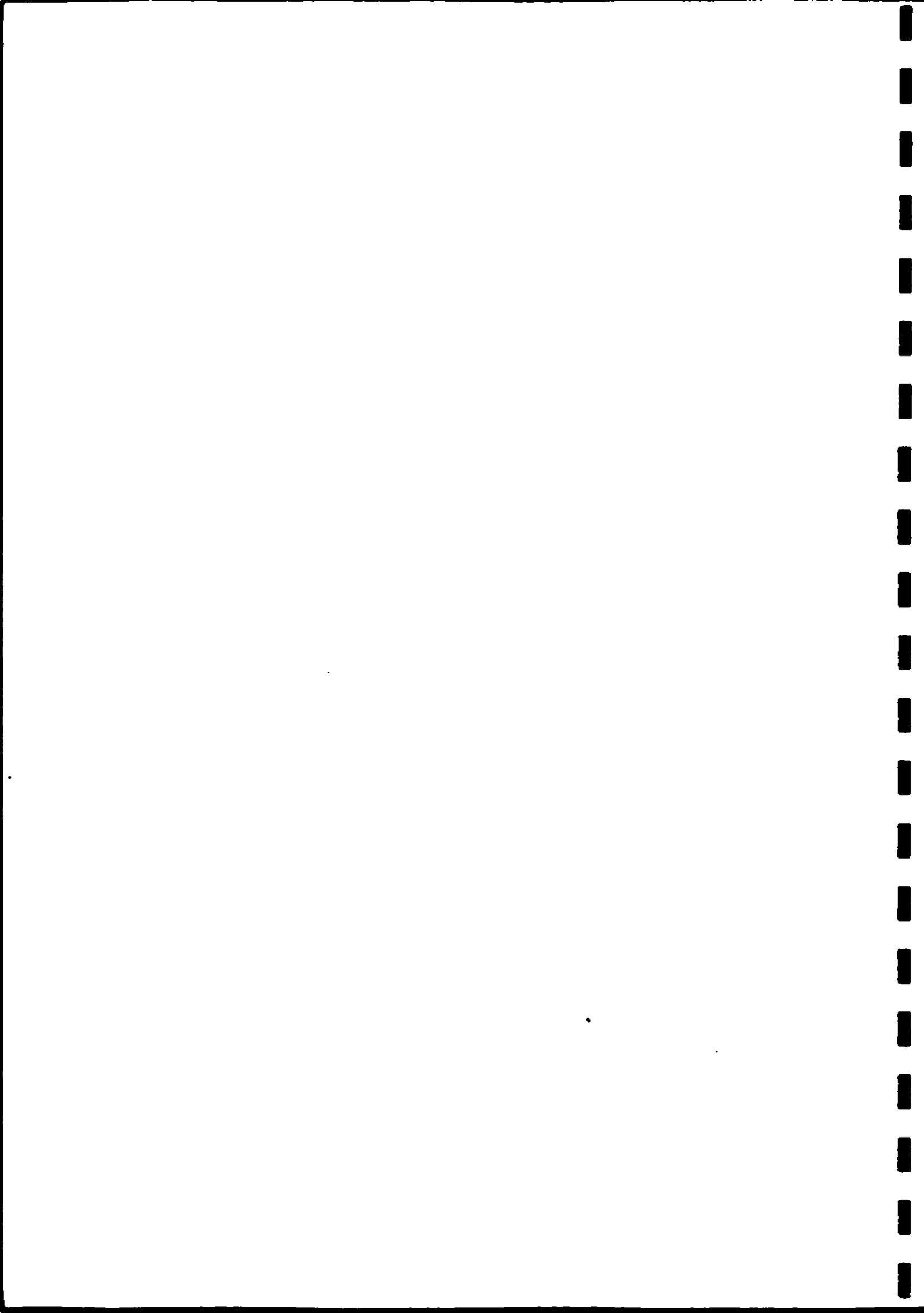
Published volumes describing the classification, with definitions of each habitat type. Database of European Community sites of importance for nature conservation, recording habitats present at each site in terms of the CORINE Biotopes classification.

### **PUBLICATION DATE(S)**

1991

REFERENCES

- Commission of the European Communities. (1991). *CORINE biotopes manual, a method to identify and describe consistently sites of major importance for nature conservation. Data specifications Part 1*. Commission of European Communities, Luxembourg. 300 pp.
- Commission of the European Communities. (1991). *CORINE biotopes manual, habitats of the European Community. Data specifications Part 2*. Commission of European Communities, Luxembourg. 300 pp.
- Commission of the European Communities. (1991). *CORINE biotopes manual, methodology*. Commission of European Communities, Luxembourg. 70 pp.
- Commission of the European Communities. (1991). *CORINE biotopes, the design, compilation and use of an inventory of sites of major importance for nature conservation in the European Community*. Commission of European Communities, Luxembourg. 132 pp.
- Ellenberg, H. (1988). *Vegetation ecology of central Europe*, Cambridge University Press. Cambridge. 731 pp.



15

**Corine Biotopes Classification**

**Landcover/use categories and definitions**

**1 COASTAL AND HALOPHYTIC COMMUNITIES**

**1.1 OCEAN AND SEAS**

Oceanic and continental shelf waters, their associated open-water and bottom communities, and marine vascular vegetation beds.

**1.1.1 Open marine waters**

Pelagic biocenoses. They can be characterised by their planktonic communities and by the composition of their nektonic or surface-feeding faunas of cephalopods, fish, sea mammals and seabirds.

**1.1.2 Seabed**

Benthic communities of animals and algae occupying the sea floor in the infralittoral, circalittoral and deeper zones.

**1.1.3 Marine vascular vegetation**

Beds of submerged marine vascular vegetation, except those of brackish seas.

**1.2 SEA INLETS**

Bays and narrow channels, including sea lochs or loughs, fiords or fiards, rias and straits but excluding estuaries. Detailed habitats can be coded by transposing subdivisions of the marine classes 1.1ff, simply replacing prefix 1.1 by prefix 1.2.

**1.3 TIDAL RIVERS AND ESTUARIES**

River channels below the tidal limit, including the water and the channel bed but not the fringing vegetation.

**1.3.1 Tidal rivers**

Portions of rivers subject to the tide, upstream from the estuary.

**1.3.2 Estuaries**

Broadening of rivers entering the sea. Detailed habitats can be coded by transposing subdivisions of marine class 1.1.2, simply replacing prefix 1.1.2 by prefix 1.3.2.

**1.3.3 Submerged beds of vascular marine vegetation**

**1.3.4 Submerged beds of vascular brackish vegetation**

**1.4 MUD FLATS AND SAND FLATS**

Sands and muds, submerged for part of every tide, devoid of vascular plants, but usually coated by blue algae and diatoms. They are of particular importance as feeding grounds for wildfowl and waders. Eelgrass communities that may be exposed for a few hours in the course of every tide have been listed under 1.1.3, 1.2.3 or 1.3.3, depending on the physical location of the flats.

**1.5 SALT MARSHES, SALT STEPPES AND GYPSUM SCRUBS**

Plant communities which are submerged by high tides at some stage of the annual tidal cycle. Also continental and coastal halophile and gypsophile communities.

**1.5.1 Salt pioneer swards**

Formations of *Salicornia* and other annuals colonizing periodically inundated muds and sands of marine or interior salt marshes.

**1.5.2 Cordgrass swards**

Perennial pioneer *Spartina* grasslands of coastal salt muds.

**1.5.3 Atlantic salt meadows**

Salt meadows of Baltic, North Sea, Channel and Atlantic shores. *Aster tripolium* can be present or abundant in most subdivisions.

**1.5.6 Saltmarsh scrubs**

Scrubby formations of woody glassworts (*Arthrocnemum*), seabites (*Suaeda*), *Halimione*, *Halocnemum* or *Limoniastrum* of saltmarshes and of their immediate vicinity.

**1.6 COASTAL SAND-DUNES AND SAND BEACHES**

Sand-covered shorelines in general, but in particular, onshore areas of sand created by the action of wind and often colonized and stabilized by communities of coarse maritime grasses.

**1.6.1 Sand beaches**

Gently sloping sand-covered shorelines fashioned by wave action.

**1.6.2 Dunes**

Onshore wind-carried sand deposits arranged in cordons of ridges parallel to the coast.

**1.6.3 Humid dune-slacks**

Humid depressions of the dunal systems. They are extremely rich and specialized habitats very threatened by the lowering of water tables.

## 1.7 SHINGLE BEACHES

Beaches covered by pebbles, or sometimes boulders, usually formed by wave action.

### 1.7.1 Unvegetated shingle beaches

Shingle beaches devoid of phanerogamic vegetation.

### 1.7.2 Shingle beach drift lines

Formations of annuals occupying accumulations of drift material and gravels rich in nitrogenous organic matter; characteristic are *Cakile maritima*, *Salsola kali*, *Atriplex* spp. (particularly *A. glabriuscula*), *Polygonum* spp., *Euphorbia peplis*, *Mertensia maritima*, *Glaucium flavum*, *Matthiola sinuata*.

### 1.7.3 Sea kale communities

Halo-nitrophilous perennial vegetation of the upper beach formed by *Crambe maritima*, *Honkenya peploides* and species characteristic of the regional communities.

### 1.7.4 Gravel bank heaths and grasslands

Grasslands and heaths of the landward expanses of large gravel banks.

## 1.8 CLIFFS AND ROCKY SHORES

Rock exposures adjacent to the sea or to saline lakes, or separated from them by a narrow shoreline. In addition to their botanical significance, they are often important as nesting sites for sea birds.

### 1.8.1 Bare cliffs

Cliffs and rocky shores devoid of vascular vegetation. The mediolittoral (intertidal or wave-washed) and supralittoral (spray) zones are inhabited by rich and diverse communities of invertebrates and algae.

### 1.8.2 Vegetated sea cliffs and rocky shores

Cliffs and rocky shores colonized by disjunct assemblages of aerohaline chasmophytes or by more or less closed aerohaline grasslands.

## 1.9 ISLETS AND ROCK STACKS

Small islands in the sea or in large bodies of water, mostly important as sites for water bird colonies. Other codes, in particular those of 18, can be used to indicate the habitats supported.

## 1.A MACHAIR

Plains behind dunes especially characteristic of the western seaboard of the Outer Hebrides. Wind-blown calcareous sands deposited on peat support a flower-rich, and correspondingly insect-rich, dune grassland studded with shallow lochs and cultivated on a strip rotation. The grassland is dominated by *Poa pratensis* and *Festuca rubra*, accompanied by *Thalictrum minus*, *Thymus drucei*, *Bellis perennis*, *Prunella vulgaris*, *Erodium cicutarium*, *Trifolium* spp., *Euphrasia* spp. and many orchids, among which *Dactylorhiza fuchsii* ssp. *hebridensis*, *D. purpurella*, *Gymnadenia conopsea*, *Coeloglossum viride*, *Platanthera chlorantha* and *Orchis mascula* are the most prominent. This grassland harbours a plant community of very restricted distribution comprising vulnerable species; *Cochlearia scotica*, *Euphrasia marshallii* and *Dactylorhiza fuchsii* ssp. *hebridensis* are endemic. Other elements of the ecosystem, such as pools and fallow fields, can be noted by addition of codes from other units (2.2, 1.6.2, 3.4, 3.7, 5.3, 5.4, 8.2, 8.7). As a whole, machair is an essential habitat for breeding waders such as *Haematopus ostralegus*, *Vanellus vanellus*, *Charadrius hiaticula*, *Calidris alpina*, *Tringa totanus* and *Callinago gallinago*; it supports the healthiest European population of the threatened corncrake *Crex crex*.

**2     NON-MARINE WATERS**

**2.1   LAGOONS**

Saline or hypersaline coastal waters, often formed from sea inlets by silting and cut off from the sea by sand or mud banks.

**2.2   STANDING FRESH WATER**

Lakes, ponds and pools of natural origin containing fresh (i.e. non-saline) water. Man-made fresh water bodies, including reservoirs and canals.

**2.2.1   Fresh waters**

The water body itself, regardless of vegetation belts.

**2.2.2   Unvegetated muds or shingles**

Unvegetated lake bottoms or lake shores and muds or shingle temporarily exposed by artificial or natural fluctuations of the water level, often important as feeding grounds for migrating waders.

**2.2.3   Amphibious communities**

Temporarily exposed lake bottoms or lake shores and other periodically or occasionally inundated muddy, sandy or stony basins colonized by phanerogamic vegetation.

**2.2.4   Aquatic vegetation**

Areas of lakes, ponds, pools or canals occupied by floating or permanently submerged vegetation.

**2.3   STANDING BRACKISH AND SALT WATER**

Brackish, saline or hypersaline lakes, pools and ditches.

**2.3.1   Unvegetated brackish and salt waters**

Open water with no (or no detected) floating or submerged vegetation other than algae.

**2.3.2   Vegetated brackish and salt waters**

Expanses of water with submerged or emergent vascular vegetation.

**2.4   RUNNING WATER**

**2.4.1   River course**

River courses, regardless of submerged vegetation.

**2.4.2   River gravel banks**

Small stone deposits of river beds.

2.4.3 River sand banks

Sand deposits in river beds, particularly significant in large river systems.

2.4.4 Submerged river vegetation

Beds of water crowfoots, pondweeds, water starworts and other aquatic vegetation of streams comprising in particular *Butomus umbellatus* f. *vallisneriifolius*, *Callitriche cophocarpa*, *C. hamulata*, *C. obtusangula*, *C. stagnatilis*, *Groenlandia densa*, *Potamogeton coloratus*, *P. helveticus*, *P. natans* var. *prolixus*, *P. nodosus*, *Ranunculus fluitans*, *R. penicillatus*, *R. trichophyllus*, *Sagittaria sagittifolia* var. *vallisneriifolia*, *Schoenoplectus lacustris* var. *fluitans*, *Sparganium emersum* ssp. *fluitans*. For fringing vegetation use codes of 5.3.

2.4.5 River mud banks

Alluvial muds exposed by stream level fluctuations (see also 3.7.7).

3 SCRUB AND GRASSLAND

3.1 HEATH AND SCRUB

3.1.1 Wet heaths

Humid, peaty or semi-peaty heaths (other than blanket bogs).

3.1.2 Dry heaths

Mesophile or xerophile heaths on siliceous, podsolic soils in moist Atlantic and sub-Atlantic climates of plains and low mountains.

3.1.4 Alpine and boreal heaths

Small, dwarf or prostrate shrub formations of the alpine and subalpine zones dominated by ericaceous species, *Dryas octopetala* or dwarf junipers; *Dryas* heaths of the British Isles.

3.1.6 Subalpine bush and tall herb communities

Bushy facies of the tall herb communities (*Betulo-Adenostyletea*) of moist, rich soils mostly of the subalpine zone of higher mountain ranges (see 3.7.8).

3.1.8 Thickets

Pre- and post-forest formations, mostly deciduous, of Atlantic or medio-European affinities, characteristic of the deciduous forest zone.

3.1.8.1 Medio European rich-soil thickets

Thickets of *Prunus spinosa*, *P. mahaleb*, *Rosa* spp., *Cornus mas*, *C. sanguinea*, *Sorbus aria*, *Crateagus* spp., *Lonicera xylosteum*, *Rhamnus catharticus*, *R. alpinus*, *Clematis vitalba*, *Ligustrum vulgare*, *Viburnum lantana*, *V. opulus*, *Rubus* spp., *Amelanchier ovalis*, *Cotoneaster integerrimus*, *C. nebrodensis*, *Pyrus pyraster*, *Malus sylvestris*, *Euonymus europaeus*, *Corylus avellana*, *Ulmus minor*, *Acer campestre*, *A. monspessulanum*, *Carpinus betulus* characteristic of forest edges, hedges and (mostly *Carpinion* or *Qercinion pubescens-petraeae*) woodland recolonisation, developed on soils relatively rich in nutrients, neutral or calcareous.

**3.1.8.2 Box thickets**

**3.1.8.3 Atlantic poor-soil thickets**

Thickets of *Rubus spp.*, *Frangula alnus*, *Sorbus aucuparia*, *Corlus avellana*, *Lonicera periclymenum*, *Cytisus scoparius*, characteristic of forest edges, hedges and (mostly *Quercion*) woodland recolonisation developed on soils relatively poor in nutrients, usually acid, mostly in climates with strong Atlantic influence.

**3.1.8.4 Broom fields**

Formations with an upper stratum dominated by tall brooms.

**3.1.8.5 Gorse thickets**

*Ulex europaeus* thickets of the Atlantic domain (including British *Ulex europaeus-Rubus fruticosus* scrub p.)

**3.1.8.6 Bracken fields**

Extensive often closed communities of the large fern *Pteridium aquilinum*.

**3.1.8.7 Woodland clearings**

Communities colonising medio-European and sub-Mediterranean deciduous or coniferous woodland clearings, clear-felled or burnt areas.

**3.1.8.8 Common juniper scrub**

Middle European and montane communities dominated by *Juniperus communis*.

**3.1.8.C Hazel thicket**

Thickets or brush, often very extensive, composed exclusively or predominantly of *Corylus spp.*

**3.1.8.D Deciduous scrub woodland**

Early stages of deciduous tall forest regrowth or colonisation composed predominantly of young individuals of tall forest species.

**3.1.8.E Coppice**

Regrowth stages of woodland treated in coppice with out standards.

**3.1.8.F Mixed scrub woodland**

Early stages of mixed tall forest regrowth or colonisation composed predominantly of young individuals of tall forest species.

**3.1.8.G Coniferous scrub woodland**

Early stages of conifer forest regrowth or colonisation composed predominantly of young individuals of tall forest species.

### 3.4 DRY CALCAREOUS GRASSLANDS AND STEPPES

Dry thermophilous grasslands of the lowlands, hills and montane zone, on mostly calcareous soils, sands, decomposed rock surfaces; steppes; thermophile forest fringe formations.

#### 3.4.1 Middle European pioneer swards

Open, thermophile formations of sandy or rocky ground in non-Mediterranean lowland to montane areas.

#### 3.4.2 Lowland heavy metal grasslands

Dry, short grasslands, often rich in lichens and mosses, colonizing western and central European soils with a high content in heavy metals such as zinc and lead, and comprising uniquely adapted species, ecotypes or populations mostly related to, or derived from, otherwise montane, boreo-montane or steppic species.

#### 3.4.3 Dense perennial grasslands and middle European steppes

Dry closed thermophilous grasslands of middle European or Mediterranean lowlands and hills, up to the montane zone, dominated by perennial grasses; steppic grasslands of continental middle European affinities.

### 3.5 DRY SILICEOUS GRASSLAND

Poor Atlantic and sub-Atlantic mat-grasslands of strongly acid soils; grasslands of decalcified sands; Mediterranean siliceous grasslands.

#### 3.5.1 Atlantic mat-grass swards and related communities

Closed, dry or mesophile, perennial grasslands occupying acid soils in Atlantic or sub-Atlantic lowland, collinar and montane regions of middle Europe and western Iberia, with *Nardus stricta*, *Festuca filiformis* (*F. tenuifolia*), *F. ovina*, *F. rubra*, *Agrostis capillaris*, *Danthonia decumbens*, *Anthoxanthum odoratum*, *Deschampsia flexuosa*, *Poa angustifolia*, *Galium saxatile*, *Polygala vulgaris*, *Viola canina*, *Meum athamanticum*, *Arnica montana*, *Centaurea nigra*, *Dianthus deltoides*, *Gentianella campestris*, *Chamaespartium sagittale*, *Jasione laevis*, *Potentilla erecta*, *Carex pilulifera*. Any of the grasses listed can dominate or co-dominate distinctive facies; *Calamagrostis epigejos* or *Carex arenaria* also can invade and dominate some formations.

#### 3.5.2 Medio-European open siliceous grasslands

Open formations of dry, siliceous soils, of Atlantic, sub-Atlantic and Mediterraneo-montane distribution, often species-poor and with a strong representation of annuals.

### 3.6 ALPINE AND SUBALPINE GRASSLAND

Grasslands of the alpine and subalpine levels of the Alps, Pyrenees, Cantabrian range, Jura, Central Massif and northern Apennines, with very fragmentary outposts in the great Hercynian ranges of middle Europe, Bayerischer Wald, Harz, Black Forest, Erz-Riesengebirge and in the Caledonian system of Britain.

#### 3.6.1 Snow-patch communities

Vegetation of areas that retain late-lying snow. These formations are mostly characteristic of the alpine level of the Alps and Pyrenees; they extend to the Macedonian mountains and are represented by relict outposts in the Sierra Nevada, the Cordillera Central, the Monti Sibillini and Abruzzi; they occur locally in the Scottish Highlands.

**3.6.3 Alpine and subalpine acidophilous grasslands**

Alpine and subalpine grasslands developed over crystalline rocks and other lime-deficient substrates or on decalcified soils of the calcareous ranges, with *Armeria alpina*, *Armeria montana*, *Euphrasia minima*, *Gentiana alpina*, *Geum montanum*, *Juncus trifidus*, *Lychnis alpina*, *Pedicularis pyrenaica*, *Phyteuma hemisphaericum*, *Pulsatilla alpina* ssp. *sulfurea*, *Ranunculus pyrenaicus*, *Sempervivum montanum*, *Botrychium lunaria*.

**3.7 HUMID GRASSLANDS AND TALL HERB COMMUNITIES**

Unimproved or lightly improved wet meadows; tall herb communities.

**3.7.1 Meadowsweet stands and related communities**

Hygrophile tall herb strips of fertile alluvial stream banks, often dominated by *Filipendula ulmaria*, and tall herb stands (*F. ulmaria*, *Angelica sylvestris*) colonizing humid hay meadows and pastures after more or less long discontinuation of mowing or grazing; characteristic species are *Filipendula ulmaria*, *Achillea ptarmica*, *Angelica sylvestris*, *Cirsium palustre*, *Deschampsia cespitosa*, *Epilobium hirsutum*, *Geranium palustre*, *Veronica longifolia*, *Scutellaria hastifolia*, *Eupatorium cannabinum*, *Lysimachia vulgaris*, *Lythrum salicaria*, *Phalaris arundinacea*, *Polygonum bistorta*, *Valeriana officinalis*.

**3.7.2 Eutrophic humid grasslands**

Meadows developed on moderately to very nutrient-rich, alluvial or fertilized, wet or damp soils, often inundated at least in winter, and relatively lightly mowed or grazed, in lowland, collinar and montane western and central Europe, south to western Iberia. They form a transition between the false oatgrass mesophile meadows, the oligotrophic *Molinion* formations and the small sedge and large sedge communities. They include a large number of distinctive and often species-rich communities, many of which harbour specialized, rare and threatened species of plants and animals.

**3.7.3 Oligotrophic humid grasslands**

Humid grasslands of middle Europe and north-western Iberia, on soils very poor in nutrients.

**3.7.7 Humid tall herb fringes**

Watercourse veil and shady woodland edge communities.

**3.7.8 Subalpine and alpine tall herb communities**

Luxuriant tall herb formations of deep, humid soils in the montane to alpine, but mostly subalpine, levels of the higher mountains, with *Cicerbita alpina*, *C. plumieri*, *Cirsium helenioides*, *C. spinosissimum*, *C. flavispina*, *Geranium sylvaticum*, *Polygonatum verticillatum*, *Ranunculus platanifolius*, *Aconitum vulparia*, *A. napellus*, *A. nevadense*, *Adenostyles alliariae*, *Senecio elodes*, *Veratrum album*, *Trollius europaeus*, *Peucedanum ostruthium*, *Doronicum austriacum*, *Pedicularis foliosa*, *Eryngium alpinum*, *Centaurea rhaetica*, *Valeriana pyrenaica*, *Tozzia alpina*. Groupings of these plants can invade the *Aceri-Fagion* and reappear, along streams, lower down in montane beech forests. If useful, their presence can be noted by combining a code of 3.7.8 with the appropriate forest code.

3.8 MESOPHILE GRASSLANDS

Lowland and montane mesophile pastures and hay meadows.

3.8.1 Mesophile pastures

Regularly grazed mesophile pastures, fertilized and on well-drained soils, with *Lolium perenne*, *Cynosurus cristatus*, *Poa* ssp., *Festuca* ssp., *Trifolium repens*, *Leontodon autumnalis*, *Bellis perennis*, *Ranunculus repens*, *R. acris*, *Cardamine pratensis*; they are most characteristic of the Euro-Siberian zone, but extend to Atlantic Iberia and the Cordillera Central, the Apennines and the supra-Mediterranean zone of Greece.

3.8.1.1 Unbroken pastures

Continuous pastureland, unrelieved by networks of ditches.

3.8.1.2 Ditch broken pastures

Grasslands drained by a network of ditches, fleets, streams or pools.

3.8.1.3 Overgrown pastures

Abandoned grasslands with ruderal species.

3.8.2 Lowland hay meadows

Mesophile hay meadows of low altitudes, fertilized and well-drained, with *Arrhenatherum elatius*, *Trisetum flavescens*, *Anthriscus sylvestris*, *Heracleum spondylium*, *Daucus carota*, *Crepis biennis*, *Knautia arvensis*, *Leucanthemum vulgare*, *Pimpinella major*, *Trifolium dubium*, *Geranium pratense*; they are most characteristic of the Euro-Siberian zone, but extend to Atlantic Iberia, the Cordillera Central and Montseny, to the Apennines and to the supra-Mediterranean zone of Greece.

4 FORESTS

4.1 BROAD-LEAVED DECIDUOUS FORESTS

Forests and woodland of native deciduous trees, other than floodplain or mire woods; forests dominated by broad-leaved deciduous trees, but comprising broad-leaved evergreen trees, are included.

4.1.1 Beech forests

Forests dominated by *Fagus sylvatica*. Many montane formations are beech-fir or beech-fir-spruce forests, to be noted as 4.3 (mixed forests).

4.1.2 Oak-hornbeam forests

Atlantic and medio-European forests dominated by *Quercus robur* or *Q. petraea*, on eutrophic or mesotrophic soils, with usually ample and species-rich herb and bush layers. *Carpinus betulus* is generally present. They occur under climates too dry or on soils too wet or too dry for beech or as a result of forestry practices favouring oaks.

**4.1.3 Ash forests**

Non-alluvial Atlantic or sub-Atlantic forests dominated by *Fraxinus excelsior*, particularly characteristic of Britain, of the north-western Iberian peninsula and of the Baltic moraine hills of Mecklenburg. Secondary formations pioneering on abandoned cultivated land are included.

**4.1.4 Mixed ravine and slope forests**

Cool, moist forests with a multispecific tree layer of variable dominance, most often on more or less abrupt slopes.

**4.1.5 Acidophilous oak forests**

Forests of *Quercus robur* or *Q. petraea* on acid soils with a herb layer mostly constituted by the ecological groups of *Deschampsia flexuosa*, *Vaccinium myrtillus*, *Pteridium aquilinum*, *Lonicera periclymenum*, *Holcus mollis*, and of *Maianthemum bifolium*, *Convallaria majalis*, *Hieracium sabaudum*, *Hypericum pulchrum*, *Luzula pilosa*, and the mosses *Polytrichum formosum* and *Leucobryum glaucum*.

**4.1.B Birchwoods**

Formations dominated by *Betula pendula*, *B. pubescens*, or their allies, on non-marshy terrain.

**4.1.D Aspen woods**

Formations dominated by *Populus tremula*.

**4.1.E Rowan woods**

*Sorbus aucuparia*-dominated formations, characteristic in particular of the Scottish Highlands.

**4.1.F Elm woods**

Non-riparian, non-ravine *Ulmus glabra* or *U. laevis*-dominated formations of northern and central Europe.

**4.1.G Lime woods**

Non-riparian, non-ravine *Ulmus spp.*-dominated formations.

**4.2 CONIFER WOODLAND**

**4.2.5 Scots Pine forests**

Forests dominated by *Pinus sylvestris*.

**4.2.A Cypress, juniper and yew forests**

Woods dominated by *Cupressus sempervirens*, *Juniperus spp.* or *Taxus baccata*.

**4.3 MIXED WOODLAND**

Forest and woodland of mixed deciduous and coniferous trees. Detailed habitats can be coded by transposing subdivisions of division 4.1, simply replacing prefix 4.1 by prefix 4.3. Mixed coniferous and broad-leaved woodland should not be listed under 4.3, but under 4.2 or 4.5, depending on dominance.

4.4 ALLUVIAL AND VERY WET FORESTS AND BRUSH

Tree and shrub vegetation of flood plains, marshes, fens and bogs.

4.4.1 Riparian willow formations

*Salix spp.* brush or arborescent formations, lining flowing water and submitted to periodic flooding.

4.4.3 Medio-European stream ash-alder woods

Riparian forests of *Fraxinus excelsior* and *Alnus glutinosa*, sometimes *Alnus incana*, of middle European and northern Iberian lowland or hill watercourses, on soils periodically inundated by the annual rise of the river level, but otherwise well-drained and aerated during low-water; they differ from riparian alder woods within 44.9 by the strong representation in the dominated layers of forest species not able to grow in permanently waterlogged soils.

4.4.9 Alder, willow and bog-myrtle swamp woods

Woods and scrubs of marshy ground, waterlogged for most of the year, colonizing fens and marshy or permanently inundated alluvial terraces of rivers.

4.4.A Birch and conifer swamp woods

Woods of *Betula pubescens*, *Pinus spp.* or *Picea abies* colonizing bogs and acid fens.

4.5 BROAD-LEAVED EVERGREEN WOODLAND

4.5.3 Meso- and supra-mediterranean holm-oak forests

Forests dominated by *Quercus ilex* or *Q. rotundifolia*, often, but not necessarily, calcicolous.

5 BOGS AND MARSHES

5.1 RAISED BOGS

Highly oligotrophic, strongly acidic communities composed mainly of sphagnum growing on, and forming, peat and deriving moisture and nutrients only from rainfall (ombrotrophic). They form only in cool climates with heavy rainfall and are characteristic of lowlands and hills of north-western and northern Europe, the adjacent Hercynian ranges, the Jura and the Alps. Their independence from ground water is the result either of upward growth or of changes in the water table. Bogs harbour, in addition to various sphagnum species, which are abundant, dominant and the major component of their formation, a small number of acidophilous plants such as *Eriophorum vaginatum*, *Scirpus (Trichophorum) cespitosus*, *Carex pauciflora*, *C. paupercula*, *Ledum palustre*, *Vaccinium oxycoccos*, *Andromeda polifolia*, *Drosera rotundifolia* and lichens. Animal species are not numerous but those that are adapted to bogs are highly specialized. Among typical invertebrates figure dragonflies (*Leucorrhinia dubia*, *Aeshna subarctica*, *A. caerulea*, *A. juncea*, *Somatochlora arctica*, *S. alpestris*), lepidopterans (*Colias palaeno*, *Boloria aquilonaris*, *Coenonympha tullia*, *Vacciniina optilete*, *Hyperodes turfosalis*, *Eugraphe subrosea*), beetles, ants (*Formica exsecta*), bugs and spiders (*Pardosa sphagnicola*, *Glyphesis cottonae*). Most of the species that bogs harbour are rare and their populations fragmented into isolated relictual elements; several are threatened. The remaining intact or nearly intact communities are exceptional.

5.1.1 Near-natural raised bogs

Undisturbed, or little disturbed, peat-forming bogs, often taking the shape of a convex lens. Such intact or nearly intact systems have become very rare or even exceptional. They are composed of a number of communities, which form and occupy the topological features of the bog.

5.1.2 Purple moorgrass bogs

Drying, mowed or burned bogs invaded by *Molinia caerulea*.

5.2 **BLANKET BOGS**

Communities similar to raised bogs, on flat or gently sloping ground with poor surface drainage, in oceanic climates with heavy rainfall, characteristic of the western and northern British Isles. In spite of some lateral water flow, blanket bogs are mostly ombrotrophic. They often cover extensive areas with local topographic features supporting distinct communities. Sphagnums (*S. papillosum*, *S. tenellum*, *S. compactum*, *S. magellanicum*) play an important role in all of them, accompanied by *Narthecium ossifragum*, *Molinia caerulea*, *Scirpus cespitosus*, *Schoenus nigricans*, *Eriophorum angustifolium*, *E. vaginatum*. High and low altitude forms and numerous variants can be distinguished. Blanket bogs constitute a habitat endemic to north-western Europe, of which intact examples are relatively uncommon.

5.2.1 Lowland blanket bogs

Hyper-Atlantic blanket bogs of the western coastlands of Ireland, western Scotland and its islands, Cumberland, northern Wales and Devon, developed under very high rainfall climates. The main vascular plants are *Molinia caerulea*, *Eriophorum angustifolium*, *E. vaginatum*, *Scirpus cespitosus*, *Schoenus nigricans*, *Rhynchospora alba*, *Narthecium ossifragum*, *Carex panicea*, *Calluna vulgaris*, *Erica tetralix*, *Myrica gale*, *Pedicularis sylvatica*, *Potentilla erecta*, *Polygala serpyllifolia*, *Pinguicula lusitanica*, *Drosera rotundifolia*. The colourful mucinal layer comprises the black and crimson liverwort *Pleurozia purpurea*, the black and gold moss *Campylopus atrovirens*, the woolly fringe moss *Rhacomitrium lanuginosum*; it is often dominated by sphagnums (*Sphagnum auriculatum*, *S. magellanicum*, *S. compactum*, *S. papillosum*, *S. nemoreum*, *S. rubellum*, *S. tenellum*, *S. subnitens*), or, particularly in parts of western Ireland, mucilaginous algal deposits (*Zygonium*).

5.2.2 Upland blanket bogs

Blanket bogs of high ground, hills and mountains in Scotland, Ireland, western England and Wales. Characteristic species are *Eriophorum vaginatum*, *Calluna vulgaris*, *Erica tetralix*, *Rubus chamaemorus*, *Narthecium ossifragum*, *Scirpus cespitosus*, *Drosera rotundifolia*, *Rhacomitrium lanuginosum* and abundant sphagnum mosses.

5.3 **WATER-FRINGE VEGETATION**

Reed beds and large sedge communities of the margins of lakes, rivers, and brooks and of fens and eutrophic marshes.

5.3.1 Reed beds

Reed bed formations of tall helophytes, usually species-poor and often dominated by one species, growing in stagnant or slowly flowing water of fluctuating depths, and sometimes on waterlogged ground.

**5.3.2 Large-sedge communities**

Formations of large Cyperaceae of genera *Carex* or *Cyperus* occupying the edge or the entirety of humid depressions, oligotrophic mires and rich fens, on ground that can be dry for part of the year. They occur, in particular, on the landward side of reedbeds in waterside successions and as colonists of humid depressions on mineral soils, or of acid and alkaline fens.

**5.3.3 Fen-sedge beds**

*Cladium mariscus*-dominated formations, mostly limited to alkaline and sometimes acid fens and to the land-building zone of calcareous lakes.

**5.3.4 Small reed beds of fast-flowing waters**

Formations of small helophytes, *Glyceria fluitans*, *G. plicata*, *G. nemoralis*, *G. declinata*, *Leersia oryzoides*, *Catabrosa aquatica*, *Sparganium neglectum*, *S. microcarpum*, *Nasturtium officinale*, *N. microphyllum*, *Veronica beccabunga*, *V. anagallis-aquatica*, *Apium nodifolium*, *Sium erectum* occupying the banks of small rivers or springs on alluvial or peaty soils.

**5.3.5 Tall rush swamps**

Formations of *Juncus* invading heavily grazed and trampled marshes or fens or (with *Juncus effusus*) eutrophized poor fens and bogs as in the vicinity of bird colonies.

**5.4 FENS, TRANSITION MIRES AND SPRINGS**

Small-sedge and related communities of fens, transition mires and quaking bogs; vegetation of springs.

**5.4.1 Springs**

Gushing springs (rheocrenes), spring basins (limnocrenes) and seepages (helocrenes) and the communities closely associated with them and dependent on the peculiar microclimatic and hydrological situation created by the spring. These comprise the specialized spring communities (*Montio-Cardaminetea*) as well as the fen communities (*Caricion bicoloris-atrofuscae*, 5.4.3, *Festuco-Brometea*, 3.4.3), that are interwoven with them.

**5.4.2 Rich fens**

Wetlands mostly or largely occupied by peat- or tufa-producing small sedge and brown moss communities developed on soils permanently waterlogged, with a soligenous or topogenous base-rich, nutrient-poor, often calcareous water supply, and with the water table at, or slightly above or below, the substratum. Peat formation, when it occurs, is infra-aquatic. Calciphile small sedges and other Cyperaceae usually dominate the mire communities, which belong to the *Caricion davallianae*, characterized by a usually prominent 'brown moss' carpet formed by *Campylium stellatum*, *Drepanocladus intermedius*, *D. revolvens*, *Cratoneuron commutatum*, *Acrocladium cuspidatum*, *Ctenidium molluscum*, *Fissidens adianthoides*, *Bryum pseudotriquetrum* and others, a grasslike growth of *Schoenus nigricans*, *S. ferrugineus*, *Eriophorum latifolium*, *Carex davalliana*, *C. flava*, *C. lepidocarpa*, *C. hostiana*, *C. panicea*, *Juncus subnodulosus*, *Scirpus cespitosus*, *Eleocharis quinqueflora*, and a very rich flora including *Tofieldia calyculata*, *Dactylorhiza incarnata*, *D. traunsteineri*, *D. traunsteinerioides*, *D. russowii*, *D. majalis* ssp. *brevifolia*, *D. cruenta*, *Liparis loeselii*, *Herminium monorchis*, *Epipactis palustris*, *Pinguicula vulgaris*, *Pedicularis sceptrum-carolinum*, *Primula farinosa*, *Swertia perennis*. Wet grasslands (*Molinietalia caerulea*, 3.7), tall sedge beds (*Magnocaricion*, 5.3.2), reed formations (*Phragmition*, 5.3.1), fen-sedge beds (*Cladietum mariscae*, 5.3.3), may form part of the fen system, with communities related to transition mires (5.4.5) and amphibious or aquatic vegetation (2.2.3, 2.2.4) or spring communities (5.4.1) developing in depressions. Outside of rich fen systems, fen communities can occur on small surfaces in dune slack systems (1.6.3), in transition mires (5.4.5), in wet grasslands (3.7) and in a few other situations. Rich fens are exceptionally endowed with spectacular, specialized, strictly restricted species. They are among the habitats that have undergone the most serious decline. They are essentially extinct in several regions and gravely endangered in most.

**5.4.3 Arcto alpine riverine swards**

Rare alpine and peri-alpine and northern British communities of glacial relicts colonizing neutral or basic gravelly, sandy, stony, sometimes somewhat argilous or peaty substrates soaked by cold water, in moraines and on edges of springs, rivulets, glacial torrents of the alpine or sub-alpine levels, or on alluvial sands of pure, cold, slow-flowing rivers and calm backwaters. The highly characteristic constituents are *Carex bicolor*, *C. microglochis*, *C. maritima*, *C. atrofusca*, *C. vaginata*, *Kobresia simpliciuscula*, *Scirpus pumilus*, *Juncus arcticus*, *J. alpinoarticulatus*, *J. castaneus*, *J. triglumis*, *Typha minima*, *T. lugdunensis*, *T. shunleworthii*, *Tofieldia pusilla*; they are often accompanied by *Carex davalliana*, *C. dioica*, *C. capillaris*, *C. panicea*, *C. nigra*, *Blasmus compressus*, *Eleocharis quinqueflora*, *Scirpus cespitosus*, *Primula farinosa*, *Equisetum variegatum*, *Drepanocladus intermedius*, *Campylium stellatum*.

**5.4.4 Acidic fens**

Topogenous or soligenous valley, basin or spring mire systems fed by waters poor in bases. As in their rich fens, the water level is at or near the surface of the substratum and peat formation is infra-aquatic. The mire communities themselves, dominated by small sedges and brown mosses or sphagnum, belong to the *Caricetalia fuscae*, but, in large fen systems, they are accompanied by acidocline wet grasslands (*Molinietalia caeruleae*), large sedge beds (*Magnocaricion*) and reed or related communities (*Phragmition*). Sphagnum hummocks (5.1.1.1) form locally and transition mires (5.4.5) or aquatic (2.2.3), amphibian (2.2.2) and spring (5.4.1) communities colonize small depressions. Acidic fen communities also occur on small surfaces or within mosaics in other ecosystems, in particular in typical humid grasslands (3.7), humid woodlands and thickets (4.4), decalcified dune slacks (1.6.3) and spring systems (5.4.1). Characteristic species of acidic mire communities are *Carex canescens*, *C. echinata*, *C. nigra*, *Eriophorum angustifolium*, *E. scheuchzeri*, *Scirpus cespitosus*, *Juncus filiformis*, *Agrostis canina*, *Viola palustris*, *Cardamine pratensis*, *Ranunculus flammula* and the mosses *Calliergon sarmentosum*, *C. stramineum*, *C. cuspidatum*, *Drepanocladus exannulatus*, *D. fluviatans*, *Sphagnum recurvum*, *S. auritum*, *S. cuspidatum*, *S. subsecundum*, *S. apiculatum*, *S. papillosum*, *S. russowii*.

**5.4.5 Transition mires**

Wetlands mostly or largely occupied by peat-forming plant communities developed at the surface of oligotrophic or meso-oligotrophic water reaching a level above, sometimes well above, the substratum, providing little or no mineral or nutrient supply. Their characteristics are thus intermediate between those of soligenous and topogenous mires and those of strictly ombrogenous bogs. In large systems, the most prominent communities are swaying swards, floating carpets or quaking mires formed by medium-sized or small sedges, associated with sphagnums or brown mosses. They are accompanied by aquatic and amphibious communities (2.2.3, 2.2.4) and by formations transitional to these on the one hand, to fens (5.4.2, 5.4.4), bogs (5.1.1) or humid grasslands (3.7) on the other; sphagnum buttes, in particular, are often an important feature. Tall sedge and reed communities (5.3) and willow and alder carrs (4.4) may invade part of the peatland. Transition mires form mostly as colonists of oligotrophic ponds and lakes, large bog pools or lags. Outside of transition mire systems, their communities can be found in bog hollows (5.1.1), in blanket bogs (5.2), in depressions of rich or acidic fens (5.4.2, 5.4.4), in spring systems (5.4.1), in humid heaths (3.1.1) and a few other habitats. Characteristic species include *Eriophorum gracile*, *Carex lasiocarpa*, *C. chordorrhiza*, *C. limosa*, *Scheuchzeria palustris*, *Hammarbya paludosa*, *Liparis loeselii*, *Calla palustris*. Transition mires are an extremely important refuge of specialized, threatened species of both plants and animals; their richness and diversity in remarkable invertebrates, dragonflies among others, is even greater than that of most other mire ecosystems.

**6 INLAND ROCKS, SCREES AND SANDS**

**6.1 SCREES**

Vegetated or sparsely vegetated and frequently unstable areas of stones, boulders or rubble on steep slopes, produced by erosion in mountainous terrain.

**6.1.1 Alpine and northern siliceous screes**

Siliceous screes of high altitudes and cool sites within the Alpine system and the Pyrenees, of the Jura and Hercynian ranges and of middle European uplands.

**6.1.3 Western Mediterranean and thermophilous screes**

Screes of warm exposures in the Alps and the Pyrenees, of calcareous substrates in the Pyrenees, of Mediterranean mountains, hills and lowlands and, locally, of warm, sunny middle European upland or lowland sites.

**6.2 INLAND CLIFFS AND EXPOSED ROCKS**

Cliffs, rock faces, limestone pavements, the plant communities that colonize their cracks, and their associated animal communities.

**6.2.1 Vegetated calcareous inland cliffs**

Dry, calcareous inland cliffs and their communities. Specific plant associations colonize montane and Mediterranean cliffs. Northern lowland cliffs usually support fragments of communities listed in other chapters.

**6.2.2 Vegetated siliceous inland cliffs**

Dry, siliceous inland cliffs and their communities. Specific plant associations colonize montane and Mediterranean cliffs. Northern lowland cliffs usually support fragments of communities listed in other chapters.

**6.2.3 Pavements**

Almost bare rock pavements and lapiaz. Cracks and superficially decomposed areas may be colonized by communities belonging, in particular, to the *Sedo-Scleranthion*, the *Alyso-Sedion albi* or the *Sedo albi-Veronicion dillenii*.

**6.2.4 Bare inland cliffs**

Cliffs, in particular of very high altitudes, devoid of vascular vegetation. They are usually colonized by lichen crusts and "ink stains".

**6.2.5 Wet inland cliffs**

Very wet, dripping, overhanging or vertical rocks of hills, mountains and Mediterranean lowlands.

**6.4 INLAND SAND DUNES**

Sand bodies of eolian origin, possessing constructional relief and separated from the coast and its dune cordons by non-dunal habitats. They support a vegetation which differs markedly from coastal sand-dune communities.

**6.4.2 Breckland inland dunes**

Remnants of the once vast Breckland inland dune system, of similar glacial origin to that of the continental fluvio-glacial dunes and like them, colonized by acidophilous grasslands and heaths.

**6.5 CAVES**

Any natural caves or cave systems. They harbour varied communities of animals that are strictly restricted to them.

**8 AGRICULTURAL & ARTIFICIAL**

Cultivated or built-up areas under the overwhelming influence of human activity; the natural vegetation cover has been totally replaced as a result of agricultural practices, urbanization or industrialization. A natural flora and fauna subsists mainly in areas of extensive and traditional cultivation and dwelling. Wild plants may grow among crops, in hedges, along roads, on walls and in fallow fields. Many animals have, during the course of the past few thousand years, adapted to these man-created habitats.

**8.1 IMPROVED GRASSLANDS**

Heavily fertilized or reseeded permanent grasslands, sometimes even treated by selective herbicides, with very impoverished flora and fauna.

**8.2 CROPS**

Fields of cereals, beets, sunflowers, leguminous fodder, potatoes and other annually harvested plants. Faunal and floral quality and diversity depend on the intensity of agricultural use and on the presence of borders of natural vegetation between fields. If a tree layer is present, it can be indicated by simultaneous use of a code of 8.3 or 8.4 with the present one.

**8.2.1 Unbroken intensive cropland**

Intensive cultivation, involving moderate to high chemical or organic fertilisation and/or systematic use of pesticides, with complete ground occupation on dry land.

**8.2.1.1 Field crops**

Cereal and other crops grown on large, unbroken surfaces in open field landscapes.

**8.2.1.2 Market gardens and horticulture**

Intensive cultivation of vegetables, flowers, small fruits, usually in alternating strips of different crops.

### 8.3 ORCHARDS, GROVES AND TREE PLANTATIONS

Ligneous crops. Extensive orchards and old plantations may support a rich flora and fauna; it is, in particular, the case of ancient olive groves and old poplar plantations with tall herb undergrowth.

#### 8.3.1 High stem orchards

Tree crops of standards, cultivated for fruit production

#### 8.3.2 Shrub orchards

Ligneous plantations of dwarf trees, shrubs, espaliers and climbers.

#### 8.3.3 Plantations

Cultivated ligneous formations planted most often for the production of wood, composed of exotic species out of their natural range and habitat.

##### 8.3.3.1 Conifer plantations

##### 8.3.3.2 Plantations of broad-leaved trees

### 8.4 TREE LINES, HEDGES, SMALL WOODS, BOCAGE, PARKLAND DEHESA

Wooded habitats of small size, arranged in a linear, reticulated or insular manner, closely interwoven with grassy or cultivated habitats. Also, combinations of such elements and mixed agricultural formations, containing both ligneous and herbaceous layers.

### 8.5 URBAN PARKS AND LARGE GARDENS

Usually varied formations, created for recreational use. The vegetation, usually composed mainly of introduced species or cultivars, can nevertheless include many native plants and supports a varied fauna when not intensively managed. The heterogeneity of the habitat engenders a high faunal diversity with, however, a preponderance of common species. The frequent presence of old trees favours the installation of rarer species.

### 8.6 TOWNS, VILLAGES, INDUSTRIAL SITES

Areas used for human occupation and industrial activities. A considerable fauna has adapted to buildings. Birds such as *Apus apus*, *Tyto alba* and *Hirundo rustica* nest nearly exclusively in them, using mostly structures with traditional architecture. Other species, of montane rocky habitats, such as *Phoenicurus ochruros*, have colonized lowlands in villages and towns. Bats roost in buildings. Rock plants colonize old walls and roofs.

#### 8.6.1 Towns

#### 8.6.2 Villages

#### 8.6.3 Active industrial sites

#### 8.6.4 Old industrial sites

#### 8.6.5 Greenhouses and agricultural constructions

#### 8.6.6 Archaeological sites

Abandoned industrial sites and by-products of industrial activities susceptible of colonisation by semi-natural communities.

**8.7 FALLOW LAND, WASTE PLACES**

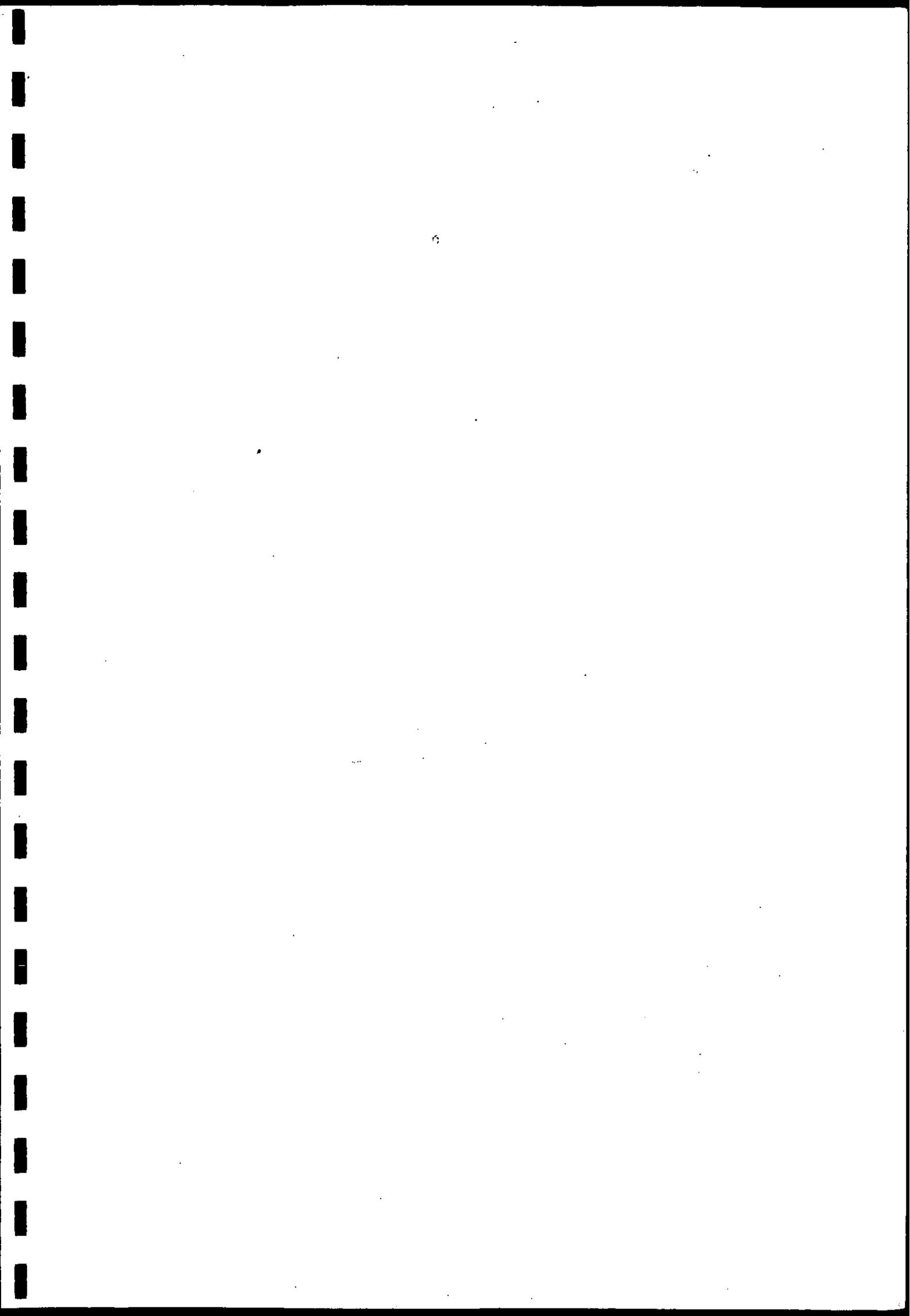
Fields abandoned or left to rest, roadsides and other interstitial spaces on disturbed ground. They are colonized by numerous pioneering, introduced or nitrophilous plants. They sometimes provide habitats that can be used by animals of open spaces.

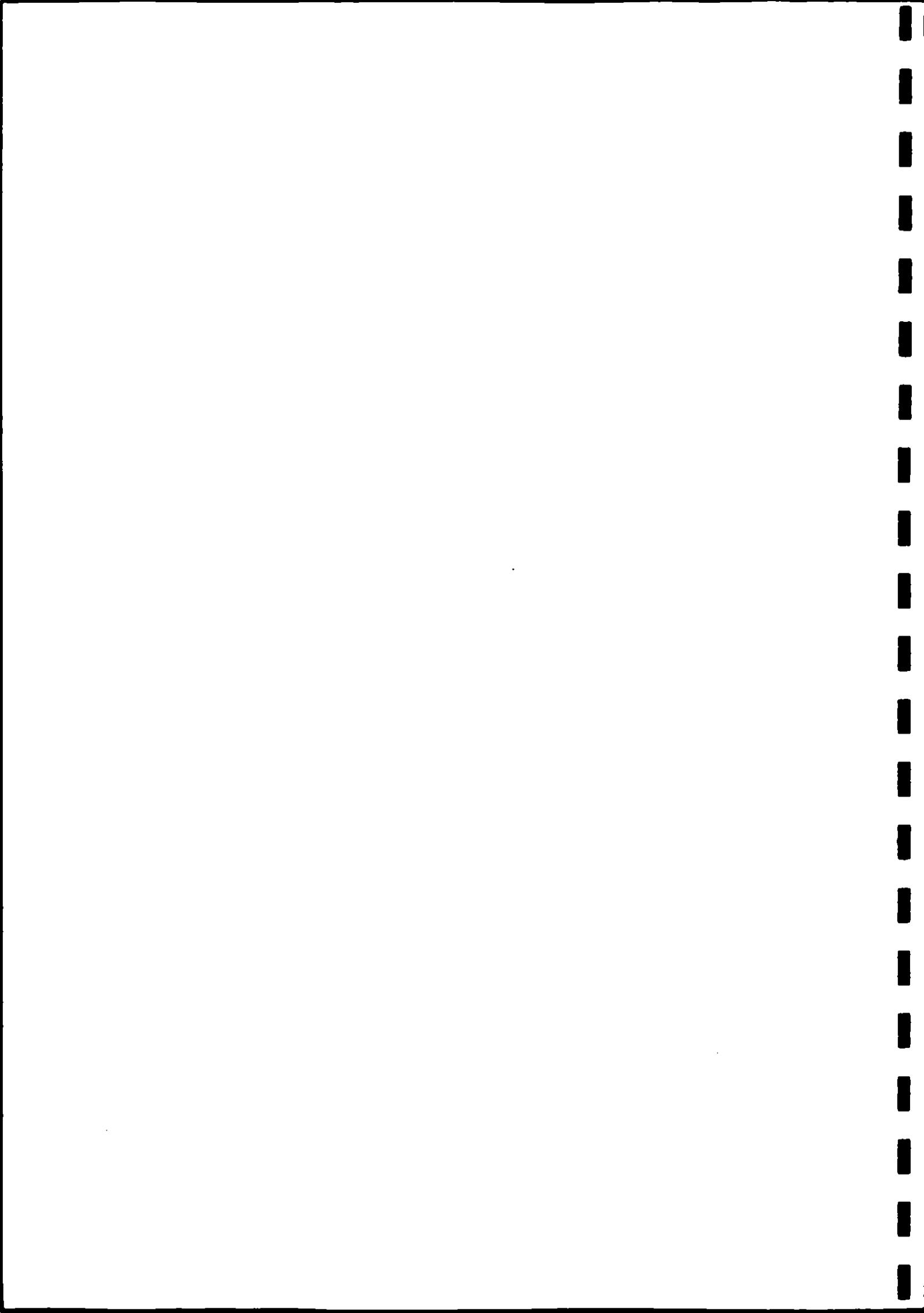
**8.9 INDUSTRIAL LAGOONS AND RESERVOIRS**

Very artificial aquatic habitats.

**8.9.1 Saline industrial lagoons and canals**

**8.9.2 Fresh-water industrial lagoons and canals**





Dictionary of Land Cover Surveys & Definitions

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<b>SURVEY NUMBER</b>	16
<b>NAME OF SURVEY</b>	NATURE CONSERVANCY COUNCIL PHASE 1 SURVEY
<b>COMMISSIONING AGENT</b>	NATURE CONSERVANCY COUNCIL (NCC)
<b>EXECUTING AGENT</b>	NATURE CONSERVANCY COUNCIL
<b>CONTACT</b>	English Nature Headquarters Northminster House Northminster PETERBOROUGH PE1 1UA  Tel: Peterborough (0733) 340345 Fax: .. .. 68834  Present contact: Dr. Keith Kirby.
<b>OBJECTIVES</b>	To provide information for those involved in the conservation of wild plants and animals by rapidly recording, classifying and mapping semi-natural vegetation and wildlife habitats throughout Great Britain.
<b>PERIOD OF SURVEY</b>	
Start	1975.
End	Continuing.
<b>SURVEY METHOD</b>	Field survey supplemented by air photo interpretation using a hierarchical classification based principally on vegetation augmented by reference to topographic and substrate features. The classification consists of some 90 specified habitat types. Since 1982 individual surveys are compatible with one another in most respects.

**GEOGRAPHICAL CHARACTERISTICS**

Area of survey	The aim is complete coverage of Great Britain (i.e. a census). More than 70% covered by 1991, however following the break up NCC each individual country is reviewing the future of such surveys.
Sampling frame	Continuous
Sampling unit	Continuous
Recording unit	Land parcels and linear features, recorded by county or district within a county.
Scale of input data	1:10,000 (some 1:25,000).
Scale of output	1:10,000 (some 1:25,000).
Resolution	0.1 ha (0.5 ha).
Accuracy and error	Variable, depending on the skill of the surveyor and whether the areas concerned were surveyed from close proximity or from a distance, as much field survey had to be done from public rights of way.

**DATA STORAGE/ANALYSIS**      Some of the data are stored on GIS.

**DATA AVAILABILITY**

**FORMS OF OUTPUT**              Habitat maps, habitat area statistics, target notes.

**PUBLICATION DATE(S)**

**REFERENCES**

England Field Unit, Nature Conservancy Council. (1990). *Handbook for Phase 1 Habitat Survey - a technique for environmental audit*. Nature Conservancy Council, Peterborough. 78 pp.

Wyatt, G. (England Field Unit, Nature Conservancy Council). (1991). *A review of Phase 1 Habitat Survey in England*. Nature Conservancy Council, Peterborough. 101 pp.

Land cover/use categories and definitions

1 WOODLAND AND SCRUB

1.1 WOODLAND

Vegetation dominated by trees >5 m high when mature, forming a distinct, although sometimes open, canopy. Distinct blocks of woodland, whether broadleaved or coniferous, are mapped separately wherever possible. If the cover of trees <30%, the area is coded as Scattered Trees. Where the cover is >30% but there are sizeable open spaces or rides, the ground flora is noted.

1.1.1 Broadleaved woodland

10% or less conifer in the canopy.

1.1.1.1 Semi-natural Broadleaved Woodland

All stands which do not obviously originate from planting. The distribution of species generally reflects natural variations in the site and its soil. Both ancient and more recent stands are included. Woodland with both semi-natural and planted trees is classified as semi-natural if the planted trees account for <30% of the canopy composition, but as plantation if >30% is planted. Semi-natural woodland includes:

woods with planted standards in semi-natural coppice;

mature plantations (more than about 120 years old) of native species growing on sites where those species are native and where there are semi-natural woodland ground flora and shrub communities;

self-sown secondary stands of exotic species (for example sycamore, holm oak on Isle of Wight);

alder carr, and willow carr where the willows are >5 m tall (although *Salix cinerea* should always be classified as scrub);

well-established sweet-chestnut coppice (that is, >25 years old);

woods which have been completely underplanted, but where the planted trees do not yet contribute to the canopy;

stands of young trees or coppice regrowth, even when <5 m.

1.1.1.2 Broadleaved Plantation Woodland

All obviously planted broadleaved woodland of any age, including orchards, ornamental tree gardens and arboreta.

**1.1.2 Coniferous woodland**

10% or less broadleaved in the canopy.

**1.1.2.1 Semi-natural Coniferous Woodland**

All stands which do not obviously originate from planting. The distribution of species generally reflects natural variations in the site and its soil. Both ancient and more recent stands are included. Woodland with both semi-natural and planted trees is classified as semi-natural if the planted trees account for <30% of the canopy composition, but as plantation if >30% is planted. Semi-natural woodland includes:

mature plantations (more than about 120 years old) of native species growing on sites where those species are native and where there are semi-natural woodland ground flora and shrub communities;

self-sown secondary stands of exotic species (for example pine on southern heaths);

woods which have been completely underplanted, but where the planted trees do not yet contribute to the canopy;

stands of young trees, even when <5 m.

**1.1.2.2 Coniferous Plantation Woodland**

All obviously planted coniferous woodland of any age, including orchards, ornamental tree gardens and arboreta.

**1.1.3 Mixed woodland**

10-90% of either broadleaved or conifer in the canopy.

**1.1.3.1 Semi-natural Mixed Woodland**

All stands which do not obviously originate from planting. The distribution of species generally reflects natural variations in the site and its soil. Both ancient and more recent stands are included. Woodland with both semi-natural and planted trees is classified as semi-natural if the planted trees account for <30% of the canopy composition, but as plantation if >30% is planted. Semi-natural woodland includes:

woods with planted standards in semi-natural coppice;

mature plantations (more than about 120 years old) of native species growing on sites where those species are native and where there are semi-natural woodland ground flora and shrub communities;

self-sown secondary stands of exotic species (for example sycamore, pine on southern heaths, holm oak on Isle of Wight);

alder carr, and willow carr where the willows are >5 m tall (although *Salix cinerea* should always be classified as scrub);

well-established sweet-chestnut coppice (that is, >25 years old);

woods which have been completely underplanted, but where the planted trees do not yet contribute to the canopy;

stands of young trees or coppice regrowth, even when <5 m.

**1.1.3.2 Mixed Plantation Woodland**

All obviously planted woodland of any age, including orchards, ornamental tree gardens and arboreta.

1.2 SCRUB

Seral or climax vegetation dominated by locally native shrubs, usually <5m tall, occasionally with a few scattered trees, including:

*Ulex europaeus*, *Cytisus scoparius* and *Juniperus communis* scrub;

stands of *Rubus fruticosus* and *Rosa canina*;

montane scrub with *Salix lapponum*, *S. lanata*, *S. myrsinites*, *S. arbuscula* or *S. phylicifolia*;

stands of mature *Crataegus monogyna*, *Prunus spinosa* or *Salix cinerea*, even if >5 m tall;

all willow carr <5 m tall; all *Salix cinerea* carr;

stands of *Myrica gale* >1.5 m tall.

but excluding:

very low *Salix herbacea*, *Salix repens* or *Myrica gale*;

*Ulex gallii* or *Ulex minor* hedges;

stands of young trees or stump regrowth <5 m high, where these represent >50% of the immature canopy cover;

stands of introduced shrub species;

scrub on dunes.

1.2.1 Dense/Continuous Scrub

1.2.2 Scattered Scrub

1.3 PARKLAND AND SCATTERED TREES

Tree cover must be <30% to warrant inclusion in this category. Dominant species, exotic trees and lines of trees forming windbreaks or avenues are recorded.

1.3.1 Broad-leaved Parkland and Scattered Trees

See 1.1.1

1.3.2 Coniferous Parkland and Scattered Trees

See 1.1.2

1.3.3 Mixed Parkland and Scattered Trees

See 1.1.3

**1.4 RECENTLY-FELLED WOODLAND**

The only areas of felled trees which should be included in this category are those whose future land use is uncertain, for instance when it is not clear whether they are to be replanted or used for crops. The dominant species which have been felled are recorded.

**1.4.1 Recently-felled Broad-leaved Woodland**

See 1.1.1

**1.4.2 Recently-felled Coniferous Woodland**

See 1.1.2

**1.4.3 Recently-felled Mixed Woodland**

See 1.1.3

**2 GRASSLAND AND MARSH**

Areas of herbaceous vegetation dominated by grasses and certain wet communities dominated by *Juncus* species, *Carex* species, *Filipendula ulmaria* or by other marsh herbs. Grasslands where there is a >25% cover of dwarf shrub heaths are recorded as Heathland; emergent stands of tall reed-grasses as Swamp, coastal grasslands as Saltmarsh, Dune and Maritime Cliff and Slope. See also Amenity Grassland.

Grassy roadside verges, railway cuttings and embankments may be very important features, especially in intensively farmed areas. If they are wide enough they are recorded in the appropriate grassland habitat.

**2.1 ACID GRASSLAND**

Grassland in this category is often unenclosed, as on hill-grazing land, and occurs on a range of acid soils (pH <5.5). It is generally species-poor, and often grades into Wet or Dry Dwarf Shrub Heath, although it must always have <25% dwarf shrub cover. Pioneer annual-rich calcifuge communities on dry sandy soils are included in this category, as are wet acidic grasslands typified by species such as *Juncus squarrosus* (but see Marsh/Marshy Grassland).

The following are indicative of acidic conditions when frequent or abundant: *Deschampsia flexuosa*, *Nardus stricta*, *Juncus squarrosus*, *Galium saxatile*, and *Rumex acetosella*.

**2.1.1 Unimproved Acid Grassland**

Comparatively rare, especially in the lowlands. They may be rank and neglected, mown or grazed. They may have been treated with low levels of farmyard manure, but should not have had sufficient applications of fertiliser or herbicide, or have been so intensively grazed or drained, as to alter the sward composition significantly. Species diversity is often high, with species characteristic of the area and the soils and with a very low percentage of agricultural species.

**2.1.2 Semi-improved Acid Grassland**

A transition category made up of grasslands which have been modified by artificial fertilisers, slurry, intensive grazing, herbicides or drainage, and consequently have a range of species which is less diverse and natural than unimproved grasslands. Such grasslands are still of some conservation value. Species diversity is generally lower than in unimproved grassland in the same area. If the signs of improvement indicative of Improved Grassland are lacking, the grassland is classified as semi-improved. See also Poor Semi-Improved Grassland.

## 2.2 NEUTRAL GRASSLAND

Typically enclosed and usually more intensively managed than acid or calcareous grassland (except on roadside verges), encompassing a wide range of communities occurring on neutral soils (pH 5.5-7.0). The following are indicative of neutral conditions when frequent or abundant: *Alopecurus pratensis*, *Arrhenatherum elatius*, *Cynosurus cristatus*, *Dactylis glomerata*, *Deschampsia cespitosa*, *Festuca arundinacea* and *Festuca pratensis*. *Lolium perenne* may be present, but when abundant it is indicative of Improved Grassland. Hay meadows usually fall within this category. Included in neutral grassland is a range of grasslands which are inundated periodically, permanently moist, or even water-logged (but see Marsh/Marshy Grassland). Examples are:

inundated grassland with abundant *Glyceria* species, *Alopecurus geniculatus*, *Poa trivialis* and *Polygonum hydropiper*;

water meadows and alluvial meadows;

species-poor *Deschampsia cespitosa* grasslands and grazed *Juncus effusus*/*Juncus inflexus*-*Holcus lanatus*/*Deschampsia cespitosa* grasslands;

wet meadows or pastures where grasses are dominant in the sward (cf. Marsh/Marshy Grassland) but with species such as *Caltha palustris*, *Filipendula ulmaria*, *Valeriana* species, *Juncus* species or *Crepis paludosa* present.

### 2.2.1 Unimproved Neutral Grassland

Comparatively rare, especially in the lowlands. They may be rank and neglected, mown or grazed. They may have been treated with low levels of farmyard manure, but should not have had sufficient applications of fertiliser or herbicide, or have been so intensively grazed or drained, as to alter the sward composition significantly. Species diversity is often high, with species characteristic of the area and the soils and with a very low percentage of agricultural species.

### 2.2.2 Semi-improved Neutral Grassland

A transition category made up of grasslands which have been modified by artificial fertilisers, slurry, intensive grazing, herbicides or drainage, and consequently have a range of species which is less diverse and natural than unimproved grasslands. Such grasslands are still of some conservation value. Species diversity is generally lower than in unimproved grassland in the same area. If the signs of improvement indicative of Improved Grassland are lacking, the grassland is classified as semi-improved. See also Poor Semi-Improved Grassland.

## 2.3 CALCAREOUS GRASSLAND

These grasslands are often unenclosed, not managed intensively, and occur on calcareous soils (pH >7.0). *Dryas octopetala* communities are included. Where the grass is tall, the dominant species is usually either *Brachypodium pinnatum* or *Bromus erectus*, whilst species indicative of short, close-grazed and species-rich calcareous turf are *Koeleria macrantha*, *Avenula pratensis*, *Sesleria albicans*, *Helianthemum nummularium*, *Sanguisorba minor* and *Thymus praecox*.

### 2.3.1 Unimproved Calcareous Grassland

Comparatively rare, especially in the lowlands. They may be rank and neglected, mown or grazed. They may have been treated with low levels of farmyard manure, but should not have had sufficient applications of fertiliser or herbicide, or have been so intensively grazed or drained, as to alter the sward composition significantly. Species diversity is often high, with species characteristic of the area and the soils and with a very low percentage of agricultural species.

**2.3.2 Semi-improved Calcareous Grassland**

A transition category made up of grasslands which have been modified by artificial fertilisers, slurry, intensive grazing, herbicides or drainage, and consequently have a range of species which is less diverse and natural than unimproved grasslands. Such grasslands are still of some conservation value. Species diversity is generally lower than in unimproved grassland in the same area. If the signs of improvement indicative of Improved Grassland are lacking, the grassland is classified as semi-improved. See also Poor Semi-Improved Grassland.

**2.4 IMPROVED GRASSLAND**

Meadows and pastures which have been so affected by heavy grazing, drainage, or the application of herbicides, inorganic fertilisers, slurry or high doses of manure that they have lost many of the species which one could expect to find in an unimproved sward. They have only a very limited range of grasses and a few common forbs, mainly those demanding of nutrients and resistant to grazing. *Lolium perenne*, *Cynosurus cristatus*, *Trifolium repens*, *Rumex acetosa*, *Taraxacum officinale*, *Bellis perennis*, *Ranunculus acris* and *Ranunculus bulbosus* are typical of improved grassland, while stands of dock *Rumex* species, common nettle *Urtica dioica* and thistles *Cirsium* species indicate local enrichment of the soil by grazing animals. The following signs usually indicate substantial improvement:

bright green, lush and even sward, dominated by grasses (though poaching causes unevenness);

low diversity of forb species;

>50% *Lolium perenne*, *Trifolium repens* and other agricultural species.

Fields which have been reseeded in the past and have since become somewhat more diverse are included in this category, but recently reseeded monoculture grassland such as rye grass leys, with or without clover, should be classified under Cultivated Land, as should most Amenity Grassland.

**2.5 MARSH/MARSHY GRASSLAND**

A diffuse category covering certain *Molinia* grasslands, grasslands with a high proportion of *Juncus* species, *Carex* species or *Filipendula ulmaria*, and wet meadows and pastures supporting communities of species such as *Caltha palustris* or *Valeriana* species, where broadleaved herbs rather than grasses, predominate. The category differs from Swamp in that the latter has a water table distinctly above the substratum for much of the year and is dominated by reed grasses or large sedges. Unlike Marginal Vegetation, Marsh/Marshy Grassland occurs on more or less level areas, rather than on the banks of watercourses. It differs from Flush in that bryophytes are not a conspicuous component of the vegetation, also Flushes always have a flow or seepage of water through them. The following communities are included in marsh/marshy grassland:

vegetation with >25% cover of *Molinia caerulea*, on < 0.5 m of peat (cf Mire);

vegetation with <25% dwarf shrub cover on peat < 0.5 m (cf Heathland);

vegetation with >25% cover of *Juncus acutiflorus*, *J. effusus*, *J. inflexus*, *Carex* species or *Filipendula ulmaria*, except for grazed *Juncus effusus*/*Holcus lanatus*/*Deschampsia cespitosa* grasslands, which should be classified as Neutral Grassland;

wet meadows and pastures where grasses are subordinate to forbs (cf. Wet Neutral Grassland). Such communities are often rich in plants such as *Caltha palustris*, *Filipendula ulmaria*, *Valeriana* species, *Crepis paludosa*, *Dactylorhiza* species, *Eupatorium cannabinum*, *Juncus* species and *Carex* species.

If *Sphagnum* is abundant, classify as Mire.

2.6 POOR SEMI-IMPROVED GRASSLAND

Good semi-improved grassland has a reasonable diversity of herbaceous species, at least in parts of the sward, and is clearly recognisable as acid, calcareous or neutral in origin. Such grassland should be classified in the semi-improved categories of Acid, Neutral and Calcareous Grassland. Poor semi-improved grassland has a much more restricted list of species and, being more improved, it is more likely to resemble a species-poor neutral grassland, irrespective of its origin.

3 TALL HERB AND FERN

3.1 BRACKEN

Areas dominated by *Pteridium aquilinum*, or with scattered patches of this species.

3.1.1 Continuous Bracken

3.1.2 Scattered Bracken

3.2 UPLAND SPECIES-RICH LEDGES

Ledge vegetation containing species such as *Angelica sylvestris*, *Filipendula ulmaria*, *Solidago virgaurea*, *Athyrium filix-femina*, *Trollius europaeus* and *Crepis paludosa*.

3.3 OTHER TALL HERB AND FERN

3.3.1 Tall Ruderal Herb

Stands of tall perennial or biennial dicotyledons, usually >25 cm high, of species such as *Chamerion (Chamaenerion) angustifolium*, *Urtica dioica* and *Reynoutria japonica*. See also Ephemeral/Short Perennial Vegetation.

3.3.2 Non-ruderal Herb and Fern

Includes non-wooded stands of species such as *Oreopteris limbosperma*, *Athyrium filix-femina*, *Dryopteris* species or *Luzula sylvatica*.

4 HEATHLAND

Vegetation dominated by ericoids or dwarf gorse species, as well as "heaths" dominated by lichens and bryophytes, dwarf forbs, *Carex bigelowii* or *Juncus trifidus*. Generally occurring on well-drained acid soils, heathland is further distinguished from Mire by being arbitrarily defined as occurring on peat <0.5m thick (but see Flood-plain mire). See also Dune Heath and Coastal Heathland.

4.1 DRY DWARF SHRUB HEATH

Vegetation with >25% cover of ericoids or small gorse species in relatively dry situations. *Calluna vulgaris*, *Vaccinium myrtillus*, *Erica tetralix*, *Ulex minor* and *Ulex gallii* are typical of lowland dry dwarf shrub heath, whilst *Empetrum nigrum*, *Empetrum hermaphroditum*, *Arctostaphylos uva-ursi* and *Vaccinium vitis-idaea* are found in upland heaths. See also Wet Dwarf Shrub Heath, Dry Heath/Acid Grassland Mosaic and Dry Modified Bog. Damp *Calluna* heath with *Sphagnum capillifolium* (mainly in western Scotland) is included in this category.

**4.1.1 Acid Dry Dwarf Shrub Heath**

Usually occurring on deep podsoles developed on base deficient sands, gravels and clays.

**4.1.2 Basic Dry Dwarf Shrub Heath**

Restricted in extent, and distinguished by the presence of herbs characteristic of chalk grassland and open habitats.

**4.2 WET DWARF SHRUB HEATH**

Vegetation with >25% cover of ericoids and/or small *Ulex* species. It differs from Dry Dwarf Shrub Heath in that *Molinia caerulea* is often abundant, usually with *Sphagnum compactum* or *Sphagnum tenellum* and less frequently other *Sphagna*. In transitions to mires, the proportion of *Sphagna* increases and the species composition changes, often with *Sphagnum papillosum* and *Sphagnum subnitens* becoming more frequent. *Erica tetralix* is common and is often present in significant quantity. *Trichophorum cespitosum* is occasionally present at lower levels. Macrolichens such as *Cladonia portentosa (impexa)*, *C. arbuscula* and *C. uncialis* may be locally abundant. The abundance of *Molinia* and *Erica tetralix* decreases in the transition from wet to dry heath. See also Wet Heath/Acid Grassland Mosaic and Wet Modified Bog.

**4.3 LICHEN/BRYOPHYTE HEATH**

Bryophyte and lichen-dominated heaths of mountain summits and lowland situations such as the East Anglian Breckland. Bryophytes and/or lichens must be dominant and there must be <30% vascular plant cover.

**4.4 MONTANE HEATH/DWARF HERB**

A diverse grouping of montane heath and snow-bed vegetation types, including heaths dominated by *Carex bigelowii* and *Juncus trifidus*, and dwarf forb communities of *Alchemilla alpina*, *Silene acaulis*, *Sibbaldia procumbens* and *Saxifraga* species. Montane dwarf shrub heath are classified under Dry Dwarf Shrub Heath or Wet Dwarf Shrub Heath and *Dryas octopetala* communities under Calcareous Grassland.

**4.5 DRY HEATH/ACID GRASSLAND MOSAIC**

A common mixture of Dry Heath and Acid Grassland, frequently found on hill and moorland, and distinguished here only for ease of mapping.

**4.6 WET HEATH/ACIDIC GRASSLAND MOSAIC**

Vegetation mosaics comprising a mixture of Wet Heath with Acid Grassland. See also Dry Heath/Acid Grassland Mosaic.

**5 MIRE**

Mires occur typically on deep peat (>0.5 m thick) with the water table at or just below the surface, but flushes and springs on shallow or incipient peats are also included in this category. The classification of peatlands has recently been revised and the term bog is now restricted to ombrotrophic mires (Blanket Bog and Raised Bog), which are fed only by direct precipitation, unlike minerotrophic mires - Fens (valley, flood-plain and basin mires), Flushes and Springs - which are fed by ground water or streams. The distinction between ombrotrophic and minerotrophic mires is not always clear-cut. Areas of minerotrophic mire may occur within blanket and raised mires; likewise, ombrotrophic areas may occur locally within fens.

## 5.1 BOG

Unmodified bog (Blanket Bog and Raised Bog) consists of *Sphagnum*-rich vegetation, lying on peat >0.5 m deep, with the water table at or just below the surface and no input of water from the surrounding land. Modified bog contains little or no *Sphagnum*.

### 5.1.6 Sphagnum bog

#### 5.1.6.1 Blanket Bog

Blanket bog comprises *Sphagnum*-rich vegetation on deep peat, forming a blanket over both concave and convex surfaces, on level to moderately sloping ground in the uplands. It is widespread in the north and west of Britain, where it may be fragmentary or very extensive. The drainage is usually diffuse and undisturbed blanket bog often shows a hummock-and-hollow structure, with *Sphagnum*-rich pools in the hollows. Blanket bog includes watershed mires, saddle mires, terrace bog and valleyside mire and may also include other mire types, where these occur within a blanket bog complex.

This habitat category is used for relatively undamaged blanket bog, with *Sphagnum* usually abundant (typically *Sphagnum papillosum*, together with other species such as *Sphagnum magellanicum*. A wide range of ericoids, including *Calluna vulgaris*, *Erica tetralix*, *Vaccinium* species and *Empetrum* species, may be present, mainly on the hummocks, together with *Eriophorum vaginatum*, *Eriophorum angustifolium* and *Trichophorum cespitosum*. *Calluna* and/or *Eriophorum vaginatum* are often dominant over large areas, but various mixtures of species occur. Bog pool systems and areas of peat cutting, often characterised by the presence of *Sphagnum recurvum*, are mapped as Open Water or Bare Peat.

Significantly damaged blanket bog, in which *Sphagnum* is much reduced or absent, is classified as Dry or Wet Modified Bog.

#### 5.1.6.2 Raised Bog

Raised bogs are found on estuarine flats, river flood plains and other level areas with impeded drainage in the lowlands, also at moderate altitudes, where they may grade into blanket mire. Many raised bogs overlie sites of glacial lakes which became infilled. In a classic raised bog, now rare in Britain, the peat is several metres deep and has accumulated to form a distinctly raised dome, with peat depth greatest in the centre and decreasing towards the edges, which are marked by the more steeply sloping mire margin. Drainage tends to flow around the mire, forming a lagg stream, and the drier sloping margins of the mire may carry lagg woodland, (mapped as Woodland).

Undamaged raised bog vegetation is very similar to that of Blanket Bog. Modification of raised bogs by draining, burning and peat-cutting can lead to the formation of Wet Modified Bog or Dry Modified Bog.

### 5.1.7 Wet Modified Bog

Modified bog vegetation with little or no *Sphagnum*, often with bare peat and patches of *Trichophorum cespitosum* and/or *Molinia caerulea*. Ericoids may be abundant, sparse or absent. Mainly found on drying and degraded blanket bogs and cut-over raised bogs. May resemble Wet Heath, but distinguished by a peat depth >0.5m. *Molinia*-dominated vegetation on deep peat is included in this category rather than in Marshy Grassland.

**5.1.8 Dry Modified Bog**

Communities dominated by *Calluna vulgaris* and other ericoids, or by *Eriophorum vaginatum*, on peat >0.5 m deep. *Sphagnum* is notably absent, but under the dwarf shrubs there may be a carpet of hypnoid mosses, with lichens such as *Cladonia portentosa* and *Cladonia arbuscula*. Where *Eriophorum vaginatum* is dominant, as on many Pennine blanket bogs, other species may be sparse or absent. Essentially dry heath vegetation (or cottongrass moor) on deep peat, this habitat type is typical of areas of Blanket Bog or Raised Bog subjected to heavy grazing, burning and draining.

**5.2 FLUSH AND SPRING**

Minerotrophic mires, termed soligenous because they are associated with water movement. They may or may not form peat, but where they do, the peat is often <0.5m deep. Flushes occur on gently-sloping ground, are often linear or triangular and may include small watercourses. They may be extensive or too small to map. Where flushes feed a Fen they are mapped as an integral part of the mire complex, unless they are very large and distinct, when they may be individually mapped.

Flushes typically have an open or closed ground layer of *Sphagnum* and/or other bryophytes, together with small sedges and *Juncus* species. The presence of a well developed bryophyte ground layer and the lack of dominant grasses distinguishes flush habitats from Marshy Grassland and from Wet Acid, Neutral and Calcareous Grasslands. Thus, a habitat with *Juncus effusus* over herbs and grasses is recorded as Marsh/Marshy Grassland. Complex mosaics of grassland and flush are quite common, particularly in the uplands, and are mapped according to the most prevalent habitat.

**5.2.1 Acid/Neutral Flush**

Typically supporting species-poor vegetation consisting of a *Sphagnum* carpet overlain by *Carex* or *Juncus* species. Characteristic moss species include *Sphagnum recurvum*, *S. palustre* and *S. auriculatum*. Overlying vegetation may consist of small *Carex* species (*Carex echinata*, *C. nigra* or *C. curta*), *Carex rostrata*, *Juncus acutiflorus*, *J. effusus*, *J. squarrosus*, or *Eriophorum angustifolium*.

**5.2.2 Basic Flush**

Basic flushes typically support a carpet of pleurocarpous brown mosses, often without *Sphagnum*, overlain by a conspicuous small sedge layer, *Carex flacca*, *Schoenus nigricans* or a mixed herb layer. Characteristic pleurocarpous mosses include *Scorpidium*, *Campyllum*, *Drepanocladus* and *Calliergon* species, whilst characteristic herbs include *Eleocharis quinqueflora*, *Eriophorum latifolium* and *Carex lepidocarpa*.

**5.2.3 Bryophyte-dominated Spring**

Occurs only in the immediate vicinity of up-wellings. It usually consists of spongy mats or small mounds dominated by bryophytes such as *Cratoneuron* or *Philonotis* species. Areas which fall within this category are normally too small to map. Flushes occurring downslope of a spring are mapped if they are large enough.

5.3 FEN

Minerotrophic mires, usually over peat >0.5m deep (but see Flood-Plain Mire). The water table is at or just below the surface. Three main types of fen can be distinguished, using topographical rather than vegetational criteria. These are valley mire, which, because there is obvious water flow, is classified as soligenous, and basin and flood-plain mires, which have impeded drainage and are termed topogenous. However, the distinction between these three mire types is not always clear in the field, so for Phase 1 mapping purposes their identification is optional.

"Poor fen" contains acid water (pH 5 or less) and short vegetation with a high proportion of *Sphagnum*. "Rich fen" contains more calcareous water (pH >5), *Sphagnum* is often absent and the vegetation usually includes patches of tall plants and species such as *Juncus subnodulosus*, *Schoenus nigricans* and *Carex lepidocarpa*, characteristic of base-rich situations. Very wet areas containing tall swamp vegetation such as *Phragmites australis* or large sedges are recorded as Swamp. Parts of the mire dominated by marsh (fen meadow) or carr should be mapped as Grassland, Woodland or Scrub.

5.3.1 Valley Mire

A valley mire develops along the lower slopes and floor of a small valley and receives water from springs and seepages on the valley sides, feeding a central watercourse. Such a fen can be distinguished from a flush because the former is a complex, whereas a flush is a discrete single feature, usually of limited extent.

Valley mires are often dominated by acidophilous vegetation containing *Sphagnum* species, *Carex* species and ericoids. However vegetation typical of base-rich conditions can also occur, for instance *Schoenus nigricans* and *Juncus subnodulosus*. Floating mats of mosses and sedges may be present. Acid watercourses often contain *Hypericum elodes* and *Potamogeton polygonifolius*.

5.3.2 Basin mire

This type of fen develops in a waterlogged basin and contains very little open water. The water table within the basin is level, but small flushes may occur around the edges and there is a limited through-flow of water.

The vegetation may be dominated by *Sphagnum* species, together with *Carex rostrata* and ericoids, or by tall swamp plants such as *Phragmites australis*, *Schoenoplectus (Scirpus) lacustris*, *Typha* species and, in base-rich situations, *Cladium mariscus*.

5.3.3 Flood-plain mire

This type of fen forms on a river or stream floodplain which is waterlogged and, typically, inundated periodically. The substrate may be peat, mineral or a mixture of both. The range of vegetation types is similar to that of a Basin Mire.

5.4 BARE PEAT

Patches of bare peat >0.25 ha in extent, including peat haggings, areas of eroding peat hags and commercial peat-workings.

**6 SWAMP, MARGINAL AND INUNDATION**

Emergent or frequently inundated vegetation, occurring over peat or mineral soils. Note that this category differs from Mire and from Marsh/Marshy Grassland in having the water table distinctly above the level of the substrate for most of the year.

**6.1 SWAMP**

Swamp contains tall emergent vegetation typical of the transition between open water and exposed land. Swamps are generally in standing water for a large part of the year, but may occasionally be found on substrates that are seldom immersed, as in the later stages of the seral succession to marshy grassland.

Species composition varies according to the trophic status of the water, the substrate type, etc. Note that vegetation dominated by *Molinia caerulea*, *Filipendula ulmaria*, mosses, small *Carex* species or *Juncus* species, should be classified as Marsh/Marshy Grassland or Flush, as appropriate. Swamp vegetation includes both mixed and single species stands of *Typha* species, *Phragmites australis*; *Phalaris arundinacea*, *Glyceria maxima*, *Carex paniculata*, *C. acutiformis*, *C. rostrata* or other tall sedge. Single-species stands are usually found in deeper water and should be indicated with species codes.

Strips of swamp vegetation narrower than 5 m bordering watercourses should be classified as Marginal Vegetation.

**6.2 MARGINAL AND INUNDATION**

**6.2.1 Marginal vegetation**

Narrow strips of emergent vegetation occurring on the (often steep) margins of lowland watercourses, where the water-table is permanently high. Bands of tall vegetation wider than 5 m should be classified as Swamp. Marginal vegetation is typically open and contains plants such as *Glyceria* species, *Rorippa* species, *Apium nodiflorum*, *Berula erecta*, *Oenanthe* species, *Galium palustre*, *Nasturtium officinale*, *Myosotis* species, *Veronica* species, *Alisma* species, *Sparganium erectum*, *Carex riparia*, *Juncus effusus* and *Juncus inflexus*, also small stands of taller plants such as *Phragmites australis*, *Typha* species and *Phalaris arundinacea*

**6.2.2 Inundation vegetation**

Includes open and innately unstable communities that are subject to periodic inundation, as found on sorted or unsorted silts, sands and gravels of river beds and islands and on the draw-down zone around pools, lakes and reservoirs. A wide variety of species occur in such communities, including *Polygonum* species, *Juncus bulbosus*, *Bidens* species, *Agrostis stolonifera* and *Alopecurus geniculatus*, as well as many ruderal species.

**7 OPEN WATER**

Water lying beyond the limits of swamp or emergent vegetation, which may contain submerged, free-floating or floating-leaved vegetation.

**7.1 STANDING WATER**

Includes lakes, reservoirs, pools, flooded gravel pits, ponds, water-filled ditches, canals and brackish lagoons.

**7.1.1 Eutrophic Standing Water**

Water often strongly discoloured by algae. pH usually >7. Substrate often highly organic mud.

**7.1.2 Mesotrophic Standing Water**

Water sometimes discoloured by planktonic algae. pH usually around or slightly below neutral.

**7.1.3 Oligotrophic Standing Water**

Water very clear, plankton sparse. pH usually <7. Substrate rocky, sandy or peaty.

**7.1.4 Dystrophic Standing Water**

Water usually peat-stained. pH very low (3.5-5.5). Alkalinity very low (up to 2 mg/1 CaCO<sub>3</sub>).

**7.1.5 Marl/Tufa Standing Water**

May be eutrophic, mesotrophic or (very rarely) oligotrophic. Water very clear. Alkalinity at least 100 mg/1 CaCO<sub>3</sub>. Powdery yellow-brown deposit of marl covers substrate in lakes. Highly calcareous streams deposit tufa.

**7.1.6 Brackish Standing Water**

Most brackish systems are coastal, but a few are inland, with salinity derived from artificial sources such as mine drainage, or from residues of ancient marine incursions in peaty areas. Conductivity 1250 to 50 000 µmhos.

**7.2 RUNNING WATER**

Rivers and streams.

**7.2.1 Eutrophic Running Water**

Water often strongly discoloured by algae. pH usually >7. Substrate often highly organic mud.

**7.2.2 Mesotrophic Running Water**

Water sometimes discoloured by planktonic algae. pH usually around or slightly below neutral.

**7.2.3 Oligotrophic Running Water**

Water very clear, plankton sparse. pH usually <7. Substrate rocky, sandy or peaty.

**7.2.4 Dystrophic Running Water**

Water usually peat-stained. pH very low (3.5-5.5). Alkalinity very low (up to 2 mg/1 CaCO<sub>3</sub>).

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**7.2.6 Brackish Running Water**

Most brackish systems are coastal, but a few are inland, with salinity derived from artificial sources such as mine drainage, or from residues of ancient marine incursions in peaty areas. Conductivity 1250 to 50 000 µmhos.

8 COASTLAND

Coastal lagoons are classified as Standing Water.

8.1 INTERTIDAL

8.1.1 Mud/Sand

8.1.2 Shingle/Cobbles

8.1.3 Boulders/Rocks

8.2 SALTMARSH

8.2.3 Saltmarsh/Dune Interface

Characterised by species such as *Frankenia laevis* or *Suaeda fruticosa*.

8.2.4 Scattered plants

8.2.5 Dense/Continuous Saltmarsh

Including areas of *Spartina* and inland saltmarsh.

8.3 SHINGLE/GRAVEL ABOVE HIGH TIDE MARK

8.4 BOULDERS/ROCKS ABOVE HIGH TIDE MARK

8.5 STRANLINE VEGETATION

Open vegetation communities on the drift line, characterised by species such as *Cakile maritima*, *Honkenya peploides*, *Rumex crispus*, *Salsola kali*, *Atriplex* species and *Beta vulgaris ssp. maritima*. In contrast to Fore Dunes, *Elymus farctus* (*Agropyron junceiforme*) is characteristically sparse or absent.

8.6 SAND DUNE

8.6.4 Dune Slack

Valleys or hollows between dune ridges, where the water table is close to the surface for at least several months in the year, leading to marshy vegetation. *Ammophila arenaria* is usually absent. Characteristic species are *Salix repens*, *Hydrocotyle vulgaris*, *Dactylorhiza* species and *Epipactis palustris*. Saline slacks are classified as Saltmarsh.

8.6.5 Dune Grassland

All grassland occurring on consolidated and flattened dunes. Generally, little *Ammophila arenaria* will be present. Includes machair.

8.6.6 Dune Heath

All heathland occurring on consolidated and flattened dunes. *Calluna* is usually the dominant ericoid, with *Erica cinerea* and *Erica tetralix* also common. *Carex arenaria* is often present and lichens, particularly *Cladonia* species, are often abundant. Occasionally, juniper may be present.

8.6.7 Dune Scrub

All scrub occurring on consolidated and flattened dunes. *Hippophae rhamnoides* is a characteristic species.

**8.6.8 Open Dune**

Early successional stages of dune formation, less stable and with lower vegetation cover than 8.6.4-8.6.7.

Fore dune: unstable, usually low ridges of sand on the foreshore, often with a very open plant cover. *Elymus farctus* is strongly characteristic, often dominant, and sometimes the only species present; *Honkenya peploides*, *Atriplex* species and *Cakile maritima* are typical associated species; *Ammophila arenaria* may be present in small quantities, but should not be dominant.

Yellow dune: partially stabilized ridges of sand lying between fore and grey dunes, with marked but incomplete plant cover, nearly always dominated by *Ammophila arenaria*, although *Leymus (Elymus) arenarius* and/or *Elymus farctus* may be common; a variety of small herbs may be present.

Grey dune: stable ridges of sand, almost completely vegetated. The vegetation is very variable in species composition; *Ammophila arenaria* is usually present, but not dominant, mosses and lichens may be frequent. Grey dune can be distinguished from fixed dune by being markedly hilly or undulating, and by the sand not being fully consolidated.

**8.8 MARITIME CLIFF AND SLOPE**

**8.8.1 Maritime Hard Cliff**

Cliffs formed on rock (including chalk) with <10% vascular plant cover.

**8.8.2 Maritime Soft Cliff**

Cliffs formed of mud or soft clay with <10% vascular plant cover.

**8.8.3 Crevice and Ledge Vegetation**

Vegetation, occasionally sparse, but covering at least 10% of the cliff surface, occurring in crevices or on ledges on steep cliffs, including vegetation occurring in the splash zone at the base of the cliffs

**8.8.4 Coastal Grassland**

Grasslands which include maritime species and which occur on shallow slopes or level areas by the sea, often on cliff tops (but see Dune Grassland). Indicator species include *Scilla verna*, *Plantago maritima* and *Armeria maritima*. *Festuca rubra* is often dominant. Other species may include *Hieracium pilosella*, *Anthyllis vulneraria*, *Lotus corniculatus*, *Galium verum* and *Thymus praecox*.

**8.8.5 Coastal Heathland**

All heathlands which include maritime species and which occur on shallow slopes, or even level areas, by the sea should be included in this category (but see Dune Heath). Indicator species include *Scilla verna*, *Armeria maritima*, *Jasione montana*, *Plantago maritima* and *Plantago coronopus*. *Calluna vulgaris* is often dominant; *Erica cinerea* and dwarf *Ulex* species are frequently present. Coastal Heathland often occurs just inland of Coastal Grassland, and like that category, frequently occurs at the top of cliffs.

**9 ROCK EXPOSURE AND WASTE**

Includes both natural and artificial exposed rock surfaces where these are almost entirely lacking in vegetation, as well as various forms of excavations and waste tips. See also Maritime Cliff and Slope.

**9.1 NATURAL EXPOSURES**

**9.1.1 Inland Cliff**

Rock surfaces >2 m high and sloping at >60°. Vegetated cliffs with >10% vascular plant cover are mapped using the relevant vegetation code.

**9.1.1.1 Inland Cliff - Acid/Neutral rock**

**9.1.1.2 Inland Cliff - Basic rock**

**9.1.2 Scree**

Accumulation, usually at the foot of a cliff of weathered rock fragments of all sizes, mostly angular in shape, including large boulders (boulder scree).

**9.1.2.1 Scree - Acid/Neutral rock**

**9.1.2.2 Scree - Basic rock**

**9.1.3 Limestone Pavement**

Near-horizontal surfaces, usually of Carboniferous limestone, irregularly corrugated and furrowed by solution and often cut by deeper and more regular fissures (grikes), which correspond to naturally occurring rock joints.

**9.1.4 Other Exposure**

Including, for example, exposed rock on mountain tops and in river beds.

**9.1.4.1 Other Exposures - Acid/Neutral rock**

**9.1.4.2 Other Exposures - Basic rock**

**9.1.5 Cave**

Any natural recess, large enough to enter and with a complete ceiling. Large crevices and deep narrow gullies are mapped under Other Habitats.

**9.2 ARTIFICIAL EXPOSURES AND WASTE TIPS**

Vegetation, if abundant, is coded under the appropriate category.

**9.2.1 Quarry**

Excavations such as gravel, sand or chalk pits and stone quarries. If the site is water-filled, map as Open Water.

9.2.2 Spoil

Includes abandoned industrial areas and tips of waste material such as coal mine spoil and slag. Spoil heaps within quarries are included in 9.2.1.

9.2.3 Mine

9.2.4 Refuse tip

10 MISCELLANEOUS

10.1 CULTIVATED/DISTURBED LAND

10.1.1 Arable

Includes arable cropland, horticultural land (for example nurseries, vegetable plots, flower beds), freshly-ploughed land and recently reseeded grassland, such as rye grass and rye clover leys, often managed for silage.

10.1.2 Amenity Grassland

Comprises intensively managed and regularly mown grasslands, typical of lawns, playing fields, golf course fairways and many urban 'savannah' parks, in which *Lolium perenne*, with or without *Trifolium repens*, often predominates. The sward composition will depend on the original seed mixture used and on the age of the community. Herbs such as *Bellis perennis*, *Plantago major* and *Taraxacum officinale* may be present. If the amenity grassland has a sward rich in herbs, it may be possible to classify it as Semi-Improved Acidic, Neutral or Calcareous Grassland, as appropriate.

10.1.3 Ephemeral/Short Perennial

Short, patchy plant associations typical of derelict urban sites, quarries and railway ballast. The land must be freely draining, and usually has shallow, stony soil. The vegetation typically lacks a clear dominant species, but consists of a mixture of low-growing plants, often <25 cm high, such as *Plantago major*, *Ranunculus repens*, *Trifolium repens*, *Medicago lupulina*, *Tussilago farfara*, *Leucanthemum vulgare* and *Senecio* species, or of taller species such as *Sisymbrium* or *Melilotus* species. Parts of fields, such as areas around gates, that contain similar communities are classified as Grassland. See also Tall Ruderal.

10.1.4 Introduced Shrub

Vegetation dominated by shrub species that are not locally native, whether planted or self-sown. Common introduced shrubs include species of *Buxus*, *Cornus*, *Laurus*, *Ligustrum*, *Rhododendron* and *Symphoricarpos*. Formal beds of shrubs such as of *Hypericum calycinum*, *Cotoneaster*, heaths and dwarf conifers are included. Introduced shrubs forming an understorey in woodland are mapped as Woodland. Introduced shrub on sand dunes is classified as Dune Scrub. See also Scrub.

## 10.2 BOUNDARIES

Grassy road verges, railway cuttings and embankments are mapped as Grassland. Where they are dominated by trees or scrub they are categorised as Woodland.

### 10.2.1 Intact Hedge

Entire and more-or-less stock-proof.

#### 10.2.1.1 Native Species-rich Intact Hedge

These have a diversity of native woody species and a good hedgerow bottom flora.

#### 10.2.1.2 Species-poor Intact Hedge

### 10.2.2 Defunct Hedge

Hedges in which there are gaps and which are no longer stock-proof.

#### 10.2.2.1 Native Species-rich Defunct Hedge

These have a diversity of native woody species and a good hedgerow bottom flora.

#### 10.2.2.2 Species-poor Defunct Hedge

### 10.2.3 Hedgerow with Trees

Windbreaks are classified under Parkland and Scattered Trees

#### 10.2.3.1 Native Species-rich Hedgerow with Trees

These have a diversity of native woody species and a good hedgerow bottom flora.

#### 10.2.3.2 Species-poor Hedgerow with Trees

### 10.2.4 Fence

### 10.2.5 Wall

### 10.2.6 Dry Ditch

Includes only ditches which appear to be dry for most of the year. Wet ditches are mapped as Standing Water or possibly Swamp.

### 10.2.8 Earth Bank

Includes the ditch/bank systems found on ancient woodland sites and sea walls constructed of natural materials.

## Dictionary of Land Cover Surveys & Definitions

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### 10.3 BUILT-UP AREAS

#### 10.3.4 Caravan site

#### 10.3.5 Sea Wall

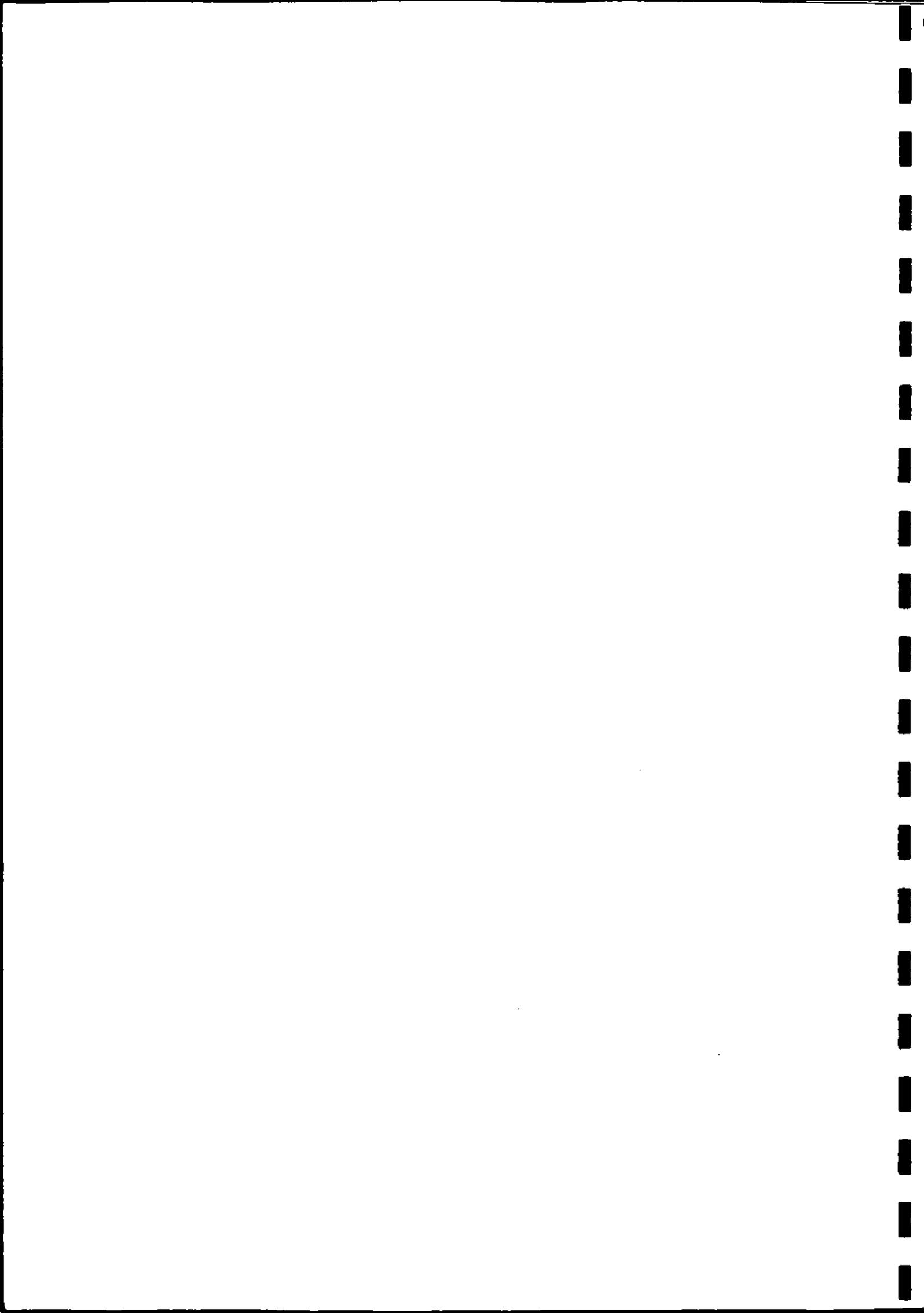
Includes only sea walls constructed of artificial materials (for example concrete): others should be mapped as Earth Banks.

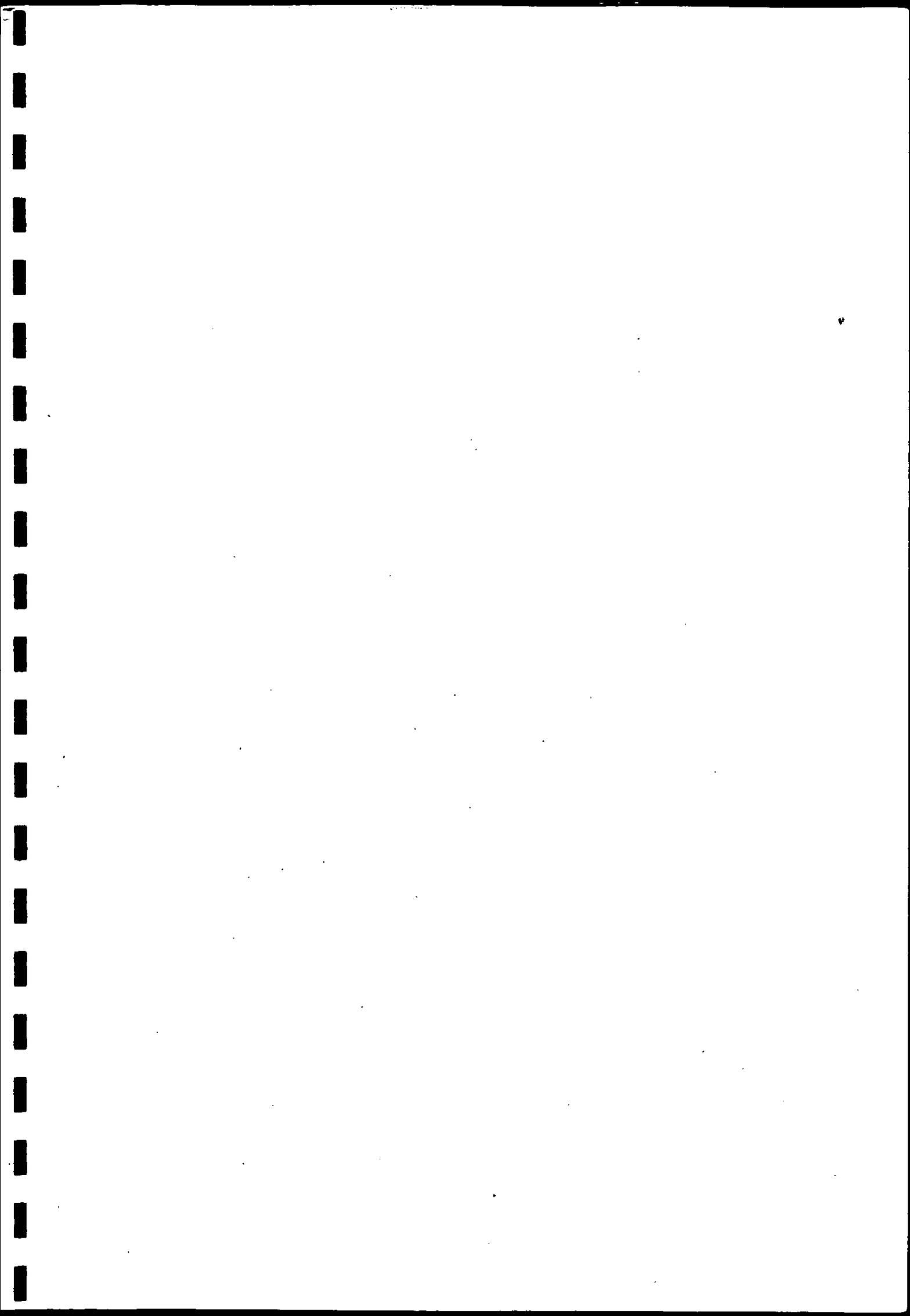
#### 10.3.6 Buildings

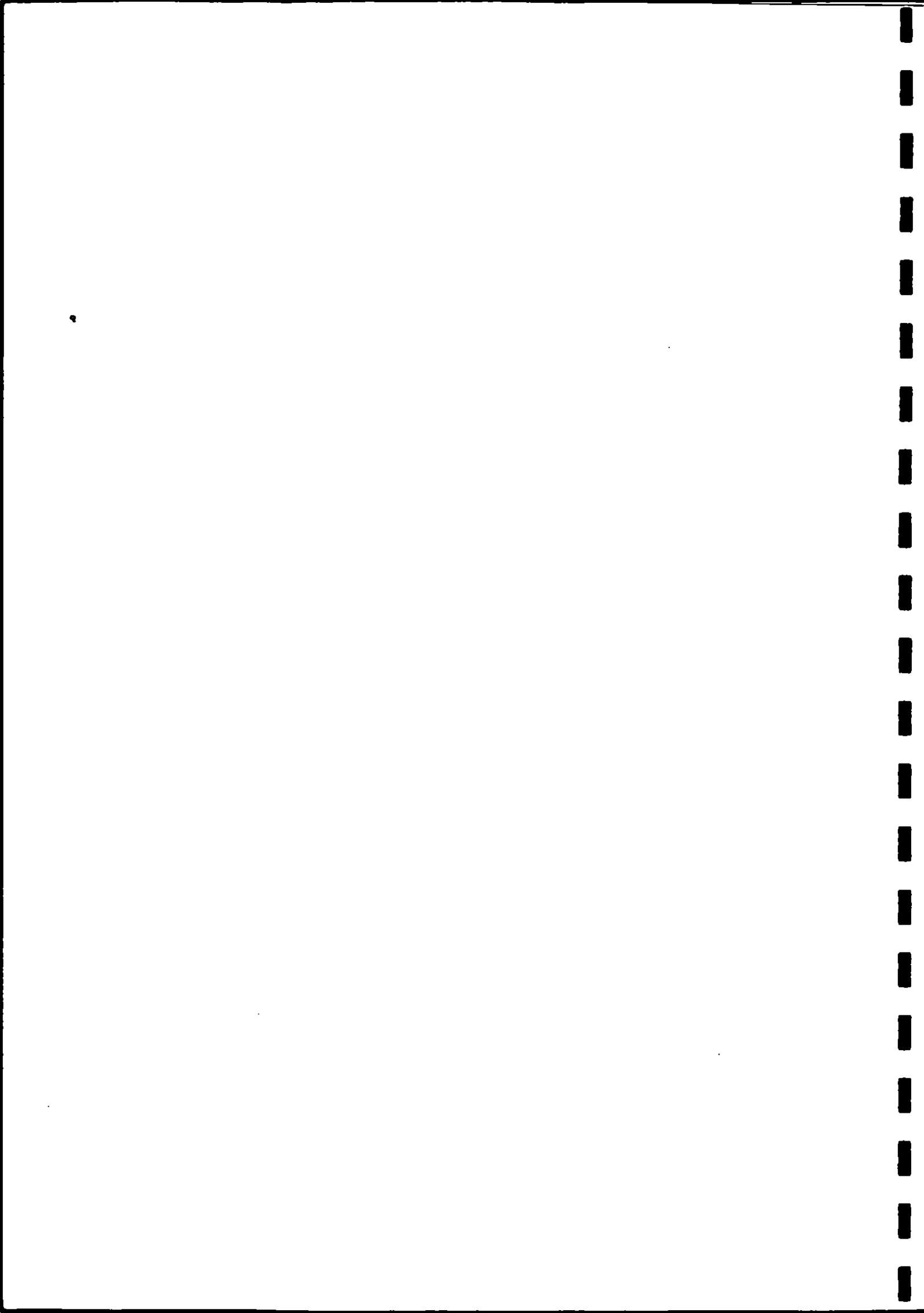
### 10.4 BARE GROUND

Includes any type of bare soil or other substrate not covered elsewhere (compare Bare Peat, Intertidal, Shingle, Boulders and Rocks, Dunes, Maritime Cliff and Natural Rock Exposure).

### 10.5 OTHER HABITAT







Dictionary of Land Cover Surveys & Definitions

<b>SURVEY NUMBER</b>	17
<b>NAME OF SURVEY</b>	NATIONAL VEGETATION CLASSIFICATION
<b>COMMISSIONING AGENT</b>	NATURE CONSERVANCY COUNCIL, subsequently the JOINT NATURE CONSERVATION COMMITTEE.
<b>EXECUTING AGENT</b>	UNIVERSITY OF LANCASTER, with subcontractual arrangements with the Universities of Cambridge, Exeter and Manchester.
<b>CONTACT</b>	Unit of Vegetation Science Lancaster University LANCASTER LA1 4YQ  Tel: Lancaster (0524) 65201 Fax: .. 843854  Present Contact: Dr. John S. Rodwell (co-ordinator).
<b>OBJECTIVES</b>	<p>To produce a systematic and comprehensive classification of British vegetation types (plant communities), according to their phytosociological associations based on the meticulous sampling of homogenous stands of the vegetation of natural, semi-natural and major artificial habitats throughout Great Britain.</p> <p>This was to fulfil the need for an overall framework of classification both to integrate a wide variety of ecological research on plants within a generally accepted understanding of their vegetational context, and to provide a basis for the systematic selection of habitats for conservation in Britain.</p>
<b>PERIOD OF SURVEY</b>	
Start	August 1975.
End	1990, with continuing publication
<b>SURVEY METHOD</b>	<p>Literature review to ascertain the precise extent and character of existing coverage of vegetation.</p> <p>Field sampling of homogenous stands of vegetation throughout Great Britain by a team of trained field workers. Data were recorded in quadrats. Quadrat shape and size was determined by the structure and scale of the vegetation stands being sampled. Much other relevant information, including topographic, soil and management data, was also recorded.</p> <p>A quantitative measure of the abundance of all vascular plants, bryophytes and macrolichens, was recorded using the Domin scale.</p>

## Dictionary of Land Cover Surveys & Definitions

### GEOGRAPHICAL CHARACTERISTICS

Area of Survey	Great Britain
Sampling frame	Selective sampling within the complete range of vegetation types in Great Britain, covering all terrestrial plant communities and those of brackish and fresh waters, except where non-vascular plants were the dominants. However many immature communities are not covered.
Sampling unit	Homogeneous stands of vegetation.
Recording unit	Quadrats, from 2 x 2 m to 50 x 50 m.
Scale of input data	Quadrat sizes were 2 x 2 m for most short herbaceous vegetation and dwarf shrub heaths; 4 x 4 m for taller or more open herb communities, sub-shrub heaths and low woodland field layers; 10 x 10 m for species-poor or very tall herbaceous vegetation or woodland field layers and dense scrub; and 50 x 50 m for sparse scrub, and woodland canopy and understorey. Linear vegetation, like that in streams, ditches, the hedgerow field layer and on walls, was sampled in 10 m strips, with 30 m strips for hedgerow shrubs and trees.
Scale of output	10 x 10 km National Grid distribution maps for most plant communities.
Resolution	
Accuracy and error	

### DATA STORAGE/ANALYSIS

Data were analyzed using a variety of multivariate techniques designed to test for similarity between samples. Data forms the basis of the UK Vegetation Data-base, being upgraded on to a Geographic Information System at Lancaster.

### DATA AVAILABILITY

### FORMS OF OUTPUT

Classification and descriptions of all vegetation types published in five volumes, with details of vegetation composition and structure, relationships to habitat, zonation and successions, distribution and affinities with related plant communities in Europe. National Vegetation Classification Field Manual and User's Guide plus related software, including an expert system, also available.

### PUBLICATION DATE(S)

1991-93

### REFERENCES

- Rodwell, J.S. (1991). *British plant communities. Volume 1: Woodlands and scrub*. Cambridge University Press, Cambridge. 395 pp.
- Rodwell, J.S. (1991). *British plant communities. Volume 2: Mires and heaths*. Cambridge University Press, Cambridge. 628 pp.

17

National Vegetation Classification

Land cover / use categories and definitions

1. AQUATIC COMMUNITIES

1.1 FLOATING AQUATIC

- 1.1.A.1 Lemna gibba
- 1.1.A.2 Lemna minor
- 1.1.A.3 Spiro poly-Hydro mors
- 1.1.A.4 Hydro mors-Strat aloj

1.2 AQUATIC MACROPHYTES

- 1.2.A.5 Ceratophyllum demersum
- 1.2.A.7 Nymphaea alba
- 1.2.A.8 Nuphar lutea
- 1.2.A.9 Potamogeton natans
- 1.2.A.10 Polygonum amphibium
- 1.2.A.11 Potam pect-Myrio spic
- 1.2.A.12 Potamogeton pectinatus
- 1.2.A.13 Potam perf-Myrio alte
- 1.2.A.14 Myriophyllum alternif
- 1.2.A.15 Elodea canadensis
- 1.2.A.16 Callitriche stagnalis
- 1.2.A.17 Ranunc penicillatus
- 1.2.A.18 Ranunculus fluitans
- 1.2.A.19 Ranunculus aquatilis
- 1.2.A.20 Ranunculus peltatus
- 1.2.A.21 Ranunculus baudotii
- 1.2.A.22 Littorella-Lobelia
- 1.2.A.23 Isoetes lacustr/setac
- 1.2.A.24 Juncus bulbosus

2. CALCICOLOUS GRASSLAND AND DWARF-SHRUB VEGETATION

2.1 CALCAREOUS GRASSLAND

- 2.1.CG.1 Fest ovina-Carlina vulg
- 2.1.CG.2 Fest ovina-Avenula prat
- 2.1.CG.3 Bromus erectus
- 2.1.CG.4 Brachypodium pinnatum
- 2.1.CG.5 Brom erect-Brach pinnat
- 2.1.CG.6 Avenula pubescens
- 2.1.CG.7 Fest ovi-Hier pil-Thym
- 2.1.CG.8 Sesleria-Scabios columb
- 2.1.CG.9 Sesleria-Gal sternerj
- 2.1.CG.10 Fest ovi-Agro cap-Thym
- 2.1.CG.11 Fes ovi-Agr cap-Alc alp
- 2.1.CG.12 Fes ovi-Alc alp-Sil aca

2.2 **CALCICOLOUS DWARF-SHRUB VEGETATION**

2.2.CG.13 Dryas oct-Carex flacca  
 2.2.CG.14 Dryas oct-Silene acaul

3. **HEATHS**

3.1 **COASTAL AND LOWLAND HEATH**

3.1.H.1 Calluna-Fest ovin heath  
 3.1.H.2 Callun-Ulex minor heath  
 3.1.H.3 Ulex min-Agr curt heath  
 3.1.H.4 Ulex gal-Agr curt heath  
 3.1.H.5 Eric vag-Schoenus heath  
 3.1.H.6 Eric vag-Ulex eur heath  
 3.1.H.7 Calluna-Scil vern heath  
 3.1.H.8 Calluna-Ulex gall heath  
 3.1.H.9 Calluna-Desc flex heath  
 3.1.H.10 Calluna-Eric cine heath  
 3.1.H.11 Calluna-Care aren heath

3.2 **SUBMONTANE AND MONTANE HEATH**

3.2.H.12 Calluna-Vacc myrt heath  
 3.2.H.13 Calluna-Clad arbu heath  
 3.2.H.14 Calluna-Raco lanu heath  
 3.2.H.15 Calluna-Juni nana heath  
 3.2.H.16 Calluna-Arct uva- heath  
 3.2.H.17 Calluna-Arct alpi heath  
 3.2.H.18 Vacc myr-Desc fle heath  
 3.2.H.19 Vacc myr-Clad arb heath  
 3.2.H.20 Vacc myr-Raco lan heath  
 3.2.H.21 Cal vul-Vac myr-Sph cap  
 3.2.H.22 Vac myrt-Rub cham heath

4. **MIRES**

4.1 **BOG POOLS**

4.1.M.1 Sph aur bog pool  
 4.1.M.2 Sph cusp/rec bog pool  
 4.1.M.3 Erioph angu bog pool

4.2 **SEDGE FLUSHES (small sedges, Carex rostrata, Schoenus nigricans)**

4.2.M.4 Carex rostr-Sph rec  
 4.2.M.5 Carex rostr-Sph squarr  
 4.2.M.6 Carex echin-Sph rec/aur  
 4.2.M.7 Carex curta-Sph russ  
 4.2.M.8 Carex rostr-Sph warust  
 4.2.M.9 Carex rostr-Calli cusp  
 4.2.M.10 Carex dioic-Ping vulg  
 4.2.M.11 Carex demis-Saxi alzo  
 4.2.M.12 Carex saxatilis mire  
 4.2.M.13 Schoen nigr-Junc subno

4.3 BLANKET BOG AND WET HEATH

4.3.M.14	<u>Schoen nigr-Narthecium</u>
4.3.M.15	<u>Scirpu cesp-Eric tetr</u>
4.3.M.16	<u>Erica tetr-Spha comp</u>
4.3.M.17	<u>Scirp cesp-Erio vagi</u>
4.3.M.18	<u>Erica tetr-Spha papi</u>
4.3.M.19	<u>Calluna-E vag blanket b</u>
4.3.M.20	<u>Erioph vag blanket/rais</u>
4.3.M.21	<u>Narth ossi-Spha papi</u>

4.4 WET GRASS AND TALL HERBS

4.4.M.22	<u>Junc subnod-Cirsi palu</u>
4.4.M.23	<u>Junc eff/acfl-Gal palu</u>
4.4.M.24	<u>Molinia-Cirs dissectum</u>
4.4.M.25	<u>Molinia-Pot erecta mire</u>
4.4.M.26	<u>Molinia-Crepis paludosa</u>
4.4.M.27	<u>Filipend vulg-Ange sylv</u>
4.4.M.28	<u>Iris pseudac-Fili ulma</u>

4.5 SPRING AND FLUSH-FRINGE VEGETATION

4.5.M.29	<u>Hyper elodes-Pota poly</u>
4.5.M.31	<u>Anthelia-Sph aur spring</u>
4.5.M.32	<u>Philo font-Saxif stell</u>
4.5.M.33	<u>Pohlia wahlenb spring</u>
4.5.M.34	<u>Carex demi-Koen island</u>
4.5.M.35	<u>Ranun omio-Mont font</u>
4.5.M.37	<u>Craton comm-Fest rubr</u>
4.5.M.38	<u>Craton comm-Care nigr</u>

5. MARITIME CLIFF COMMUNITIES

5.1 SEA-CLIFF VEGETATION

5.1.MC.1	<u>Crith mar-Sperg rupicol</u>
5.1.MC.2	<u>Armer mar-Ligustic scot</u>
5.1.MC.3	<u>Rhodi ros-Armeria marit</u>
5.1.MC.4	<u>Brassica oleracea cliff</u>
5.1.MC.5	<u>Armer mar-Cerast diffus</u>

5.2 BIRD-CLIFF AND OTHER EUTROPHIC MARITIME CLIFF VEGETATION

5.2.MC.6	<u>Atrip hast-Beta vulgar</u>
5.2.MC.7	<u>Stell med-Rum acetosa</u>

5.3 CLIFF AND SALT-INFLUENCED MARITIME GRASSLAND

5.3.MC.8	<u>Fest rubra-Armer marit</u>
5.3.MC.9	<u>Fest rubra-Holcu lanat</u>
5.3.MC.10	<u>Fest rubra-Plantago spp</u>
5.3.MC.11	<u>Fest rubra-Daucus carot</u>
5.3.MC.12	<u>Fest rubra-Hyacin non-s</u>

6. MESOTROPHIC GRASSLAND

6.1 COARSE GRASSLAND

6.1.MG.1 Arrhenatherum elatius

6.2 MANAGED PERMANENT GRASSLAND

6.2.MG.2 Filip ulm-Arrhen elat  
 6.2.MG.3 Anthox odo-Geran sylv  
 6.2.MG.4 Alopec pra-Sangui offi  
 6.2.MG.5 Cynos cris-Centaur nigr  
 6.2.MG.6 Lolium per-Cynos cris  
 6.2.MG.8 Cynos cris-Caltha palu  
 6.2.MG.9 Holc lana-Desch cespit  
 6.2.MG.10 Holc lana-Junc effusus

6.3 GRASSY FLOOD-SWARDS

6.3.MG.11 Fes rub-Agr sto-Pot ans  
 6.3.MG.12 Festuca arundinacea  
 6.3.MG.13 Agro stol-Alop genicul

7. SWAMPS AND TALL-HERB FENS

7.1 SEDGE AND GRASS SWAMPS AND EMERGENT VEGETATION OF WATER MARGINS

7.1.S.1 Carex elata swamp  
 7.1.S.2 Cladium mariscus swamp  
 7.1.S.3 Carex paniculata swamp  
 7.1.S.5 Glyceria maxima swamp  
 7.1.S.6 Carex riparia swamp  
 7.1.S.7 Carex acutiformis swamp  
 7.1.S.8 Scirpus lacustris swamp  
 7.1.S.9 Carex rostrata swamp  
 7.1.S.10 Equiset fluviatil swamp  
 7.1.S.11 Carex vesicaria swamp  
 7.1.S.12 Typha latifolia swamp  
 7.1.S.13 Typha angustifol swamp  
 7.1.S.14 Sparganium erect swamp  
 7.1.S.15 Acorus calamus swamp  
 7.1.S.16 Sagittaria sagitt swamp  
 7.1.S.17 Carex pseudocyp swamp  
 7.1.S.18 Carex otrubae swamp  
 7.1.S.19 Eleocharis palustris swamp  
 7.1.S.20 Scirpus tabern swamp  
 7.1.S.21 Scirpus maritimus swamp  
 7.1.S.22 Glycer fluit water-marg  
 7.1.S.23 Other water-margin veg

7.2 TALL-HERB FENS

7.2.S.24 Phra-Peuc tall-herb fen  
 7.2.S.25 Phragmit-Eupatorium fen  
 7.2.S.26 Phragmites-Urtica fen  
 7.2.S.27 Carex rost-Pote pal fen  
 7.2.S.28 Phalaris arundinac fen

8. SAND-DUNE, STRANLINE & SHINGLE COMMUNITIES

8.1 STRANLINE AND SHINGLE VEGETATION

8.1.SD 1 Rumex cris-Glauc flavum  
 8.1.SD 2 Honke pepI-Cakile marit  
 8.1.SD 3 Matri mari-Galium apar

8.2 MOBILE DUNE GRASSLAND AND ALLIED AMMOPHILA VEGETATION

8.2.SD.4 Elymus farctus  
 8.2.SD.5 Leymus arenarius  
 8.2.SD.6 Ammophila arenaria  
 8.2.SD.7 Ammoph aren-Fest rubra

8.3 FIXED DUNE GRASSLAND

8.3.SD.8 Fest rubra-Galium verum  
 8.3.SD.9 Ammoph aren-Arrhen elat  
 8.3.SD.10 Carex arenaria  
 8.3.SD.11 Carex aren-Cornic acul  
 8.3.SD.12 Car are-Fes ovi-Agr cap

8.4 DUNE SLACK AND ALLIED SALIX REPENS VEGETATION

8.4.SD.13 Salix repe-Bryum pseudo  
 8.4.SD.14 Salix repe-Campyl stell  
 8.4.SD.15 Salix repe-Call cuspid  
 8.4.SD.16 Salix repe-Hole lanatus  
 8.4.SD.17 Poten anse-Carex nigra

8.5 DUNE SCRUB

8.5.SD.18 Hippophae rhamnoides

9. SALTMARSH

9.1 INTERTIDAL FLATS

9.1.SM.1 Zostera  
 9.1.SM.2 Ruppia maritima  
 9.1.SM.3 Eleocharis parvula

9.2 LOWER AND MIDDLE SALTMARSH

9.2.SM.4 Spartina maritima  
 9.2.SM.5 Spartina alterniflora  
 9.2.SM.6 Spartina anglica  
 9.2.SM.7 Arthrocnemum perenne  
 9.2.SM.8 Annual Salicornia  
 9.2.SM.9 Suaeda maritima  
 9.2.SM.10 Transitional low marsh  
 9.2.SM.11 Aster trip discoideum

9.3 UPPER SALTMARSH AND SALT MEADOWS

9.3.SM.13	<u>Puccinellia salt-marsh</u>
9.3.SM.14	<u>Halimione portulacoides</u>
9.3.SM.15	<u>Junc marit-Trigloch mar</u>
9.3.SM.16	<u>Juncus gerardii</u>
9.3.SM.17	<u>Artemisia maritima</u>
9.3.SM.18	<u>Juncus maritimus</u>
9.3.SM.19	<u>Blysmus rufus</u>
9.3.SM.20	<u>Eleocharis uniglumis</u>
9.3.SM.21	<u>Suaed vera-Limon binerv</u>
9.3.SM.22	<u>Halim port-Frankenia</u>
9.3.SM.23	<u>Sperg mari-Pucci dist</u>

9.4 SALTMARSH DRIFTLINE VEGETATION

9.4.SM.24	<u>Elymus pycnanthus</u>
9.4.SM.25	<u>Suaeda vera drift-line</u>
9.4.SM.26	<u>Inula crithmoides</u>
9.4.SM.28	<u>Elym repens salt-marsh</u>

10. CALCIFUGOUS GRASSLANDS AND MISCELLANEOUS UPLAND COMMUNITIES

10.1 ACID GRASSLAND

10.1.U.1	<u>Fes ovi-Agr cap-Rum acf</u>
10.1.U.2	<u>Deschampsia flexuosa</u>
10.1.U.3	<u>Agrostis curtisii</u>
10.1.U.4	<u>Fes ovi-Agr cap-Gal sax</u>
10.1.U.5	<u>Nardus str-Galium saxat</u>
10.1.U.6	<u>Junc squarr-Fest ovina</u>

10.2 MONTANE GRASSLAND AND ALLIED COMMUNITIES

10.2.U.7	<u>Nardus str-Carex bigel</u>
10.2.U.8	<u>Car bigel-Poly alpinum</u>
10.2.U.9	<u>Junc trifid-Rac lanugin</u>
10.2.U.10	<u>Car bigelow-Rac lanugin</u>

10.3 SNOW-PATCH VEGETATION

10.3.U.11	<u>Polyt sexa-Kisleria star</u>
10.3.U.12	<u>Salix herb-Racom hetero</u>
10.3.U.13	<u>Desch cesp-Galium saxat</u>
10.3.U.14	<u>Alchem alp-Sibbald proc</u>

10.4 FERN, CLIFF-LEDGE AND WET ROCK COMMUNITIES

10.4.U.15	<u>Saxif alzo-Alchem glabr</u>
10.4.U.16	<u>Luzul sylv-Vaccin myrt</u>
10.4.U.17	<u>Luzul sylv-Genm rivale</u>
10.4.U.18	<u>Crypt cris-Athy disten</u>
10.4.U.19	<u>Thely limb-Blec spican</u>
10.4.U.20	<u>Pteri aqul-Galium saxat</u>

Dictionary of Land Cover Surveys & Definitions

10.5 ROCK AND SCREE COMMUNITIES (numbering provisional)

10.5.U.21	<u>Crypt cris-Desch flexu</u>
10.5.U.22	<u>Asple tric-Asple ruta-m</u>
10.5.U.23	<u>Asple viri-Cysto fragil</u>
10.5.U.24	<u>Arrhen ela-Geran robert</u>

11. WOODLANDS AND SCRUB

11.1 SALLOW AND WILLOW CARR

11.1.W.1	<u>Salix cin-Gal palu wood</u>
11.1.W.2	<u>Sal cin-Bet pub-Phr aus</u>
11.1.W.3	<u>Sal pent-Car rostr wood</u>

11.2 WET BIRCH AND ALDER WOOD

11.2.W.4	<u>Bet pubesc-Molinia wood</u>
11.2.W.5	<u>Alnus gl-Carex panicul</u>
11.2.W.6	<u>Aln glut-Urtic dio wood</u>
11.2.W.7	<u>Aln glu-Fra exc-Lys nem</u>

11.3 ASH, HAZEL, MAPLE, ROWAN AND ALLIED BASIC WOODLAND

11.3.W.8	<u>Fra exc-Ace cam-Mer per (subcomms a-d)</u>
11.3.W.9	<u>Fra exc-Sor auc-Mer per</u>

11.4 MEOSOPHILOUS MIXED BROADLEAF WOODLAND (often oak dominated)

11.4.W.10	<u>Que rob-Pte agu-Rub fru</u>
11.4.W.11	<u>Que pet-Bet pub-Oxa ace</u>

11.5 CALCAREOUS BEECHWOOD AND ALLIED YEW WOODLAND

11.5.W.12	<u>Fagus syl-Merc per wood</u>
11.5.W.13	<u>Taxus baccata woodland</u>

11.6 ACID BEECHWOOD

11.6.W.14	<u>Fagus syl-Rubus fr wood</u>
11.6.W.15	<u>Fagus syl-Des flex wood</u>

11.7 UPLAND OAK AND BIRCH WOOD

11.7.W.16	<u>Que spp-Bet spp-Des fle</u>
11.7.W.17	<u>Que pet-Bet pub-Dic maj</u>

11.8 NATIVE PINE AND JUNIPER WOOD

11.8.W.18	<u>Pinus syl-Hyl sple wood</u>
11.8.W.19	<u>Junip com-Oxal ace wood</u>

**11.9 SUBARCTIC WILLOW SCRUB**

11.9.W.20                      Salix lap-Luz syl scrub

**11.10 THORNY SCRUB THICKETS AND AREAS OF RECOLONIZATION**

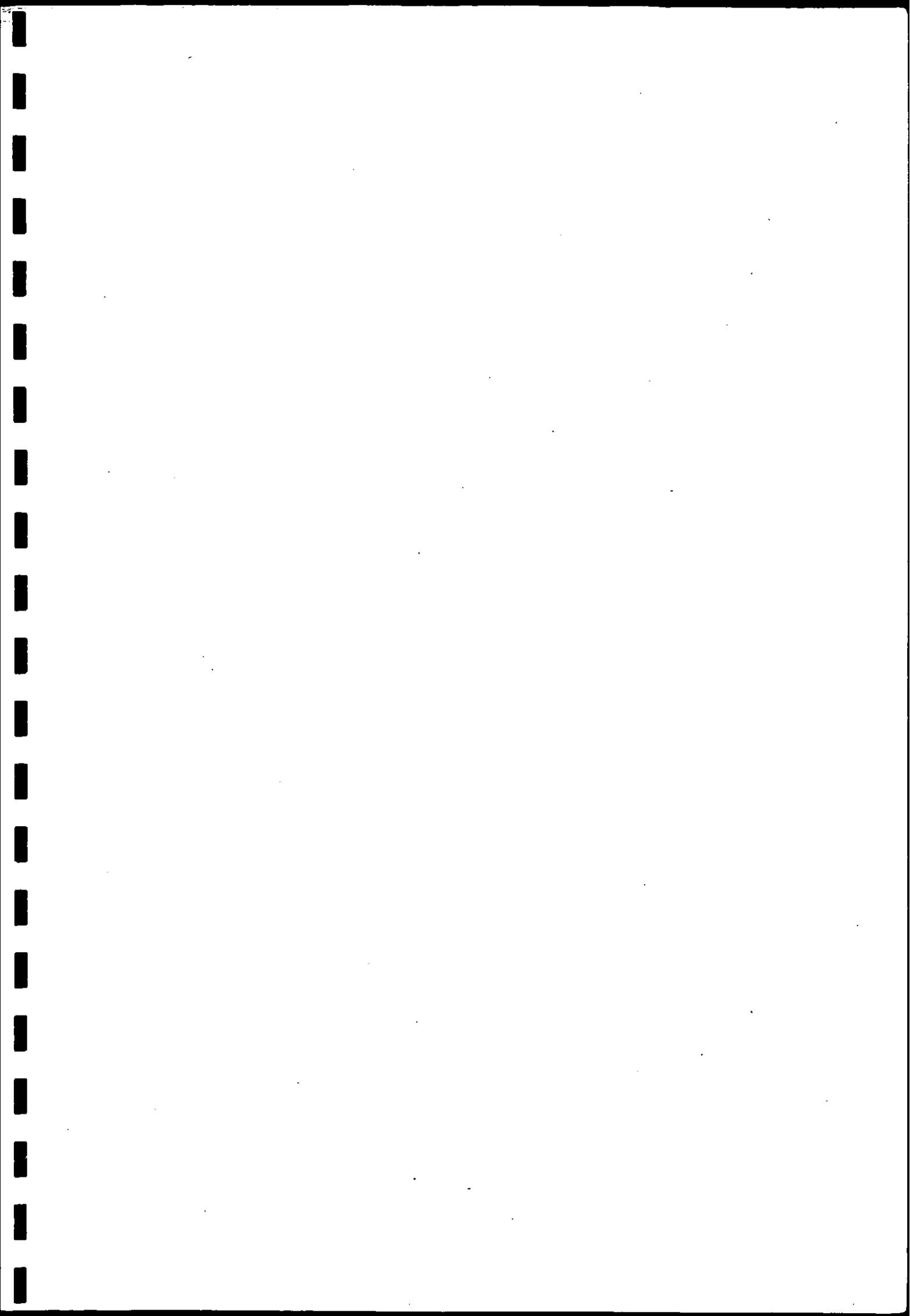
11.10.W.21                  Crat mono-Hedera scrub

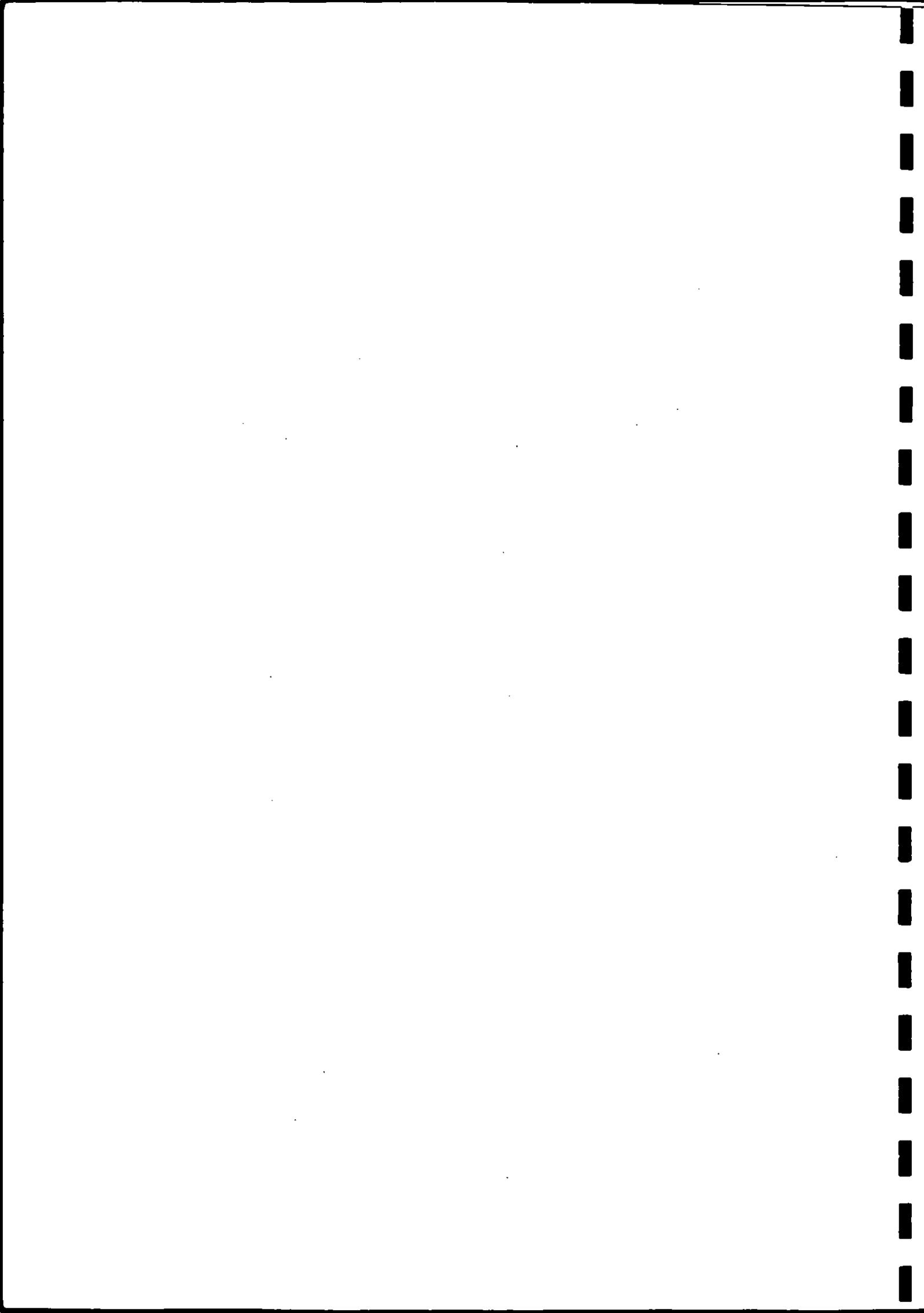
11.10.W.22                  Prun spin-Rubus scrub

11.10.W.23                  Ulex euro-Rub fr scrub

11.10.W.24                  Rub fr-Hol la undersch

11.10.W.25                  Pte aq-Rub fr undersch





ITE has administrative headquarters north and south, and the geographical distribution of its 250 staff in six Research Stations throughout Britain allows efficient use of resources for regional studies and provides an understanding of local ecological and land use characteristics.

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#### **ITE NORTH**

**Edinburgh Research Station**  
and ITE(N) Directorate  
Bush Estate  
Penicuik  
Midlothian EH26 0QB  
Tel: 031 445 4343; Telex 72579  
Fax: 031 445 3943

**Banchory Research Station**  
Hill of Brathens  
Glassel  
Banchory  
Kincardineshire AB31 4BY  
Tel: 033 02 3434  
Fax: 033 02 3303

**Merlewood Research Station**  
Grange-over-Sands  
Cumbria LA11 6JU  
Tel: 05395 32264; Telex 65102  
Fax: 05395 34705

#### **ITE SOUTH**

**Monks Wood**  
and ITE(S) Directorate  
Abbots Ripton  
Huntingdon  
Cambs PE17 2LS  
Tel: 048 73 381; Telex 32416  
Fax: 048 73 467

**Bangor Research Unit**  
University College of North Wales  
Deiniol Road  
Bangor  
Gwynedd LL57 2UP  
Tel: 0248 370045; Telex 61224  
Fax: 0248 355365

**Furzebrook Research Station**  
Wareham  
Dorset BH20 5AS  
Tel: 0929 551518  
Fax: 0929 551087

The ITE Research Marketing Officers for ITE North and South are based at Banchory and Monks Wood, respectively.

