A LANDSCAPE ECOLOGICAL STUDY OF

FERMANAGH DISTRICT

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COVER ILLUSTRATION: JANUS FIGURE OF BOA ISLAND

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SUMMARY

1. A landscape and ecological survey of Fermanagh District was carried out during 1989 and 1990. The objectives of the work were to:

    1. Produce a land classification and framework for the assessment of landscape and ecological resources.

    2. Quantify the distribution of land use, ecological resources and landscape attributes.

    3. Describe the structure, composition and management of these resources.

    4. Identify associated environmental problems and discuss management options.

    5. Prepare a computerised database and map archive for monitoring environmental change.

2. A multivariate land classification of kilometre grid squares within the study area yielded 6 groups of land classes summarising the main elements of landscape variation. Local patterns of land class distribution and land class clusters were further used to divide the study area into 16 geographically distinct landscape units.

3. Quantitative field survey of landscape and ecological resources was carried out using a random sample of 165, 25ha sample squares stratified by land class group and landscape unit. Within each square, land use and linear features were recorded under the main headings of woodland, seminatural vegetation, field boundaries, agriculture and landscape attributes. Data were recorded as a map archive on field data sheets and as a microcomputer database.

4. Seminatural woodland occurs particularly as isolated parcels associated with agricultural land, limestone escarpments and land at lake margins. Species composition is often diverse and varied. It is subject to clearance for agriculture and is often heavily grazed and poached. Coniferous plantation is a prominent feature of upland areas in the North-West and South- East.

Although these plantations are often quite well landscaped their large size makes them obtrusive. Small to intermediate sized plantations are common in other areas. Woodland is also a feature of estate land.

5. Seminatural vegetation other than woodland occupies 23.1% of the land area. Farmed land often has little seminatural vegetation associated with it. Calcareous grassland occurs on the limestone escarpment and plateau areas in the North- West. Lakeland margin and ditch vegetation is abundant fringing Upper Lough Erne and many small loughs. Species rich wet grassland is found in low lying areas, interdrumlin hollows and as field parcels. It is particularly abundant in West Fermanagh as is fen meadow. Species rich wet grassland is often cut for hay in mid-summer. Upland vegetation mainly consists of heath, heath mosaic, poor fen and bog. It is a resource that has been heavily exploited partly because of its accessibility. Potential losses of seminatural vegetation come from afforestation, reclamation and the application of fertilizer and herbicides.

6. Soils, weather and topography are major constraints on agriculture in Fermanagh District. Soils are often waterlogged and low in fertility. Agriculture is a major feature accounting for 56.1% of land area. This mainly consists of agricultural grassland much of it unimproved and rush infested. Arable production is mainly restricted to the eastern lowlands. Hay making is still a common agricultural practice. Much agricultural improvement comes about by judicious management of existing grassland rather than by reseeding. Improvement is often accompanied by boundary removal. Socio-economic factors also play an important part in determining land use and farming practice.

7. Hedgebanks with scattered or overgrown shrubs are widespread particularly in the lowlands. Ash, willow and alder trees are a major component of them together with hawthorn, blackthorn and holly. Only a minority of hedges are actively managed. Banks are also relatively common but less so at lower elevation. Post and wire fencing is found throughout the district. Many boundaries have been lost through boundary removal (mainly at lower elevation) and through afforestation (mainly at higher elevation). Walls are not a feature of Fermanagh District except in the limestone escarpment and plateau areas where they are mostly derelict. Ditches are a feature commonly associated with boundaries. Post and wire fencing is not routinely added to existing boundaries.

8. New domestic and agricultural buildings are a feature of lowland areas. Derelict buildings, however are also commonplace. New access roads are associated with farms, forestry and peatland exploitation. Access to upland areas for peat cutting and grazing is one of the main functions. Fermanagh District is rich in antiquities, historic monuments and plantation estates. It is a major area for general recreation and tourism particularly fishing. The area is also noted for quarrying especially gravel and limestone. Some of these quarries are particularly obtrusive in the landscape.

ACKNOWLEDGEMENTS

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1. Introduction

This report was written as part of a research contract awarded to the Department of Environmental Studies of the University of Ulster, by the Countryside and Wildlife Branch (CWB) of the Department of the Environment for Northern Ireland (DOENI). The study is concerned with land classification and the assessment of landscape and ecological resources in Fermanagh District. A research officer, Dr. Ronald Murray was appointed for 21 months in June 1989 to coordinate the work. Thomas McCann was subsequently employed for a 12 month period in October 1989 to assist with field work and analysis.

The main objectives of the study were to:

1. Produce a land classification and framework for the assessment of landscape and ecological resources.

2. Quantify the distribution of land use, ecological resources and landscape attributes.

3. Describe the structure, composition and management of these resources.

4. Identify associated environmental problems and discuss management options.

5. Prepare a computerised database and map archive for monitoring environmental change.

The work is complementary to site-based studies for assessing Areas of Special Scientific Interest (ASSI) and full cover surveys of habitat types.

The final report is the fourth in a series of similar studies in Northern Ireland. The survey methods employed were developed in the first study covering the Mourne AONB (Cooper & Murray 1987a). The methods were based on a standardised approach to field survey introduced by Bunce et al. (1983). With this approach, multivariate land classification is used to stratify a sampling programme of grid squares in which field survey is carried out to determine land use, ecological resources and landscape attributes.

The second report (Cooper & Murray 1987b) covered the Antrim Coast and Glens AONB and the Causeway Coast AONB. At this stage, emphasis was placed on refining field methods and analysis so as to integrate computer database analysis of the field records.

The Mourne and Antrim studies were developed further under contract to the Department of Agriculture for Northern Ireland (DANI). This involved construction of a computerised database for both the Mourne Environmentally Sensitive Area (ESA) (Cooper, Murray & McCann 1988) and the Glens of Antrim ESA (Cooper, Taylor & Murray 1989). These are being used by DANI, as base-line studies against which to monitor the effect of the ESA legislation.

The third report covered the Sperrins AONB and the North Derry AONB (Cooper et al. 1988). In this case the initial boundaries of the study area were not prescribed by CWB. An additional objective of the work therefore was to develop a structured method of landscape evaluation for the region, based on land classification, which would be of value in boundary definition.

2. Land Classification

2.1 Description of study area

Fermanagh is centred around Lough Erne in the south-west of Northern Ireland and is bounded by Counties Tyrone, Donegal, Monaghan, Leitrim and Cavan (Fig.1). Fermanagh District differs from the County in that a small area of County Tyrone, east of Irvinestown is included. The study area covers 2033 kilometre squares on the Irish grid, representing a land area of 1689 km^2. Land area includes lakes and rivers with a width less than 50 metres.

2.2 Derivation of land class groups

Using the multivariate Northern Ireland Land Classification (Cooper 1986), kilometre squares on the Irish grid were classified into one of 23 land classes representing distinct land types. Squares in each land class share certain characteristics related to topography, land use, climate, geology, soils, landscape and settlement artefacts. The TWINSPAN hierarchical key used to classify squares, the method of recording the map attributes in the key and an example of using the key are given by Cooper

(1986). Land classes 1 and 13 were not represented in the study area. Certain land classes, in particular, 4,9,11,16 and 18 were poorly represented. For reasons of simplification, similar land classes were combined to form six major land class groups (Fig.2, Table 1) using the criterion that the main hierarchical divisions in the land classification should be retained. These land class groups summarize the main elements of landscape variation.

2.3 Description of land class groups

Descriptions are largely based on map attributes, in particular, those recorded from the field sample squares (Section 3.2).

Group A

This group encompasses the lakeland environment notably that of Upper and Lower Lough Erne, Lough Macnean Lower, Lough Macnean Upper and Lough Melvin. It also includes larger rivers. It is associated with lower elevation flat to undulating land and smaller drumlins away from the lakes (particularly between Enniskillen, Lough Macnean Lower and Rosslea). Northern Ireland land classes 3,5 and 10 are well represented. Elevation rarely exceeds 80m and is generally highest near Rosslea (120m) immediately adjacent to the uplands. Soils are primarily gleys on glacial till associated with lower limestone, calp limestone, shale and some carboniferous sandstone. There is generally a well developed road and habitation infrastructure.

Group B

This land class group is associated with undulating land, smaller drumlins, interdrumlin hollows and valley bottoms at an elevation of approximately 50-150m. It is found scattered immediately east and west of Upper Lough Erne and in the North-West, principally in association with land class group A. It is also found in the North-East, between Lisnaskea and Ederney adjacent to the larger drumlin terrain of land class group C. Northern Ireland land class 7 is the most common land class in the group. Gley soils occur in association with a variety of geological substrata notably calp limestone and shale, and in the North-East with old red sandstone. There is a developed road and habitation infrastructure.

Group C

This land class group is representative of larger drumlin terrain and lower elevation upland slopes generally between 50- 150m elevation. It is principally located at the upland/lowland divide throughout Fermanagh. It also occurs notably between Lower Lough Erne and the mountains in the far west and in association with land class group B between Enniskillen and Pettigoe. Land class 15 is the most characteristic Northern Ireland land class. Soils are typically gleys associated with a variety of geological substrata. A developed road and habitation infrastructure is a characteristic feature.

Group D

This land class group is representative of intermediate elevation slopes associated with the uplands and mountain blocks at an elevation in the region of 120-210m. It is located mainly in the south-east of Fermanagh and the Brougher/Topped Mountain area. Northern Ireland land class 19 is the most common land class. Soils are generally gleys or peaty gleys with some blanket peat associated with a variety of geological substrata notably old red sandstone, Devonian conglomerates, and in the west with upper limestone.

Group E

This land class group characterises upland terrain, plateau areas and lower elevation mountain summits generally at an elevation between 100-300m. The main locations are uplands in the South-East, North-East and North-West, the Brougher/Topped Mountain area, the Cuilcagh Mountains and Slieve Rushen. Soils are mainly gleys and peaty gleys associated with Carboniferous sandstone and upper limestone geological substrata. There is a less developed road and habitation infrastructure than in the lowland land class groups.

Group F

The highest mountain terrain and summit tops are represented by this land class group. Elevation is generally between 250-600m. The main locations are the mountains in the South-East and North-West, Slieve Rushen and the Cuilcagh Mountains. Peaty gleys and blanket peat are characteristic soils on Carboniferous

sandstone, upper Visean limestone and shale geological substrata.

2.4 Derivation of landscape units

Local patterns of land class distribution and land class clusters were used to divide the district into 16 geographically distinct landscape units (Fig.3, Tables 2a,2b). The first step in the process of defining units was to delimit lowland areas from upland areas. Lowland areas were circumscribed as those primarily belonging to land class groups A-C whilst upland groups were delimited on the basis of belonging to land class groups D-F.

Minor adjustments were made to boundaries between the two main groups where divisions were abrupt. Boundaries within the groups were drawn in relation to distinct geographical features and discontinuities between land class groups. Landscape units 1,2,3,4,5,6a,7,8,9,10 and 11 represent lowland areas and landscape units 6b,12,13,14,15 and 16 represent upland areas. The general procedure for circumscribing the units is described in Appendix 1.

Unit 6 comprises both a lowland (6a) and an upland (6b) component. They were combined into one unit because of their geographical proximity and the small size of subunit 6b. Units 15 and 16 were subdivided into two subunits each (a & b) on the presence or absence of upper limestone geological substrata in order to assess the limestone areas separately.

2.5 Description of landscape units

Descriptions are largely based on map attributes, in particular, those recorded from the field sample squares (Section 3.2).

Unit 1: Upper Lough Erne

A lakeland unit encompassing the shoreline, islands and lough margins, lough channels and adjacent waterbodies. Topography is generally flat to undulating, mainly at an elevation of between 40-70m. Gley soils are commonly associated with calp limestone, shale, lower limestone and in some localities with upper limestone

geological substrata. Land class group A is the most characteristic land class group. There is a developed, mainly minor road network and habitation infrastructure.

Unit 2: Lower Lough Erne

A lakeland unit primarily encompassing the shoreline, lough margins and islands of the lough and the River Erne. The topography is generally flat to undulating mainly at an elevation of between 40-100m. Gley soils are characteristic on a variety of geological substrata, notably calp limestone, shale and Carboniferous sandstone in the north, lower old red sandstone in the east and lower limestone in the west. The lough is encircled by major and secondary roads. There is also a developed minor road network, habitation and estate land infrastructure on the east side. Land class group A is the main group in association with groups B and C.

Unit 3: Magheraveely

A lowland unit located east of Upper Lough Erne adjacent to the national border along the Finn River in the South. It incorporates the towns of Newtownbutler, Lisnaskea and Rosslea. Undulating and drumlin topography is characteristic, mainly at an elevation of between 50-150m. Land class group C is characteristic of large drumlin terrain whilst land class groups A and B represent the more flat and undulating land. Numerous small waterbodies are to be found in the unit, particularly in the north at the upland/lowland divide and near the upper reaches of the Finn River. Gley soils with some peaty gleys are primarily situated on calp limestone, shale and lower limestone geological substrata. A band of upper limestone is located at the upland/lowland divide along the north boundary of the unit. There is a developed road and habitation infrastructure.

Unit 4: Colebrook

A lowland unit to the east of Upper Lough Erne, incorporating Fivemiletown, Tempo, Lisbellaw, Brookeborough and Maguires- bridge. The Colebrooke Estate is located within the unit alongside the Colebrooke River. Undulating topography at an elevation between 50-150m is representative of land class group B with groups A and C as minor components. Gley soils are the most common types. Acid brown earths are found near Fivemiletown and some lowland blanket peat occurs in flatter areas principally the Black Bog near Brookeborough. Sand and gravel deposits are found in

the Colebrooke and Tempo River valleys. Clogher Valley limestone, shale, lower limestone with some Carboniferous sandstone and old red sandstone are the most frequently found geological substrata. There is a developed road and habitation infrastructure.

Unit 5: Ballinamallard

A lowland unit to the east of Upper Lough Erne, centred around Ballinamallard and bounded by County Tyrone in the East. Undulating and large drumlin topography is commonplace, mainly at an elevation between 50-150m. This is represented primarily by land class groups B and C with group A as a minor component. The Ballinamallard River runs through the unit. Gley soils are characteristic, in association with old red sandstone geological substrata. Sand and gravel deposits are superimposed on drumlin tops near Ballinamallard and blanket peat is found in valley bottoms. There is a developed road and habitation infrastructure.

Unit 6: Ederney and North-East Uplands

A lowland and upland/ mountain unit north-east of Lower Lough Erne and bounded by County Tyrone and the national border in the North.

Subunit 6a: Ederney

A lowland subunit dissected by the Glendarragh River and including the towns of Ederney, Pettigoe and Irvinestown. Large drumlin terrain is a characteristic feature, representative of land class group C. The topography is more undulating in the South, associated more with land class groups A and B. Elevation varies between 50-200m. Gley soils are found in association with lower old red sandstone, Carboniferous sandstone, Tournasian basal clastics, calp limestone and shale geological substrata. Blanket peat occurs in the Glendarragh River valley near Ederney. There is a developed road and habitation infrastructure in the south.

Subunit 6b: North-East Uplands

An upland/mountain subunit at an elevation generally between 110-350m. Land class group E is the most abundant with elements of groups C and D at lower elevation. Blanket peat and gley soils are characteristically found in association with calp

limestone, shale and Carboniferous sandstone geological substrata. Upper Dalradian igneous bands traverse the unit. There is a minor road network with a less developed habitation infrastructure than in most lowland units.

Unit 7: Derrylin

A lowland unit bounded by Upper Lough Erne on the east side and Slieve Rushen in the West. Derrylin is the principal village. Topography is flat to undulating at a general elevation of 50- 150m. Land class group A is the most common, with elements of groups B and C. Gleys and peaty gleys are characteristic, in association with calp limestone, shale and upper limestone geological substrata. Sand and gravel deposits are present in the south-west adjacent to Slieve Rushen. There is a developed road and habitation infrastructure.

Unit 8: Arney

A lowland unit to the west of Upper Lough Erne, centred on the Arney River valley between Slieve Rushen, the Cuilcagh Mountains, Belmore Mountain and Lough Macnean Lower. Topography is flat to undulating at an elevation generally between 50-150m. Land class group A is the principal group. Gley soils on calp limestone or shale with some lower limestone are a characteristic feature. Areas of blanket peat are also present. There is developed road and habitation infrastructure.

Unit 9: Garrison

A lowland unit located in the north-west of Fermanagh and bounded by the River Erne in the North, Lough Melvin and Lough Macnean in the South-West and mountains in the East. The terrain is hilly and sometimes steep at the edge of the mountain block, grading to more flat and undulating land further to the west. Elevation is generally in the range between 30-200m. Land class groups A and C are the most abundant whilst group B is a more minor component. Gleys, peaty gleys and grey brown podzols are characteristic soils, commonly found in association with Carboniferous sandstone geological substrata with some calp limestone, shale and Upper Visean limestone. Upper limestone is located in the east, at the boundary with the mountain block. A road and habitation infrastructure is less developed than in most other lowland units.

Unit 10: Lough Scolban

A lowland unit located in the North-West of Fermanagh between the national border and Lower Lough Erne. It contains various small lakes including Lough Scolban. The topography is generally undulating with some prominent steep hills, notably Mallybreen, Croagh and Derrin Mountain. Steeper slopes occur more at the southern edge adjacent to Lower Lough Erne. Elevation is generally between 50-200m. Land class groups A, B and C are representative of most of the terrain. Land class group E represents the higher hills. Soils are mainly blanket peat with some gleys on Moinian metamorphic granulites and quartz. The road and habitation infrastructure is generally underdeveloped.

Unit 11: Sillees

A lowland unit centred around the Sillees river valley between Lower Lough Erne and the North-West Mountains. Derrygonnelly is the principal village in the north of the unit. Large drumlin terrain is a characteristic feature. Cullen Hill, a long intermediate elevation area, lies adjacent to Lower Lough Erne. Elevation is generally between 50-200m. Land class group C is the most common group. Soils are primarily gleys with some peaty gleys associated with lower limestone, calp limestone, shale and carboniferous sandstone geological substrata. There is a developed road and habitation infrastructure.

Unit 12: Brougher

An upland unit intersected by lowland valleys between Lisbellaw and Clabby, north-west of the Tempo River. Topped Mountain rises to 277m in the South and Brougher Mountain to 316m in the North. Elevation is generally between 120-310m. The unit is primarily represented by land class groups D and E. Gley soils and at higher elevation, blanket peat, overlie lower old red sandstone and Devonian conglomerate geological substrata. There is a developed mainly minor road network and habitation infrastructure at lower elevation.

Unit 13: South-East Uplands

An upland and mountain unit between Fivemiletown, Lisnaskea and Rosslea. Slieve

Beagh rises to 380m. Elevation is generally between 90-380m. Land class group E is most common with elements of groups D and F. Gleys and peaty gleys are the most common soil types, overlying Carboniferous sandstone geological substrata. Upper limestone is characteristic of the geology at the upland/lowland divide. There is a relatively developed network of minor roads but an underdeveloped habitation infrastructure.

Unit 14: Slieve Rushen

An upland and mountain unit located to the west of Upper Lough Erne, incorporating the summit plateau and north-east slopes and including Molly Mountain. Elevation generally ranges between 100-390m. Land class E is the most common with elements of groups D and F. Soils are primarily gleys and peaty gleys associated with upper limestone, shale, upper Visean limestone and Carboniferous sandstone geological substrata. Dolerite and basalt sills traverse the unit. Sand and gravel deposits are present in the south of the unit at lower elevation. There is an underdeveloped habitation and road infrastructure, primarily consisting of farms and minor farm roads at lower elevation.

Unit 15: Cuilcagh Mountains and Escarpment

An upland and mountain unit incorporating some adjacent lowland between Lough Macnean Lower, Florencecourt and Swanlinbar.

Subunit 15a: Cuilcagh Mountains

This subunit encompassses the summit and sloping upper plateau at an elevation generally between 250-665m. Cuilcagh summit is the highest point at 665m. Land class group F is representative of the subunit. Soils are primarily peaty gleys overlying Carboniferous sandstone, millstone grit, upper Visean limestone and shale geological substrata. The habitation infrastructure is undeveloped and road network mainly limited to minor farm roads.

Subunit 15b: Cuilcagh Escarpment

The subunit encompasses the lower elevation plateau and escarpment of the Cuilcagh Mountains and flat, low elevation land adjacent to the escarpment and Lough

Macnean Lower. Elevation is generally between 50-420m. Land class group E is the most common with groups C, D and F occurring as minor elements. The soils are characteristically gleys and peaty gleys principally on upper limestone geological substrata. Swallow holes are a common feature of the limestone. There is a developed minor road network but a relatively underdeveloped habitation infrastructure.

Unit 16: North-West Mountains and Escarpment

An upland and mountain plateau unit bounded by Lower Lough Erne, Lough Melvin, Lough Macnean Upper and Lower, and lowland terrain in the east and west.

Subunit 16a: North-West Mountains

This subunit encompasses the mountain plateau. Notable features include the Cliffs of Magho adjacent to Lower Lough Erne. Lough Navar is located in the north of the subunit. Belmore Mountain in the south rises to 401m. Land class groups E and F are the most abundant groups. Elevation is generally between 50-340m. Gleys and peaty gleys are the most common soils, mainly overlying Carboniferous sandstone geological substrata. Upper limestone, millstone grit, dolerite and basalt outcrops occur in places. A band of upper Visean limestone and shale encircles the mountain block. Minor roads traverse the plateau. There is a network of forestry roads in an area that is not densely populated.

Subunit 16b: North-West Escarpment

This subunit encompasses the east and south facing escarpment of the plateau. Elevation is generally between 60-400m. Land class groups E and F are most common with group D occurring as a more minor component. Gleys and peaty gleys are characteristic soils on upper limestone geological substrata. There is a minor road network associated with the escarpment.

3. Sampling, Field Survey and Analysis

3.1 Sample stratification

Land class groups A-F and landscape units 1-16 (Figs.2 & 3) were both used to stratify the study area in order to carry out a detailed landscape and ecological resource sampling programme in the field. A random sample of 190, 1km squares was initially selected for the programme. A random 25ha quarter square from each of the kilometre squares was selected for field study. The number of sample squares was estimated as the absolute maximum that could be surveyed in the time available and represented a sample area amounting to 2.5% of land area.

Within each landscape unit, sample squares were allocated randomly in proportion to their land class group frequency. Areas with diverse and abundant seminatural vegetation or other important ecological attributes were allocated samples at a greater intensity than those that were primarily agricultural. Sample squares falling next to existing sample squares or diagonally adjacent were re-allocated to further ensure that sample clumping was minimised. This rule was relaxed in the case of subunits 15b and 16b which were sampled at a particularly high intensity. Parts of the square which covered other local government districts or the Republic of Ireland were excluded.

Sample squares were then marked for withdrawal in proportion to land class group frequency if time did not allow for completion of the full set. These were mainly withdrawn from agricultural areas with limited landscape variation. In total, 165 squares were ultimately sampled (Appendix 2, Fig.4) representing a 2.1% sample of land area. The intensity of sampling within landscape units varies between 1.3% and 5.3% and within land class groups between 1.4% and 2.7%.

The sampling programme, summarised by land class group and individual landscape unit, is given in Tables 1 & 2. Landscape units were subsequently combined for analytical purposes because of the small number of samples in some units (Table 3). Decisions on unit combinations were based on proximity and similarity in land class composition. Lowland units were kept separated from upland units with the exception of upland unit 6b which has been combined with lowland units 3,4,5 and 6a. Seven combined units have been derived representing distinct areas. The frequency of land class groups in individual and combined landscape units is shown in Table 4 & 5. Each unit has a characteristic composition which summarises its

physical structure.

3.2 Physical characteristics of the sampling strata

Using the initial 190 kilometre sample squares described in section 3.1, map attributes of the land class groups and landscape units were recorded from map archives (Tables 6-9). Landscape units were combined for analytical purposes. The maps from which information was recorded were: Ordnance Survey of Northern Ireland (1:50,000), Geological Survey of Northern Ireland (1:625,000), Generalised Soil Map of Ireland at a scale of 1:575,000 (Gardiner and Radford 1980). For simplification soil categories were combined into complexes of types. These are described fully in Appendix 3. Map attribute recording procedures are described fully by Cooper (1986).

3.3 Field recording procedure

Field data were recorded onto standard data sheets (Appendix 4) corresponding to the following categories:

1. Woodland: type, position in the landscape, structure, ground flora, soils, management, main species of the understorey, canopy and regenerating species.

2. Seminatural vegetation: grassland, heaths, bog, lakeland vegetation and tall herb vegetation; their structure, management and main species present.

3. Field boundaries: type, structure, the main species of shrubs, small and large trees.

4. Agriculture: grassland, crops, their management, structure and the types and numbers of farm animals.

5. Landscape: artefacts of the built, urban and rural environments, dereliction, recreation and surface topographical features.

Each of the five data sheets held a checklist of coded attributes, a scale map derived from the Ordnance Survey 1:10560 edition and a data matrix. The data recording procedure consisted of inserting numeric codes onto the maps then checklist codes into the data matrix. Appendix 4 illustrates the process. Information was recorded with reference to a set of habitat and attribute standard descriptors (Appendix 5) and species codes (Appendix 6). Target notes were added for specific parcels of land and the square as a whole.

In the field, boundaries were located accurately using 1:50,000 and 1:10560 Ordnance Survey maps. In the uplands, where locating boundaries was more difficult, aerial photographs were occasionally used to check parcels of land. The whole of every sample square was visited, but dangerous or inaccessible areas were viewed from vantage points. Minor variations in the field, defined as areas less than $10m^2$ or linear features less than 10m in length, were not recorded.

Quantitative measurements of land use, linear features and landscape attributes were made from the maps after field survey had been completed, using a digitising table linked to an IBM- pc50 microcomputer. Measurements were subsequently entered into the field data sheet matrices. The original field data sheets (Appendix 7) are held by the Department of Environmental Studies, University of Ulster. Copies have been deposited with the Countryside and Wildlife Branch of the Department of the Environment for Northern Ireland.

3.4 Computer database and data analysis

Column headings on the field data sheet matrices reflect the field structure of the computer database. This facilitated the direct transfer of data to computer files. Technical details and a catalogue of files are given in Appendix 8. Database analysis was carried out with dBASE III PLUS (Ashton-Tate 1985), run on an IBM PS/2 Model 50 microcomputer.

The data has been analysed to produce estimated mean figures of abundance and total amounts of ecological resources and boundary lengths for land class groups and combined landscape units. A summary of the general analytical procedure is presented in Appendix 9. Abundance measures for some attributes have been combined to produce more meaningful estimates, particularly where individual

estimates are small. Combinations are indicated alongside attribute standard descriptors in Appendix 5.

Recorded features such as new domestic buildings, new agricultural buildings, new urban, new roads and boundary removal are related to the survey date of the 1:10560 maps used on the field data sheets. Survey dates differ between sample squares. Mean map dates have been calculated for land class groups and landscape units and should be related to figures of resource abundance in the text. The mean survey dates are presented in Appendix 10.

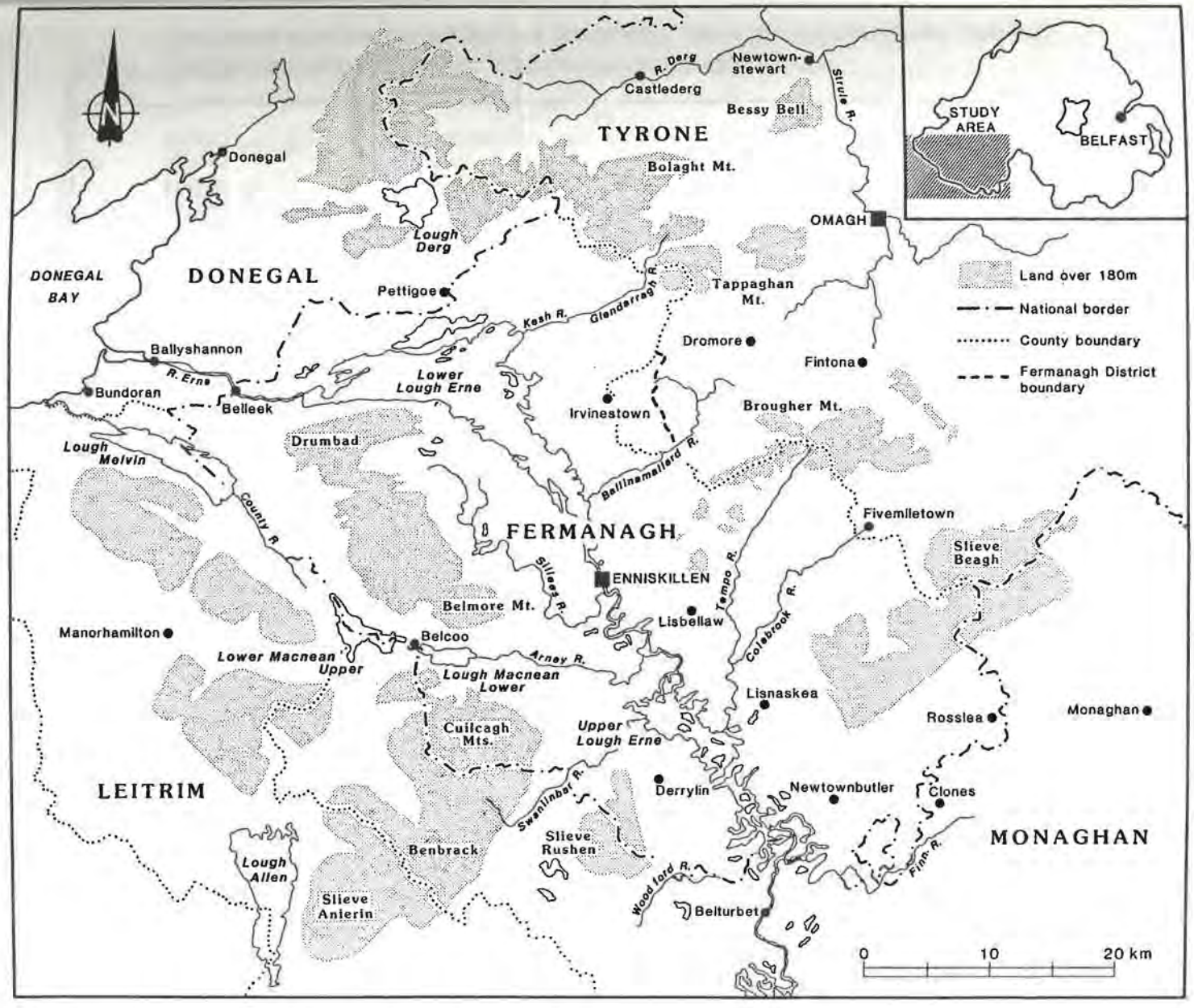


Fig. 1 Location map of Fermanagh District.

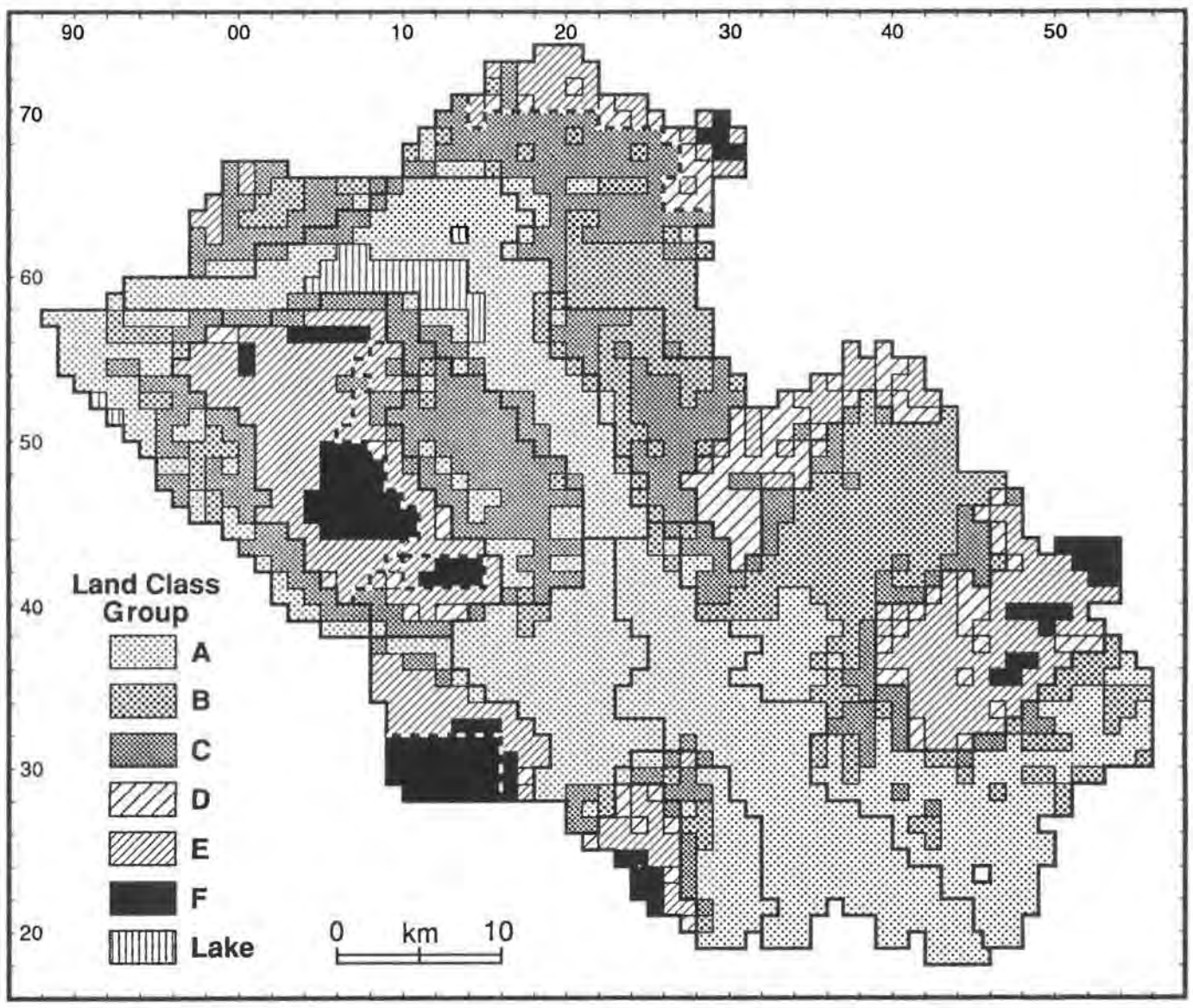


Fig. 2 Distribution map of land class groups in Fermanagh District.
Bold lines indicate landscape unit (unbroken) and subunit boundaries (broken).

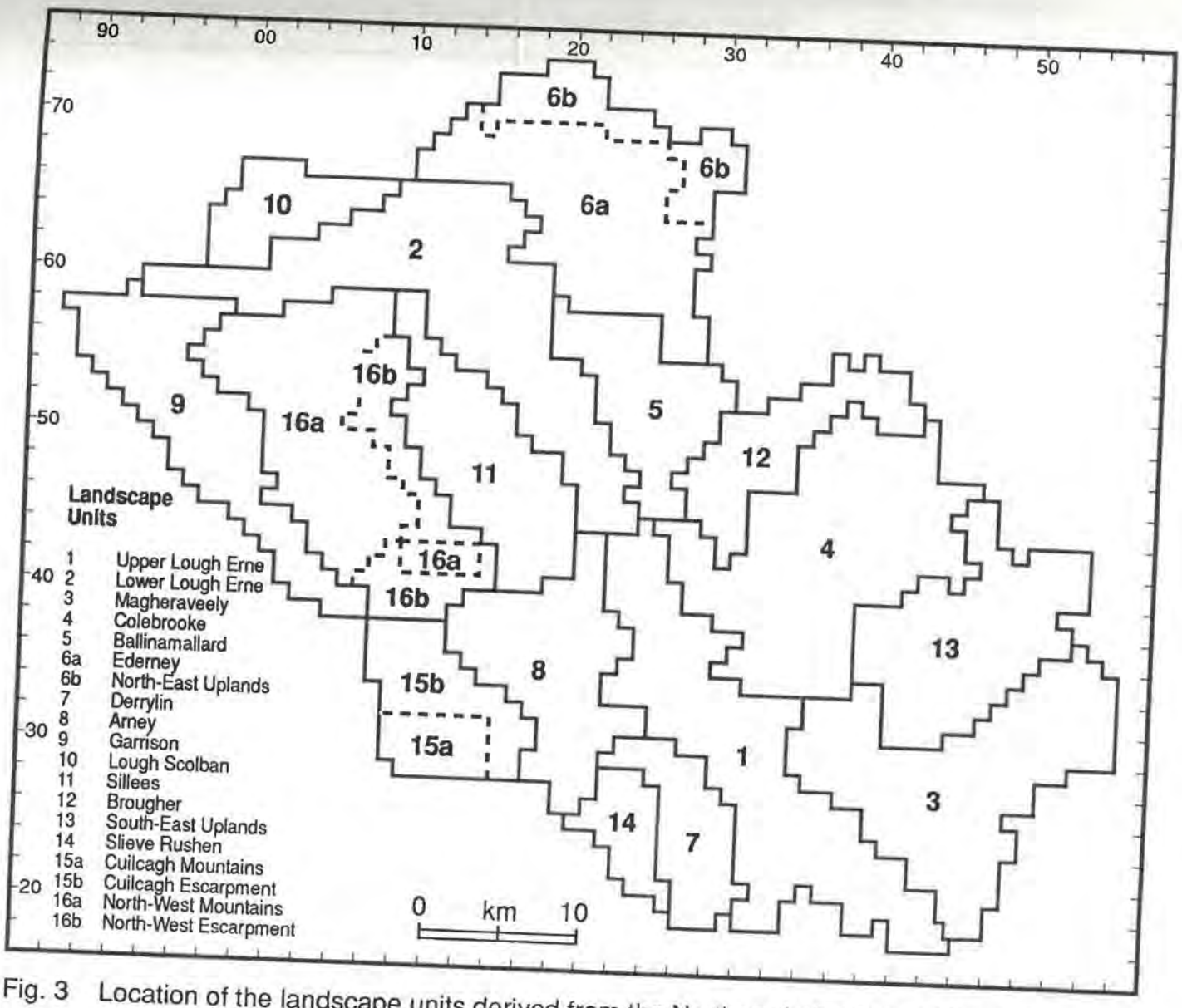


Fig. 3 Location of the landscape units derived from the Northern Ireland Land Classification.

This figure, Fig. 4, has been removed to preserve the confidentiality of the sample square locations.

Table 1 Field sample stratification for land class groups within the Fermanagh District study area.

Land class group	Northern Ireland land class	Number of 1km squares in study area	Land area (km^2)	Field sample area (km^2)	Number of field sample 25ha squares	Field sampling intensity (% area)
A	2,3,4,5, 9,10,11,12	732	550	11.8	60	2.2
B	6,7,8,	295	272	3.7	16	1.4
C	13,14,15,16	434	400	7.7	33	2.0
D	17,18,19	106	96	2.5	10	2.6
E	20,21,	328	302	8.2	35	2.7
F	22,23	108	87	2.3	11	2.7
L	Lake	30	-	-	-	-
Total		2033	1706	36.4	165	2.1

Table 2a Landscape units in Fermanagh District.

Unit number	Unit name
1	
2	Upper Lough Erne
3	Lower Lough Erne
4	Magheraveely
5	Colebrooke
6a	Ballinamallard
6b	Ederney
7	North-East Uplands
8	Derrylin
9	Arney
10	Garrison
11	Lough Scolban
12	Sillees
13	Brougher
14	South-East Uplands
15a	Slieve Rushen
15b	Cuilcagh Mountains
16a	Cuilcagh Escarpment
16b	North-West Mountains
	North-West Escarpment

Table 2b Field sample stratification for individual landscape units within the Fermanagh District field study area.

Landscape unit	Number of 1km squares in study area	Land area (km^2)	Field sample area (km^2)	Number of field sample 25ha squares	Field sampling intensity (%area)
1	194	138	3.8	20	2.7
2	203	99	2.1	13	2.2
3	180	153	2.3	11	1.5
4	203	196	2.8	11	1.4
5	83	80	1.0	4	1.2
6a	149	137	1.8	8	1.3
6b	53	37	0.5	2	1.3
7	56	52	0.9	4	1.7
8	113	110	1.8	7	1.6
9	121	91	2.3	11	2.5
10	48	35	0.9	4	2.6
11	106	103	2.5	10	2.4
12	74	64	1.6	7	2.4
13	132	120	3.0	12	2.5
14	32	24	0.6	3	2.3
15a	27	22	0.5	2	2.3
15b	50	44	2.3	11	5.3
16a	150	145	3.7	15	2.5
16b	59	57	2.2	10	3.9
Total	2033	1706	36.4	165	2.1

Table 3a Combined landscape units in Fermanagh District.

Unit number	Unit name
1,2	Lough Erne
3,4,5,6a,6b	Eastern Lowlands
7,8,11	Western Lowlands
9,10	Garrison and Lough Scolban
12,13	Eastern Uplands
14,15a,15b	Slieve Rushen and Cuilcagh Mountains
16a,16b	North West Mountains and Escarpment

Table 3b Field sample stratification for combined landscape units in the Fermanagh District study area.

Landscape Unit	Number of 1km squares in study area (km^2)	Land area (km^2)	Field sample area (km^2)	Number of field sample 25ha squares	Sampling intensity (% area)
1,2	397	237	5.9	33	2.5
3,4,5,6a,6b	668	604	8.4	36	1.4
7,8,11	275	264	5.1	21	1.9
9,10	169	126	3.2	15	2.5
12,13	206	184	4.5	19	2.5
14,15a,15b	109	90	3.4	16	3.8
16a,16b	209	202	5.9	25	2.9
Total	2033	1706	36.4	165	2.1

Table 4 Percentage area of land class groups within individual landscape units of Fermanagh District.

Landscape unit	Land class group					
	A	B	C	D	E	F
1	97	2	1	-	-	-
2	71	7	22	-	-	-
3	64	23	13	-	-	-
4	18	59	22	-	-	-
5	5	40	55	-	-	-
6a	10	31	59	-	-	-
6b	-	-	6	29	64	1
7	64	11	23	-	2	-
8	93	5	3	-	-	-
9	35	17	48	-	-	-
10	10	21	60	-	9	-
11	18	4	77	-	1	-
12	-	-	5	65	30	-
13	-	-	<1	22	66	12
14	-	-	4	25	56	14
15a	-	-	-	-	-	100
15b	10	-	8	2	68	12
16a	-	-	3	1	65	30
16b	1	-	24	14	61	-
Total	32	16	23	6	18	5

Table 5 Percentage area of land class groups within combined landscape units of Fermanagh District.

Landscape unit	Land class group					
	A	B	C	D	E	F
1,2	86	4	10	-	-	-
3,4,5,6a,6b	25	37	32	2	4	<1
7,8,11	58	6	36	-	1	-
9,10	28	18	51	-	3	-
12,13	-	-	2	37	54	8
14,15a,15b	5	-	5	8	49	34
16a,16b	<1	-	9	5	64	22
Total	32	16	23	6	18	5

Table 6 Mean values of map attributes recorded in a stratified random sample of kilometre squares from each land class group in Fermanagh District. (%A = Percentage mean area, %F = Percentage mean frequency).

	Land class group						
	A	B	C	D	E	F	Total
Land 0- 50m (%A)	28	-	2	-	-	-	10
Land 51- 150m (%A)	72	100	95	42	15	-	67
Land 151- 250m (%A)	<1	<1	3	57	68	13	17
Land 251- 500m (%A)	-	-	-	1	16	87	7
Gradient of slope (o)	7	8	9	7	8	7	8
Contour top or summit (%F)	89	91	84	71	54	50	79
Flat valley bottom (%F)	33	42	28	22	3	-	27
Stream/single line river (%F)	74	91	92	91	85	100	84
Double line river (%F)	18	11	5	-	-	-	9
Inland water body (%F)	56	5	30	-	10	37	32
Red road (%F)	15	16	17	-	-	-	12
Brown Road (%F)	9	32	24	-	-	-	13
Yellow Road (%F)	62	96	81	72	43	-	64
White Road (rural) (%F)	83	89	93	100	70	64	84
Path, track or walk (%F)	17	45	51	64	30	17	34
Number of buildings (No/km^2)	10	12	10	11	4	<1	9

Table 7 Percentage mean frequency of geological and soil attributes recorded in a stratified random sample of kilometre squares from each land class group in Fermanagh District.

	Land class group						
	A	B	C	D	E	F	Total
GEOLOGY							
Basal clastics	-	4	6	14	3	-	3
Clogher Valley limestone/shale	6	13	5	-	-	-	5
Lower limestone	36	31	13	-	-	-	20
Calp limestone/shale	54	19	33	-	18	-	33
Upper limestone	8	7	14	24	39	31	17
Upper Visean limestone/shale	2	5	2	8	5	51	6
Millstone grit	-	-	-	-	-	13	1
Dolerite/basalt	1	-	3	-	12	9	3
Lower old red sandstone	4	30	19	34	5	-	13
Conglomerates	-	-	-	22	3	-	2
Carboniferous sandstone	20	14	35	17	62	87	32
Upper Dalradian schists	-	-	-	14	-	-	1
Metamorphic granulites/quartz	-	4	10	-	-	-	3
Llandovery shales/conglomerates	-	-	5	-	-	-	1
SOIL COMPLEX							
Peaty gley	4	8	2	24	54	67	18
Blanket peat	-	13	10	33	10	27	8
Gley	94	71	90	81	55	6	78
Acid brown earth	-	13	-	-	-	-	2
Grey brown podzolic	2	3	-	-	-	-	1

Table 8 Mean values of map attributes recorded in a stratified random sample of kilometre squares from combined landscape units in Fermanagh District. (%A = Percentage mean area, %F = Percentage mean frequency).

	Combined landscape units							
	1,2	3,4,5,6	7,8,11	9,10	12,13	14,15	16	Total
Land 0- 50m (%A)	53	2	6	5	-	-	<1	10
Land 51- 150m (%A)	47	93	91	94	20	16	27	67
Land 151- 250m (%A)	-	5	3	1	64	40	46	17
Land 251- 500m (%A)	-	-	-	-	16	44	27	7
Gradient of slope (o)	7	8	8	6	7	10	9	8
Contour top or summit (%F)	85	89	81	80	74	60	50	79
Flat valley bottom (%F)	12	48	34	27	10	-	5	27
Stream single line river (%F)	50	93	96	86	84	87	97	84
Double line river (%F)	17	9	23	-	-	-	-	9
Inland water body (%F)	93	13	15	41	5	13	40	32
Red road (%F)	22	12	19	-	-	-	8	12
Brown road (%F)	3	28	8	26	-	-	3	13
Yellow road (%F)	44	85	85	73	58	31	24	64
White road (rural) (%F)	79	89	100	73	89	53	73	84
Path, track or walk (%F)	21	39	27	40	42	26	35	34
Number of buildings (No/km^2)	8	11	12	10	6	3	4	9

Table 9 Percentage mean frequency of geological and soil attributes recorded in a stratified random sample of kilometre squares from combined landscape units in Fermanagh District.

	Combined landscape units							
	1,2	3,4,5,6	7,8,11	9,10	12,13	14,15	16	Total
GEOLOGY								
Basal clastics	-	7	-	-	5	-	-	3
Clogher Valley limestone/shale	5	13	-	-	-	-	-	5
Lower limestone	32	30	30	-	-	-	-	20
Calp limestone/shale	41	32	77	13	-	8	23	33
Upper limestone	8	5	8	19	16	65	52	17
Upper Visean limestone/shale	-	-	4	19	-	50	14	6
Millstone grit	-	-	-	-	-	12	-	1
Dolerite/basalt	6	-	-	-	5	10	10	3
Lower old red sandstone	7	26	-	-	26	-	-	13
Conglomerates	-	-	-	-	15	-	-	2
Carboniferous sandstone	26	8	15	58	59	40	63	32
Upper Dalradian schists	-	2	-	-	-	-	-	1
Metamorphic granulites/quartz	4	-	-	29	-	-	-	3
Llandovery shales/conglomerates	-	4	-	-	-	-	-	1
SOIL COMPLEX								
Peaty gley	-	4	8	13	43	78	58	18
Blanket peat	-	9	-	22	31	4	-	8
Gley	100	86	92	59	58	26	59	78
Acid brown earth	-	5	-	-	-	-	-	2
Grey brown podzolic	-	-	-	13	-	-	-	1

4. Ecological Resources, Land Use and Landscape Attributes.

Summary features of resource distribution are presented in Figs. 5-8. Figure 9 and Tables 10-48 give detailed resource statistics for land class groups and combined landscape units as follows:

Tables 10-18	woodland
Tables 19-23	seminatural vegetation
Tables 24-27	agriculture
Tables 28-29	landscape
Figure 9	field boundaries
Tables 30-41	field boundaries
Tables 42-48	ecologically diverse areas (units 1,15b,16b)

Mean map dates relating to new landscape attributes and boundary removal are given in Appendix 10.

4.1 Regional distribution

Woodland

Woodland in Fermanagh District occupies 15.3% of the land area. Seminatural broadleaf woodland accounting for 3.3% of land area and scrub (0.4%) occur throughout land class groups A-E. They are, in particular, an escarpment feature of landscape units 14,15b and 16b. Seminatural broadleaf woodland is also a feature of the lakeland environment in landscape units 1 and 2. Fen carr is found in small but significant amounts (0.5% of land area). It is primarily a flat terrain lowland feature found in land class groups A and B and is particularly associated with the lakeland landscape units 1 and 2. Alder, ash, birch, hazel and willow are common species of seminatural woodland.

Coniferous plantation accounts for 10.1% of land area and is primarily a feature of upland land class groups E and F in landscape units 13 and 16a. Sitka spruce is the most common species. Other woodland types such as broadleaf plantation and mixed species woodland are more poorly represented. The woodland understorey, with the exception of fen carr, is not particularly species rich. Seminatural woodland types are also largely unenclosed and unmanaged with a significant amount of understorey

vegetation grazed.

Seminatural Vegetation

Seminatural vegetation in Fermanagh District occupies 23.1% of the land area. Land class groups E and F and landscape units 9, 10 and 15 have the greatest amount of seminatural vegetation. Land class group B and landscape units 3-6 have the least. Calcareous and species rich dry grassland (0.9%) is mainly a feature of limestone escarpments and outcrops associated with land class E in landscape subunits 15b and 16b. Lakeland margin and ditch vegetation (1.6% of land area) and species rich wet grassland (4.2%) are characteristic of land class group A. These vegetation types are associated with the lakeland landscape units 1 and 2. Species rich wet grassland is also a feature of landscape unit 9. Fen meadow (2.9% of land area) is characteristic of land class groups C and E and is most abundant in landscape unit 9 but also occurs significantly in units 14, 15b and 16b.

Heath (2.2% of land area), poor fen (2.2%) and bog (3.4%) are mainly a component of the mountain land class group F, occurring at high elevation. Heath is commonplace in landscape units 10,12 and 15b whilst poor fen is found most abundantly in units 14 and 15 and bog in units 10,14,15a and 16a. Heath mosaic, in contrast is a feature of land class groups D-F and landscape units 10,12,13,14,15 and 16a. These upland vegetation types are heavily exploited for peat cutting and agriculture. Hand cutting and general disturbance of seminatural vegetation are proportionally greatest in land class groups C-E, burning in group D, machine cutting in groups A and E and drainage in group F. Erosion was mainly noted in land class groups C,E and F. Landscape unit 12 was particularly associated with exploitation. Hill pasture, gorse and bracken are not features of Fermanagh District.

Agriculture

Agricultural land in Fermanagh District covers 56.1% of the land area. It is mainly associated with land class groups A-D and landscape units 1-8 and 11. This almost exclusively consists of grassland with very little arable land (0.4%). 'Other' agricultural grassland (35.2% of land area) is the dominant type. It is a feature of all land class groups except group F. It is present throughout the district but is somewhat less common in the upland landscape units. Perennial ryegrass accounts for 17.7% of land area and is most frequent in land class groups A-D and the lowland landscape

units. Mixed species grassland (2.2% of land area) and Italian ryegrass swards (0.5%) are minor grassland components.

Rush (52% of grassland area) and broadleaf infestation (22%) commonly occur across the range of land class groups and landscape units. Mixed species and 'other' agricultural grassland are notably rush infested (73% of type area) particularly in the uplands. Ryegrass swards tend to have more broadleaf infestation (31% of type area) than 'other' and mixed species agricultural grassland (18%). Broadleaf infestation is relatively common in all land class groups except group F. It is also associated with all landscape units, but in particular 1,2,14 and 15b.

Landscape

New domestic buildings in Fermanagh District (1.4 per km^2) are most common in land class groups A-C and new agricultural buildings (2.8 per km^2) in land class groups A-D. Lowland landscape units 1-11 are also associated with these attributes. Abandoned vehicles (2.1 per km^2), sites of disposed rubbish and litter (1.7 per km^2) are most common in land classes A-D. Derelict buildings (3.5 per km^2) are found in land class groups A-E with some in group F. Landscape units 1, 10 and 16b are also associated with derelict buildings. New unmetalled roads (0.5 km per km^2) are a feature of all land classes. New metalled roads (0.2 km per km^2) are less frequent in the upland land classes than in the lowland.

Field Boundaries

Overall there are 22 km per km^2 of field boundaries in Fermanagh District. Land class groups A-D and landscape units 1-13 have the greatest lengths. Boundary removal amounts to 13.9% of the length since 1962. It is proportionally greatest in land class groups A-D and in the lowland landscape units. Hedgebanks with scattered or overgrown shrubs (36.1% of boundary length) are a major boundary type. They are not common in land class group F. Although proportionally abundant in the upland landscape units their overall length is less than in the lowlands. Complete hedgebanks, hedgebanks with gaps and hedgerows are more of a minority component. Only 14% of hedges are managed. Management is proportionally most common in land class groups A-D and landscape units 3-6.

Banks represent 17.0% of boundary length. They are common to all land class

groups and landscape units but in particular groups D-E and units 10 and 12. Walls (1.7% of boundary length) are not a major feature of the study area and where present, are mainly ruined. They are mainly associated with land class group E and landscape units 15 and 16 in limestone escarpment and plateau areas. Hedge on wall (0.6% of boundary length) is not a major boundary type but occurs in clusters particularly in land class group D and landscape unit 16b. Post and wire fencing represents 16.0% of boundary length and is common to all land class groups and landscape units. Afforested boundaries (4.3% of boundary length) are mainly a feature of upland land class group E in landscape units 13 and 16a.

Ditches are present alongside 63% of boundary length and are in particular a feature of hedges (70%) and banks (71%). They occur across the range of land class groups and landscape units. Hawthorn, blackthorn, holly and gorse are shrubs commonly associated with boundaries. Hazel is also reasonably common. Common trees are ash, alder, holly, rowan, sycamore and willow.

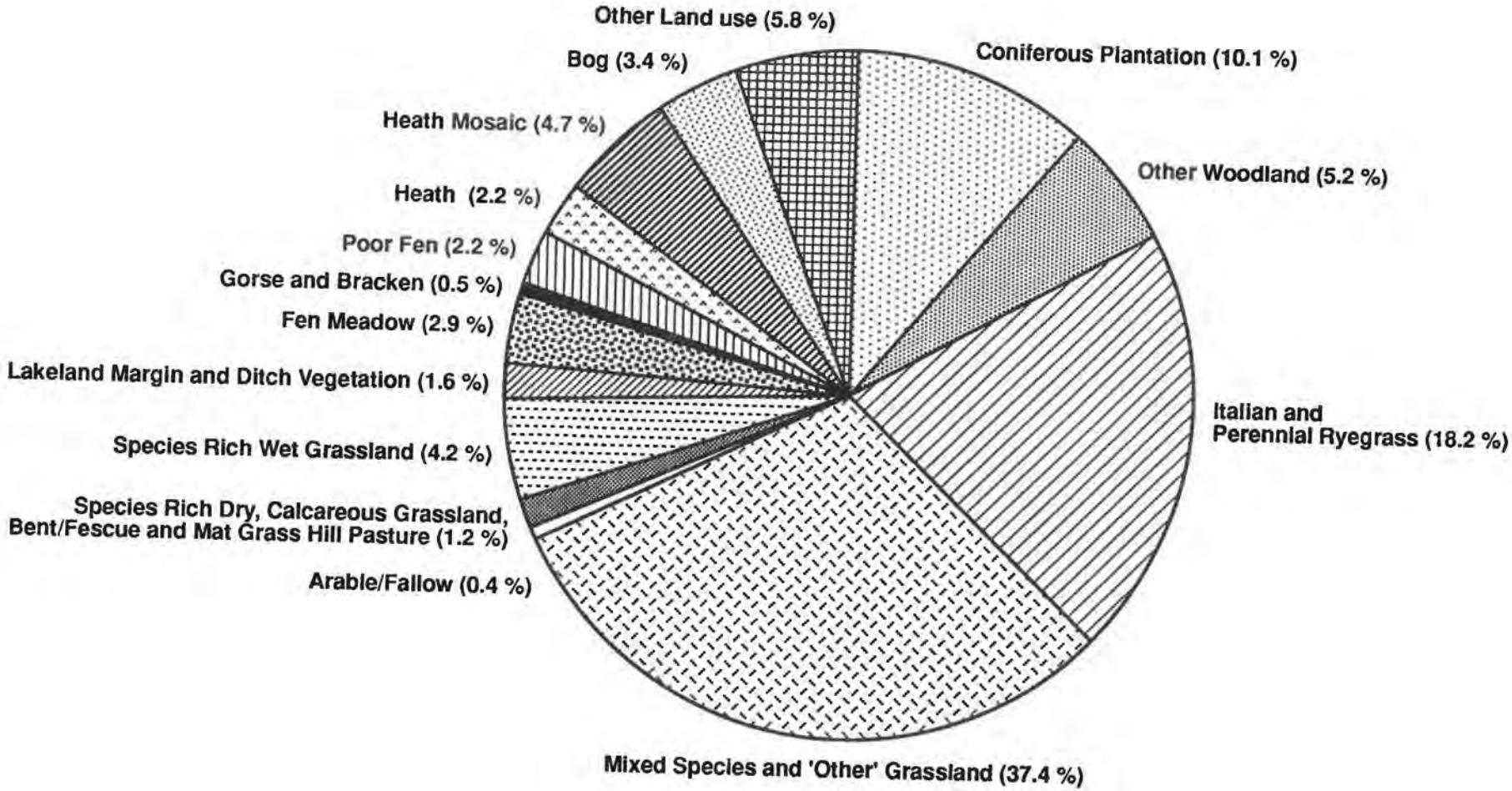


Fig.5 Percentage area of ecological resources and land use in Fermanagh District.

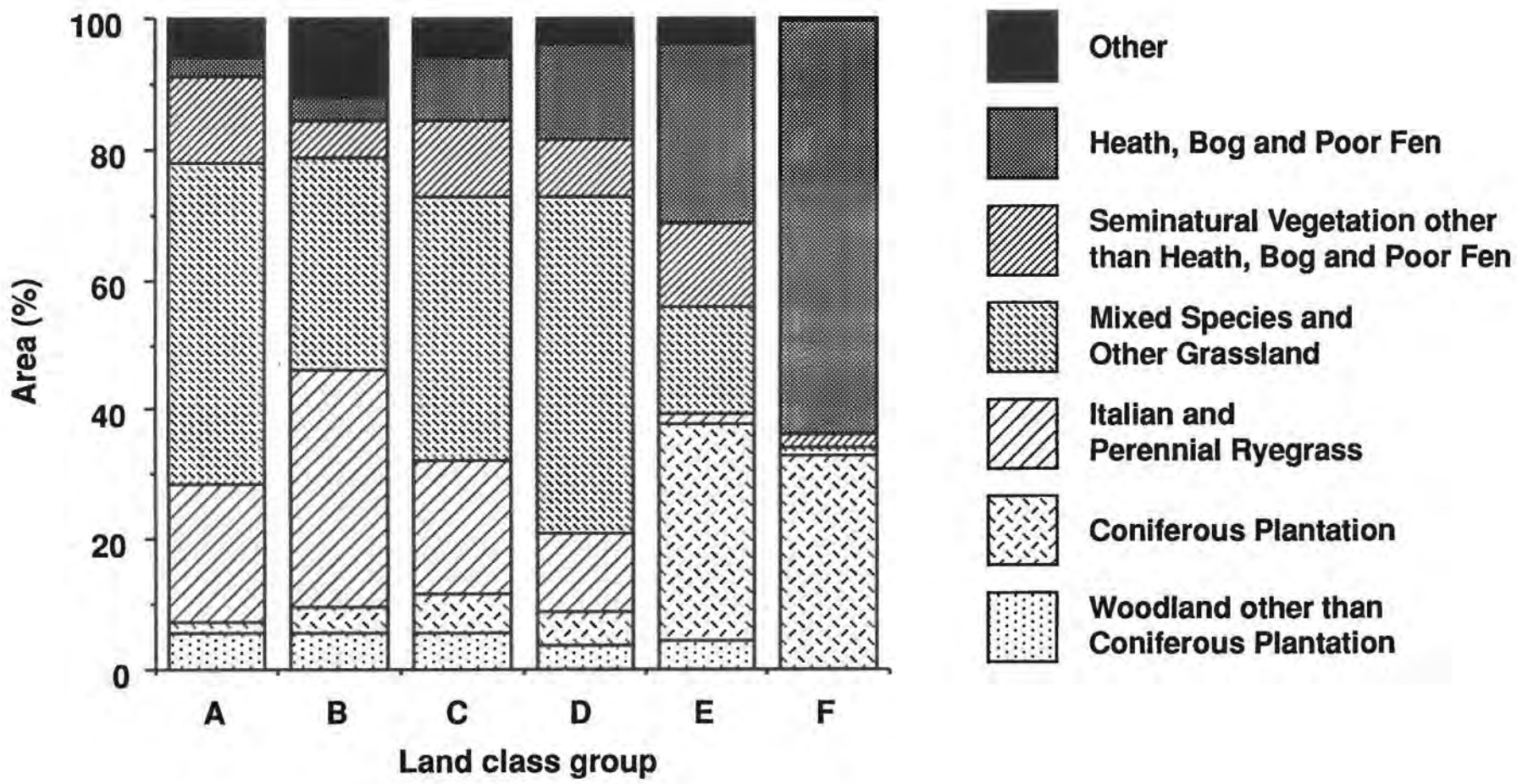


Fig. 6 Percentage area of ecological resources and land use types in land class groups within Fermanagh District.

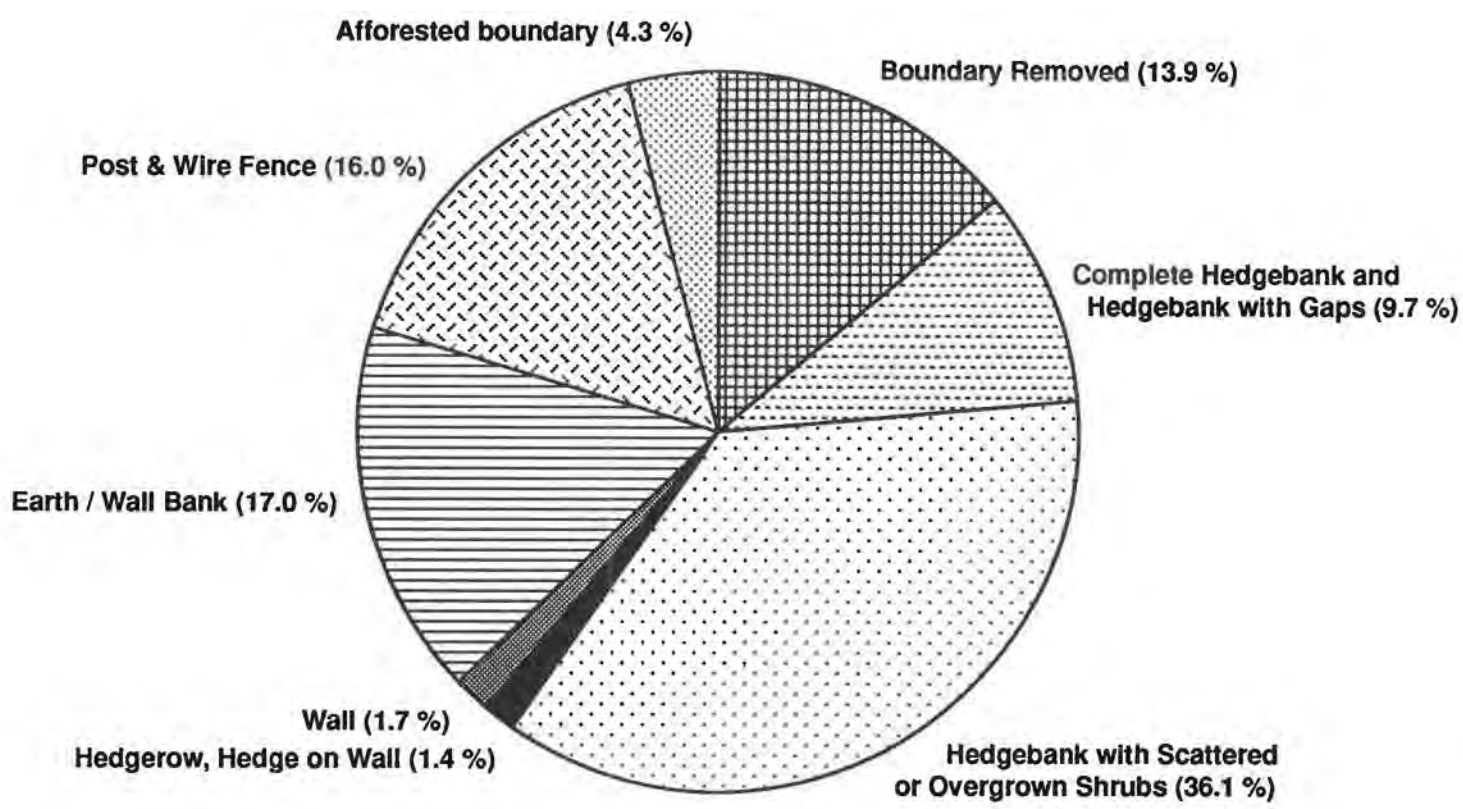


Fig.7 Percentage length of field boundary types in Fermanagh District

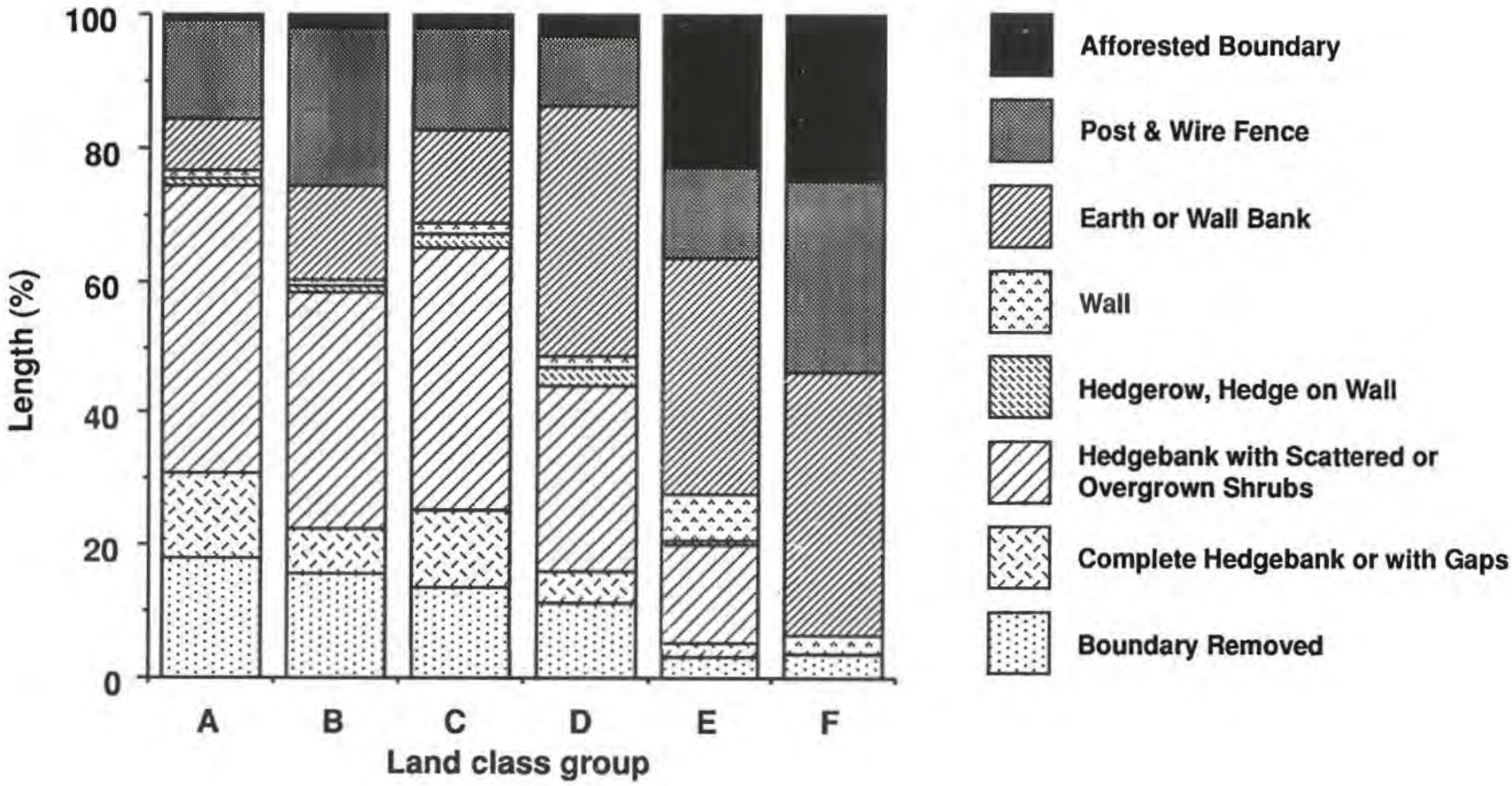


Fig.8 Percentage length of field boundary types in land class groups within Fermanagh District.

4.2 Land class group resource descriptions

Land class group A

Seminatural broadleaf woodland (3.7% of group land area) and fen carr (0.9%) are associated with the lakeland environment. Seminatural vegetation accounts for 15.8% of group area. This mainly consists of species rich wet grassland (7.0%), and lakeland margin and ditch vegetation (4.0%). There are also smaller amounts of peatland vegetation associated with lowland bog which have largely been cut-over by hand in the past and currently by machine.

Agriculture accounts for 71.0% of group land area. Of this 46.0% is 'other' grassland and 20.5% perennial ryegrass. Rush infestation amounts to 51% of total grassland area. There is some dereliction particularly abandoned vehicles (2.6 per km^2), derelict buildings (4.1 per km^2) and sites of disposed rubbish and litter 2.1 per km^2). New metalled (0.3 km per km^2) and unmetalled roads (0.5km per km^2) are characteristic features.

Boundary length amounts to 23.5 km per km^2. Hedgebanks with overgrown or scattered shrubs (43.0% of group boundary length) are a major boundary type. Post and wire fence accounts for a further 14.7%. Boundary removal amounts to 17.9% of group boundary length. Ditches are found in association with 66% of boundary length. Ash trees, in particular are commonplace and are found in 52% of all boundaries.

Land class group B

Seminatural broadleaf woodland (5.1% of group area) and fen carr (0.6%) are found mainly in association with low lying peat areas and are dispersed through farmland. There are also small areas of conifer plantations (3.8% of group land area). Land class group B has the least amount of seminatural vegetation (9.5% of group area). This mainly consists of species rich wet grassland (3.3%), poor fen (2.2%) and fen meadow (1.4%).

The terrain is largely agricultural (71.3% of group land area). Perennial ryegrass accounts for 36.4% and 'other' agricultural grassland 30.5%. The group has the least amount of grassland rush infestation (36% of grassland area) and the most broadleaf

infestation (32%). The land class group also has the most arable/fallow land (1.9%). New agricultural buildings are common (3.8 per km^2) as are new domestic buildings (2.6 per km^2). New metalled (0.3km per km^2) and unmetalled roads(0.5km per km^2) are also a feature.

There are 25.7 km per km^2 of field boundaries. Boundaries are largely made up of hedgebanks with scattered or overgrown shrubs (36.1% of group boundary length), post and wire fence 24.0% and banks (15.2%). The group has the largest amount of managed hedges (19% of group boundary length). Boundary removal amounts to 15.7% of group boundary length.

Land class group C

Seminatural broadleaf woodland accounts for 2.7% of group land area, scrub 0.5%, mixed species woodland 2.1% and coniferous plantation a further 6.0%. Seminatural vegetation accounts for 21.1% of group land area. This mainly consists of fen meadow (5.3%), bog (4.0%), species rich wet grassland (3.3%), heath (2.5%) and heath mosaic (1.6%). A high proportion of seminatural vegetation has been cut over by hand (21% of its area) and much is disturbed (26%) or eroded (16%).

The terrain is largely agricultural (61.2% of group land area) with 'other' agricultural grassland accounting for 39.1% and perennial ryegrass for 19.6%. Dereliction is relatively commonplace with abandoned vehicles (2.7 per km^2), derelict buildings (3.2 per km^2) and sites of disposed rubbish/litter (2.2 per km^2).

Boundary length amounts to 25.1 km per km^2. Hedgebanks with scattered or overgrown shrubs (39.6% of group boundary length), banks (14.1%) and post and wire fence (15.1%) are the main boundary types. There is a high proportion of managed hedges (18% of group boundary length) and boundaries with ditches (66%). Ash trees occur in 47% of all boundaries and holly in 23%. Boundary removal amounts to 13.5%.

Land class group D

Seminatural broadleaf woodland represents 2.2% of group land area, scrub 0.7% and coniferous plantation 5.2%. Seminatural vegetation accounts for 23.5% of group land area. This mainly consists of heath mosaic (9.2%) and species rich wet grassland

(3.9%). A large proportion of seminatural vegetation has been burnt (37% of its area) and disturbed (34%).

Agriculture (64.1% of group land area) is the predominant land use. This mainly consists of 'other' agricultural grassland (49.8%) with some perennial ryegrass (12.2%). There is a relative abundance of abandoned vehicles (3.4 per km^2), derelict buildings (5.5 per km^2) and sites of disposed rubbish/litter (2.2 per km^2). New agricultural buildings (4.6 per km^2) are also a major feature.

Boundary length amounts to 27.4 km per km^2. Boundaries are primarily banks (37.7% of group boundary length), hedgebanks with scattered or overgrown shrubs (27.9%) and post and wire fence (10.4%). Ditches are found in association with 61% of group boundary length. the abundance of gorse shrubs and rowan trees is greatest in this group. Boundary removal amounts to 11.3% of group boundary length.

Land class group E

Coniferous plantation (33.3% of group land area) is a major component. Broadleaf seminatural woodland accounts for a further 3.2%. Seminatural vegetation (40.9% of group land area) is also an important feature. This incorporates a variety of vegetation types of which heath mosaic (14.4% of group land area) is the most abundant. Much seminatural vegetation has been exploited for peat. In particular, 25% of its area has been cut- over by hand, 8% has been machine cut and 29% is disturbed.

Agricultural land is a more minor component occupying 18.2% of group land area. This mainly consists of 'other' agricultural grassland (15.5%). Most swards are rush infested (88% of grassland area). There are a number of derelict buildings (3.2 per km^2). New unmetalled roads (0.8km per km^2) are also a common feature.

Boundary length amounts to 16.4 km per km^2. Boundaries are mainly banks (35.7% of group boundary length), hedgebanks with scattered or overgrown shrubs (14.8%), post and wire fence (14.0%) and walls (7.2%). Afforested boundaries represent 22.7% of group boundary length.

Land class group F

There is little woodland other than coniferous plantation which represents 32.8% of group land area. Seminatural vegetation is most abundant in this land class group accounting for a further 65.4%. It largely comprises bog (22.9%), heath mosaic (17.5%), heath (13.5%) and poor fen (9.5%). Open drains are commonplace in seminatural vegetation (30% of type area) and 18% is eroded. There is little agricultural land (1.2% of group land area) which mainly consists of 'other' agricultural grassland. There are some new unmetalled roads (0.5km per km^2). There are few boundaries (2.5 km per km^2). These mainly comprise banks (39.6% of group boundary length), post and wire fence (29.1%) and afforested boundaries (24.8%).

4.3 Landscape unit resource descriptions

Combined units 1 and 2: Lough Erne

There is an abundance of seminatural broadleaf woodland (7.0% of unit land area) and fen carr (1.8%) associated with the lough margins. Seminatural vegetation accounts for 18.6% of unit land area. This mainly consists of lakeland margin and ditch vegetation (7.6%) and species rich wet grassland (6.4%). Agriculture occupies 60.1% of unit land area. This mainly consists of 'other' agricultural grassland (38.6%) and perennial ryegrass (14.7%). Broadleaf infestation of grassland (38% of grassland area) is greatest of all combined units. Dereliction, in particular, derelict buildings (5.4 per km^2) is commonplace.

Boundary length amounts to 19.2 km per km^2. Hedgebanks with scattered or overgrown shrubs (42.7% of unit boundary length) are a dominant feature. Post and wire fence accounts for a further 13.9%. A large proportion of boundaries have ditches associated (55% of unit boundary length) and ash trees (51%). Boundary removal amounts to 17.7%.

Unit 1: Upper Lough Erne

Summaries of resource abundance are presented in Tables 42-44 and 46-48. The upper lough is shallow, indented and has numerous inundation areas and smaller loughs at its periphery. The main interest in the unit is the lakeland margin and ditch vegetation (10.4% of unit land area). It is commonly only a narrow band but is often

particularly species rich and contains rarities such as the marsh pea. Grazed fen vegetation in this band is commonplace (66% of type area) whilst 9% is also disturbed. Fen carr (1.0% of unit land area) is often contiguous with fen vegetation and is invasive of the latter. Species rich ditch vegetation is a common feature characteristic of field parcels near the lake margin. Species rich wet grassland (9.7% of unit land area) is found dispersed throughout the unit. Large parcels are sometimes found in interdrumlin hollows and periodically inundated or low lying areas adjacent to the lakeside.

Seminatural broadleaf woodland represents 3.9% of unit land area. Much of it is near the lake margin. The Reilly and Goles Woods in the south of the unit are National Nature Reserves. The smaller islands are often continuously wooded with mixed species and many are grazed by feral goats. Away from the water margin, agricultural grassland (65.3% of unit land area) is the main resource type. Much of this is on reclaimed peat. It is largely unimproved 'other' grassland (35.9%). Improved ryegrass swards (17.9%) and mixed species grassland (11.2%) are also relatively abundant. Almost 50% of grassland area is conserved for hay or silage and 57% is rush infested.

Dereliction is a common feature of the unit particularly derelict buildings (6.7 per km^2), sites of disposed rubbish/litter (4.0 per km^2) and abandoned vehicles (3.5 per km^2). New agricultural buildings are also characteristic (4.0 per km^2). Urban development is extensive in the countryside around Enniskillen.

Boundary length amounts to 21.7 km per km^2. Boundaries are mainly hedgebanks with scattered or overgrown shrubs (45.4% of unit boundary length). Post and wire fence accounts for a further 11.4%. Ash occurs in 50% of all boundaries. Ditches occur alongside 57% of unit boundary length. Boundary removal amounts to 18.2%.

The unit is an important area for waders, wildfowl and corncrakes. It is also popular for recreation in the form of boating and fishing. Several plantation estates notably Crom, Belle Isle and Castle Coole fall within the unit.

Unit 2: Lower Lough Erne

Fringing lakeland margin vegetation (3.8% of unit area) occurring mainly in the more sheltered bays is less abundant than in unit 1. The lower lough is a deeper more open

water body with a less indented shoreline and fewer inundation areas. Heath accounts for a further 4.7% of unit land area. Seminatural vegetation is in particular disturbed (43% of type area) and eroded (25%). Seminatural broadleaf woodland (11.4% of unit area) and fen carr (3.0%) are commonly found at the water margin especially on accreted foreshores and islands. Mixed species woodland accounts for a further 7.0% and coniferous plantation 5.3%. Some of this woodland is also associated with estates notably Castle Caldwell, Castle Archdale and Eley Lodge Forest.

'Other' agricultural grassland (42.3% of unit land area) is particularly characteristic of the north lough shore and Boa Island. More productive farmland and in particular perennial ryegrass (10.2% of unit land area) is associated with the River Erne, the east lough shore and land near Enniskillen. There is a relatively low amount of grassland rush infestation (34% of grassland area) but much broadleaf infestation (46%).

Derelict buildings are relatively commonplace (3.8 per km^2). Boundary length amounts to 15.6 km per km^2. Hedgebanks with scattered or overgrown shrubs account for 37.5% of boundary length. Banks (19.0%) and post and wire fence (18.7%) are also characteristic features. Boundary removal amounts to 17.0%.

The unit is noted for its plantation estates e.g. Portora, Tully, Archdale, Caldwell and Crevinish and also ancient monuments and monastic sites. Of particular interest are Janus figures on Boa Island, the church on White Island and the monastery and round tower on Devenish Island. National Nature Reserves are located in Castle Archdale Bay and at Castle Caldwell. Castle Archdale is also a Country Park. The lough is a focus for recreation and tourism particularly fishing and boating and is a major habitat for waders and other birds. There are several caravan sites.

Combined units 3,4,5 and 6: Eastern Lowlands

Broadleaf seminatural woodland accounts for 2.9% of unit land area. There is also a small amount of coniferous plantation (3.4%). The area is primarily agricultural (76.7% of unit land area). This is made up primarily of 'other' agricultural grassland (41.2%) and perennial ryegrass (33.0%). There is a relatively low amount of grassland rush infestation (42% of grassland area). There is a small amount of seminatural vegetation (8.0% of unit area) mainly consisting of scattered species rich wet grassland (3.1%) and fen meadow (1.6%).
New metalled roads (0.3 km per km^2) and new unmetalled roads (0.5 km per km^2) are

relatively common. New agricultural buildings are also a feature (4.0 per km^2). There is an abundance of field boundaries (25.7 km per km^2). Hedgebanks with scattered or overgrown shrubs account for 40.1% of unit boundary length and post and wire fence 20.1%. These combined units have the greatest amount of managed hedges (21% of hedge length). Boundary removal amounts to 15.7%. Ancient settlements are also a feature of these lowland units.

Unit 3: Magheraveely

The unit is primarily agricultural (76.9% of unit land area). This comprises 'other' agricultural grassland (48.6%) and perennial ryegrass (29.4%). Better land often with extensive improvement is found near Lisnaskea and Newtonbutler. The land north of Rosslea adjacent to the South-East Uplands is of poor quality, mainly comprising rush infested 'other' grassland but also some species rich wet grassland. As a whole there is relatively little seminatural vegetation (8.9% of unit land area). Species rich wetland vegetation, however, is a major feature of wide valley bottoms and is particularly associated with the Finn River. This is also a major wildfowl area. There are a number of small loughs in the unit, mainly adjacent to the South-East Uplands.

New domestic buildings (2.6 per km^2) and new metalled roads (0.6km per km^2) are relatively common. There is an abundance of field boundaries (26.7 km per km^2). These are mainly hedgebanks with scattered or overgrown shrubs (45.4% of unit boundary length) and post and wire fence (11.6%). Boundary removal amounts to 20.7%.

Unit 4: Colebrooke

The unit is mainly composed of agricultural grassland (82.1% of unit land area), often improved and associated with a relatively large field size and with silage production. Perennial ryegrass swards form 46.0% of unit land area and 'other' agricultural grassland 33.5%. There is relatively little grassland rush infestation (31% of grassland area). Dairy farming is a major feature with overwintering of sheep becoming more commonplace. Much of the unit is a non less favoured agricultural area and has a high proportion of free draining soils related to gravel deposits in the Colebrooke River valley. The river, however, is also liable to flooding. The gravels have been extracted in places. There is also a prominent limestone quarry at Creevehill.

There is little seminatural vegetation (1.8% of unit land area), mainly consisting of isolated species rich wet grassland parcels and areas of exploited lowland peat. Peat extraction, in particular, associated with new access roads is taking place near Tattinfree. Seminatural broadleaf woodland accounts for 5.0% of unit area and is, in particular associated with estate land notably the Colebrooke estate. There is an abundance of field boundaries (24.1 km per km^2). Hedgebanks with scattered or overgrown shrubs account for 30.0% of unit boundary length and post and wire fence 29.2%. Boundary removal amounts to 16.9 %.

Unit 5: Ballinamallard

The unit mainly comprises agricultural grassland (66.1% of unit land area). This is a mosaic of good quality grassland, particularly perennial ryegrass, and poorer rush infested grassland. Better swards and some arable fields occur on sandy clay loams associated with gravel deposits. Poorer swards are more commonplace at higher elevation adjacent to Brougher Mountain.

Seminatural vegetation accounts for 10.8% of land unit area. This consists mainly of bog in valley bottoms which has been heavily exploited for turf. Peatland has also been both afforested and colonised by invading woodland species particularly birch and Scots pine. Woodland occupies 10.6% of unit land area and includes different types of plantation associated with Riversdale and Necarne Forests. Hedgebanks with scattered or overgrown shrubs account for 44.7% of unit boundary length and post and wire fence 19.6%. There has also been significant boundary removal.

Unit 6a: Ederney

Agricultural land occupies 75.9% of unit land area. This mainly comprises 'other' agricultural grassland (46.7%) and perennial ryegrass (26.1%), with a small but notable amount of arable land. Poorer more rush infested agricultural land occurs near the adjacent uplands whilst land in and adjacent to the Glendarragh River valley is more improved as is land in the south of the unit. Seminatural vegetation occupies 10.5% of unit land area. This consists mainly of species rich wet grassland and poor fen. Peatland vegetation is associated with the Black Bog in the Glendarragh River valley near Ederney.

There is little seminatural broadleaf woodland but coniferous plantation occurs in

intermediate sized blocks mainly in the North. There is an abundance of boundaries (30.5 km per km^2). These are mainly hedgebanks with scattered or overgrown shrubs (48.0% of unit boundary length) and post and wire fence (19.9%).

Unit 6b: North-East Uplands

Land cover is mainly a mixture of poor agricultural grassland (59.6% of unit land area), coniferous plantation (10.8%) and seminatural vegetation (22.2%). The latter mainly comprises fen meadow and species rich wet grassland. Boundaries are mainly hedgebanks with scattered or overgrown shrubs, banks and post and wire fence. New unmetalled roads and new agricultural buildings are common features.

Combined units 7,8 and 11: Western Lowlands

The area is largely agricultural (76.0% of unit land area). This is made up of 'other' agricultural grassland (52.7%) and perennial ryegrass (18.4%). Seminatural vegetation comprises 12.8% of unit land area. This mainly consists of species rich wet grassland (5.3%), heath mosaic (2.6%) and bog (1.4%). Seminatural vegetation is heavily exploited with 17% of its area machine cut for turf and 20% disturbed.

Landscape features are commonplace with notable numbers of abandoned vehicles (3.3 per km^2), new domestic buildings (2.4 per km^2), new agricultural buidings (3.9 per km^2), new metalled roads (0.5 km per km^2) and new unmetalled roads(0.7 km per km^2). There is little woodland of any type.

There is an abundance of field boundaries (26.5 km per km^2). Hedgebanks with scattered or overgrown shrubs comprise 44.1% of unit boundary length with a further 8.8% of complete hedges. Post and wire fence accounts for 13.2%. Boundaries commonly have ditches (71% of unit boundary length). There is also an abundance of different shrub and tree species. Boundary removal amounts to 17.1%.

Unit 7: Derrylin

The unit is mainly agricultural (79.4% of unit land area). This consists of 'other' agricultural grassland (58.5%) and perennial ryegrass (20.9%). Seminatural vegetation accounts for 10.9% of unit land area. This is mainly species rich wet grassland, fen meadow and bog. Seminatural vegetation variation is greatest adjacent

to Slieve Rushen in the west of the unit. It is also here that most seminatural broadleaf woodland is located. New agricultural buildings are relatively commonplace. Both used and disused gravel quarries near Gortmullan in the south-west of the unit and the limestone quarry at Knockninny hill are obtrusive landscape features. Hedgebanks with scattered or overgrown shrubs are a common boundary type. There is also a significant amount of complete hedgebank and a lot of boundary removal.

Unit 8: Arney

The unit is mainly agricultural (73.4% of unit land area), much of which has been reclaimed from peatland. This agricultural land comprises 'other' agricultural grassland (60.2%) and perennial ryegrass (10.5%). A notable proportion of swards are conserved for hay. Corncrakes also breed within the unit.

Seminatural vegetation accounts for 17.1% of unit land area. This consists primarily of species rich wet grassland which occurs as land parcels at lower elevation away from the upland margin. Peatland parcels, mainly heath mosaic and bog occur in similar localities. These parcels are often heavily exploited. The best intact bog sites are at Clontymullan, Tattenmona and Lisblake. There is little woodland except that associated with the Florence Court estate and house which are located within the unit. The unit is notable for the number of abandoned vehicles and new domestic buildings.

Field boundaries are abundant (25.8 km per km^2). Hedgebanks with scattered or overgrown shrubs are a common boundary feature. There is also a significant amount of complete hedgebank and post and wire fence. Boundary removal is common.

Unit 11: Sillees

The unit primarily consists of agricultural land (77.2% of unit land area). 'Other' agricultural grassland (42%) is, in particular, rush infested (80% of its area). Perennial ryegrass occupies 27.4% of unit land area. There is a landscape contrast between improved grassland areas with boundary removal and those largely unimproved with their boundaries intact.

There is relatively little seminatural vegetation (9.2% of unit land area). This mainly consists of species rich wet grassland (3.2%) located in interdrumlin hollows or

adjacent to lough margins and poor fen (2.8%). Species rich wetland vegetation is, in particular associated with the Ross Lough National Nature Reserve. Coniferous plantation (4.8%) is dispersed throughout the unit in intermediate sized blocks, often on abandoned farmland. The trend for planting in such areas, as land becomes available, is likely to increase.

New metalled (0.6 km per km^2) and unmetalled roads (1.1km per km^2) are a feature as are new agricultural buildings (5.3 per km^2). Boundaries are primarily hedgebanks with scattered or overgrown shrubs (51% of unit boundary length) and post and wire fence (9.0%). Complete hedgebanks are relatively common (8.8%). Field boundary removal is also a feature (15.2%).

Combined units 9 and 10: Garrison and Lough Scolban

Seminatural vegetation accounts for 53.6% of unit land area. This comprises a variety of types, in particular, fen meadow (15.9%), species rich wet grassland (9.4%), bog (8.7%), heath (7.2%) and heath mosaic (5.8%). Much of this is exploited and, in particular, 18% of seminatural vegetation area has been cut by hand, 20% burnt, 31% disturbed and 17% eroded.

Agricultural land (31.2% of unit land area) is a more minor component. This mainly consists of 'other' agricultural grassland (27.4%). Rush infestation of grassland is high (89% of grassland area). Seminatural broadleaf woodland accounts for 2.3% of unit land area and coniferous plantation a further 6.8%. Derelict buildings are a common feature (6.0 per km^2) as are new unmetalled roads (0.5km per km^2).

There is an abundance of field boundaries (24.9 km per km^2). These are mainly banks (42.9% of unit boundary length), hedgebanks with scattered or overgrown shrubs (28.3%), and post and wire fence (11.1%). There is a low percentage of managed hedges (4% of hedge length) and a high percentage of ditches associated with boundaries (72% of unit boundary length). Gorse shrubs and willow trees in boundaries are particularly common in these units. Boundary removal is relatively low, amounting to 8.2% of unit boundary length.

Unit 9: Garrison

Seminatural vegetation accounts for 46.6% of unit land area mainly comprising fen

meadow (20.5%) and species rich wet grassland (12.5%), associated with traditional low input agricultural practice. The unit is notable for an abundance of these types. Agricultural land accounts for 37.6% of unit land area of which all but a small amount is 'other' agricultural grassland. Most of this is rush infested. The unit is largely agriculturally unimproved primarily because of the poor soil and wet climatic conditions that exist. Many grass swards are traditionally cut for hay in mid-summer. Amongst these are some of the most species rich.

In the landscape are a number of traditional farm buildings many of which are derelict (5.2 per km^2). Seminatural broadleaf woodland accounts for 3.2% of unit land area. Coniferous plantation (5.3% of unit land area) is common in small sized blocks on abandoned farmland. This land use is increasing in area and is a potential threat to seminatural vegetation types. Lough Melvin is associated with recreation in the form of fishing and outdoor pursuits.

There is an abundance of field boundaries (29.6 km per km^2). Boundaries are primarily banks (40.2% of unit boundary length), hedgebanks with scattered or overgrown shrubs (29.7%), and post and wire fence (9.8%). Much post and wire fence is in the form of traditional stick fences.

Unit 10: Lough Scolban

This unit mainly comprises blanket bog seminatural vegetation (71.9% of unit land area) related to the metamorphic geology of the area. Bog, heath and heath mosaic are the most common types. Much peatland vegetation has been burnt, disturbed and eroded, although there are relatively large areas of intact peat in the more remote locations. Coniferous plantation is also a common feature on this substratum.

The area is renowned for its traditional agriculture and traditional buildings. Many grassland swards are species rich and cut for hay although their abundance is less than in unit 9. Agricultural grassland is a minor component accounting for only 14.7% of unit land area. This is mainly rush infested 'other' agricultural grassland. There is an abundance of derelict buildings. Boundaries consist mainly of banks and post and wire fence. Boundary removal is not great.

Combined Units 12 and 13: Eastern Uplands

Seminatural vegetation accounts for 37.8% of unit land area. It consists of a variety of types but notably heath mosaic (20.8%). Seminatural vegetation is heavily exploited, in particular, 44% of its area has been cut over by hand, 13% by machine, 21% has open drains, 20% has been burnt and 29% is disturbed. Coniferous plantation is also a common feature (27.2% of unit land area). Agriculture accounts for 30.0% of unit land area. This is mainly 'other' agricultural grassland (25.5%).

There are 20.4 km per km^2 of field boundaries. These mainly consist of banks (39.5%), hedgebanks with scattered or overgrown shrubs (17.0%) and post and wire fence (11.2%). Afforested boundaries account for a further 21.7%. New unmetalled roads are common (0.6 km per km^2).

Unit 12: Brougher

Seminatural vegetation accounts for 49.3% of unit land area and is present mainly at higher elevation. It largely comprises heath mosaic with a smaller amount of relatively intact wet heath. Seminatural vegetation is heavily exploited. Much has been cut-over by hand and machine and burnt as well as being disturbed and eroded. There is little woodland in the unit.

Agricultural land (43.0% of unit land area) mainly consists of 'other' agricultural grassland and is predominantly rush infested. Reclamation to agricultural grassland is commonplace in the uplands. Grassland is also a characteristic of the lower elevation slopes. Abandoned vehicles and new unmetalled roads are common landscape features. Banks and post and wire fences are the main boundary types together with some hedgebanks with scattered or overgrown shrubs. The area is important for archeological sites e.g. megalithic tombs, cairns and standing stones.

Unit 13: South-East Uplands

There is an extensive amount of existing and new forestry plantation (41.6% of unit land area) on blanket peat and abandoned farmland. Although landscaped with mixed plantings its large size makes it obtrusive in the landscape. Seminatural vegetation encompassing a variety of mainly upland vegetation types on blanket peat accounts for 29.6% of unit land area. Heath mosaic is most common (12.6%). Much

seminatural vegetation has been cut-over by hand (23% of its area) and has open drains (31%). Disturbance (18%) and burning (17%) are also relatively common.

Agricultural land (23.2% of unit land area) mainly consisting of 'other' agricultural grassland accounts for much of the remainder. Most agricultural grassland is rush infested (85% of grassland area). Boundaries are mainly banks (30.7% of unit boundary length), hedgebanks with scattered or overgrown shrubs (20.3%) and post and wire fence (9.2%). Afforested boundaries account for a further 32.2%.

Combined units 14 and 15: Slieve Rushen and Cuilcagh Mountain

The area covers upland and plateau areas together with the limestone escarpments and some lower elevation land. It comprises seminatural vegetation types (70.6% of unit land area). These are mainly upland types notably heath mosaic (17.8%), bog (15.9%), poor fen (11.4%) and heath (7.7%). Species rich dry and calcareous grassland (6.6%) are characteristic where there are upper limestone rock outcrops. Broadleaf seminatural woodland (4.5% of unit land area) and scrub (0.7%) are also mainly associated with the limestone escarpments.

Agricultural land accounts for 21.5% of unit land area. This mainly consists of 'other' agricultural grassland (16.4%). Much grassland is rush infested (72% of total grassland area). There is also a comparatively large amount of broadleaf infestation (27%). New unmetalled roads (0.6 km per km^2) are a common feature. Field boundary length amounts to 12.8 km per km^2. Boundaries are mainly banks (36.0% of unit boundary length), hedgebanks with scattered or overgrown shrubs (24%), walls (16.6%) and post and wire fence (10.4%). Most walls are of the ruined dry stone type.

Unit 14: Slieve Rushen

Seminatural vegetation accounts for 51.4% of unit land area. It mainly consists of heath mosaic, bog, fen meadow, and poor fen at higher elevation. Seminatural deciduous woodland is associated with scarps and gulleys at the upland margin. Agricultural grassland (37.8% of unit land area) is mainly associated with intermediate elevation and escarpment terrain although there is some reclamation in the uplands. 'Other' agricultural grassland, predominantly rush infested, is the main type. Boundaries are primarily hedgebanks with scattered or overgrown shrubs and

banks. New unmetalled roads are a common landscape feature. Obtrusive used and disused gravel workings are located at lower elevation near Gortmullan.

Subunit 15a: Cuilcagh Mountains

The subunit consists almost exclusively of seminatural vegetation. Heath and heath mosaic are characteristic of better drained and sloping sites whilst poor fen and wet bog occur elsewhere. New unmetalled roads allow access to the lower and intermediate elevations of the plateau. These areas are being exploited for mechanical turf cutting. There are few boundaries. Aghatirourke Forest Nature Reserve is located within the subunit.

Subunit 15b: Cuilcagh Escarpment

Summary resource information is presented in Tables 42-43 and 45-47. The subunit is a major recreation area with attractions such as the Marble Arch Caves and Florence Court nearby, the Ulster Way to Cuilcagh Mountain and Gortalughany viewpoint. Hanging Rock, Marble Arch Forest, and Crossmurrin are National Nature Reserves located within the subunit. There are also a number of archaeological sites. Seminatural vegetation accounts for 66.7% of subunit land area. Calcareous grassland (13.7%) is widely distributed on the plateau and the higher elevation rock outcrops between Brookfield, and the national border in the west. South of Brookfield its cover and quality become more patchy. This is partly due to the greater depth of soil and lack of rock outcrops.

Heath (11.2%) and heath mosaic (15.8%) are common vegetation types often found in close association with calcareous grassland. Fen meadow (6.9% of unit land area), bog (5.4%) and poor fen (6.8%) are also moderately abundant. Species rich wet grassland is not well represented. Its main location is in flushed meadows at the upland/lowland divide, mainly in the south of the unit. Approximately 23% of all seminatural vegetation is disturbed and 21% eroded. Broadleaf seminatural woodland (5.7% of subunit land area) is a facet of the escarpment and associated river valleys. Its species composition is varied and diverse. Woodland cover is decreasing due to clearance for agricultural grassland.

Agricultural grassland accounts for 22.9% of subunit land area. It consists mainly of 'other' agricultural grassland (16.5%) of which almost all is rush infested. Derelict

buildings are relatively commonplace (3.9 per km^2). Boundary length amounts to 11.2 km per km^2. Banks (29.0% of subunit boundary length), walls (32.3%) and post and wire fences (17.5%) are the main boundary types.

Unit 16: North-West Mountains and Escarpment

Seminatural vegetation accounts for 33.7% of unit land area. This is mainly made up of bog (8.4%), heath (3.9%), heath mosaic (6.1%) and fen meadow (4.8%). Much seminatural vegetation is disturbed (30% of its area) and eroded (13%). Coniferous plantation covers 39.9% of unit land area and seminatural broadleaf woodland 4.3%. Agricultural land totals 17.7 % of unit land area. This mainly comprises 'other, agricultural grassland (12.6%). Derelict buildings (4.1 per km^2) are a characteristic feature.

Boundary length amounts to 12.0 km per km^2. Banks (25.4 % of unit boundary length), hedgebanks with scattered or overgrown shrubs (19.3%) and post and wire fence (17.8%) are characteristic boundary types. There is also a smaller but significant amount of wall (7.2%) mainly composed of the ruined dry stone type. Boundary removal is not great (6.7% of unit boundary length). These combined units have the least amount of ditches (47% of unit boundary length) and few managed hedges (3%).

Subunit 16a: North-West Mountains

Coniferous plantation (53.3% of sub unit land area) occupies large tracts of peatland and abandoned farms on the plateau. Some hill tops, lake margins and other features such as cliffs have been left unplanted. In spite of this landscaping the plantations size and extent makes it obtrusive. Areas of the forest are open for recreation, particularly Lough Navar Forest. There is an increasing amount of private forestry on the western side of the mountain block, often on small farms that have changed ownership.

Seminatural vegetation accounts for 33.9% of subunit land area. This consists mainly of bog (11.6%) with smaller amounts of heath (5.1%) and heath mosaic (8.3%). Of all seminatural vegetation, 18% of its land area has been cut over by hand, 30% is disturbed and 17% eroded. National Nature Reserves are located in Corral Glen and at Lough Naman Bog.

Agricultural land (6.7% of subunit land area) is limited in extent and located mainly on the western side of the mountain range at intermediate elevation. This is represented almost exclusively by 'other' agricultural grassland. New unmetalled roads mainly associated with forestry operations are a common landscape feature (0.6km per km^2).

Boundary length amounts to 9.4 km per km^2. Banks (31.9% of subunit boundary length), post and wire fence (18.6%) and hedgebanks with scattered or overgrown shrubs (14.1%) are the main field boundary types. Afforested boundaries represent a further 24.3%.

Subunit 16b: North-West Escarpment

Summary resource information is presented in Tables 42-43 and 45-48. Seminatural vegetation accounts for 33.2% of subunit land area. The area between Knockmore Cliff and Bunnahone Lough has a particularly high landscape quality, botanical species richness and habitat diversity. Seminatural vegetation mainly consists of species rich dry and calcareous grassland (10.0% of subunit land area), fen meadow (8.7%) and species-rich wet grassland (7.3%). Disturbance of seminatural vegetation primarily caused by cattle grazing occurs over 21% of its area. Calcareous grassland is mainly associated with the north-west of the unit where the escarpment is pronounced. Knockmore Cliff and Monawilken ASSI are in particular prime locations for this resource. Species rich wet grassland is integral to the subunit, occurring in flatter and plateau areas at intermediate elevation between escarpment faces. Only a small amount of this vegetation type is located at the base of the escarpment.

Broadleaf seminatural woodland (9.4% of subunit land area) and scrub (3.1%) are features of the escarpment. Species diversity is varied and there is a continuing trend of woodland clearance to make way for agricultural grassland. Agricultural land accounts for 46.2% of subunit land area. This comprises 'other' agricultural grassland (28.6%) and perennial ryegrass (13.0%). Derelict buildings (6.3 per km^2) are common landscape features. Boundary length amounts to 18.8 km per km^2. They are mainly hedgebanks with scattered or overgrown shrubs (26% of subunit boundary length), banks (16.8%) and post and wire fence (16.7%).

Table 10 Percentage mean area (A) and percentage sample square frequency (F) of woodland in land class groups of Fermanagh District. Also shown is the predicted total area (km^2).

Woodland type		Land class group A	B	C	D	E	F	Study area	Predicted total area (km^2)
Seminatural broadleaf woodland	A	3.7	5.1	2.7	2.2	3.2	0.1	3.3	56
	F	76	55	79	58	46	3	65	
Fen Carr	A	0.9	0.6	0.3	0.3	<0.1	-	0.5	9
	F	34	27	20	22	7		23	
Scrub	A	0.2	0.3	0.5	0.7	0.8	<0.1	0.4	7
	F	21	52	48	49	31	3	34	
Coniferous plantation	A	1.4	3.8	6.0	5.2	33.3	32.8	10.1	172
	F	32	58	48	40	62	50	46	
Broadleaf plantation	A	0.3	0.1	<0.1	-	0.1	0.1	0.2	3
	F	15	40	2		7	9	13	
Mixed species woodland	A	0.6	0.7	2.1	0.3	0.5	-	0.9	15
	F	24	34	29	45	10		24	
Isolated and lines of trees	A	-	-	-	-	-	-	-	-
	F	76	78	82	89	52	20	72	
Total	A	7.2	10.7	11.6	8.6	37.9	32.9	15.3	261
	F	92	87	95	100	89	55	55	

Table 11 Percentage mean area (A) and percentage sample square frequency (F) of woodland in combined landscape units of Fermanagh District. Also shown is the predicted total area (km^2).

Woodland type		Landscape unit 1,2	3,4,5,6	7,8,11	9,10	12,13	14,15	16	Study area	Predicted total area (km^2)
Seminatural broadleaf woodland	A	7.0	2.9	1.8	2.3	0.5	4.5	4.3	3.3	56
	F	72	62	84	94	32	53	52	65	
Fen carr	A	1.8	0.4	0.3	0.3	0.1	–	0.5	0.5	9
	F	56	19	11	20	10		15	23	
Scrub	A	0.4	0.1	0.3	0.6	0.1	0.7	1.6	0.4	7
	F	17	37	38	60	10	49	42	34	
Coniferous plantation	A	2.9	3.4	2.0	6.8	27.2	0.4	39.9	10.1	172
	F	39	47	35	54	53	10	71	46	
Broadleaf plantation	A	0.7	0.1	<0.1	<0.1	-	-	0.2	0.2	3
	F	22	17	10	7			15	13	
Mixed species woodland	A	3.2	0.8	<0.1	<0.1	0.9	<0.1	0.2	0.9	15
	F	37	29	17	20	26	4	8	24	
Isolated and lines of trees	A	-	-	-	-	-	-	-	-	-
	F	78	83	69	66	63	57	48	72	
Total	A	16.0	7.8	4.4	10.1	28.9	5.5	46.7	15.3	261
	F	100	84	94	100	74	75	100	90	

Table 12 Location of woodland in Fermanagh District expressed as a percentage area of each woodland type.

Woodland type	Location					
	Riverside	Lakeside	Field	Farm	Roadside	Demesne
Seminatural broadleaf woodland	12	27	42	1	1	17
Fen Carr	-	51	49	-	-	-
Scrub	11	7	70	2	7	2
Coniferous plantation	<1	<1	97	<1	<1	1

Table 13 Woodland topography in Fermanagh District expressed as a percentage area of each woodland type.

Woodland type	Topography					
	Flat	Sloping	Steep	Hilltop	Escarpment	Valley bottom
Seminatural broadleaf woodland	31	13	10	22	16	8
Fen carr	74	8	5	<1	-	13
Scrub	23	25	20	7	22	4
Coniferous plantation	10	34	29	25	<1	2

Table 14 Woodland height in Fermanagh District expressed as a percentage area of each woodland type.

Woodland type	Height			
	0-1m	1-3m	3-10m	>10m
Seminatural broadleaf woodland	<1	2	23	75
Fen carr	-	7	64	29
Scrub	4	46	50	-
Coniferous plantation	8	11	43	38

Table 15 Type of woodland ground flora in Fermanagh District expressed as a percentage area of each woodland type.

Woodland type	Ground Flora		
	species rich	Species poor	Grass dominated
Seminatural broadleaf woodland	32	55	14
Fen Carr	67	14	19
Scrub	27	41	32
Coniferous plantation	5	79	16

Table 16 Woodland soil type in Fermanagh District expressed as a percentage area of each woodland type.

Woodland type	Soil type			
	Waterlogged peat	Drained peat	Waterlogged mineral	Drained mineral
Seminatural broadleaf woodland	3	9	25	63
Fen carr	48	14	19	19
Scrub	4	27	17	52
Coniferous plantation	3	52	17	28

Table 17 Woodland management in Fermanagh District expressed as a percentage area of each woodland type.

Woodland type	Management			
	Unmanaged	Unenclosed	Shelter	Grazed
Seminatural broadleaf woodland	89	82	<1	37
Fen carr	94	73	-	9
Scrub	94	87	-	46
Coniferous plantation	8	44	<1	<1

Table 18 Percentage frequency of the most common tree species in parcels of each woodland type within Fermanagh District.

(a)

Woodland type	Tree species					
	Alder	Ash	Birch	Hawthorn	Hazel	Oak
Seminatural broadleaf	45	44	30	16	29	6
Fen Carr	53	13	30	-	2	-
Scrub	15	24	13	22	11	1
Coniferous plantation	1	-	1	-	1	-

(b)

Woodland type	Tree species					
	Rowan	Sycamore	Willow	Larch	Lodgepole pine	Sitka spruce
Seminatural broadleaf	9	10	50	-	-	-
Fen Carr	6	-	71	-	-	-
Scrub	11	2	40	-	-	-
Coniferous plantation	-	-	1	10	8	79

Table 19 Percentage mean area (A) and percentage sample square frequency (F) of seminatural vegetation in the land class groups of Fermanagh District. Also shown is the predicted total area (km^2)

Seminatural vegetation type		Land class group							
		A	B	C	D	E	F	Study area	Predicted total area (km^2)
Species rich dry and calcareous grassland	A	0.4	0.1	0.8	1.1	2.6	0.3	0.9	15
	F	19	20	19	30	21	30	21	
Species rich wet grassland	A	7.0	3.3	3.3	3.9	2.8	0.2	4.2	72
	F	77	60	70	67	43	11	62	
Lakeland margin and ditch vegetation	A	4.0	0.6	0.5	0.2	0.3	0.2	1.6	27
	F	80	44	24	31	25	17	47	
Ruderal vegetation	A	0.2	0.2	0.2	0.5	<0.1	–	0.2	3
	F	40	33	27	38	15	9	31	
Bent/fescue and mat grass hill pasture	A	-	0.1	0.4	0.1	0.9	0.4	0.3	5
	F		8	13	19	15	11	7	
Bracken	A	0.1	0.1	<0.1	<0.1	-	-	<0.1	<1
	F	7	8	7	8			6	
Gorse Heath	A	0.3	0.2	1.0	1.2	0.1	-	0.4	7
	F	19	11	42	56	12		22	
Heath	A	0.5	0.5	2.5	1.7	3.4	13.5	2.2	38
	F	6	11	9	31	30	68	15	
Heath mosaic	A	1.2	0.6	1.6	9.2	14.4	17.5	4.8	82
		6	17	12	40	57	60	22	
Fen meadow	A	1.1	1.4	5.3	1.7	6.3	0.9	2.9	50
	F	21	17	28	56	54	11	28	
Poor fen	A	0.5	2.2	1.4	1.8	4.5	9.5	2.2	37
	F	11	51	29	71	74	38	36	
Bog	A	0.7	0.3	4.0	1.9	5.5	22.9	3.4	58
	F	8	14	21	11	42	80	21	
Total	A	15.8	9.5	21.1	23.5	40.9	65.4	23.1	394
	F	98	92	100	100	100	91	98	

Table 20 Percentage mean area (A) and percentage sample square frequency (F) of seminatural vegetation in combined landscape units of Fermanagh District. Also shown is the predicted total area (km^2).

Seminatural vegetation type		Landscape unit 1,2	3,4,5,6	7,8,11	9,10	12,13	14,15	16	Study Area	Predicted total area (km^2)
Species rich dry and calcareous grassland	A	0.7	0.1	0.3	0.1	<0.1	6.6	2.8	0.9	15
	F	30	18	10	20	11	33	32	21	
Species rich wet grassland	A	6.4	3.1	5.3	9.4	2.7	0.9	3.3	4.2	72
	F	70	65	72	78	42	17	57	62	
Lakeland margin and ditch vegetation	A	7.6	0.6	0.5	0.7	0.1	0.8	0.9	1.6	27
	F	89	51	36	33	16	8	39	47	
Ruderal vegetation	A	0.2	0.2	0.1	0.1	0.1	0.5	0.1	0.2	3
	F	36	33	40	19	10	22	34	31	
Bent/fescue and mat grass hill pasture	A	-	0.1	-	-	0.2	2.9	0.6	0.3	5
	F		9			10	32	15	7	
Bracken	A	0.1	<0.1	<0.1	0.1	-	<0.1	-	<0.1	<1
	F	10	3	5	21		10		6	
Gorse heath	A	0.2	0.3	0.2	2.2	0.5	0.8	0.1	0.4	7
	F	22	19	12	53	32	24	8	22	
Heath	A	2.0	<0.1	0.2	7.2	4.7	7.7	3.9	2.2	38
	F	4	2	11	28	37	60	27	15	
Heath mosaic	A	0.4	0.1	2.6	5.8	20.8	17.8	6.1	4.8	82
	F	4	6	12	41	68	43	46	22	
Fen meadow	A	0.1	1.6	1.0	15.9	1.5	5.3	4.8	2.9	50
	F	12	12	33	79	47	40	40	28	
Poor fen	A	0.7	0.9	1.1	3.5	3.9	11.4	2.7	2.2	37
	F	14	23	26	67	89	55	39	36	
Bog	A	0.2	1.0	1.4	8.7	3.2	15.9	8.4	3.4	58
	F	7	6	17	48	26	65	48	21	
Total	A	18.6	8.0	12.8	53.6	37.8	70.6	33.7	23.1	394
	F	100	97	95	100	100	100	95	98	

Table 21 Management and structure of peatland vegetation in Fermanagh District. Results are expressed as a percentage area of each peatland type.

Peatland type	Hand -cut	Machine -cut	Open drains	Burnt	Disturbed	Eroded
Heath	23	6	12	13	30	30
Heath mosaic	46	15	8	19	48	25
Bog	35	5	24	19	22	6
Poor fen	8	-	4	<1	21	9

Table 22 Management and structure of seminatural vegetation in land class groups of Fermanagh District. Results are expressed as a percentage area of each group.

Management/ structure	Land class group A	B	C	D	E	F	Total
Hand cut	9	5	21	22	25	6	18
Machine cut	6	<1	-	1	8	2	4
Open drains	1	2	10	6	4	30	8
Burnt	3	1	15	37	2	13	8
Disturbed	15	13	26	34	29	11	22
Eroded	<1	3	16	3	10	18	10

Table 23 Management and structure of seminatural vegetation in combined landscape units of Fermanagh District. Results are expressed as a percentage area of combined units.

Management/ structure	Landscape unit							
	1,2	3,4,5,6	7,8,11	9,10	12,13	14,15	16	Total
Hand cut	6	10	24	18	44	5	13	18
Machine cut	-	-	17	<1	13	<1	4	4
Open drains	-	13	1	3	21	10	<1	8
Burnt	-	5	1	20	20	4	1	8
Disturbed	18	8	20	31	29	13	30	22
Eroded	8	-	-	17	11	11	13	10

Table 24 Percentage mean area (A) and percentage sample square frequency (F) of agricultural land in the land class groups of Fermanagh District. Also shown is the predicted total area (km^2).

Agricultural type		Land class group A	B	C	D	E	F	Study area	Predicted total area (km^2)
Italian ryegrass	A	0.9	0.1	1.0	0.1	-	-	0.5	9
	F	8	8	8	8			6	
Perennial ryegrass	A	20.5	36.4	19.6	12.2	1.3	-	17.7	303
	F	65	80	72	74	27		59	
Mixed species grassland	A	3.6	2.2	1.5	1.9	1.0	<0.1	2.2	37
	F	37	35	41	52	27	3	34	
Other agricultural grassland	A	46.0	30.5	39.1	49.8	15.5	1.2	35.2	601
	F	92	100	92	100	74	11	87	
Arable, fallow land	A	<0.1	1.9	<0.1	0.1	0.3	-	0.4	7
	F	9	14	15	14	7		14	
	A	71.0	71.3	61.2	64.1	18.2	1.2	56.1	956
	F	94	100	92	100	74	11	87	

Table 25 Percentage mean area (A) and percentage sample square frequency (F) of agricultural land in combined landscape units of Fermanagh District. Also shown is the predicted total area (km^2).

Agricultural type		Landscape unit 1,2	3,4,5,6	7,8,11	9,10	12,13	14,15	16	Study area	Predicted total area (km^2)
Italian ryegrass	A	0.1	0.3	2.5	-	-	-	0.1	0.5	9
	F	8	6	16				3	6	
Perennial ryegrass	A	14.7	33.0	18.4	2.9	3.0	3.5	3.6	17.7	303
	F	49	83	83	39	36	45	14	59	
Mixed species grassland	A	6.7	1.3	2.4	0.9	0.9	1.4	1.4	2.2	37
	F	44	29	41	40	26	26	31	34	
Other agricultural grassland	A	38.6	41.2	52.7	27.4	25.5	16.4	12.6	35.2	601
	F	81	100	100	86	79	53	62	87	
Arable, fallow land	A	<0.1	0.9	<0.1	<0.1	0.5	0.1	<0.1	0.4	7
	F	3	23	20	6	11	14	5	14	
Total	A	60.1	76.7	76.0	31.2	30.0	21.5	17.7	56.1	956
	F	90	100	100	86	79	96	62	87	

Table 26 Percentage area of agricultural grassland in the landclass groups of Fermanagh District infested with rushes and broadleaf weeds.

RUSH INFESTED

Grassland type	Land class group						
	A	B	C	D	E	F	Total
Italian and perennial ryegrass	10	7	11	6	23	-	9
Mixed species and 'other' grassland	69	67	77	74	93	100	73
Total	51	36	55	61	88	100	52

BROADLEAF INFESTED

Grassland type	Land class group						
	A	B	C	D	E	F	Total
Italian and perennial ryegrass	29	44	24	21	16	-	31
Mixed species and 'other' grassland	22	18	13	20	12	-	18
Total	24	32	16	21	12	-	22

RUSH and BROADLEAF INFESTED

Grassland type	Land class group						
	A	B	C	D	E	F	Total
Italian and perennial ryegrass	3	4	1	-	1	-	2
Mixed species and 'other' grassland	13	5	7	8	9	-	10
Total	10	4	5	6	8	-	7

Table 27 Percentage area of agricultural grassland in combined landscape units of Fermanagh District infested with rushes and broadleaf weeds.

RUSH INFESTED

Grassland type	Landscape units							
	1,2	3,4,5,6	7,8,11	9,10	12,13	14,15	16	Total
Italian and perennial ryegrass	13	7	13	31	13	9	24	9
Mixed species and 'other' grassland	60	70	78	94	80	84	89	73
Total	48	42	60	89	73	72	76	52

BROADLEAF INFESTED

Grassland type	Landscape units							
	1,2	3,4,5,6	7,8,11	9,10	12,13	14,15	16	Total
Italian and perennial ryegrass	53	30	22	30	6	34	32	31
Mixed species and 'other' grassland	32	14	16	16	16	25	14	18
Total	38	21	18	17	15	27	17	22

RUSH and BROADLEAF INFESTED

Grassland type	Landscape units							
	1,2	3,4,5,6	7,8,11	9,10	12,13	14,15	16	Total
Italian and perennial ryegrass	8	2	1	8	-	1	9	2
Mixed species and 'other' grassland	19	5	11	14	7	15	7	10
Total	16	4	8	13	6	13	8	7

Table 28 Landscape artefacts in the land class groups of Fermanagh District. N: sites per square kilometre. L: length (km) per square kilometre. F: percentage sample square frequency. Also shown are the predicted totals.

Landscape artefact		Land class group A	B	C	D	E	F	Study area	Predicted totals
Sites of new domestic buildings	N	1.4	2.6	2.3	-	0.3	-	1.4	2322
	F	14	31	35		6		18	
Sites of new agricultural buildings	N	2.9	3.8	3.7	4.6	0.4	-	2.8	4852
	F	39	59	58	41	5		38	
Sites of abandoned vehicles	N	2.6	1.4	2.7	3.4	0.9	-	2.1	3551
	F	32	23	47	47	19		31	
Sites of derelict buildings	N	4.1	3.0	3.2	5.5	3.2	1.2	3.5	6032
	F	46	41	55	86	36	9	45	
Sites of disposed rubbish/litter	N	2.1	2.1	2.2	2.2	0.5	-	1.7	2933
	F	31	42	39	39	8		29	
New metalled roads	L	0.3	0.3	0.2	0.1	<0.1	-	0.2	341
	F	22	18	21	21	5		18	
New unmetalled roads	L	0.5	0.5	0.6	0.4	0.8	0.5	0.5	931
	F	44	56	66	45	48	20	50	

Table 29 Landscape artefacts in the landscape units of Fermanagh District. N: sites per square kilometre. L: length (km) per square kilometre. F: percentage sample square frequency. Also shown are the predicted totals.

Landscape artefact		Landscape unit 1,2	3,4,5,6	7,8,11	9,10	12,13	14,15	16	Study area	Predicted total
Sites of new domestic buildings	N	1.6	1.8	2.4	0.9	0.2	0.4	0.2	1.4	2322
	F	17	23	33	14	5	8	5	18	
Sites of new agricultural buildings	N	3.1	4.0	3.9	2.2	0.9	1.1	0.6	2.8	4852
	F	36	56	55	33	10	22	6	38	
Sites of abandoned vehicles	N	2.4	2.0	3.3	1.6	2.6	1.2	0.5	2.1	3551
	F	25	38	42	19	42	14	11	31	
Sites of derelict buildings	N	5.4	2.5	3.1	6.0	3.1	2.9	4.1	3.5	6032
	F	46	41	50	60	53	26	43	45	
Sites of disposed rubbish/litter	N	2.9	2.1	1.9	0.6	1.5	1.0	0.1	1.7	2933
	F	36	36	43	6	26	10	3	29	
New metalled roads	L	0.1	0.3	0.5	0.1	-	0.2	0.1	0.2	341
	F	11	22	46	6		22	6	18	
New unmetalled roads	L	0.4	0.5	0.7	0.5	0.6	0.6	0.7	0.5	931
	F	29	57	74	67	42	31	35	50	

Table 30 Classification of field boundary types in Fermanagh District.

Boundary Type	
1	Boundary removed
2	Complete hedgebank with post and wire fence
3	Complete hedgebank without post and wire fence
4	Hedgebank with gaps and post and wire fence
5	Hedgebank with gaps, without post and wire fence
6	Hedgebank with scattered or overgrown shrubs and post and wire fence
7	Hedgebank with scattered or overgrown shrubs, without post and wire fence
8	Hedgerow (all conditions)
9	Wall (all conditions)
10	Hedge on wall
11	Earth or wall bank with post and wire fence
12	Earth or wall bank without post and wire fence
13	Post and wire fence
14	Afforested boundary

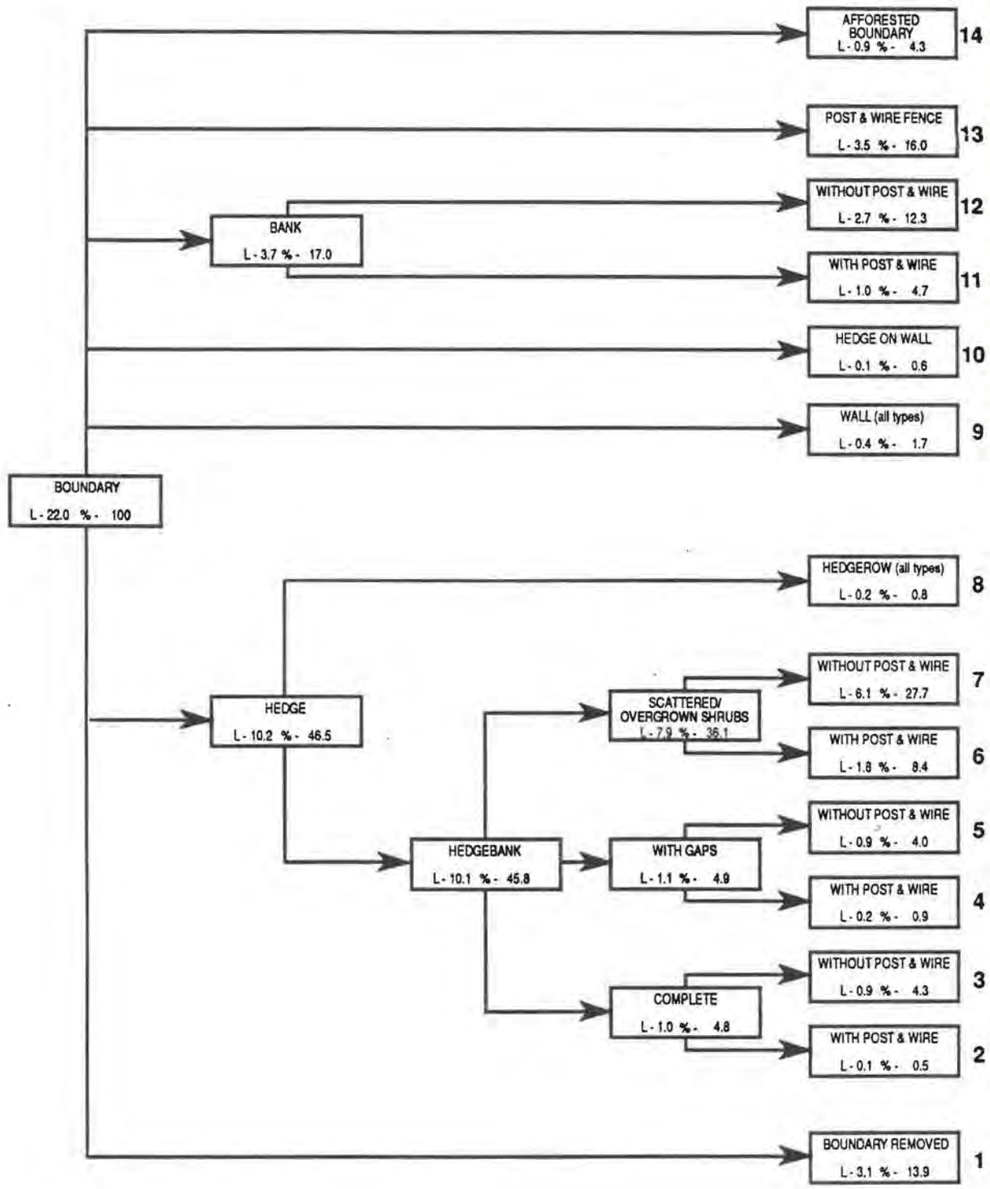


Fig.9 Hierarchical classification of field boundary types in Fermanagh District.

Table 31 The mean length (km) per square kilometre of field boundary types in land class groups of Fermanagh District. Results are also expressed as a percentage (%) of each group total. Predicted total lengths (Km) are also given.

Boundary type			Land class group A	B	C	D	E	F	Study area	Predicted total length (km)
Boundary removed	1	Km	4.2	4.0	3.4	3.1	0.6	0.1	3.1	5208
		%	17.9	15.7	13.5	11.3	3.5	3.4	13.9	
Hedgebank	2	Km	0.1	<0.1	0.2	-	<0.1	-	0.1	172
		%	0.5	0.2	0.9		<0.1		0.5	
	3	Km	1.6	0.5	1.0	0.7	0.1	-	0.9	1615
		%	6.8	2.1	4.1	2.5	0.9		4.3	
	4	Km	0.2	0.5	0.2	0.2	<0.1	-	0.2	346
		%	1.0	1.8	0.8	0.6	<0.1		0.9	
	5	Km	1.1	0.7	1.5	0.5	0.2	-	0.9	1501
		%	4.8	2.7	6.1	1.7	1.0		4.0	
	6	Km	2.0	3.9	1.9	1.7	0.3	-	1.8	3138
		%	8.5	15.1	7.5	6.2	1.7		8.4	
	7	Km	8.1	5.4	8.0	5.9	2.1	<0.1	6.1	10406
		%	34.5	21.0	32.1	21.7	13.1	0.2	27.7	
Hedgerow	8	Km	0.2	0.1	0.3	<0.1	<0.1	-	0.2	291
		%	1.0	0.5	1.3	<0.1	0.2		0.8	
Wall	9	Km	0.1	0.1	0.4	0.5	1.2	0.1	0.4	658
		%	0.6	0.3	1.4	1.9	7.2	3.0	1.7	
Hedge on wall	10	Km	0.1	-	0.2	0.8	0.1	-	0.1	234
		%	0.4		0.9	2.8	0.4		0.6	
Earth or wall bank	11	Km	0.5	1.1	0.9	3.0	1.7	0.3	1.0	1774
		%	2.3	4.3	3.6	11.1	10.2	11.2	4.7	
	12	Km	1.4	2.8	2.6	7.3	4.2	0.7	2.7	4598
		%	6.1	10.9	10.5	26.6	25.5	28.4	12.3	
Post & wire fence	13	Km	3.5	6.2	3.8	2.9	2.3	0.7	3.5	5996
		%	14.7	24.0	15.1	10.4	14.0	29.1	16.0	
Afforested boundary	14	Km	0.2	0.5	0.6	0.9	3.7	0.6	0.9	1612
		%	0.7	1.9	2.2	3.2	22.7	24.8	4.3	
Total		Km	23.5	25.7	25.1	27.4	16.4	2.5	22.0	37550
		%	100	100	100	100	100	100	100	

Table 32 The mean length (km) per square kilometre of field boundary types in combined landscape units of Fermanagh District. Results are also expressed as a percentage (%) of unit total. Predicted total lengths (km) are also given.

Boundary type			Landscape unit 1,2	3,4,5,6	7,8,11	9,10	12,13	14,15	16	Study area	Predicted total length (km)
Boundary removed	1	Km	3.4	4.0	4.5	2.0	1.4	0.9	0.8	3.1	5208
		%	17.7	15.7	17.1	8.2	6.8	7.4	6.7	13.9	
Hedgebank	2	Km	0.1	0.2	0.2	0.1	-	<0.1	<0.1	0.1	172
		%	0.4	0.6	0.6	0.3		0.1	0.2	0.5	
	3	Km	1.2	1.0	2.2	0.2	0.1	0.3	0.3	0.9	1615
		%	6.4	4.0	8.2	0.8	0.6	2.0	2.5	4.3	
	4	Km	0.1	0.3	0.3	0.1	<0.1	-	0.1	0.2	346
		%	0.8	1.3	1.3	0.3	<0.1		0.6	0.9	
	5	Km	1.0	1.3	1.3	0.3	0.1	0.1	0.3	0.9	1501
		%	5.1	5.1	4.9	1.2	0.7	1.1	2.2	4.0	
	6	Km	1.6	3.1	1.9	1.0	0.5	0.6	0.6	1.8	3138
		%	8.5	11.9	7.2	4.0	2.4	4.7	5.3	8.4	
	7	Km	6.6	7.3	9.8	6.1	3.0	2.5	1.7	6.1	10406
		%	34.2	28.2	37.0	24.3	14.6	19.3	14.0	27.7	
Hedgerow	8	Km	0.4	0.3	0.1	0.1	-	-	<0.1	0.2	291
		%	2.0	1.0	0.4	0.2			0.4	0.8	
Wall	9	Km	0.2	0.1	0.1	0.6	0.5	2.1	0.9	0.4	658
		%	0.9	0.4	0.4	2.5	2.2	16.6	7.2	1.7	
Hedge on wall	10	Km	0.2	<0.1	0.1	0.3	<0.1	0.3	0.4	0.1	234
		%	0.9	<0.1	0.5	1.3	0.2	2.4	3.1	0.6	
Earth or wall bank	11	Km	0.6	0.9	0.5	2.3	2.5	0.9	0.8	1.0	1774
		%	3.0	3.3	1.8	9.3	12.4	6.8	6.9	4.7	
	12	Km	1.2	1.7	1.7	8.4	5.5	3.7	2.2	2.7	4598
		%	6.4	6.5	6.4	33.6	27.1	29.2	18.5	12.3	
Post & wire fence	13	Km	2.7	5.2	3.5	2.8	2.3	1.3	2.1	3.5	5996
		%	13.9	20.1	13.2	11.1	11.2	10.4	17.8	16.0	
Afforested boundary	14	Km	-	0.4	0.3	0.7	4.4	-	1.8	0.9	1612
		%		1.7	1.2	2.9	21.7		14.8	4.3	
Total		Km	19.2	25.7	26.5	24.9	20.4	12.8	12.0	22.0	37550
		%	100	100	100	100	100	100	100	100	

Table 33 Percentage length of managed hedges in Fermanagh District.

Hedge type	% of boundary length
Complete hedgebank	42
Hedgebank with gaps	30
Hedgebank with scattered or overgrown shrubs	8
Hedgerow, hedge on wall	24
Total	14

Table 34 Percentage length of managed hedges in land class groups of Fermanagh District.

Hedge type	Land class group A	B	C	D	E	F	Total
Hedgerow, hedgebank, hedge on wall	11	19	18	11	4	-	14

Table 35 Percentage length of managed hedges in combined landscape units of Fermanagh District.

Hedge type	Landscape units 1,2	3,4,5,6	7,8,11	9,10	12,13	14,15	16	Total
Hedgerow, hedgebank, hedge on wall	7	21	11	4	8	2	3	14

Table 36 Percentage length of boundaries with ditches in land class groups of Fermanagh District.

Boundary type	Land class group						
	A	B	C	D	E	F	Total
Hedgerow, hedgebank, hedge on wall	72	52	75	65	75	-	70
Wall	-	-	15	13	7	-	8
Bank	74	71	69	68	77	61	71
Post and wire fence	41	34	41	29	36	48	38
Total	66	50	66	61	62	53	63

Table 37 Percentage length of boundaries with ditches in combined landscape units of Fermanagh District.

Boundary type	Landscape unit							
	1,2	3,4,5,6	7,8,11	9,10	12,13	14,15	16	Total
Hedgerow, hedgebank, hedge on wall	63	67	79	75	80	61	59	70
Wall	19	7	-	11	22	5	2	8
Bank	57	75	73	77	72	70	58	71
Post and wire fence	27	40	34	54	41	30	30	38
Total	55	61	71	72	67	51	47	63

Table 38 The percentage number of field boundaries with selected shrub species in land class groups of Fermanagh District.

HAWTHORN

Boundary type	Land class group						
	A	B	C	D	E	F	Total
Hedge	88	92	90	88	90	100	89
Wall	4	-	20	27	31	-	20
Bank	29	32	27	25	27	17	28
Post and wire fence	3	4	2	2	3	-	3
Total	66	56	63	49	41	15	59

BLACKTHORN

Boundary type	Land class group						
	A	B	C	D	E	F	Total
Hedge	46	28	38	17	22	-	38
Wall	2	-	5	16	7	-	6
Bank	2	2	5	2	2	-	3
Post and wire fence	1	4	2	1	-	-	2
Total	33	16	26	9	8	-	24

Table 38 continued

HOLLY

Boundary type	Land class group						
	A	B	C	D	E	F	Total
Hedge	17	5	28	20	9	-	18
Wall	-	-	2	3	4	-	2
Bank	5	1	10	3	2	-	4
Post and wire fence	<1	-	-	-	-	-	<1
Total	13	3	20	9	4	-	12

GORSE

Boundary type	Land class group						
	A	B	C	D	E	F	Total
Hedge	3	7	10	8	7	-	6
Wall	7	-	10	14	5	-	7
Bank	27	29	43	41	23	6	32
Post and wire fence	<1	2	4	3	1	-	2
Total	5	11	15	22	14	4	11

Table 39 The percentage number of field boundaries with selected shrub species in combined landscape units of Fermanagh District.

HAWTHORN

Boundary type	Landscape units							
	1,2	3,4,5,6	7,8,11	9,10	12,13	14,15	16	Total
Hedge, hedge on Wall	85	91	89	89	89	87	86	89
Wall	-	-	17	24	16	52	17	20
Bank	27	32	20	35	23	25	25	28
Post and wire fence	<1	3	4	5	2	-	4	3
Total	63	63	68	52	40	49	44	59

BLACKTHORN

Boundary type	Landscape units							
	1,2	3,4,5,6	7,8,11	9,10	12,13	14,15	16	Total
Hedge, hedge on wall	42	37	50	24	14	28	29	38
Wall	-	-	5	5	3	25	1	6
Bank	1	6	4	2	1	1	3	3
Post and wire fence	-	2	1	3	-	-	2	2
Total	30	25	37	10	5	14	12	24

Table 39 continued

HOLLY

Boundary type	Landscape units 1,2	3,4,5,6	7,8,11	9,10	12,13	14,15	16	Total
Hedge, hedge on wall	10	17	25	27	24	11	11	18
Wall	6	-	-	-	-	3	5	2
Bank	8	6	2	5	2	3	2	4
Post and wire fence	-	<1	-	-	-	-	-	<1
Total	8	12	18	12	9	5	6	12

GORSE

Boundary type	Landscape units 1,2	3,4,5,6	7,8,11	9,10	12,13	14,15	16	Total
Hedge, hedge on wall	2	8	4	9	8	7	1	6
Wall	20	-	19	5	13	5	5	7
Bank	15	38	36	36	32	28	13	32
Post and wire fence	-	3	-	1	3	-	1	2
Total	3	11	7	22	21	14	5	11

Table 40 The percentage number of field boundaries with selected tree species in the land class groups of Fermanagh District.

ASH

Boundary type	Land class group A	B	C	D	E	F	Total
Hedge, hedge on wall	68	56	65	36	46	-	62
Wall	14	12	7	11	9	-	10
Bank	24	15	25	11	13	-	18
Post and wire fence	3	4	3	1	2	-	3
Total	52	33	47	20	20	-	41

ALDER

Boundary type	Land class group A	B	C	D	E	F	Total
Hedge, hedge on wall	22	17	23	36	31	-	23
Wall	4	-	-	9	<1	-	2
Bank	14	12	19	25	15	3	17
Post and wire fence	5	4	3	2	2	-	3
Total	18	13	18	27	16	2	18

Table 40 continued

WILLOW

Boundary type	Land class group A	B	C	D	E	F	Total
Hedge, hedge on wall	37	27	37	33	33	100	35
Wall	2	-	3	-	9	-	5
Bank	47	33	42	33	24	3	36
Post and wire fence	6	4	7	6	6	-	6
Total	32	22	33	29	22	5	29

ROWAN

Boundary type	Land class group A	B	C	D	E	F	Total
Hedge, hedge on wall	3	2	10	23	11	-	7
Wall	2	-	3	18	7	-	6
Bank	13	8	13	26	10	-	14
Post and wire fence	<1	<1	1	3	1	-	1
Total	4	3	9	22	9	-	7

Table 40 continued

HOLLY

Boundary type	Land class group A	B	C	D	E	F	Total
Hedge, hedge on wall	19	8	28	21	15	-	20
Wall	5	12	13	18	2	-	8
Bank	16	4	23	15	4	-	13
Post and wire fence	1	-	1	2	-	-	1
Total	15	5	23	16	6	-	15

SYCAMORE

Boundary type	Land class group A	B	C	D	E	F	Total
Hedge, hedge on wall	7	7	13	14	9	-	9
Wall	-	12	1	8	-	-	2
Bank	5	1	4	9	2	-	4
Post and wire fence	-	-	2	-	-	-	<1
Total	5	4	9	10	3	-	6

Table 41 The percentage number of field boundaries with selected tree species in combined landscape units of Fermanagh District.

ASH

Boundary type	Landscape unit							
	1,2	3,4,5,6	7,8,11	9,10	12,13	14,15	16	Total
Hedge, hedge on wall	67	63	68	53	36	45	58	62
Wall	27	4	5	14	-	15	9	10
Bank	28	28	22	14	10	10	12	18
Post and wire fence	4	3	4	4	1	2	3	3
Total	51	45	53	27	16	22	28	41

ALDER

Boundary type	Landscape unit							
	1,2	3,4,5,6	7,8,11	9,10	12,13	14,15	16	Total
Hedge, hedge on wall	18	19	26	30	44	22	26	23
Wall	6	-	5	-	6	1	-	2
Bank	16	16	16	12	26	9	12	17
Post and wire fence	4	4	3	2	3	2	2	3
Total	15	15	22	17	28	12	15	18

Table 41 continued

WILLOW

Boundary type	Landscape unit							
	1,2	3,4,5,6	7,8,11	9,10	12,13	14,15	16	Total
Hedge, hedge on wall	36	27	44	52	39	32	32	35
Wall	6	-	-	5	6	3	11	5
Bank	50	42	42	39	29	19	16	36
Post and wire fence	7	5	5	9	6	8	6	6
Total	32	24	37	40	29	20	20	29

ROWAN

Boundary type	Landscape unit							
	1,2	3,4,5,6	7,8,11	9,10	12,13	14,15	16	Total
Hedge, hedge on wall	3	6	6	8	28	12	4	7
Wall	-	-	6	5	22	3	5	6
Bank	16	12	20	9	21	10	7	14
Post and wire fence	<1	<1	-	1	3	-	-	1
Total	4	6	7	8	21	8	4	7

Table 41 continued

HOLLY

Boundary type	Landscape unit							
	1,2	3,4,5,6	7,8,11	9,10	12,13	14,15	16	Total
Hedge, hedge on wall	11	20	25	24	33	3	10	20
Wall	6	4	13	22	13	-	4	8
Bank	16	13	22	13	14	3	2	13
Post and wire fence	-	<1	2	1	2	-	-	1
Total	9	15	21	16	18	2	5	15

SYCAMORE

Boundary type	Landscape unit							
	1,2	3,4,5,6	7,8,11	9,10	12,13	14,15	16	Total
Hedge, hedge on wall	8	12	6	5	7	7	13	9
Wall	-	4	-	-	3	2	1	2
Bank	8	5	6	1	5	4	4	4
Post and wire fence	-	1	-	-	-	-	-	<1
Total	6	8	5	2	5	4	7	6

Table 42 The percentage mean area of selected woodland types in ecologically diverse areas of Fermanagh District.

Woodland type	Landscape unit		
	1	15b	16b
Seminatural broadleaf woodland	3.9	5.7	9.4
Woodland scrub	0.6	1.2	3.1
Coniferous plantation	1.1	-	5.5
Other	2.3	-	0.5
Total Woodland	7.9	6.9	18.5

Table 43 The percentage mean area of selected seminatural vegetation types in ecologically diverse areas of Fermanagh District.

Seminatural vegetation type	Landscape unit		
	1	15b	16b
Lakeland margin and ditch vegetation	10.4	1.6	2.8
Species rich dry and calcareous grassland	0.9	13.7	10.0
Species rich wet grassland	9.7	1.9	7.3
Heath	-	11.2	1.0
Heath mosaic	-	15.8	0.2
Fen meadow	0.2	6.9	8.7
Poor fen	<0.1	6.8	1.1
Bog	-	5.4	-
Other	0.5	3.4	2.1
Total seminatural vegetation	21.7	66.7	33.2

Table 44 The percentage area of seminatural lakeland vegetation, grazed or disturbed in the Upper Lough Erne landscape unit (1).

Vegetation type	Grazed	Disturbed
Freshwater vegetation	–	–
Reedbeds	10	1
Swamp	10	1
Fen	66	9
Water inundation vegetation	92	10
Rush pasture	86	10
Species rich wet vegetation	39	7
Water margin vegetation (ditch)	10	–

Table 45 Management and structure of seminatural vegetation in the main limestone escarpment areas of Fermanagh District. Results are expressed as a percentage of sub unit area

Management/structure	Landscape subunit	
	15b	16b
Hand cut	4	<1
Disturbed	23	21
Eroded	21	4

Table 46 The percentage mean area of agricultural types in ecologically diverse areas of Fermanagh District.

Agricultural type	Landscape unit		
	1	15b	16b
Italian ryegrass	0.2	-	0.2
Perennial ryegrass	17.9	4.9	13.0
Mixed species grassland	11.2	1.4	4.4
Other agricultural grassland	35.9	16.5	28.6
Arable/fallow	0.1	<0.1	-
Total agricultural land	65.3	22.9	46.1

Table 47 Landscape artefacts in ecologically diverse areas of Fermanagh District. N: sites per square kilometre. L: length (kilometre) per square kilometre.

Landscape artefacts		Landscape unit		
		1	15b	16b
New domestic buildings	N	2.4	0.9	-
New agricultural buidings	N	4.0	1.3	2.3
Sites of abandoned vehicles	N	3.5	0.4	1.8
Sites of derelict buildings	N	6.7	3.9	6.3
Sites of rubbish/litter	N	4.0	-	0.5
New metalled roads	L	0.1	0.3	0.2
New unmetalled roads	L	0.2	0.6	0.8

Table 48 Field boundaries in ecologically diverse areas of Fermanagh District expressed as a percentage of total boundary length.

Boundary type	Landscape unit		
	1	15b	16b
Boundary removed	18.2	5.8	12.8
Complete hedgebank	8.7	0.7	4.0
Hedgebank with gaps	7.5	0.7	5.3
Hedgebank with scattered/overgrown shrubs	45.4	11.9	26.0
Wall	0.6	32.3	8.0
Earth or wall bank	4.4	29.0	16.8
Post and wire fence	11.4	17.5	16.7
Other	3.8	2.0	10.3
Total	100	100	100

4.4 Comparison with Areas of Outstanding Natural Beauty

Northern Ireland Land Class composition

The characteristic mountain topography in the Mourne AONB is reflected in the high frequency of upland and mountain land classes present (56.2%). There is also a considerable amount of intensively farmed low elevation land typified by land class 1. In the Antrim Coast and Glens AONB, the upland and mountain land classes 20-23 predominate with a cover of 80.9%. In the Antrim Causeway Coast AONB, the coastal, lowland/upland transitional land class 16 is typical. The North Derry AONB mainly comprises the low elevation land class 5, the coastal, lowland/upland transitional land class 16 and the upland/mountain land classes 21 and 22 in similar proportions. The Sperrins AONB has the highest frequency of the mountain land class 23, which together with other upland land classes constitute 88.9% of the area (Table 49).

Fermanagh District notably comprises the low elevation land class 5 (27%). Away from the lake margins the lowland flat to undulating land class 7 (12%) is commonly found often in association with landclass 15 (19%), typical of high drumlin topography and the lower slopes of the uplands. Land class 20 (14%) is typical of the rolling uplands and lower mountains. Distribution maps and the characteristic physical attributes of the four most common land classes in Fermanagh District are presented in Fig. 10.

Ecological Resources, Land Use and Landscape Attributes

There is a greater percentage area of seminatural deciduous woodland, scrub and fen carr in Fermanagh than in the AONB's (Fig. 11). The amount of coniferous plantation is similar to that in North Derry and Antrim and greater than that in the Sperrins or the Mournes.

Fermanagh has by far the largest percentage area of 'other' agricultural grassland but fewer ryegrass swards than in North Derry and the Mournes (Fig. 11). All the AONB's have a much greater percentage mean of arable/fallow land than Fermanagh.

Species rich wetland vegetation is more a characteristic of Fermanagh than the other areas (Fig. 12). In contrast the percentage mean area of hill pasture, gorse, bracken,

ericaceous heath (and its mosaic) is much less. There is much less wet heath (and mosaic) in Fermanagh than in the Sperrins but more than in other areas except the Mournes. Bog and poor fen are also not a major characteristic of the District.

Hedgebanks of all types are more characteristic of Fermanagh than the other areas (Fig. 13). The percentage boundary length of banks is much less than in the Sperrins but broadly comparable to Antrim and greater than in North Derry. Banks were not recorded as an attribute in the Mournes. Post and wire fence and walls are fewer than in the AONB's. Boundary removal in Fermanagh and the Mournes (0.5% per year) is comparable and slightly greater than in the Sperrins (0.4%), Antrim (0.4%) and North Derry (0.3%).

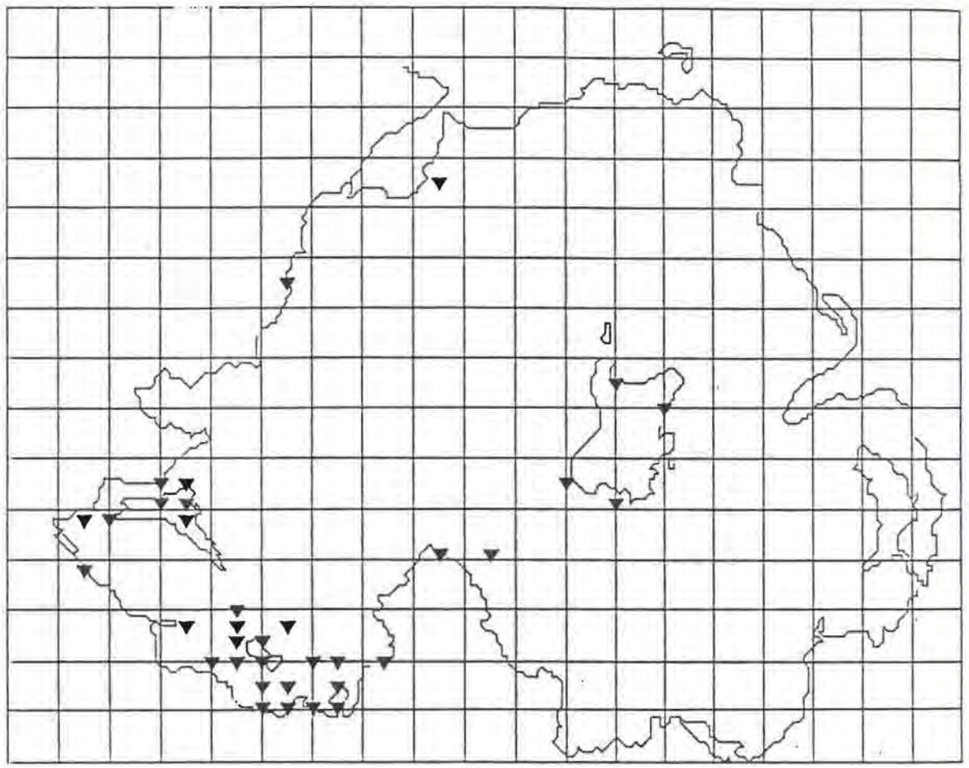
Table 49 **Percentage frequency of the Northern Ireland land classes in the landscape ecology study areas in Northern Ireland. Only frequencies greater than 1% in any area are shown. An asterisk marks frequencies which deviate markedly upwards from the frequency distribution of land classes in Northern Ireland.**

	Northern Ireland land class	Northern Ireland	Mourne AONB	Antrim Coast and Glens AONB	Antrim Causeway Coast AONB	North Derry AONB	Sperrins AONB	Fermanagh District
	1	5.1	*16.8	-	-	-	-	-
	2	4.1	8.1	-	-	-	-	-
	3	7.9	5.7	-	-	-	-	3.4
	4	3.0	1.1	-	-	-	-	-
low	5	5.0	-	-	-	*29.1	-	*27.1
elevation	6	2.9	-	-	-	-	-	-
	7	3.9	-	1.2	-	-	1.7	*11.6
	8	3.6	-	-	-	-	1.2	2.2
	9	3.0	-	-	-	-	-	-
	10	5.1	-	-	-	-	-	3.5
	11	4.6	-	-	*15.8	4.5	-	-
	12	3.0	-	-	* 8.8	4.5	-	-
	13	2.9	3.4	-	-	-	-	-
lowland/	14	5.4	4.1	-	-	-	2.6	2.1
upland	15	5.4	-	1.8	-	-	3.2	*18.8
transition	16	4.9	-	*14.5	*71.9	*20.9	-	-
	17	3.3	*31.1	-	-	-	3.2	-
	18	3.7	2.6	* 8.3	-	1.8	1.2	-
upland	19	5.1	1.5	2.0	-	-	*28.9	4.3
	20	5.3	-	*9.7	-	4.5	*10.8	*13.7
	21	4.6	-	*20.2	3.5	*18.2	*11.4	2.5
	22	4.9	2.4	*27.4	-	*13.6	*12.5	4.4
mountain	23	3.3	*18.6	13.3	-	1.8	*20.9	-
Lake		-	-	-	-	-	-	1.5

Fig. 10 Distribution maps of Northern Ireland land classes that constitute a large proportion of Fermanagh District.

Land Class 5

This type is found mainly around the Lough Erne drainage basin and is associated with the 61m contour. Drumlins and interdrumlin hollows are common features in an otherwise flat landscape. Almost 15% of the land class is occupied by freshwater bodies with small loughs and islands being frequent. The drainage pattern is characterised by much branched streams and rivers. The road network is poorer in comparison with the other lowland classes and consists mainly of minor roads. There are few buildings and a relatively high frequency of lowland, semi-natural vegetation types. Soils are principally gleys but there is also grey brown podzolic soil and some basin peat.



A constant attribute is one which occurs in the land class with a frequency of >80%.

Constant attributes (80-100%)

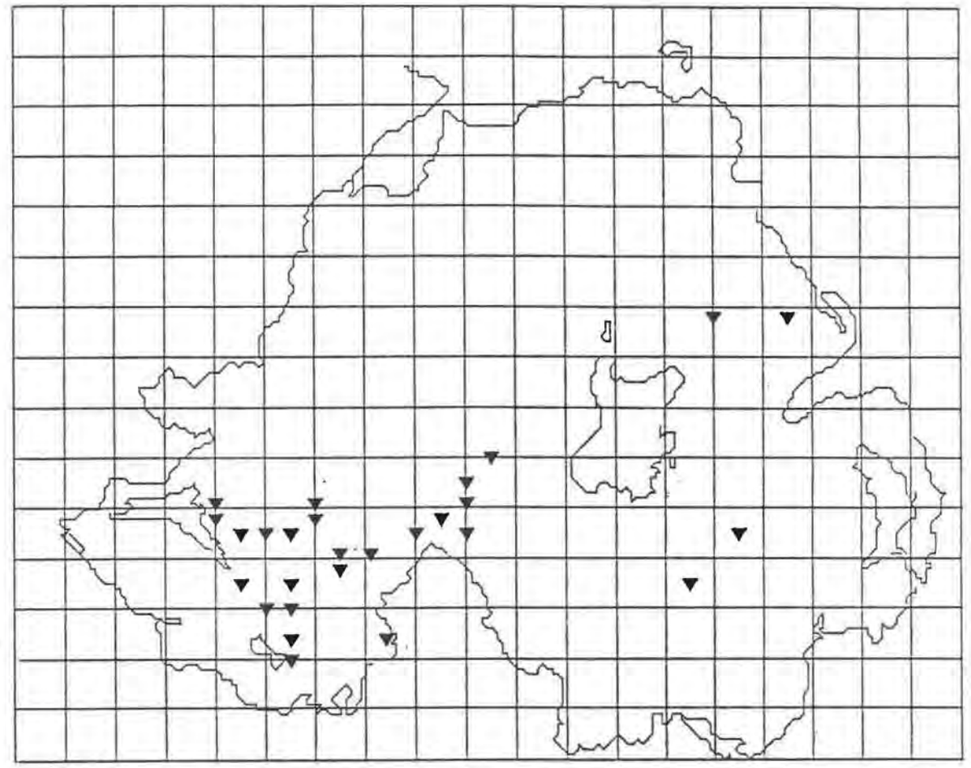
Land 0-61m in surrounding squares
Highest point, 0-152m
Lowest point, 0-152m
*Mean minimum July temperature, 10.0-10.5°C
*Mean annual number of days with air frost, 40-60
*Mean annual number of days with gales 5-10
Minor road

Attributes at the ultimate TWINSPAN dichotomy

Calp limestone and shale-sandstone
Gleys (Upper carboniferous limestone and shale-sandstone glacial till)
Surrounding squares with water bodies, 1
Buildings, <11
Mean maximum January temperature >6.5°C

Land Class 7

Topography and elevation do not differ greatly from land class 6 but the landscape is more strongly influenced by the presence of drumlins. This land class is found further south than land class 6, in Fermanagh and Tyrone, often over limestone, but there are outliers in the east of the region. The land class is also more typically associated with small rivers and there are fewer freshwater bodies. There is a high frequency of much- forked, often unfenced roads and the density of buildings is relatively high. The soils are mainly gleyed.



Constant attributes (80-100%)

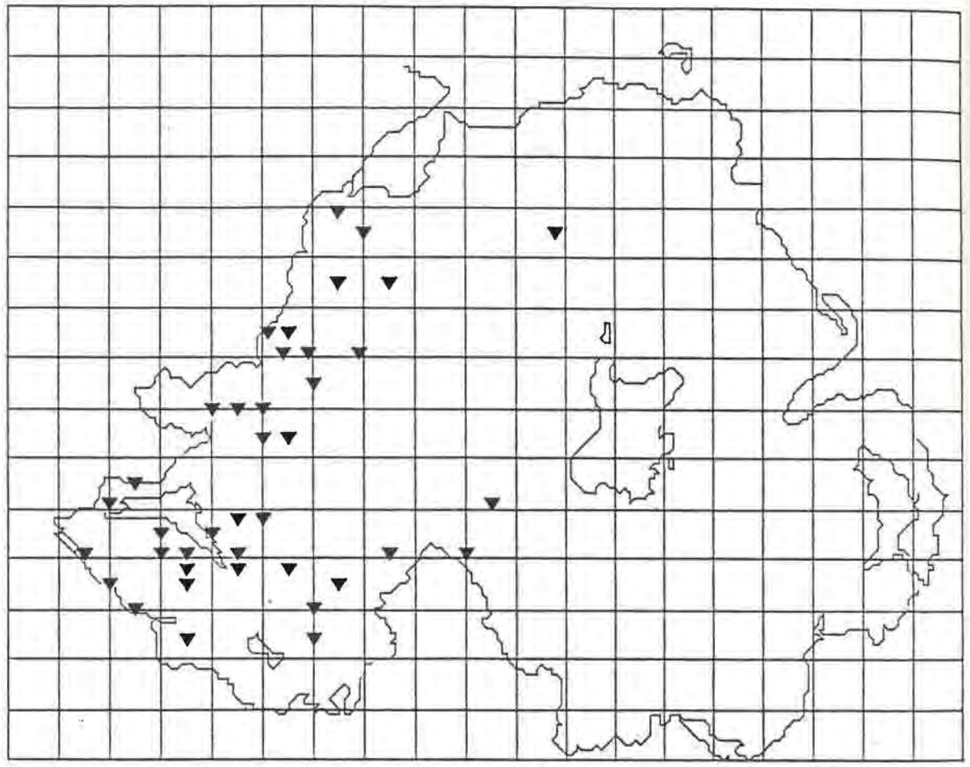
Highest point, 0-152m
Minor road
*Mean minimum July temperature, 10.0-10.5°C
Land 62-152m in surrounding squares
Unfenced road
Mean annual number of days with sleet or snow, 20-30
*Mean annual number of days with fog, >10
*Mean minimum January temperature, <1.0°C
Mean maximum July temperature, 18.0-18.5°C
Buildings, 11-25
Lowest point, 0-152m
Land between 62-152m, 76-100 ha
Single line river/stream
Community building in surrounding squares

Attributes at the ultimate TWINSPAN dichotomy

Mean maximum January temperature, 6.0-6.5°C
Gleys (Upper Carboniferous limestone and shale-sandstone glacial till)
Surrounding squares with principal road, 1-4
Surrounding squares with contour tops, 6-8
Calp limestone and shale-sandstone

Land Class 15

A transitional land class with a western distribution. Elevation lies predominantly between the 61m and the 152m contours but elevation classes <61m and 152m-244m are also found. The topography is usually determined by the presence of short, very steep slopes associated with hill land. Branched watercourses are very abundant and there are relatively few buildings. Small deciduous woods and rough grazing have high frequencies. Gley is the predominant soil with a smaller proportion of brown podzols.



Constant attributes (80-100%)

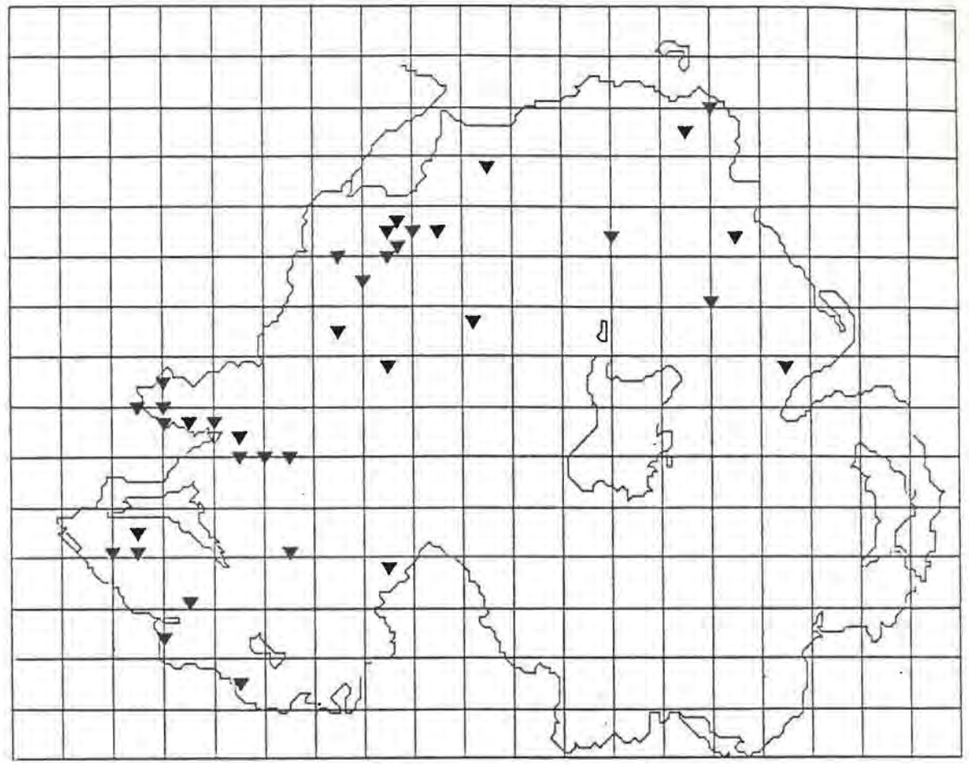
Highest point, 0-152m
Lowest point, 0-152m
*Mean annual number of days with gales, 5-10
Land 62-152m in surrounding squares
Minor road
*Mean minimum July temperature, 10.0-10.5°C
Community building in surrounding squares
*Mean distance to west coast, 41-100km
Length of slope line, <0.5km
Mean maximum January temperature, 6.0-6.5°C

Attributes at the ultimate TWINSPAN dichotomy

Gleys (Upper Carboniferous limestone and shale-sandstone glacial till)
Gradient, 6.1°-17.0°
Mean annual days with sleet or snow, <20
Mean maximum July temperature, <18°C
Valley bottom, >250m
Mean maximum January temperature, 6.0-6.5°C

Land Class 20

This upland land class occurs on a wide range of rocks in the north and west of the region but is not found in the Mourne Mountains. Elevation is largely between 152-244m but there are significent areas of land frequently over 244m. The topography is often steeply sloping, particularly where it is associated with escarpments. Frequently branched streams are generally present, often springing from within the land class and in the southwest, small loughs are characteristic. There are relatively few roads and the frequency of buildings is low. Rough grazing is very common and almost 10% of the land is afforested with conifers. Soils are mainly peaty gleys and blanket peat but there are also brown podzols and gleys.



Constant attributes (80-100%)

Land 153-244m in surrounding squares
Highest point, 153-305m
Lowest point, 153-305m
Single line river/stream
Mean annual number of gales, 5-10
Height of hill behind slope, 153-305m
Land 62-152m in surrounding squares

Attributes at ultimate TWINSPAN dichotomy

Single line river/stream
Source of river/stream

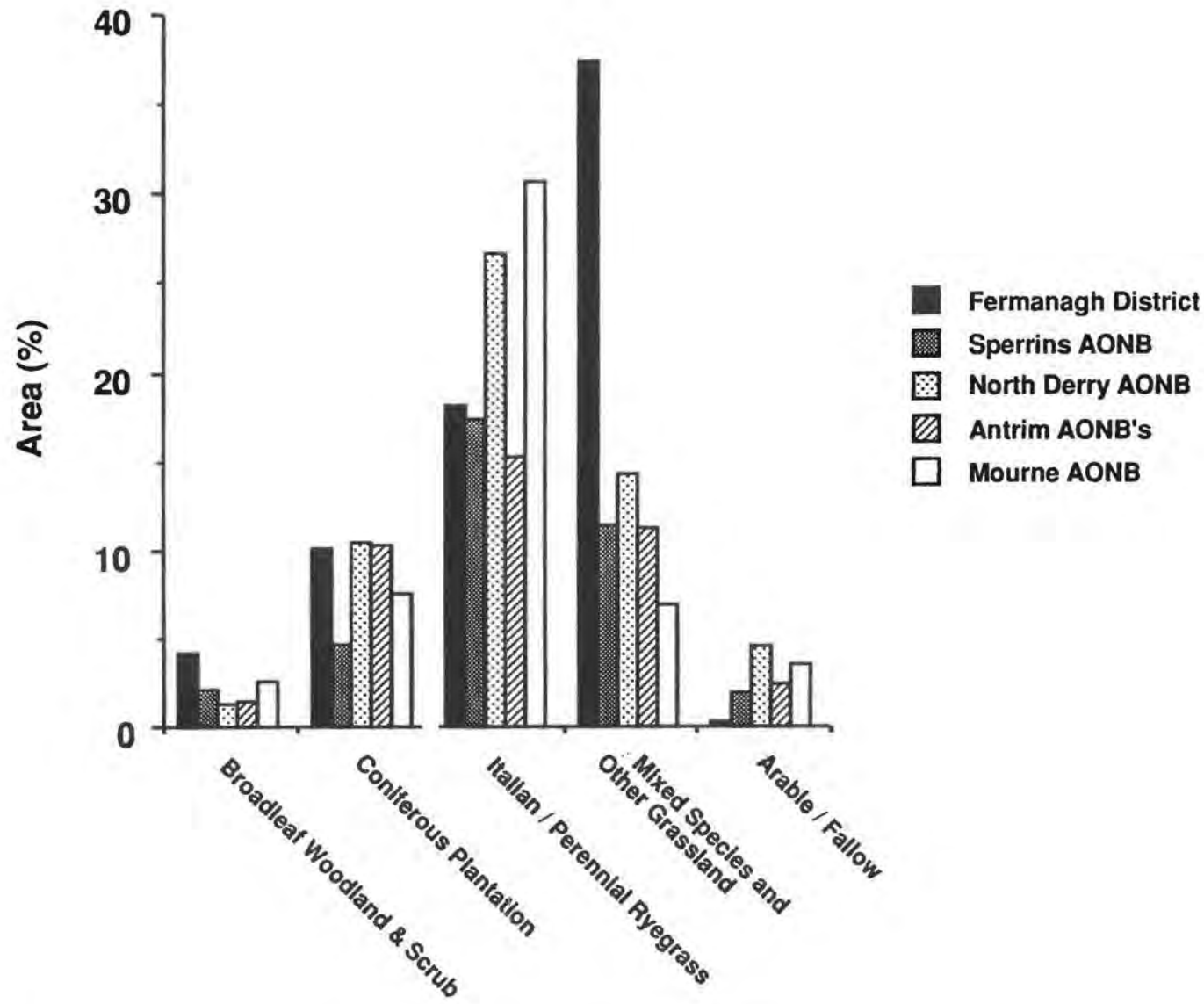


Fig.11 Percentage area of woodland and agriculture in the Northern Ireland field study areas.

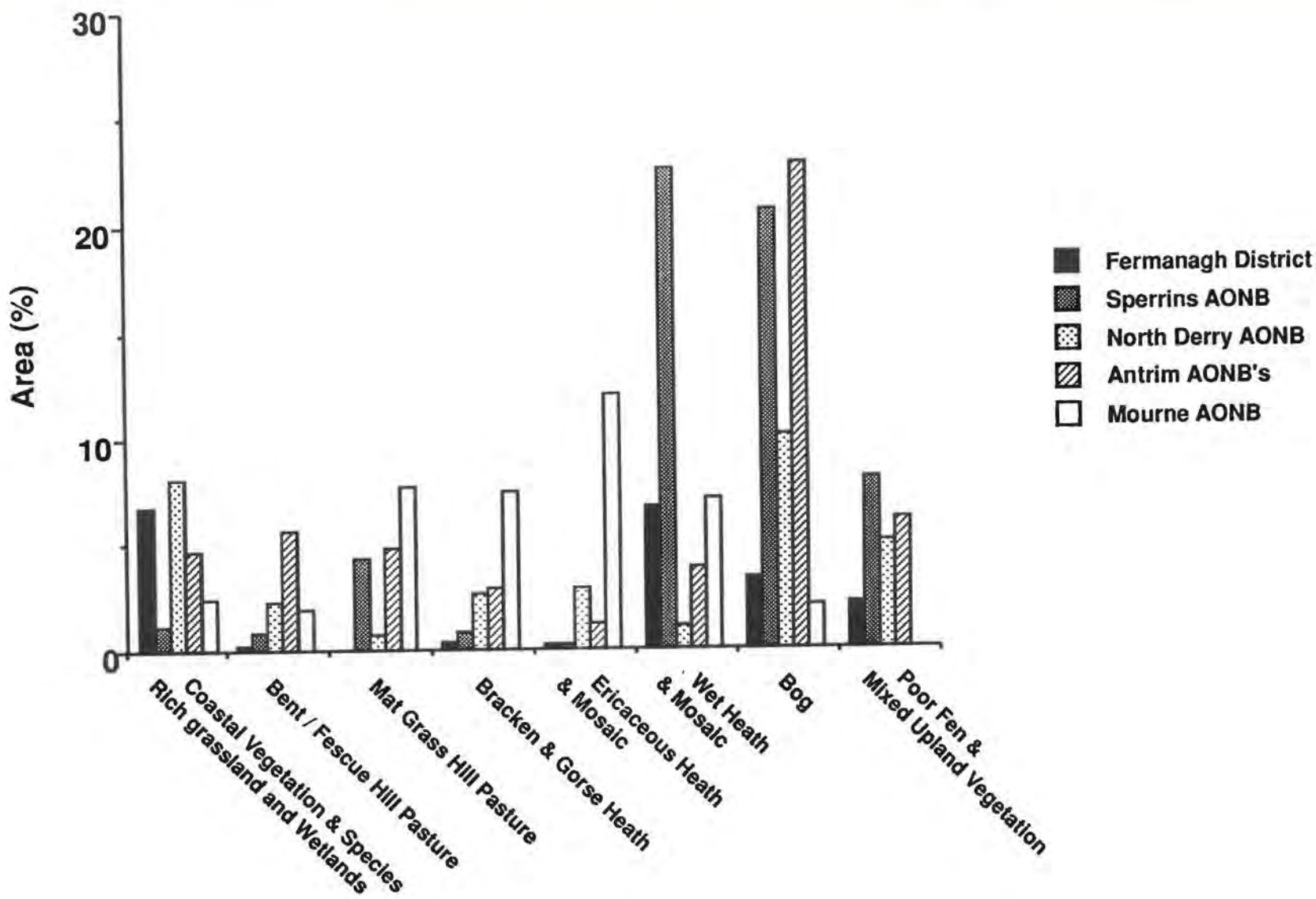


Fig.12 Percentage area of seminatural vegetation in the Northern Ireland field study areas.

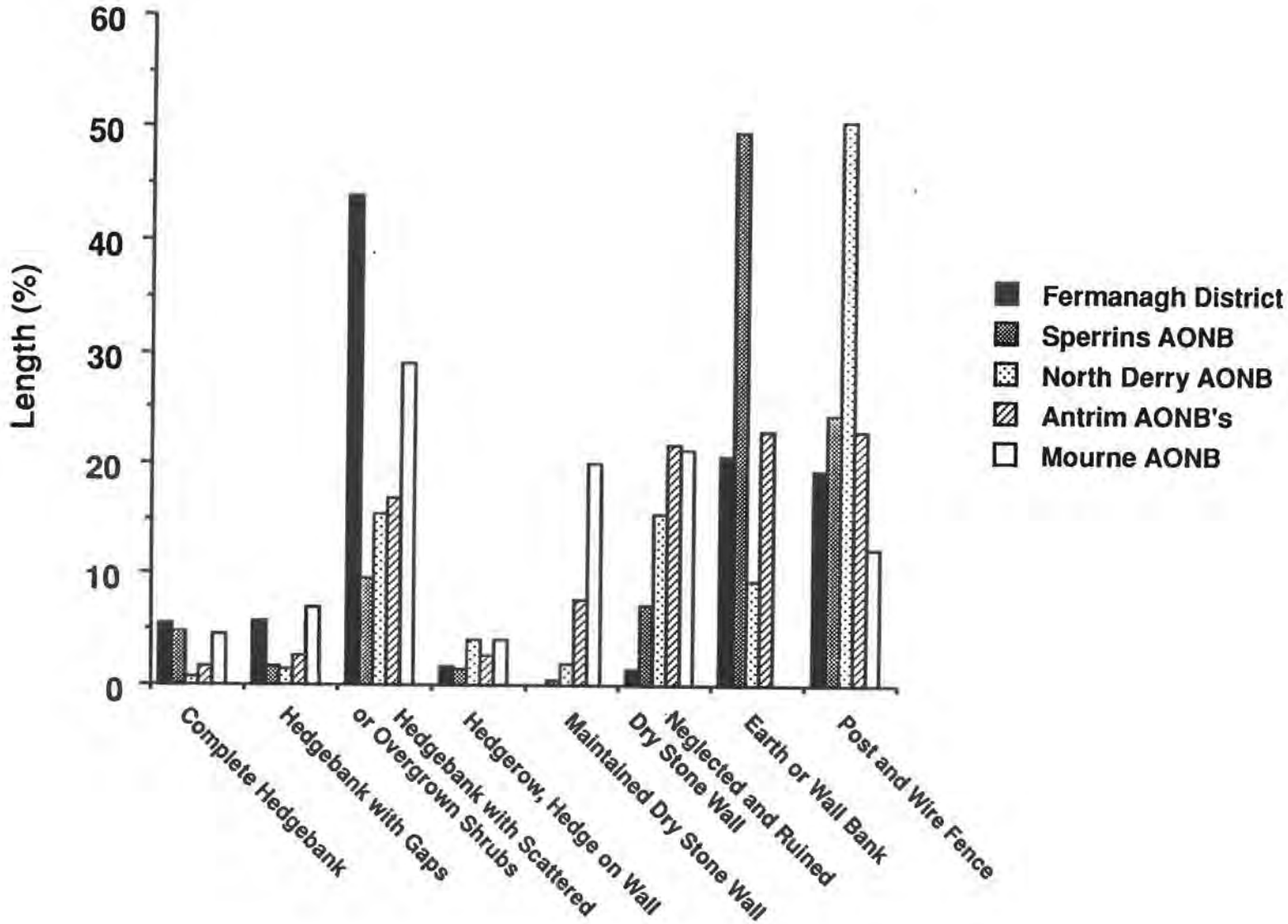


Fig.13 Percentage length of field boundary types in (excluding removed boundaries) the Northern Ireland field study areas.

This, however, is currently not the case.

Forest plantation is widespread and extensive in Fermanagh notably in upland/mountain areas in the North-West and South- East. New planting is mainly in small blocks on poor farmland often adjacent to existing plantation. The Forest Service (DANI) owns 21,500ha which is approximately 13% of the land area in the county. Of this 15,200 ha (9% of the county) are planted (Morrow & O'Neill 1985). These figures exclude private forestry. Afforestation is largely on the poorer soils. Morrow (1981) has categorised the abundance of forest soils as follows:

Cat A 0.8%
B 2.0%
C 16.8%
D 48.0%

Category A and B represent the better agricultural soils whilst categories C and D represent gleys and peaty gleys.

Many forest blocks have been contoured to the landscape and natural features within plantations left unplanted. Some plantations particularly in the South-East but much less so in the North-West have been planted in smaller blocks of different conifer species with some parcels planted with deciduous trees. Old boundaries have been left intact often adding an additional deciduous tree element. Ideally, unplanted headlands need to be created around existing boundaries so that the boundary trees and species rich ground flora are not excluded by the fast growing conifers. In spite of much commendable landscaping Sitka spruce (Picea sitchensis) monocultures, still dominate much of the landscape. Afforestation is an obtrusive feature in the landscape solely because of the large areas covered.

Afforestation is a model for land use change on marginal farmland especially near existing forests. Private forestry, in particular, is increasing its involvement notably in west Fermanagh. Plantation on lowland bog is also an economic land use after peat extraction. The potential impact of afforestation on both the visual landscape and species rich vegetation is great in view of the great potential of land for afforestation. Areas of high landscape quality and species richness correspond with areas in which afforestation is likely to occur.

5.2 Seminatural vegetation

Lake margin vegetation

Species rich wetland is largely restricted to the immediate edge of water bodies often extending for only a few metres and bounded on the landward side by agricultural grassland or woodland. Only in a minority of cases does species rich vegetation extend further inland. In these it usually takes the form of species rich wet grassland associated with interdrumlin hollows or low lying land adjacent to the lake, which may or may not be seasonally inundated by rising lake water.

There are a number of governing factors that determine the type and dynamics of lakeland vegetation. These include:

a) wind and wave action,
b) soil and geological substrate,
c) water depth and fluctuation,
d) environmental history,
e) management,

In relation to Lough Erne, drainage and lowering of the water level originally during the 19th century and subsequently as a consequence of the Erne drainage scheme from 1952-1960, has been a major determinant in subsequent vegetation change. Some communities are still in a state of flux.

The lakeside vegetation can be broadly divided into two main types although there is some overlap:

a) vegetation of disturbed and exposed sites usually headlands, islands or promontories of the main loughs subject to wave action or where exposure is severe.

b) vegetation of shallow inundated and sheltered sites, usually inlets, channels and bays of the main loughs and smaller water bodies.

Characteristically, at the water margin of type 'a', on exposed or disturbed sites, there is a rocky or sandy shoreline which is periodically inundated, disturbed and

frequently devoid of vegetation. There is often, however, a very narrow and depauparate swamp zone with common spike rush (Eleocharis palustris). Slightly further back this unstable environment is frequently colonised by tussock sedge (Carex paniculata) but more commonly by water inundation vegetation which is sedge (Carex spp.) dominated and often includes species such as silverweed (Potentilla anserina), creeping bent (Agrostis stolonifera), watermint (Mentha aquatica), creeping Jenny (Lysimachia nummularia) and white clover (Trifolium repens).

Also away from the water margin, rush pasture is sometimes found, containing notably hard rush (Juncus inflexus), sedges, creeping buttercup (Ranunculus repens), Yorkshire fog (Holcus lanatus), marsh ragwort (Senecio aquatica) and selfheal (Prunella vulgaris). Whilst rush pasture is commonly found as part of the water zone vegetation it also occurs in meadows further from the waters edge. The water zone vegetation of exposed sites is often colonised by scattered scrub, mainly hawthorn (Crataegus monogyna).

Lakeland vegetation of type 'b', associated with sheltered sites, occurs in distinct bands at the waters edge. These are often only narrow bands and can form a diverse zonation from freshwater vegetation passing to reedbeds, swamp, fen and then to species rich wet grassland. Slope and grazing can both truncate the zonation.

Freshwater vegetation is often quite extensive. Common species include yellow waterlily (Nuphar lutea) and pondweed (Potomageton spp.). At the partly inundated water margin, swamp or reedbeds are commonly found either separately or together in a mosaic. Bulrush (Scirpus lacustris) is the most common component of swamp vegetation along with marsh horsetail (Equisetum palustre), lesser water plantain (Baldellia ranunculoides), sedges and yellow waterlily. Reedbeds mainly comprise common reed (Phragmites communis) with reedmace (Typha latifolia), marsh horsetail, bur-reed (Sparganium erectum), sedges, creeping Jenny, and water hemlock (Cicuta virosa), occurring as major elements. There is an overlap of species composition between swamp and reedbeds.

Beyond the swamp and reedbed zone, is commonly a waterlogged peaty fen vegetation, often very species rich and mainly composed of a variety of forbs and sedges. Dominants include sedges, yellow flag (Iris pseudacorus) forget-me-not (Myosotis scorpioides), creeping Jenny, marsh horsetail, marsh pennywort

(Hydrocotyle vulgaris) and bogbean (Menyanthes trifoliata). Rarities such as marsh pea (Lathyrus palustris) are not infrequently found around Upper Lough Erne. Coexistent with fen vegetation, mature or developing woodland carr vegetation is often found. Common tree species are alder (Alnus glutinosa) and willow (Salix spp.). They are frequently seen invading fen vegetation

Beyond the fen zone, elevation generally rises to give a greater mineral soil content. Species rich grassland can be found here containing species such as rushes (Juncus spp.), bent (Agrostis spp.), Yorkshire fog (Holcus lanatus), meadowsweet (Filipendula ulmaria), marsh cinquefoil (Potentilla palustris), creeping Jenny, creeping buttercup, trefoil (Lotus uliginosus) and sedges. Species rich ditch vegetation is a feature of Upper Lough Erne. Dominant species include yellow flag, bur-reed, sweet grass (Glyceria spp.), marsh horsetail, canary grass (Phragmites australis) and bogbean. Many ditches, particularly elsewhere, are eutrophic.

Lower Lough Erne, Lough Melvin, Lough Macnean Upper and Lower were found to be less species rich, exposed and more associated with type 'a'. Upper Lough Erne and outlying small lakes in the lowlands are species rich and associated more with type 'b'. Elements of type 'b' may occur at exposed sites, mainly as a minor mosaic component, associated with vegetation type 'a'.

Lakeside vegetation was observed to have been grazed down to the waters edge by cattle particularly during the dry summer of 1989. This had effects directly on the vegetation and on the ground, causing in many instances severe poaching and disturbance. Species rich fen vegetation, swamp and reedbeds were particularly affected. From a nature conservation perspective, heavy regular grazing is likely to interfere with the reproduction and maintenance of desired species to the benefit of coarse grasses, rushes and ruderal weeds. A certain amount of grazing, however, may be beneficial in reducing monodominance and disturbance may increase regeneration niche diversity. The extent of grazing will depend partly on the water level and length of grazing period. Due to the lack of rainfall in the summer of 1989, the water level of Upper Lough Erne, in particular, was relatively low. This encouraged cattle to graze nearer the waters edge than they might otherwise have done in wetter years.

Fencing to separate lakeland vegetation from adjacent agricultural grassland in order to control grazing is virtually nonexistent. A management programme would probably involve restricting grazing in species rich locations, either to certain areas or to

certain times of the year. This also has advantages from the farmers perspective in that there is a danger of losing animals in soft ground at the waters edge. Cognisence needs to be given to the possible encroachment of woodland carr if grazing is restricted. As DANI own much of the bed and accreted foreshore of Lough Erne there would seem to be scope for management agreements with farmers in this part of Fermanagh.

Ditch vegetation is often species rich adjacent to Upper Lough Erne. Ditching operations are essential to the farmer in order to alleviate waterlogging from adjacent grassland. Often, however, the result is a ditch devoid of vegetation. Appropriate ditching techniques need to be implemented probably involving part but frequent operations. Ditches are frequently fenced from grazing animals providing the opportunity for the regeneration of species-rich vegetation if ditching is carried out appropriately.

An investigation of the structure, composition and dynamics of lakeland vegetation in relation to the governing factors described above is a research priority.

Species rich grassland

Species rich wet grassland is dispersed throughout Fermanagh. It is rarely found in large concentrations except in unit 9 (Garrison) and some parts of Upper Lough Erne. It is often found in isolated parcels on farms, some upland areas and in flushed sites at the base of limestone escarpments. Many parcels are traditionally cut for hay in late June or early July, amongst them are the most species rich. A not uncommon feature of species poor wetter agricultural grassland is a headland comprising several metres of species rich wet grassland.

Swards contain diverse combinations of species depending on local physical conditions and management. Characteristic species include soft rush (Juncus effusus), jointed rush (Juncus articulatus), sedges, creeping buttercup, marsh marigold (Caltha palustris), yellow flag, creeping Jenny, marsh cinquefoil, watermint, sedge, ragged Robin (Lychnis flos-cuculi), marsh violet (Viola palustris), sweet vernal grass (Anthoxanthum odoratum), Yorkshire fog, bent and meadowsweet.

Major impacts include drainage and grassland reclamation, particularly around Upper Lough Erne and more fertile areas but less so in West Fermanagh and other more

agriculturally marginal localities. Here loss is likely to come about as a result of coniferous afforestation on marginal farmland. Overgrazing or cutting for conservation early in the growing season will ultimately lead to a decrease in species diversity. This is partly related to reduced seed production and subsequent return to the seed bank. There is a general trend to cut earlier for both hay and silage conservation. These moves are ultimately weather related. An increase in the application of fertilisers and herbicides has also affected species composition. This does not appear, however, to be a major impact as the vegetation type represents many of the poorer agricultural swards where application would lead only to a marginal increase in productivity. Farming practice is discussed in more detail in section 5.3. Assessment of the distribution of species rich hay meadows and the factors affecting species composition is a research priority.

The high rainfall and usually heavy textured soils means that species-rich dry grassland is uncommon. It is mainly restricted to the steeper drumlin sides at low elevation. Most sites are heavily grazed and where neglected, scrub invasion by gorse (Ulex europeaus), hawthorn or blackthorn (Prunus spinosa) is rapid. Crested dogs-tail is usually abundant and species such as knapweed (Centaurea nigra), birds-foot trefoil (Lotus corniculatus), cats ear (Hypochaeris radicata), ladys mantle (Alchemilla glabra) and red fescue (Festuca rubra) are usually present. This type grades into species rich hill pasture and mixed species grassland.

Calcareous grassland occurs where there are upper limestone geological substrata and, in particular, well formed rock escarpment areas between the lowlands and uplands. There are two main locations:

a) subunit 15b Cuilcagh escarpment
b) subunit 16b North-West escarpment

Dominant species include quaking grass (Briza media), crested dogstail, lady's mantle, thyme (Thymus praecox), ladies bedstraw (Galium verum), red fescue, bent, yarrow, (Achillea millifolium), ribwort plantain, (Plantago lanceolata), blue moor grass, (Sesleria albicans) and birdsfoot trefoil.

This vegetation type is much less common and generally more species poor on other upper limestone outcrops e.g. Slieve Rushen, South-West Uplands and North-West Mountains. In these areas the escarpment is less well defined and soil cover is

greater. Flushed species rich wet grassland is more commonplace.

In subunit 15b species rich calcareous grassland is widely distributed on the plateau immediately above the Cuilcagh escarpment. It is most frequently associated with limestone pavement, particularly in the vicinity of Marble Arch Caves, and with smaller rock outcrops where there is a shallow soil cover. Commonly the vegetation type is found as a mosaic with other types, in particular, wet heath mosaic (often on small pockets of cut-over peat) and rush infested "other" agricultural grassland (associated with deeper soil cover). On deeper soils, calcareous grassland is commonly rush or weed infested particularly with thistles (Cirsium spp.). The quality of grassland varies from extremely species rich to species poor. On exposed slopes and summits of the larger limestone hills, it grades to species poor bent-fescue hill pasture. Species richness is particularly poor at elevation.

Calcareous grassland in subunit 16b is associated with a farmed landscape enclosed predominantly by dry stone walls at an elevation between 150-200m . Generally the depth of soil cover over the limestone substrate is greater than in the Cuilcagh Escarpment subunit. This produces a more uniform vegetation type. Extensive invasion by hawthorn is occurring on the summit of Monawilken.

Management impacts include grazing, fertilizer application and reclamation. Much of the vegetation type appears overgrazed. Management prescription, however, is not clear cut as the vegetation, particularly in subunit 15b, is often mixed with other vegetation types or is weed and rush infested. Reclamation is not likely to be a major impact as the vegetation is on shallow rocky soils and much of it is inaccessible.

Fen meadow

Fen meadow is mainly associated with rounded hills and upland slopes at intermediate elevation. It may be a community derived from past agricultural reclamation of peatland. Soils characteristically have a predominantly heavy mineral texture often with a thin peaty surface. They are often flushed and become more neutral at lower elevation where the vegetation type grades into species rich wet or 'other' agricultural grassland.

Dominant species include jointed rush, sedges, bog thistle (Cirsium dissectum), and devils bit scabious (Succisa pratensis). Occasional species include grass of Parnassus

(Parnassia palustris). Purple moor grass (Molinia caerulea) is also usually present. At intermediate elevation heather (Calluna vulgaris) is often also a component.

Fen meadow is a colourful type which has a high nature conservation interest in spite of the fact that it is not always species-rich. Devils bit scabious, in particular, is an attractive widespread flowering element in the summer. Bog thistle is also attractive but flowers spasmodically.

The more accessible parcels have been traditionally cut for hay in late June or July and the aftermath grazed until autumn. The ground is invariably soft in spring and unsuitable for grazing animals and machinery. Land, particularly at higher elevation which is inaccessible for machinery is solely grazed. Disturbance and poaching due to the wet nature of the terrain is often acute. This does not appear to affect dramatically the maintenance in the sward of devils bit scabious and bog thistle. The vegetation type grades to poor fen and wet heath at higher elevation. Progression to heath is inhibited by heavy grazing.

Heath, bog and poor fen vegetation

Wet bog on blanket peat is dominated mainly by Sphagnum spp., bog cotton (Eriophorum vaginatum) and heather (Calluna vulgaris). Bog asphodel (Narthecium ossifragum) and purple moor grass are a component on shallower peat. Only the less accessible, often higher elevation sites are uncut e.g. the Cuilcagh Mountains above an elevation of approximately 300-350m. Where the peat is flushed, rushes and Polytrichum commune become dominant often over large areas. The abundance of deer grass (Scirpus caespitosus) has probably increased due to burning and grazing

On better drained ground particularly on slopes and rock outcrops, wet heath dominated by heather or heath mosaic vegetation is characteristic. Associated species include deer grass, purple moor grass, sedges, bog myrtle (Myrica gale) and heath rush (Juncus squarrosus). On steeper, rockier sites and escarpments, notably over limestone, ericaceous heath occurs. It is found with regenerating birch (Betula pendula) or rowan (Sorbus aucuparia) at lower elevation.

Poor fen occurs on deeper flushed peat in the uplands and on shallower peat associated with poorer agricultural land. It is a species poor vegetation type.

Characteristic species include jointed rush, soft rush, sedges, mosses, bent, Yorkshire fog and sweet vernal grass.

Much of the peat resource, particularly wet heath mosaic, is disturbed or eroded and has been cutover in the past by hand and currently by machine. At an elevation lower than 300-350m cattle grazing and burning are frequent on both cut-over and uncut peat. This is associated with poaching and erosion. Upland areas are generally at relatively low elevation and are heavily exploited, particularly where accessible from public highways. Peat cutting is closely associated with the presence of grant aided access roads or tracks which provide an infrastructure for increased machine cutting. Drainage improves the grazing and forestry potential of land. Afforestation of intermediate elevation peat particularly by private companies is a recent impact although government forestry is much more extensive.

5.3 Agriculture

Soils, weather and topography constrain and dictate the nature of agriculture in Fermanagh. A low output is due to the predominance of gleyed soils, low in fertility (particularly phosphate) together with a high rainfall. Access to grassland is hampered for seven months in the winter by waterlogged soils. In contrast, in a hot summer water shortage can occur due to the quick drying of clay soils.

The parent material is generally a clay textured glacial till with sluggish land drainage over a wide range of rock type, grain size and acidity (Cruickshank 1961). The glacial till is mainly derived from the local rock type and has different drainage conditions associated with different materials. Till east of Lower Lough Erne derived from old red sandstone produces a sandy clay loam which, in particular, allows improvement whilst that derived from calp limestone produces a tenacious clay. Free draining podsols are present on gravel deposits near Brookeborough. Drumlin crests are generally more free draining. Peat deposits occur particularly in valley bottoms and interdrumlin hollows. It is evident from the field survey that soil type can vary within very short distances and that a variety of types can occur within a given field parcel.

Morrow (1981) has classified the soils of Fermanagh as follows:

Cat A 8% - best quality land, light in texture
B 50% - second quality land, heavier and poorer with impeded drainage

C 24% - gleyed
D 18% - peaty gleys and peats

Approximately 98% of Fermanagh farmland is classified as a less favoured area (Morrow & O'Neill 1985). The remaining 2% is located in the Colebrooke River valley between Brookeborough and Fivemiletown where soils are more free draining. Farmland as a whole is largely owner occupied and approximately 15% is in conacre.

Agricultural production varies from intensive to non-intensive. Suckler herds and beef rearing are characteristic of the smaller and less intensive farms. Dairy cattle are found on the better land although herd size is relatively small. Some intensive farms run large suckler herds. Cattle although previously overwintered on the land are now generally not. In recent years the availability of grants has led to the construction of new buildings for overwintering stock. Sheep farming is common in the west of Fermanagh particularly in the Cuilcagh Escarpment subunit (15b). Here many farmers own good quality low elevation land as well as poorly quality upland. Sheep are also overwintered on better quality land in the east of Fermanagh. Arable production is restricted to the small areas of better soils where there is no underlying boulder clay. This is mainly in the east of the district

Inorganic fertilizer input is mainly on the better and more accessible grassland. Slurry and manure are also commonly applied. This is either applied by tanker or dumped from a back bucket in mounds and subsequently spread using a grape.

Grassland is the primary agricultural resource. 'Other' grassland is the most common grassland type. Characteristic species include Yorkshire fog, bent, sweet vernal grass, meadow foxtail, crested dogstail, meadow fescue (Festuca pratensis), creeping buttercup, meadow buttercup (Ranunculus acris) and white clover. It is often infested with soft rush (Juncus effusus) or jointed rush (Juncus articulatus). Hay meadows are, in particular, often abundant in grass species occurring in different combinations. Although agricultural grassland by definition is not species rich it is an important habitat for birds in general and particularly the corncrake.

Many swards are either used almost exclusively for grazing whilst others are reserved partly for hay or silage. Access, topography, past history and species composition are major factors in determining which swards are cut or grazed. Farmers with improved ryegrass swards may make three or more cuts, and use them only for silage

production during the summer. Most conservation swards of a poorer quality are cut once in June or July for hay or silage and subsequently grazed until the autumn. Many farmers are converting to silage production rather than make hay. This is accompanied by new agricultural buildings to accommodate the feed.

Hay cutting as well as silage making is taking place much earlier in Fermanagh than the traditional period of mid to late July. This is partly related to the usage of fertilizer which hastens sward maturation. The exact timing of cut will vary from year to year dependent on weather conditions. A sequence of events as follows was observed during 1990. Towards the end of May ryegrass swards were cut for silage. These were either subsequently grazed or allowed to regrow and cut again for silage in July. Some of these would have subsequently been grazed whilst others would have been left to regrow and cut again in the autumn. In early June poorer ryegrass and the more productive non-ryegrass swards were cut for silage. Towards the end of June less productive swards were cut for silage and the first hay cuts (mainly in the lowlands) were noted. Grass cutting for conservation continued past the middle of July with an increase through time in the proportion cut for hay. Timing of cutting for hay was particularly late in the west of Fermanagh and in upland areas. In these areas a surge occurred in the middle of July after a period of inclement weather. Swards would normally have been cut earlier if the weather was suitable.

Traditional haymaking is still a feature of West Fermanagh and more upland areas. Swards are cut by Allen scythe, turned and raked by hand and rucked, in contrast to other areas where harvesters may be used and the hay baled.

The relative dominance of species in swards can be altered by different management regimes. Topping is a common technique used to decrease the dominance of rushes and increase the grass component. Poor fen can often be converted to other agricultural grassland in this way. The aftermath from topping is subsequently left to decompose, burnt or used for animal bedding. The extent that this takes place very much depends on weather conditions during the growing season and the consequent accessibility to the land. In a good year more grassland will be topped than one in which the weather is poor. A lot of topping took place during the warm dry summer of 1989. In contrast old meadows which are difficult to manage and in isolated locations are neglected and reverting to rough grazing.

The transformation from traditional agriculture to more intensive production is a

relatively recent phenomenon in Fermanagh. Grassland improvement, however, by reseeding to ryegrass swards is not a routine feature although much land has been improved in this way, notably in some of the lowland units. Reclaimed drumlin tops are, in particular, an eyesore. Improvement usually comes about by the judicious management of existing swards associated with field boundary removal to increase field size. Poor soils and the current lack of agricultural grants are factors controlling land reclamation. Original field size in Fermanagh is small.

Many farmers feel that farming in Fermanagh is a difficult proposition and that it is necessary to remove some boundaries to maintain a viable farm business. In some instances, however, particularly in the more farmed areas boundary removal is wholesale and obtrusive. Guidelines for the retention of key field boundaries in terms of their landscape and wildlife value, need to be integrated into farm plans.

It is evident that socio-economic factors play an important part in determining land use and farming practice. Emigration, lack of successors to farms and ageing farmers are obvious criteria which will affect the landscape. These factors will affect the extent of land in conacre and the intensity of management. Intensive farmers will have the greatest impact on the landscape and may be the most uncooperative in implementing conservation management. For many of the others farming is part time and not their sole income.

5.4 Landscape

Fermanagh is rich in antiquities. There is a predominance of forts in lowland areas which are often wooded with deciduous species. Forts are potentially subject to erosion and reclamation although these impacts do not appear to be significant at present. Wooded crannogs are a characteristic feature of small lakes. Any impact is limited by their inaccessibility. Other major features of historic interest include the monastic settlements. Fermanagh is particularly noted for its plantation estates and castles many which were built on or near the shores of Lough Erne e.g. Crom, Portora, Tully, Archdale, Crevinish, Caldwell and Coole. Others inland include Florencecourt, Colebrooke and Monea.

The development of tourism could potentially have a major impact on landscape quality and resources. Impacts include fishing, boating and outdoor pursuits as well as general tourism. General tourism is primarily associated with Cuilcagh, Marble

Arch, Florence Court, parts of Lower and Upper Lough Erne and of West Fermanagh. Tourism facilities e.g. laybys, fishing stands, picnic areas, caravan sites and viewpoints are generally sensitively designed. At present any detrimental impact from tourism is limited, although potential damage may come from building developments, the dumping of rubbish, erosion and disturbance from overuse of facilities. Lakeside vegetation is relatively unaffected by fishing and boating.

New farm roads are a major development. These are particularly common in upland and marginal areas where new access allows exploitation of peat resources and reclamation. Older farm structures such as tracks, field boundaries and gates are often in disrepair.

Fermanagh is rich in commercial mineral resources. There is an abundance of disused quarries in Fermanagh. Limestone, sand and gravel, in particular, are quarried. Particularly obtrusive workings in the landscape are the gravel quarries near Derrylin, and limestone quarries east of Belcoo and at Knockninny hill east of Kinawley. Dust and lorry disturbance are additional aggravations. Historically mining (feldspar, iron, lead,copper), now disused, is associated with the Castle Caldwell area .

5.5 Field boundaries

Boundaries in the lowlands are primarily hedgebanks with scattered or overgrown shrubs. These often have substantial banks with one side often facing into a ditch. Many are relatively stockproof in spite of the fact that their underlying shrub or tree structure is gappy. This is due to their tall, overgrown state caused by neglect. Many uncoppiced small and large trees are present and invasion by brambles (Rubus fruticosus) and dog rose (Rosa canina). Hawthorn (Crataegus monogyna), blackthorn (Prunus spinosa) and holly (Ilex aquifolium) are the most common hedge species. Hazel and willow occur less frequently. Blackthorn, in particular, often occurs in dense stands which grow out from the hedge reducing the size of field parcels.

Mossy banks associated with gaps in the more overgrown hedges, are commonly species rich. Dog violet (Viola riviniana) wild strawberry (Fragaria vesca) and primrose (Primula vulgaris) are characteristic forbs. Dense shading, however, leads to a species poor bank flora. Roadside hedges are often species rich, usually with a strong woodland forb element. This is particularly the case where they are regularly managed as part of the road maintenance programme.

Hedges generally have a diverse tree species complement. Ash and willow are particularly common. Oak is occasional. Hedges are largely unmanaged favouring the regeneration of tree species. Management needs to be implemented not only to improve stockproofing but also to selectively tag favoured tree species for preservation other than the often predominant ash.

Banks are more a feature of the uplands but also occur in the lowlands. They are a feature in their own right but are also derived from degraded hedges. Dry stone walls are not a feature of Fermanagh. They are scattered in distribution and occur mainly in upland areas associated with local rock outcrops.

The addition of continuous post and wire fencing to existing boundaries for stockproofing is not a usual feature although filling individual gaps with barbed wire or hedge brashings is. Sometimes a single strand of wire is strung between short posts or between trees. Stick fences with wire, either alone or in association with hedges or banks are a common feature of West Fermanagh and upland areas. These are often flimsy structures with a single strand of wire but can be quite substantial structures when the sticks are placed in close proximity. Some farmers routinely cut away shrubs growing into field parcels and use the timber for firewood and the brashings to fill hedge gaps. This practice is to be commended if done in a self sustainable way. Ditches associated with boundaries are a common feature.

Boundary loss in the lowlands is a function of agricultural improvement whilst in the uplands the main cause is afforestation. Afforested boundaries are seldom removed but are incorporated in the forest plantation.

Field boundary and ditch removal on farmland is a common occurrence, often associated with field parcel improvement but not necessarily reseeding. Some boundary removal is inevitable in view of the small field size in Fermanagh and the need to maintain an economic farm enterprise. Such work should be planned so that resultant field patterns are in keeping with the topography and landscape features. Wholesale removal is commonly associated with sheep farming enterprises where boundaries are sometimes replaced by wood post and wire fences. Where boundaries are removed, farmers often leave large single trees, particularly oak, in place. The current lack of grants for removal is probably a major factor in limiting improvement. Some farmers regret having removed boundaries and a few have replaced hedges considering that the shelter provided outweighs other considerations.

6. REFERENCES

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Appendix 1. Procedure for circumscribing the landscape units.

The first step in the process was to delimit lowland areas from upland areas. Lowland areas were circumscribed as those primarily belonging to land class groups A-C whilst upland groups were delimited on the basis of belonging to land class groups D-F. Minor adjustments were made to boundaries between the two main groups where divisions were abrupt.

Boundaries within these two major groups were drawn in relation to distinct geographical features and discontinuities between land class groups. Landscape units 1,2,3,4,5,6a,7,8,9,10,11 represent lowland areas and landscape units 6b,12,13,14,15,16 upland areas. The criteria used for defining boundaries within the two major groups and in making minor adjustments between groups are described below.

1. Upper Lough Erne: Delimited as lowland squares encompassing the lough and squares immediately adjacent which contained an ancillary water body. Pilot field survey indicated that these squares were different in terms of field resources compared to squares of the same land class group further from the lake shore. Central Enniskillen was taken as the boundary with Lower Lough Erne (unit 2). Outlying squares encompassing the Castle Coole estate near Enniskillen were also included.

2. Lower Lough Erne: Delimited as lowland squares encompassing the lough or the River Erne and squares immediately adjacent containing an ancillary water body. Also included is estate land on the eastern shore which is less than 1km from a lakeland square (e.g. Castle Archdale). The unit is separated from unit 1 by central Enniskillen.

3. Magheraveely: Lowland squares not immediately adjacent to Upper Lough Erne. The unit is separated from unit 4 by a narrow juncture near Lisnaskea.

4. Colebrooke: Lowland squares not immediately adjacent to Upper Lough Erne. The unit is separated from unit 5 by a narrow juncture near Enniskillen.

5. Ballinamallard: Lowland squares not immediately adjacent to Lower Lough Erne. The unit is separated from unit 6 by a transition to higher drumlin terrain associated with that unit.

6a. Ederney: Lowland squares not immediately adjacent to Lower Lough Erne. Delimited from unit 5 by transition to lower elevation more undulating topography associated with that unit.

6b. North-East Uplands: Grouped with unit 6a. as being geographically integral. Pilot field survey indicated little difference in major resources between the two subgroups. The subunit includes some squares of land class group C which are integral to the upland area.

7. Derrylin: Lowland squares not adjacent to Upper Lough Erne. The unit is separated from unit 8 by the Swanlinbar River.

8. Arney: Lowland squares not adjacent to Upper Lough Erne. The unit is separated from unit 11 by a transition from land class group A to land class group C associated with that unit. It is separated from units 15 and 16 at the Arney River inlet into Lough Macnean Lower and from unit 15 by the Cuilcagh escarpment.

9. Garrison: The unit is separated from unit 2 by the River Erne and from unit 16 at the juncture of Lough Macnean Upper and Lower.

10. Lough Scolban: Lowland squares not immediately adjacent to Lower Lough Erne. The unit incorporates integral squares of land class group F.

11. Sillees: Lowland squares not immediately adjacent to Lower Lough Erne with the exception of three squares in the north which are more characteristic of this unit.

12. Brougher: Integral upland unit.

13. South-East Uplands: Integral upland unit.

14. Slieve Rushen: Integral upland unit. One square of land class group C has been included so as not to cut of the mountain edge.

15. Cuilcagh Mountains and Escarpment: An integral upland unit.

15a. Cuilcagh Mountains: Upland squares not on upper limestone geological strata.

15b. Cuilcagh Escarpment: Upland squares located on upper limestone geological strata. The subunit also includes lowland squares also generally on upper limestone immediately adjacent to Lough Macnean Lower and the escarpment.

16. North-West Mountains and Escarpment: An integral upland unit.

16a. North-West Mountains: Separated from subunit 16b in the south and east at juncture of upper limestone escarpment associated with subunit 16b. The subunit incorporates some lowland squares associated with the Cliffs of Magho adjacent to Lower Lough Erne.

16b. North-West Escarpment: Squares in the south and east of unit 16 on upper limestone geological substrata. The subunit incorporates some lowland squares immediately adjacent and integral to the escarpment. Also incorporated are lowland squares on upper limestone adjacent to Lough Macnean Lower.

These grid references, pages 118-124, have been removed to preserve the confidentiality of the sample square locations.

Appendix 2. The location of sample squares selected for field survey in Fermanagh District.

UNIT	FIELD SURVEY SAMPLE NO.	N. IRELAND LAND CLASS	LAND CLASS GROUP	[redacted]	SAMPLE AREA(ha)
UNIT 1 - Upper Lough Erne					
01	001	05	A	[redacted]	15.7
01	002	05	A	[redacted]	24.1
01	003	05	A	[redacted]	23.4
01	004	10	A	[redacted]	16.9
01	005	10	A	[redacted]	25.0
01	006	05	A	[redacted]	13.8
01	007	05	A	[redacted]	5.4
01	008	05	A	[redacted]	17.6
01	009	05	A	[redacted]	3.0
01	010	05	A	[redacted]	11.5
01	011	05	A	[redacted]	12.9
01	012	05	A	[redacted]	22.9
01	013	05	A	[redacted]	25.0
01	014	05	A	[redacted]	24.2
01	015	05	A	[redacted]	25.0
01	016	05	A	[redacted]	22.0
01	017	05	A	[redacted]	23.0
01	018	05	A	[redacted]	16.4
01	019	05	A	[redacted]	23.2
01	020	10	A	[redacted]	25.0
UNIT 2 - Lower Lough Erne					
02	021	05	A	[redacted]	23.1
02	022	05	A	[redacted]	24.9
02	023	05	A	[redacted]	3.2
02	024	05	A	[redacted]	12.3
02	025	05	A	[redacted]	3.3
02	026	05	A	[redacted]	25.0
02	027	05	A	[redacted]	9.9
02	028	05	A	[redacted]	16.4
02	029	05	A	[redacted]	4.0
02	030	05	A	[redacted]	21.8
02	031	05	A	[redacted]	25.0
02	032	15	C	[redacted]	25.0
02	033	15	C	[redacted]	18.9
UNIT 3 - Magheraveely					
03	034	05	A	[redacted]	25.0
03	036	05	A	[redacted]	24.3
03	038	10	A	[redacted]	25.0
03	039	05	A	[redacted]	25.0

UNIT	FIELD SURVEY SAMPLE NO.	N. IRELAND LAND CLASS	LAND CLASS GROUP	O. SURVEY GRID REF.	SAMPLE AREA(ha)
03	040	05	A	[redacted]	25.0
03	041	05	A	[redacted]	24.7
03	042	05	A	[redacted]	5.4
03	043	05	A	[redacted]	9.5
03	045	07	B	[redacted]	17.7
03	046	07	B	[redacted]	25.0
03	048	15	C	[redacted]	25.0
UNIT 4 - Colebrooke					
04	049	05	A	[redacted]	25.0
04	050	05	A	[redacted]	25.0
04	051	10	A	[redacted]	25.0
04	053	07	B	[redacted]	25.0
04	054	07	B	[redacted]	25.0
04	055	07	B	[redacted]	25.0
04	056	08	B	[redacted]	25.0
04	058	08	B	[redacted]	25.0
04	059	07	B	[redacted]	25.0
04	063	15	C	[redacted]	25.0
04	064	14	C	[redacted]	25.0
UNIT 5 - Ballinamallard					
05	066	06	B	[redacted]	25.0
05	067	07	B	[redacted]	25.0
05	070	15	C	[redacted]	25.0
05	072	14	C	[redacted]	25.0
UNIT 6 SUBUNIT A - Ederney					
06	073	05	A	[redacted]	25.0
06	074	06	B	[redacted]	7.3
06	075	07	B	[redacted]	25.0
06	078	07	B	[redacted]	24.0
06	081	15	C	[redacted]	25.0
06	082	15	C	[redacted]	25.0
06	084	15	C	[redacted]	25.0
06	085	15	C	[redacted]	25.0
UNIT 6 SUBUNIT B - North-East Uplands					
06	086	19	D	[redacted]	25.0
06	087	20	E	[redacted]	25.0

UNIT	FIELD SURVEY SAMPLE NO.	N. IRELAND LAND CLASS	LAND CLASS GROUP	O. SURVEY GRID REF.	SAMPLE AREA(ha)
UNIT 7 - Derrylin					
07	091	05	A	[redacted]	25.0
07	092	05	A	[redacted]	25.0
07	093	05	A	[redacted]	15.3
07	094	15	C	[redacted]	25.0
UNIT 8 - Arney					
08	096	05	A	[redacted]	25.0
08	097	05	A	[redacted]	25.0
08	099	10	A	[redacted]	25.0
08	100	04	A	[redacted]	25.0
08	101	03	A	[redacted]	25.0
08	102	03	A	[redacted]	25.0
08	103	05	A	[redacted]	25.0
UNIT 9 - Garrison					
09	106	05	A	[redacted]	12.6
09	107	05	A	[redacted]	25.0
09	108	05	A	[redacted]	6.1
09	109	07	B	[redacted]	25.0
09	110	07	B	[redacted]	25.0
09	111	12	A	[redacted]	25.0
09	112	15	C	[redacted]	25.0
09	113	15	C	[redacted]	25.0
09	114	15	C	[redacted]	25.0
09	115	15	C	[redacted]	25.0
09	116	15	C	[redacted]	10.4
UNIT 10 - Lough Scolban					
10	117	08	B	[redacted]	25.0
10	118	15	C	[redacted]	13.8
10	119	15	C	[redacted]	25.0
10	120	15	C	[redacted]	25.0
UNIT 11 - Sillees					
11	121	02	A	[redacted]	25.0
11	122	05	A	[redacted]	22.1
11	123	15	C	[redacted]	25.0
11	124	15	C	[redacted]	25.0
11	125	15	C	[redacted]	25.0

UNIT	FIELD SURVEY SAMPLE NO.	N. IRELAND LAND CLASS	LAND CLASS GROUP	O. SURVEY GRID REF.	SAMPLE AREA(ha)
11	126	15	C	[redacted]	25.0
11	127	15	C	[redacted]	25.0
11	128	15	C	[redacted]	25.0
11	129	15	C	[redacted]	25.0
11	130	15	C	[redacted]	25.0
UNIT 12 - Brougher					
12	131	19	D	[redacted]	25.0
12	132	19	D	[redacted]	25.0
12	133	19	D	[redacted]	25.0
12	134	19	D	[redacted]	25.0
12	135	20	E	[redacted]	18.2
12	136	20	E	[redacted]	14.1
12	137	20	E	[redacted]	23.1
UNIT 13 - South-East Uplands					
13	138	19	D	[redacted]	25.0
13	139	19	D	[redacted]	25.0
13	140	19	D	[redacted]	25.0
13	141	20	E	[redacted]	24.5
13	142	20	E	[redacted]	25.0
13	143	20	E	[redacted]	25.0
13	144	20	E	[redacted]	25.0
13	145	20	E	[redacted]	25.0
13	146	20	E	[redacted]	25.0
13	147	20	E	[redacted]	25.0
13	148	20	E	[redacted]	25.0
13	149	22	F	[redacted]	25.0
UNIT 14 - Slieve Rushen					
14	150	19	D	[redacted]	25.0
14	151	20	E	[redacted]	25.0
14	152	22	F	[redacted]	5.8
UNIT 15 SUBUNIT A - Cuilcagh Mountains					
15	153	22	F	[redacted]	25.0
15	154	23	F	[redacted]	25.0

UNIT	FIELD SURVEY SAMPLE NO.	N. IRELAND LAND CLASS	LAND CLASS GROUP	O. SURVEY GRID REF.	SAMPLE AREA(ha)
UNIT 15 SUBUNIT B - Cuilcagh Escarpment					
15	155	05	A	[redacted]	19.7
15	156	15	C	[redacted]	25.0
15	157	20	E	[redacted]	25.0
15	158	20	E	[redacted]	25.0
15	159	20	E	[redacted]	25.0
15	160	20	E	[redacted]	25.0
15	161	20	E	[redacted]	25.0
15	162	21	E	[redacted]	6.7
15	163	21	E	[redacted]	24.5
15	164	22	F	[redacted]	4.4
15	165	23	F	[redacted]	25.0
UNIT 16 SUBUNIT A - North-West Mountains					
16	166	16	C	[redacted]	20.2
16	167	20	E	[redacted]	25.0
16	168	20	E	[redacted]	25.0
16	169	20	E	[redacted]	25.0
16	170	20	E	[redacted]	25.0
16	171	20	E	[redacted]	25.0
16	172	20	E	[redacted]	25.0
16	173	20	E	[redacted]	25.0
16	174	20	E	[redacted]	25.0
16	175	21	E	[redacted]	25.0
16	176	22	F	[redacted]	25.0
16	177	22	F	[redacted]	24.7
16	178	22	F	[redacted]	25.0
16	179	22	F	[redacted]	25.0
16	180	22	F	[redacted]	25.0
UNIT 16 SUBUNIT B - North-West Escarpment					
16	181	15	C	[redacted]	25.0
16	182	15	C	[redacted]	25.0
16	183	15	C	[redacted]	7.9
16	184	18	D	[redacted]	25.0
16	185	20	E	[redacted]	21.6
16	186	20	E	[redacted]	25.0
16	187	20	E	[redacted]	25.0
16	188	20	E	[redacted]	25.0
16	189	21	E	[redacted]	16.6
16	190	21	E	[redacted]	25.0

Appendix 3. Description of soil types from the general soil map of Ireland (Gardner & Radford 1980) that have been combined into simplified soil complexes for the purpose of the study.

Broad physiographic division	No.	Soil Association Principal soil	Associated soil	Parent material
Peaty gley complex				
Mountain and hill	02	Peaty gleys (75%)	Blanket peat (20%) Peaty podsols (10%)	Mostly mica schist gneiss, quartzite and sandstone
Blanket peat complex				
Mountain and hill	05	Blanket peat (high level)		
Lowland	24	Blanket peat (low level)		
Brown earth complex				
Drumlin (drier mineral and organic soils)	29	Acid brown earths (75%)	Interdrumlin peat and peaty gleys (25%)	Mostly Ordovician -Silurian shale, glacial till
Grey/brown podzolic complex				
Flat to undulating lowland	32	Degraded grey/brown podzolics (50%)	Peat (15%) Brown earths (15%) Gleys (10%) Podzols (10%)	Mostly limestone glacial till
Gley complex				
Rolling lowland	21	Gleys (75%)	Peaty gleys (25%)	Sandstone glacial till
Rolling lowland	22	Gleys (75%)	Acid brown earths (15%) Peat (10%)	Upper Carboniferous shale glacial till
Drumlin (wet mineral and organic soils)	25	Gleys (50%)	Acid brown earths (40%) interdrumlin peat and peaty gleys (10%)	Mostly Ordovician-Silurian shale sandstone glacial till
Drumlin (wet mineral and organic soils)	27	Gleys (85%)	Interdrumlin peat and peaty gleys (15%)	Mostly Upper Carboniferous limestone and shale-sandstone glacial till

Appendix 4 Field data recording sheets

DEPARTMENT OF ENVIRONMENTAL STUDIES
UNIVERSITY OF ULSTER

FERMANAGH DISTRICT
LANDSCAPE ECOLOGICAL STUDY
FIELD DATA SHEET

O.S. Grid. ref. [redacted]

Geographical Unit 1

Land Class 10

Field Sample Square No. 5

Date Surveyed 11/7/89

Surveyor RM

These maps, pages 125-129, have been removed to preserve the confidentiality of the sample square locations.

WOODLAND

TYPE

01. Broadleaf woodland, seminatural
02. Broadleaf woodland, plantation
04. Coniferous woodland, plantation
05. Mixed woodland, seminatural
06. Mixed woodland, plantation
07. Dense scrub
08. Scattered scrub
09. Parkland
10. Scattered / isolated trees
11. Lines of trees
48. Fen carr

LANDSCAPE

12.	Riverside	18.	Flat
48.	Lakeside	19.	Sloping
13.	Field	20.	Steep
14.	Farm buildings	21.	Hill top
15.	Roadside	22.	Escarpment
16.	Demesne	23.	Valley bottom
17.	Coast		

STRUCTURE

24.	Woodland height	0-1m
25.		1-3m
26.		3-10m
27.		>10m

GROUND FLORA

28. Species-rich ground flora
29. Species-poor ground flora
30. Grass dominated flora
31. Other

[redacted]

SOILS

32. Waterlogged peat
33. Drained peat
34. Wet mineral
35. Drained mineral
36. Chalk / limestone

MANAGEMENT

37.	Unmanaged	42.	Felling
38.	Managed	43.	Shelter
39.	Thinning	44.	Grazed
40.	Coppice	45.	Planting
41.	Unenclosed	46.	Other
		47.	Amenity

N.I. Landclass	L.C. Group	Square	Unit	Sub Unit
1 2: 1 0	3: A	4 5 6: 0 0 5	7 8: 0 1	9:

Filename: F M W O O D ● S D F

Par	Area (ha)	Typ	landsc 1	landsc 2	Str	Gr fl	Soi	Management 1	Management 2	Management 3	Management 4	Understorey 1	Understorey 2	Understorey 3	Regeneration 1	Regeneration 2	Regeneration 3	Trees 1	Trees 2	Trees 3	Trees 4
10	12	17	19	21	23	25	27	29	31	33	35	37	40	43	46	49	52	55	58	61	64 66
0,1	0,0●0,2	0,7	1,3	1,8	2,5	2,9	3,5	3,7	4,1			P,R,S			P,R,S						
0,2	0,0●0,9	0,2	1,4	1,8	2,7	2,9	3,5	3,7	4,1	4,4								A,E,H			
0,3	0,0●0,1	0,2	1,3	1,8	2,7	2,9	3,5	3,7	4,1	4,4								U,L,S			
0,4	●																				
0,5	●																				
0,6	●																				
0,7	●																				
0,8	●																				
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1,6	●																				
1,7	●																				
1,8	●																				
1,9	●																				
2,0	●																				
2,1	●																				
2,2	●																				

SEMINATURAL VEGETATION

GRASSLAND
01. Species-rich dry grassland
02. Species-rich wet grassland
03. Bent / fescue hill pasture
04. Mat grass hill pasture
05. Molinia grassland
06. Calcareous grassland
64. Rush pasture

HEATH
07. Gorse heath-continuous
08. -scattered
09. Ericaceous heath
10. Wet heath
11. Lichen / bryophyte heath
12. Dry heath / grassland mosaic
13. Wet heath / grassland mosaic
57. Mixed upland vegetation
58. Gorse heath / bracken mosaic

MIRES
14. Wet bog
15. Dry bog
16. Poor fen / peaty flush
69. Sedge marsh
65. Fen meadow
17. Reedbeds
18. Fen
19. Freshwater vegetation
66. Swamp
67. Water margin vegetation
68. Water inundation vegetation

COASTAL
20. Intertidal
21. Saltmarsh
22. Shingle gravel / ridge
23. Strandline
24. Fore-dune
25. Dune grassland
26. Dune heath
27. Dune scrub
28. Bird cliff vegetation
30. Cliff top grassland
31. Cliff top heathland
59. Dune slack vegetation

TALL HERB / FERN
32. Bracken - continuous
33. - scattered
34. Ruderal
35. Other

29. Crevice / ledge vegetation

STRUCTURE

36. Mosaic
37. Peat hag
38. Erosion / bare peat
39. Blanket bog
40. Raised bog
41. Ridge and furrow
42. Weed infested
60. Disturbed
61. Calcareous
62. Roadside verge

[redacted]

MANAGEMENT

43.	Burnt	52.	Mechanical peat cutting
44.	Neglected		Drainage (open)
45.	Semi-improved	54.	- new
46.	Weed control	55.	old
47.	Conserved (hay / silage)	56.	Drainage (closed)
48.	Grazed	63.	Rush topping
49.	Pollution		
50.	Domestic peat cutting-used		
51.	-disused		

N.I. Landclass	L.C. Group	Square	Unit	Sub Unit
1 2: 1 0	3: A	4 5 6: 0 0 5	7 8: 0 1	9:

Filename: F M S E M T ● S D F

Par	Area (ha)	Type	Structure 1	Structure 2	Structure 3	Structure 4	Management 1	Management 2	Management 3	Management 4	Species 1	Species 2	Species 3	Species 4
10	12 17		19	21	23	25	27	29	31	33	35	38	41	44 46
0,1	0,0●0,1	0,1	6,2								H,O,L	C,E,N	T,R,R	P,L,L
0,2	0,0●0,3	6,7									J,U,S	F,I,U		
0,3	0,0●0,7	3,4					4,4				R,U,F			
0,4	0,0●0,4	0,2					4,7				J,U,S	H,O,L	F,I,U	R,A,R
0,5	●													
0,6	●													
0,7	●													
0,8	●													
0,9	●													
1,0	●													
1,1	●													
1,2	●													
1,3	●													
1,4	●													
1,5	●													
1,6	●													
1,7	●													
1,8	●													
1,9	●													
2,0	●													
2,1	●													
2,2	●													

BOUNDARIES

TYPE

01. Boundary removed
02. Hedge bank
03. Hedgerow
04. Dry stone wall (old)
05. Dry stone wall (new)
06. Ruined dry stone wall
07. Mortar / brick / concrete wall
08. Hedge on wall
09. Stone heap
10. Earth bank
11. Wood post and wire fence
12. Other fence
24. Vernacular gatepost

STRUCTURE

13. Boundary with gaps
14. Boundary with filled gaps
15. Boundary complete
16. Hedge with scattered shrubs
17. Hedge with overgrown shrubs
18. With wood post and wire fence
19. With other fence
20. Species rich
21. Permanently wet ditch
22. Seasonally wet ditch
23. Managed

[redacted]

N.I. Landclass	L.C. Group	Square	Unit	Sub Unit
1 2: 1 0	3: A	4 5 6: 0 0 5	7 8: 0 1	9:

Filename: F M B O U N ● S D F

Par	Length m	Type	Structure 1	Structure 2	Structure 3	Structure 4	Structure 5	Shrubs 1	Shrubs 2	Shrubs 3	Trees 2-5m 1	Trees 2-5m 2	Trees 2-5m 3	Trees >5m 1	Trees >5m 2	Trees >5m 3
10	13	16	18	20	22	24	26	28	31	34	37	40	43	46	49	52 54
0,0,1	0,4,4	0,2	1,3				2,3	C,R,M						F,R,E		
0,0,2	0,4,0	0,2	1,6			2,2	2,3	P,R,S	C,R,M	C,O,A						
0,0,3	0,6,3	0,2	1,6	1,8		2,2		C,R,M	P,R,S					A,C,P	S,A,S	
0,0,4	1,0,7	0,3	1,6	1,8		2,2		S,A,S						S,A,S		
0,0,5	0,7,2	0,3	1,6	1,8				C,R,M						A,L,G		
0,0,6																
0,0,7																
0,0,8																
0,0,9																
0,1,0																
0,1,1																
0,1,2																
0,1,3																
0,1,4																
0,1,5																
0,1,6																
0,1,7																
0,1,8																
0,1,9																
0,2,0																
0,2,1																
0,2,2																
0,2,3																
0,2,4																
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0,2,6																
0,2,7																
0,2,8																
0,2,9																
0,3,0																
0,3,1																
0,3,2																
0,3,3																

AGRICULTURE

CROPS

01. Wheat
02. Barley
03. Oats
04. Potatoes
05. Brassicas
06. Legumes
39. Root crops
07. Italian ryegrass
08. Perennial ryegrass
09. Mixed species grassland
10. Ploughed / fallow
11. Other grassland

HORTICULTURE

12. Orchard
13. Soft fruit
14. Vegetables
15. Flowers
16. Other

MANAGEMENT / STRUCTURE

17. Conservation hay / silage
18. Grazed
19. Reclamation
20. Rush infested
21. Weed infested (broadleaf)
22. Drainage
23. Neglected
24. New sown
31. Erosion
40. Fen peat

FARM ANIMALS

25.	Store cattle	32.	Calves
26.	Dairy cattle	33.	Lambs
27.	Suckler cattle	34.	Horses
28.	Sheep	35.	Pigs
29.	Donkey	36.	Poultry
38.	Goat	37.	Geese

[redacted]

N.I. Landclass	L.C. Group	Square	Unit	Sub Unit
1 2: 1 0	3: A	4 5 6: 0 0 5	7 8: 0 1	9:

Filename: F M A G R I ● S D F

Par	Area (ha)	Typ	Man / struct	Animals Typ	Animals No	Species 1	Species 2	Species 3
10	12	17	19 21 23	25	27	30	33	36 38
0,1	0,0 ●	0,3	1,1 1,7	2,0		H,O,L	R,A,R	
0,2	0,0 ●	3,1	1,1 1,7			H,O,L	R,A,R	L,O,P
0,3	0,0 ●	3,2	1,1 1,7	2,1		H,O,L	R,A,R	R,U,S
0,4	0,0 ●	4,8	0,8 1,8	2,1		H,O,L	L,O,P	C,I,S
0,5	●							
0,6	●							
0,7	●							
0,8	●							
0,9	●							
1,0	●							
1,1	●							
1,2	●							
1,3	●							
1,4	●							
1,5	●							
1,6	●							
1,7	●							
1,8	●							
1,9	●							
2,0	●							
2,1	●							
2,2	●							
2,3	●							
2,4	●							

Par	Area (ha)	Typ	Man / struct	Animals Typ	Animals No	Species 1	Species 2	Species 3
10	12	17	19 21 23	25	27	30	33	36 38
2,5	●							
2,6	●							
2,7	●							
2,8	●							
2,9	●							
3,0	●							
3,1	●							
3,2	●							
3,3	●							
3,4	●							
3,5	●							
3,6	●							
3,7	●							
3,8	●							
3,9	●							
4,0	●							
4,1	●							
4,2	●							
4,3	●							
4,4	●							
4,5	●							
4,6	●							
4,7	●							
4,8	●							

LANDSCAPE

URBAN-RURAL ARTEFACTS

01. Urban area
02. New urban
03. New domestic building
04. New agricultural building
35. Other new buildings
37. Vernacular building
47. Rath
38. Other historic monument
05. New metalled road
06. New unmetalled road
07. Silo
42. Pylon
48. Shed

DERELICTION

08. Derelict farm building (vernacular)
09. Derelict modern building
10. Derelict industrial building
49. Derelict historic monument
11. Abandoned road / track
12. Old railway
13. Domestic rubbish
14. Commercial rubbish
36. Other rubbish
15. Litter
16. Spoil
17. Abandoned vehicles
18. Land fill
19. Bare / disturbed ground
20. Quarry-used
21. - disused

RECREATION

22. Recreation trails
23. Path/ track erosion
24. Managed footpath
25. Land erosion
26. Amenity grassland
27. Caravan park / camping
39. Car park / layby
40. Roadside verge
42. Fishing

[redacted]

EXPOSURE

29. Sea cliff
30. Inland cliff
31. Scree
32. Rock outcrops
33. Surface boulders
34. River bank canalised
41. Moraine
43. Sink hole
44. Caves
45. Limestone pavement
46. Gorge

N.I. Landclass	L.C. Group	Square	Unit	Sub Unit
1 2: 1 0	3: A	4 5 6: 0 0 5	7 8: 0 1	9:

Filename: F M L A M 0 ● 5 D A F

Par	Area (ha)	Length (m)	U-R Type	Dereliction 1	Dereliction 2	Dereliction 3	Dereliction 4	Recreation 1	Recreation 2	Recreation 3	Recreation 4	Exposure 1	Exposure 2	Exposure 3	Exposure 4
10	12	17	20	22	24	26	28	30	32	34	36	38	40	42	44 45
0,1	●			0,8											
0,2	●			0,8											
0,3	●			3,6											
0,4	●														
0,5	●														
0,6	●														
0,7	●														
0,8	●														
0,9	●														
1,0	●														
1,1	●														
1,2	●														
1,3	●														
1,4	●														
1,5	●														
1,6	●														
1,7	●														
1,8	●														
1,9	●														

TARGET NOTES

GENERAL

This map and grid reference, page 131, has been removed to preserve the confidentiality of the sample square locations.

FERMANAGH DISTRICT			
GRID REFERENCE	UNIT	LAND CLASS	FIELD SURVEY SAMPLE NUMBER
[redacted]	1	10	5

[redacted]

Appendix 5. Field data sheet descriptors.

Self-evident items on the field data sheets are not described.

1. Woodland

1.1 Type

Seminatural broadleaf woodland: woodland which has not been planted and where conifers comprise <10% of trees.

Seminatural mixed woodland: woodland which has not been planted, comprising broadleaf species with planted conifers as a minor component.

Scrub: immature seminatural broadleaf woodland and scrub cover. The category includes both dense and scattered scrub but excludes gorse scrub without trees.

Coniferous plantation: planted stands with uniform age structure, primarily (>90%) of conifer species. Sites include new plantings and mature plantations.

Broadleaf plantation: planted stands of broadleaf trees with <10% conifers.

Parkland: scattered individual, usually mature trees, mainly >10m apart with pasture or amenity grassland beneath.

Mixed plantation: primarily planted stands comprising 10-90% broadleaf or conifer species.

Scattered, isolated trees: occur singly or in small groups (<10m^2).

Lines of trees: one tree wide.

Fen carr: seminatural woodland on fen peat with willow or alder trees.

1.2 Structure

Height: mean height of woodland canopy.

1.3 Ground flora

Species-rich: high plant species diversity, particularly of forbs.

Species-poor: low plant species diversity or predominantly bare ground.

1.4 Management

Unenclosed: open to farmstock on at least one side.

Shelter: woodland planted as a windbreak.

2. Seminatural vegetation

2.1 Type

Only the vegetation types relating to Fermanagh District are described.

Species rich dry grassland: unimproved grassland, moderately well drained and forb-rich where ryegrass species are absent. On drier sites the grasses crested dog's-tail, bent and fescue are usually conspicious with forbs such as primrose, white clover, cats-ear and ladys mantle. On wetter soils Yorkshire fog and sweet vernal grass are found in association with knapweed, selfheal, meadow vetchling, greater birdsfoot trefoil and square stemmed St Johns wort.

Species-rich wet grassland: unimproved, poorly drained grassland containing soft rush, sharp flowered or jointed rush with an abundance of forbs. These include creeping buttercup, yellow flag, marsh marigold, creeping Jenny, marsh cinquefoil, watermint, 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.

Molinia grassland: grassland with purple moor grass as the principal component. The small amount of this resource type was combined with bog for analytical purpose

Fen meadow: vegetation on mineral soils, usually with a thin surface layer of peat with jointed or sharp flowered rush, devils bit scabious, bog thistle and sedges as dominants. A subtype includes a heather component.

Lakeland margin and ditch vegetation: freshwater vegetation, reedbeds, swamp, fen, water inundation vegetation, water margin vegetation and rush pasture are combined into this category for analytical purposes.

Freshwater vegetation: vegetation of open water and permanently inundated areas, beyond the land zone. Common species include yellow water lily and pondweed.

Reedbeds: stands of common reed or reedmace occuring on waterlogged mineral soils and usually associated with the lakeside water margin interface. There is some overlap in species composition with swamp.

Swamp: vegetation of the waterlogged mineral soils associated with the lakeside water margin interface other than reedbeds. Dominant species include bulrush, marsh horsetail, common spike rush, lesser water plantain and sedges.

Fen: Primarily found on low lying waterlogged peaty ground behind the reedbed and swamp zone. Common species include sedges, yellow flag, forget-me-not, creeping Jenny, marsh horsetail, marsh pennywort and bogbean.

Water inundation vegetation: ruderal vegetation of rocky lake shores usually disturbed by wave action or seasonally inundated. Common species include silverweed, tussock sedge, creeping bent, watermint, creeping Jenny and white clover.

Water margin vegetation (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.

Rush pasture: vegetation back from the lakeland water margin or in field parcels where hard rush is a major dominant. Soft rush may be co-dominant. Associated species include sedges, watermint, selfheal and creeping buttercup.

Ruderal vegetation: vegetation associated with disturbed or ground. Species commonly found include nettle, bramble, thistle and dock.

Bent/fescue hill pasture: moderately well-drained grassland where bent and fescue are dominant. It is commonly infested by rushes and thistles.

Mat-grass hill pasture: grassland where mat-grass is dominant or co-dominant with bent/fescue hill pasture.

Bracken: areas where bracken is dominant, or invading other vegetation types, principally grassland. For analytical purposes continuous and scattered bracken have been combined.

Gorse: areas where European gorse is dominant or invading other vegetation types, principally grassland. For analytical purposes, continuous and scattered gorse have been combined.

Wet heath: an even dominant cover of ling heather in association with wetland species as a sub-dominant component. Cotton grasses, purple moor-grass, heath rush, deer-grass, wavy hair-grass, sedges and mosses are commonly present but not dominant. This category grades to wet heath mosaic and fen meadow. The type is combined with ericaceous heath for analytical purposes.

Wet heath mosaic: mainly ling heather forming a patchy mosaic with other wetland species or mat-grass. The type is combined with dry heath mosaic for analytical purposes.

Ericaceous heath: an even dominant cover of ling heather alone or with grassland species as a sub-dominant component. The type is combined with wet heath for analytical purposes.

Dry heath mosaic: Ling heather forming a patchy mosaic with bent-fescue hill pasture or other lowland grassland types. The type is combined with wet heath mosaic for analytical purposes.

Dry bog: less wet peat comprising a mixture of wetland species from other vegetation types and a grass component. Polytrichum, rush species, deer-grass and purple moor grass are the main species. The type is combined with wet bog for analytical purposes.

Poor-fen: rush-dominated vegetation over wet peaty soils. Soft rush, jointed or sharp flowered rush is dominant. Sedges, Rhytidiadelphus spp., bent grasses and Yorkshire fog are usually associated.

Wet bog: waterlogged peat comprising bog-moss, cotton grasses and ling heather as dominants. Deer-grass, bog asphodel and purple moor grass are common components. The type is combined with dry bog for analytical purposes.

2.2 Structure

Mosaic: vegetation containing marked patches of different species or vegetation types or a patchy distribution of the main type.

Disturbed: Bare ground or vegetation with bare patches, created by either animals, machines or burning.

Neglected: unmanaged land where the vegetation is rank or overgrown.

3. Field boundaries

Boundary removed: boundaries shown as present on the Ordnance Survey field sample maps but absent at the time of survey.

Hedge: a linear boundary comprising shrubs.

Hedgebank: a hedge associated with either an earth bank or a wall bank.

Hedgerow: a hedge not associated with a bank.

Complete hedge: a complete hedge with no gaps.

Hedge with gaps: a hedge with gaps forming <10% of its length.

Scattered shrubs: a hedge with gaps forming >10% of its length. It is generally not stockproof unless the gaps have been filled with wire strands or miscellaneous items.

Overgrown shrubs: a hedge with shrubs >2m tall and gaps between adjacent individuals, especially near the base. It is also generally not stockproof.

Managed hedge: a hedge with signs of recent cutting or trimming usually to a flat top.

Dry stone wall: a stone wall constructed without mortar.

Maintained dry stone wall: a complete wall with less than 2 gaps or gaps forming <15% of its length.

Dry stone wall with gaps: an otherwise maintained wall with more than 2 gaps or >15% of its length with gaps.

Ruined dry stone wall: a mainly derelict wall with no agricultural function.

Hedge on wall: a hedge planted on top of a dry stone wall.

Mortar, brick or concrete wall: a stone wall constructed with mortar or made from brick or concrete.

Bank: an earth bank or an earth bank with a dry stone component on one side without accompanying planted shrubs.

Post and wire fence: mainly comprising fences of wood post and wire or wooden rail but also concrete post and wire. The type is found alone or in association with other boundary types.

Afforested boundary: a field boundary previously associated with agriculture but now functionless and incorporated within a forestry plantation. This category excludes boundaries which separate the plantation from other resource types.

4. Agricultural Land

4.1 Type

Italian ryegrass: relatively recently sown grassland with this species. It is commonly found in association with perennial ryegrass.

Perennial ryegrass: grassland in which perennial ryegrass is dominant. Timothy and white clover are commonly sown with perennial ryegrass.

Mixed species grassland: long established grassland comprising crested dogs'tail

and a variety of forbs and grass species. Knapweed and selfheal are, in particular, common. This type is less species rich than species rich dry grassland into which it grades.

Other grassland: Unimproved grassland with sweet vernal-grass, meadow fescue, bent, Yorkshire fog, white clover, and creeping buttercup as principal species.

Arable and fallow land: Cereal or vegetable crops. Some land had no grass or crop at the time of survey.

4.2 Management/Structure

Reclamation: reseeding or cultivation of seminatural vegetation.

Rush infested: species forming a major component of sward.

Broadleaf infested: either nettle ragwort, dock or thistle forming a major component of the sward.

Drainage: either open or closed drains.

Neglected: under-utilized, rank vegetation.

5. Landscape

Urban area and domestic building: land forming part of towns or areas developed for housing other than isolated groups which comprise rural domestic buildings.

Derelict building: unmaintained and not used for its primary purpose.

Rubbish, litter, spoil, abandoned vehicles: sites of artefact.

Appendix 6. Species codes used on the field data sheets together with botanical and common names.

CODE	BOTANICAL NAME	COMMON NAME
ABA	Abies alba	Common silver fir
ABG	Abies grandis	Giant fir
ABP	Abies procera	Noble fir
ACC	Acer campestre	Field maple
ACM	Achillea millifolium	Yarrow
ACP	Acer pseudoplatanus	Sycamore
AEH	Aesculus hippocastanum	Horse chestnut
AEP	Aegopodium podagraria	Ground elder
AES	Angelica sylvestris	Angelica
AGS	Agrostis spp.	Bent
AHP	Achillea ptarmica	Sneezewort
AIP	Alliaria petiolata	Garlic mustard
AJR	Ajuga reptans	Bugle
ALG	Alnus glutinosa	Alder
ALI	Alnus incana	Grey alder
ALP	Alopecurus pratensis	Meadow foxtail
ALV	Alchemilla vulgaris	Lady's mantle
AND	Antennaria dioica	Mountain cudweed
ANN	Anemone nemorosa	Wood anemone
ANO	Anthoxanthum odoratum	Sweet vernal-grass
ANS	Anthriscus sylvestris	Cow parsley
AOG	Alopecurus geniculatus	Marsh foxtail
APA	Alisma plantago-aquatica	Water plantain
APN	Apium nodiflorum	Fools watercress
ARA	Araucaria araucana	Monkey-puzzle tree
ARE	Arrhenatherum elatius	False oat-grass
ARM	Arctium minus	Lesser burdock
BAR	Baldellia ranunculoides	Lesser water-plantain
BEP	Bellis perennis (seminat. veg)	Daisy
BEP	Betula spp. (woodland)	Birch
BES	Berberis spp.	Berberis
BIT	Bidens tripartita	Trifid bur-marigold
BRA	Bracythecium albicans	Moss
BRM	Briza media	Quaking grass
BRS	Bracythecium spp.	Moss
CAB	Carpinus betula	Hornbeam
CAE	Carex elata/paniculata	Tufted tussock sedge
CAP	Caltha palustris	Marsh marigold
CAS	Carex spp.	Sedge
CAV	Calluna vulgaris	Ling heather
CEF	Cerastium fontanum	Mouse-ear
CEN	Centaurea nigra	Knapweed
CES	Cedrus spp.	Cedar
CHS	Chaemycyparis/Cupressocyparis spp.	Cypress
CID	Cirsium dissectum	Bog thistle
CIS	Cirsium spp.	Thistle
CIV	Cicuta virosa	Cowbane
CLS	Cladonia spp.	Lichen
COA	Corylus avellana	Hazel

CODE	BOTANICAL NAME	COMMON NAME
COM	Conopodium majus	Pignut
COS	Cotoneaster simonsii	Cotoneaster
CRM	Crataegus monogyna	Hawthorn
CRP	Cardamine pratensis	Lady's smock
CSA	Castanea sativa	Sweet chestnut
CST	Callitriche stagnalis	Water starwort
CUM	Cupressus macrocarpa	Monterey cyprus
CYC	Cynosurus cristatus	Crested dogstail
CYS	Cytisus scoparius	Broom
DAG	Dactylis glomerata	Cocksfoot
DAM	Dactylorhiza maculata/fuchsii	Heath spotted/common orchid
DEC	Deschampsia caespitosa	Tufted hair-grass
DEF	Deschampsia flexuosa	Wavy hair-grass
DFM	Dryopteris filix-mas	Male fern
DIP	Digitalis purpurea	Foxglove
ELC	Elodea canadensis	Canadian pondweed
ELP	Eleocharis palustris	Common spike-rush
EPA	Epilobium angustifolium	Rose-bay willow-herb
EPH	Epilobium hirsutum	Great willowherb
EQS	Equisetum spp.	Horsetail
ERC	Erica cinerea	Bell heather
ERS	Eriophorum angustifolium/vaginatum	Cotton-grass
ERT	Erica tetralix	Cross-leaved heath
ESS	Escallonia spp.	Escallonia
EUC	Eupatorium cannabinum	Hemp-agrimony
EUO	Euphrasia spp.	Eyebright
FAS	Fagus sylvatica	Beech
FEG	Festuca gigantea	Giant fescue
FEP	Festuca pratensis	Meadow fescue
FES	Festuca spp.	Fescue
FIU	Filipendula ulmaria	Meadowsweet
FRE	Fraxinus excelsior	Ash
FUM	Fuchsia magellanica	Fuchsia
GAA	Gallium aparine	Cleavers
GAP	Galium palustre	Marsh bedstraw
GAS	Galium saxatile	Heath bedstraw
GAV	Galium verum	Lady's bedstraw
GLS	Glyceria spp.	Sweet-grass
GUR	Geum rivale	Water avens
HEH	Hedera helix	Ivy
HES	Heracleum sphondylium	Hogweed
HNS	Hyacinthoides non-scriptus	Bluebell
HOL	Holcus lanatus	Yorkshire fog
HPR	Hypochaeris radicata	Cat's-ear
HYT	Hypericum tetrapterum	Square-stalked ST Johns-wort
HYV	Hydrocotyle vulgaris	Marsh pennywort
ILA	Ilex aquifolium	Holly
IMG	Impatiens glandulifera	Himalayan balsam
IRP	Iris pseudacorus	Yellow flag
JNS	Juncus squarrosus	Heath rush
JUA	Juncus acutiflorus/articulatus	Sharp flowered/jointed rush
JUI	Juncus inflexus	Hard rush
JUS	Juncus effusus/conglomeratus	Soft rush/compact rush
LAD	Larix decidua/Kaemferi	Larch
LAP	Lathyrus pratensis	Meadow vetchling

CODE	BOTANICAL NAME	COMMON NAME
LBS	Laburnum spp.	Laburnum
LEA	Leontodon autumnalis	Autumn hawkbit
LES	Lemna spp.	Duckweed
LEV	Leucanthemum vulgare	Ox-eye daisy
LFC	Lychnis flos-cuculi	Ragged robin
LIO	Ligustrum ovalifolium	Garden privet
LOC	Lotus corniculatus	Birdsfoot trefoil
LOD	Lobelia vulgaris	Water lobelia
LOM	Lolium multiflorum	Italian ryegrass
LOP	Lolium perenne	Perennial ryegrass
LTP	Lathyrus palustris	Marsh pea
LUC	Luzula campestris	Field rush
LUO	Lotus uliginosus	Greater birdsfoot trefoil
LUS	Luzula sylvatica	Great wood rush
LYE	Lycopus europaeus	Gipsywort
LYM	Lysimachia nummularia	Creeping-Jenny
LYS	Lythrum salicaria	Purple loosestrife
LYV	Lysimachia vulgaris	Yellow loosestrife
MAD	Malus domestica	Apple
MAS	Malus sylvestris	Crab apple
MEA	Mentha aquatica	Water mint
MET	Menyanthes trifoliata	Bogbean
MOC	Molinia caerulea	Purple moor-grass
MOF	Montia fontana	Blinks
MYG	Myrica gale	Bog myrtle
MYS	Myosotis spp.	Forget-me-not
NAO	Nasturtium officinale	Water cress
NAS	Nardus stricta	Mat-grass
NRO	Narthecium ossifragum	Bog asphodel
NUL	Nuphar lutea	Yellow water-lily
OES	Oenanthe spp.	Water dropwort
OXA	Oxalis acetosella	Wood sorrel
PEA	Potentilla anserina	Silverweed
PES	Pedicularis sylvatica	Lousewort
PHA	Phalaris arundinacea	Reed canary-grass
PHC	Phragmites australis	Common reed
PHP	Phleum pratense	Timothy
PIA	Picea abies	Norway spruce
PIC	Pinus contorta	Lodgepole pine
PIN	Pinus nigra	Corsican pine
PIO	Picea omorika	Siberian spruce
PIS	Picea sitchensis	Sitka spruce
PLL	Plantago lanceolata	Ribwort plantain
PNS	Pinus sylvestris	Scot's pine
POC	Polytrichum commune	Moss
POE	Potentilla erecta	Tormentil
PON	Potomageton natans	Broad-leaved pondweed
POP	Poa pratensis	Smooth-stalked meadow-grass
POS	Populus spp.	Poplar
POT	Poa trivialis	Rough-stalked meadow-grass
PRA	Prunus avium	Gean
PRD	Prunus domestica	Plum
PRL	Prunus laurocerasus	Cherry laurel
PRP	Prunus padus	Bird cherry
PRS	Prunus spinosa	Blackthorn

CODE	BOTANICAL NAME	COMMON NAME
PRU	Prunus spp.	Ornamental cherry
PRV	Primula vulgaris	Primrose
PSM	Pseudotsuga menziensii	Douglas fir
PTA	Pteridium aquilinum	Bracken
PTP	Potentilla palustris	Marsh cinquefoil
PUD	Pulicaria dysenterica	Common fleabane
PUV	Prunella vulgaris	Selfheal
PYH	Polygonum hydropiper/minus	Water-pepper
PYP	Polygonum persicaria	Redshank
QUS	Quercus spp.	Oak
RAA	Ranunculus acris	Meadow buttercup
RAF	Ranunculus ficaria	Celandine
RAR	Ranunculus repens	Creeping buttercup
RAS	Rhacomitrium lanuginosum	Moss
REJ	Reynoutria japonica	Japanese knotweed
RHM	Rhinanthus minor	Yellow rattle
RHP	Rhododendron ponticum	Rhododendron
RHS	Rhytidiadelphus spp.	Moss
RIS	Ribes sanguineum	Flowering currant
RNF	Ranunculus flammula	Lesser spearwort
ROS	Rosa canina/tomentosa	Wild rose
RUA	Rumex acetosa	Common sorrel
RUF	Rubus fruticosus	Bramble
RUS	Rumex spp.	Dock
SAN	Sambucus nigra	Elder
SAS	Salix spp.	Willow
SCC	Scirpus caespitosus	Deer-grass
SCL	Scirpus lacustris	Bulrush
SDA	Sedum acre	Biting stonecrop
SEA	Senecio aquaticus	Marsh ragweed
SEG	Sequoiadendron giganteum	Wellingtonia
SEJ	Senecio jacobea	Ragweed
SIL	Sium latifolium	Greater water-parsnip
SOA	Sorbus aucuparia	Rowan
SOO	Sonchus oleraceus	Sow thistle
SPR	Sparganium spp.	Bur-reed
SPS	Sphagnum spp.	Bog-moss
SRA	Sorbus aria	Whitebeam
SSA	Sesleria albicans	Blue moor-grass
STM	Stellaria media	Chickweed
STP	Stachys palustris	Marsh woundwort
SUP	Succisa pratensis	Devils-bit scabious
SYM	Symphoricarpos rivulare	Snowberry
TAB	Taxus baccata	Yew
TAO	Taraxacum officionale	Dandelion
THO	Thuja occidentalis	White cedar
THP	Thuja plicata	Western red cedar
THP	Thymus praecox (seminat. veg.)	Wild thyme
TIS	Tilia spp.	Lime
TRP	Trifolium pratense	Red clover
TRR	Trifolium repens	White clover
TUF	Tussilago farfara	Coltsfoot
TYL	Typha latifolia	Reedmace
ULE	Ulex europaeus	European gorse
ULG	Ulex galli	Dwarf gorse

CODE	BOTANICAL NAME	COMMON NAME
ULS	Ulmus spp.	Elm
URD	Urtica dioica	Nettle
VAM	Vaccinium myrtillus	Bilberry
VAO	Valeriana officinalis	Common valerian
VEB	Veronica beccabunga	Brooklime
VIO	Viburnum opulus	Guelder-rose
VIP	Viola palustris	Marsh violet

Appendix 7. Field data sheets and map archive.

The originals are held by the Department of Environmental Studies, University of Ulster and copies by the Countryside and Wildlife Branch, Department of the Environment for Northern Ireland.

Appendix 8. The computer database.

The field data is stored in the form of dBASE III PLUS (Ashton Tate 1985) database files on floppy disks. These are suitable for use on an IBM personal computer or some compatable machine. Each main resource type described on the data sheet is held on disk as follows:

Resource	Database file (.DBF)
Woodland	FMWOOD.DBF
Seminatural vegetation	FMSENT.DBF
Field boundaries	FMBOUN.DBF
Agriculture	FMAGRI.DBF
Landscape attributes	FMLAND.DBF

Database fields and numeric codes are detailed on the field data sheets in Appendix 4. All records in each file are indexed in numerical order by unit, square number and parcel number with index (.NDX) files.

Report form files (.FRM) group records separately by unit and square number and lists data from specified fields either on screen or to the printer when used with the dBASE III PLUS software.

A series of tailor made command programmes are available that will extract specific information from the database.

Appendix 9. General procedures for analysis of data.

The field sample area of each land class group within individual landscape units was allocated in the same approximate proportion as that between total land class group areas. This allows easy calculation of resource values in individual units:

$$\text{e.g Resource \% mean area for unit} = \frac{\text{resource sampled in unit}}{\text{area of unit sampled (km}^2\text{)}}$$

Calculations are done in a similar way for boundary length and attribute number per square kilometre and also percentage frequency of occurrence in sample squares.

Simple additions of individual unit totals to produce values for combined units can only be done where the percentage area of the units sampled is the same or very similar. These values vary between units in the Fermanagh District study area introducing a non random element of distribution into the sample set.

When calculating values for the whole study area or combined landscape units where the percentage area sampled is different, arithmetical adjustment needs to be made to the computations:

e.g Resource % mean area for combined units =

$$\underset{\text{(unit 1)}}{(\text{\% mean area x ratio 1})} + \underset{\text{(unit 2)}}{(\text{\% mean area x ratio 2})} ..$$

$$\text{where ratio 1} = \frac{\text{total land area unit 1}}{\text{total land area unit 1 + 2}}$$

$$\text{and ratio 2} = \frac{\text{total land area unit 2}}{\text{total land area unit 1 + 2}}$$

ratio 1 + ratio 2 = 1

Total resource values are calculated as:

e.g. Total area of resource within unit = % mean area within unit x area of unit (km^2)

The same calculation is done for combined units or the whole study area.

Calculations for individual land class groups are performed in a similar way using sample areas and ratios pertaining specifically to them. Some units with small areas of particular land class groups were not sampled. In these cases the mean value of a given resource from the rest of the sample was allocated to them to bring the total area sampled to 100 percent.

Appendix 10 Mean dates of Ordnance Survey survey for the map archive (O.S. 1:10560) attached to the field data sheets. Dates are presented for land class groups and landscape units within Fermanagh District.

Land class groups

Land class group	Mean map date
A	1963
B	1962
C	1963
D	1962
E	1961
F	1960

Individual landscape units

Landscape unit	Mean map date
1	1961
2	1965
3	1960
4	1966
5	1963
6a	1965
6b	1962
7	1962
8	1959
9	1964
10	1967
11	1961
12	1963
13	1961
14	1960
15a	1958
15b	1958
16a	1962
16b	1961

Combined landscape units

Combined landscape unit	Mean map date
1,2	1962
3,4,5,6	1963
7,8,11	1961
9,10	1965
12,13	1961
14,15	1959
16	1962

Mean map date for Fermanagh District = 1962