A VEGETATION SURVEY OF GLENVEAGH NATIONAL PARK AND THE AN TAISCE PROPERTY, CO. DONEGAL.

Lynda C.Weekes,

Department of Botany,

University College,

Galway.

Report to the Office of Public Works, National Parks and Monuments Branch.

CONTENTS

INTRODUCTION

Glenveagh National Park covers an area of approximately 25,000 acres consisting of mountain blanket bog, *Molinia*-type grassland, and deciduous woodland.

The area was studied by Telford (1977) who described the past and present vegetation of the Park in some detail. He classified the vegetation into five classes; OXYCOCCO-SPHAGNETEA, MOLINIO-ARRHENATHERETEA, CALLUNO-ULICETEA, NARDETEA and QUERCETEA ROBORI-PETRAEAE.

Most of the wet heathland and bog vegetation of Glenveagh belong to the class OXYCOCCO-SPHAGNETEA, and association Pleurozio purpureae-Ericetum tetralicis. The grassland type vegetation which occurs generally on slopes, particularly on the western slopes of Lough Veagh falls in to the MOLINIO-ARRHENATHERETEA. CALLUNO-ULICETEA, characterises the vegetation of dry heaths and mountain vegetation. Telford found that the vegetation of the class NARDETEA was often mixed with the CALLUNO-ULICETEA on mountain slopes. The oak woodland vegetation belonging to the class, QUERCETEA ROBORI-PETRAEAE, was found to occur mainly on the eastern shore of Lough Veagh and other isolated areas on the north eastern shore. This woodland vegetation has been invaded in many areas by *Rhododendron ponticum*. Telford mapped these areas in 1977 but since then *R. ponticum* has spread further, it was therefore necessary to remap the extent of the *Rhododendron* in the Park.

The An Taisce property which is situated south-west of the Park, an area of 6,000 acres, covered mainly by mountain blanket bog

was not previously surveyed, neither was the Park area south of the Poisoned Glen. These areas were surveyed and the areas already studied by Telford were re-surveyed in the summer of 1989 in order to classify and locate the different vegetation types and to draw up a map to facilitate future Park management.

It should be noted that "Glenveagh" refers to both the Park area and the An Taisce property throughout this report.

METHODS

Vegetation sampling

The area to be mapped was first walked over and preliminary notes and observations made.

Sampling was carried out in June, July and August and some areas were rechecked in October '89.

A copy of the 6" map with the traced vegetation units was brought out into the field with field photographs. The units were located on the ground and sampled using the Braun-Blanquet cover abundance scale:-

+	less than 1% cover
	1-5% cover
	6-25% cover
	26-50% cover
	51-75% cover
	76-100% cover

Also recorded with each releve were other relevant details :-

slope

aspect

altitude

location

vegetation description:- total percentage cover

scrub layer

herb layer

bryophyte layer

average height of vegetation;

Comments:- grazing; % rock; peat erosion etc.

Releves (1 x 1m) were recorded subjectively to represent the typical vegetation type of the unit in question.

Bryophytes and other taxa not identified in the field were sampled and later identified in the laboratory.

The species nomenclature used for this survey were; bryophytes according to Smith (1978); hepatics according to Watson (1968); and higher plants according to Webb (1977).

Over the three months, 132 releves were taken and the data analysed using computer.

Vegetation analyses.

The raw data was analysed on the Vax system, initially using the programme TWINSPAN (Hill 1979) to aid in the separation and classification of the vegetation groups. TWINSPAN (Two-way indicator species analyses) is a programme which constructs a classification of samples and then uses this to classify species according to their ecological preferences to produce a two-way table of the combined results.

The data was presented in tabular form using the programme NPHYTO (O'Connell U.C.G.). This table was subsequently sorted to produce the final ordered phytosociological table of the original data set (table 5). A summary table (UBERSICHTSTABELLE) of table 5 was produced using the programme UBERS (table 6).

The master table (consisting of all the data and communities) was synclassified with reference to White and Doyle (1982) and other texts.

Subtables were extracted from the master table, each table lists the species characteristic of a class and its associated

communities to enable the non-botanist to recognise the different units in the field with ease.

The classification of the vegetation is according to White and Doyle (1982).

Mapping.

An area of 31,000 acres which includes the area of the Park (25,000 acres) and the An Taisce property (6,000 acres) was mapped.

The vegetation units were traced on to a 6" map from black and white aerial photographs taken by the Ordinance Survey of Ireland in May 1977 from a height of 4750 metres. Units which merge gradually from one to another were delimited half-way between each.

The extent of the *Rhododendron* invasion was mapped from colour aerial photographs taken in November 1989, as the Ordinance survey maps were out of date regarding its spread since 1977.

The vegetation units were classified floristically according to White and Doyle (1982). In addition it was necessary to use physiognomic features such as percentage rock or degree of peat erosion to determine the units on the map as the vegetation in Glenveagh National Park and the An Taisce property is relatively uniform.

The woodland area was not surveyed as detailed work has been carried out by Telford (1977). The woodland was mapped using the aerial photographs and information extracted from Telford's thesis.

Units of vegetation occurring in areas such as gullies, gorges and the like which were too small to be situated on the map are described in the text.

DESCRIPTION OF THE VEGETATION OF GLENVEAGH.

The overall vegetation in Glenveagh was relatively uniform for such a large area, it was classified in to four classes; MOLINIO-ARRHENATHERETEA (wet to dry grassland), OXYCOCCO-SPAGNETEA (wet heath bog vegetation found on acid waterlogged peat), CALLUNO-ULICETEA (dry heathland of mountain areas), NARDETEA (acid grassland of mountain slopes); and QUERCETO ROBORI-PETRAEAE (Oak woodland). These classes are discussed in turn below.

Reference may be made to the maps 1 and 2 for location of areas mentioned, 3 and 4 for the vegetation units, figures 1 to 5 for overall classification of the vegetation units(White and Doyle op.cit); and phytosociological sub-tables 1 to 4 extracted from the master table 5, which is summarized in table 6.

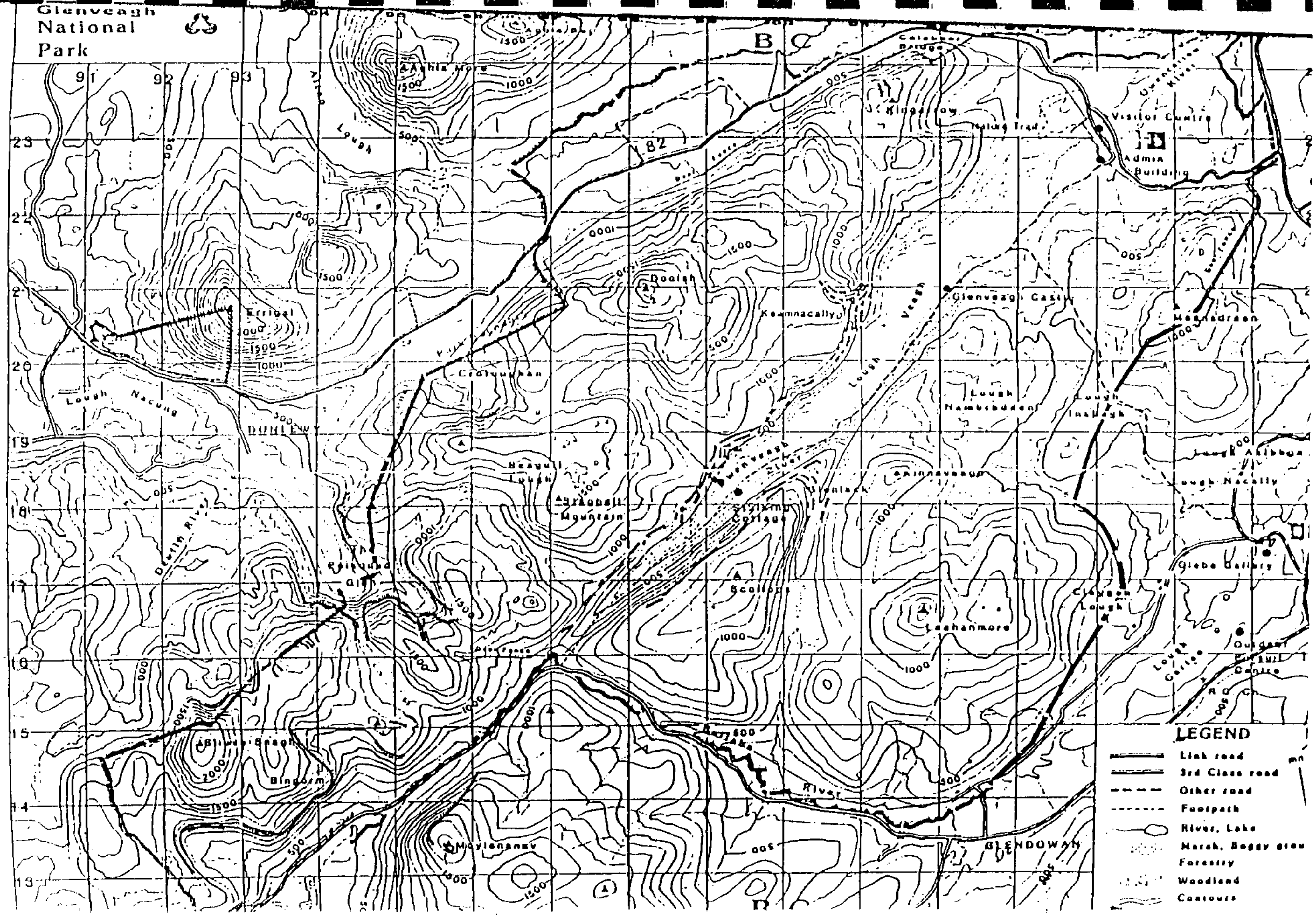
The terminology used in the text is understood as follows (White and Doyle op. cit):-

Character species:- Those species with a fidelity for a particular association. In this classification the association character species are listed if adequate descriptive and analytical work has been conducted on the association in Ireland.

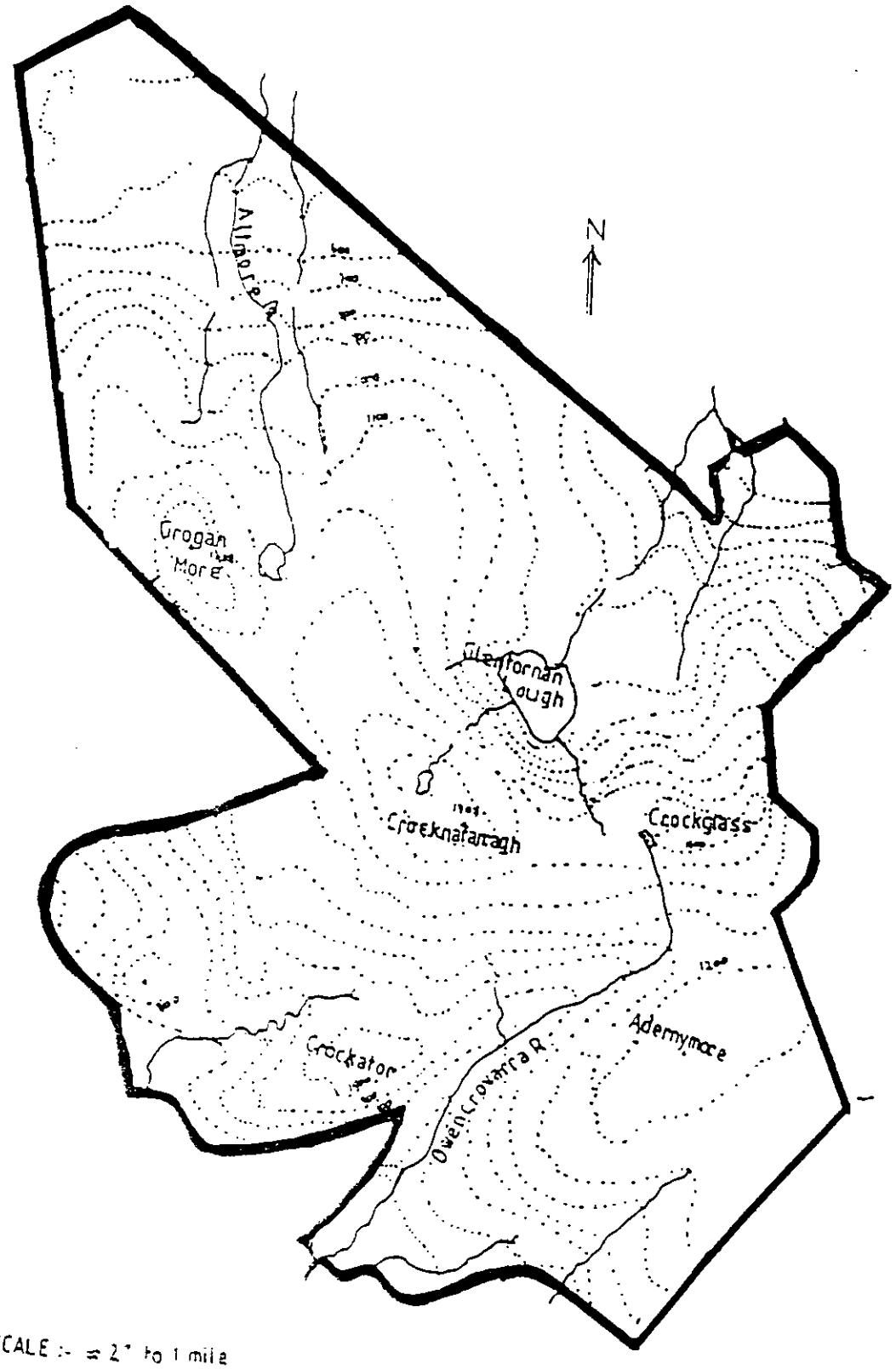
Diagnostic species:- This term is used where the investigation of Irish vegetation has been inadequate. These may be character species of associations elsewhere but are of uncertain syntaxonomic status here.

Differential species:- Associations may also be more precisely discriminated by differential species in addition to character species.

They may occur in different associations but contribute to defining similar syntaxa.



Glenveagh
National
Park
Errigal
Aghla More
Lough Nacung
DUNLEWY
Crolougher
Dooish
Keamnacally
Glenveagh Castle
Lough Veagh
Lough Nambradden
Lough Inshagh
Lough Aslibbon
Lough Nacally
Beagull Lough
Aghaboll Mountain
Owenveagh River
Sruhanmo Cottage
Glenlack
Poisoned Glen
Scollops
Leahanmore
Clogher Lough
Glebe Gallery
Lough Gartan
Devlin River
Bingorm
Moylenanav
GLENDOWAN
Visitor Centre
Admin Building
Owenbeagh River
Calabber Bridge
Kingsarrow
Nature Trail
Meenadrean
LEGEND
Link road
3rd Class road
Other road
Footpath
River, Lake
Marsh, Boggy ground
Forestry
Woodland
Contours



SCALE :- = 2" to 1 mile

MAP 2 : AN TAISCE PROPERTY

No.	Species													
6	Galium saxatile	IV	IV	III	III	I	I	I	I	III	II	II	.	I
5	Rhytidiadelphus loreus	.	.	.	.	.	.	.	I	III	.	+	.	I
13	Hylocomium splendens	.	.	.	.	.	.	.	I	III	.	.	.	.
1	Arctostaphylos uva-ursi	.	R	.	.	.	.	II	.	III	.	II	.	II
5	Juniperus sp.	.	.	.	.	.	.	.	.	I	.	.	.	.
1	Salix herbacea	.	.	.	.	.	III	.	I	I	.	.	.	.
		.	.	.	.	.	.	.	.	I	.	.	.	.
	CLASS:-MOLINIO-ARRHENATHERETEA													
	ORDER ARRHENATHERETALIA													
	ALLIANCE CYNOSURON CRISTATI													
	ASSOCIATION Centaureo-cynosurion													
	SUB-ASSOCIATION Juncetosum													
116	Molinia caerulea	V	V	V	V	V	V	IV	IV	.	V	V	IV	V
21	Anthoxanthum odoratum	.	.	.	.	.	I	III	I	.	.	IV	V	IV
21	Juncus acutiflorus	.	II	.	+	.	.	.	.	.	.	IV	II	IV
27	Agrostis canina	.	R	.	+	.	II	II	I	III	III	V	III	II
11	Holcus lanatus	+	.	.	.	.	.	.	.	.	.	II	II	II
9	Rhytidiadelphus squarrosus	.	.	.	R	.	I	.	.	.	.	II	II	II
13	Hylocomium splendens	.	R	.	.	.	.	II	.	III	.	II	.	II
4	Plantago lanceolata	.	.	.	.	.	.	I	.	.	.	I	.	I
4	Ranunculus repens	.	.	.	.	.	.	.	.	.	.	+	II	II
4	Euphrasia nemorosa	.	.	.	.	I	I	.	.	.	.	I	.	.
3	Prunella vulgaris	.	R	.	.	.	.	.	.	.	.	I	.	.
2	Trifolium repens	.	.	.	.	.	.	.	.	.	.	I	.	.
2	Cynosurus cristatus	.	.	.	.	.	.	.	.	.	.	I	.	.
2	Senecio jacobea	.	.	.	.	.	.	.	.	.	.	I	.	.
5	Thuidium tamariscinum	.	.	.	R	.	I	I	.	.	.	I	.	.
1	Bellis perennis	.	.	.	.	.	.	.	.	.	.	+	.	.
1	Hieracium pilosella	.	.	.	.	.	.	.	.	.	.	+	.	.
1	Hypochoeris radicata	.	.	.	.	.	.	.	.	.	.	+	.	.
1	Leontodon sp.	.	.	.	.	.	.	.	.	.	.	+	.	.
6	Agrostis capillaris	.	.	.	R	.	.	.	I	.	.	II	II	.
	PTERIDIUM COMMUNITY													
7	Pteridium aquilinum	.	.	.	.	.	.	II	.	.	.	.	V	I
3	Oxalis acetosella	.	.	.	.	.	.	.	.	.	.	+	III	.
2	Festuca pratensis	+	.	.	.	.	.	.	.	.	.	.	II	I
3	Viola riviniana	.	.	.	.	.	.	.	.	.	.	I	II	.
	ORDER MOLINIETALIA													
	ALLIANCE JUNCO CONGLOMERATI -MOLINION													
	ASSOCIATION Junco acutiflori -Molinietum													
9	Juncus effusus	.	.	.	.	.	.	.	.	.	.	I	.	V
6	Juncus conglomeratus	.	.	.	.	.	.	.	.	.	.	.	.	IV
7	Galium palustre	.	.	.	.	.	.	.	.	.	.	+	III	III
2	Juncus bulbosus	.	.	.	.	I	.	.	.	.	.	.	.	I
	Companion species													
83	Potentilla erecta	.	II	III	III	V	V	III	V	IV	V	V	V	IV
67	Scirpus cespitosus	+	III	IV	IV	V	IV	II	IV	II	IV	.	.	II
16	Carex panicea	.	I	+	+	.	II	.	II	.	II	.	.	I
15	Huperzia selago	.	.	+	R	II	II	.	III	II	III	+	.	[illegible]
12	Pinguicula vulgaris	.	R	.	II	I	I	II	I			.	.	[illegible]
11														

		1	2	3	4	5	6	7	8	9	10	11	12	13
	Column no.->	1	2	3	4	5	6	7	8	9	10	11	12	13
	No. of releves ->	11	20	15	24	7	6	5	9	7	5	11	4	8
	Mean no. of spp.->	16.1	13.8	13.5	10.9	12.7	12.7	13.4	11.6	13.4	12.6	12.5	9.3	12.8
	CLASS OXYCOCCO-SPHAGNETEA													
	ORDER SCHEUZERIETALIA PALUSTRIS													
	ALLIANCE RHYNCOSPORION ALBAE													
	ASSOCIATION Sphagno-tenelli -Rhyncosporetum albae													
15	Menyanthes trifoliata	V	I	+	.	.	.	.	.	.	.	.	.	.
12	Rhynchospora alba	IV	+	I	R	.	.	.	.	.	.	.	.	.
8	Sphagnum cuspidatum	III	R	.	.	.	.	.	.	I	.	.	.	.
7	Drosera intermedia	II	+	+	R	.	.	.	.	.	.	.	.	.
6	Sphagnum auriculatum auricu.	III	R	.	.	.	.	.	.	.	.	.	.	.
4	Potamogeton polygonifolius	II	R	.	.	.	.	.	.	.	.	.	.	.
3	Utricularia intermedia	+	+	.	.	.	.	.	.	.	.	.	.	.
2	Potentilla palustris	+	.	.	.	.	.	.	.	.	.	.	.	I
1	Carex limosa	+	.	.	.	.	.	.	.	.	.	.	.	.
1	Nymphaea alba	+	.	.	.	.	.	.	.	.	.	.	.	.
1	Aulacomnium palustre	+	.	.	.	.	.	.	.	.	.	.	.	.
	ORDER ERIOPHORO VAGINATI -SPHAGNETALIA PAPILLOSI													
	ALLIANCE CALLUNO-SPHAGNION PAPILLOSI													
	ASSOCIATION Pleurozio purpureae -Ericetum tetralices													
81	Erica tetralix	IV	V	IV	V	III	I	III	II	.	II	II	II	II
50	Schoenus nigricans	V	IV	III	III	II	.	.	.	.	.	+	.	.
56	Narthecium ossifragum	V	III	IV	III	III	II	I	II	I	I	.	.	I
57	Eriophorum angustifolium	V	II	V	III	III	I	.	III	II	III	.	.	I
52	Sphagnum subnitens	IV	IV	III	III	I	I	I	I	III	II	II	.	I
40	Myrica gale	V	V	I	II	.	.	.	.	.	.	II	.	I
32	Sphagnum papillosum	V	IV	+	+	II	.	.	I	.	.	.	.	I
31	Odontoschisma sphagni	IV	III	II	+	II	.	.	.	I	I	I	.	.
25	Polygala serpyllifolia	III	II	II	II	I	I	I	.	.	.	+	.	I
29	Sphagnum capillifolium	I	I	+	II	III	.	I	I	III	II	+	.	I
24	Eriophorum vaginatum	.	R	II	III	II	.	.	I	II	.	+	.	I
29	Hypnum jutlandicum	I	II	I	II	I	III	.	II	III	.	+	.	I
16	Drosera anglica	III	.	II	II	I	.	.	.	.	.	.	.	.
17	Sphagnum tenellum	II	II	+	+	II	.	I	.	.	I	.	.	.
14	Campylopus atrovirens	+	+	II	I	.	I	.	.	I	I	.	.	.
	ASSOCIATION ZYGOGONIETOSUM													
24	Drosera rotundifolia	IV	I	II	II	.	.	.	.	.	.	.	.	.
25	Zygogonium sp.	II	II	II	II	.	I	.	.	.	I	.	.	.
	HUMMOCK COMMUNITY													
29	Pleurozia purpurea	II	II	IV	+	II	I	I	II	II	.	.	.	.
44	Racomitrium lanuginosum	.	+	V	+	V	IV	II	IV	III	III	.	.	.
28	Cladonia uncialis	.	+	IV	.	III	I	I	III	III	III	.	.	.
20	Cladonia impexa (portentosa)	.	+	II	.	II	IV	I	II	II	I	.	.	.
	CLASS CALLUNO-ULICETEA/NARDETEA													
	ORDER VACCINIO-GENISTALIA													
97	Calluna vulgaris	III	V	V	IV	V	V	IV	V	V	V	I	II	I
43	Erica cinerea	.	.	I	II	V	V	V	V	II	.	+	II	.
44	Racomitrium lanuginosum	.	+	V	+	V	IV	II	IV	III	III	.	.	.
31	Nardus stricta	+	.	.	.	I	IV	I	IV	V	V	I	.	III
20	Juncus squarrosus	.	.	I	R	.	I	I	IV	III	V	.	.	.
	ALLIANCE:-GENISTO-CALLUNION													
13	Festuca vivipara	.	.	.	R	.	II	III	II	I	.	I	.	II
8	Blechnum spicant	.	.	.	.	.	I	IV	.	I	.	I	.	.
5	Solidago virgaurea	.	.	.	.	.	I	II	.	.	.	+	II	.
	ALLIANCE VACCINIO-CALLUNION													
	ASSOCIATION Lycopodio alpini Racomitrium lanuginosi													
10	Vaccinium myrtillus	.	.	.	.	.	I	.	.	V	I	+	.	.

CLASS:- OXYCOCCO-SPHAGNETEA Braun - Blanquet et Tuxen 1943

(Table 1, fig. 1, unit 1) BB

The vegetation in this class is characteristic of wet heath and bog land, which is widespread on lowland and sloped areas in Glenveagh.

There are three orders in this class reccgnised by White and Doyle (op.cit) and vegetation communities belonging to each of these occur in the Glenveagh area.

The first, SPHAGNETALIA COMPACTI Tuxen, Miyawki et Fugiwara (1970) represents vegetation of shallow peat confined to lower slopes, where the gragient prevents deep peat accumulation forming. When we study the vegetation of this order (fig 1) and compare it with the data on table 1 the combination of species which make up this group are poorly represented in Glenveagh.

The order ERIOPHORO VAGINATI-SPHAGNETALIA PAPILLOSI Tuxen 1970 (units 1a & 1b) is well represented in the area but occurs on much shallower peat than White and Doyle (op.cit) suggest. This order represents vegetation on deep peat (>2m) in western Europe. In Glenveagh this vegetation does occur on deep peat on lowland regions such as Derrybeg bog but is also found on sloping areas where peat is shallower (<1m) as in the upper valley of the Stranaglogh river.

The character species of this order, *Sphagnum papillosum,* and *Odontoschisma sphagni,* occur particularly in wetter areas, *Eriophorum vaginatum,* also a character species tends to be more widespread.

The alliance CALLUNO-SPHAGNION PAPILLOSI (Schwickerath 1940) Tuxen 1970 is also well represented in Glenveagh particularly in

15

flat low-lying areas such as the area surrounding Lough Insagh and Lough Nambradden.

The character species listed in figure 1 are present with the exception of *Sphagnum imbricatum,* and *Mylia anomala* which were not found throughout the survey. Although *Rhyncospora alba* is considered to be a character species of the order SCHEUZERIETALIA PALUSTRIS Nordhagen 1936, and in Glenveagh is found to occur more frequently in this order growing in permanently flooded areas (unit 1c) rather than in the CALLUNO-SPHAGNION-PAPILLOSI where surface water is not always present.

Cladonia uncialis, C. impexa and *Racomitrium lanuginosum* (not a character species) form a distinct group (named Hummock community) in the Glenveagh boglands, where *R. lanuginosum* forms hummocks on flat low-lying areas, these hummocks provide small dry Islands for species such as *Calluna vulgaris* and *Erica cinerea* to survive. *Pleurozia purpurea* is commonly found at the base of these hummocks but is also found more widespread on the bogland.

The vegetation forming blanket bog on the slopes of Glenveagh can be represented by the association Pleurozio purpureae-Ericetum tetralicis Braun-Blanquet et Tuxen 1952 em. Moore 1968. The character species *Pleurozia purpurea* and *Campylopus atrovirens* occur on wet mountain slopes as well as on flat bog surfaces. *Schoenus nigricans* was more dominant on lowland bog, but was often found on slopes with *Molinia caerulea* (a diagnostic species).

The diagnostic species of this association, *Potentilla erecta, Pedicularis sylvatica, Polygala serpylifolia, Pinguicula vulgaris*

were common throughout Glenveagh and *P. lusitanica* although quite rare in Ireland was also found to be relatively common.

The vegetation of pool areas and small lake-sides were characterised by the presence of pool species such as *Menyanthes trifoliata, Rhyncospora alba, Carex limosa,* and *Sphagnum cuspidatum* which are character species of the order SCHEUZERIETALIA PALUSTRIS Nordhagen 1936 (unit 1c).

The order may be further divided into the alliance RHYNCOSPORION ALBAE Koch 1926 and association Sphagno tenelli-Rhyncosporetum albae (Osvald 1923) Koch 1926, characterised by the presence of *Drosera intermedia,* and *Sphagnum tenellum.* Other species important in this group in Glenveagh but not listed in White and Doyle (op.cit) were *Sphagnum auriculatum* var *auriculatum,* and *Potamogeton polygonifolius.* This order occurred in small patches on the north eastern side of the Park near the Owencarrow river and on the south east end by the Stranaglogh river.

There is a subassociation recognised by Doyle and Moore (1980) characterised by *Zygogonium sp. Drosera anglica* and *Sphagnum magellanicum* , *Zygogonium* being the dominant element. Doyle (1982) refers to this group as the Zygogonietosum.

In Glenveagh this group was recognised in the north tip of the park but *Drosera rotundifolia* was found in close association with *Zygogonium* rather than *D. anglica* and *Sphagnum magellanicum* was not present, but due to the dominance of *Zygogonium* the group merits status and at present will be refered to as the Zygogonietosum. This was not shown on the vegetation map as the unit is too small.

Fig: 1

CLASS:OXYCOCCO-SPHAGNETEA
Br.-Bl. et Tx. 1943
Bog and wet heath class
Character species:

Vaccinium oxycoccus	Sphagnum magellanicum	Calypogeia trichomanis
Andromeda polifolia	Sphagnum nemoreum	Cephalozia connivens
Drosera rotundifolia	Sphagnum rubellum	Lepidozia setacea
Eriophorum vaginatum	Sphagnum tenellum	Mylia anomala
Sphagnum fuscum	Pohlia nutans	

ORDER:SPHAGNETALIA COMPACTI Tx., Miyawki et Fugiwara 1970
Character species:
Erica tetralix
Scirpus caespitosus
Juncus squarrosus
Sphagnum compactum
Sphagnum strictum

ALLIANCE:ERICION TETRALICIS Schwick. 1933
Character species as for order
Differential species:
Potentilla erecta
Polygala serpyllifolia
Pedicularis sylvatica
Carex panicea
Succisa pratensis

ASSOCIATION:Narthecio-ericetum tetralix Moore 1968
Character species:
Erica tetralix
Narthecium ossifragum
Sphagnum compactum
Juncus squarrosus

ASSOCIATION:Pleurozio purpureae-Ericetum tetralicis Br.-Bl et Tx. 1952 em. Moore 1968

Character species:	Differential species:
Pleurozia purpurea	Potentilla erecta
Campylopus atrovirens	Pedicularis sylvatica
Schoenus nigricans	Polygala serpyllifolia
	Pinguicula lusitanica
	Molinia caerulea

ORDER:ERIOPHORO VAGINATI-SPHAGNETALIA PAPILLOSI Tx. 1970
Character species:
Eriophorum vaginatum
Sphagnum papillosum
Odontoschisma sphagni

ALLIANCE:CALLUNO-SPHAGNION PAPILLOSI(Schwick. 1940) Tx. 1970
Character species:

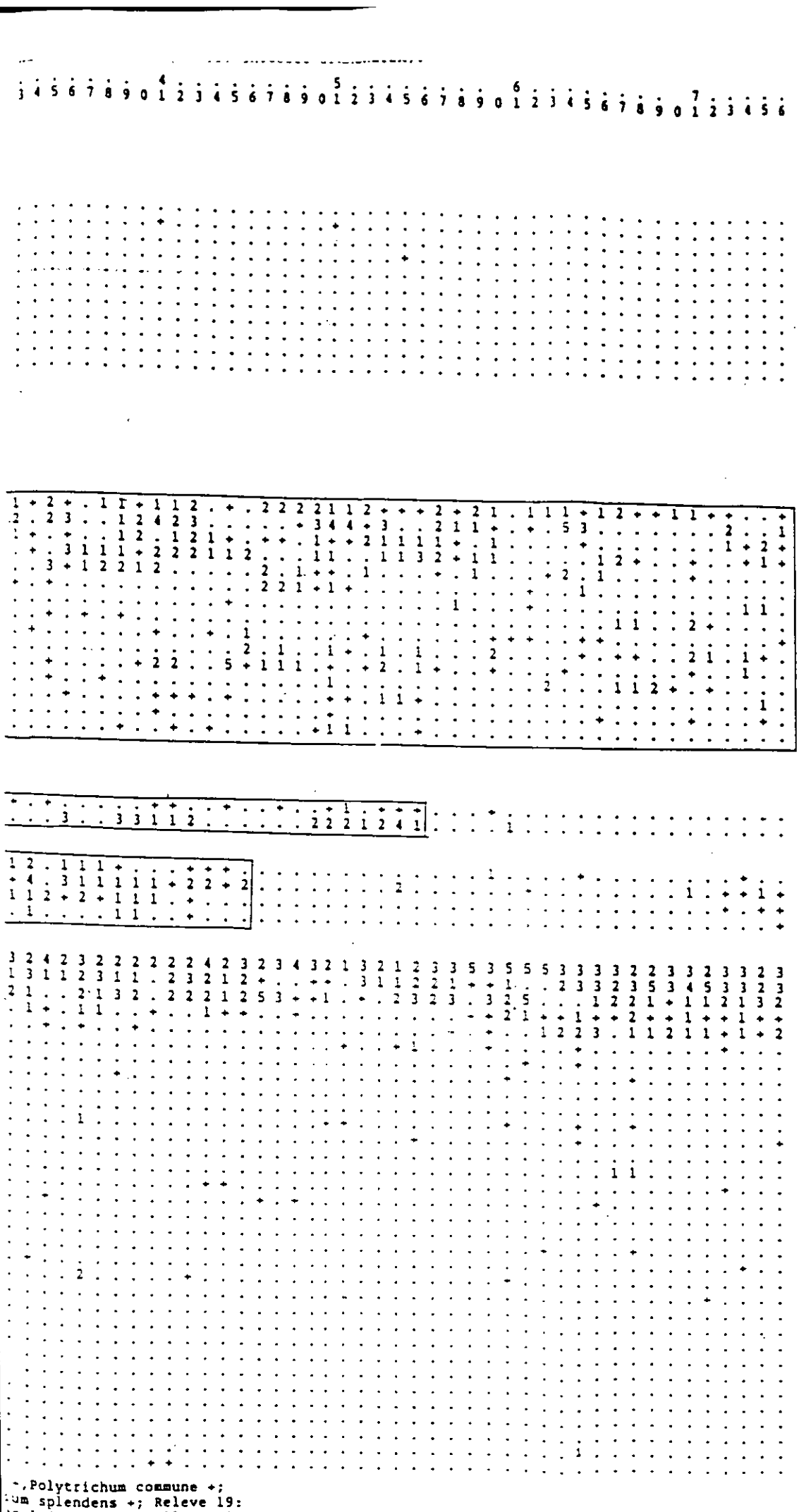
Narthecium ossifragum	Diplophyllum albicans
Rhyncospora alba	Mylia anomala
Eriophorum vaginatum	Odontoschisma sphagni
Campylopus paradoxus	Cladonia impexa
Sphagnum imbricatum	Cladonia uncialis
Cephalozia bicuspidata	

ORDER:SCHEUZERIETALIA PALUSTRIS Nordh. 1936
Character species:
Carex limosa
Rhyncospora alba
Menyanthes trifoliata
Sphagnum cuspidatum
Sphagnum apiculatum
Sphagnum subsecundum
Cladophiella fluitans

ALLIANCE:RHYNCOSPORION ALBAE Koch 1926
Character species:

Scheuchzeria palustris	Sphagnum cuspidatum
Rhyncospora alba	Drepanocladus fluitans
Rhyncospora fusca	Cladopodiella fluitans
Drosera intermedia	Sphagnum pulchrum

ASSOCIATION:Sphagno tenelli-Rhyncosporetum albae (Osvald 1923) Koch 1926
Character species:
Rhyncospora alba
Rhyncospora fusca
Sphagnum cuspidatum
Sphagnum tenellum



,Polytrichum commune +;
um splendens +; Releve 19:
s 1,Campylium stellatum 1,
leve 26:Riccardia
Sphagnum recurvum +;
anum bonjeanii +; Releve 47:

Table 1

Column no. →

VEGETATION OF POOL/POND MARGINS
(ORDER SCHEUZERIETALIA PALUSTRIS)
(ALLIANCE RHYNCOSPORION ALBAE)
(ASSOCIATION Sphagno tenelli
-Rhyncosporetum albae

Menyanthes trifoliata
Rhynchospora alba
Sphagnum cuspidatum
Drosera intermedia
Sphagnum auriculatum auricu.
Potamogeton polygonifolius
Utricularia intermedia
Potentilla palustris
Carex limosa
Nymphaea alba
Aulacomnium palustre

LOWLAND AND SLOPE BOG VEGETATION
(ORDER ERIOPHORO VAGINATI
-SPHAGNETALIA PAPILLOSI)
(ALLIANCE CALLUNO-SPHAGNION
PAPILLOSI)
(ASSOCIATION Pleurozio purpureae
-Ericetum tetralices)

Erica tetralix
Schoenus nigricans
Narthecium ossifragum
Eriophorum angustifolium
Sphagnum subnitens
Myrica gale
Sphagnum papillosum
Odontoschisma sphagni
Polygala serpyllifolia
Sphagnum capillifolium
Eriophorum vaginatum
Hypnum jutlandicum
Drosera anglica
Sphagnum tenellum
Campylopus atrovirens

VEGETATION OF THIN LOWLAND
PEAT/ROCKS
(ZYGOGONIETOSUM)

Drosera rotundifolia
Zygogonium sp.

HUMMOCK COMMUNITY

Pleurozia purpurea
Racomitrium lanuginosum
Cladonia uncialis
Cladonia impexa (portentosa)

Companion species

Molinia caerulea
Calluna vulgaris
Scirpus cespitosus
Potentilla erecta
Erica cinerea
Pinguicula vulgaris
Juncus acutiflorus
Carex panicea
Cephalozia bicuspidata
Breutelia chrysocoma
Campylopus paradoxus
Pedicularis palustris
Phragmites australis
Diplophyllum albicans
Carex echinata
Pseudoscleropodium purum
Pinguicula lusitanica
Cephalozia connivens
Agrostis canina
Huperzia selago
Juncus squarrosus
Nardus stricta
Melampyrum pratense
Calypogeia muellerana
Sphagnum magellanicum
Eurhynchium praelongum
Selaginella selaginoides
Sphagnum palustre
Riccardia pinguis
Carex dioica
Lepidozia setacea
Succisa pratensis
Pedicularis sylvatica

Additional species:- Releve 1:Holcus lanat
Releve 4:Cephalozia sp. +; Releve 18:Hyloc
Calypogeia fissa +; Releve 25:Cladium mari
Drepanocladus revolvens +,Festuca rubra +
multifida 26; Releve 30:Cirsium dissectum
Releve 31:Prunella vulgaris +; Releve 46:E

grassland CLASS- MOLINIO-ARRHENATHERETEA Tuxen 1937

(Table 2, fig 2, unit 2).

This class consists of grassland on poorly drained to well drained soils. It is thought that this vegetation is that which replaces former deciduous woodland communities (White and Doyle op. cit). The Park was wooded to a far greater extent up to the 17th century but the vast majority of it was destroyed by the 19th century (Telford 1977).

There are two orders in this class.

The first, ARRHENATHERETALIA Pawloski 1928 (unit 2b), includes the drier grassland communities occurring on moderately to well drained loamy soils.

The units in this order were not extensive in the Park, and not present on the An Taisce property. They are located on the north west side of Lough Veagh; and a small area in Glendowen where there is evidence of former "lazy beds", now used for grazing sheep.

The vegetation in this order in Glenveagh may be classified in to the alliance CYNOSURION CRISTATI Tuxen 1937, characterised by the presence of *Cynosurus cristatus*, *Senecio jacobaea*, and *Trifolium repens*, the differential species listed in figure 2 for this alliance were not present in the releves.

The occurrence of *Rhytidiadelphus squarrosus* and *Hypochaeris radicata* suggests that the vegetation may belong to the association Centaureo-cynosurion but there are many species listed by White and Doyle (1982) that were not found in Glenveagh.

The units contain species more in common with the Sub-Association, Juncetosum which is confined to imperfectly drained soils. The character species for this Sub-Association found in Glenveagh are *Juncus acutiflorus* and *Juncus effusus*. These dominate the margins of the drier grassland units or occur as isolated individuals throughout the area.

These species are not specific to this vegetation group, therefore they tend towards the role of differential species rather than character species of the Sub-Association.

It can be seen from table 2 that the vegetation in releves eight and nine has a high percentage of species which form a basal rosette of leaves, for example, *Bellis perennis, Hypochaeris radicata , Leontodon autumnalis* and *Hieracium pilosella*, they are usually intolerant of shaded conditions. They quickly disappear where grasses and rushes are allowed to dominate. The area must be grazed frequently by sheep and/or deer to retain this diversity of species. This type of grassland was found in a relatively small area on the north western side of Lough Veagh.

The order MOLINETALIA occurs where rainfall exeeds 1000mm per annum on poorly drained soils and peat (White and Doyle op.cit). The order is recognised by the occurrence of *Juncus effusus, J. acutiflorus* and *J. conglomeratus* which were often co-dominant with *Molinia caerulea* on areas subjected to sporadic flooding in particular (unit 2a).

Although *Filipendula ulmaria* and *Deschampsia caespitosa* are character species of this order, they are poorly represented in the Glenveagh area, occurring only in one area (unit 2c) in the north of the park along the Owencarrow river and are listed as additional species, being recorded only in one releve. But taking

this area in isolation these species were important to this group along with *Equisetum fluviatile, Veronica scutellata, Potentilla anserina, Senecio aquaticus, Cardamine pratensis, Potentilla palustris* and *Hydrocotyle vulgaris.*

Species of the Alliance for this order JUNCO CONGLOMERATI-MOLINION are characteristic of generally poor soil which have a tendancy to dry out in the summer (White and Doyle op.cit.).

Most of the wet grassland of the west of Ireland falls into this class (O'Sullivan 1976).This vegetation type is widespread in the park but often intermingling, or forming a mosaic-type pattern on lower mountain slopes with the OXYCOCCO-SPHAGNETEA.

Pure stands are found in basins, valleys and along river banks such as the south end of Lough Inshagh and the Upper Glen.

The mosaic type of vegetation is found on many of the lower slopes of Glenveagh, *Molinia caerulea* dominated slopes with *Potentilla erecta, Erica tetralix,* and *Succisa pratensis* with bog species occurring on wetter areas, such as *Schoenus nigricans,* and *Scirpus caespitosis.*

River banks were generally characterised by the presence of *Molinia caerulea, Galium palustre, Juncus conglomeratus, J. effusus* and also on higher river banks, *Nardus stricta* was common. *Juncus bulbosus* occurred on bank edges that were frequently flooded.

In wet river basins *Sphagnum papillosum, S. palustre,* and *S. capillifolium* were present with *Molinia caerulea* although not part of this grassland classification.

The groups described within the MOLINIO-ARRHENATHERETEA in Glenveagh were often in part "invaded" by *Pteridium aquilinum* and its associated species.

This group was distinct enough to be allocated the name PTERIDIUM COMMUNITY by the author as there is not sufficient documentation to merit classification at present.

Pteridium aquilinum commonly occurred in Molinia/rush type vegetation along river banks particularly along the Owenveagh river in the Upper Glen. It also occurred in the drier grassland communities and areas where there had been trees up to very recent times (dead wood still evident). Here, it acted as cover and protection to woodland species such as *Oxalis acetosella,* and *Viola riviniana.* Also present in this group was *Festuca pratensis.*

Fig. 2

CLASS: MOLINIO-ARRHENATHERETEA Tx. 1937
Lowland grassland class

Character species:

Cardamine pratensis	Festuca rubra	Plantago lanceolata
Cerastium fontanum	Holcus lanatus	Prunella vulgaris
Poa trivialis	Poa pratensis	Trifolium pratensis
Rumex acetosa	Vicia cracca	Alopecurus pratensis
Festuca pratensis	Ranunculus acris	Lathyrus pratensis

ORDER: MOLINIETALIA Koch 1926
Character species:

Juncus acutiflorus	Lotus uliginosus
Juncus effusus	Lythrium salicaria
Circium palustre	Lychnis flos-cuculi
Filipendula ulmaria	Angelica sylvestris
Juncus conglomeratus	Achillea ptarmica
Senecio aquaticus	Equisetum palustre
Myosotis laxa	Deschampsia caespitosa

ALLIANCE: JUNCO CONGLOMERATI-MOLINION
Westhoff 1968

Character species:

Succisa pratensis	Potentilla anglica
Juncus conglomeratus	Circium dissectum

Differential species:

Potentilla erecta	Carex echinata
Danthonia decumbens	Carex pulicaris
Nardus stricta	Pseudoscleropodium purum
Molinia caerulia	Thuidium tamarascinum
Carex panicea	Hylocomium splendens
Carex nigra	

ASSOCIATION: Junco acutiflori-Molinietum
Tx. et O'Sullivan 1964 in O'Sullivan 1968
Character species as for Alliance.

SUB-ASSOCIATION: Juncetosum
O'Sullivan (1965, 1968)

Character species:

Juncus articulatus	Carex hirta
Juncus effuses	Carex ovalis
Juncus inflexus	Juncus acutiflorus

ORDER: ARRHENATHERETALIA
Pawlowski 1928

Character species:

Anthriscus sylvestris	Taraxacum spp.
Bellis perrenis	Trisetum flavescens
Leucanthemum vulgare	Veronicia chamaedrys
Dactylus glomerata	Trapopodon pratensis
Heracleum sphondylium	Arrhenathrum elatius

Differential species: Vicia cracca

ALLIANCE: CYNOSURON CRISTATI Tx. 1937
Character species: Cynosurus cristatus
Phleum pratensis
Senecio jacobaea
Trifolium repens
Differential species: Achillea millifolium
Cirsium arvense
Lolium perenne
Odontites verna

ASSOCIATION: Centaureo-cynosurion
Br.-Bl. et Tx. 1952
Character species:

Carex flacca	Luzula campestris
Centaurea nigra	Potentilla anglica
Hypochoeris radicata	Mnium undulatum
Leontodon taraxicoides	Rhytidiadelphus squarrosus
Lotus corniculatus	

Table 2 GLENVEAGH NATIONAL PARK:-GRASSLAND VEGETATION (CLASS:-MOLINIO-ARRHENATHERETEA)

Column no. →	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
MODERATELY/WELL-DRAINED PASTURELAND																							
(ORDER ARRHENATHERETALIA)																							
(ALLIANCE CYNOSURON CRISTATI)																							
(ASSOCIATION Centaureo-cynosurion)																							
(SUB-ASSOCIATION Juncetosum)																							
Molinia caerulea	3	5	5	3	5	5	+	.	.	1	5	.	2	5	3	5	5	.	1	3	2	4	5
Anthoxanthum odoratum	.	1	.	1	1	2	1	2	.	2	1	1	+	1	+	.	+	+	+	1	.	+	.
Juncus acutiflorus	3	1	+	2	+	+	+	.	2	.	.	.	.	+	.	1	1	+	+	.	.	.	1
Agrostis canina	.	+	1	1	2	2	+	.	2	1	2	.	.	1	2	1	.	.	.	.	.	+	.
Holcus lanatus	.	.	.	2	1	+	.	2	2	2	.	2	.	.	.	.	2	1	.	.	.	.	+
Rhytidiadelphus squarrosus	.	.	.	+	+	.	.	+	+	.	.	.	+	.	.	.	+	.	.	.	.	+	.
Hylocomium splendens	.	.	.	.	+	.	2	+	.	1	.	.	.	.	.	+	.	.	.	.	.	+	.
Plantago lanceolata	.	.	.	.	.	.	.	2	1	.	.	.	.	.	.	.	.	.	.	+	.	.	.
Ranunculus repens	.	.	.	.	.	.	.	.	1	.	.	1	.	.	.	.	.	1	.	.	.	.	+
Euphrasia nemorosa	.	.	.	.	.	.	.	+	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.
Prunella vulgaris	.	.	.	.	.	.	.	2	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Trifolium repens	.	.	.	.	.	.	.	2	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Cynosurus cristatus	.	.	.	.	.	.	.	+	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Senecio jacobea	.	.	.	.	.	.	.	+	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Thuidium tamariscinum	.	.	.	.	.	.	.	+	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.
Bellis perennis	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Hieracium pilosella	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Hypochoeris radicata	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Leontodon sp.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Agrostis capillaris	.	.	.	.	.	.	.	+	+	2	.	1	.	.	.	.	.	.	.	.	.	.	.
PTERIDIUM COMMUNITY																							
Pteridium aquilinum	.	.	.	.	.	.	.	.	.	.	.	3	5	+	4	.	.	.	+	.	.	.	.
Oxalis acetosella	.	.	.	.	.	.	.	.	.	+	.	1	1	.	.	.	.	.	.	.	.	.	.
Festuca pratensis	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	+	.	.	.	.
Viola riviniana	.	+	.	.	1	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.
WET GRASSLAND																							
(ORDER MOLINIETALIA)																							
(ALLIANCE JUNCO CONGLOMERATI-MOLINION)																							
(ASSOCIATION Junco acutiflori-Molinietum)																							
Juncus effusus	.	.	.	.	.	.	.	.	1	+	.	.	.	.	.	1	1	5	2	2	+	+	
Juncus conglomeratus	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	5	1	2	2	+	.	
Galium palustre	.	.	.	.	.	.	.	.	.	+	.	.	1	1	.	.	1	.	2	1	1	.	
Nardus stricta	.	.	.	1	+	.	.	.	.	.	.	.	.	.	1	.	.	.	1	2	1	.	
Juncus bulbosus	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	
Companion species																							
Potentilla erecta	+	+	+	1	+	+	+	+	+	2	2	1	1	2	1	+	.	.	+	1	+	.	
Erica tetralix	.	+	1	.	.	1	+	.	.	.	.	.	.	1	1	.	.	.	.	.	+	.	
Luzula campestris	.	.	+	.	.	.	+	.	.	.	.	+	+	.	.	.	.	.	+	.	.	.	
Sphagnum subnitens	.	+	1	.	.	+	1	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	
Myrica gale	.	+	+	.	.	.	+	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	
Calluna vulgaris	.	.	1	.	.	.	.	.	.	.	+	.	.	.	1	1	.	.	.	.	.	.	
Festuca vivipara	.	.	.	.	.	1	.	.	.	+	.	.	.	.	.	1	.	.	.	2	.	.	
Carex echinata	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	+	.	+	+	.	.	
Viola palustris	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	+	.	.	.	.	.	.	+
Carex panicea	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	
Odontoschisma sphagni	.	+	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Eriophorum vaginatum	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	3	.	.	
Hypnum jutlandicum	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	
Polygala serpyllifolia	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	
Pseudoscleropodium purum	.	.	.	+	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	
Succisa pratensis	.	.	.	.	+	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	
Festuca rubra	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	
Rumex acetosa	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	+	.	.	.	.	.	
Blechnum spicant	.	.	.	.	.	.	.	.	.	1	+	.	.	.	.	.	.	.	.	.	.	.	
Galium saxatile	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	+	.	.	.	.	
Polytrichum commune	.	.	.	.	.	.	.	.	.	+	+	.	.	.	.	.	.	.	.	.	.	.	
Sphagnum capillifolium	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	1	.	.	
Erica cinerea	.	.	.	.	.	.	.	.	.	.	+	.	.	.	1	.	.	.	.	.	.	.	
Solidago virgaurea	.	.	.	.	.	.	.	.	.	.	+	.	.	+	.	.	.	.	.	.	.	.	
Campylopus paradoxus	.	.	.	.	.	.	.	.	.	.	+	.	.	.	+	.	.	.	.	.	.	.	
Ranunculus flammula	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	+
Scirpus cespitosus	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	1	.	

Additional species:- Releve 1:Phragmites australis +,Schoenus nigricans 1, Carex rostrata 1,Riccardia multifida +,Hypericum pulchrum +; Releve 5: Lophocolea bidentata +; Releve 7:Agrostis stolonifera; Releve 8:Rhododendron ponticum +; Releve 10:Jasione montana +; Releve 11:Luzula multiflora 1, Vaccinium myrtillus 1,Digitalis purpurea +; Releve 17:Sphagnum palustre; Releve 18:Cardamine pratensis +,Epilobium palustre +,Potentilla palustris +, Equisetum fluviatile +,Senecio aquaticus +,Filipendula ulmaria +,Deschampsia cespitosa +,Hydrocotyle vulgaris +,Veronica scutellata +,Potentilla anserina +; Releve 21:Narthecium ossifragum 1,Carex demissa +,Carex lepidocarpa +;Sphagnum papillosum 1; Releve 22:Eriophorum angustifolium 1,Campylium stellatum +; Releve 23:Leontodon autumnalis.

Dry Heath CLASS- CALLUNO-ULICETEA/NARDETEA.

(Table 3, figs 3 & 4, units 3 & 4).

Although the classification of European heathlands is somewhat obscure (O'Sullivan 1982), we can tentatively classify the shrub/heathland vegetation of Glenveagh in to this system .

The classes CALLUNO-ULICETEA Braun-Blanquet et Tuxen 1943 (unit 3) and NARDETEA Rivas Goday et Borja Carbonell 1961 (unit 4) are discussed together here as there is no clear distinction between them in Glenveagh, with the exception of the slopes of Slieve Snaght, Bingorm and patches on Crockbrack where the class NARDETEA may be classified to association level.

Elsewhere NARDETEA frequently occurs interspersed with the CALLUNO-ULICETEA.

The CALLUNO-ULICETEA occurs on shallow peat (<1m), although, the peat was deeper in some areas such as the top of Farscollop and much of the higher areas on the An Taisce property. The diagnostic species are *Calluna vulgaris, Erica cinerea,* both widespread in the Park and *Empetrum nigrum* found mostly on high mountain slopes and summits.

Ulex europaeus and *U. gallii,* also diagnostic species, do not occur in any releves recorded on the mainland but *Ulex eurpaeus* was found in abundance on the islands of Lough Veagh, and on the track verge to Lough Inshagh, perhaps grazing pressures have suppressed its growth on the mainland.

The vegetation units of this class in Glenveagh all occur in the order VACCINIO-GENISTALIA Shubert 1960, the other order within CALLUNO-ULICETEA does not exist within the surveyed area.

The diagnostic species for VACCINIO-GENISTALIA are the same as the class with the exclusion of *U. europaeus* and *U. galii* .

The order represents the vegetation of heathlands of upland and more European continental areas.

In Glenveagh this order occurs on steep mountain slopes and summits.

The slope vegetation may be classified further to the alliance GENISTO-CALLUNION Duvigneaud 1944 (unit 3a) and association, Calluno-Ericetum cinereae Lemee 1938.

The diagnostic species for both the Alliance and the Association are *Calluna vulgaris* and *Erica cinerea*.

This vegetation type is traditionally upland grazing for sheep and grouse (White and Doyle 1982). In Glenveagh this vegetation type is suppressed particularly within the deer fence, perhaps this is due to overgrazing. Molinia dominated grassland (MOLINIO-ARRHENATHERETEA) is far more widespread.

Where the Association does occur, the growth habit of *Calluna vulgaris* is generally degenerate and unsuitable to grouse which require young tender dense growth of heather. It tends to occur on particularly steep slopes (>50) and cliff areas inaccessable to grazing animals.

Festuca vivipara, Blechnum spicant and *Solidago virgaurea* regularly occur in this association, particularly on higher slopes; although they are not recognised as character species.

The Alliance VACCINIO-CALLUNION (unit 3b) Moore in Mhic Daied 1976 is represented by the vegetation in Glenveagh generally occuring on or near mountain summits.

The species diagnostic of this alliance are *Calluna vulgaris*, often dominating this vegetation type in Glenveagh and *Vaccinium*

myrtillus which was found not to be specific to mountain vegetation but also occurring on the lower drier slopes, and often growing in sheltered crevices and therefore was not well represented in the releves.

Vaccinium vitis-idaea was found in only one location on the An Taisce property on a sheltered rock face and therefore was not recorded in a releve. *Arctostaphylus uva-ursi* is relatively rare in the Park itself but is found on high mountain slopes on the An Taisce property often co-dominant with *Calluna vulgaris, Empetrum nigrum* (also a diagnostic species) and *Racomitrium lanuginosum.*

Empetrum nigrum was less frequent in the park, tending to occur on mountain summits such as Meenadreen and Kingarrow on shallower soil.

Galium saxatile and *Rhytidiadelphus loreus* were closely associated with the species of this alliance in Glenveagh, but are not recognised as character species by White and Doyle (1982). *Sphagnum subnitens* and *Hylocomium splendens* are also frequent in this group but also occur in other associations such as blanket bog and grassland vegetation. There is a conspicuous absence of *Molinia caerulia* (not a diagnostic species) in these releves, perhaps because of drier conditions.

The Association Lycopodio alpini-Racomitrium lanuginosi (unit 3c) occurred throughout Glenveagh on mountain tops with little to no soil and >70% rock. The vegetation is characteristic of windshorn dwarf heathland of many mountain summits and ridges. This Association was recognised by the presence of *Salix herbacea* which occurs frequently on bare gravel and shattered rock along side *Racomitrium lanuginosum* and occasionally *Juniperus communis* although it seemed to be more common outside the Glenveagh area.

The rare *Lycopodium alpinum* was found infrequently in Glenveagh, its distribution concentrated on Staghall mountain.

A species worth noting was *Narthecium ossifragum* which was tending to colonise thin bare peat and gravel areas on mountain summits, Its growth form was stunted rarely growing higher than 3cm in height. Summerfield (1971) has found that these individuals are frequently infertile, perhaps due to lack of nutrients as it has been recognised as a flush indicator on lowland blanket bog (Newbould 1960 ; Loach 1966).

Although *Huperzia selago* was also found on lower mountain slopes it tended to be more associated with the mountain vegetation.

The class NARDETEA (unit 4) was characterised by the presence of *Nardus stricta and Juncus squarrosus* , both diagnostic species, which were co-dominant on dry acid mountain slopes. On areas where the soil was particularly thin, the presence of *Racomitrium lanuginosum* was an important feature.

Nardus stricta and *Juncus squarroses* also occur amongst heathland vegetation in Glenveagh as already discussed.

Nardus Grassland

Fig: 2

CLASS: CALLUNO-ULICETEA Br.-bl. et tx. 1943

Shrub-heathland class

Diagnostic species: Calluna vulgaris, Ulex gallii, Erica cinerea, Empetrum nigrum, Ulex europaeus

ORDER: VACCINIO-GENISTALIA Schubert 1960

Diagnostic species: Calluna vulgaris, Vaccinium myrtillus, Empetrum nigrum

ALLIANCE: GENISTO-CALLUNION Tx. 1949

Diagnostic species: Calluna vulgaris, Erica cinerea

ASSOCIATION: Calluno-Ericetum cinereae Lemée 1938

Diagnostic species: As for Alliance

ALLIANCE: VACCINIO-CALLUNION Moore in Mhic Daeid 1976

Diagnostic species: Calluna vulgaris, Vaccinium myrtilus, Vaccinium vitis-idaea, Arctostaphylos uva-ursi, Empetrum nigrum

ASSOCIATION: Lycopodio alpini-Racomtrium lanuginosi Br.-Bl. et Tx. 1952

Diagnostic species: Lycopodium alpinum, Racomitrium lanuginosum, Salix herbacea, Carex bigelowii, Juniperus communis, Arctosaphylos uva-ursi, Vaccinium vitis-idaea

Fig: 4

CLASS: NARDETEA Rivas Goday et Borja Carbonell 1961

Acid grassland/heathlands class

|

ORDER:NARDETALIA Prsg. 1949

Diagnostic species for class and order:

Nardus stricta
Danthonia decumbens
Luzula multiflora
Carex pilulifera
Veronica officinales
Festuca vivipara
Lathyrus montenus
Carex binervis

|

ALLIANCE:NARDO-GALION SAXATILIS Prsg.1949

Diagnostic species:Polygala serpyllifolia
Pedicularis sylvatica
Galium saxatile
Juncus squarrosus

Table 3

GLENVEAGH NATIONAL PARK:-MOUNTAIN VEGETATION (CLASS:- CALLUNO-ULICETEA/NARDETEA)

Column no. =>	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
SHRUB HEATHLAND/ACID GRASSLAND HEATH																																
(CLASS:-CALLUNO-ULICETEA)																																
(ORDER:-VACCINIO-GENISTALIA)																																
Calluna vulgaris	3	2	4	4	3	4	2	+	.	5	2	3	1	+	4	3	4	1	.	3	3	4	4	4	4	4	2	3	1	1	2
Erica cinerea	2	1	2	+	+	1	2	2	2	1	1	2	2	1	2	1	2	1	2	1	1	1	2	.	.	.	.	.	.	.	.	.
Racomitrium lanuginosum	2	3	+	2	.	.	2	.	.	2	.	1	2	.	2	2	.	1	1	1	2	.	1	.	2	1	+	.	.	.	4	1
Nardus stricta	.	2	3	.	2	.	+	.	.	+	.	.	3	1	2	.	3	4	.	1	2	.	1	1	+	+	2	+	2	1	3	+
Juncus squarrosus	.	.	.	.	.	1	.	.	.	.	.	.	.	2	2	2	.	1	2	3	.	+	.	1	.	.	1	2	2	2	2	2
HIGH MOUNTAIN SLOPE VEGETATION																																
(ALLIANCE:-GENISTO-CALLUNION)																																
Festuca vivipara	.	+	.	.	.	.	+	2	+	+	.	.	.	+	.	.	.	+	.	.	.	.	.	+	.	.	.	.	.	.	.	.
Blechnum spicant	.	.	.	.	.	.	+	.	+	+	1	+	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.
Solidago virgaurea	.	.	.	.	.	.	+	+	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
MOUNTAIN SUMMIT VEGETATION																																
(ALLIANCE:-VACCINIO-CALLUNION)																																
(ASSOCIATION:-Lycopodio alpini-Racomitrium lanuginosi																																
Vaccinium myrtillus	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	1	1	1	1	+	.	.	.	.
Empetrum nigrum	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	2	2	.	+	.	2	+	2	.	.	.	.	.
Sphagnum subnitens	.	.	.	.	+	.	.	.	.	.	.	.	+	.	.	.	.	.	.	1	.	1	+	+	.	.	.	.	2	1	.	.
Galium saxatile	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	1	1	+	.	.	.	.	.	.	.
Rhytidiadelphus loreus	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	+	+	+	+	.	.	.	.	.	.	.
Hylocomium splendens	.	.	.	.	.	.	+	.	.	+	.	.	.	.	.	.	.	.	.	.	.	1	1	+	+	.	.	.	.	.	.	.
Arctostaphylos uva-ursi	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.
Juniperus sp.	.	.	+	1	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	.	1	.	.	.	.	.	.	.
Salix herbacea	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.
Companion species																																
Potentilla erecta	+	+	2	+	+	1	2	2	.	+	.	+	1	1	+	.	+	+	2	+	+	+	+	+	.	.	+	1	+	+	+	+
Molinia caerulea	2	2	.	2	2	3	1	4	5	.	3	3	1	4	1	2	1	.	4	.	1	.	.	.	.	.	.	.	1	5	.	2
Scirpus cespitosus	2	3	.	2	2	1	.	.	+	.	.	+	2	2	2	2	.	3	.	.	1	1	.	.	.	.	1	.	3	.	1	2
Huperzia selago	1	+	.	+	.	.	.	.	.	.	.	.	+	+	.	.	.	+	.	+	.	.	.	.	+	+	.	.	+	.	+	.
Cladonia impexa (portentosa)	+	+	+	+	+	.	.	.	.	+	.	.	.	.	+	1	.	.	.	.	+	.	1	.	.	+	.	.	.	.	.	+
Cladonia uncialis	.	.	.	+	.	.	.	.	.	+	.	.	.	.	+	1	.	.	.	+	+	.	+	.	2	+	.	.	.	.	+	+
Agrostis canina	.	.	.	.	.	1	2	.	.	+	+	.	.	.	.	.	.	+	.	.	.	1	.	.	.	+	+	.	.	.	+	+
Eriophorum angustifolium	.	+	.	.	.	.	.	.	.	.	.	.	.	2	+	+	.	.	.	1	.	1	.	.	.	.	.	4	+	.	.	+
Hypnum jutlandicum	.	.	+	.	2	.	+	.	.	.	.	.	.	.	.	1	.	.	.	+	.	.	.	+	+	+	.	.	.	.	.	.
Erica tetralix	.	.	.	.	.	+	.	+	.	.	+	+	.	+	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	+	.	1
Pleurozia purpurea	+	.	.	.	.	+	.	.	.	.	+	.	+	.	.	.	.	.	1	.	.	.	.	.	+	1	.	.	.	.	.	.
Narthecium ossifragum	.	.	2	1	.	.	.	.	+	.	.	.	2	.	.	1	.	.	.	.	.	.	.	+	.	.	.	.	1	.	.	.
Carex panicea	.	.	2	.	1	.	.	.	.	.	.	.	1	+	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	+	+
Sphagnum capillifolium	.	.	.	.	.	.	.	.	.	.	.	1	.	+	.	.	.	.	.	.	.	.	.	.	.	1	+	2	.	.	.	2
Pinguicula vulgaris	.	+	.	.	.	.	.	.	+	+	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Anthoxanthum odoratum	.	.	.	.	.	.	1	+	1	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Diplophyllum albicans	+	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.
Campylopus atrovirens	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	+	.
Campylopus paradoxus	.	.	.	.	.	.	.	+	+	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Eriophorum vaginatum	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	+	.	.	.	2	.	.	.	.	.
Scapania gracilis	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	+	.	.	.	.	.	.	.
Zygogonium sp.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	.	.
Thuidium tamariscinum	.	.	.	.	.	+	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Polygala serpyllifolia	.	.	.	.	.	.	+	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Viola palustris	.	.	.	.	.	.	+	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Carex rostrata	.	.	.	.	.	.	+	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Pteridium aquilinum	.	.	.	.	.	.	.	2	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Pedicularis palustris	.	.	.	.	.	.	.	.	+	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Carex echinata	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.
Sphagnum tenellum	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.
Carex binervis	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	+	.	.
Polytrichum commune	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.
Odontoschisma sphagni	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	1

Additional species:- Releve 1:Carex pilulifera +; Releve 6:Rhytidiodelphis squarrosus +; Releve 7:Eupnrasia nemorosa 1,Luzula campestris +; Releve 8: Leucobryum glaucum +; Releve 9:Carex pulicaris +,Plantago lanceolata +, Cirsium dissectum +; Releve 10:Danthonia decumbens +; Releve 14:Carex nigra +; Releve 15:Deschampsia cespitosa +; Releve 17:Agrostis capillaris +; Releve 19:Sphagnum papillosum +; Releve 23:Dicranum scoparium +,Sphagnum palustre 2,Sphagnum cuspidatum +; Releve 26:Calypogeia neullerana +, Herberta sp. +; Releve 28:Deschampsia flexuosa +.

WOODLAND VEGETATION OF GLENVEAGH

(fig 5, unit 5).

The deciduous wooded areas of Glenveagh all lie within the Park boundaries, they do not occur on the An Taisce property. There is an area of commercial coniferous forest on the north-west boundary of the An Taisce area and planted coniferous woodland surrounding the visiter centre area.

Surveying of the woodlands was beyond the scope of this contract due to the time involved. They were mapped from the aerial photographs on to the vegetation map according to the canopy cover i.e. whether closed (unit 5a) or open canopy (unit 5b). Detailed descriptions of the woodland have been carried out by Telford and reference may be made to his thesis (Telford 1977).

The most prevalent woodland class in the Park is the QUERCETEA ROBERI-PETRAEAE Braun-Blanquet et Tuxen 1943, the Oak Class which is the climax vegetation of base-poor, podzolised soils with raw humus (White and Doyle op. cit).

The woodland can be classified further in to the order QUERCETALIA ROBERI-PETRAEAE Tuxen 1937 em.1955 and alliance QUERCION ROBORI-PETRAEAE (Malcuit 1939) Br.-Bl. 1932. The class, order and alliance are characterised by the presence of *Quercus petraea, Betula pubescens, Ilex aqifolium,* and *Sorbus aucuparia* in Glenveagh. *Quercus petraea* and *Betula pubescens* are dominant in most of the closed woodland areas of Glenveagh.

The understory vegetation of closed woodland in Glenveagh is classified under the association Blechno-Quercetum petraeae, the character species present are *Agrostis canina, Blechnum spicant,*

Dryopteris aemula, *Luzula sylvatica*, *Calluna vulgaris*, and *Vaccinium myrtillus*.

Woodland in Glenveagh is most prominant on the east side of Lough Veagh, elsewhere in the Park trees were relatively scarce, being found growing in sheltered rock faces and gullies, a scale too small to map.

Fig: 5

CLASS: QUERCETEA ROBORI-PETRAEAE Br.bl. et tx. 1943

Oak Class

ORDER: QUERCETALIA ROBORI-PETRAEAE Tx.1937 em. 1955

ALLIANCE: QUERCION ROBORI-PETRAEAE(Malcuit 1929) Br.-Bl. 1932

Class, order and alliance diagnostic species:-

Quercus petraea	Betula pubescens	Betula pendula
Ilex aquifolium	Populus tremula	Sorbus aucuparia
Hieracium umbellatum	Lonicera periclymenum	Melampyrum pratense
Pteridium aquilinum	Solidago virgaurea	Teucrium scorodonia

ASSOCIATION: Blechno-Quercetum petraeae Br.-bl. et Tx. 1952

Character and differential species:-

Agrostis canina	Blechnum spicant	Carex pilulifera
Dryopteris aemula	Calluna vulgaris	Luzula sylvatica
Vaccinium myrtillus	Calypogeia arguta	Calypogeia meullerana
Cephalozia bicuspidata	Dicranum majus	Diplophyllum albicans
Hylocomium splendens	Isopterigium elegans	Hypnum cupreessiform
Lepidozia reptans	Leucobryum glaucum	Plagiothecium undulatu
Rhytidiadelphis loreus	Saccogyna viticulosa	Scapiana nemorea

ISLAND VEGETATION

(Table 4, map 3)

The island vegetation of Glenveagh National Park in some cases is different to the mainland most probably due to the lack of disturbance from animals and humans.

The Islands actually walked over in this study were those of Lough Veagh as they were accessable by boat, while other sizable islands on Lough Inshagh and on Seagull Lough which were not visited during the survey.

In general the islands contained vegetation of greater diversity than the mainland, considering their size.

There are thirteen islands in Lough Veagh, the species list for these islands is in table 4. The table is not a comprehensive list, it is provided to illustrate the general vegetation found on the islands, but due to the time involved a detailed study was not carried out, and as can be seen on the table bryophytes are not listed.

The soils on some of the islands were poor and thin (<50cm), soil was not visible in some cases where the vegetation grew from under boulders. Presumably there was enough soil under these rocks as trees were growing in this terrain. The boulders provided stability for tree trunks in many cases as the trees grew in the spaces between them and must contribute to the fact that trees are able to withstand the harsh exposure that they are subjected to particularly in the winter months.

Webb and Glanville (1962) recognised four zones on the islands of Connemara, and can be recognised in Glenveagh:-

The Littoral zone:- consisting of a stony waterlogged area containing species like *Lobelia dortmanna*.

The Marginal zone:- where *Juncus effusus, J.acutiflorus* and *Schoenus nigricans* were typical of marginal areas on the islands, where flooding from the lake waters is liable to occur.

The Heath zone:- was typified by the presence of *Calluna vulgaris, Erica cinerea, Myrica gale* (dominant on island one) and *Potentilla erecta*.

It is interesting to note that *Ulex europaeus* occurs quite abundantly, and is dominant on islands five, nine, and ten. On island five it was co-dominant with *Calluna vugaris,* and *Erica cinerea,* forming a scrub-heathland typical of the class CALLUNO-ULICETEA for which these species characteristic. Islands nine and ten also fit in to this class, however *Pteridium aquilinum* has colonised and become dominant.

The Woodland zone:- Trees were not uncommon on the islands where they could grow successfully out of danger from grazing animals. Here the destruction of seedlings, and barking of mature trees by deer which was seen to take place on the mainland did not occur.

The condition of the trees in general was poor. They were windshorn, in the case of *Taxus baccata* and *Ilex aquifolium* in particular, leaf number was low and the west facing side of the trees were devoid of leaves. The trees rarely grew higher than 5 metres.They generally formed open canopy woodland or were so well spaced that they did not merit woodland status.

The islands provide a refuge for species such as *Taxus baccata* which are not found on the mainland. Other trees that occurred were *Fraxinus excelsior, Quercus petraea, Ilex aquifolium, Sorbus*

aucuparia, Crataegus monogyna, Betula pubescens , and *Salix* sp.

Of these, seedlings of *Sorbus aucuparia,* and *Fraxinus excelsior,* were relatively common.

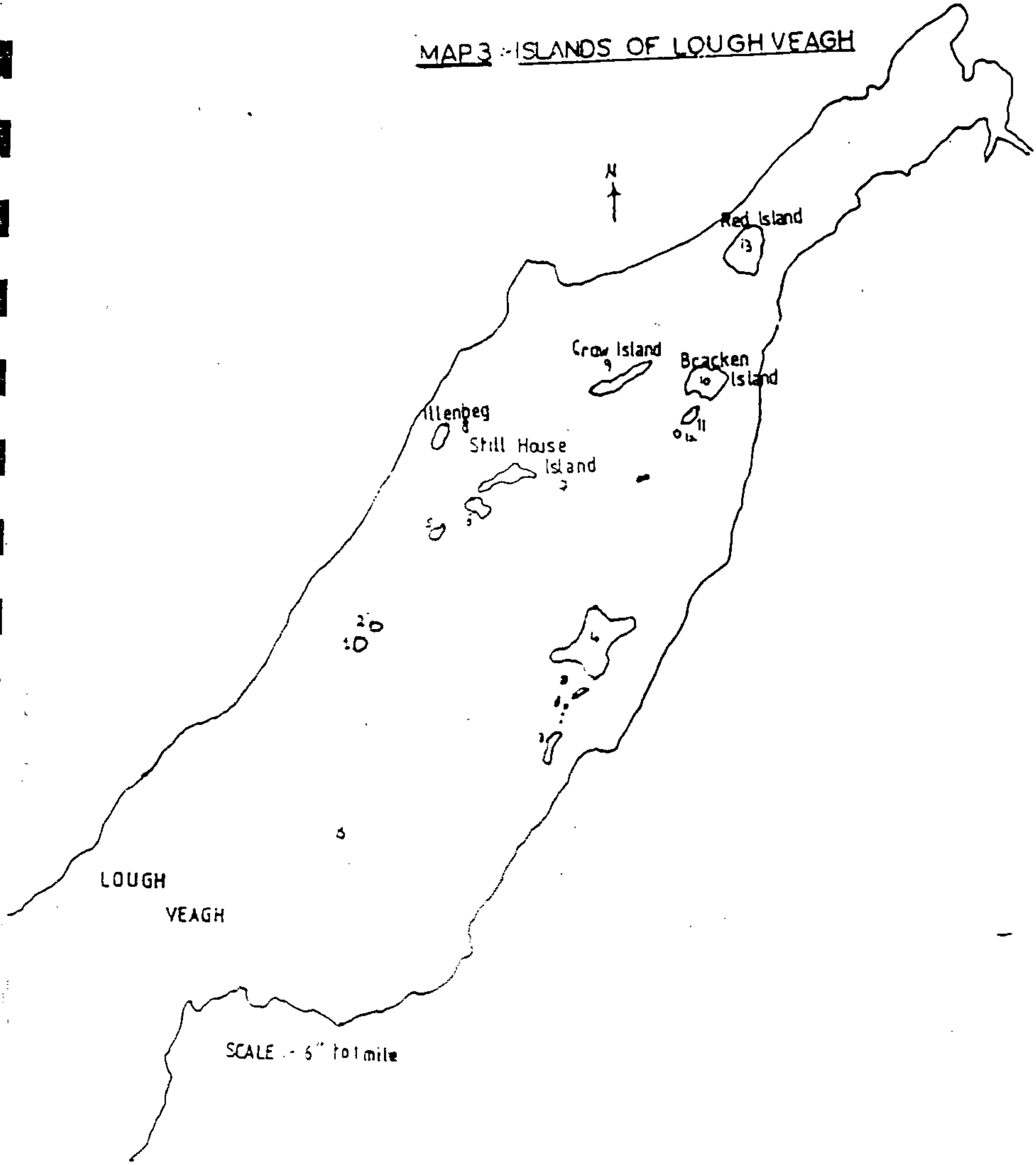
Woodland species occurred where there was reasonable shade from either trees or large boulders, these species include *Luzula sylvatica, Vaccinium myrtillus, Digitalis purpurea, Viola riviniana,* and *Hedera helix.*

Where soil was evident and relatively dry on the island, grassland vegetation occurred The grassland generally consisted of *Molinia caerulea* which was present constantly but only dominant on island one. Other species commonly found on the island were *Succisa pratensis, Cirsium dissectum, Agrostis canina, Holcus lanatus* and *Anthoxanthum odoratum.* This was not recognised by Webb and Glanville (1962).

aquilinum may be a threat to the island vegetation as it was found to be dominant in at least one area of ten islands. On Island four in particular, *Pteridium aquilinum* was dominant in the centre and invaded on the poorer soil around the perimetres by *Rhododendron ponticum* .

It can be seen from the map that island four and ten are very close to the eastern shore of Lough Veagh where the *Rhododendron* problem is most acute, and both have been invaded by this species. *Rhododendron* seedlings were found on islands one, five, nine, and ten, which may prove to be a danger to existing vegetation.

MAP 3 :- ISLANDS OF LOUGH VEAGH



SCALE :- 6" to 1 mile

Table: 4

SPECIES LIST FOR THE ISLANDS OF LOUGH VEAGH

ISLAND NO.	1	2	3	4	5	6	7	8	9	10	11	12	13
GRASSLAND SPECIES													
Molinia caerulia	d	+	+	+	+	+	+	+	+	+	+	+	d
Succisa pratensis	+	+	+		+		+	+	+		+		
Pteridium aquilinum			d			d	d	d	d	d			d
Cirsium dissectum	+		+			+	+	+		+	+		
Agrostis canina			+			+	+	+	+	+			
Anthoxanthum odoratum			+	+					+		+		+
Holcus lanatus				+						+	+	+	
Dactylus glomerata	+			+	+								
Leontodon autumnales		+				+				+			
Galium palustre				+		+				+			
Taraxacum sp.				+						+		+	
Plantago lanceolata	+		+										
Hypochaerus radicata	+												
Festuca vivipara			+										
Senecio jacobea				+									
Epilobium obscurum				+									
Ranunculus repens				+									
Rumex acetosa				+									
Trifolium repens				+									
Prunella vulgaris				+									
Solidago virgaurea										+			
BOGLAND SPECIES													
Potentilla erecta	+	+	+	+	+	+	+			+	+		+	+
Calluna vulgaris	+	+	+		d	+	+	+		+	+			+
Erica cinerea	+		+		d	+	+	+		+	+			+
Juncus acutiflori	+	+	+	+		+	+			+				
Ulex europaeus			+	+	d	+		+		d	d	+		+
Myrica gale	d	+	+		+	+	+	+						+
Vaccinium myrtillus	+					+	+					+	+	+
Schoenus nigricans			+	+				+		+	+			
Hypericum pulchrum	+		+		+	+	+							
Carex demissa	+	+				+	+							
Carex nigra			+		+	+						+		
Juncus effuses				+		+								+
Blechnum spicant	+													+
Narthecium ossifragum	+		+											
Pedicularis palustris			+											+
Pinguicula vulgaris			+			+								+
Erica tetralix														
Carex ecninata			+											
HEDGE AND WOODLAND SPECIES													
Rubus sp.	+		+	+	+	+	+			+	+	+		+
Lonicera periclymenum	+				+	+				+	+		+	
Osmunda regalis		+		+		+					+	+		
Luzula sylvatica	+			+								+	+	
Rosa canina					+	+	+			+				
Viola riviniana	+		+			+								+
Oxalis acetosella								+						
Pernettya mucronata	-	+						+						
Rosa pimpinellifolia						+		+						
Prunus spinosa						+		+						
Polypodium vulgare	+													
Hedera helix			+											
Digitalis purpurea				+										
TREE SPECIES														
Salix sp.			+	+			+	+	+	+	+	+		+
Ilex aquifolium	+			+			+	+	+	+	+	d		
Sorbus aucuparia	+		+			+			+	+	+			+
Taxus baccata	+			+			+	+	+	+			+	
Rhododendron ponticum	+			d		+				+	+	d		+
Betula pubescens			+		+			+	+					
Quercus petraea	+							+				d	d	
Crataegus monogyna	+									+	+			
Fraxinus excelsior								+		+				

DISCUSSION AND CONCLUSIONS

The vegetation is generally uniform in Glenveagh the greatest area being occupied by heathland, therefore it was necessary to use physiognomic features to map the vegetation, the features taken were % rock and degree of peat erosion. Rock exposure was greatest on high mountainous areas, peat erosion was widespread and were visible on the aerial photographs, these were mapped.

Five phytosociological classes were recognised: OXYCOCCO-SPHAGNETEA Braun-Blanquet et Tuxen 1943, CALLUNO-ULICETEA Braun-Blanquet et Tuxen 1943, NARDETEA Rivas Goday et Borja Carbonnell 1961, MOLINIO-ARRHENATHERETEA Tuxen 1937, and QUERCETEA ROBERI-PETRAEAE Braun-Blanquet et Tuxen 1943.

The vegetation of Glenveagh is similar to that of Connemara National Park which was classified in 1986 by G. J. Doyle, according to White and Doyle (1982) as was used here for Glenveagh.

The orders SPHAGNETALIA COMPACTI and SCHEUZERIETALIA do occur in the class OXYCOCCO-SPHAGNETEA in Glenveagh although the areas are small, but not in Connemara National Park, which suggests that there is greater diversity of bogland vegetation at Glenveagh.

Heathland in Connemara National Park contain the species *Antennaria dioica* which may tentatively be assigned to the association Antennario-callunetum (Doyle 1986) which was not present in Glenveagh. Apart from this the classification of Glenveagh is very similar to that of Connemara. The class NARDETEA was not well defined in Glenveagh as it is in Connemara where it occurs on much of the high mountain slopes, although

Nardus stricta (character species of NARDETEA) is more widespread throughout the OXYCOCCO-SPHAGNETEA in Glenveagh, this may indicate overgrazing in these areas by deer

As in Connemara, the *Molinia* type grassland posed a problem for classification, the system of White and Doyle (1986) was not totally satisfactory, but more research is needed on Irish vegetation before further developments may be made.

Grazing in Glenveagh National park is quite extensive within the deer fence. In some places such as the Croghloughan area a difference in the vegetation can be seen on either sides of the fence due to deer grazing. In this particular area the heathland outside of the deer fence was dominated by *Calluna vulgaris* , but inside, *Calluna* was suppressed by grazing, and *Molinia caerulea* was dominant. This effect was noticable on the aerial photograph. Deer must contribute greatly to the fact that heather dominated heath is restricted to steep slopes less accessible to grazing animals in Glenveagh.

Sheep grazing occurs outside the deer fence, and is particularly heavy on the An Taisce property which may contribute to peat erosion.

Peat erosion is extensive in Glenveagh, ranging from bare rock on mountain tops e.g. Staghall mountain, large peat hags on flat mountainous regions e.g. Farscollops, to gullying on slopes such as on the southern slopes of Farscollops. Peat erosion is acute on the An Taisce property, where large peat hags occur both in the valleys and mountainous regions. The main cause of the problem is climatic, the conditions being more severe in Donegal compared to the other National parks in Ireland, but the problem is enhanced by over-grazing (McGee 1988).

Turf cutting at the northern end of the park is still intensive, the vegetation of these areas is less diverse than areas untouched by cutting. It should be pointed out that the flushed areas (order SCHEUZERETALIA) surveyed are very close to the cut over areas and are in danger of being destroyed by further drainage and cutting, and are likely to be under pressure at present as there are drainage ditches cut along their margins.

The islands on Lough Veagh act as natural exclosures and have proved to contain interesting species, but the invasion of *Pteridium aquilinum* and *Rhododendron ponticum* pose a threat to these communities. It may be wise to eliminate particularly the *Rhododendron* seedlings which are colonising these islands while they are still in managable proportions.

REFERENCES

Doyle, G.J. and Moore,J.J. (1980). Western blanket bog (Pleurozio purpureae-Ericetum tetralicis) in Ireland and Great Britain. Colloques Phytosociologiques. 7, 213-223.

Doyle, G.J. (1982). The vegetation, ecology and productivity of Atlantic blanket bog in Mayo and Galway, Western Ireland. Journal of Life Sciences, Royal Dublin Society, 3: 147-165.

Hill, M.O.(1979). TWINSPAN- A FORTRAN program for arranging multivariate data in an ordered two-way table by classification of the individuals and attributes. Section of Ecology and Systematics, Cornell University, Ithaca, New York 14850.

Loach, K. (1966). Relations between soil nutrients and vegetation in wet heath. 1. Soil nutrients and moisture conditions. Journal of Ecology. 54, 579-608.

McGee, E. (1988). A report to the Office of Public Works on a Preliminary investigation of the extent and causes of peat erosion in the National Parks.

Newbould, P.J. (1960). The ecology of Cranesmoor, New Forest valley bog. 1.The present vegetation. Journal of Ecology. 48, 361-383.

O'Sullivan, A. M. (1976). The phytosociology of the Irish wet grasslands belonging to the order Molinietalia. Colloques phytosociologiques. 5: 259-267.

O'Sullivan, A. M.(1982). The lowland grasslands of Ireland. Journal of Life Sciences. Royal Dublin Society. 3,131-142

Summerfield, R.J.(1974). Biological flora of the British Isles: *Narthecium ossifragum* (L.) Huds. Journal of Ecology. 62, 325-339.

Smith, A.J.E.(1978). The moss flora of Britain and Ireland. Cambridge University Press, Cambridge.

Telford, M. B. (1977). Glenveagh National Park: The past and present vegetation. Ph.D Thesis, Trinity College, Dublin.

Watson, E.V.(1981). British mosses and Liverworts. (3rd edition) Cambridge University Press, Cambridge.

Webb, D.A. & Glanville, E.V.(1962). The vegetation and flora of some islands in the Connemara lakes. Proceedings of the Royal Irish Academy. 62, 31-55.

White, J. and Doyle, G. (1982) The vegetation of Ireland, a catalogue raisonne. Journal of Life Sciences. Royal Dublin Society. 3, 289-368.

KEY TO VEGETATION MAP

PHYSICAL FEATURES:-

Roadway
Trackway
Pathway
Contour lines
Park boundary

VEGETATION UNITS:-

Group 1:- Class OXYCOCCO-SPHAGNETEA (Bog and wet heath class)

1a Deep lowland peat vegetation.
1a' Deep lowland peat vegetation greatly eroded with large peat-hags.
1b Shallow peatland vegetation on lower slopes.
1b' Shallow peatland vegetation with >30% rock on lower slopes.
1c Wetland/flush areas with permanent surface water.

Group 2:- Class MOLINIO-ARRHENATHERETEA (Lowland grassland class)

2a Wet grassland of slopes.
2a' Wet grassland invaded by *Pteridium*.
2b Moderately drained grassland
2b' Moderately grassland invaded by *Pteridium*.
2c Wet grassland characterised by *Filipendula*.

Group 3:- Class CALLUNO-ULICETEA (Shrub heathland class)

3a Heather dominated vegetation
3b Mountain heath with peat hags
3c Alpine vegetation of thin soil/rocks
3d Alpine vegetation on slopes.

Group 4:- Class NARDETEA (Acid grassland/heathlands class)

4 *Nardus* dominated grassland.

Group 5: Class QUERCETEA ROBORI-PETRAEAE (Oak woodland class)

5a Closed woodland
5b Open woodland

Group 6:- *Rhododendron ponticum*

6a Closed *Rhodendron* canopy
6b Open *Rhododendron* canopy

S Scree

P Coniferous plantation