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The National Institute for Physical Planning and Construction Research

CONSERVATION AND ADVISORY AMENITY SERVICE

PLANNING DIVISION

A Preliminary Report on Areas of Scientific Interest in County Mayo.

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PREFACE

An Foras Forbartha has been engaged in preparing a comprehensive National Heritage Inventory for a number of years. The inventory includes both man-made structures and the natural environment. One purpose of the inventory is to make available to local authorities specialist information for incorporation in County Development Plans. These plans are prepared every five years under the Local Government (Planning and Development) Act, 1963 and must make provision for the protection and development of amenities as defined in Part IV of the Third Schedule of the Act. The other purpose of the inventory is to provide an authoritative and systematic record of the heritage as it exists. In fulfilling this second objective, An Foras Forbartha has discharged one of the main recommendations contained in its report The Protection of the National Heritage, published in 1969.

Following the publication of this report, a National Heritage Inventory Working Party, consisting of representatives of government departments and agencies concerned with the National Heritage, was established in December 1969 to ensure co-operation and to prevent duplication of effort in the preparation of the inventory. The departments and agencies represented on the Working Party are:

> Bord Failte, Bord na Mona, Department of Agriculture and Fisheries (Fisheries Division), Department of Lands (Forest and Wildlife Service), Department of Local Government, An Foras Forbartha, An Foras Taluntais, Geological Survey, National Gallery, Office of Public Works and the Ordnance Survey.

The establishment of the Conservation and Amenity Service by An Foras Forbartha in 1971 made it possible for additional specialist staff to be engaged by the Institute allowing work on the National Heritage Inventory to be speeded up.

This inventory has now been completed for the twenty seven administrative counties. The inventory has been finished within seven years, a remarkable achievement for which credit must go to those directly involved in undertaking the county surveys and to the members of the National Heritage Working Party for their considerable help and assistance.

This report has been assembled from literature sources, from the files of An Foras Forbartha and from contacts with several official agencies and private individuals. In particular we would like to acknowledge the help of: Department of Fisheries & Forestry (Miss O'Shaughnessy, Dr. Moriarty, Mr. Mooney), Geological Survey (Dr. A. Flegg), An Taisce, Irish Wildbird Conservancy, Seabird Group, Inland Fisheries Trust, Dr. D. Kelly.

CONTENTS

1. INTRODUCTION

Basis of the Survey

The survey was carried out in order to list a representative range of natural and semi-natural habitats as well as the sites of special significance in the county. These latter may be important in having, for example, unusual environmental conditions, or for showing exposures of rock that are valuable in elucidating geological history. In approach, the survey is basically a botanical one with inputs from geology and earth sciences, ornithology and other branches of zoology. There is good reason for this apparent bias. A biological site is of interest because of its diversity (number of species) or the density of one or a group or organisms. Both these things are a reflection of habitat conditions and where they are very high or low they show that unusual site factors are present. The problem is how to find these extremes and identify the real from the apparent ones.

Work on invertebrate animals (insects, snails, spiders etc.) is difficult and more time consuming than that on the larger plants. Consequently, the state of knowledge about this part of the Irish fauna is incomplete, and in many parts of the country practically non-existent. Repeated visits are required to measure either diversity or density and, therefore, many interesting communities must remain unknown at the present time. If they have been sampled they may be impossible to put into perspective - nobody knows whether they are unusual or not. The groups of animals which one can evaluate more conveniently are the larger, better-known organisms such as birds and to a more limited extent fish and butterflies. Data from these groups and from others, where it is meaningful, have been incorporated into the site analysis.

Since all animal life depends on plants for food, whether directly or indirectly through intermediate plant eating forms, diversity and density in the plant cover indicates diversity and density in all other forms of life. It therefore seems reasonable to give the greatest weight to the botanical features of the environment.

An indication that unusual factors are present at any site is often given by the presence of a rare species of plant or animal : one which is intolerant of most environments and therefore restricted in its distribution. Such a species may be important in its own right as part of the Irish flora or fauna. As such it can be removed from the countryside and grown in a garden or a cage. However, the intricate community from which it comes is impossible to recreate, once it has been destroyed. For this reason, the community is a more valuable entity. It may conceal other unusual things, some of greater value to mankind.

The survey has concentrated on natural and semi-natural communities since these cannot be developed artificially, at least within a reasonable period. It does not of course exclude man-made ecosystems and where natural processes have led to the colonisation of these by secondary organisms, there is often considerable interest; for example, in man-made lakes and sloblands and sometimes in planted woods.

Although the attempt has been made to cover all the relevant literature and to obtain advice from those with specialised knowledge of the county, this survey is not at a sufficiently advanced stage to allow definitive statements about importance or rarity to be made, outside certain very limited groups. It is hoped that the appearance of such a report will stimulate those with local information to make it known. Contributions which will be treated confidentially, if desired, are invited. They will assist both central and local government in the better planning and management of the environment.

Conservation

The conservation of the full variety of natural communities in the country is desirable on many grounds. For example, their continued existence or their development on a rational basis may add to visual amenity or improve the quality and level of recreation that an area can satisfy. They may be

useful and stimulating places for education and many may provide valuable insights in scientific research.

There can be no question that such areas add to the quality of the landscape. They introduce contrast into the countryside and increase the variety of shape and form. Grossly unkempt to the eye of a parks superintendent they nevertheless sustain a wild atmosphere even in the midst of intensive agriculture or urban development. They are often enjoyable places to be in and while many people find an untouched landscape relaxing, it can also be stimulating. Nature is seen to reassert itself in forms that do not penetrate our everyday environment.

Natural areas often provide facilities for education. They are an open-air laboratory for field studies in many of the life sciences, not simply biology. For instance, they show clear examples of the ecological principles on which farming, waste disposal and even civilisation depend. They may indicate the effect of different forms of land use (historical or current) on the natural resource. Fieldwork attracts all children at some stage of their lives. There is the challenge of naming the many forms of life and of discovering about the creatures' lives and interactions. Such a stimulus to learning has been little exploited as yet in this country but there is no doubt as to its effectiveness. Fieldwork of any sort leads to a better appreciation of the countryside and may also lay the foundation of constructive recreation in later life.

Scientific research often overlaps with the educational use of the natural environment. Here one may study the basis of ecology - productivity, breakdown and recycling - without artificial influences to obscure them. One can examine the productive base (plants), the factors that control its growth, the many alternative pathways of consumption and energy flow, and the various levels on which a plant or animal crop can be harvested. Organisms that at present are little appreciated or even unknown may be found suitable for pest control, for soil improvement, for pollution treatment or for growing as a new

crop. It is important to protect these resources to be able to take full advantage of the options they offer for future development.

In addition to this role as an insurance policy, the natural environment is needed for a control area. As a self-sustaining and non-polluting system it clearly has a lot to offer as a model for improving man's attempts at land management. Its comparative function with the field and greenhouse is considerable.

Vulnerability of Natural Areas

In the course of normal development many natural areas are being and will continue to be subjected to different conditions than those to which they have become adjusted. All will be reflected by changes in the ecological balance and in some cases these will be to the detriment of the area. Slow modifications may be caused by the addition, or removal, of nutrients and by other selective pressures such as grazing, trampling and fire. They are not so noticeable as rapid changes due to drainage or physical destruction, but they may be just as damaging.

Woodland is one of the most vulnerable communities for it can be swiftly destroyed if a concerted effort is made. Clearance may be carried out to increase the agricultural area of a farm, to replant with other more productive tree species or, more locally, for road widening and housing development. When a deciduous wood is replaced by a coniferous one, either by felling and replanting or by underplanting, the associated community of animals and plants is totally altered. Although the actual number of birds and insects may build up again to their former levels, the species content is much more restricted and usually is of little interest. The belts and lines of mature trees that may be left, in no way maintain the intact community and contribute only to amenity. On the other hand, quite small blocks of trees can preserve a good deal of their former interest.

In woodland, a low density of grazing animals may have only a slight effect on the community, preventing some species from flowering or spreading naturally. As it builds up, however, it gradually removes the undergrowth, changing the internal climate and affecting the insect (and bird) life. Tree seedlings are gradually killed or suppressed and no saplings are recruited. These are necessary for the survival of the wood itself. The trees become old and susceptible to rot and windthrow and the canopy is opened out. The evergreen shrub, Rhododendron ponticum, has a similar effect by shading, and constitutes a worse threat, or at least a more intractable one, to the future of many woods.

By contrast, grazing unmanaged grassland seldom does significant damage since this community is adapted to it. In places, grassland depends on a certain level of grazing to prevent scrub invasion but where the plant cover is thin, physical damage can be caused by trampling on such sites as eskers and blanket bog. In places affected by human trampling, the pressure is often aggravated by vehicles or fires and in sand dunes or on lakeshores the vegetation can break down and expose the soil to erosion.

Generally more serious to 'natural' grassland is the application of fertilisers. This is a different selective pressure and it favours coarse fast-growing grasses at the expense of the flowering plants that usually abound in such pastures. Certain species can disappear and with them their dependent butterfies and other insects. Local extinctions like this are seldom induced by grazing although it does often restrict flowering. Herbicides can obviously have a great effect wherever they are used. Generally, this is in greatly modified communities such as fields and gardens but where roadside verges are also treated, the depletion of the local flora and fauna can be significant.

Aquatic communities are affected by greater changes of water level than the normal seasonal fluctuations. The water table may be lowered by

field or arterial drainage or a formerly moveable waterline may be stabilised. Alternatively, a lakeshore may be subjected to much greater changes in level if it is used as a reservoir. The junction between land and water is the main zone to be affected by drainage and the communities involved are marshes, fens and reedswamps. This complex of vegetation may simply re-establish itself at a lower level but some species may be unable to migrate so quickly, especially those that do not readily reproduce by seeds. Complete drying out or the disappearance of winter flooding is naturally more serious as the whole marsh community with its dependent wildfowl and other animals may be destroyed. This happens in successful arterial drainage. If such drainage is not so effective a debased semi-aquatic community lingers on of little interest or agricultural use.

Water pollution is a problem of growing importance due to the aggregation and increase of population and the growing size of agricultural and industrial units. Incoming matter cannot be localised in a waterbody, neither can it be absorbed. Thus pollutants may be recirculated by the bottom deposits long after their initial appearance. Aquatic communities generally require less nutrients than land-based ones and enrichment by sewage or other organic matter leads rapidly to changes. The community of microscopic organisms is altered. Bacteria and the algae that can multiply most rapidly (forming 'blooms' in early summer) are favoured and the whole assemblage of animals dependent on this food base changes. The oxygen supply in the water is reduced and this also leads to the disappearance of some animal forms. The result is the replacement of a complex community by a simplified one characteristic of stagnant water, with a few very common species. This can happen in both fresh and marine waters and is often noticed in estuaries.

Pollution with other industrial wastes takes many forms but the effluent generally reduces the variety of animal and plant life in the vicinity. It causes the organisms finely balanced with environmental factors (the rare ones) to die out. It may have a strong selective effect against

certain groups which accumulate toxic substances to a level much higher than that in their surroundings (e.g. shellfish, birds of prey). Alternatively, it may act through a physiological quirk, as oil does on the feathers of water birds.

Methods of Protection

Because of limited public interest in conservation up to a few years ago, the legal framework necessary for the adequate protection of our natural heritage is only just coming into existence. However, even those statutes that have been available up to this have not been fully utilised.

The main laws concerned are the Local Government (Planning and Development) Acts of 1963 and 1976, Wildlife Act 1976 and Water Pollution Act, 1977. There are also laws by which conservation can be secured as an incidental benefit of their main purpose. These include the Foreshore Act, 1933, the Forestry Act, 1946, the Fisheries (Consolidation) Act, 1959, and the Protection of Animals (Amendment) Act, 1965.

The Local Government Acts allow a planning authority to develop or secure the development of land for conservation under the general area of preserving or improving amenities. This includes both ecological and geological sites. If conservation objectives are written into a Development Plan it is the duty of the Local Authority to carry them out.

The actual means of carrying them out lies in three positive instruments and in the more general obligation for a developer to obtain planning permission before development starts. Residential and industrial works can be prevented in any area in this way, but agricultural buildings and those connected with forestry are largely exempt. Similarly, the Local Authority is given no control over large scale agricultural changes such as drainage and afforestation.

The Special Amenity Area Order under this Act reinforces the process of development control and gives a stronger hand to the planning authority seeking to prevent development, as it has the backing of the full Council and later the Minister and Oireachtas. With such an Order, development can be prevented or controlled at a certain level in the interest of amenity and/or nature conservation. Where this latter aspect is important the authority can go further by making a Conservation Order to protect the flora or fauna in a particular area. The purpose of the Tree Preservation Order is to impose a management plan on trees and woodlands of special amenity value - protecting the more important trees, but allowing felling and replanting when necessary. Both these Orders can be made without compensating the owner, and the planning authority may be reluctant to use them for this reason. Provision is made for compensation, but this usually has to come from local rather than central funds. Once such an order has been made, the planning authority has the power to acquire the site. In some cases it can also be obliged to purchase land where development has been refused.

The most important recent development has been the passing of the Wildlife Act, 1976, which gives the Minister of Fisheries and Forestry, in consultation with a Wildlife Advisory Council, wide powers for the conservation of all wildlife and their habitat. He is able to establish nature reserves on State land, including the seabed of territorial waters, and also to designate refuges for fauna on private land after compensating the owner. Where drainage schemes will affect nature reserves he can modify them to minimize or avoid damage.

In addition, protection may be given to any species of flora or fauna in any part of the State. Hunting regulations for game can be specified and wildlife dealing is also regulated by licence. The import and export of both living and dead organisms may be controlled.

The Water Pollution Act, 1977, gives power to the local authority to licence and monitor all discharges to rivers or lakes and to enforce standards of purity on them. Trade wastes to sewers are also licensed and regulations can be made for preventing discharges from boats.

The Foreshore Act, 1933, allows public access to be prohibited on any part of the foreshore and also authorises the Minister for Tourism and Transport to prevent the removal of mineral matter, seaweed or bent grass from the somewhat wider zone of the seashore.

Among the provisions of the Forestry Act, 1946, is one requiring that anyone felling a tree outside an urban area must obtain a licence to do so. This can be refused by the Minister for Fisheries & Forestry and, if it is allowed, conditions may be included for the planting of trees to compensate for the felling. Where a licence is refused on the grounds of amenity, the planning authority can be obliged to acquire the site.

The Fisheries (Consolidation) Act, 1959, is a complex instrument which, among other things, allows the Minister to set close seasons for some freshwater fish and marine shellfish. Certain fishing methods for freshwater and sea fish can be prohibited and there is also a provision to totally protect shellfish for a period of up to three years. It is an offence for anyone to allow deleterious matter to enter a watercourse. Sea fish regulations mainly deal with undersized fish whose capture is illegal.

Successful conservation must in many cases include the acquisition of a site and before the Wildlife Act, 1976, was passed this was only open to a private person or company, a planning authority or the Office of Public Works. Under the State Property Act, 1954, and the earlier Land Acts this last body has acquired sizeable tracts of land, some of which is managed as National Parks or Monuments.

Form of the Report

When an area is chosen its broadest features are described together with any particular aspect of interest. It is evaluated against similar sites within the county and outside it and is also given a rating. This scale has four points : international, national, regional and local importance. Since the majority of examples of a certain type of habitat are not listed at all, the 'local' rating should not be thought of as the actual bottom of the scale.

The ratings are derived quantitatively but they may be conveniently interpreted as the distance a specialist in a particular field would be prepared to travel to see the feature involved. Thus 'international' implies a change of country, 'national' a journey across the country, 'regional' a trip within a province and 'local' a visit if the researcher happened to be in the same regional area.

The current use of each area may be mentioned in the body of the report and where a site seems specially suited for educational studies by reason of its character or accessibility, this has been indicated.

2. DESCRIPTION OF THE COUNTY

Mayo has one of the most diverse landforms of any county in Ireland. The plains of Erris contain the oldest rocks in the country, now covered almost entirely by blanket peat. A ring of quartzite peaks towers over this area reaching its most spectacular form in Achill and Nephinbeg. It is matched across Clew Bay by the younger block of Mweelrea, made of slates and sandstones. The vegetation differs strikingly on these two sets of mountains. Heather is predominant on the quartzite, giving a dark colour in contrast to the white rocks. It is replaced to a large extent by upland grasses on the sandstone. The long ridge of the Ox mountains stretches from Newport to Manor-hamilton in Co. Leitrim. It is bounded in places along the north edge by a fault thought to be continuous with the Highland Boundary Fault of Scotland. The mountains have a granite core which is well exposed at Lough Cullin and Pontoon. Devonian rocks still cover its western end, girdling the Clew Bay drumlins and rising to 420 m in Croaghmoyle where the sandstone is particularly coarse in texture.

East and central Mayo is predominantly a carboniferous area, formed of younger rocks which are often limestones. The transition begins near Ballycastle where shales and sandstones appear and were once extensively used for roofing. They give way to the overlying limestones in a regular sequence of considerable geological interest eastwards of a line from Killala to Westport and Clonbur. Near Kiltimagh the limestone is itself covered by younger shales forming a patch of badly drained land.

On this foundation the ice-sheets of the Glacial period have exerted their tremendous pressure, plucking rocks out of the northern and eastern sides of hills to form cooms, gouging valleys along faults or other lines of weakness and dumping the material in hollows or on the plains.

Achill provides some of the best examples of glacial erosion with a series of cooms from Croaghaun eastwards while the Sheeffry Hills are also notable. For deposition, the Clew Bay landscape of drowned drumlins is unequalled in Britain or Ireland. This archipelago has subsequently been worked on by the sea, the strongest and most enduring of present landscape forces. The stupendous cliffs of Croaghaun in Achill and Croaghmore in Clare Island which must be seen to be believed bear adequate testimony to the sea.

The areas of scientific interest are the unusual features of the county and those that stand out are the large lakes, the untouched blanket bog, the seacoast and offshore islands. The mountains, although spectacular and often dominant in the landscape, have less inherent interest.

Lakes figure prominently in the sites that follow and many parts of Lough Mask and Lough Conn are listed. Developments here should be sensitive to the high amenity and scientific values around them though if sited well and to a good design they can be quite large. Lough Carra is a more vulnerable lake where the water quality is critical and the scientific values easier to disturb. It has considerable value on a European scale being at the extreme end of the calcareous environmental gradient.

The blanket bogs of Bangor Erris have a similar international value. There is no doubt that with the bogs in parts of Scotland they are the finest examples of this formation in Europe. Overall blanket bog is an unusual type being initiated by rainwater rather than groundwater. The Mayo bogs are the largest in Ireland and the least modified. While it is unarguable that a good proportion should be exploited for fuel it is equally right that some of the best remaining examples should be conserved as a baseline habitat and historical record. Bogs have the

singular virtue of accumulating and storing environmental data in their peat deposits.

There is a concentration of interesting habitats along the coastline, including seabird cliffs like Downpatrick on Creevagh Heads, offshore islands such as Inishkea, Inishglora or Clare Island, coastal sands and lagoons like Dooaghtry or Termoncarragh Lake and rocky slopes as at Mulrany and Old Head. These sites are secure from development pressures where they are too exposed or inaccessible but the coastal strip is in general of high amenity value and there must be increasing pressure for building in the more sheltered locations. There is sometimes a good case to be made for naming such places Areas of Special Amenity. This is a public expression of value that should forestall much of the build-up of pressure for development. It is suggested that such action should be taken now before the full impact of European buyers has reached the area.

AREAS OF SCIENTIFIC INTEREST

NAME OF AREA	PAGE NO.	GRID REF.	RATING	PRIORITY	SCIENTIFIC INTEREST
Inishkea	18	F56 22	International	C	Ornithological, Zoological
Old Head	21	L83 82	"	B	Botanical, Zoological, Ornithological
Pontoon Woods	24	G21 04	"	B	Botanical, Ornithological, Zoological
Belderg Harbour	29	F99 42	"	C	Geological
Lough Carra	31	M17 72	"	B	Botanical, Zoological, Ornithological
Clare Island Cliffs	36	L66 86	"	C	Botanical, Ornithological, Zoological
Bellacorrick Flush	40	F96 21	"	B	Botanical, Zoological
Owenduff Blanket Bog	43	F84 04	"	B	Botanical, Zoological
Glenamoy	46	F89 35	"	A	Botanical, Zoological
Illaunmaster	49	F935 435	National	C	Ornithological
Mweelrea	52	L79 67	"	C	Botanical, Zoological
Lough Mask Shore	55	M16	"	B	Botanical, Geological, Zoological
Inishglora	59	F61 31	"	C	Ornithological
Dooaghtry	61	L73 69	"	A	Botanical, Ornithological, Zoological
Cloughmoyne	66	M22 50	"	B	Botanical
Garrycloonagh	68	G18 16	"	B	Botanical, Zoological
Lough Conn & Cullin	71	G20 10	"	B	Zoological, Ornithological
Annagh Head - Scotchport	74	F63 35	"	C	Geological
Lough Mask	76	M16	"	C	Zoological, Ornithological
Termoncarragh Lough	79	F66 34	"	A	Botanical, Ornithological, Zoological
Owenbrin Grassland	82	M05 62	"	B	Botanical, Zoological, Ornithological
Lough Akeel Quarry	85	M662 928	Regional	C	Geological
Inishturk	87	L61 74	"	C	Botanical, Ornithological, Zoological
Moy Estuary	90	G25 25	"	B	Ornithological, Botanical
Kinlooey Lough	93	M03 81	"	B	Botanical, Zoological
Sheefry Hills	96	L86 70	"	C	Botanical, Zoological
Croaghpatrick	99	L90 80	"	C	Botanical, Zoological
Coolbarren Lough	102	L98 86	"	B	Botanical, Zoological
Cuilkillew Wood	105	G16 08	"	B	Botanical, Zoological
Stella Maris	108	G09 40	"	C	Geological
Rockfleet Bay	110	L92 95	"	C	Geological
Bills Rocks	112	L 5493	"	C	Ornithological

NAME OF AREA	PAGE NO.	GRID REF.	RATING	PRIORITY	SCIENTIFIC INTEREST
Barnarinnia Wood	114	M0660	Regional	A	Botanical, Zoological
Creevagh Head	117	G1841	"	C	Ornithological
King's Hill	119	G139 020	"	C	Geological
Cappagh	121	M166 933	"	C	Geological
Glenisland River	123	M088 965	"	C	Geological
Shangort	125	M110 732	"	C	Geological
Curraun Plateau	127	I77 96	"	C	Botanical, Zoological
Clyard Kettleholes	130	M22 58	"	A	Botanical, Zoological
Croaghmoyle	133	M10 98	"	C	Geological
Mulrany Hill	135	L81 96	"	B	Botanical, Zoological, Ornithological
Downpatrick Head	138	G12 42	"	C	Ornithological
Lackan Saltmarsh	141	G18 35	"	B	Botanical, Zoological
Carrowmore Lough	144	F83 28	"	C	Ornithological, Botanical
Kilcummin Head	147	G20 37	"	B	Botanical, Zoological, Ornithological
Burren Rock	150	M12 99	"	C	Botanical, Ornithological
Inishkeeragh	153	F60 30	Local	C	Ornithological
Drumleen Lough	155	G05 09	"	B	Botanical
Rossmoney inlet	157	I94 86	"	B	Botanical, Zoological
Ballynew outcrop	160	M170 920	"	C	Geological
Burren	162	M126 986	"	C	Geological
Tawnagh More	164	G224 070	"	C	Geological
Derrycraff	166	M019 728	"	C	Geological
Mulrany Saltmarsh	168	I82 95	"	C	Botanical
Owenduff (Lagduff)	171	F82 14	"	C	Botanical
Knappagh Woods	174	L96 80	"	A	Botanical, Zoological
Porturlin Cliffs	177	F90.42 - F85.42	"	C	Ornithological, Botanical
Mocorrha Lough	180	M22 54	"	A	Botanical
Mayfield Loughs	182	M33 74	"	B	Botanical, Zoological
Robe River Bog	185	M24 66	"	C	Botanical
Ardogommon Wood	188	M02 82	"	B	Botanical, Zoological

NAME OF AREA	PAGE NO.	GRID REF.	RATING	PRIORITY	SCIENTIFIC INTEREST
Teevmore Channel	191	L97 92	Local	B	Botanical, Zoological
Lough Glenawough	194	L99 68	"	C	Zoological
Killala Esker	196	G21 29	"	A	Botanical, Zoological
Lough Corrib Shore	199	M19 51	"	B	Botanical
Cloonagh Lough	202	G20 21	"	B	Botanical, Zoological
Lough Alick	205	G21 14	"	C	Botanical, Zoological
Benwee Head	208	F81 44	"	C	Ornithological, Botanical
Carrowmore Lake Shore	211	M22 88	"	C	Botanical
Stags of Broadhaven	214	F8347	"	C	Ornithological
Lough Cahasy	216	L7578	"	B	Ornithological, Botanical

INISHKEA ISLANDS

Grid Reference	F56 22
Area	327 ha
Interest	Ornithological, Zoological
Rating	International importance
Priority	C

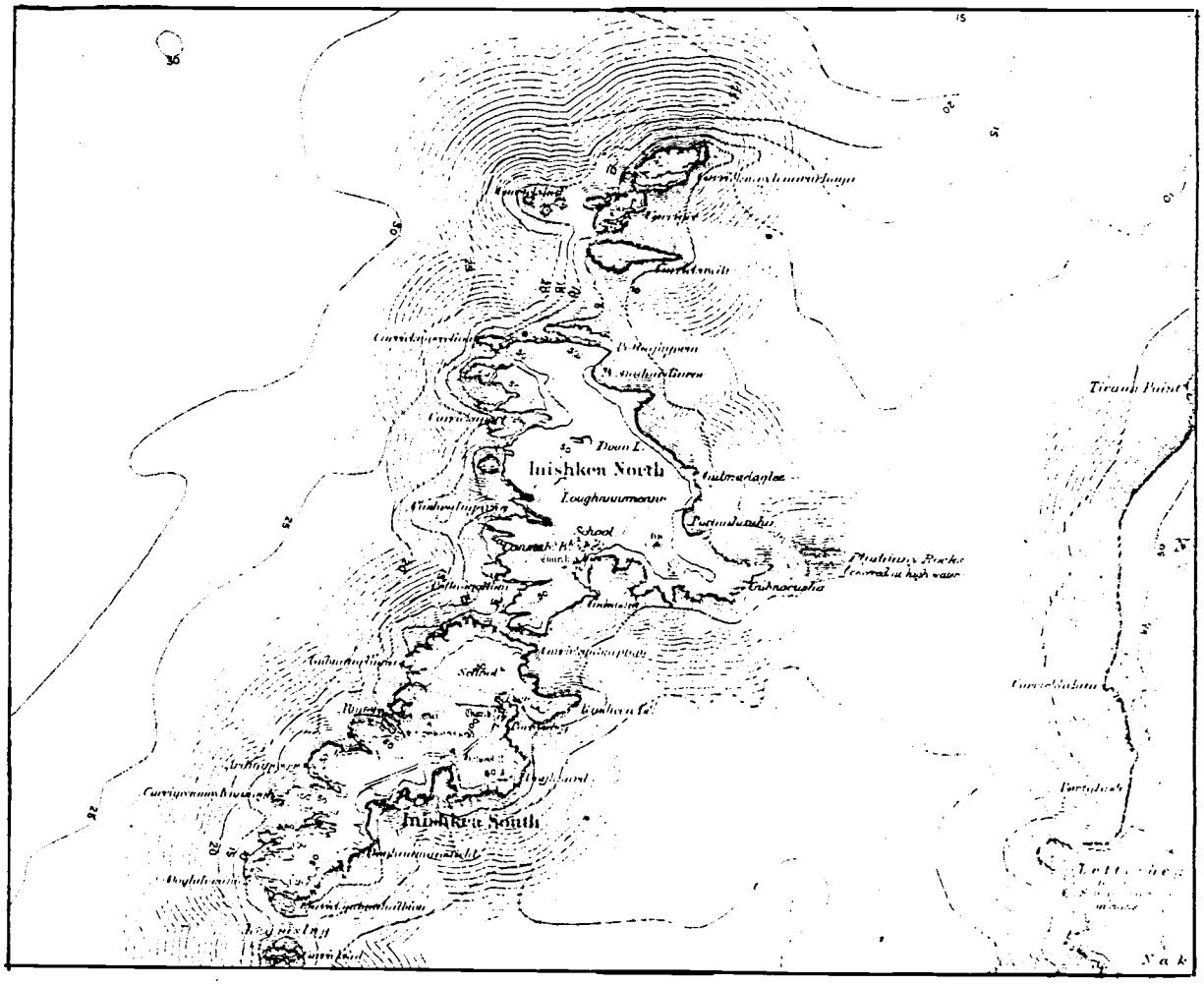
The two Inishkea Islands lie two to three miles off the Mullet and, like it, are based on Precambrian gneiss. The north island rises to only 30 m on its western edge and this high point is actually the crest of a storm beach, built with rocks of enormous size. The ground slopes down eastward with much windblown sand. South Inishkea has a hill of 70 m, again on the western side.

Much of the vegetation of the islands is plantain sward since they are swept by seaspray when there are storms. On the western side this is pure but to the east other plant species enter the picture, especially red fescue (Festuca rubra), meadow grass (Poa pratensis), white clover (Trifolium repens) and daisy (Bellis perennis). The higher parts of the south island have a heathy vegetation with heather (Calluna vulgaris), heath grass (Sieglingia decumbens), scabious (Succisa pratensis, Jasione montana) and creeping willow (Salix repens). The sward is closely grazed by sheep, cattle and geese and the dry stone walls form a conspicuous feature. A small lake, Doon Lough, occurs on North Inishkea.

The ornithological importance of the area derives from the large flocks of barnacle geese that winter there every year and from some of the breeding species. The following list indicates the average peak numbers of the more interesting species that occur (* indicates breeding strength).

(1) References to scientific notes and papers will be found on p.222.

INISHKEA ISLANDS



Scale : 1 cm = 634 m

Barnacle goose	2300
White-fronted goose	25
Wigeon	25
Teal	50
Golden plover	1000
Whimbrel	5
Purple sandpiper	150
Sanderling	200
Ruff	5
Dunlin	5*
Great black-backed gull	150*
Lesser black-backed gull	20*
Herring gull	250*
Common gull	10*
Black guillemot	10*
Raven	2*
Chough	2*
Tree sparrow	5*

Evaluation: The islands are of international importance for their population of barnacle geese which forms over 60% of the entire Irish flock and about 12% of the Greenland population. The other species of interest are purple sandpiper and sanderling which use the island as a landfall on their migrations to and from the Arctic. The breeding numbers of dunlin, black guillemot and tree sparrow are also locally important, as are those of the grey seal.

Vulnerability and Recommendations: All geese are affected by human disturbance and will forsake an area if it becomes too frequent. Thus the creation of no-shooting areas, including the Inishkea islands since 1962, is an important measure of protection. The goose and other populations seem secure at the moment though grazing by moderate numbers of farm animals should continue.

OLD HEAD WOODLAND

Grid Reference	L 8382
Area	29 ha
Interest	Botanical, Zoological, Ornithological
Rating	International importance
Priority	B

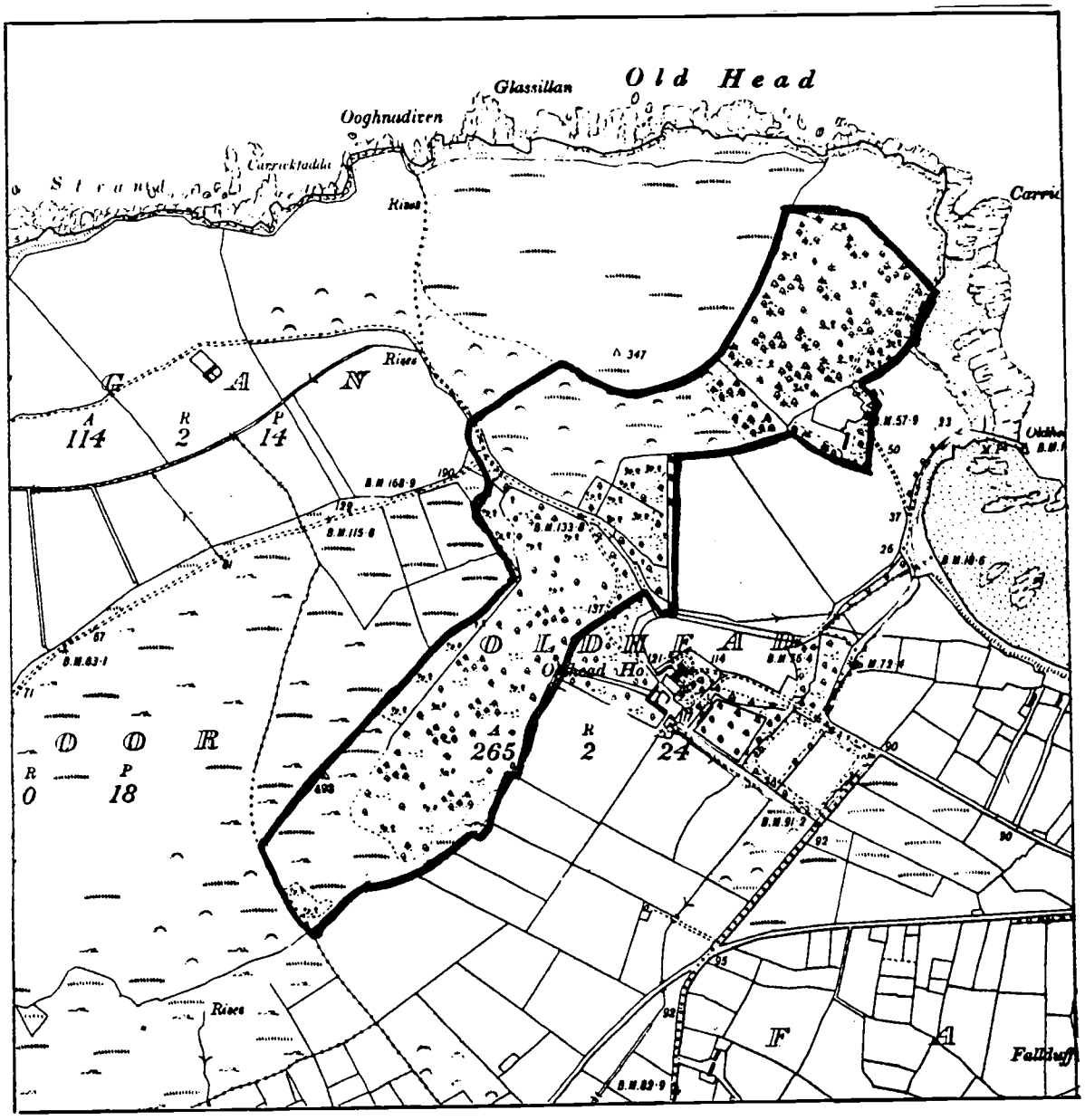
The low hills at Old Head are formed by an outlier of the Old Red Sandstone found in Glen Nephin. They are covered in woodland and heath with corresponding clayey and peaty soils. The heath is generally dominated by gorse (Ulex europaeus), heather (Calluna vulgaris, Erica cinerea, E. tetralix) or bracken (Pteridium aquilinum). St. Dabeoc's heath (Daboecia cantabrica) is frequently mixed in with the other plants where they do not exceed 50 cm in height.

The woodland mostly occurs on the sheltered eastern side of the hill but extends to the crest in places. In these exposed conditions the trees are only 2 - 3 m in height, their branches projecting widely to the east and north-east. The stand is of oak (Quercus petraea) with its common associates of rowan (Sorbus aucuparia), birch (Betula pubescens) and willow (Salix cinerea). Conifers, notably sitka spruce have been planted in clearings and beech (Fagus sylvatica) is also present. Hazel (Corylus avellana) and holly (Ilex aquifolium) are other understory species.

Because of the exceptionally high humidity, the growth of epiphytes on the trees is spectacular. Large lichens are the most noticeable, especially species of Lobaria, Sticta, Usnea and Parmelia. They occur as huge hanging patches, sometimes embedded in moss (Isothecium, Hypnum), and measure anything up to 60 cm in diameter.

The woodland contains a fully representative community of herbs,

OLD HEAD WOODLAND



Scale : 1 cm = 106 m

including much crinkled buckler fern (Dryopteris aemula), wood sorrel (Oxalis acetosella), woodrush (Luzula sylvatica) and wood sedge (Carex sylvatica). Two interesting species are a clubmoss (Selaginella kraussiana) and smooth-stalked sedge (Carex laevigata).

The woodland is an oasis for bird life in a region with few trees of any sort. Most of the common passerines nest, including long-tailed tit, spotted flycatcher and chiffchaff. Redstarts have been seen while the whinchat and stonechat nest in the adjacent heath.

Evaluation: Old Head represents the extreme development of Atlantic oakwood and is one of the only sites that is actually on the coast. Because of this uniqueness it is given international importance, though its size and inherent quality only qualify it for national value. Its importance is an ecological one but the luxuriance of the lower plants should be singled out as of special interest. Its bird populations are also of local or regional value.

The area is very suitable for educational use provided precautions are taken with regard to collecting specimens.

Vulnerability: As mentioned, some of the plants (lichens especially) could suffer from collecting, since they grow so slowly. The structure of the wood could be altered by grazing animals or renewed planting of introduced species. The spread of beech and sycamore would also be damaging to the scientific interest.

Recommendations: The wood is owned by the Forest and Wildlife Service so will probably be managed to maintain its scientific interest. The Council should however be aware of its value in the control of adjacent development and in any amenity schemes.

WOODS AROUND PONTOON

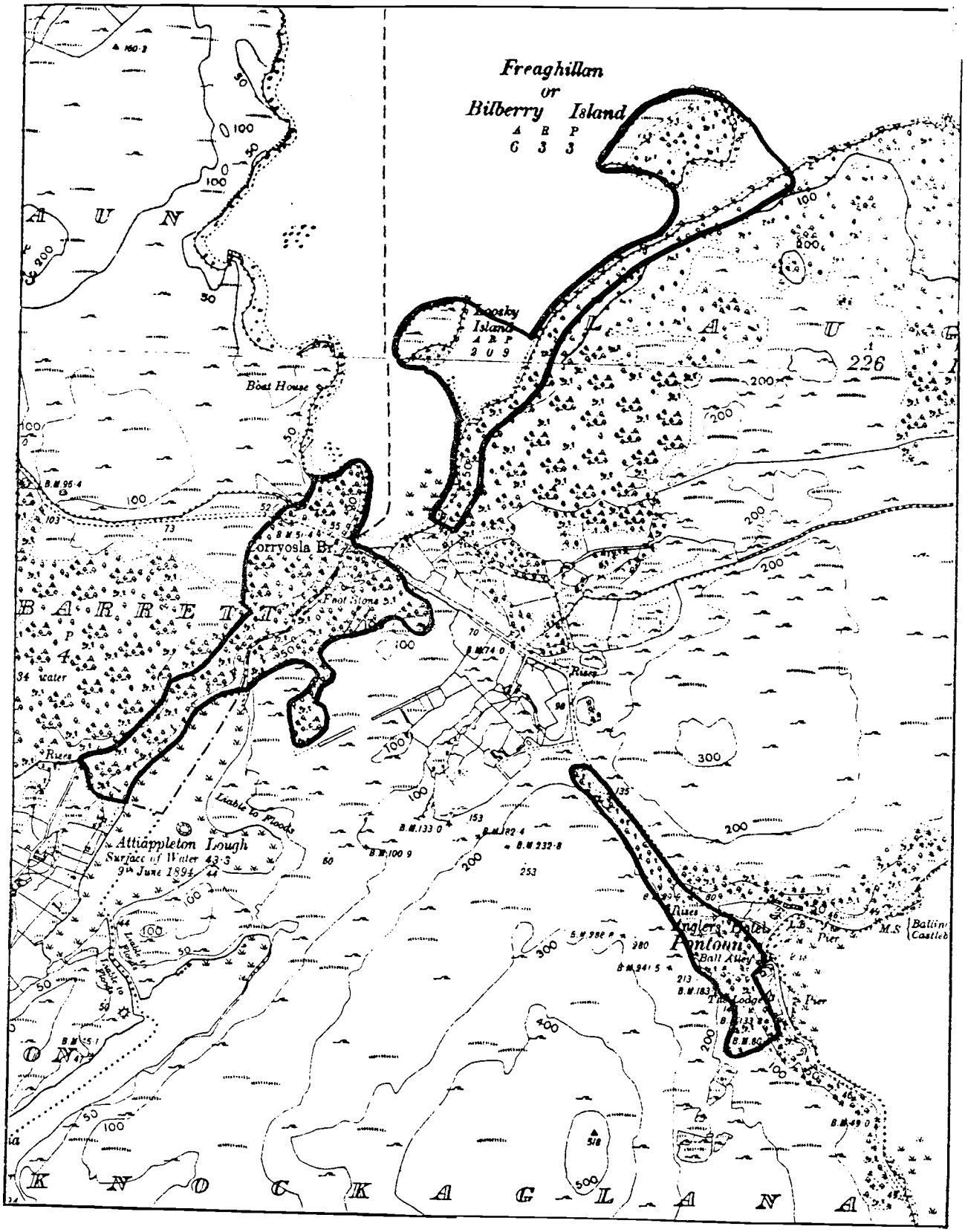
Grid Reference	G 21 04
Area	33 ha
Interest	Botanical, Ornithological, Zoological
	Geological
Rating	International importance
Priority	B

The southern end of Louth Conn and the whole of Lough Cullin lie on granite, a rock that stretches eastward from here to form the Ox Mountains on the Sligo border. It produces rather different scenery than the limestone further north and the heather-covered humps and bosses of rock are a dominant feature around Pontoon. The rock is known as the Foxford or Pontoon granite. It is rich in biotite (black mica) and sometimes has large mineral crystals. It is also arranged in layers (foliated) which were caused by the cooling pattern of the intrusive molten rock when it was deeply buried beneath the Dalradian schists. The rock exposures beside the road, from the bridge to the dance-hall are notably good.

Much of the granite is covered by blanket bog with scattered shrubs and trees on the drier sites. The rocky knolls often bear juniper (Juniperus communis) or gorse (Ulex europaeus), with which unusual herb species, wintergreen (Pyrola media), or a twayblade (Listera cordata) are sometimes associated.

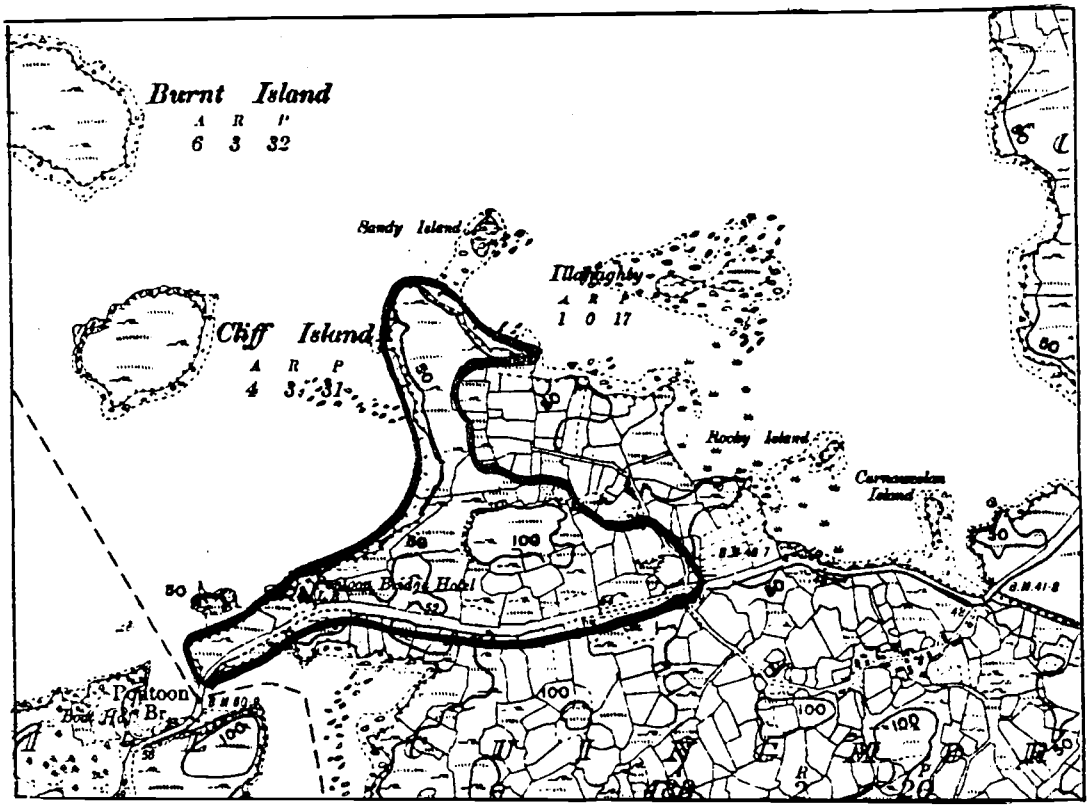
On certain sites, where lower grazing pressure has allowed it, oak woodland is the dominant vegetation type. Until fairly recently it covered an extensive area from Massbrook to Drummin Wood but forestry operations have altered most of this, replacing the natural wood by conifer plantations. The patches that remain are generally poorly grown, either in exposed lakeside positions or on shallow soils inland. The soil is podsolic with a pH of 4 - 4.6, except for

WOODS AROUND PONTOON (see p. 26)



Scale : 1 cm = 106 m

WOODS AROUND PONTOON (cont.)



Scale : 1 cm = 106 m

a more fertile brown earth beneath hazel wood which occurs in the glen west of Pontoon. Sessile oak (Quercus petraea) is the dominant tree with an understorey of holly (Ilex aquifolium), sometimes very dense. Birch (Betula pubescens) forms stands on the upper margins and is mixed into the wood to a small extent, as is rowan (Sorbus aucuparia), willow (Salix spp) and ash (Fraxinus excelsior). Additional species are associated with the lakeshore, for example a whitebeam (Sorbus rupicola), aspen (Populus tremula), silver birch (B. pendula) and the shrubs guelder rose (Viburnum opulus), buckthorn (Rhamnus catharticus) and spindle tree (Euonymus europaeus).

The ground flora is usually composed of fraochan (Vaccinium myrtillus) or woodrush (Luzula sylvatica) with some or all of the following species : hard fern (Blechnum spicant), wood sorrel (Oxalis acetosella), bracken (Pteridium aquilinum), buckler ferns (Dryopteris aemula, D. dilatata), cow-wheat (Melampyrum pratense), tormentil (Potentilla erecta), golden rod (Solidago virgaurea) and such mosses as Dicranum majus, Eurynchium spp., Hylocomium brevirostre and Isopterygium elegans. In Pontoon glen additional species indicate the better soil, e.g. sedges (Carex sylvatica, C. remota), meadow grass (Poa trivialis) and bugle (Ajuga reptans).

The bird and animal life in these woods is rich because of the extensive area available. Four species of tit are found with mistle thrush, treecreeper, chiffchaff, sparrow hawk and many other species. Some of the aquatic birds like teal, red-breasted merganser and common scoter nest at the edges of the wood where cover is suitable. Insect life is notably rich because of the abundant oak and rotting timber. Fritillaries are noticeable among the butterflies and wood dwelling species among the beetles. Acanthinula lamellata occurs: this is a snail associated

with old natural woodlands.

Because of the lowering of the lake level as part of the Moy drainage scheme, wide beaches of granite sand with or without peat are apparent everywhere, sometimes linking former islands to the mainland. Jointed rush (Juncus articulatus) is a notable colonist of the wetter sites, purging flax (Linum catharticium) and allseed (Radiola linoides) of the drier ones. Trees (birch and alder) are rapidly colonising these flats which are infiltrated by the rich lake water. The water lobelia (Lobelia dortmanna) and a narrow leaved pondweed (Potamogeton filiformis) have lost some ground but still occur in the lake while royal fern (Osmunda regalis), bog myrtle (Myrica gale), sundews (Drosera spp.), sedges (Carex lepidocarpa, C. serotina, C. demissa), and sometimes alder buckthorn (Frangula alnus) are found on the edge, in a fringe of poorly-growing reed (Phragmites australis).

Evaluation: The site is formed of a complex of interesting communities, many in a very natural state. Its main feature is the oakwood which is of international importance, forming the major remnant in Mayo of a formerly ubiquitous vegetation. Many of the other aspects of the area are of national importance, particularly the lakeshore communities and the bird life.

Vulnerability and Recommendations: The site was formerly threatened with clearance for forestry plantations but the Forest and Wildlife Service now have an enlightened policy of conservation for such stands. Any development which involves felling trees, such as road widening or new buildings, or that brings more people into the wood (car parks, public buildings) should be given close scrutiny so as to protect the intrinsic natural values.

BELDERG HARBOUR

Grid Reference	F 99 42
Area	63 ha
Interest	Geological
Rating	International importance
Priority	C

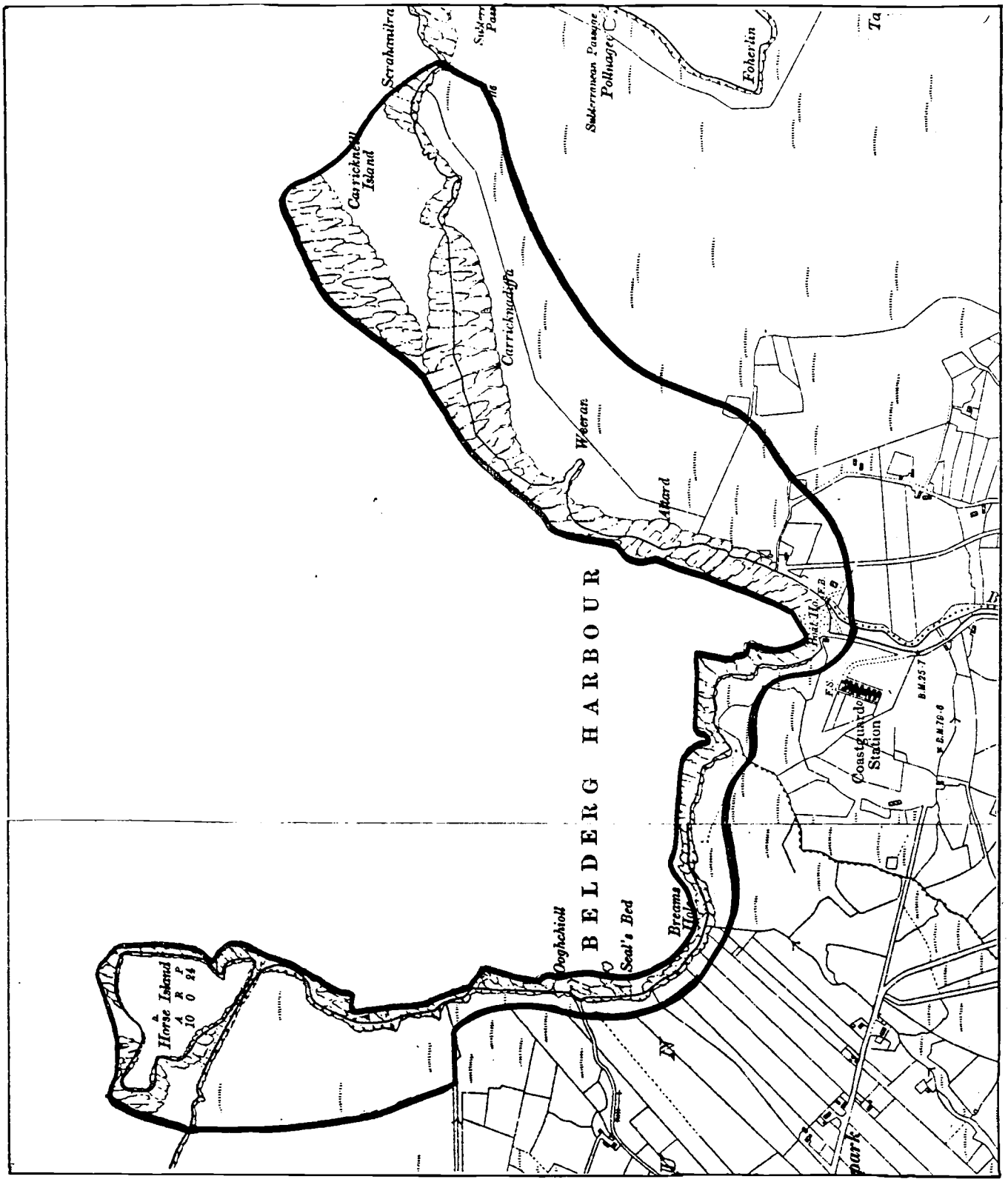
An unusual structure occurs in the pre-Cambrian rocks around Belderg Harbour. This is curvilinear folding and the folds exposed here form a complete sequence in the progressive development of deformational features. Several things are in disagreement with accepted geological theory.

Evaluation: The site gives a better idea of the overall formative causes of this structure than anywhere else in north Mayo and possibly in the whole country.

Vulnerability: There is no current utilization of the coastal exposures in question, nor is any likely in the future.

Recommendations: No developments should be allowed which would obscure the rock exposures on the cliffs.

BELDERG HARBOUR



Scale : 1 cm = 106 m

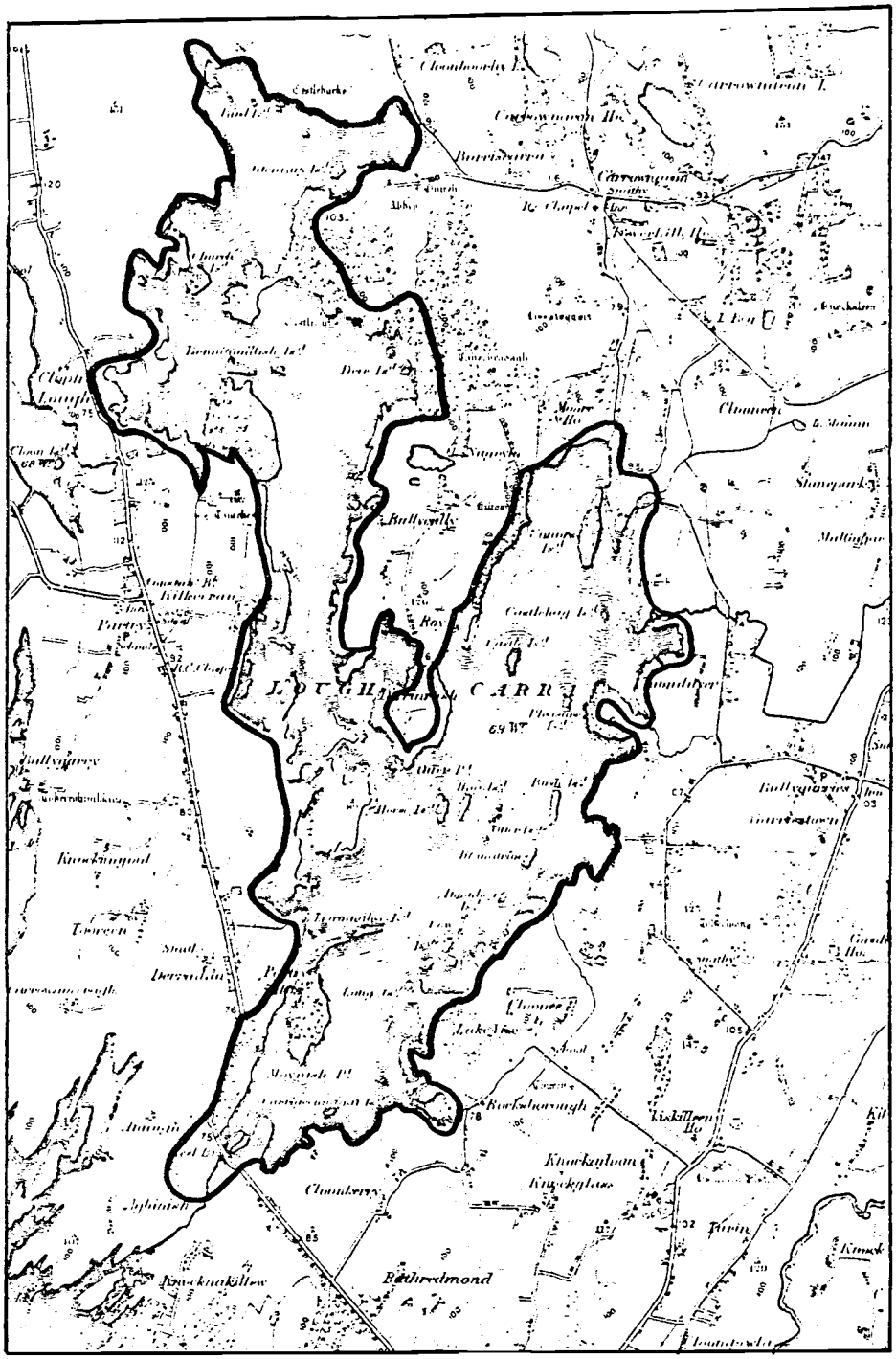
LOUGH CARRA (3, 4)

Grid reference	M 17 72
Area	1,880 ha
Interest	Botanical, zoological, ornithological
Rating	International importance
Priority	B

Lough Carra is mostly fed by springs and the streams that do flow into it are small. For this reason very little sediment enters the lake and the water is clear. In its passage through the ground the spring water becomes charged with calcium bicarbonate and when this is released into the lake (pH 8) the carbonate precipitates on all available surfaces, causing the sticky white marl that is so characteristic of the lake. Though highly calcareous the water is not rich in other nutrients; neither is the marl able to support rooted plants. Aquatic plants are therefore mostly restricted to free-floating algae (plankton) and what little emergent vegetation there is, is sparse and poorly grown. Two pondweeds are found (Potamogeton filiformis and P. perfoliatus). Diatoms dominate the phytoplankton in spring with the crustacean Bosmina; in summer the alga Anaboena is more common, with rotifers.

In former times the lake covered a larger area than it does today so the marl deposit is spread over adjacent low-lying land. This now carries a fen vegetation, as around Cloondaver, Ballintubber and Keel Bridge, dominated by black bog rush (Schoenus nigricans) like much of the lake-shore. If ungrazed this plant grows 0.5 - 1m high but on its tussocks and in between them many other species find a niche. These include grass of Parnassus (Parnassia palustris), eyebright (Euphresia micrantha), purple moor grass (Molinia caerulea), marsh helleborine (Epipactis palustris), devil's bit (Succisa pratensis), northern bedstraw (Galium boreale) and butterwort (Pinguicula vulgaris) as well as about 20 other

LOUGH CARRA



Scale : 1 cm = 634 m

flowering plants. Landwards this community gives way to limestone grassland through a belt of reed fescue (Festuca arundinacea) and meadow thistle (Cirsium dissectum). This grassland is a most attractive vegetation with a multitude of herb species including orchids, harebells (Campanula rotundifolia) and yellow composites (Pilosella officinarum, Leontodon spp). Several species associated with the Burren limestones, for example the spring gentian (Gentiana verna) and the dense-flowered orchid (Neotinea intacta) reach their N.E. limit here. It contains the food plants of many insects, so butterflies and moths are often common.

Associated with limestone outcrops which are especially frequent west of the lake and reach sufficient height to be quarried near Partry, are other plants such as stone bramble (Rubus saxatilis), wild madder (Rubia peregrina) and, closer to the lake, alder buckthorn (Frangula alnus), meadow rue (Thalictrum minus) and dog's violet (Viola canina).

There is much woodland and scrub around the lake which is unusual on such fertile soils (brown earths of pH 6-7). It is centred mainly on the large estates of Moore Hall, Castlecarra and Lake View. Some of the woodland has been felled and coniferous species planted in its place but enough remains to give a fine example of natural woodland on limestone. Castle, I., Hogs, I. and the smaller ones near Castle carra are important in this respect. On the mainland some planting was carried out, of lime, hornbeam, horse chestnut and oak but in the more natural conditions ash and hazel are the commonest species with holly, birch (Betula pubescens) and willows (Salix cinerea and S. caprea). Along the edges of such woods buckthorn (Rhamnus catharticus), aspen (Populus tremula), guelder rose (Viburnum opulus) and spindle tree (Enonymus europaeus) are characteristic with some elm (Ulmus glabra), crab apple (Malus pumila) and whitebeam (Sorbus hibernica). The herbaceous flora is rich because of the fertile soil and the age of the stand. The less frequent species include giant

fescue (Festuca gigantea), ivy broomrape (Orobanche hederae) and birds nest orchid (Neottia nidus-avis).

The lake has long been known for its wildfowl populations and recent winter counts (September-March) show the average (and peak) levels to be:-

Mallard	773	(1938)
Teal	313	(1095)
Gadwall	18	(51)
Wigeon	101	(584)
Shoveler	119	(500)
Tufted duck	185	(514)
Pochard	114	(850)
Goldeneye	46	(117)
Red-breasted merganser	4	(7)

Substantial numbers of mallard and tufted duck nest with great crested grebe, little grebe, coot, moorhen and water rail. In the woods the woodcock is characteristic in both summer and winter. A full range of passerine birds also occurs. The invertebrate fauna has been little examined but in any natural woodland, particularly those rare stands on fertile soils, it is of considerable interest.

Evaluation: Lough Carra is the largest and best example of a marl lake in the country. These were widespread in post-glacial times but the vast majority of such lakes have subsequently been grown over by fen vegetation and covered by raised bog. In the scientific investigation of limnology and of peatlands the lake is therefore a very important site.

In addition to the lake itself which has the largest population of breeding mallard and one of the largest wintering concentrations and is also nationally important for its shoveler and gadwall, the surrounding communities of grassland, woodland and scrub are of great value. This stems from their species diversity and richness and their role as a contrast to the Burren vegetation, the more southerly and coastal limestone communities.

Vulnerability: Lowering of the lake level would damage the marginal fen vegetation considerably and it would take many years for this to re-establish itself in its full diversity at the lower level.

Lakeside developments of bungalows, chalets etc. might damage particular sites by obliteration, change of agricultural use or restriction of access. Water pollution is also a significant threat in view of the unusual limnology of the lake.

Recommendations: The area is so important that a large amount of it should be designated as a nature reserve of some sort or as an Area of Special Amenity (Local Government Acts, 1963 and 1976). In the meantime any development within the outlined area should be examined in depth for its impact on the natural communities.

CLARE ISLAND CLIFFS (5)

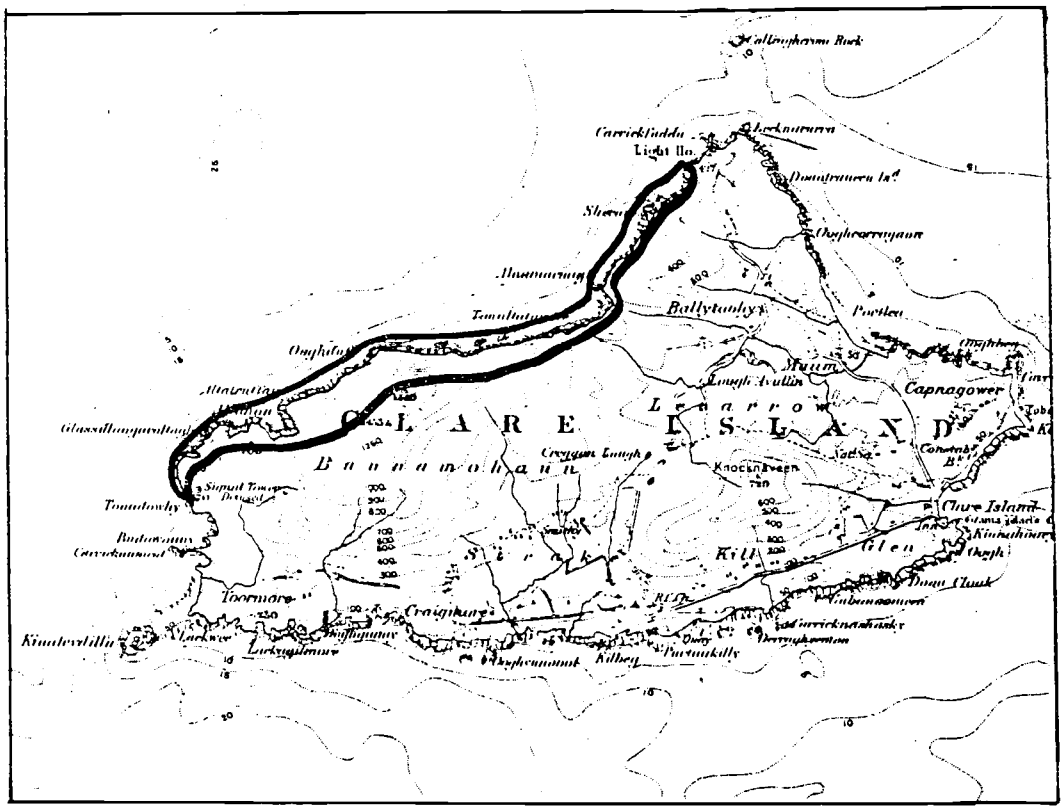
Grid Reference	L 66 86
Area	150 ha
Interest	Botanical, Ornithological, Zoological
Rating	International importance
Priority	C

Clare Island is formed of Ordovician and Silurian sandstones and slates with small patches of metamorphic and volcanic rock. From a maximum of 480 m on the N.E./S.W. ridge the land descends regularly to the south and east but it drops almost directly into the sea on the north-side of Croaghmore.

Windswept heathy vegetation covers most of the island with the agricultural land along the southern shore. However, the seaward slope of Croaghmore bears an interesting natural community, only grazed in small patches because of its steepness. Mossy campion (Silene acaulis) is abundant, extending down to 120 m, and growing with mountain sorrel (Oxyria digyna), roseroot (Rhodiola rosea), St. Patrick's cabbage (Saxifraga spathularis), and a kidney-leaved saxifrage of hybrid origin (S. spathularis x geum). The latter two species overlap with the maritime flora of thrift (Armeria maritima) and red fescue (Festuca rubra) towards the base of the cliffs.

The other alpine plants include alpine sawwort (Saussurea alpina), saxifrages (Saxifraga oppositifolia, S. rosacea), hawkweed (Hieracium anglicum), least willow (Salix herbacea) and ferns (Asplenium viride, Cystopteris fragilis, Polystichum lonchitis, Hymenophyllum wilsonii) with many moss species. In some places these are the most frequent plants on the cliffs, in others they are outnumbered by grasses (Festuca

CLARE ISLAND CLIFFS



Scale : 1 cm = 634 m

spp. Koeleria cristata), milkwort (Polygala vulgaris), tormentil (Potentilla erecta) or harebell (Campanula rotundifolia) Several woodland herbs grow in sheltered gullies. So extensive are the alpine plants that a true high-level community exists, characterised by a peculiar invertebrate fauna. A plantain sward is developed along the top of the lower cliffs in the north part of the island : this is a 1 cm high mixture of plantains (Plantago maritima and P. coronopus) with about twenty-five other species sprinkled through it.

The bird fauna of these cliffs is also rich, including a large variety of seabirds and some terrestrial species. During a census carried out in 1970, the following seabirds were counted :

Fulmar	1,320	pairs
Storm Petrel	3	"
Shag	29	"
Great black-backed gull	44	"
Lesser black-backed gull	1	"
Herring gull	80	"
Common gull	5	"
Kittiwake	1,539	"
Razorbill	1,800	"
Guillemot	857	"
Puffin	90	"
Black Guillemot	29	"

The most thorough systematic biological survey ever undertaken in this country was carried out in the years 1909 - 1911 on Clare Island. It led to the discovery of many animals previously undescribed or unrecorded in Ireland. The island is therefore the type location for about 120 species, mostly invertebrate animals.

Evaluation: The seabird colony described above is the largest one in Co. Mayo, including the largest aggregations of fulmar, kittiwake, razorbill and guillemot. The plant communities are also of exceptional interest being the best example of a high-level community in the county and probably the second best in the whole country (after the Benbulbin plateau in Sligo). The occurrence of the hybrid saxifrage may be singled out as of special interest as one of its parents (S. geum) does not now occur outside Co. Kerry.

Vulnerability: Large parts of the cliffs are practically inaccessible and they therefore seem secure from both development or disturbance. The bird populations would, however, be affected by oil or other pollution at sea. The Clare Island Survey covered all parts of the island so the majority of its discoveries were made away from the present site. The communities have changed little in the meantime, however, as land use has been stable or declining in intensity. It does not seem necessary to zone the whole island as an Area of Scientific Interest although it does have interesting features.

Recommendations: In the event of oil pollution at sea, every effort should be made to prevent slicks reaching the bird feeding areas off-shore. Should oil come ashore, detergents should not be used on rocky parts of the shore as this usually compounds the damage done to the marine organisms.

BELLACORICK IRON FLUSH (6)

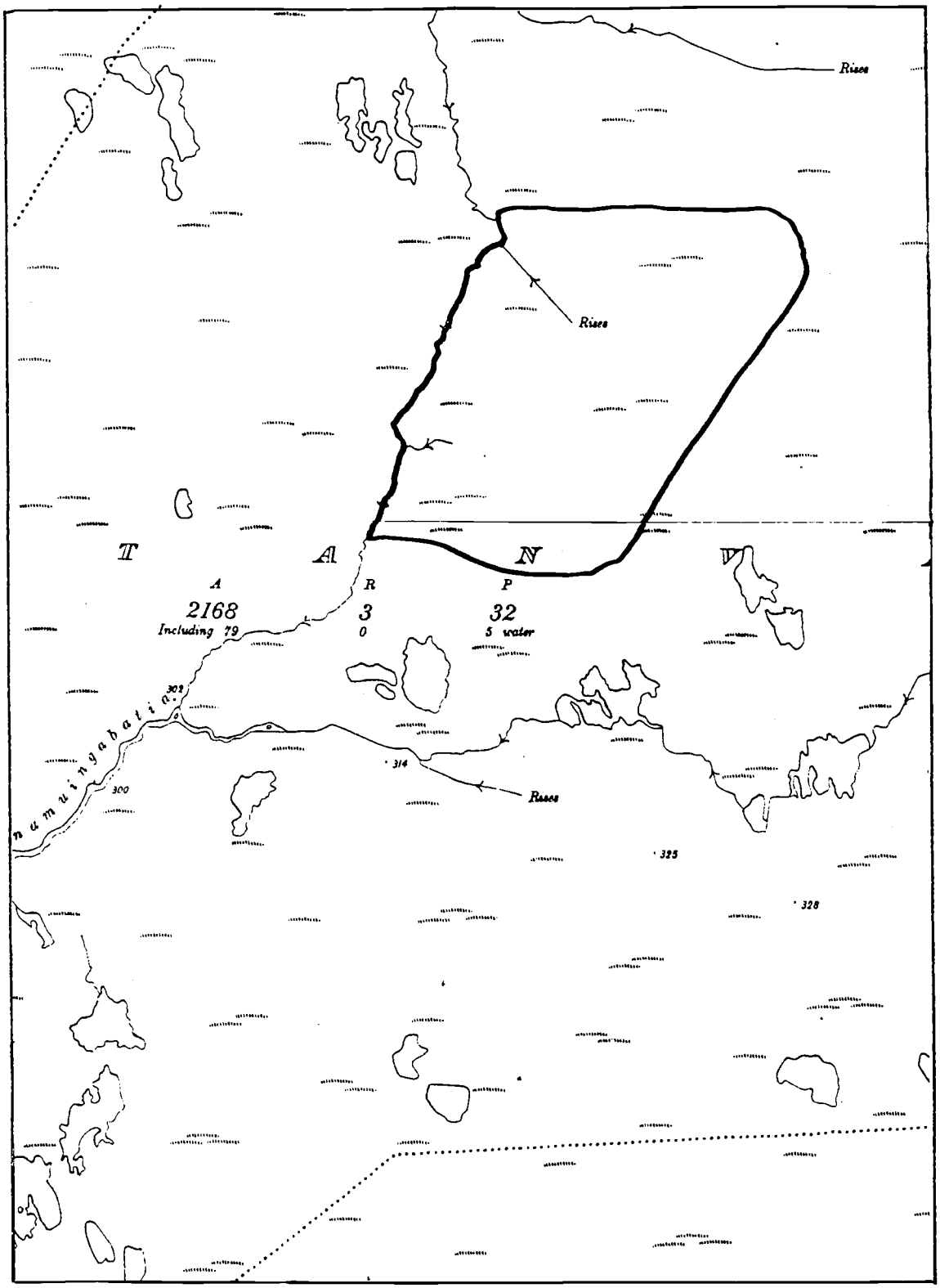
Grid Reference	~~F96 21~~ G005 242
Area	30 ha
Interest	Botanical, Zoological
Rating	International importance
Priority	B

The site is a large spring in the extensive area of blanket bog which supplies fuel to the generating station at Bellacorick. The bog has developed over podsolized soils and the rising water brings with it large amounts of iron from this source. The orange colour of the surface is a notable feature of the marsh. The area slopes westwards for a distance of about 450 m and the wettest area occurs two-thirds of the way down. Here a little open water is found with saw sedge (Cladium mariscus), reed (Phragmites australis), other sedges (Carex rostrata, C. paniculata) and bog cotton (Eriophorum angustifolium) growing in it. Marsh cinquefoil (Potentilla palustris), marsh saxifrage (Saxifraga hirculus) are also characteristic with the mosses Meesia tristicha, Camptothecium nitens, Philinotis and Sphagnum subsecundum, palustre, recurvum and rubellum.

The saxifrage and Camptothecium extend into the drier areas surrounding the spring to some extent. Here purple moor grass (Molinia caerulea) is abundant with sedges (Carex dioica, C. nigra), orchids (Dactylorhiza maculata, D. incarnata) and mosses (Campylium, Acrocladium). Species of richer soils also occur but give way towards the edge to the blanket bog flora.

Evaluation: This small marsh has a unique combination of physical conditions and has developed a similarly unique plant community. The main species of interest are the saxifrage which occurs nowhere else in the Republic, the moss Meesia whose nearest other station is in

BELLACORICK IRON FLUSH



Scale : 1 cm = 106 m

East Anglia in England and the Camptothecium which has only two other Irish sites. The last two species were common in interglacial times, and are widely found as fossils in peat, but it was thought until relatively recently that both were extinct in Ireland.

Their ability to persist here would repay some scientific study. It may be related to the microclimate of the site, the soil conditions or the isolation from other marshes. The fauna of the area is also likely to be interesting.

Vulnerability: The site has been slightly modified by attempts at simple drainage and it is noticeable that Camptothecium has decreased in abundance where this disturbance has occurred. It would naturally be affected by any further changes in the local hydrology.

The immigration of new species into the surrounding land when this has been fully cut over or the agricultural practices that develop may pose some threat is the continued existence of the community.

Recommendations: The site is owned by Bord na Mona and is now recognised as important. It is thus unlikely that further intentional attempts at drainage will be made though local water levels will probably change with the cessation of turf cutting and reclamation.

The Council should make all possible attempts to see that the site (and its water table) is preserved intact whatever future pattern of land use develops in the surrounding area.

OWENDUFF BLANKET BOG

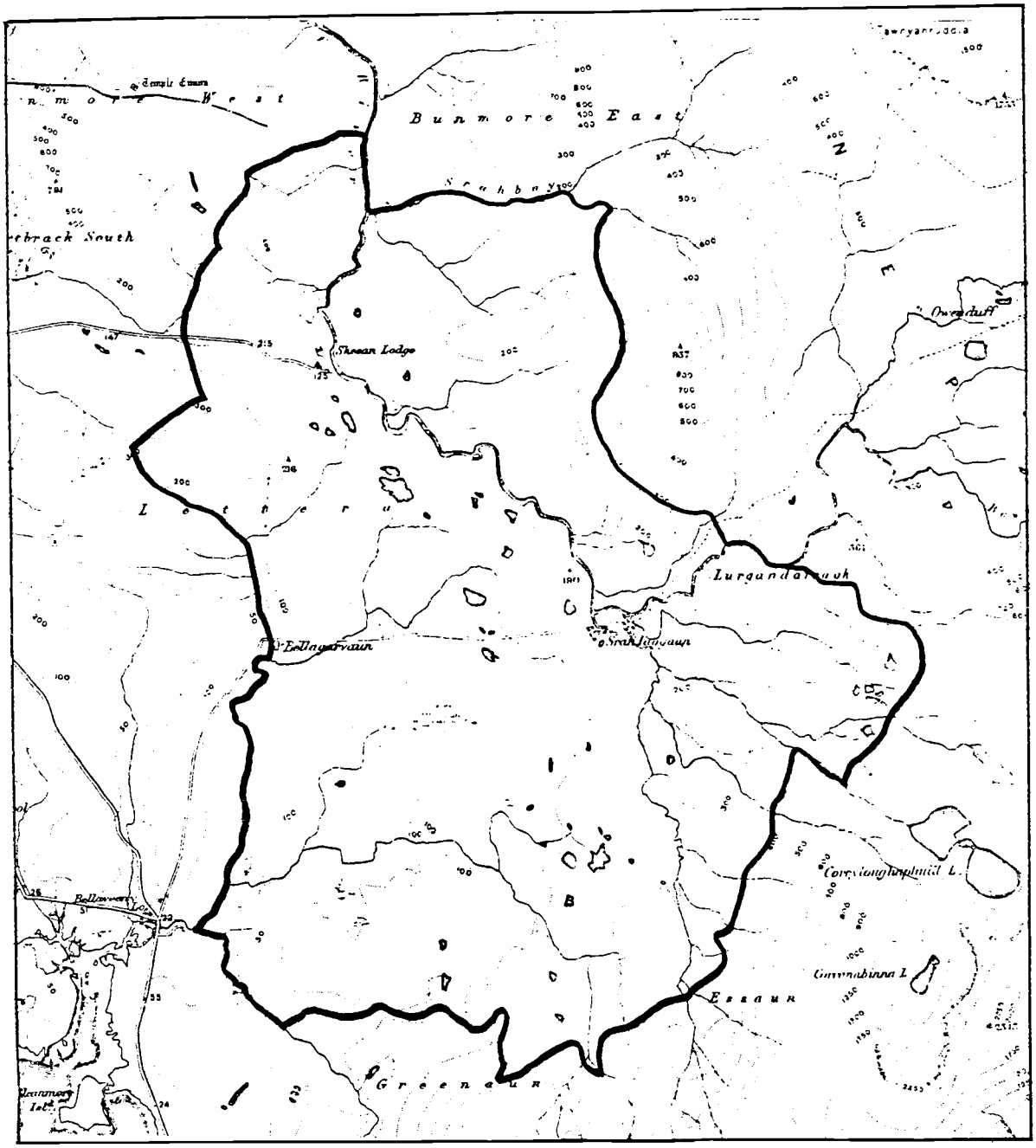
Grid Reference	F 86 07
Area	4,145 ha
Interest	Botanical, Zoological
Rating	International importance
Priority	B

Blanket bog forms as a skin over soil and rock where waterlogging, maintained by high humidity and rainfall, inhibits the breakdown of dead plant material. The typical vegetation which now covers the area and continues to form peat consists of purple moor grass (Molinia caerulea), black bog rush (Schoenus nigricans) and deer sedge (Trichophorum cespitosum) with white beak sedge (Rhynchospora alba) in the wetter places. The group of characteristic species is completed by the heathers Erica tetralix and Calluna vulgaris, bog asphodel (Narthecium ossifragum), carnation sedge (Carex panicea), bog cotton (Eriophorum angustifolium) tormentil (Potentilla erecta) spike rush (Eleocharis multicaulis), sundew (Drosera spp.) and the grass Nardus stricta. Mosses are abundant but do not form such large patches as on midland raised bogs except for the sometimes large hummocks of Leucobryum glaucum. Other common mosses are Sphagnum rubellum and Campylopus atrovirens. Large lichens (Cladonia impexa and C. uncialis) are found where the surface has remained unburnt for some time.

The topography of the bog is generally flat or slightly sloping though beside stream valleys, steeper slopes, up to 35°, may occur. Here other plant species may occur with the lateral seepage of water but elsewhere the vegetation is very homogenous.

The plant remains are poor in nutrients and highly acid so the

OWENDUFF BLANKET BOG



Scale : 1 cm = 634 m

associated animal life is fairly poor in species and in numbers. Red grouse, golden plover, meadow pipit and merlin are the characteristic birds while certain moths, dipterous flies, beetles and springtails are the commonest insects. Fungi are important decomposers and provide food for such underground animals as occur; especially enchytraeid worms, mites and springtails.

Evaluation: Practically all of West Mayo behind the coastal fringe of sea cliffs, rocks and sands and away from the steeper mountain slopes was once covered by blanket bog which here finds its best development in Europe. In many areas it has been cut for turf, formerly near habitations but latterly far into the interior to fuel the power station at Bellacorrick. The Owenduff-Owenbrin region now is the largest intact blanket bog in the country and the present area is the least disturbed. Although not as well investigated as the Glenamoy bog (p.46) it is more isolated and therefore less influenced by surrounding management (forestry, grassland etc.). From an ecological viewpoint therefore, it is more valuable.

Vulnerability: Blanket bog is generally independent of surrounding land use but can be damaged by adjacent drainage and by dust blow from liming fertilizing operations or from smoke. Direct threats include afforestation, turf cutting and sometimes grazing and trampling.

Recommendations: Although blanket bog still covers a large proportion of West Mayo, this is the premier site and should be protected from now on. It gives the landscape a distinctive quality, altered in many other places by afforestation or turf cutting. It would seem a suitable area to be covered by a Special Amenity Area Order under Section 42 of the 1963 Act and Section 11 of the 1976 Act, on the grounds of conservation and landscape value. In particular no extensive peat winning operation or other development should be santioned.

GLENAMOY VIRGIN BOG

Grid Reference	F ~~89 35~~ 915 340
Area	76 ha
Interest	Botanical, Zoological
Rating	International importance
Priority	A

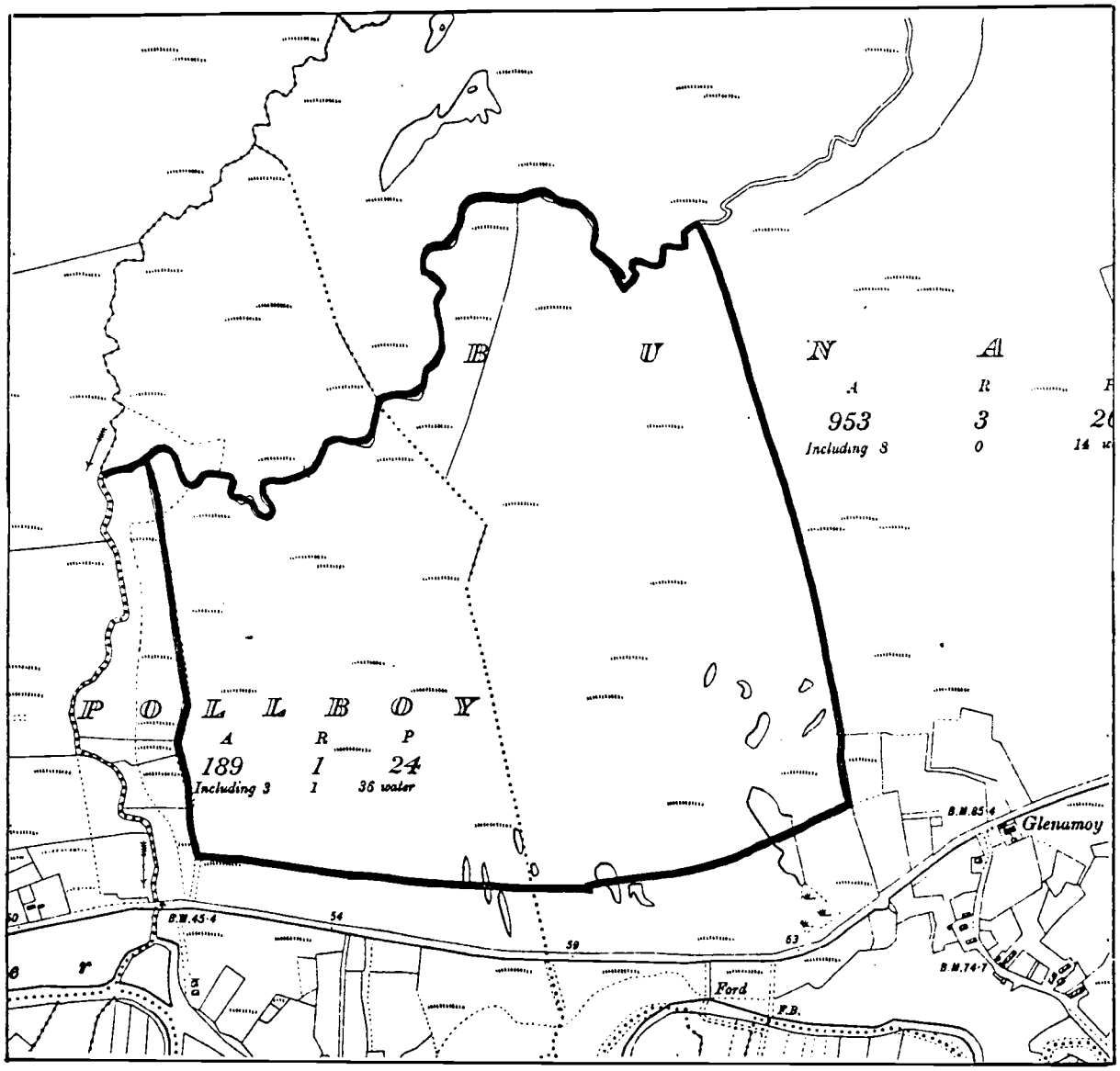
This area got its name during the International Biological Programme (1969-'72) when it was chosen as the focus of the Irish national contribution. As such it can fairly be stated that it is the most intensively studied natural community in the whole country.

In structure it resembles much of N.W. Mayo, a level surface of blanket bog concealing all traces of the Precambrian basement rocks under 4 - 10 m of peat. The surface has standing water for much of the year and is covered by tufted grass-like plants which allow intervening wetter pools to develop. In the deepest of these bog bean (Menyanthes trifoliata), bladder wort (Utricularia spp) and a moss (Sphagnum cuspidatum) are found. Algae are also important here and on the peat surface where the purplish Zygogonium is characteristic.

The fauna is divided between animals that feed on dead plant material like mites and springtails, those that eat living plants such as caterpillars and those that prey on either of these types. The largest species are by far the rarest in the community and hares, frogs, pygmy shrew, lizards and birds occur at very low densities.

Evaluation: This is a relatively small area partially surrounded by modified land to which it is ecologically comparable. Its main value is that it has been investigated in detail for the animal and plant species present and their interactions. In this respect it is unique

GLENAMOY VIRGIN BOG



Scale : 1 cm = 106 m

in Ireland and is of great comparative value to similar sites in the rest of the world.

Several species new to science were discovered here as well as many more new to Ireland.

Vulnerability: The smallness of this area means that it may be influenced by factors outside its immediate boundaries like drainage, agriculture or forestry. The windblow of fertilisers for example would be a significant threat by altering the nutritional status of the community.

Recommendations: Land use should remain in its present form within this area and for a buffer zone, 1 km deep, surrounding it. In order to ensure this the site should be protected by Conservation Order and Special Amenity Area Order. These could be prepared by An Foras Forbartha.

ILLAUNMASTER

Grid Reference	F 935 435
Area	17 ha
Interest	Ornithological
Rating	National importance
Priority	C

Part of the north Mayo cliff area (see p.177) this island rises steeply out of the sea on all but its southern side. The cliffs are sloping rather than vertical and there are several caves. The maritime vegetation which includes species such as red fescue (Festuca rubra), sea thrift (Armeria maritima), scurvy grass (Cochlearia officinalis) and bladder campion (Silene maritima), grows on a fairly deep soil, much tunnelled by puffins.

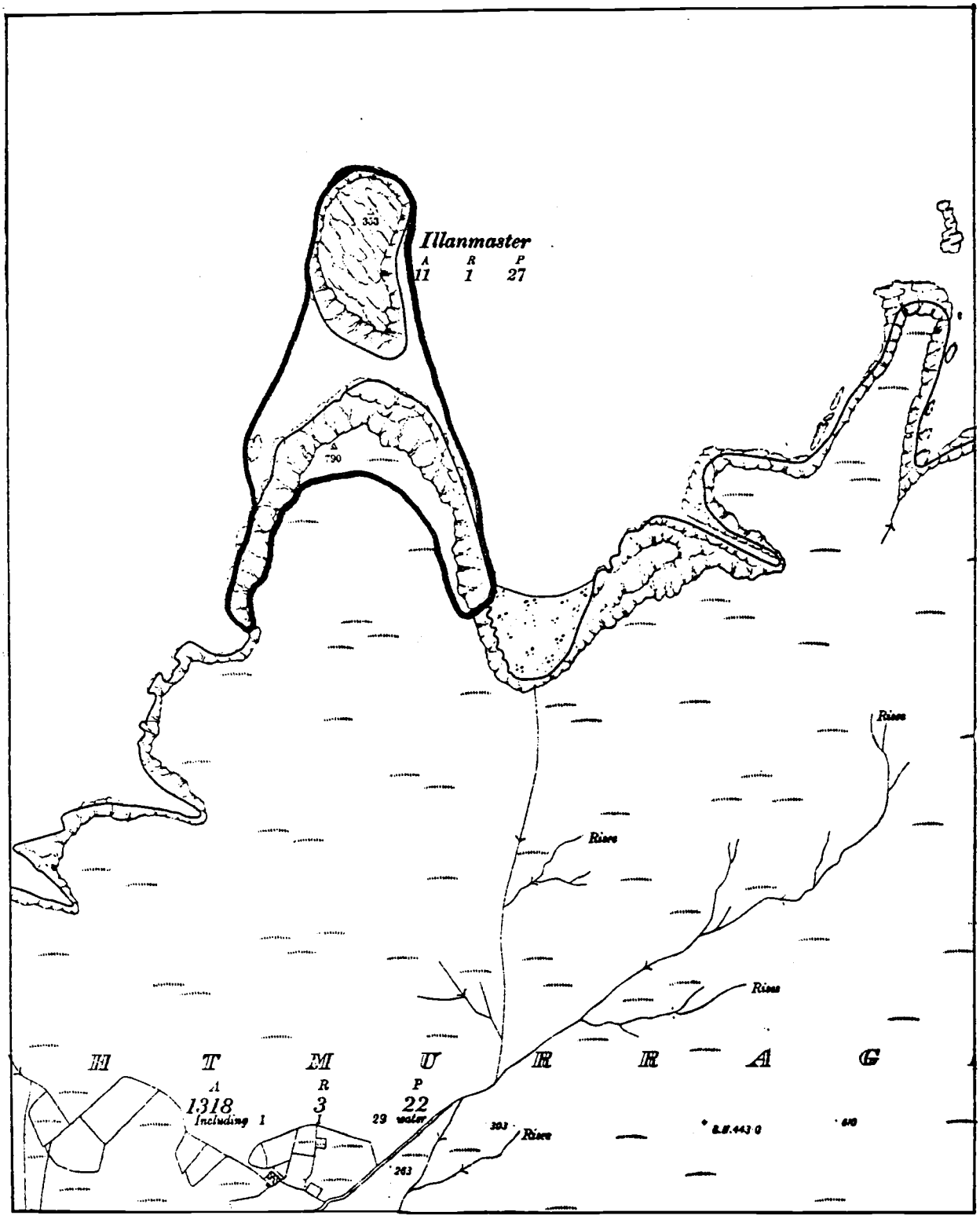
The island is included for its seabirds which in 1970 numbered :

Great black-backed gull	1 pair
Herring gull	16 pairs
Kittiwake	89 pairs
Razorbill	14 pairs
Puffin	2000 pairs

Evaluation: Illaunmaster is one of the main Irish colonies of the puffin and the largest one in Galway, Mayo or Sligo. This is a species which seems to have declined in much of N.W. Europe.

Vulnerability: Puffin colonies are susceptible to the depredation of rats and other introduced predators which generally do not occur on islands. Wild goats or sheep could overgraze the vegetation leading to instability and erosion. Human disturbance is a possible, though unlikely, threat.

ILLAUNMASTER



Scale : 1 cm = 106 m

Puffins commonly get trapped by drift nets if these are in use in their feeding areas.

Recommendations: The island is a bird reserve owned by the Irish Wildbird Conservancy and is managed so as to prevent such threats as those mentioned above. Drift netting should not be carried out in the main feeding areas at night.

MWEELREA

Grid Reference	L 79, 67
Area	713 ha
Interest	Botanical, zoological
Rating	National importance
Priority	C

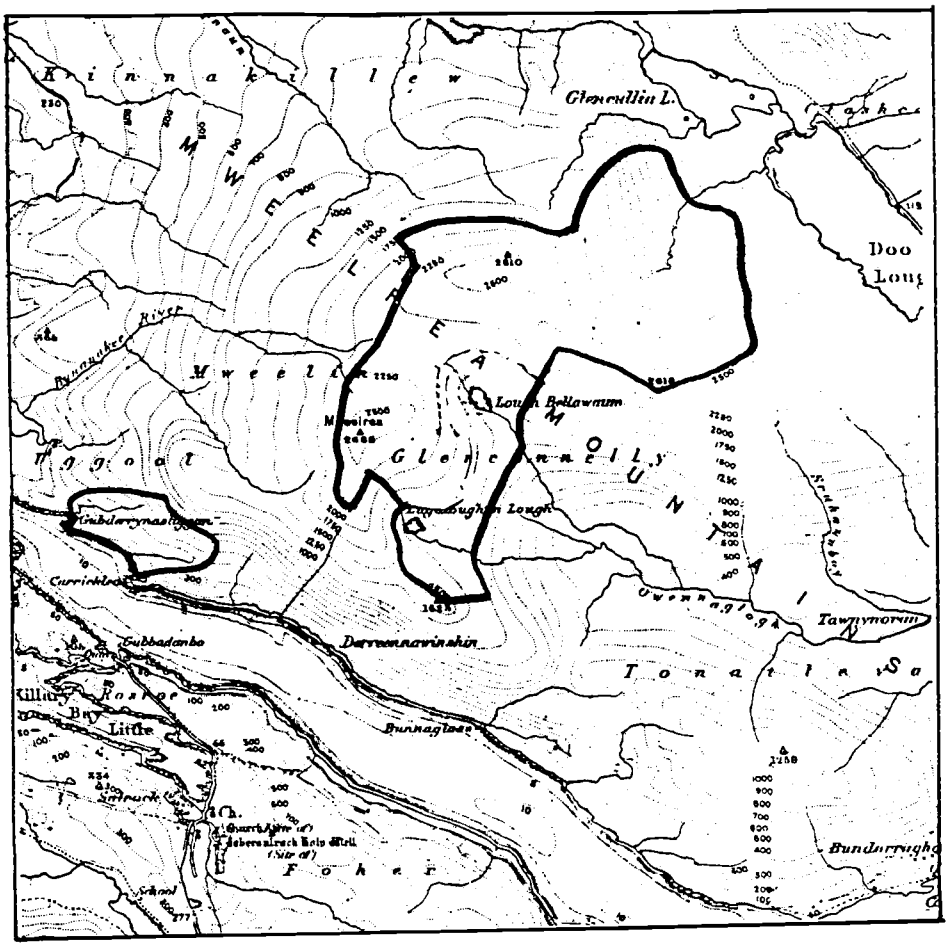
The Ordovician slate mass north of Killary Harbour slopes smoothly but steeply on its southern side but has been strongly glaciated on the north resulting in a plateau edged by cliffs and spurs. Ecological interest is centred on these north and north-east facing slopes and also in two valleys on the south side almost at sea level.

Although the habitat appears suitable for a rich mountain flora the actual number of alpine species so far recorded is quite low. Mountain sorrel (Oxyria digyna), purple saxifrage (Saxifraga oppositifolia) and alpine meadow-rue (Thalictrum alpinum) are the most interesting species in a list of about twelve. Away from the cliff ledges the vegetation is largely an acid grassland with some blanket bog.

The south side of the mountain slopes smoothly down to Killary Harbour and is punctuated by a series of straight streams. Near the base of these a large stand of mediterranean heath (Erica erigena) forms a notable feature. The plants are well grown and regenerating freely and form a totally natural community without any introduced species.

Evaluation: Mweelrea supports mountain communities of local importance but the stand of Erica erigena is the largest in Ireland and therefore of greater value. It forms the best site for the study of the animal community associated with the species since it is largely isolated from

MWEELREA



Scale : 1 cm = 634 m

gardens and introduced plants.

Vulnerability: Overgrazing could affect the Erica stand. The cliff flora appears secure from this or other influences except plant collectors.

Recommendations: Grazing pressure should not be increased on the Erica by enclosure or overstocking.

LOUGH MASK SHORELINE (see also p. 76)

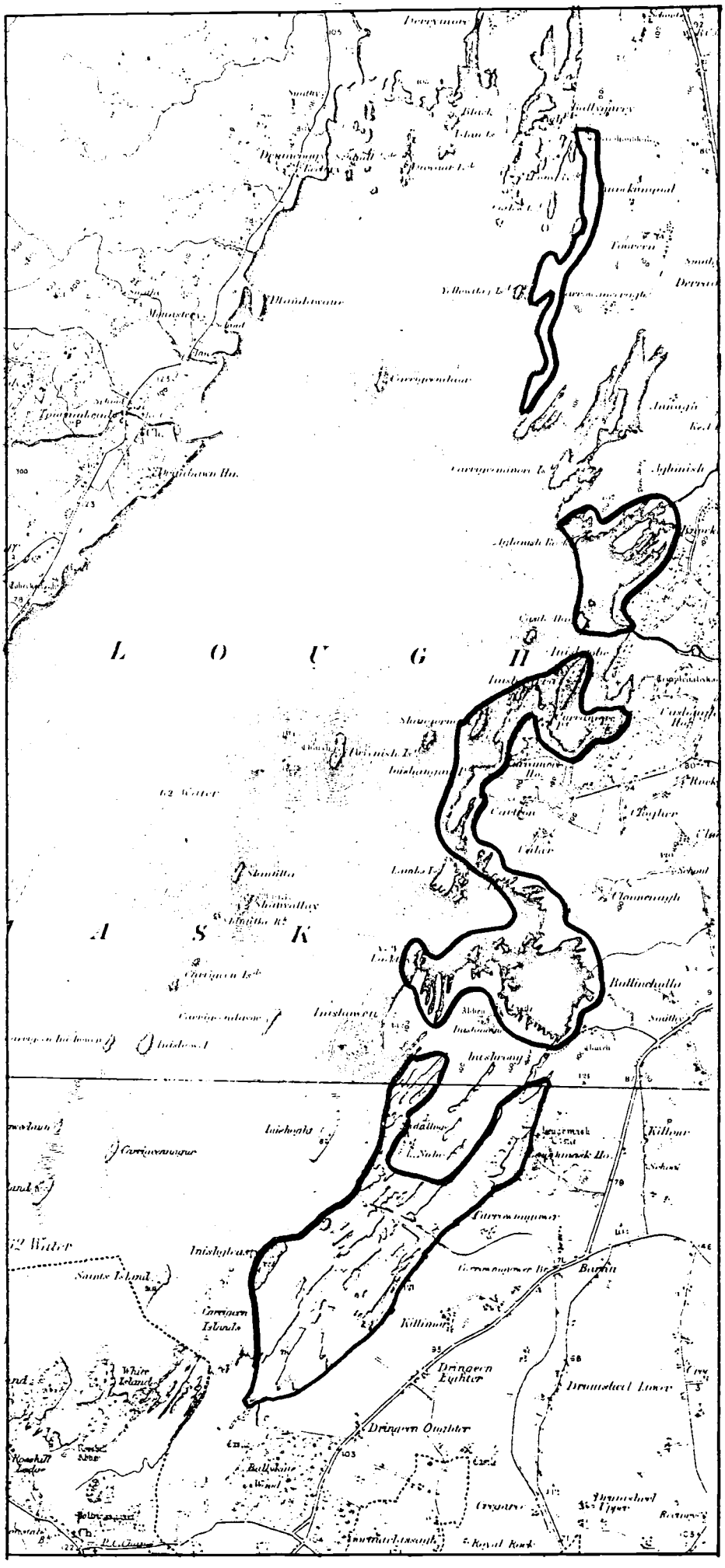
Grid Reference	M 16
Area	912 ha
Interest	Botanical, geological, zoological
Rating	National importance
Priority	B

The eastern shore of Lough Mask is made up of numerous bays and islands dissolved out of the limestone by the slightly acid lake water. Solution features are particularly well developed. As well as this, the rocks exposed in the townlands of Carrowaneeragh, Lackafinna and Knocknagool are of stratigraphic interest for they are some of the only exposures of the basal Visean in Mayo. This is the type of carboniferous limestone whose upper levels cover all of midland Ireland. The rocks show the declining influence of a former shoreline for sandy rocks give way to pebbly dolomites and dolomitic limestones as one goes eastward. The outcrop at Carrowaneeragh is the type section for this limestone and forms limestone pavement, partly subject to winter flooding.

Both the pavement and the lakeshore are ecologically interesting. The pavement has a rich limestone flora similar to Lough Carra. The more noticeable plants include wild thyme (Thymus drucei), bloody cranesbill (Geranium sanguineum) yellow wort (Blackstonia perfoliata), carline thistle (Carlina vulgaris), biting stonecrop (Sedum acre) and eyebright (Euphrasia salisburgensis). Blue fleabane (Erigeron acer) and dense-flowered orchid (Neotinea intacta) are somewhat rarer while wild chives (Allium schoenoprasum) occurs in one limited area.

The lakeside scrub is generally of hawthorn (Crataegus monogyna) and hazel (Corylus avellana) but ash (Fraxinus excelsior) is scattered through

LOUGH MASK SHORELINE



Scale : 1 cm = 634 m

it with spindle tree (Euonymus europaeus) and guelder rose (Viburnum opulus). Buckthorns (Rhamnus cathartica, Frangula alnus) are less frequent. The ground is covered by brambles (Rubus fruticosus, R. caesius) and mosses, with some madder (Rubia peregrina).

The scrub changes to woodland towards Clonbur. Although much of Ballykine Wood has now been planted with coniferous species sufficient semi-natural oaks and ash exist in the coastal part to form a stand of considerable interest. The associated herb species show that the community has existed on this site for a very long time.

On the narrow beaches below this scrub hemp agrimony (Eupatorium cannabinum), purple loosestrife (Lythrum salicaria), water mint (Mentha aquatica) and northern bedstraw (Galium boreale) are conspicuous. The flatter shores that occur in bays have, by contrast, a rich marsh flora. Because of the convolution of the shoreline marshes occur at some distance from the lake and are only flooded in winter. Sometimes the substrate is clayey in which case bur-reed (Sparganium ramosum), marestail (Hippuris vulgaris) and water plantain (Alisma plantago-aquatica) occur; elsewhere, with a stony or marly base, black bog rush (Schoenus nigricans is more common. These marshes are used to a considerable extent by wildfowl (mallard, teal, shoveler) for feeding (see p.76).

Evaluation: The eastern shore of Lough Mask is a complex and fascinating area bearing a great variety of limestone communities. Much of it is inaccessible and so has retained extensive natural stands subject to light or moderate grazing pressure. The area is of national importance for its vegetation and of regional value for its geological sites.

Vulnerability: The main threat to the area would be the uncontrolled spread of holiday chalets or bungalows which would break up areas of natural vegetation and might obliterate valuable communites. Changes in

agricultural practice especially the fertilization of limestone pastures could have an adverse effect.

Recommendations: New developments in this area should be subject to strict control and attention in each case should be given to the scientific value of their immediate surroundings. Relatively dense chalet or caravan development would seem more suitable than scattered one-off projects.

INISHGLORA (7)

Grid Reference	F 61 31
Area	41 ha
Interest	Ornithological
Rating	National importance
Priority	C

Inishglora is a low island lying off Cross Point on the west side of the Mullet. It has some grassland on the eastern side and extensive boulder beaches. In these a very large colony of storm petrels is found and latest estimates put the number at over 10,000 pairs. Gulls are the other nesting species, including ~~lesser~~ black-backed (15), and common (30),

Small flocks of barnacle geese (up to 50 birds) visit the island occasionally during winter but feeding conditions are not really suitable for them.

Evaluation: The petrel colony is by far the largest in the north west and is probably the fourth largest in Ireland. The stronghold of the species is in Kerry but it occurs all along the west coast.

Vulnerability and Recommendations: Few threats exist to this nocturnal, hole-nesting species apart from oil pollution at sea.

INISHGLORA

Scale : 1 cm = 106 m

DOOAGHTRY (8)

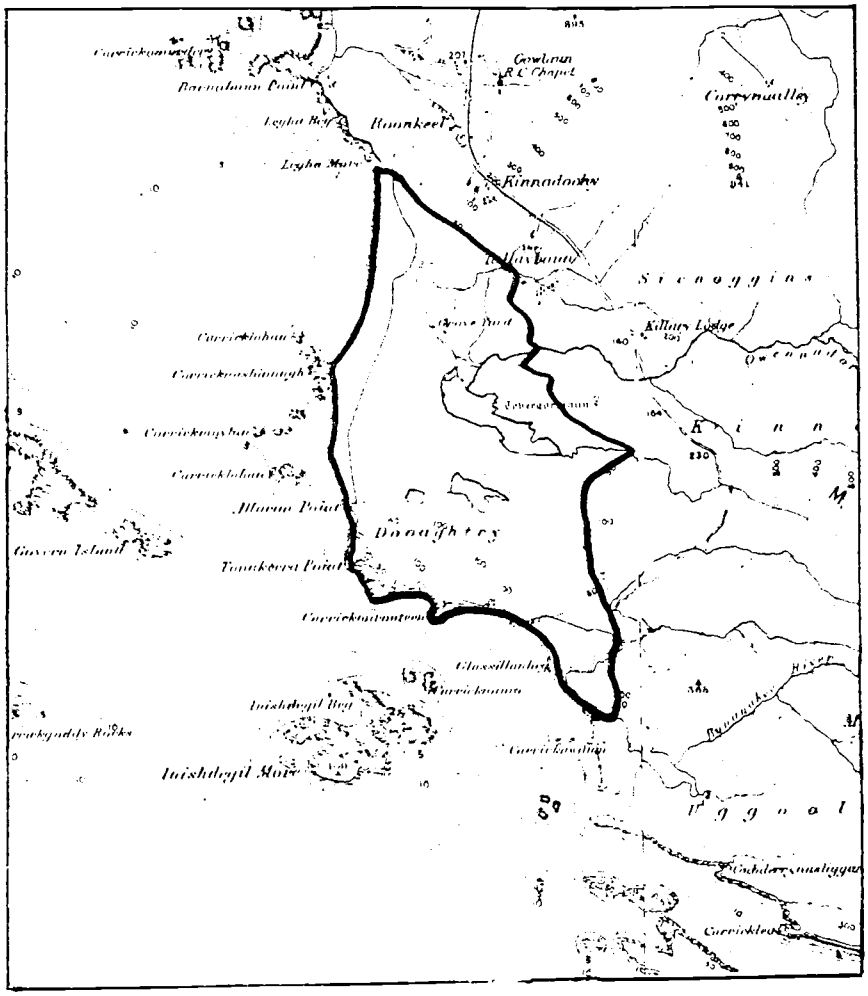
Grid Reference	L 73 69
Area	518 ha
Interest	Botanical, ornithological, zoological
Rating	National importance
Priority	A

The Corragaun-Dooaghtry area is a complex of aquatic and terrestrial communities set on an undulating basement of Ordovician slates and sandstones continuous with those in Mweelrea. Windblown sand is the dominant influence, surrounding some of the rocky knobs, forming dunes on the coast and flats in the three lakes. Seaspray affects the S.W. corner and assists in the formation of transitory stream channels otherwise fed by rainfall.

The sand dunes are strongly calcareous but in common with most of those in the west of Ireland have a limited flora. However, the prevalence of creeping willow (Salix repens) in Lackakeely is most unusual. Here it forms great mounds of vegetation in a sea of moving sand, preserving the original top surface of a dune grassland that was once stable.

Behind the dunes calcareous grassland occurs with a dominance of red fescue (Festuca rubra), meadow grass (Poa pratensis) and various herbs, including devil's bit (Succisa pratensis), centaury (Centaurium erythraea), autumn gentian (Gentianella amarella) and hawkbit (Leontodon taraxacoides). Where rocks break through the surface mountain everlasting (Antennaria dioica), thyme (Thymus drucei), carline thistle (Carlina vulgaris) and harebell (Campanula rotundifolia), are characteristic. South of the central lake steeper rocks conceal

DOOAGHTRY



Scale : 1 cm = 634 m

a windswept woodland with oak (Quercus petraea), birch (Betula pubescens) and hazel (Corylus avellana). The less frequent species here include aspen (Populus tremula), meadow rue (Thalictrum minus), royal fern (Osmunda regalis) and agrimony (Agrimonia odorata). The heathers Erica erigena and Daboecia polifolia also occur. Where the ground descends towards the waterlevel of the three lakes some of the most interesting vegetation is found. Knotted pearlwort (Sagina nodosa), sedges (Carex flacca, C. panicea, C. dioica), spike rush (Eleocharis quinqueflora), bog pimpernel (Anagallis tenella) and purging flax (Linum catharticum) are characteristic with the following list.

Self heal	Prunella vulgaris
Brookweed	Samolus valerandi
Grass of Parnassus	Parnassia palustris
Sea plantain	Plantago maritima
Clubmoss	Selaginella selaginoides
Butterwort	Pinguicula vulgaris
Marsh helleborine	Epipactis palustris
Fragrant orchid	Gymnadenia conopsea

This ground is flooded by fresh or slightly brackish water in winter where it is below high tide level, as at the months of streams, saltmarsh vegetation occurs with flat sedge (Blysmus rufus), water dropwort (Oenanthe lachenalii) and a spike rush (Eleocharis uniglumis).

The deeper lakes have a different vegetation again including reed (Phragmites australis), club rush (Scirpus tabernaemontani), marestail (Hippuris vulgaris) spearwort (Ranunculus lingua) and tassel weed (Ruppia maritima).

The invertebrate animals associated with this complex of habitats are most interesting and it is one of the richest sites for molluscs on the whole west coast. The bird fauna is also notable. Breeding species include dunlin, snipe and lapwing with mallard and mute swan. At other times of the year a wide variety of species occur depending on weather conditions. A list of regularly occurring wildfowl and waders, to include annual peak numbers, follows :

White-fronted goose	5	Wigeon	80
Barnacle goose	30	Pochard	30
Mute swan	35	Tufted	50
Whooper swan	20	Golden plover	200
Bewick's swan	3	Lapwing	200
Mallard	35	Chough	20
Teal	80		

The geese are transitory visitors depending on the level of disturbance and there are also other species which pass through the area on migration. The more noteworthy are whimbrel, ruff, spotted redshank and black-tailed godwit.

Evaluation: The area contains a fascinating mixture of habitats and communities subject to an unusual set of environmental conditions. The lakes form an important wetland for bird life while the low population density favours the breeding of certain species. The ecological value of the vegetation is very high. It resembles that on the sandy headlands near Slyne Head in Connemara in some respects but yet is significantly different from it.

Vulnerability: There is considerable shooting disturbance to the wildfowl in winter and numbers, particularly of geese, would be higher without it. Otherwise the main threats to the area are a change

in agricultural use or building development. The plant and animal communities depend on a particular form of farming and isolation from other types of activity.

Recommendations: This area might well be designated as of special amenity for nature conservation under Section 42 of the 1963 Planning Act and Section 40 of the 1976 one. Land use should continue in its present form and developments in adjacent land be assessed with the value of Dooaghtry in mind and their possible impacts on it.

CLOUGHMOYNE (9)

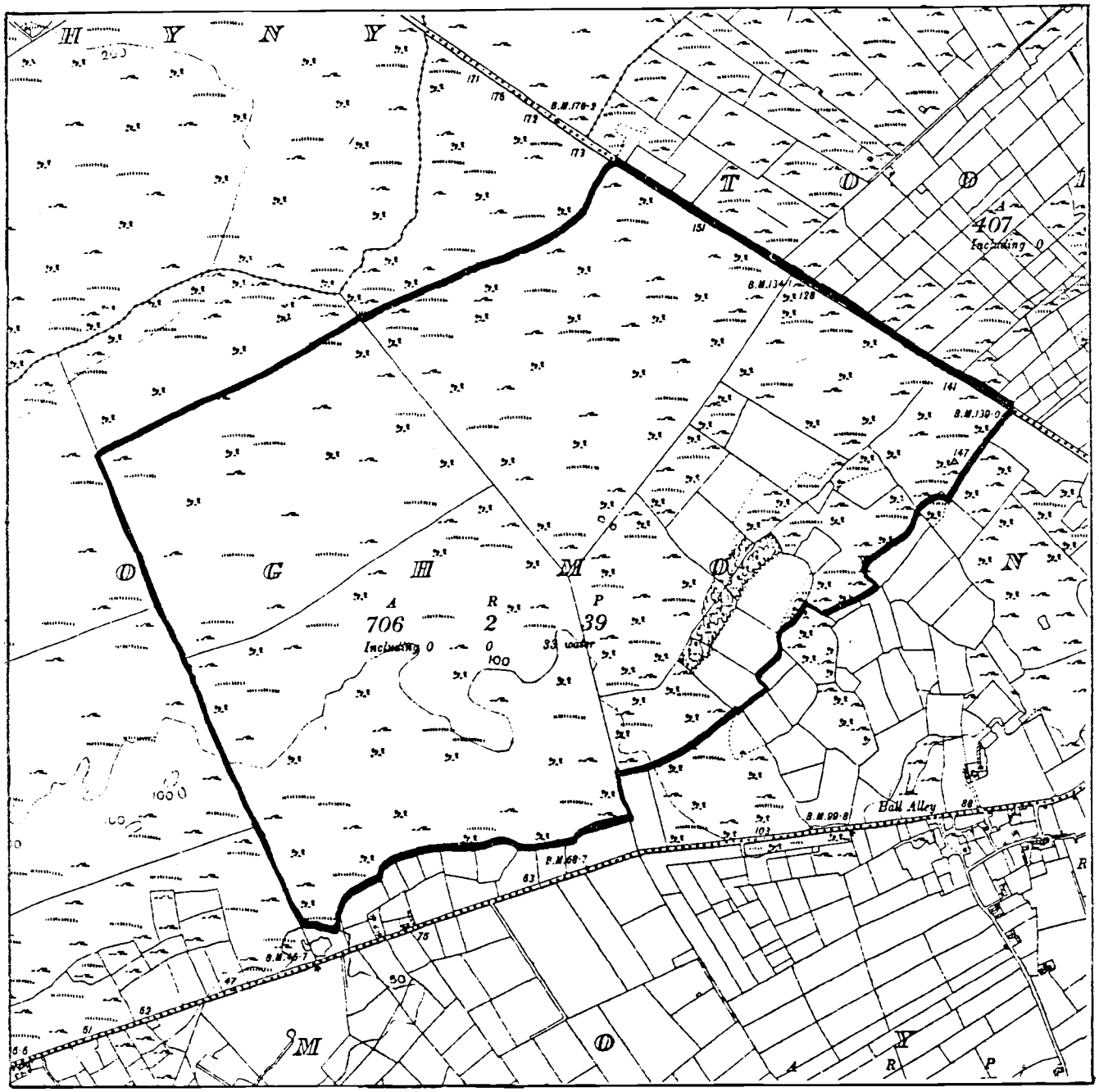
Grid Reference	M 2250
Area	108 ha
Interest	Botanical
Rating	National importance
Priority	B

This area consists of a low limestone ridge where the rock is thinly covered by soil. The vegetation is typical of such a site on the western limestones, a heathy community of heathers (Calluna vulgaris, Erica cinerea), blue moor grass (Sesleria caerulea) and a sedge (Carex flacca) in which the bloody cranesbill (Geranium sanguineum) is abundant. The associated common species include St. John's wort (Hypericum pulchrum) and mouse-ear hawkweed (Pilosella officinarum) with some eyebright (Euphrasia salisburgensis), madder (Rubia peregrina), columbine (Aquilegia vulgaris) and a little juniper (Juniperus communis), dense flowered orchid (Neotinea intacta) and spring gentian (Gentiana verna). Wood bitter-vetch (Vicia orobus) is relatively frequent and, where the rock breaks through the soil, the limestone polypody (Dryopteris robertianum) sometimes occurs, especially near the ridge of the hill.

Evaluation: This is the only recorded station for this fern in Ireland and as such is given national importance. The rest of the community is also of some interest particularly the occurrence of Vicia orobus in it.

Vulnerability and Recommendations: The species of interest could be damaged by excessive grazing pressure or forest or other tree growth. Land use should therefore remain in its present form and any proposed development be assessed for its impact on the area.

CLOUGHMOYNE



Scale : 1 cm = 106 m

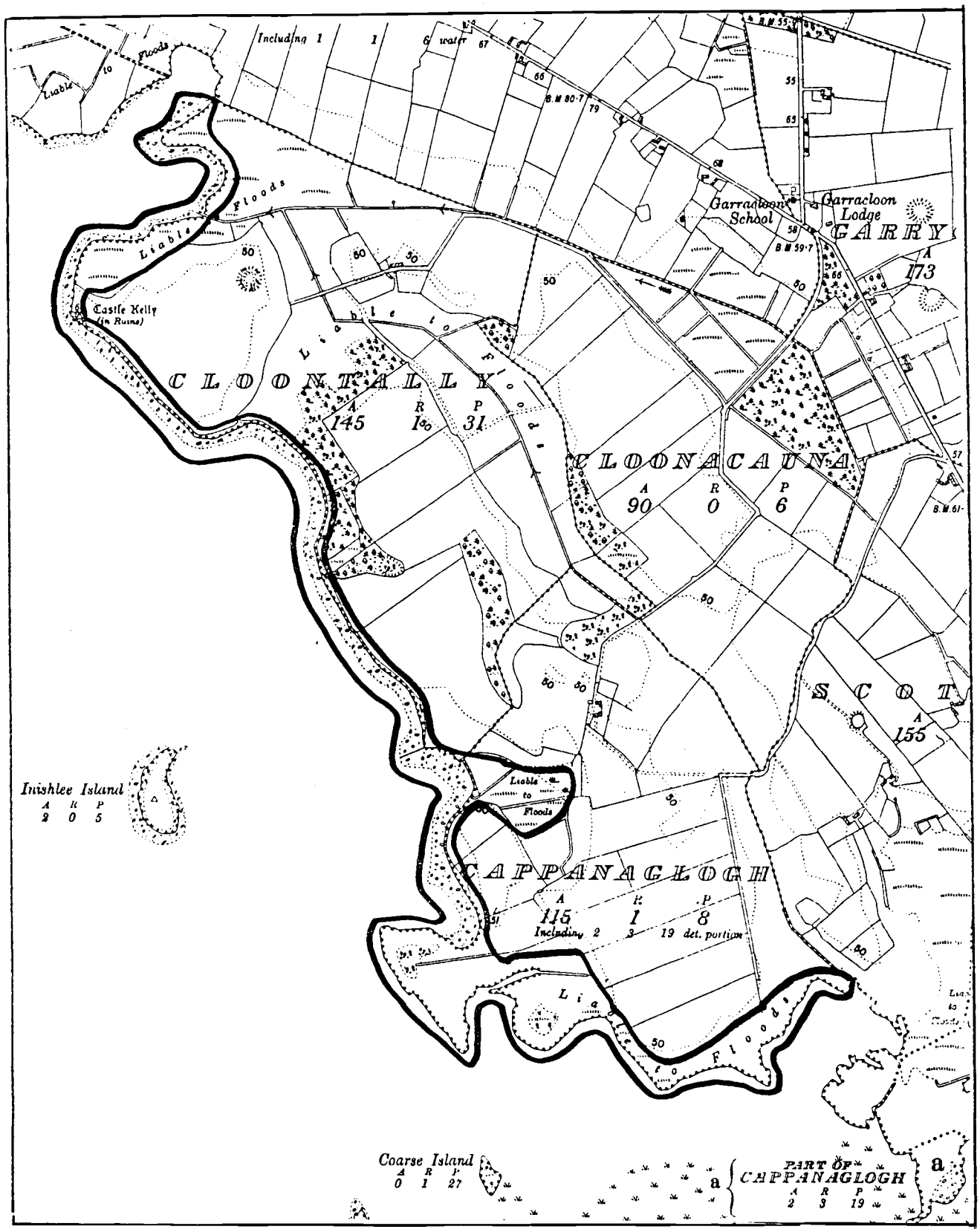
GARRYCLOONAGH (L. CONN) (see also p. 71)

Grid Reference	G 1816
Area	27 ha
Interest	Botanical, Zoological
Rating	National importance
Priority	B

This part of the Lough Conn shore consists of a rough slope of limestone rocks and stones marking the line of the former shore. It lies above a flatter section where sand is mixed in with the larger material. In some places hazel (Corylus avellana) and hawthorn (Crataegus monogyna) scrub approaches the lake but usually it is open and fairly heavily grazed. Between the rocks a rich variety of herbs grow. Thyme (Thymus drucei), burnet (Sanguisorba officinalis), meadow rue (Thalictrum minus) and northern bedstraw (Galium boreale) are especially noticeable but blue moor grass (Sesleria caerulea), sheeps' fescue (Festuca ovina), sea plantain (Plantago maritima), stone bramble (Rubus saxatilis), black bog rush (Schoenus nigricans) and harebell (Campanula rotundifolia) are all abundant. Other interesting species are gromwell (Lithospermum officinale), zig-zag clover (Trifolium medium) and mediterranean heath (Erica erigena), in places growing on the limestone.

The lower shore gets progressively wetter as one descends. Coltsfoot (Tussilago farfara), purple moor grass (Molinia caerulea), hemp agrimony (Eupatorium cannabinum) and clubmoss (Selaginella selaginoides) are characteristic, sometimes with sneezewort (Achillea ptarmica) and yellow loosestrife (Lysimachia nemorum). In seepage channels water mint (Mentha aquatica), forget-me-not (Myosotis scorpioides) and purple loosestrife (Lythrum salicaria) are found with rushes (Juncus articulatus).

GARRYCLOONAGH (L. CONN)



Scale : 1 cm = 106 m

The rarity of some of the plant communities indicates that the associated invertebrate life is of some interest. A considerable population of aquatic invertebrates also lives beneath stones and in the shallow water.

Evaluation: The occurence of Sanguisorba in such a lakeside calcicole community is unique in Ireland and the site is thus of considerable ecological and botanical value. It is ideal for scientific studies and is also suitable for educational use. The community is developed to some extent around two-thirds of the lakeshore but this is the most extreme example of it.

Vulnerability: Lakeside developments whether of chalets, bungalows or car parks are a major threat to such a rocky shore.

Recommendations: This area should be avoided in any exploitation of the lake shore. Adjacent development should be examined for possible impacts on it. It is important that a fairly large section of the shore remain intact without scattered one-off development in it.

LOUGH CONN & CULLIN (See also pp 68, 105, 164)

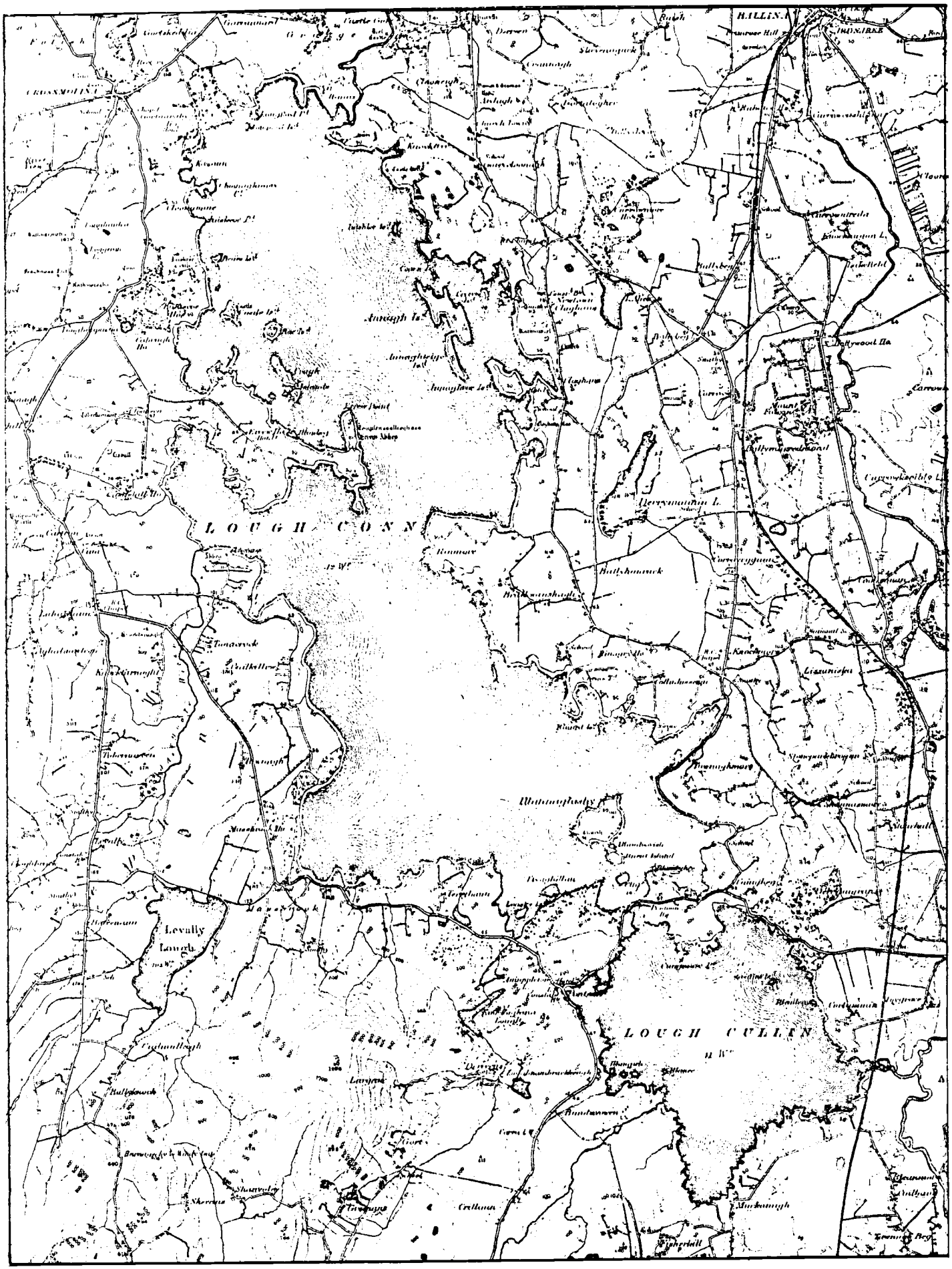
Grid Reference	G 20 10
Area	5,000 ha
Interest	Zoological, Ornithological
Rating	National importance
Priority	B

Several parts of the shores of these lakes have been listed separately for their botanical and ecological interest but the lakes themselves have a certain intrinsic value. They form a single alkaline waterbody (pH 8.3) mainly on limestone with granite at the southern end. Both types produce a rocky shore, exaggerated by the lowering of water level in 1968 in exposed places with numerous boulders lying offshore. In sheltered places, however, sandy beaches are characteristic of the granite and stony muds of the limestone. The phytoplankton of the lake is dominated by diatoms and blue-green algae (Oscillatoria) and there is evidence that the latter group are more common now than in former years. This indicates that nutrient inflow is occuring, probably from domestic and farm sewage. The lake could be called mesotrophic at present.

The attached aquatic flora is rather sparse, the stony substrate and the depth (up to 28 m) militating against it. Several pondweeds occur in the shallower portions, e.g. Potamogeton praelongus, P. filiformis, P. perfoliatus. Beside peaty places a bladderwort (Utricularia intermedia) and least bur-reed (Sparganium minimum) are characteristic while water lobelia (Lobelia dortmanna) often grows in sand. Thin reedbeds and patches of water lilies (Nuphar lutea) occur in some of the bays.

These conditions favour a large population of brown trout and also some Cole's char (Salvelinus alpinus) which is an interesting species of fish restricted to very few lakes in Ireland.

LOUGH CONN & CULLIN



Scale : 1 cm = 634 m

Wildfowl populations are small in relation to the water area available but moderate numbers of teal, mallard (up to 100), wigeon, tufted duck (up to 50), goldeneye and merganser (up to 25) occur. White fronted geese and whooper swan are also regular.

Four species of duck breed on the lake, the most important being the common scoter.

Evaluation: The lake represents one of two sites in Ireland where the common scoter breeds and it is here at its southern European limit. The area is also regionally important for its population of char as there may be other relict species from postglacial times in it.

Vulnerability: The increase in trophic (nutritional) status is likely to upset the fish community eventually, leading to the spread of coarse fish. Such a change would not adversely affect the bird life as most species have a varied diet and can alter their habits with the food supply.

Clearance of scrub beside the shore or on islands is a significant threat to the breeding wildfowl.

Recommendations: Further nutrient inflow into the lake should be curtailed as far as possible. Applications for shoreline developments should be checked for their impact on the birdlife of the lake as well as on the amenity values.

ANNAGH HEAD - SCOTCHPORT (10)

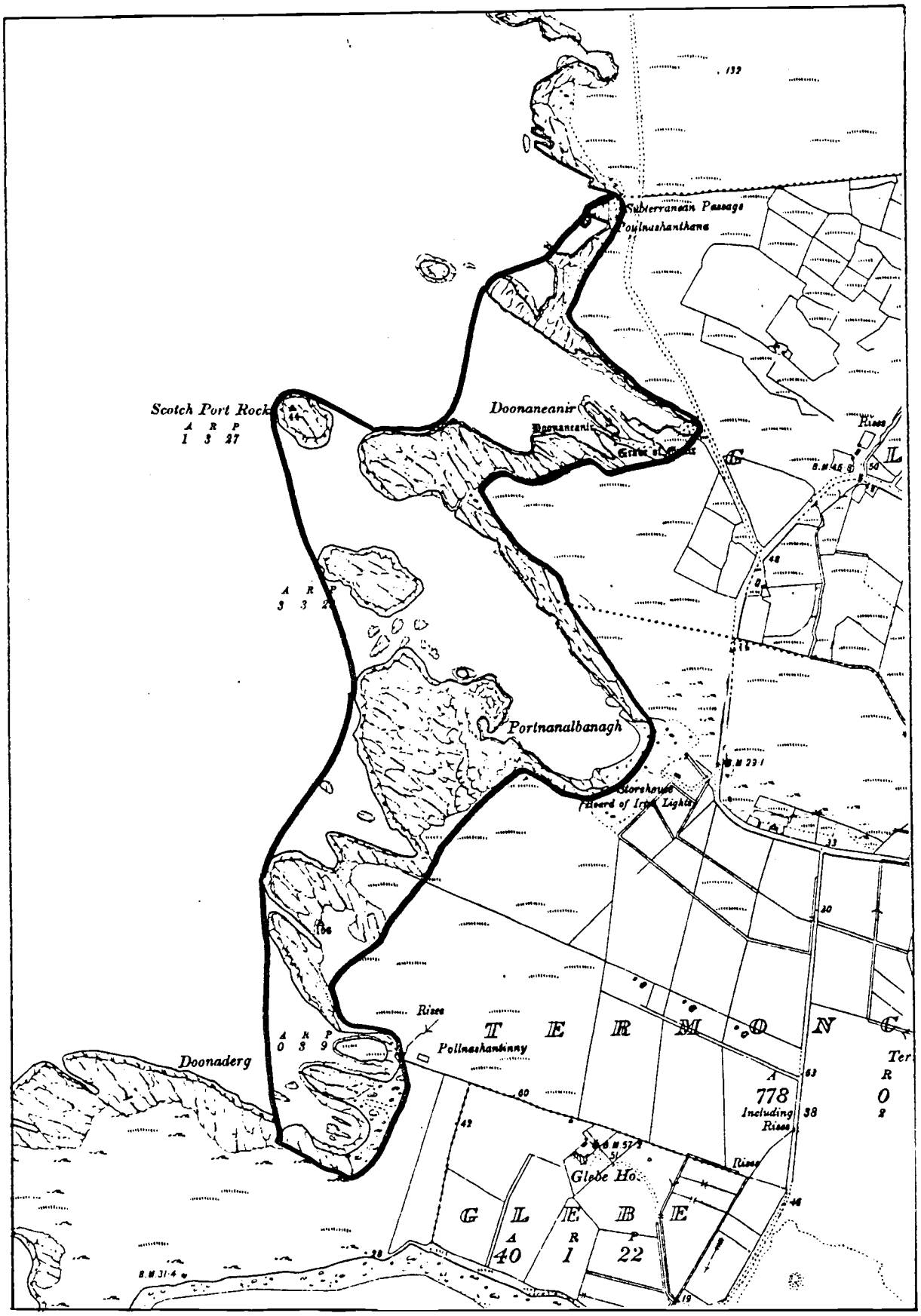
Grid reference	F 63 35
Area	55 ha
Interest	Geological
Rating	National importance
Priority	C

A good section occurs in these Precambrian coastal cliffs and headlands of rocks reconstituted from their minerals at two different periods, before and during the Caledonian phase of mountain building. This occurred under moderate heat and pressure so the rocks have not been metramorphosed to any great extent.

Evaluation: Reconstitution is relatively rare in such ancient rocks and when geological information is complete for Ireland, it may be found that this site is of international importance.

Vulnerability and Recommendations: This would seem to be a secure site not suitable for development of any kind. Coastal erosion will continue to expose new rock faces from time to time.

ANNAGH HEAD - SCOTCHPORT



Scale : 1 cm = 106 m

LOUGH MASK (4) : See also p. 55.

Grid Reference	M 16
Area	8,000 ha
Interest	Zoological, Ornithological
Rating	Regional importance
Priority	C

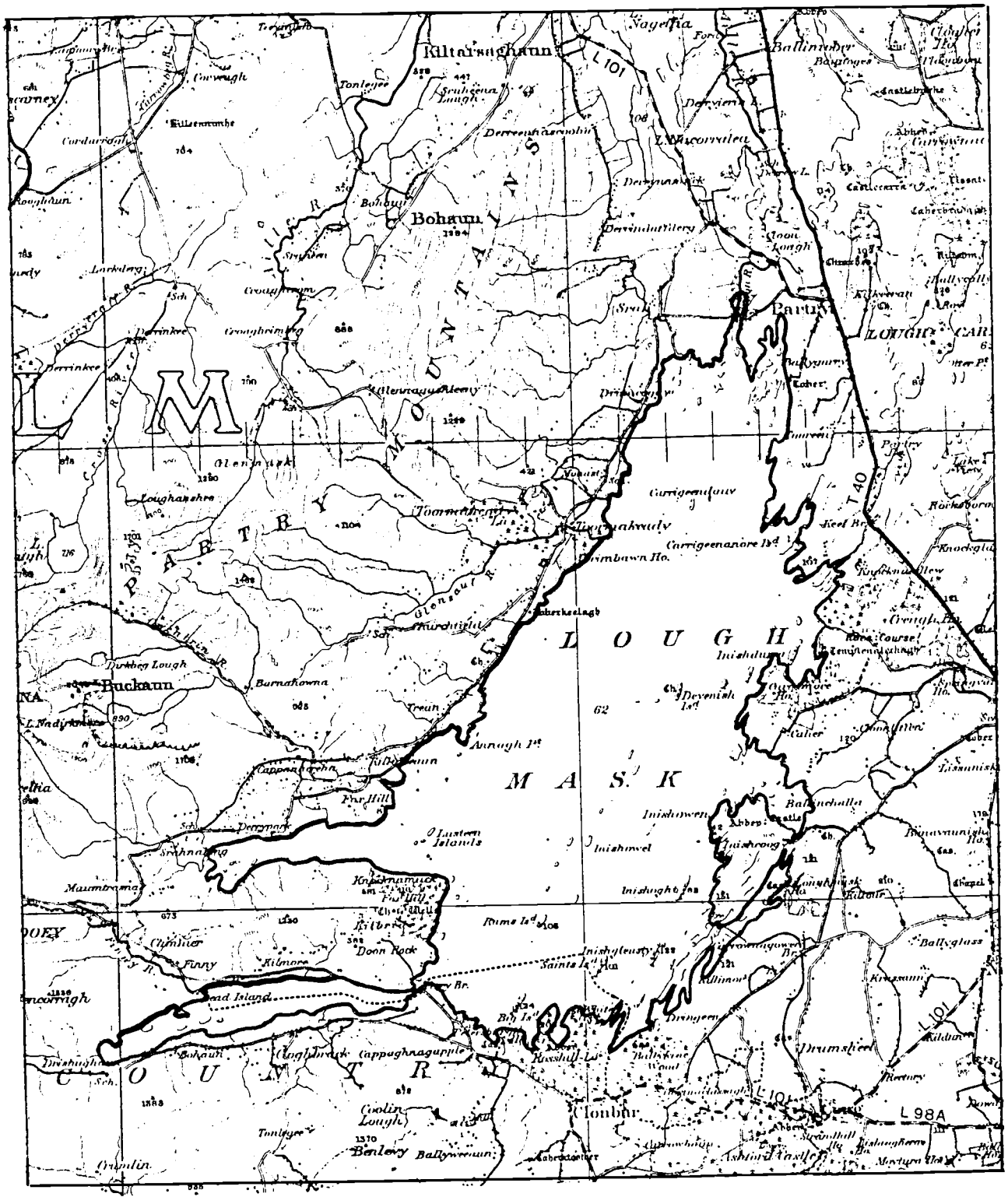
Lough Mask lies on the junction of hard slates and softer limestone and this assymmetry is reflected in its bed. A trough occurs along the western shore with a maximum depth of 58 m and this takes the lake floor to 40 m below sea level, the lowest known lakebed in the country. Because of this depth, the water is stratified with fairly stagnant cold water in the deepest places and an upper circulating layer above it.

The cold zone, which remains at 6°C even in July and August when the surface is at 15°C, may be of significance to northern organisms, relicts of the Glacial Period. These are a shrimp (Niphargus) and Cole's char (Salvelinus alpinus). The rest of the community is varied with diatoms being the most frequent phytoplankton and crustacea and rotifers, the most important zooplankton.

The water is moderately alkaline (pH 8.1) and although relatively rich in nutrients, is not very productive. Trout are the dominant fish and they support an important fishery, managed by the Inland Fisheries Trust. Pike also occur but bottom feeding coarse fish are rare or absent.

Bird life is associated with the shallower water around islands and the average wildfowl populations in winter would seem to be : -

LOUGH MASK



Scale : 1 cm = 1267 m

Mallard	77	(188, peak in the years 1972-'75)
Teal	29	(150)
Wigeon	76	(350)
Shoveler	1	(12)
Tufted duck	191	(358)
Pochard	7	(43)
Goldeneye	5	(19)

Evaluation: The lake is of local importance for its bird life which is spread over a considerable part of the eastern and northern shore.

It is much more valuable for its limnological characteristics with the occurrence of two unusual aquatic animals.

Vulnerability: Water pollution is the only significant threat to this lake which is notably unpolluted at present. Overshooting may occur locally but the large size of the lake allows the wildfowl to take refuge elsewhere.

Recommendations: Sewage effluent from farms (animal slurry, silage effluent) should not be released into the lake which could accumulate such wastes in its deeper parts and be unable to get rid of them. Any housing development should have adequate sewage treatment facilities.

TERMONCARRAGH LAKE

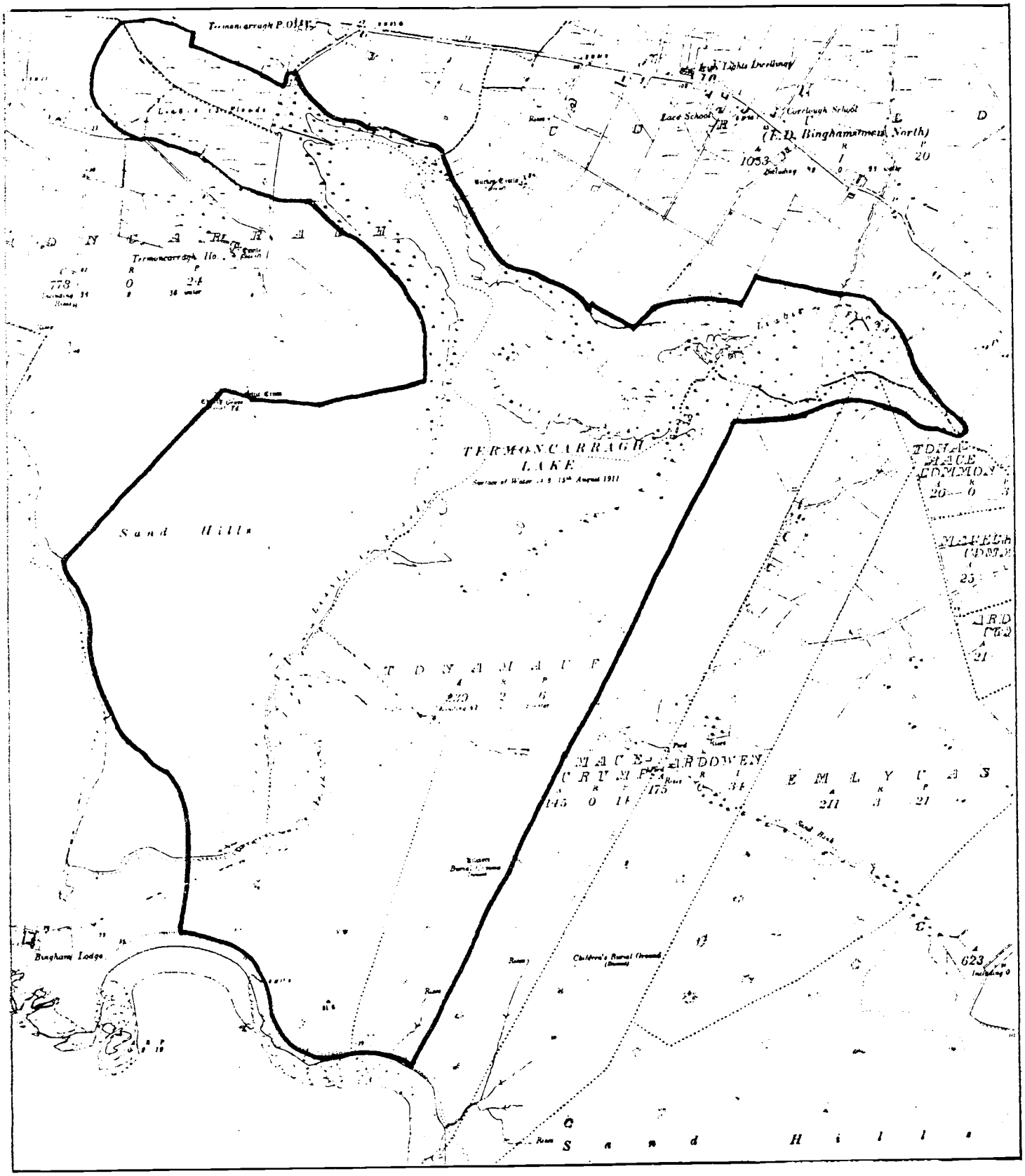
Grid Reference	F 66 34
Area	159 ha
Interest	Botanical, Ornithological, Zoological
Rating	National importance
Priority	A

The western side of the Mullet is built up predominantly of windblown sand. Where dunes have accumulated across a narrow bay or on some offshore reef a lagoonal lake such as Termoncarragh or Cross Lough, has originated. In the present site large dunes occur on the southern side and they bear a characteristically diverse flora. The dunes are lower on the west with more grassland (machair type).

The sand has a high shell content so the soil derived from it is calcareous and rich in nutrients. This allows a wide range of species to exist in both terrestrial and aquatic sites. The lake still receives some of this sand by windblow; it is also slightly brackish.

The area of water is fringed and partly overgrown by extensive stands of clubrushes (Scirpus maritimus and S. tabernaemontani) and, in the shallower parts by bogbean (Menyanthes trifoliata). Behind this, fen vegetation is found with such plants as jointed rush (Juncus articulatus), sedges (Carex nigra), spike rush (Eleocharis palustre), yellow flag (Iris pseudacorus) and marsh bedstraw (Galium palustre). Patches of watercress (Nasturtium officinale, Apium nodiflorum), lesser water parsnip (Berula erecta) and parsely water dropwort (Oenanthe lachenalii) occur through this with willow herbs (Epilobium palustre and E. parviflorum), water speedwell (Veronica anagallis-aquatica) and red rattle (Pedicularis palustre). Such vegetation grades onto mineral soil which carries

TERMONCARRAGH LAKE



Scale : 1 cm = 161 m

seasonally flooded grassland composed of rough-stalked meadow grass (Poa trivialis).

Wide stretches of this community occur and they fulfil the nesting requirements of several wading birds e.g. redshank, lapwing, snipe, and dunlin.

Two species of duck nest on the lake but it is probably more important as a wintering area for wildfowl. The following figures are annual maxima in the years 1960-'70.

Mallard	100	Whooper swan	180
Teal	50	White-fronted goose	54
Gadwall	8	Barnacle goose	30
Wigeon	30	Lapwing	150
Tufted duck	200	Golden plover	3000
Pochard	20	Curlew	300
Mute swan	74	Snipe	20

Evaluation: This would seem to be the richest and most productive lake on the Mullet and has an interesting flora and fauna. For the area of water the wildfowl numbers are high as are the breeding populations of waders.

Vulnerability: The birdlife requires freedom from disturbance to persist, particularly during the breeding season (May to June) and would suffer from an increase in numbers of visitors at that time. Overshooting in winter is also a threat to such a small lake. The lake ecology would be altered by nutrient inputs from sewage or other sources.

Recommendations: No building development should be allowed inside the marked area, nor caravan or camping sites. The strand in Annagh Bay should not be further developed for visitors who can be accommodated adequately elsewhere.

OWENBRIN GRASSLAND (see also p.76)

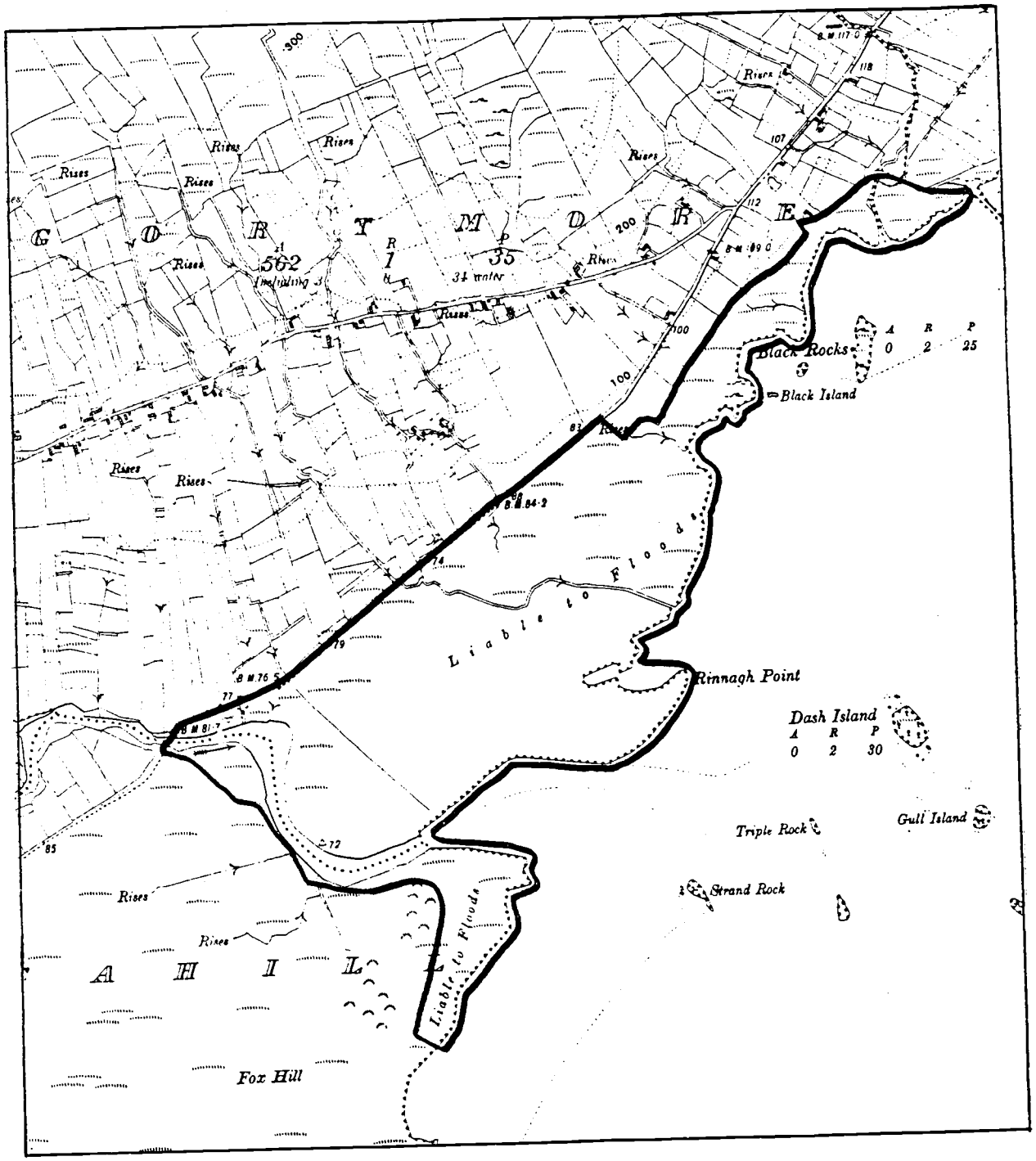
Grid Reference	M 05 62
Area	46 ha
Interest	Botanical, zoological, ornithological
Rating	National importance
Priority	B

The Owenbrin is a steep river with a relatively high flow. It therefore has transported a large quantity of sediment downslope and built an extensive delta into Lough Mask. The fact that this lake is now at a lower level than during prehistoric times means that the delta flats are in two main series. The material is a reddish acid sand but peat is sometimes included and it is now forming on the older sites.

The vegetation is simplest at the lakeshore where it has to contend with frequent inundation and a poor unweathered substrate. A spike rush, (Eleocharis quinqueflora) is characteristic, with shore weed (Littorella uniflora), a sedge (Carex serotina) and jointed rush (Juncus articulatus). An American species of St. John's wort (Hypericum canadense) also grows here. Immediately above this level the closed turf is composed of such species as creeping bent (Agrostis stolonifera), marsh pennywort (Hydrocotyle vulgaris), self heal (Prunella vulgaris), creeping willow (Salix repens) and sneezewort (Achillea ptarmica), other grasses soon appear (e.g. Anthoxanthum, Sieglingia, Nardus and Agrostis tenuis) interspersed with bog pimpernel (Anagallis tenella), white clover (Trifolium repens), sedges (Carex echinata, C. ovalis, C. panicea), corn mint (Mentha arvensis) and skull cap (Scutellaria minor).

The drainage channels and the pools left behind where they have changed course have a more aquatic selection of plants like (Apium inundatum). lesser spearwort (Ranunculus flammula), water purslane (Lythrum portula),

OWENBRIN GRASSLAND



Scale : 1 cm = 106 m

a different St. John's wort (Hypericum elodes) the Greater birdsfoot trefoil (Lotus uliginosus) and quillwort (Pilularia globulifera). Drier sites typically have chamomile (Anthemis nobilis), purging flax (Linum catharticum) and allseed (Radiola linoides) with a little cudweed (Filago minima).

South of the river a fossil pine forest, formerly covered by peat, exists.

The beach and grassland are completely open with only a few clumps of furze (Ulex europaeus) and no fences. This is one of the reasons why it is used for feeding and resting by migrating birds which follow the line of Connaught lakes (Loughs Conn, Mask and Corrib) in their flights north and south. Curlew, snipe and lapwing are usually present but flocks of many other species occur sporadically, for example golden plover, dunlin, whimbrel and godwits.

Evaluation: This is a very fine example of low level acid grassland, unmodified except by grazing. The vegetation is extremely diverse and interesting and small ecological changes are demonstrated over large areas because of the flatness of the terrain. Two of the plant species are especially noteworthy, the area being the headquarters of one of them (Hypericum canadense) in Europe.

Vulnerability: The main threat to the value of this site is the spreading of fertilizers which would destroy its uniqueness and lead to the disappearance of most of the interesting species. Building development or afforestation which is not very likely could also have adverse effects.

Recommendations: The site seems relatively secure from most threats but in view of its value should not be allowed to be altered in any way. If the landowner intends to spread fertilizers a substantial section of the area should be chosen for retaining in its natural state, allowing grazing only.

LOUGH AKEEL QUARRY

Grid Reference	M 662 928
Area	1 ha
Interest	Geological
Rating	Regional importance
Priority	C

This quarry which is now unused is cut into the Lough Akeel oolites, a formation of oolitic limestone and conglomerate respresentative of the shallow marine Carboniferous rocks of southern Mayo. They were probably formed in lagoonal conditions as sand bars in a clearer sea (now giving the Castlebar limestone).

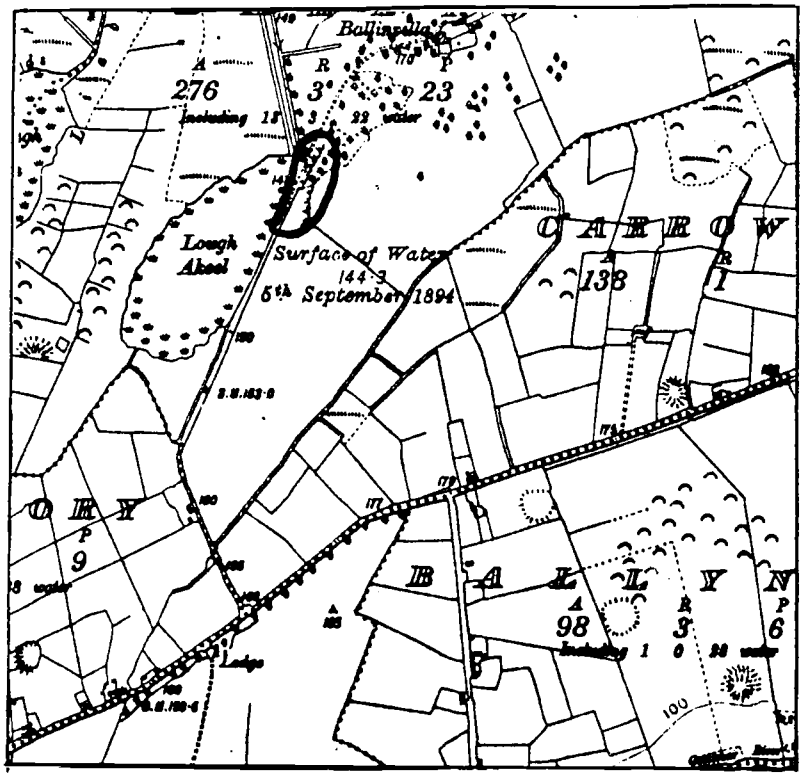
As can be seen the quarry has two parts and of these the smaller one is the most interesting. The jointed rocks are of coarser texture in the large section and more sandy in the smaller one. Here, in addition, a small sill of volcanic rock was formed during the Tertiary period.

Evaluation: This area provides the type section for the Lough Akeel oolites; the area from which they were first described and named. It is probably also their best exposure and is a valuable teaching area.

Vulnerability: The larger section of the quarry has been used as a dump for old cars and tree stumps. Excessive hammering and collection could damage the type exposure.

Recommendations: Further dumping in this quarry should be prevented, especially in its smaller part.

LOUGH AKEEL QUARRY



Scale : 1 cm = 106 m

INISHTURK (5)

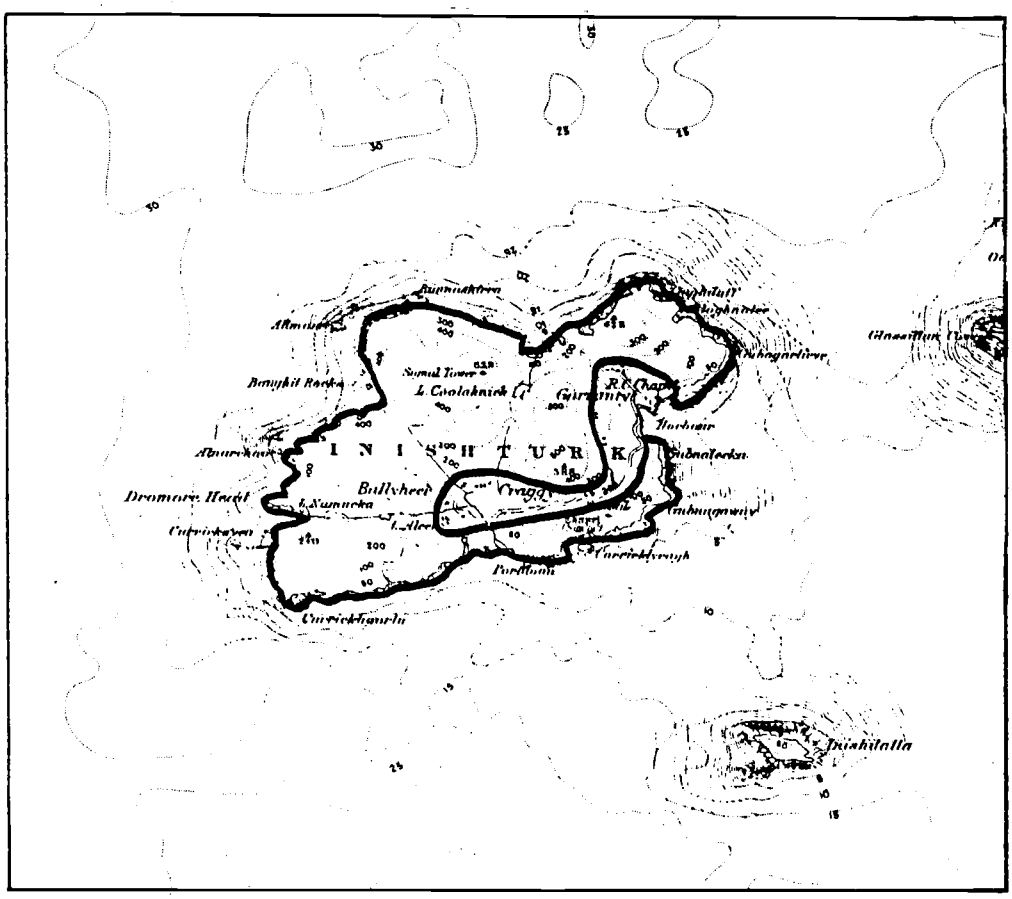
Grid Reference	L 6174
Area	518 ha
Interest	Botanical, Ornithological, Zoological
Rating	Regional importance
Priority	C

Inishturk is included in this report because of its flora and birdlife, especially the seabirds. Much of the interest is associated with the cliffs which encircle the island and rise to a considerable height at the west end. They are formed of Ordovician slates and are frequently surmounted by plantain sward, a pure association of Plantago maritima and P. coronopus. A pearlwort (Sagina subulata), rose root (Rhodiola roseum) and sea spleenwort (Asplenium marinum) grow on the rocks with scurvy grass (Cochlearia scotica) and other maritime plants.

The underlying rock frequently breaks through to the surface of the island and the heathy community that develops in such cases is remarkable for the occurrence of a rock rose (Tuberaria guttata) and a butterwort (Pinguicula lusitanica). Where slightly higher ridges occur, woodland is established in rudimentary form and is now spreading slightly. Hawthorn (Crataegus monogyna), birch (Betula pubescens) and holly (Ilex aquifolium) are the main species with some aspen (Populus tremula), sycamore (Acer pseudo-platanus) and apple (Malus sylvestris).

The main breeding seabird is the fulmar and up to 780 pairs are found in summer. In 1970 there were also 34 shag, 54 guillemot and lower numbers of puffin, black guillemot and common gull. The storm petrel nests in some years. The grey seal breeds on some of the secluded beaches on the island.

INISHTURK



Scale : 1 cm = 634 m

Evaluation: Inishturk is half way between Inishbofin and Clare Island in position and in some respects also in the character of the flora and fauna. It has a relatively large number of species and is the most northerly location for Tuberaria - a plant restricted to west Galway and Cork. The island has the second largest colony of fulmars in Mayo.

Vulnerability: The usual threats of disturbance to seabirds and fertilization or overgrazing of heaths would seem unlikely here though grazing animals (especially goats) should not be let multiply beyond the capacity of the vegetation to support them.

Recommendations: The scientific value of the heaths should be noted in any development plans for the area.

MOY ESTUARY

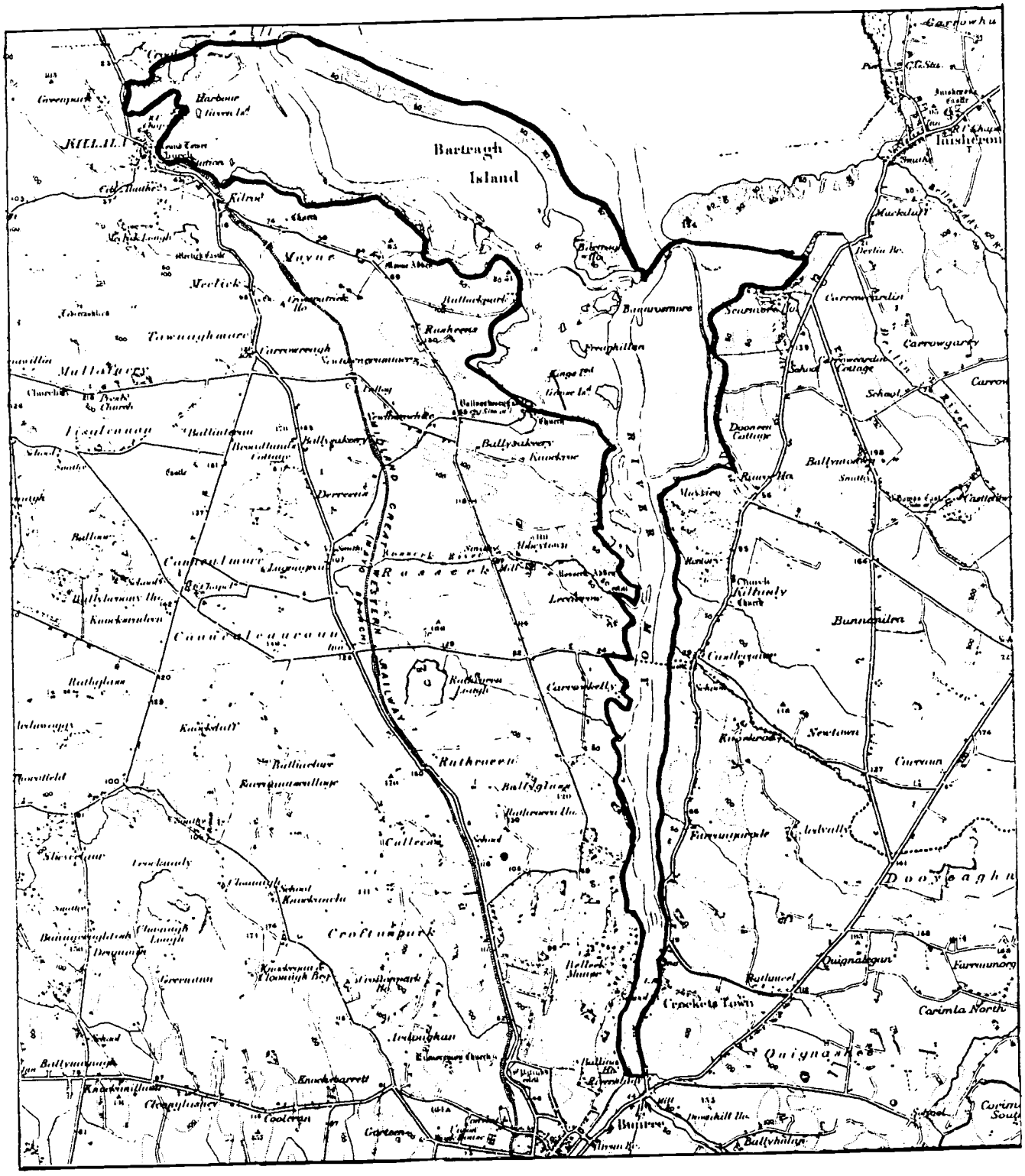
Grid Reference	G 2525
Area	129 ha
Interest	Ornithological, botanical
Rating	Regional importance
Priority	B

Killala Bay is an extensive triangular estuary with mudflats lining the sides of the channel of the Moy river. Lower down they fill all parts sheltered from the scour of tidal water. The area offers rich feeding to wildfowl and waders though because it is so large it is difficult to census. South of Bartragh Island an average count shows :

Mallard	42
Teal	43
Wigeon	268
Pintail	2
Red-breasted merganser	24
Shelduck	13
Whooper swan	2
Oystercatcher	104
Lapwing	610
Ringed plover	32
Golden plover	160
Curlew	309
Bar-tailed godwit	33
Redshank	92
Greenshank	5
Dunlin	350

These birds feed on the mudflats but roost on saltmarshes during periods

MOY ESTUARY



Scale : 1 cm = 634 m

of high tide. Around Killala the saltmarshes are of botanical interest also, with flatsedge (Blymus rufus). Adjacent sand dunes house a mountain plant, whitlowgrass (Draba incana) while the long ridge of Bartragh Island presents a good series of sand dunes which are lightly grazed by sheep but not recently by cattle.

Evaluation: The birds using Killala Bay occur in regionally important numbers while there are also individual sites with interesting vegetation.

Vulnerability: The density of invertebrate food organisms controls the numbers of birds that visit an area so that any habitat change that affects them is of importance to the bird life. Downstream of a large town pollution by sewage or other effluent can be a damaging influence particularly if toxic chemicals or heavy metals are released. Disturbance by shooting is also a threat if it occurs frequently (more than once a week on the same site).

Recommendations: The standards of sewage effluent should be maintained at as high a level as possible.

A section of the estuary could well be managed as a no-shooting area to increase the overall carrying capacity of the bay.

KINLOOEY LOUGH

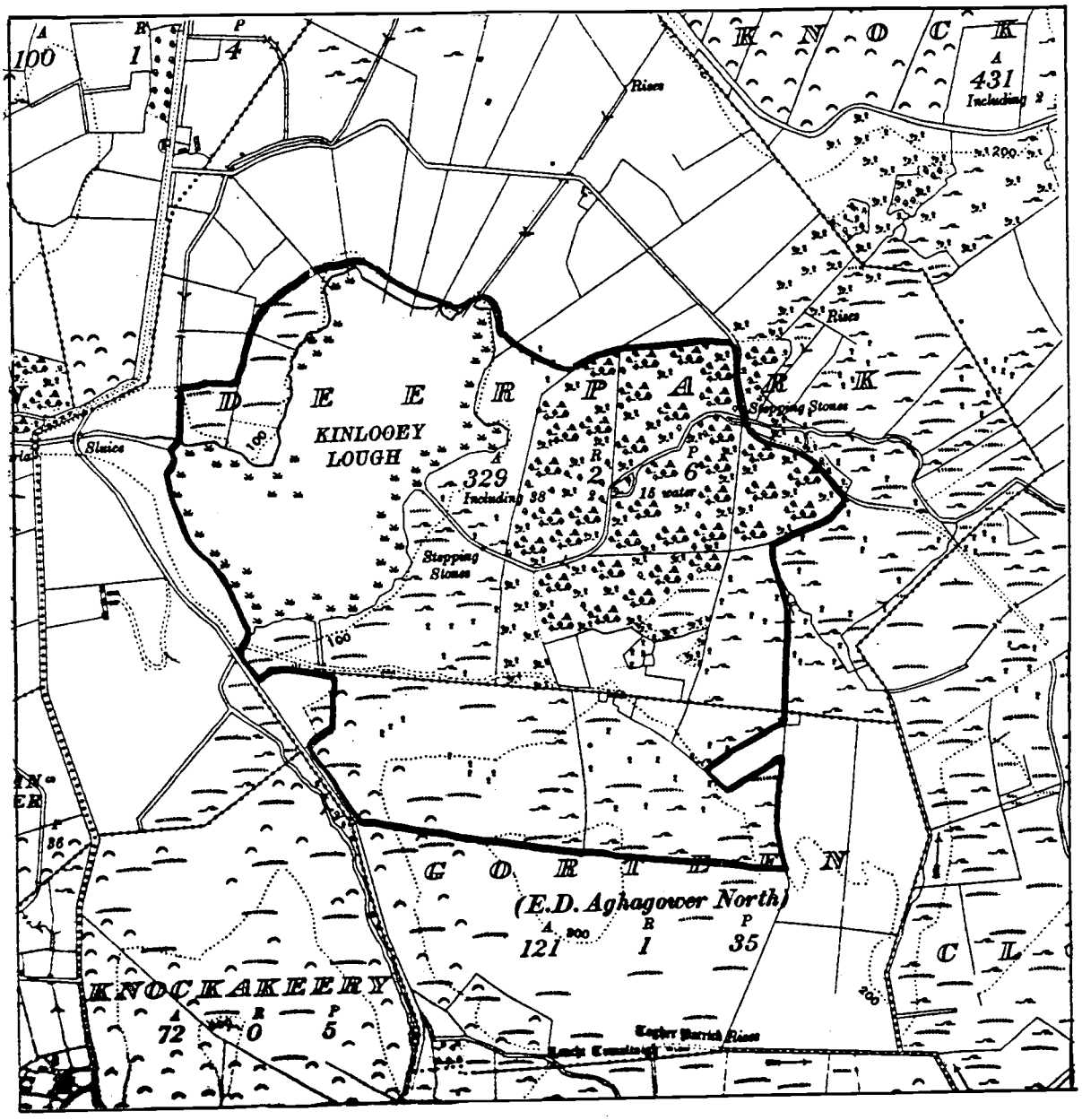
Grid Reference	M 03 81
Area	65 ha
Interest	Botanical, zoological
Rating	Regional importance
Priority	B

Kinlooey Lough lies on the transition between the Carboniferous shales and limestones so the local drainage is complex with a variety of sinkholes and depressions, especially to the south of the lake. Seepage around the sinkholes produces an interesting flora with fen and peat-loving plants such as heather (Calluna vulgaris, Erica cinerea), sneezewort (Achillea ptarmica), and butterwort (Pinguicula vulgaris).

On the east of the lake an interesting woodland occurs on a stony drumlin. Willows (Salix cinerea, S. caprea), ash (Fraxinus excelsior) and birch (Betula pubescens) make up most of the larger trees with some scattered beech (Fagus sylvatica) and oak (Quercus petraea) but extensive areas are covered by the lower growth of hazel (Corylus avellona), holly (Ilex aquifolium), hawthorn (Crataegus monogyna) and rowan (Sorbus aucuparia). The ground flora is rich, with at least 25 species. It is basically calcicole in type but includes hard fern (Blechnum spicant) and mountain vetchling (Lathyrus montanus). Two unusual grasses are bearded couch (Agropyron caninum) and giant fescue (Festuca gigantea). The habitat is most suitable for passerine birds and ten species were noted during summer. In the bushy places around the wood further types occur together with a good variety of butterflies.

The lake itself is bordered partly by limestone grassland and partly by raised bog. The shore is therefore both stony and peaty; the former

KINLOOEY LOUGH



Scale : 1 cm = 106 m

type has a vegetation including a sedge (Carex serotina), bistorts (Polygonum hydropiper, P. minus) and a black moss (Cinclidotus fontinaloides) which suggests that the water level fluctuates during the year. Some of the peat has been eroded to show numbers of old pine stumps, still in the position of growth.

A fertilization experiment was carried out in the lake in the 1950's so a fair amount of data exists on water quality as well as the growth rates of brown trout. The freshwater mussel (Anodonta sp) is a conspicuous member of the fauna which in winter includes such wildfowl as tufted duck and teal.

Evaluation: This is a diverse area with many habitats occurring within a small compass. The most interesting features are the woodland, which has developed without any recent human interference and the lake, with its juxtaposition of acid and alkaline habitats. It is a very suitable area for outdoor education in field biology and geography.

Vulnerability: Grazing would adversely affect the full development and regeneration of the woodland. The aquatic communities would be altered by increased pollution from livestock units.

Recommendations: The beech trees which are an unnatural feature in the wood should be removed for firewood. In the event of any felling the area should be covered by a Tree Preservation Order, except for beech, under Section 45, Local Government (Planning and Development) Act, 1963.

The full diversity of natural habitats should be retained, as far as is possible.

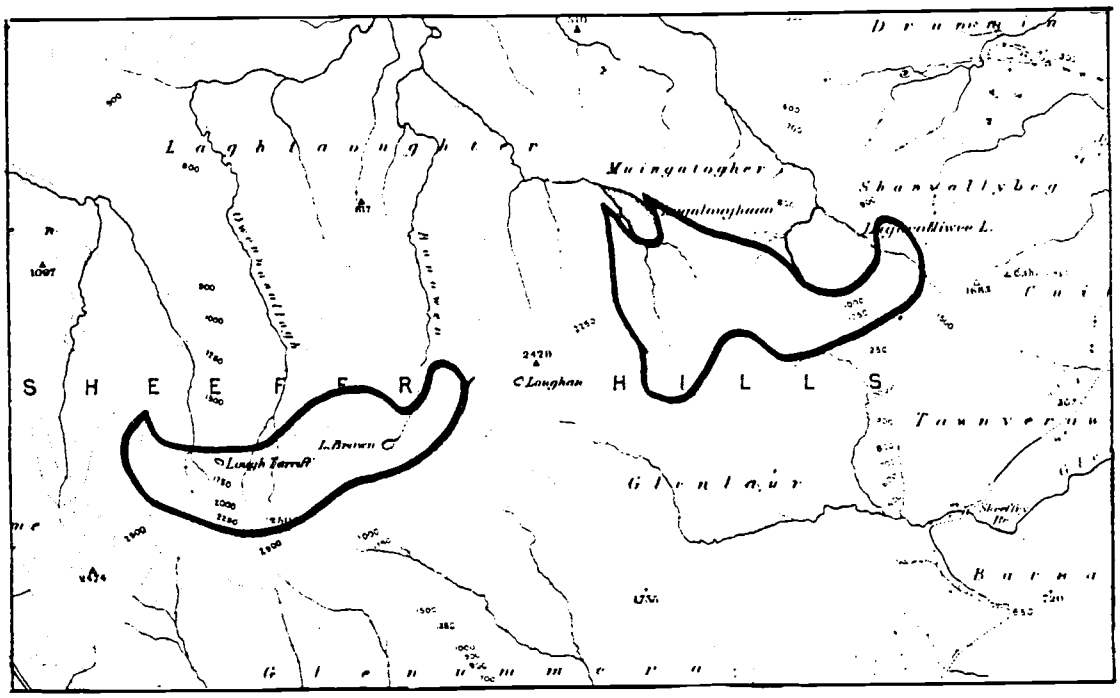
SHEEFRY HILLS (11)

Grid Reference	L 8670
Area	648 ha
Interest	Botanical, Zoological
Rating	Regional importance
Priority	C

The cliffs on the north side of the Sheefry Hills have a high level community that is especially well developed above Lough Tarriff and L. Brawn but extends at least to Lugacollivea Lough. The face is generally a steep scree of finely broken slate but solid rock outcrops in a few places. The summit plateau, at about 750 m,is covered by thin peat with the moss Rhacomitrium abundant. Bog cotton (Eriophorum angustifolium), mat grass (Nardus stricta) and heather (Calluna vulgaris) and crowberry (Empetrum nigrum) occur with some alpine clubmoss (Lycopodium alpinum) and stiff sedge (Carex bigelowii). The vegetation is windswept and dwarf in the extreme. The cliffs contain a mixed flora with woodland plants such as woodrush (Luzula sylvatica), violet (Viola riviniana), water avens (Geum rivale) and buckler fern (Dryopteris dilatata), and mountain plants such as sea thrift (Armeria maritima) sea plantain (Plantago maritima), mountain everlasting (Antennaria dioica), cowberry (Vaccinium vitis-idaea),and various ferns (Thelypteris phegopteris, Polystichum aculeatum, Cystopteris fragilis). In this latter group are the few alpine species, including purple saxifrage (Saxifraga oppositifolia), least willow (Salix herbacea), mountain sorrel (Oxyria digyna), starry saxifraze (S. stellaris), saw-wort (Saussurea alpina), and a meadow-rue (Thalictrum alpinum).

These higher plants may be taken as the indication of a correspondingly interesting flora of mosses and liverworts and fauna of molluscs and insects.

SHEEFRY HILLS



Scale : 1 cm = 634 m

Evaluation: Though widely scattered the patches of high level communities are of considerable interest in West Mayo and are richer than those on Mweelrea.

Vulnerability and Recommendations: Much of the interesting vegetation is inaccessible to grazing animals and will remain secure.

CROAGHPATRICK (11)

Grid Reference	L 9080
Area	121 ha
Interest	Botanical, Zoological
Rating	Regional importance
Priority	C

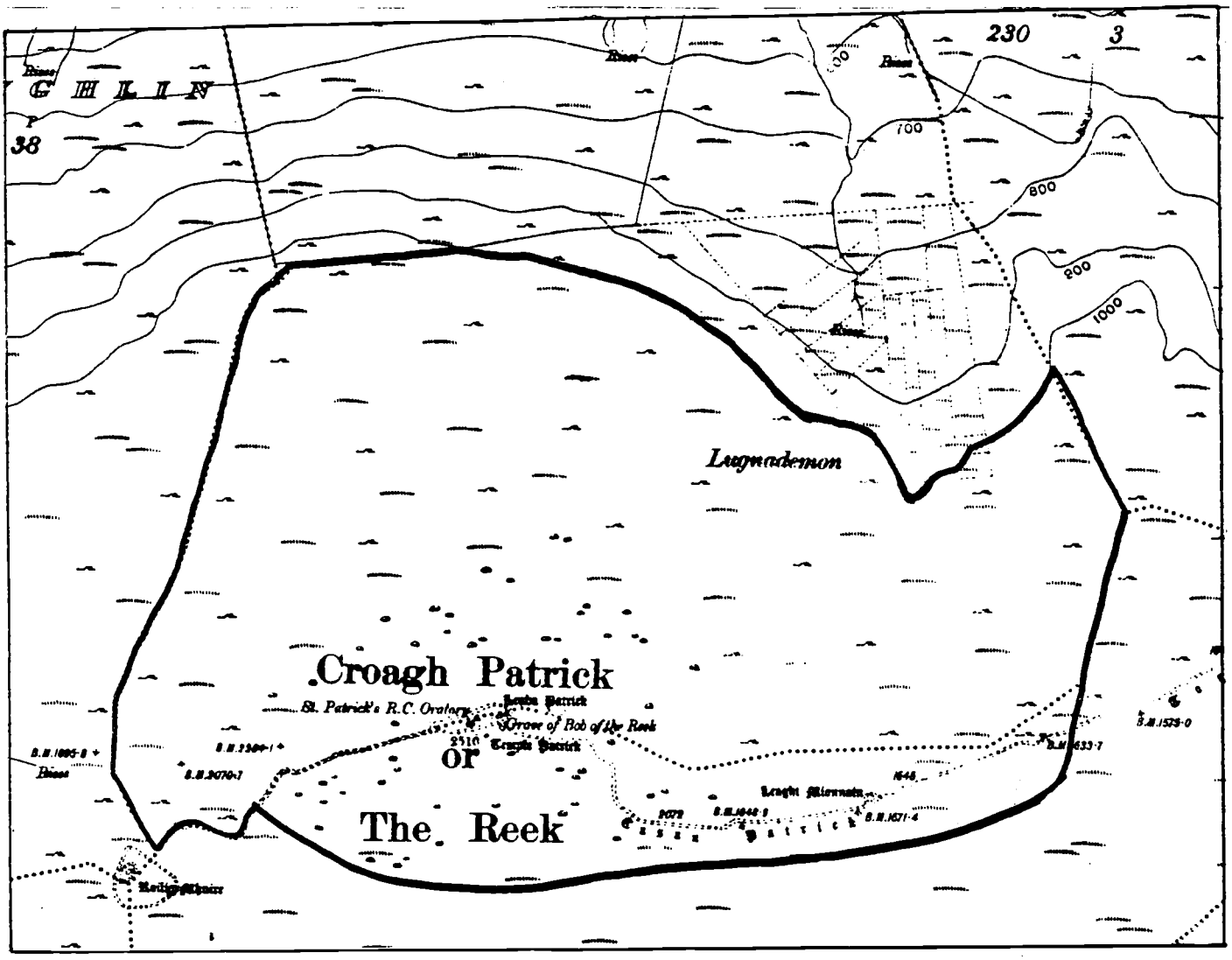
This well known mountain is formed of a cone of quartzite formed of both solid rock and screes. The northern face is the most precipitous and on this a considerable number of alpine plants occur. In general these occur above 500 m and include least willow (Salix herbacea), mountain sorrel (Oxyria digyna), rose root (Rhodiola rosea), green spleenwort (Asplenium viride), alpine meadow-rue (Thalictrum alpinum) and saw-wort (Saussurea alpina). A few other interesting plants also occur in rockier places within the heath vegetation.

The mountain may also have a high level community of insects, indicated by the occurence of the mountain ringlet butterfly (Erebia epiphron).

Evaluation: This is an interesting mountain in the national context being one of the only three stations for this butterfly so far found in Ireland. However it has not been seen for over 100 years, so may not now occur. The plant life is surprisingly rich in view of the type of rock and the ubiquitous screes.

Vulnerability: The important communities mostly occur on the steep slopes of the north side and are preserved by their relative inaccessibility. The butterfly is however located within stands of heather, this being the food plant of its offspring. Vegetation damage could radically affect its numbers, and may have done so already.

CROAGHPATRICK



Scale : 1 cm = 106 m

Recommendations: Erosion of the vegetation and movement of the summit screes should be controlled. There is a need for the best methods of doing this to be analysed in detail as also the present status of the butterfly.

COOLBARREN LOUGH

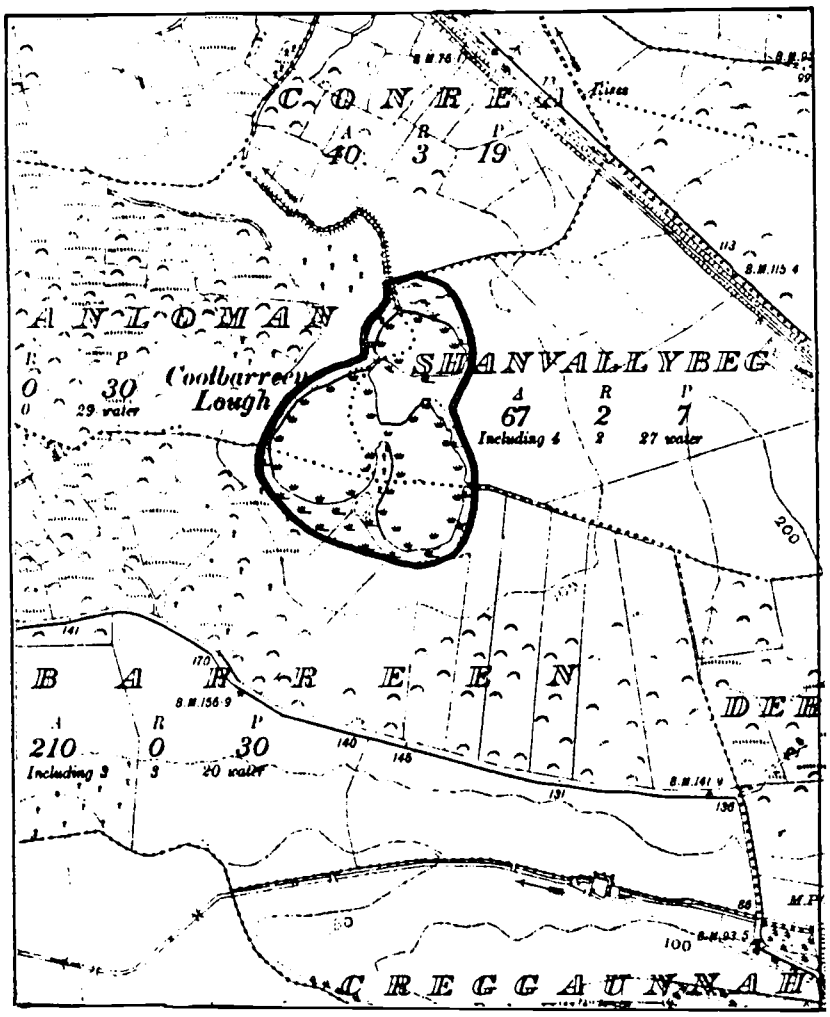
Grid Reference	L 9886
Area	8 ha
Interest	Botanical, Zoological
Rating	Regional importance
Priority	B

This lake lies in a large inter-drumlin hollow near the southern edge of the drumlin belt. The land slopes steeply down to it,especially on the southern side. Substantial colonization by plants has taken place so that the area of open water is smaller than that shown on the map. Lake clubrush (Scirpus lacustris), reed (Phragmites australis) and water horsetail (Equisetum fluviatile) form stands in the open water but the chief invasive species which create a floating mat of vegetation are marsh cinquefoil (Potentilla palustris), bogbean (Menyanthes trifoliata) and bottle sedge (Carex rostrata). Bulrush (Typha latifolia) grows through this mat in wetter places, willows (Salix aurita, S. repens) in drier ones. Typical marsh plants like marsh marigold (Caltha palustris), marsh bedstraw (Galium palustre), angelica (Angelica sylvestris) and willow herb (Epilobium palustre, E. hirsutum) are found. In places acidification of this fen flora is underway with different species of mosses being obvious: Aulacomnium, Hylocomium splendens, Pleurozium and Sphagnum rubellum replacing Acrocladium and Drepanocladus.

Between the floating vegetation and the bank a zone of enrichment occurs from surface drainage. Blunt-flowered rush (Juncus obtusiflorus) occurs here.

Bird life is representative of this type of marsh with moorhen, tufted duck, snipe and mallard but the insect numbers seem quite high, particularly dragonflies.

COOLBARREN LOUGH



Scale : 1 cm = 106 m

Evaluation: This is an ecologically interesting area showing the early stages of raised bog formation in an enclosed basin. Most of the similar sites in the county are at a later stage of development with substantial amounts of peat.

Vulnerability: The ecosystem is at a sensitive stage, particularly with regard to eutrophication and could therefore be modified by an increase in pollution levels. Agricultural change on the surrounding fields is not such a threat.

Recommendations: No new effluent discharge should be allowed within the immediate catchment of the lake.

CUILKILLEW WOOD, LOUGH CONN (see p. 71)

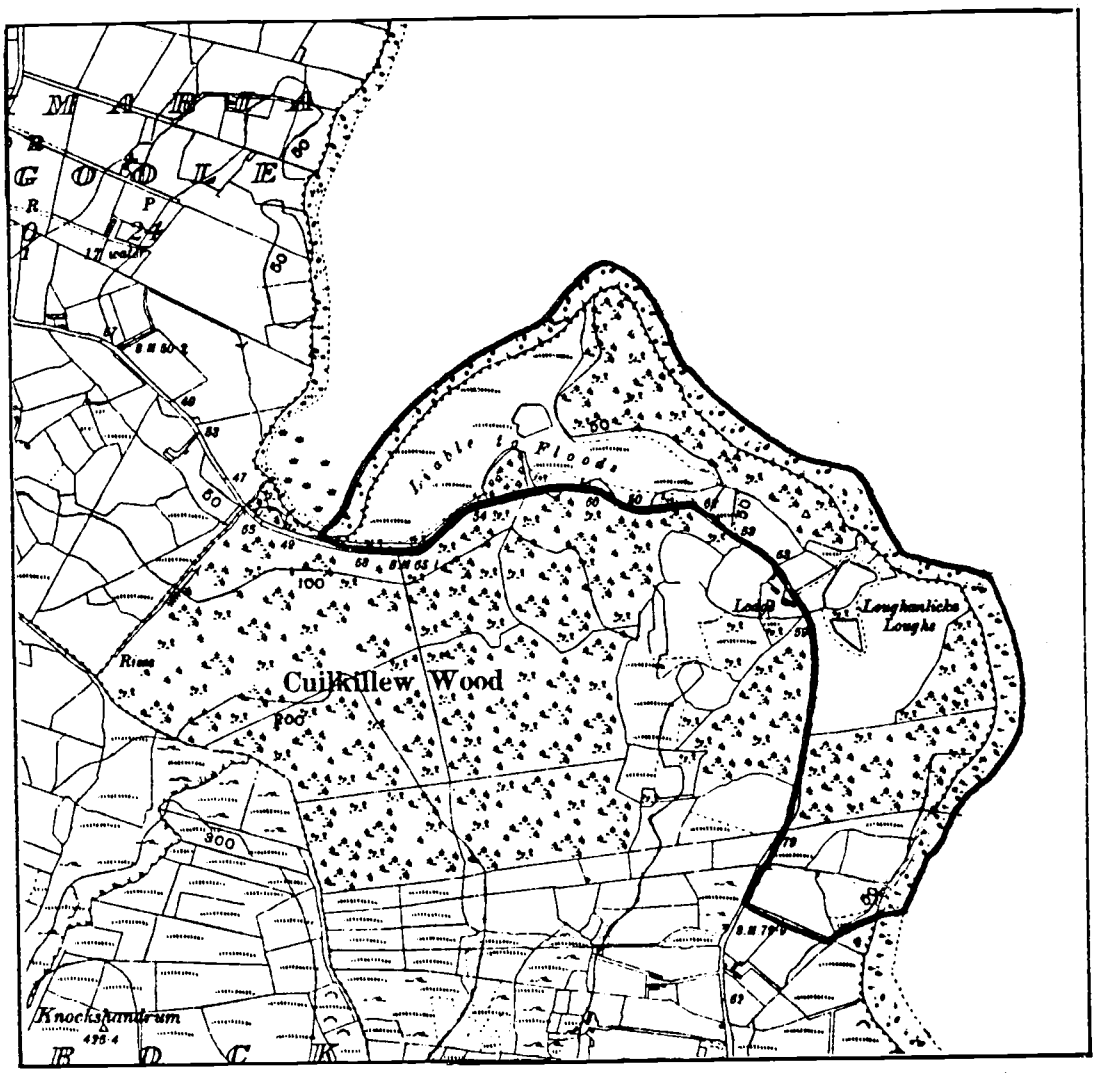
Grid Reference	G 16 08
Area	27 ha
Interest	Botanical, Zoological
Rating	Regional importance
Priority	B

At this point on the western side of Lough Conn the ban of old red sandstone that runs along the northern side of Glen Nephin reaches the shore, resulting in a small hill, now covered by glacial drift. Woodland has been established here for many years though it has frequently been cut. At the present time the stand is almost exclusively of birch (Betula pubescens) and this grows through a dense cover of bracken (Pteridium aquilinum) with some brambles (Rubus fruticosus). A number of very old birches are scattered through the stand, presumably the seed parents. In many cases they have been blown over or otherwise damaged. A few oak trees (Quercus spp.) and rowans (Sorbus aucuparia) occur and are growing vigorously while a number of holly seedlings (Ilex aquifolium) have recently established themselves. Young rhododendrons (R. ponticum) are now immigrating from adjacent areas.

In the high light conditions of this open wood a representative ground flora occurs, including some species more characteristic of blanket bog, e.g. heathers (Calluna vulgaris, Erica cinerea) and certain mosses (Hycocomuim splendens, Plenrozium schreberi and Dicranum scoparium). Slightly richer soil at the northern end where the stand grades into alder wood allows bluebell (Scilla non-scripta), red fescue (Festuca rubra) and ivy (Hedera helix) to grow.

The wood overlooks the sandy shore of Lough Conn which is fringed by gorse (Ulex europaeus). At one place an inlet is surrounded

CUILKILLEW WOOD, LOUGH CONN



Scale : 1 cm = 106 m

by a thicket of willows (Salix cinerea) still occasionally flooded. Birch wood is not rich in bird life except for abundant willow warblers in summer, and usually woodcock in winter, but a sizeable species list of moths and other invertebrates could be built up here.

Evaluation: Birch wood is one of the stages of the colonisation of open ground by trees that eventually leads to the development of the climax or stable stage of oak forest. It is uncommon to find such an extensive stand and therefore its characteristic community is seldom fully realized. The present site has considerable ecological importance even though the wood has been initiated artifically by felling existing trees.

Vulnerability: Rhododendron is a renowned pest species of woods on acid soils especially where grazing allow its minute seedlings to become established. In time it forms an impenetrable thicket of little value to anything, except roosting birds. Grazing in its own right significantly alters the ground flora of any habitat.

Recommendations: The area should be conserved as a birch wood and the natural succession allowed to proceed without heavy grazing or rhododendron. It should probably be acquired by the Forest and Wildlife Service in due course, but in the meantime no development should be allowed within the outlined area.

STELLA MARIS

Grid reference	G 09 40
Area	11 ha
Interest	Geological
Rating	Regional importance
Priority	C

The pre-Cambrian massif of north-west Mayo is overlain by Carboniferous rocks from Port eastwards. The lower sandstones appear first and around Stella Maris they in turn are covered by limestones. The rocks of interest occur as a coastal section about 1 km long and are found in the intertidal zone and the splash zone above it, sometimes extending to the low cliffs behind. Shallow-water marine sandstones, siltstones and limestones are shown, sometimes with their original rippled surfaces or polygonal drying-out cracks.

Evaluation: This site is one of several useful for stratigraphical study of the Carboniferous period. The evidence of the conditions in which the sediments were laid down is a valuable feature, particularly for education.

Vulnerability: The rocks could be obscured or obliterated by coastal developments, though this is unlikely.

Recommendations: The rock exposures should be preserved in any large scale development.

STELLA MARIS

Scale : 1 cm = 106 m

ROCKFLEET BAY

Grid Reference	L 92 95
Area	2 ha
Interest	Geological
Rating	Regional importance
Priority	C

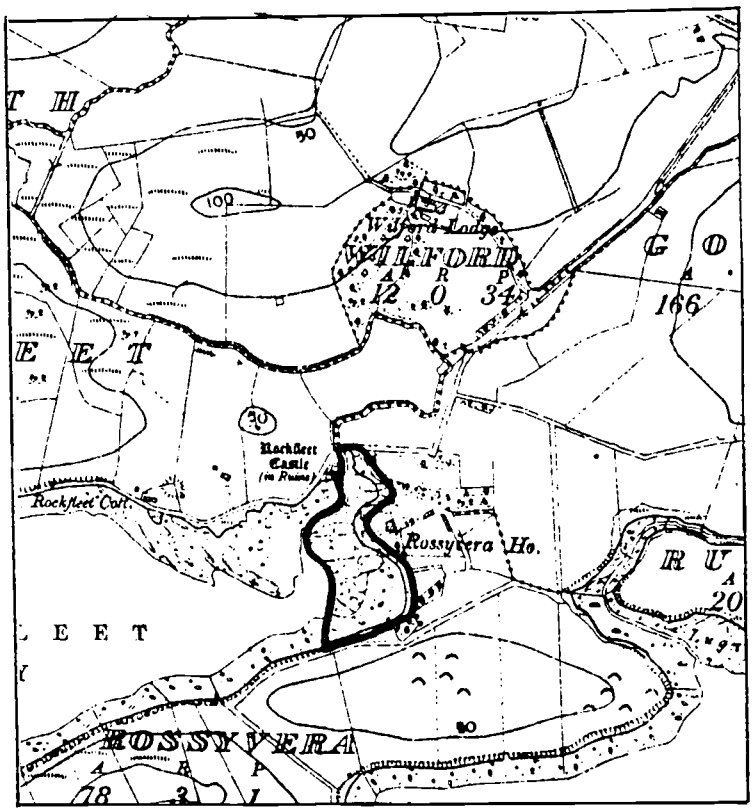
Rock exposures occur between the tidemarks here and extend up an adjacent stream valley. They show the transition into the oldest of the marine Carboniferous limestones and include many different rock types, including mudflake conglomerates, algal limestones and sandstones, both terrestrial and marine. Some of the sandstones show sun-cracking, the preserved record of their former exposure to air. Two of the fossils are particularly interesting, though not spectacular. One is the coral Syringopora and the other a group of small crustaceans (Ostracods) which are used for dating and for climatic studies.

Evaluation: A number of other such sections occur on the coast of Clew Bay but this is the best and most accessible example.

Vulnerability: The site could be damaged by coastal development works, possibly associated with Rockfleet Castle which is a national monument.

Recommendations: The development of paths or other works along this coastline should avoid modifying or obliterating any rock sections.

ROCKFLEET BAY



Scale : 1 cm = 106 m

BILLS ROCKS (12)

Grid Reference	L 54 93
Area	3 ha
Interest	Ornithological
Rating	Regional importance
Priority	C

These precipitous tiny islands which are eight miles south of Achill Head have little vegetation on them except for a turf of sea thrift (Armeria maritima). There are considerable numbers of seabirds nesting, however, and a census made in 1967 showed the following:-

Shag	21 pairs
Razorbill	100 "
Puffin	1,000 "
Great black-backed gull	60 "
Herring gull	20 "
Kittiwake	174 "

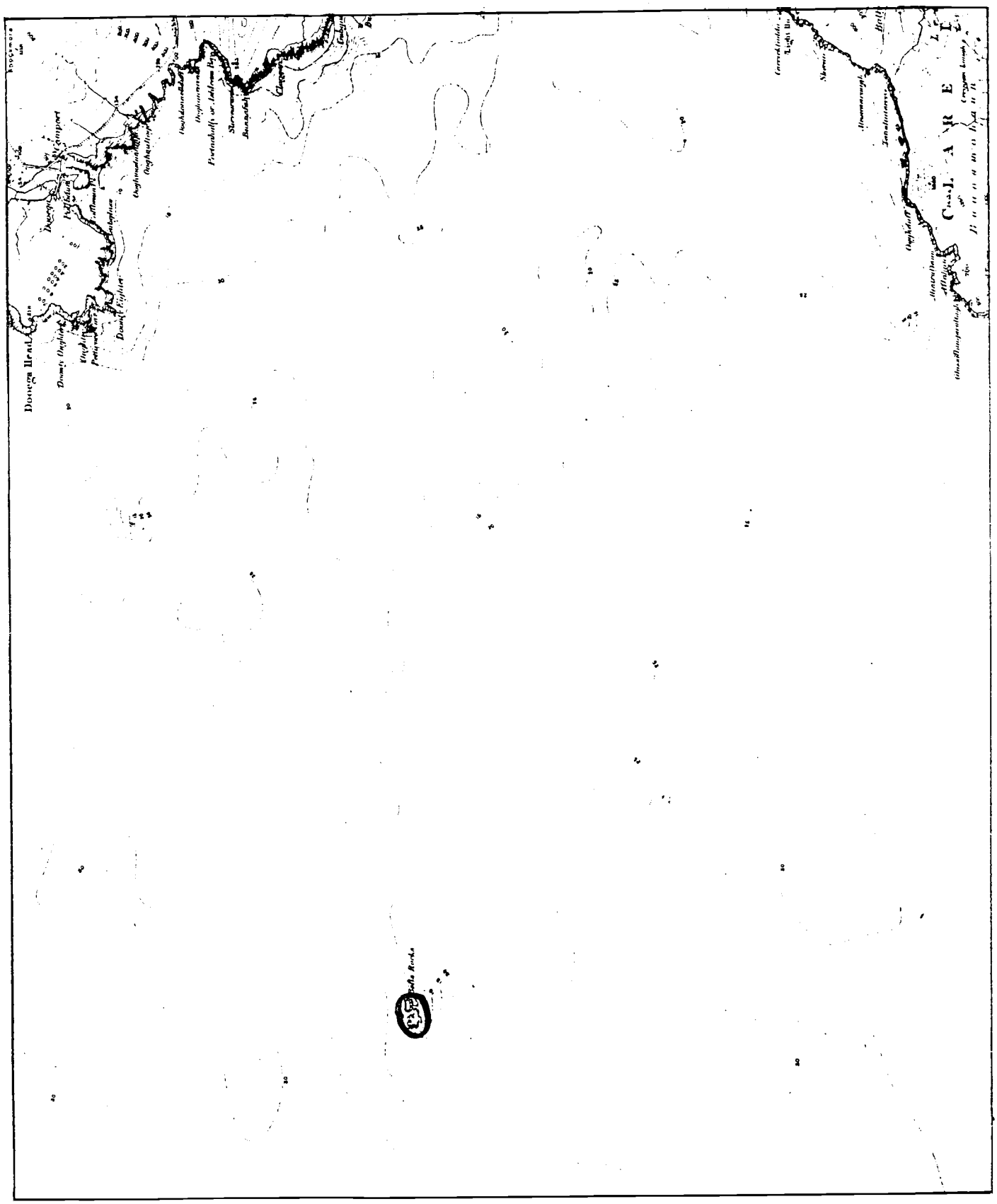
It is not known if the numbers have changed since then; the three gulls may have increased at the expense of the puffins. The puffins nest in burrows in the vegetation in places away from the gulls.

Evaluation The large colony of puffins entitles this site to regional importance. It is the second largest colony of the species in Mayo.

Vulnerability The impact of predatory gulls on puffin colonies can be severe but it is not known what the present situation is in this area.

Recommendations The area is well protected at the moment by its inaccessibility.

BILLS ROCKS



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BARNARINNIA WOOD

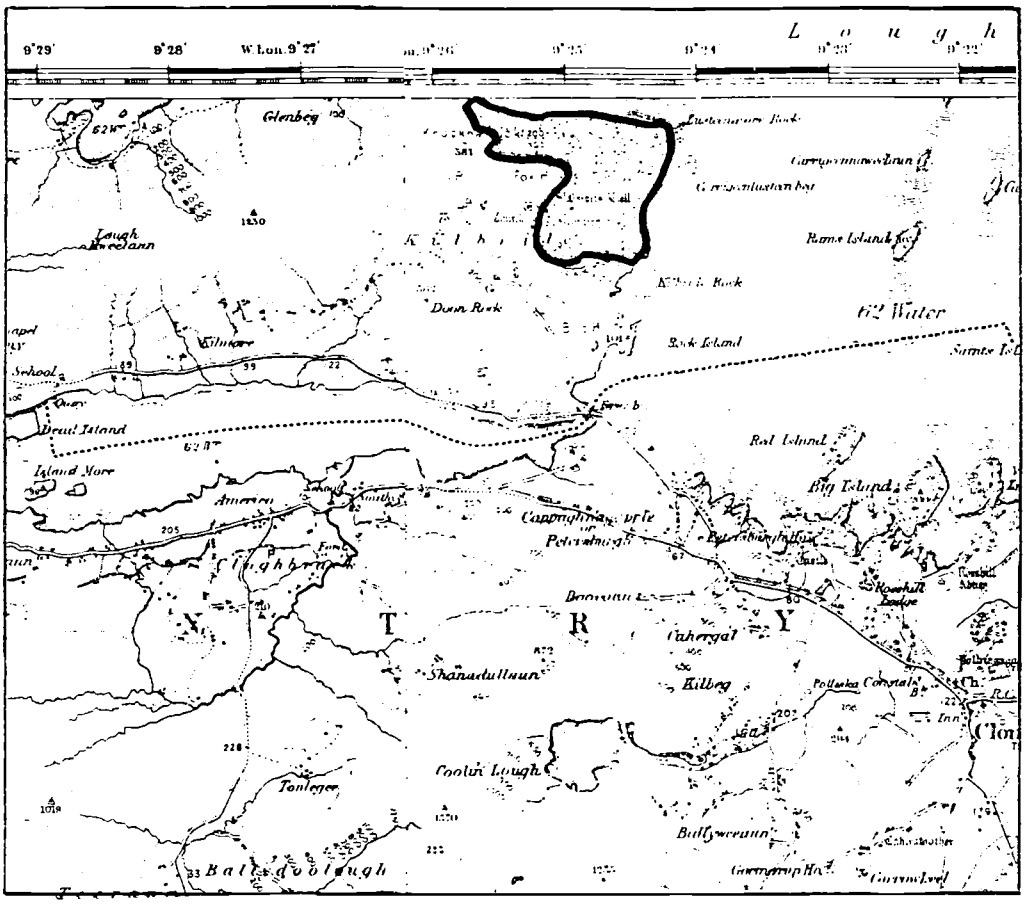
Grid Reference	M 0660
Area	69 ha
Interest	Botanical, Zoological
Rating	Regional importance
Priority	A

This deciduous wood occurs on a broad promontory in Lough Mask, north of Ferry Bridge. It is composed of oak (Quercus petraea) with the typical associated species of holly (Ilex aquifolium), rowan (Sorbus aucuparia) and birch (Betula pubescens) with some hazel (Corylus avellana) and ash (Fraxinus excelsior). The stand is mostly of old trees as long continued grazing has prevented regeneration in most places. The ground is generally rather bare in fact, with mosses such as Polytrichum formosum, Dicranum scoparium and Hylocomium splendens prominent. The fraochan (Vaccinium myrtillus) is a common species together with the grasses, Deschampsia flexuosa and Agrostis tenuis.

The full complement of western oakwood species can be found in this extensive area but some of them require a search because of the changes produced by grazing.

Evaluation The wood is potentially a very valuable site and if the grazing factor was eliminated, it might become as important as the Pontoon woods. No investigation into the fauna of the area has been carried out as far as is known.

BARNARINNIA WOOD



Scale : 1 cm = 634 m

Vulnerability As has been said the wood is being destroyed by grazing which is so severe as to threaten its survival in the long term. By altering the ground flora and preventing the growth of young trees it has changed the environmental conditions, probably destroying a large part of the characteristic invertebrate fauna.

Recommendations Discussions could be initiated with the Forest and Wildlife Service on the rehabilitation of this area. As a matter of urgency it should be covered by a Tree Preservation Order under Section 42 of the Local Government (Planning & Development) Act, 1963. This would be a public statement of its value and would also prevent any felling that is going on. Such felling is probably minimal at present.

CREEVAGH HEAD (13)

Grid reference	G 1841
Area	4 ha
Interest	Ornithological
Rating	Regional importance
Priority	C

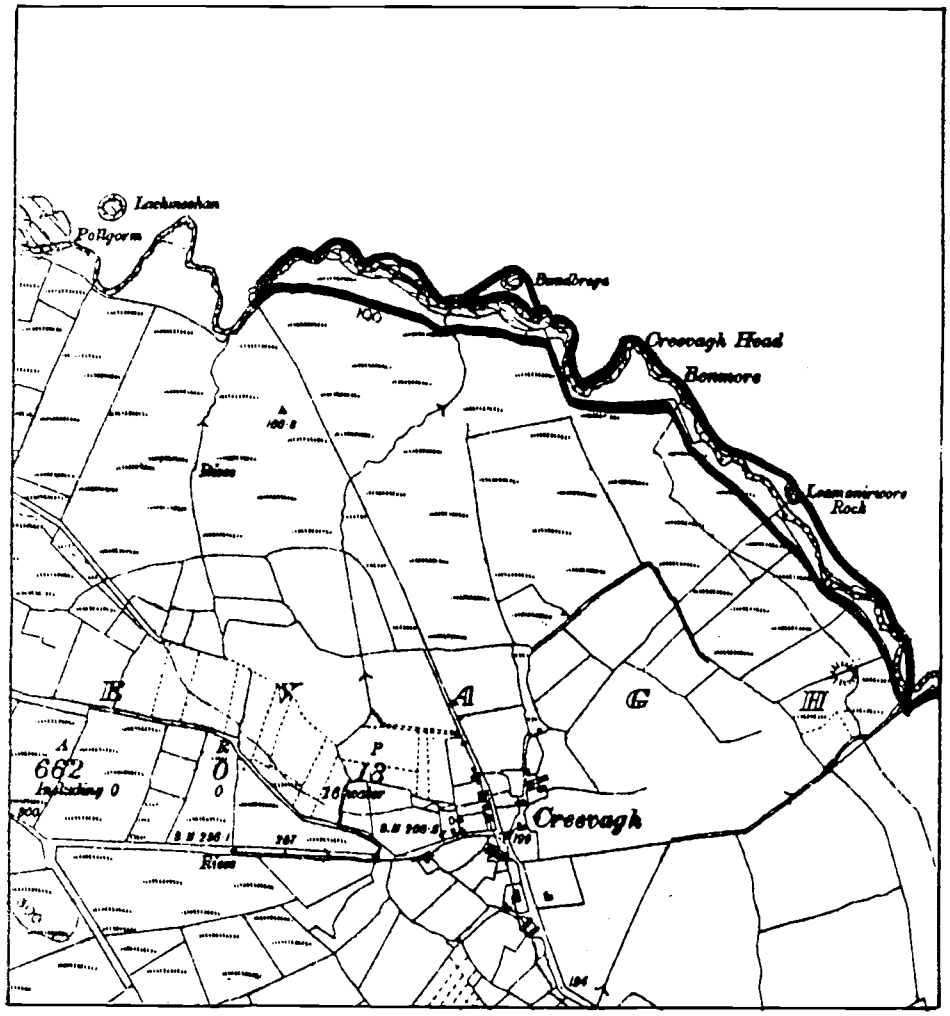
The relatively low cliffs around Creevagh Head contain vertical sections with ledges on which many seabirds nest. A census during 1970 gave the following results :

Fulmar	50
Herring gull	2
Kittiwake	613
Razorbill	48
Guillemot	554

Evaluation: The numbers of kittiwakes and guillemots are regionally important at this site and it is one of three major concentrations on the north Connaught coast. The others are Aughris Head and Downpatrick Head.

Vulnerability and Recommendations: Seabirds are secure on most cliffs because of their inaccessibility. At Creevagh, however, the small size of the cliffs brings some birds within range of disturbance. Since one of them, the guillemot, is especially sensitive to it, access and disturbance should not be encouraged in this area.

CREEVAGH HEAD



Scale : 1 cm = 106 m

KING'S HILL

Grid Reference:	G 139 020
Area	14 ha
Interest	Geological
Rating	Regional importance
Priority	C

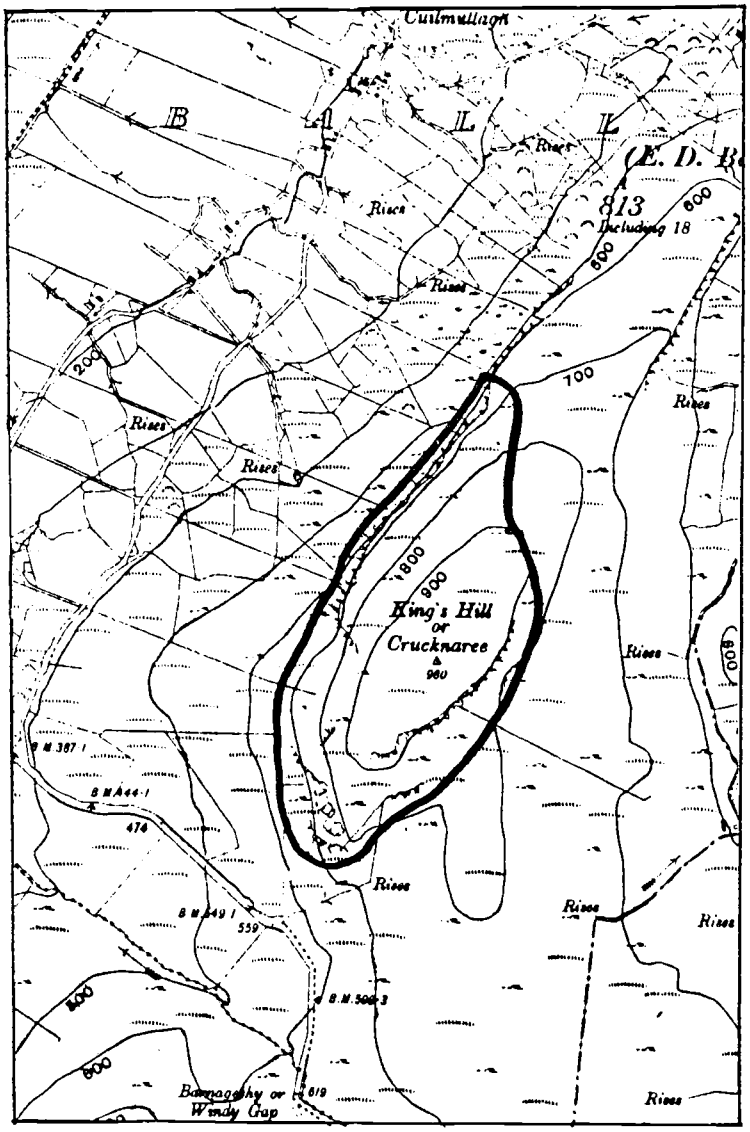
The cliff sections around King's Hill expose a coarse Carboniferous breccia resting unconformably on the local Devonian conglomerates. This breccia could be the basal beds of the carboniferous period or could have a more recent origin.

The conglomerates show an interesting transition in texture with different degrees of size, sorting and rounding of their constituent pebbles.

Evaluation: The site is one of few places showing this transition and the variation in the conglomerate is an excellent example.

Vulnerability and Recommendations: This hill-top site is secure from development but access to it might become difficult because of forestry planting. If this is planned a path to the summit should be left implanted and a signpost put up at the Windy Gap.

KING'S HILL



Scale : 1 cm = 106 m

CAPPAGH

Grid reference	M 166 933
Area	12 ha
Interest	Geological
Rating	Regional importance
Priority	C

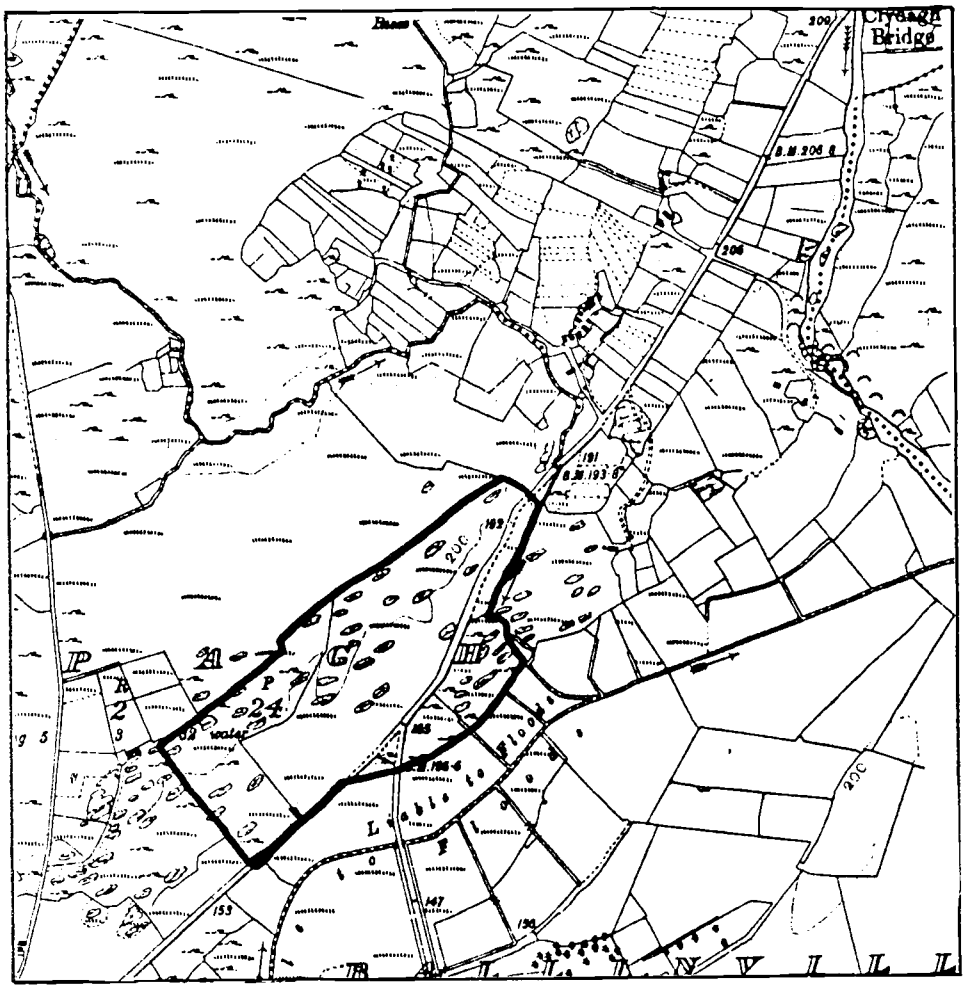
Numerous ice-smoothed mounds of rock (roches moutonees) occur in this area outcropping through a thin bog. They are covered in ice-induced scratches (striae) and are composed of complexly folded Precambrian sediments with polyphase deformations.

Evaluations: This is especially valuable as a teaching area because of its proximity to Castlebar and its quality. The outcrops are ideal for demonstrating the deformations and the relationship of minor folds to larger structures as well as the glacial topography.

Vulnerability: The area could be damaged by housing development or afforestation which would obliterate some of the interesting features.

Recommendations: Land use should remain in its present form in this area.

CAPPAGH



Scale : 1 cm = 106 m

GLENISLAND RIVER

Grid reference	M 088 965
Area	2 ha
Interest	Geological
Rating	Regional importance
Priority	C

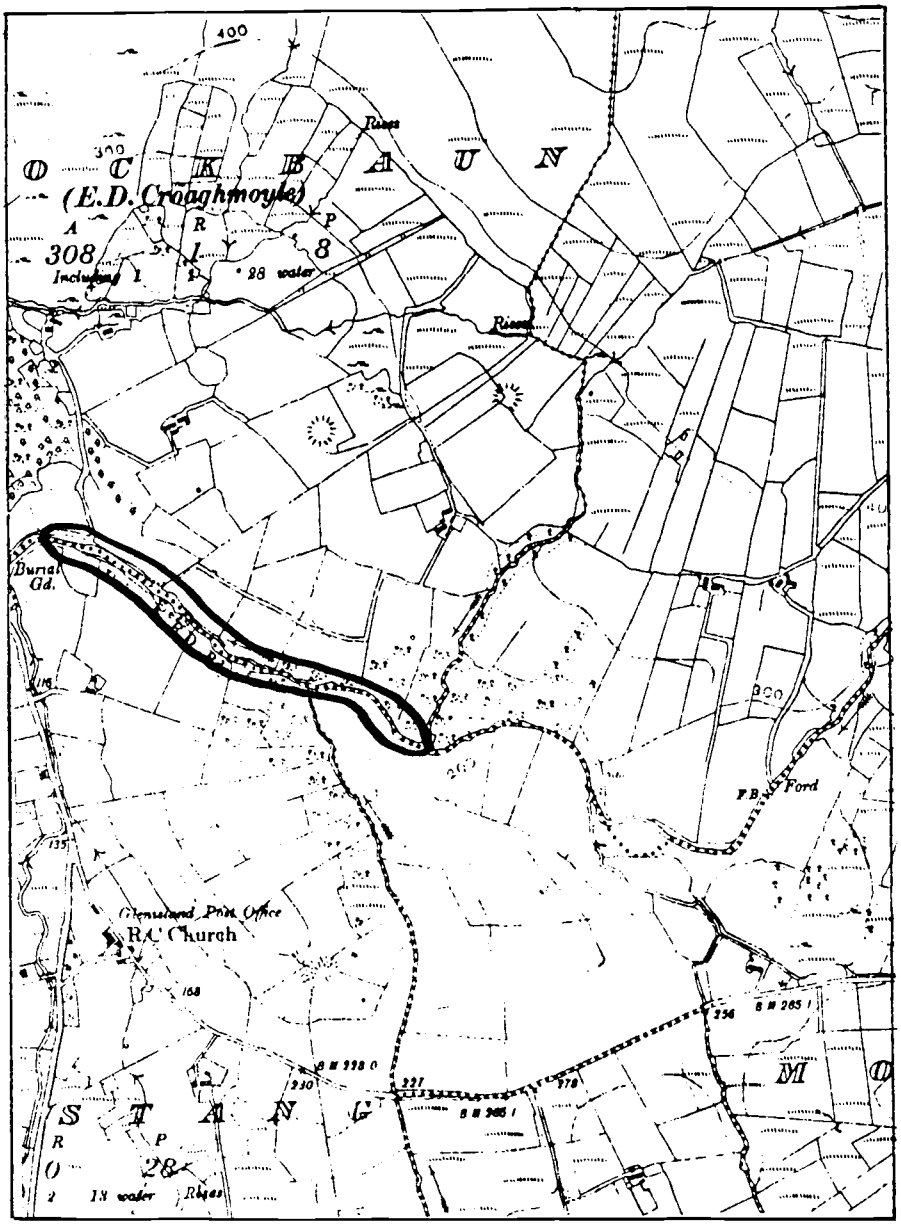
The Glenisland River is in the process of cutting a gorge in the Old Red Sandstone of the Croaghmoyle range in its path across Knockbaun townland. Just below the waterfall on the left bank a break in the Devonian rocks occurs where younger material was laid down after a period of erosion of the older sandstones. The underlying rocks are now bedded vertically having suffered the Caledonian mountain building. The upper rocks are also strongly deformed and they are coarser in type (conglomerates).

Evaluation: This appears to be the only exposure of this unconformity in this mountain chain which extends through the Ox Mountains to Benbo in Leitrim.

Vulnerability: The site could be damaged by hammering etc. from visiting geologists. Otherwise it will survive if the stream valley remains as it is.

Recommendations: No developments should be permitted which would flood the gorge of the river, e.g. a local water scheme.

GLENISLAND RIVER



Scale : 1 cm = 106 m

SHANGORT

Grid Reference	M 110, 732
Area	3 ha
Interest	Geological
Rating	Regional importance
Priority	C

In roadside exposures and scattered outcrops in the adjoining fields an unconformity between Ordovician and Carboniferous rocks reveals the old Ordovician relief. Deep joints were weathered in the Ordovician limestone probably in Devonian times and were subsequently filled by a red sandstone in the Devonian/Carboniferous period, protecting the old landscape from further erosion.

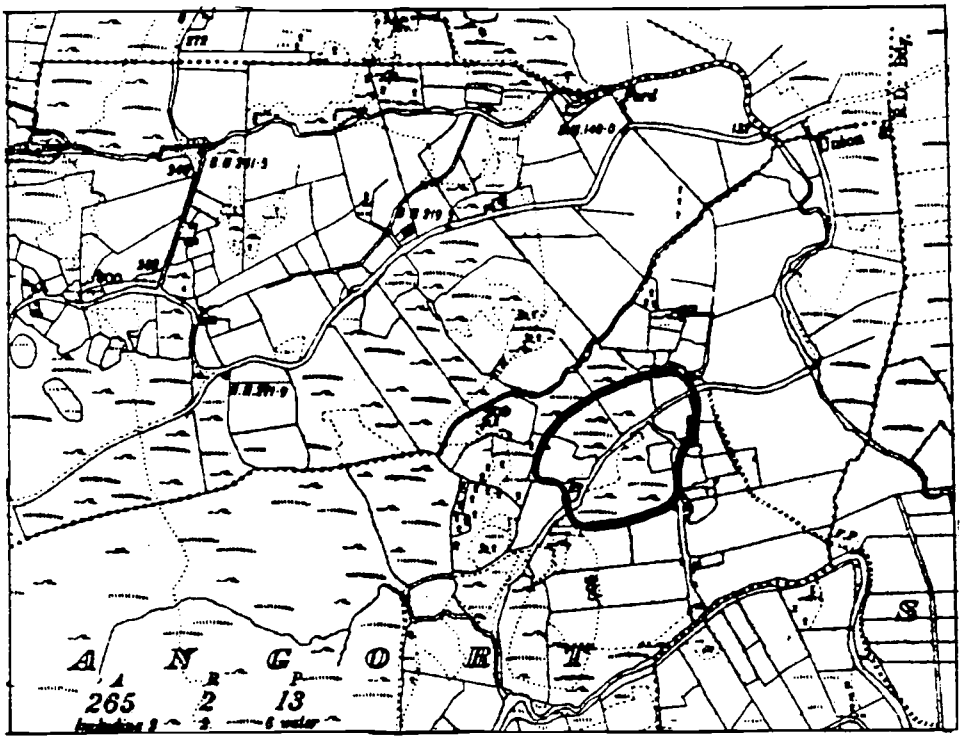
An interesting volcanic dyke occurs in one part of the area.

Evaluation: This is a very accessible site, close to the Srah/Killavally Road, and is valuable chiefly for educational purposes. It could be opened up for public view.

Vulnerability: Damage could be done to the outcrop by road widening while afforestation or building development could obliterate part of it. The Neptunian dyke is a small exposure and could be damaged by hammering.

Recommendations: Land-use should generally continue in its present form on this site.

SHANGORT



Scale : 1 cm = 106 m

CORRAUN PLATEAU (14)

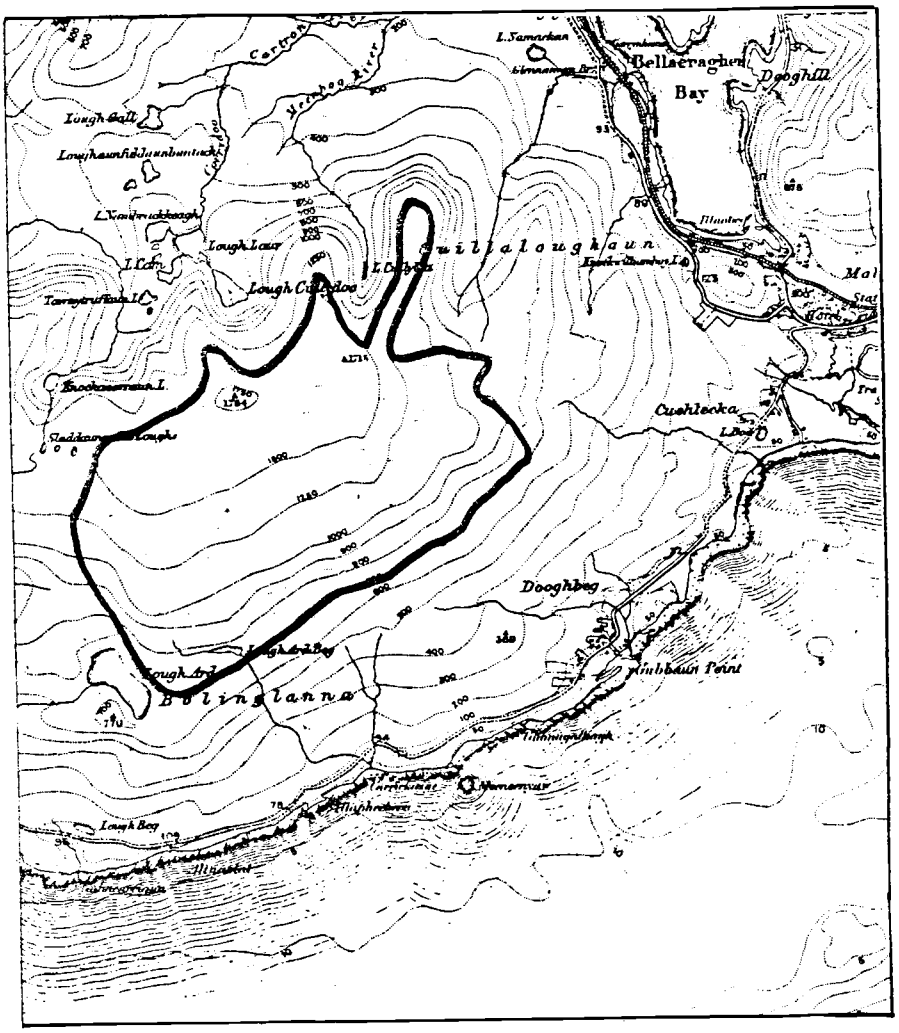
Grid Reference	L 77 96
Area	780 ha
Interest	Botanical, zoological
Rating	Regional importance
Priority	C

A series of rocky outcrops separated by blanket bog occurs in this area. Where the rock is fractured as on the ridges its drainage is much improved and the peat has formed less thickly if at all. An upland heath of juniper (Juniperus communis) bearberry (Arctostaphylos uva-ursi) and crow berry (Empetrum nigrum) has developed with frequent heather (Calluna vulgaris and Erica cinerea). The vegetation is low growing because of the exposure and all the plants trail along the ground, rising perhaps 10cm in all. In rocky places species such as golden rod (Solidago virgaurea), frochan (Vaccinium myrtillus), mountain fescue (Festuca vivipara), St. Patrick's cabbage (Saxifraga spathularis) and mountain everlasting (Antennaria dioica) occur.

The deeper peat supports the normal species of blanket bog with mat grass (Nardus stricta), clubmoss (Lycopodium selago) and velvet bent (Agrostis canina) in the more open places. At about 420m the plateau begins and drainage disimproves. Here the peat is largely covered by woolly hair moss (Rhacomitrium lanuginosum) and mat grass (Nardus) with some heather, devil's bit (Succisa pratensis) and a sedge (Carex demissa). Some hummocks are found, especially on the west and south west slopes.

The flatter stretches of bog which have pools and channels cut in them and now often include some bare and eroding peat are the habitat of golden plover, a bird confined to three counties as a breeding species.

CURRAUN PLATEAU



Scale : 1 cm = 634 m

The unusual plant community may be expected to have an interesting invertebrate fauna also, perhaps including arctic or alpine species. A large rove beetle (Staphlinid) was seen.

Evaluation: With the dominance generally of tall growing Calluna on drier heaths and of thick peat deposits on the wetter ones there is little room left for the low growing shrubs mentioned above. Exposure seems an important factor here allied to the rock structure. The necessary combination occurs rarely and the community is of regional or national importance.

Vulnerability: Frequent burning of the vegetation is the only significant threat at this site but there is no evidence that it takes place at the moment, nor that it could ever be frequent, with the prevailing climate. The birds are susceptible to disturbance from walkers.

Recommendations: The plateau area should not be developed for walkers by signposting or paths and the heathland should not be burnt.

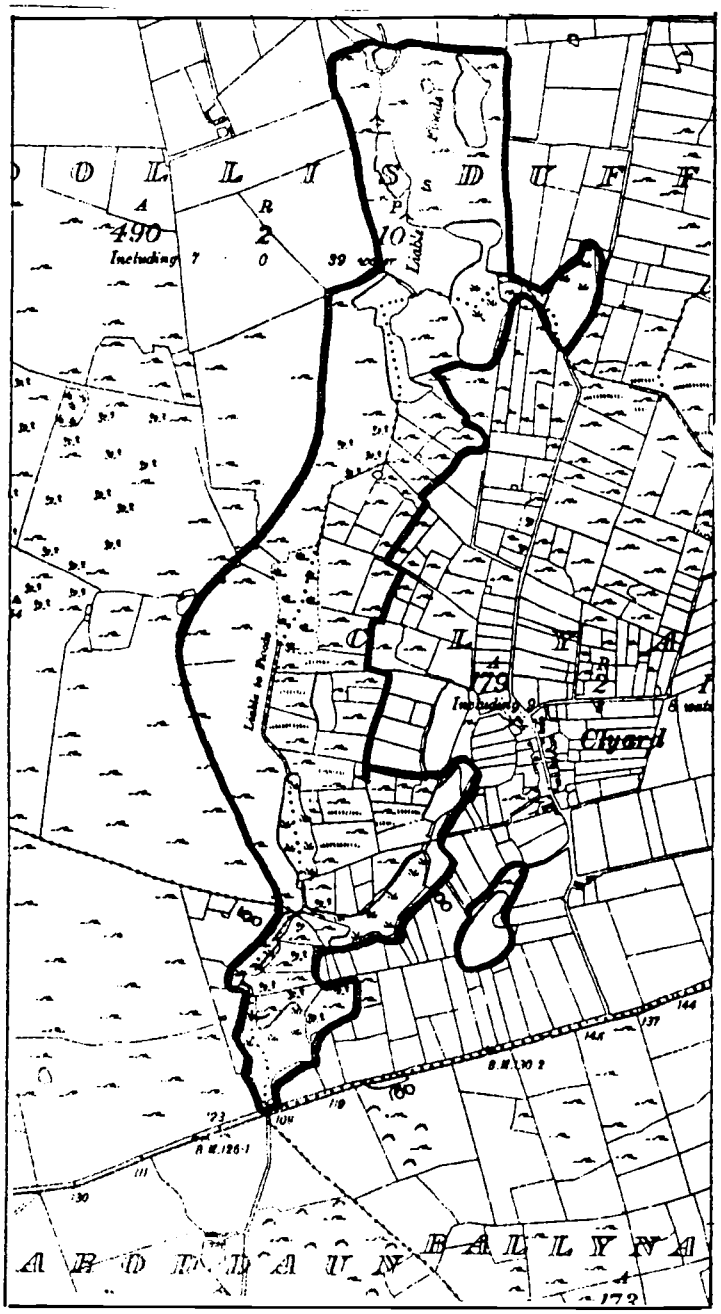
CLYARD KETTLEHOLES

Grid reference	M 22 58
Area	30 ha
Interest	Botanical, zoological
Rating	Regional importance
Priority	A

A number of small lakes lie hidden between stony hillocks in the jumbled topography of the moraines west of Kilmaine. Some of them communicate with each other but others appear to fill and empty by subterranean means. As is often the case with such features apparently small or even non-existent physical differences have led to wide divergences in the development of vegetation in each basin. The main communities in the four ponds visited were : saw sedge (Cladium mariscus) fen with black bog rush (Schoenus nigricans) and a sedge (Carex lasiocarpa); clear shallow water filled by stoneworts (Characeae); reedswamp in deeper water formed by lake rush (Scirpus lacustris) and reeds (Phragmites australis); quaking marsh vegetation formed largely of a water dropwort (Oenanthe fistulosa) and bog bean (Menyanthes trifoliata). The last is more species rich than the others and has such eutrophic plants as bur marigold (Bidens cernua), bur reed (Sparganium ramosum), fool's watercress (Apium nodiflorum) and water speedwell (Veronica anagallis - aquatica).

Common marsh plants such as St. John's wort (Hypericum tetrapterum), marsh pennywort (Hydrocotyle vulgaris), sedges (Carex nigra, C. rostrata) and grass of Parnassus (Parnassia palustris) are widely distributed while knotted pearlwort (Sagina nodosa), meadow thistle (Cirsium dissectum) and red rattle (Pedicularis palustris) are especially associated with the fen. Two other sedges (Carex paniculata and C. elata) were conspicuous in the reedswamp.

CLYARD KETTLEHOLES



Scale : 1 cm = 106 m

The less strongly calcareous areas are rich in insect life and a good number of dragonflies and damselflies were seen. The small size of the waterbodies restricts the bird life to moorhen, sedge warbler and reed bunting.

Evaluation: Groups of kettleholes are by no means common over the country though single ones are more widely spread. The most interesting features in this series are the variation in plant cover caused by differences in plant succession in adjacent ponds and the change in hardness of the water. The communities occur in other parts of the county except for the floating Oenanthe which has not been found before in East Mayo.

The area would make a valuable ecological teaching ground for higher classes.

Vulnerability: The ponds generally lie at the bottom of depressions so they would be difficult though not impossible to drain. They could be polluted however by the seepage of slurry or silage effluent and since the rate of turnover is slow, this could be serious.

Marginal dumping is a feature of the southern pond, including household and farm refuse, tree trunks and hedges bulldozed off surrounding land.

Recommendations: The water table should remain at its present height throughout the area and no intercommunicating ditches cut between the ponds. These would allow water of different qualities to mix, altering the plant and animal communities.

Dumping of refuse should be prevented and a nearby site found if the demand for it exists.

CROAGHMOYLE

Grid reference	M 10 98
Area	1 ha
Interest	Geological
Rating	Regional importance
Priority	C

There are two interesting sites on this mountain, one of stratigraphical significance and the other a fossil locality. On the northern side of the summit area a coarse conglomerate is exposed which is of basal Carboniferous age. It is separated by a fault from the Old Red Sandstone which forms the rest of the mountain.

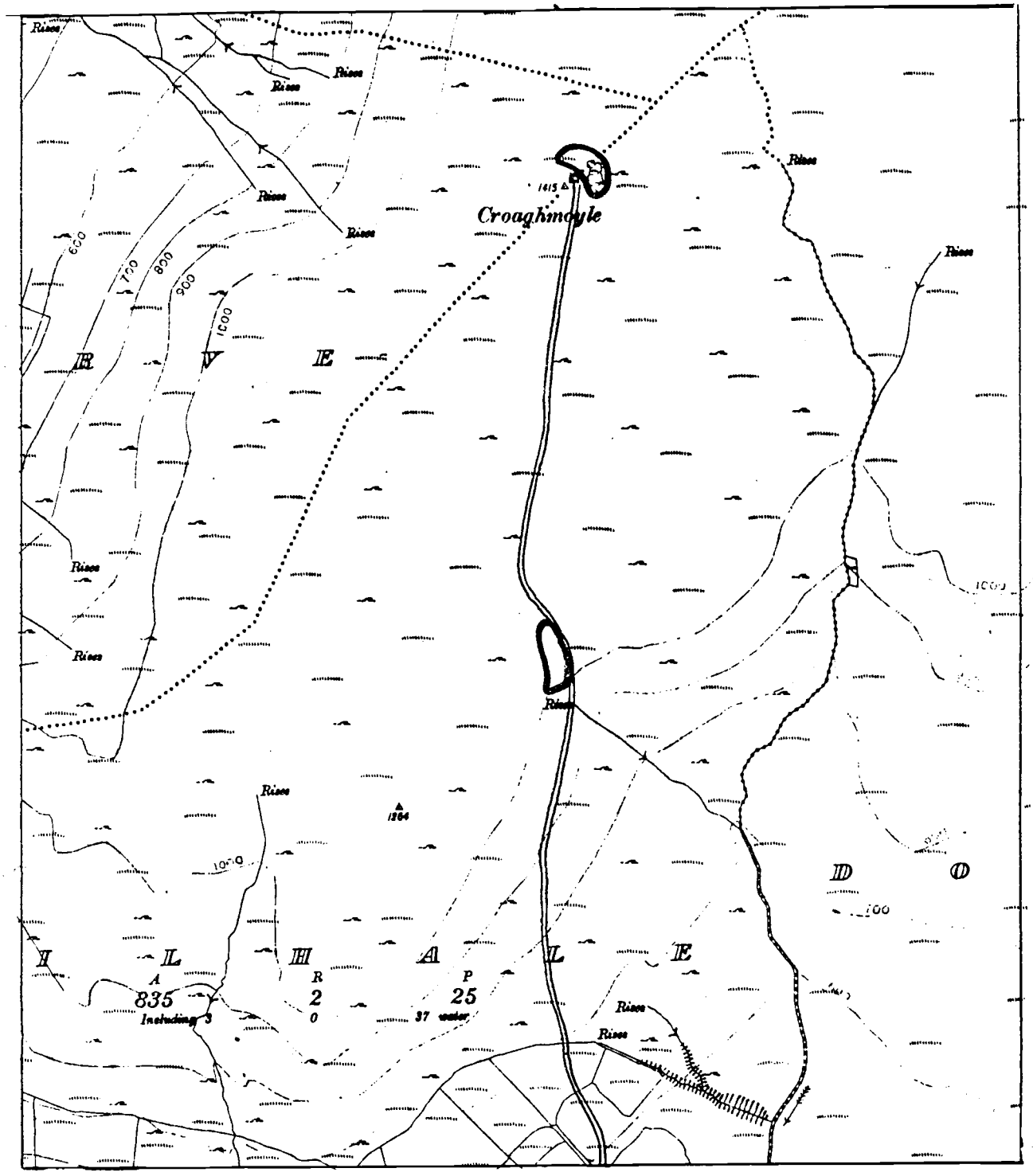
The fossil site occurs on the left hand side of the road leading up to the transmitter where plant remains have been found in greenish bands in the sandstone.

Evaluation: The exposure of the lower Carboniferous at the summit is unique in Ireland and therefore of considerable importance.

Plant fossils are relatively rare in the Irish Devonian rocks but insufficient work has been done at this site to assess its true significance.

Vulnerability & Recommendations: The summit rocks are unlikely to be damaged by any development but road reconstruction or other work could interfere with the fossil locality. Excavation would quite likely be beneficial but a geologist should be present when it is being done. The fossil site could probably be developed as an educational feature.

CROAGHMOYLE



Scale : 1 cm = 106 m

MULRANY HILL

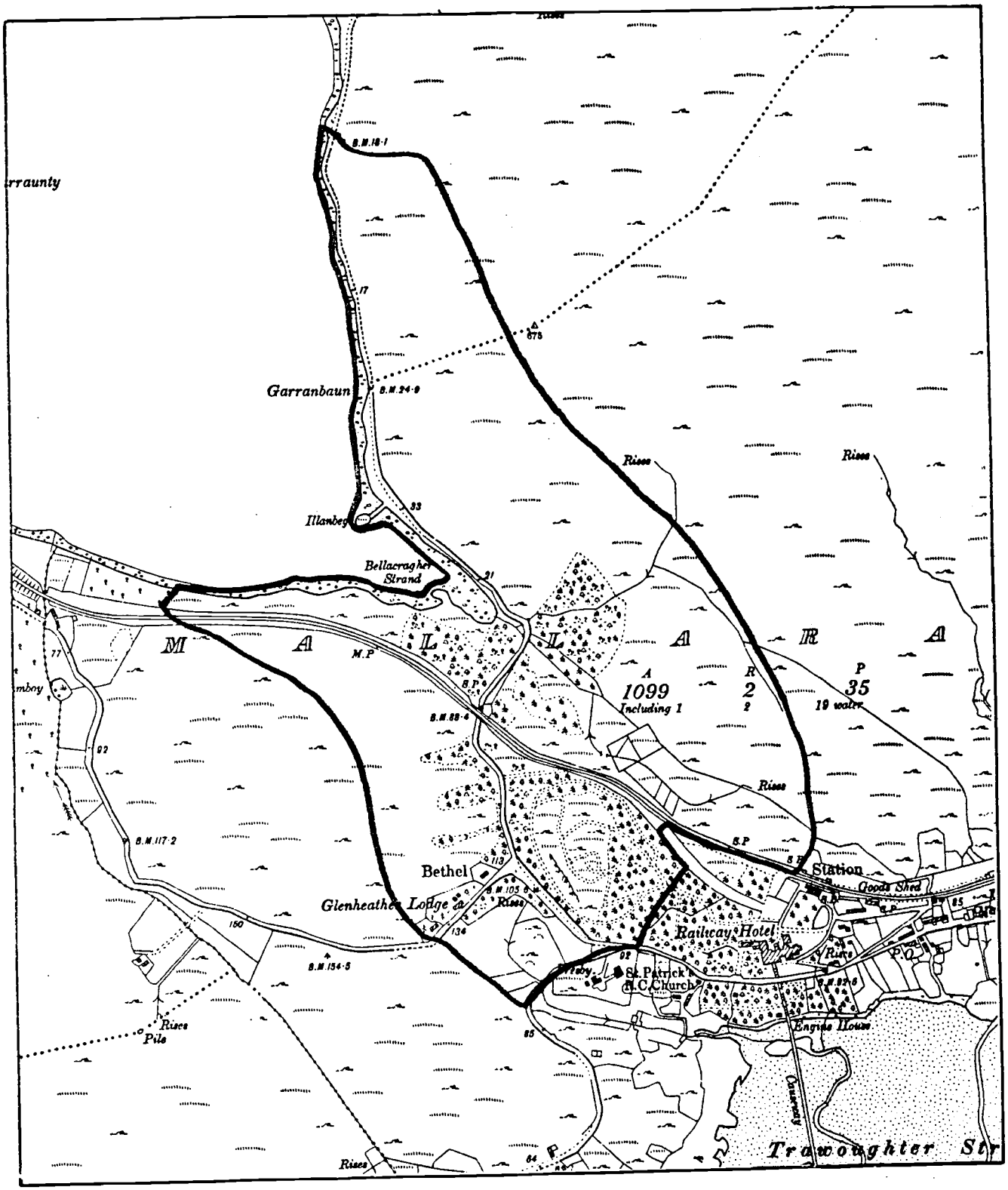
Grid reference	L 81 96
Area	84 ha
Interest	Botanical, zoological, ornithological
Rating	Regional importance
Priority	B

This hill at the head of Bellacragher Bay is surrounded by roads on the south, east and west sides while the disused Achill railway line crosses the northern end. The southern part of the area was used as a garden for the hotel at one time while the northern end was farmed. The land has since fallen out of use so that woodland and other natural communities are extending at the expense of open land.

The seashore is fringed by an extensive stand of mediterranean heath (Erica erigena) above a saltmarsh including English scurvy grass (Cochlearia anglica) and terrestrial seaweed (Fucus vesiculosus). The stand includes heath plants of all ages, some almost 2m high, and extends southwards to the hotel and northwards along the Bangor Erris road. It is spreading onto old lazy beds which are also being colonized by acid woodland.

The woodland is made up of birch (Betula pubescens), hawthorn (Crataegus monogyna) and towan (Sorbus aucuparia) with hazel (Corylus avellana), sycamore (Acer pseudo-platanus), holly (Ilex aquifolium) and ash (Fraxinus excelsior) coming in above the old railway line. Some oak (Quercus petraea) also occurs. The ground flora includes sweet vernal grass (Anthoxanthum odoratum), Yorkshire fog (Holcus lanatus), greater woodrush (Luzula sylvatica) and tormentil (Potentilla erecta) with many ferns when the ground is shaded. Woodland herbs occur in some

MULRANY HILL



Scale : 1 cm = 106 m

variety, for example foxglove (Digitalis purpurea), yellow pimpernel (Lysimachia nemorum), wavy hair grass (Deschampsia flexuosa) and marsh hawksbeard (Crepis paludosa). The species present show that the soil is moderately rich while the mosses and liverworts indicate its western position in the county.

The wood is surprisingly rich in birdlife, probably because it has trees of various ages and sizes. Goldcrest, great tit, long-tailed tit, tree-creeper, spotted flycatcher and willow wabler were noted.

Evaluation: This is the most famous though not the largest stand of Mediterranean heath, a plant that, in Ireland, is restricted to County Mayo. In the sheltered conditions here it seems to grow to its largest size. The adjacent woodland, which includes both natural and planted trees, is of good quality and one of very few in this part of the county.

The area has both research and educational value and could with profit be developed as a tourist or school stop.

Vulnerability: Changes in land use such as intensive livestock production or afforestation could be damaging to the various communities present. Feeding cattle on restricted sites with brought- in fodder occurs in the neighbourhood and leads to the destruction of any plant cover present. Afforestation has already occurred in the eastern section of the site. Because of the high scenic quality the area might also attract building development.

Recommendations: Land use should remain in its present form throughout the area but some attention could be given to opening by paths in the southern section, including the old railway track, as an amenity/educational site.

DOWNPATRICK HEAD (13)

Grid Reference	G 12 42
Area	23 ha
Interest	Ornithological
Rating	Regional Importance
Priority	C

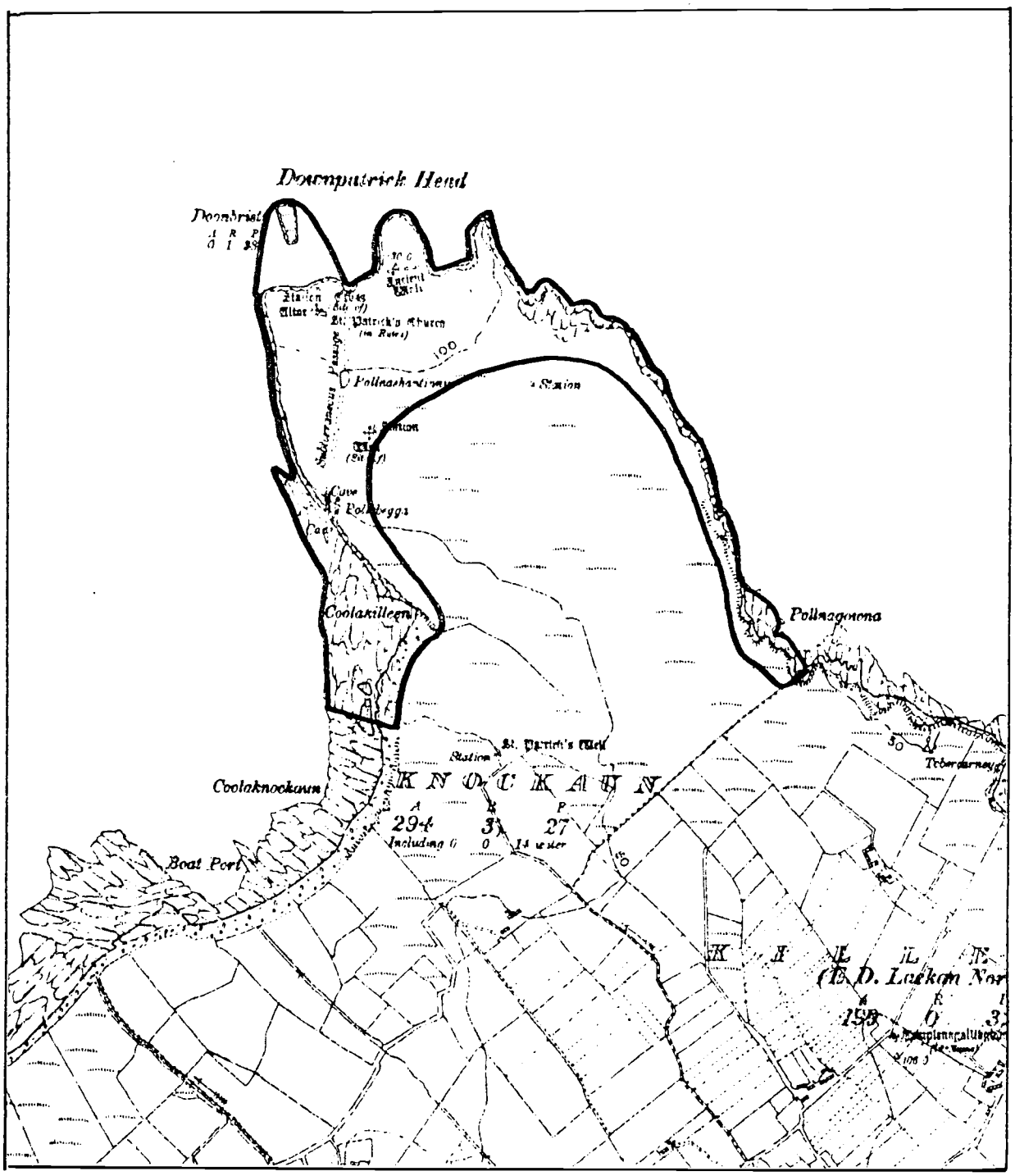
Downpatrick Head is formed of yellowish Carboniferous sandstone which is bedded horizontally and therefore stands as vertical cliffs around the headland and its outlier Doonbristy. The sea is reputed to have created this gap in 1393 and it continues to work on the western side of the head. It has eroded several narrow gashes here; some of them are still roofed as caves, occasionally with blow-holes. The vegetation around such features and on other exposed sites is a plantain sward and it gives way eastward to fescue grassland with sea pink (Armeria maritima) and a sedge (Carex distans). To the south acid grassland is found beyond a 'flushed' belt of black bogrush (Schoenus nigricans), sedges (Carex flacca), meadow thistle (Cirsium dissectum), and eyebrights (Euphrasia spp.).

The head is chiefly famous for its seabird colony which held the following numbers in 1972.

Fulmar	80	pairs
Great black-backed gull	10	"
Herring gull	10	"
Kittiwake	510	"
Razorbill	13	"
Guillemot	740	"

Since this time the number of kittiwakes has slightly increased but that of razorbill and guillemot decreased.

DOWNPATRICK HEAD



Scale : 1 cm = 106 m

Evaluation: Downpatrick Head provides some spectacular and accessible coastal scenery which illustrates marine erosion and the structure of sedimentary rocks. Its nesting seabirds are visible, expecially on Doonbristy and the eastern side of the Head, and occur in regionally important numbers. They form the second largest colony of guillemots in the county and the third largest of kittiwakes. The site has considerable educational value.

Vulnerability: Disturbance by shooting from the cliff top would adversely affect the seabirds, particularly the guillemots. Otherwise they would become accustomed to people walking along the cliff top. The numbers of auks are also threatened by drift-netting activity. This can be a significant cause of mortality when feeding birds become entangled in the nets.

Recommendations: The area could well be developed as a viewing post for seabirds either by the Council or a voluntary body such as the Irish Wildbird Conservancy or An Taisce. Unnecessary disturbance should be curtailed.

LACKAN SALTMARSH

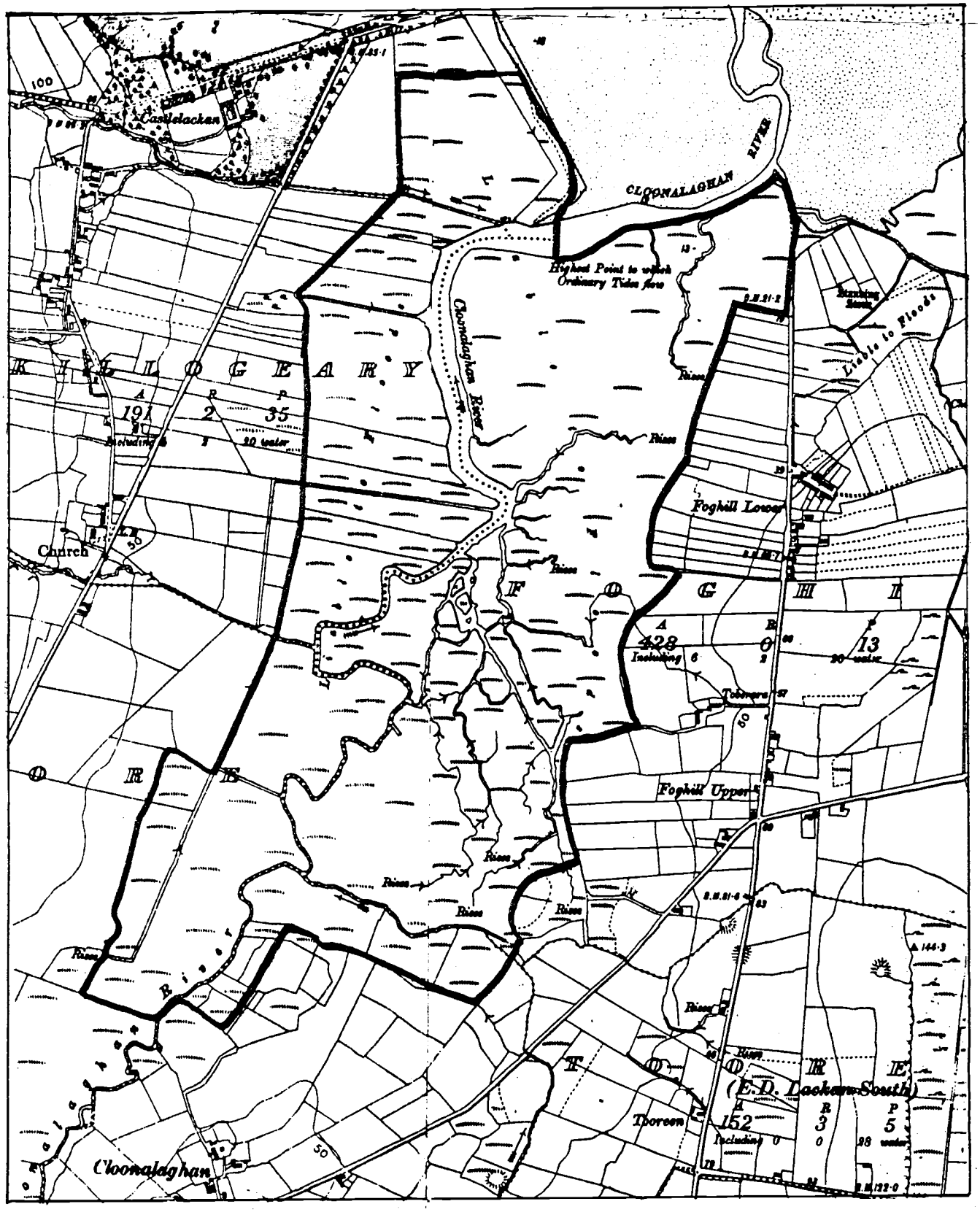
Grid Reference	G 18 35
Area	110 ha
Interest	Botanical, Zoological
Rating	Regional Importance
Priority	B

An extensive saltmarsh has been built up in Lackan Bay by sediments originating from the Cloonalaghan River and from the coast to the east. In it all variations of habitat and management are shown. The eastern part is heavily grazed with 1 cm turf of saltmarsh grass (Puccinellia spp.) sea pink (Armeria maritima) saltwort (Suaeda), milkwort (Glaux) and plantain (Plantago maritima) with prostrate forms of glasswort (Salicornia spp) and a rush (Juncus gerardii). Sea rush (Juncus maritimus) occurs on slightly elevated sites and its sharp stems protect two succulent plants, scurvy grass (Cochlearia officinalis) and sea aster (Aster tripolium). A few shallow pools or pans occur in the surface.

West of the river the position is quite different and the vegetation grows tall and luxuriant. Freshwater streams flow down from the hillside at intervals, occupying ditches through the grassland. Sea rush is the commonest plant with two grasses growing through it; red fescue (Festuca rubra) and creeping bent (Agrostis stolonifera). Scattered through this stand is a good selection of other plants, including spurrey (Spergularia spp.), parsely water-dropwort (Oenanthe lachenalii), a sedge (Carex extensa) and arrow grass (Triglochin maritimum) as well as the species mentioned above. Clubrush (Scirpus maritimus) and reeds (Phragmites australis) grow in some of the ditches.

The fauna of the contrasting vegetation types is also very different, a much more diverse insect community being found in the taller cover.

LACKAN SALTMARSH



Scale : 1 cm = 106 m

Bird life is rather the opposite, as flocks of waders rest and feed on the open ground. Lapwing, golden plover, redshank and curlew were noted, with dunlin and sanderling in the channels and mudflats. In November, 2,200 golden plover may be found with 400 lapwing and 60 wigeon. Teal, mallard and snipe are associated with the taller cover where the three commonest species are meadow pipit, reed bunting and skylark.

Evaluation: The large size of this saltmarsh has allowed many different types of community to develop each controlled by different environmental conditions. The contrast of grazed and ungrazed areas is especially valuable and ungrazed saltmarsh is, in fact, rare on our coasts.

Vulnerability: Changes in land management will bring about changes in the natural communities but in the present case (under multiple ownership) are only likely to alter their distributions. The area could be reclaimed by preventing tidal access and pumping water outwards and in this case the interest would be destroyed.

Recommendations: Land use should remain in its present general pattern.

CARROWMORE LAKE (4)

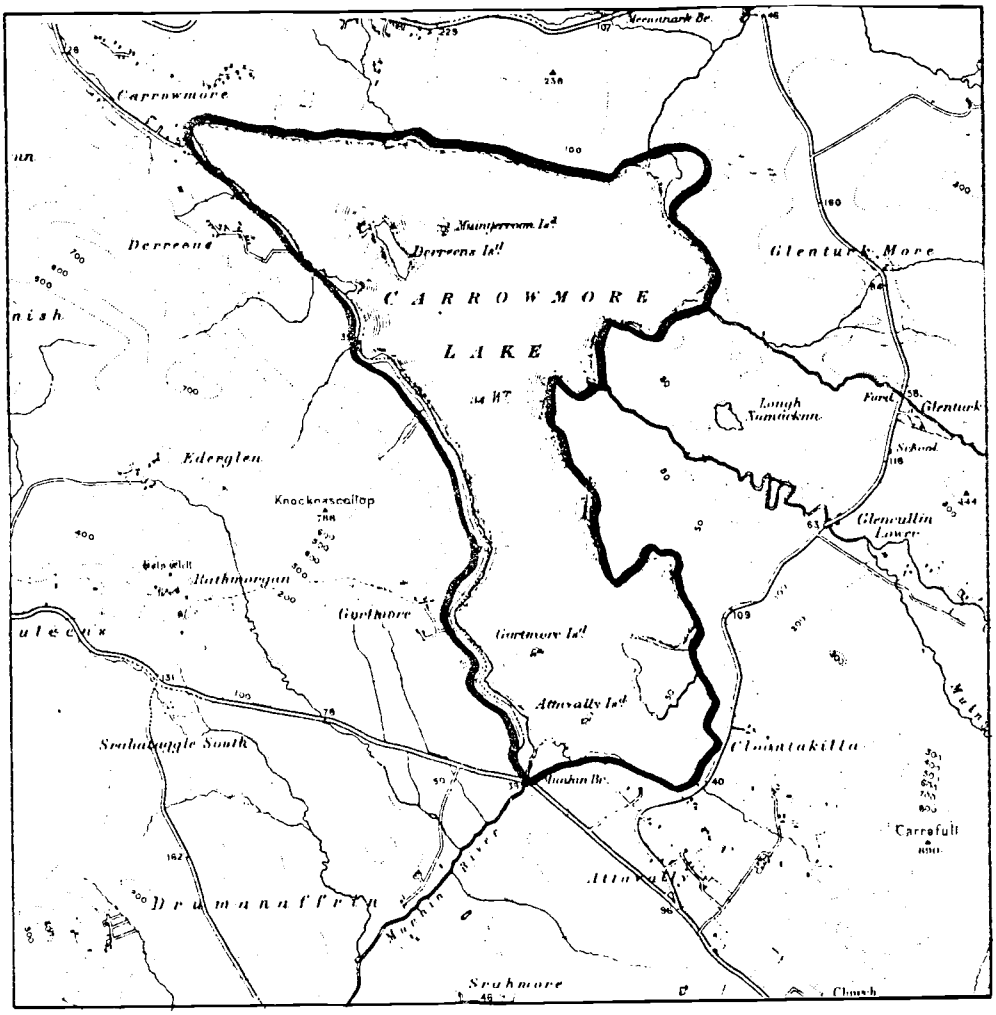
Grid Reference	F 83 28
Area	980 ha
Interest	Ornithological, Botanical
Rating	Regional Importance
Priority	C

Carrowmore Lake is a large shallow waterbody with a maximum depth of about 2.5m. The catchment consists largely of blanket bog though around the lake this is flushed by nutrients and has been converted to acid grassland. The lake water is almost neutral and its nutrient leads are enriched by sea spray. It is tending towards eutrophy, with blue-green algae (Microcystis) the commonest planktonic alga and the shrimps Daphnia and Cyclops the most frequent animals. This increased productivity favours higher organisms like fish and birds.

A sizeable breeding colony of common gulls exists on the island in the lake and in 1965 it numbered 200 pairs. Lapwing, teal and snipe also nest and sometimes there are common terns. In winter a good variety of wildfowl is present, with the following composition: (averages 1966-'71) -

Mallard	9
Teal	5
Wigeon	7
Scaup	3
Pochard	380
Tufted duck	150
Goldeneye	2
Mute swan	4
Whooper swan	15
Whitefronted goose	25 (1969)

CARROWMORE LAKE



Scale : 1 cm = 634 m

Shoreweed (Littorella uniflora), sedges (Carex serotina) and rushes (Juncus articulatus) fringe the lakeshore with some pondweed (Potamogeton perfoliatus), bur-reed (Sparganium angustifolium) and water lobelia (Lobelia dortmanna) further out. Wet grassland then occurs on the shore with pennywort (Hydrocotyle vulgaris), silverweed (Potentilla anserina), purple loosestrife (Lythrum salicaria), white clover (Trifolium repens) and grasses (Cynosurus, Agrostis stolonifera). Above this zone, a band of mediterranean heath (Erica erigena) surrounds practically all of the lake with bell heather (E. cinerea), angelica (Angelica sylvestris) and yellow flag (Iris pseudacorus). This is at, or, slightly higher than the level of natural floods.

Evaluation: The colony of common gulls is the second largest in the Galway/Mayo region and is, in fact the largest in Mayo. The number of wintering pochard is also notable but perhaps less so than the variety of waterfowl species that have been seen at this lake. It may be an important landfall for migrants, being the first visible stretch of open fresh water in north Mayo to birds coming from Iceland.

The mediterranean heath is widely distributed in west Mayo but occurs here in a very accessible site related to former lake levels.

Vulnerability: An added pollution input would alter the ecology of the lake but probably not to the detriment of the bird populations.

Recommendations: The lake is already a no-shooting area in winter under the Wildlife Act, 1976, but an increase in disturbance from boating or lakeside development should not be permitted.

KILCUMMIN HEAD

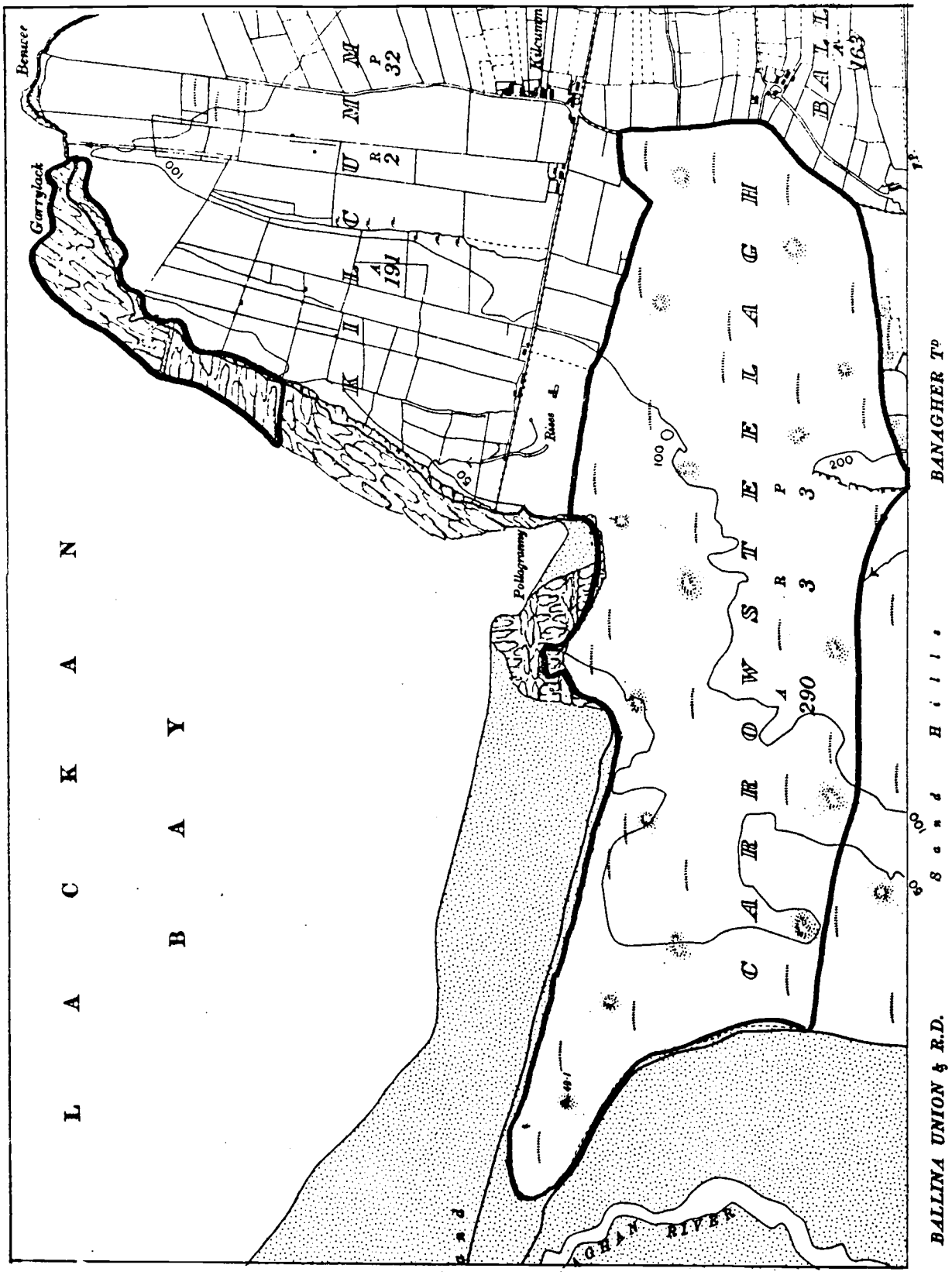
Grid Reference	G 20 37
Area	82 ha
Interest	Botanical, Zoological, Ornithological, Geological
Rating	Regional importance
Priority	B

Kilcummin Head resembles Downpatrick Head in its rock type and has a fine section of marine sandstones and carbonates with interesting structures in it. Windblown sand has accumulated as a spit across Lackan Bay and has also been blown up onto the headland. The complex of sandy mineral soils that has arisen gives rise to a mixed assemblage of plant species, some of sand dunes proper, some of dune grassland and some of heathy pasture.

On the headland an alkaline grassland community is the commonest type with fescue grasses prominent (Festuca rubra and F. ovina) as well as meadow grass (Poa pratensis), creeping bent (Agrostis stolonifera) and crested hair grass (Koeleria cristata). It is closely grazed and creeping thistle (Cirsium arvense) is frequent. The herb flora is diverse including wild thyme (Thymus drucei), lady's bedstraw (Galium verum), yarrow (Achillea millefolium), bulbous buttercup (Ranunculus bulbosis), clovers (Trifolium repens, T. dubium), dog daisy (Leucanthemum vulgare) and centaury (Centaurium erythraea). Less common species of some interest are dodder (Cuscuta epithymum), mountain everlasting (Antennaria dioica), field gentian (Gentianella campestris), pyramidal orchid (Anacamptis pyramidalis) and an eyebright (Euphrasia cf occidentalis). The maritime influence is shown by sea pansy (Viola tricolor) among other species and the western situation by the occupance of bog pimpernel (Anagallis tenella) and a moss (Hylocomium splendens) throughout the turf.

A rich flora like this offers many food plants to butterflies and other insects. The lepidoptera noted were six-spot burnet moth, cinnabar

KILCUMMIN HEAD



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moth, meadow brown, small heath, dark green fritillary, common blue. Three species of bumble bee were also seen.

A varied selection of seabirds nest on the cliffs or as in the case of puffins, in the soil above them. In 1972 these consisted of :

Fulmar	32	pairs
Great black-backed gull	19	"
Lesser black-backed gull	2	"
Herring gull	31	"
Kittiwake	185	"
Razorbill	13	"
Puffin	250	"

Evaluation: The diversity of the area is an important feature of this site as is the intrinsic interest of the grassland community and the seabird colony. The occurrence of dodder is interesting since it occurs nowhere else in West Mayo, but here covers 15 ha.

The puffin colony is the largest on the Mayo mainland and the second largest in the county. It contains 5% of the total birds in Ireland.

Vulnerability: The dune grassland could be significantly damaged by an increase in trampling and or grazing pressure. Trampling could arise from a caravan or camping site.

Puffins are less susceptible to disturbance than some other auks because they nest in burrows and come out mainly at night.

Recommendations: The site has considerable educational value and could be used for a nature trail. Camping developments should not occur within the outlined area though it could be used for walking. Land use should generally be maintained in its present form.

BURREN ROCK

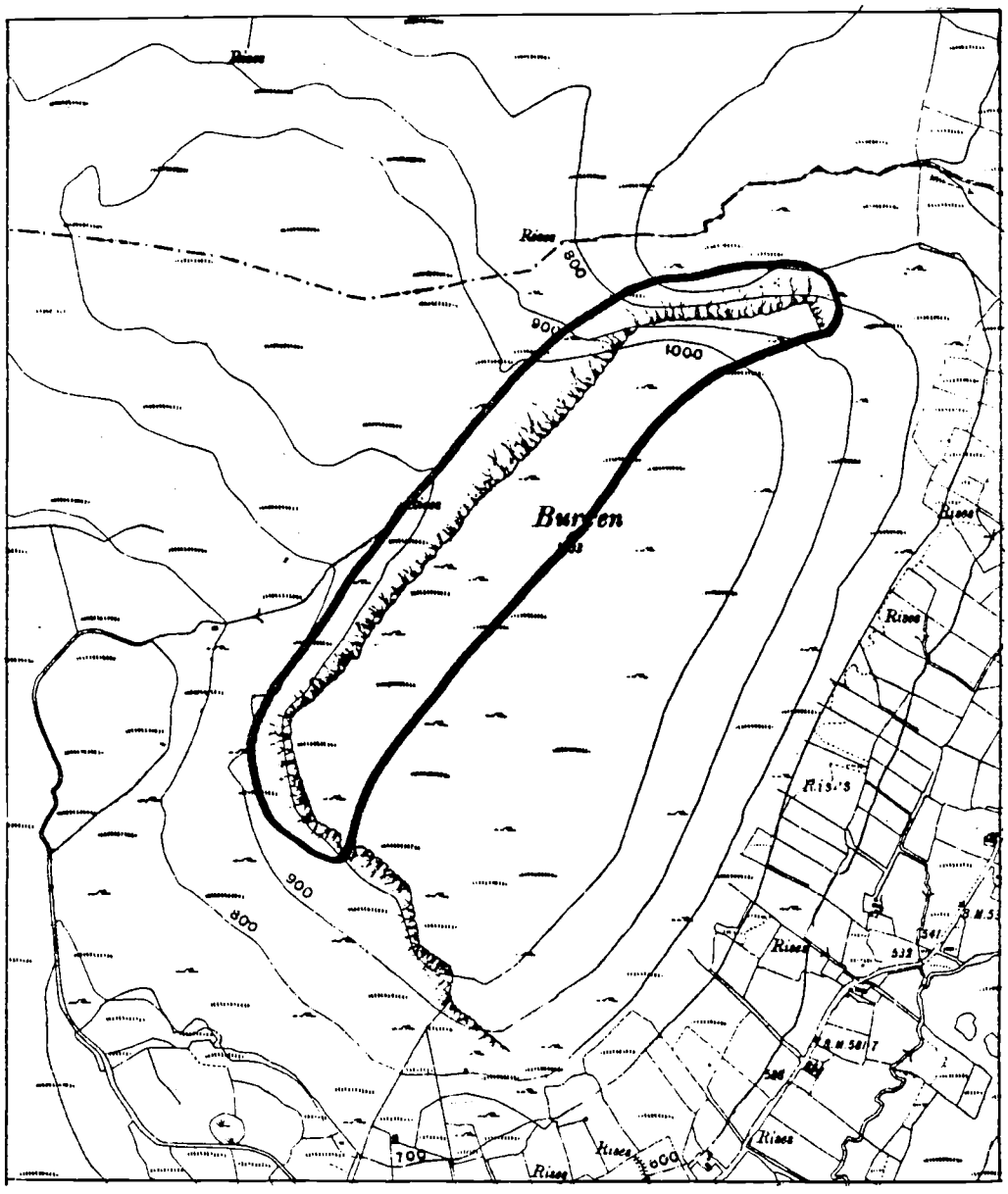
Grid Reference	M 12 99
Area	19 ha
Interest	Botanical, Ornithological
Rating	Regional importance
Priority	C

Moving ice plucked rocks from the north side of this hill during the Glacial period creating a cliff in the massive Old Red Sandstone about 60 m high. Because of its aspect (north and north west) the microclimate is cool and alpine species of plant, which were much more widespread during the ice age, can compete successfully against the later invaders (temperate plants). Ferns are conspicuous, shield fern(Polystichum aculeatum) and green spleenwort (Asplenium viride) being found amongst the commoner species such as buckler ferns (Dryopteris dilatata and D. aemula), and other spleenworts (A. trichomanis and A. adiantum-nigrum). Two clubmosses also occur (Lycopodium selago and L. clavatum), and other mountain plants such as roseroot (Rhodiola rosea), harebell (Campanula rotundifolia) and crowberry (Empetrum nigrum). The commonest plants are probably heather (Calluna vulgaris), fraochan (Vaccinium myrtillus) and fescue grasses (Festuca vivipara and F. ovina). Mosses are also abundant.

The area houses several cliff-nesting birds such as raven and kestrel and is of considerable amenity value also. Eagles nested there in former times.

Evaluation: The alpine species of plant occur at a low level in this area because of the peculiar environmental conditions. They include

BURREN ROCK



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several plants that are unknown on other mountains in Mayo, north of Clew Bay.

Vulnerability: The vegetation is secure from grazing damage. The bird life could suffer from disturbance if the cliff was made more accessible to walkers.

In amenity terms afforestation could conceal the cliff feature from the road to Windy Gap.

Recommendations: Access to casual walkers should not be provided in this area.

INISHKEERAGH (1)

Grid Reference	F 60 30
Area	19 ha
Interest	Ornithological
Rating	Local importance
Priority	C

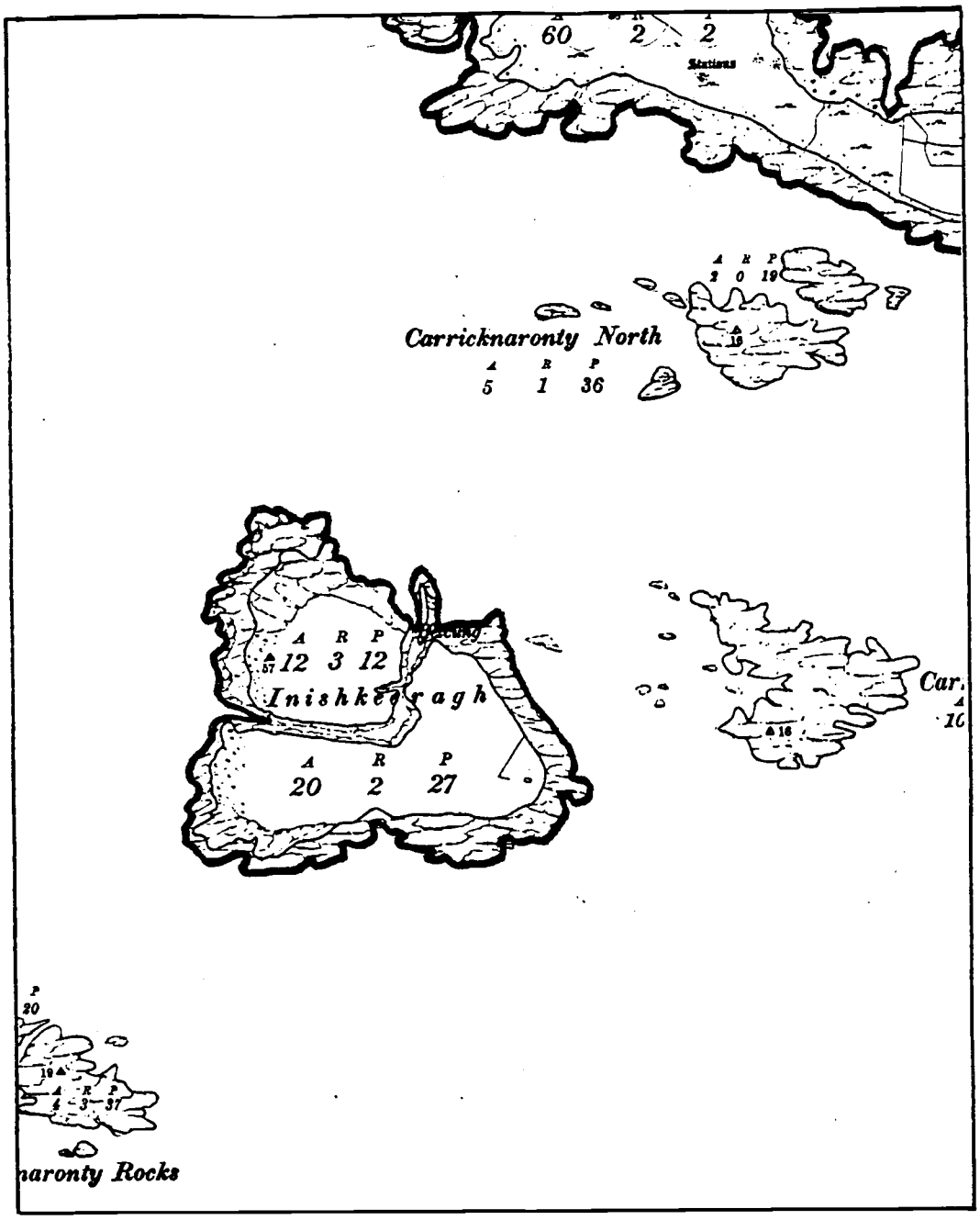
A low-lying island adjacent to Inishglora, Inishkeeragh has proportionally more grassland and less boulder beach. It is visited to a greater extent by barnacle geese and there is usually a flock of about 100 birds there in winter.

The island is chiefly noted for its nesting cormorants (90 prs) but there are also storm petrels (100 prs), shags (3 prs), lesser black-backed gulls (5 prs) and herring gulls (25 prs).

Evaluation: Inishkeeragh has the largest colony of cormorants in Mayo and is a locally important feeding area for barnacle geese.

Vulnerability and Recommendations: All the birds named are susceptible to disturbance so that people should not be encouraged to land on the island.

INISHKEERAGH



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DRUMLEEN LOUGH (15)

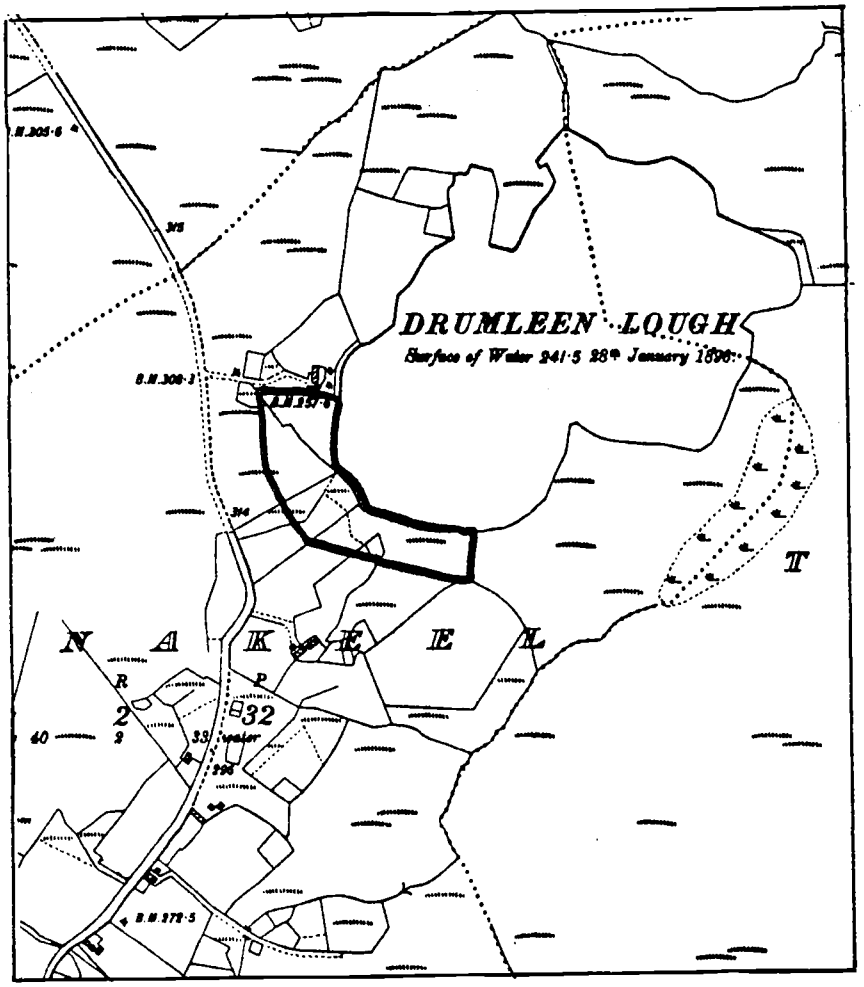
Grid Reference	G 0509
Area	2 ha
Interest	Botanical
Rating	Local importance
Priority	B

A wet meadow on the western shore of Drumleen Lough has an interesting flora for its type, and is chiefly remarkable for the occurence of the whorled caraway (Carum verticillatum).

Evaluation: The plant in question has not been found anywhere else in Connaught and this station links its range in Kerry and Donegal.

Vulnerability and Recommendations: Plants of wet meadows may be affected by drainage or fertilisation. It is important therefore that the present type of agricultural usage remains the same in this small area.

DRUMLEEN LOUGH



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ROSSMONEY INLET

Grid Reference	L 9486
Area	4 ha
Interest	Botanical, Zoological
Rating	Local importance
Priority	B

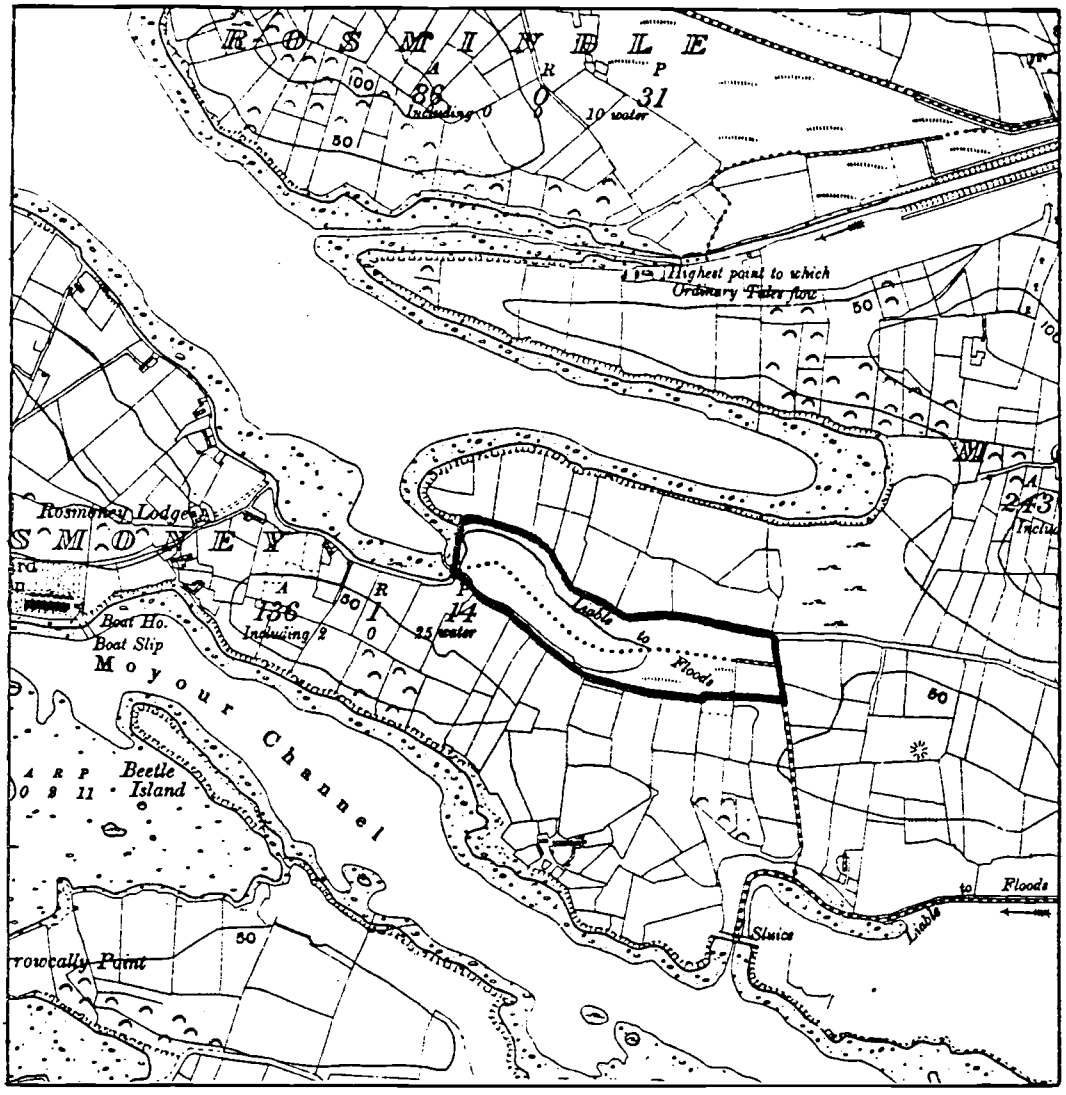
In this area a former arm of the sea has been dammed by a sluice and a permanent waterbody created. An interesting marsh has developed at the head of this with a strong calcareous influence in brackish conditions. The more saline part of the marsh bears a vegetation of saltmarsh rush (Juncus gerardii), clubrush (Scirpus tabernaemontani), sea plantain (Plantago maritima) with some arrow grass (Triglochin maritimum), brookweed (Samolus valerandi) and a sedge (Carex cf serotina). Offshore, tasselweed (Ruppia maritima) occurs.

Seepage of calcareous water is marked by the occurrence of stonewort (Chara sp.) with fen pondweed (Potamogeton coloratus), black bog rush (Schoenus nigricans), red rattle (Pedicularis palustris) and a sedge (Carex flacca). Several smaller species are associated with this community, e.g. eyebright (Euphrasia cf scotica), grass of Parnassus (Parnassia palustris), a large orchid, possibly Dactylorhiza majalis and the small clubmoss (Selaginella selaginoides).

The invertebrates associated with this environmental gradient are of some interest.

Evaluation: The juxtaposition of a calcareous marsh and a saltmarsh is unusual and of considerable ecological value. The fact that the habitat is partly man-made is also interesting.

ROSSMONEY INLET



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Vulnerability and Recommendations: The waterbody could be filled in by dumping or modified by a change in water levels. The former influence should be prevented.

BALLYNEW OUTCROP

Grid Reference	M 170 920
Area	1 ha
Interest	Geological
Rating	Local importance
Priority	C

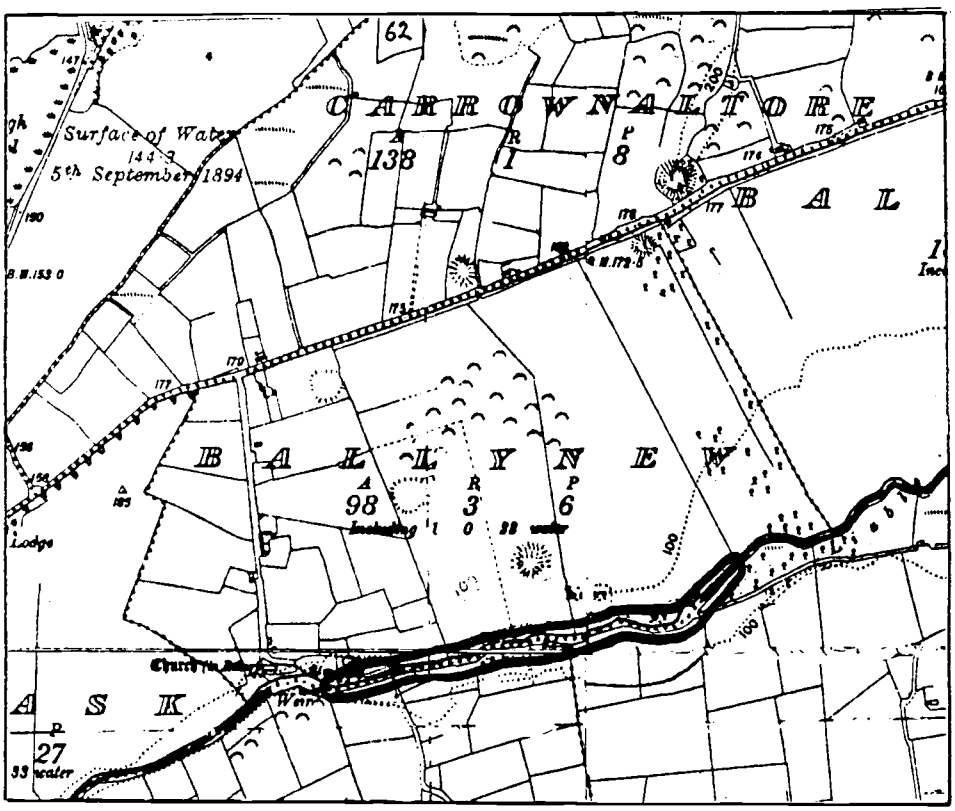
This is an outcrop of the Castlebar River Limestone (10 x 3m) which is an algal mat limestone found around and southwards of the town. The exposure at Ballynew is a river section now appearing as a shelf of rock above the modified channel of the river.

The rock is sediment-rich, laminated black micrite with remains of drying cracks and fossilized animal burrows.

Evaluation: These sedimentary features are displayed particularly well at Ballynew and are useful in teaching being fairly accessible. The site is not the type exposure of the Castlebar River Limestone but is a good example of it nevertheless.

Vulnerability and Recommendations: Further modification of the river channel could interfer with the site and any material excavated should not be dumped near it.

BALLYNEW OUTCROP



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BURREN

Grid reference	M 126 986
Area	1 ha
Interest	Geological
Rating	Local importance
Priority	C

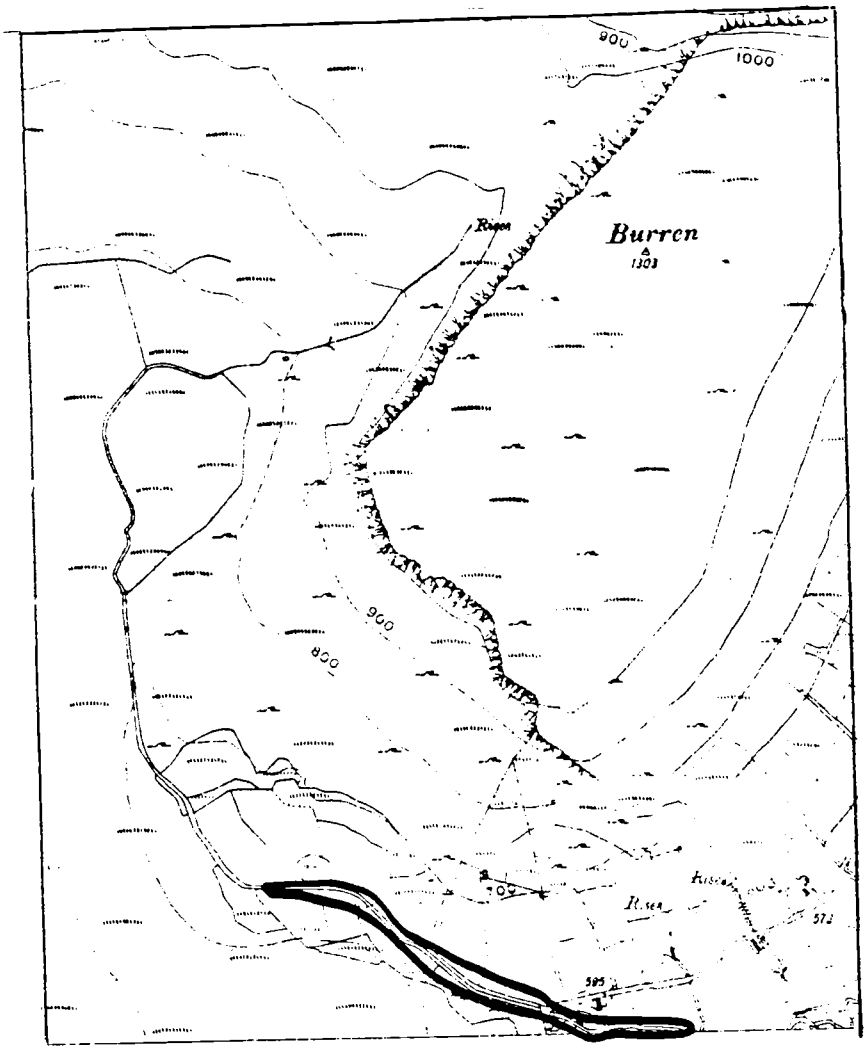
A small stream-side exposure, about 10 x 2m has yielded interesting Middle Devonian fossils which are comparatively rare in this sandstone type.

Evaluation: This is a useful site for people studying the Devonian period and is one of several in the Croaghmoyle Hills.

Vulnerability: Indiscriminate fossil collecting has destroyed some of the value in this area. Changes could also be made to the stream bed, though this is not likely.

Recommendations: Developments leading to changes in the stream should be checked for their impact on this site.

BURREN



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TAWNAGH MORE

Grid reference	G 224 070
Area	2 ha
Interest	Geological
Rating	Local importance
Priority	C

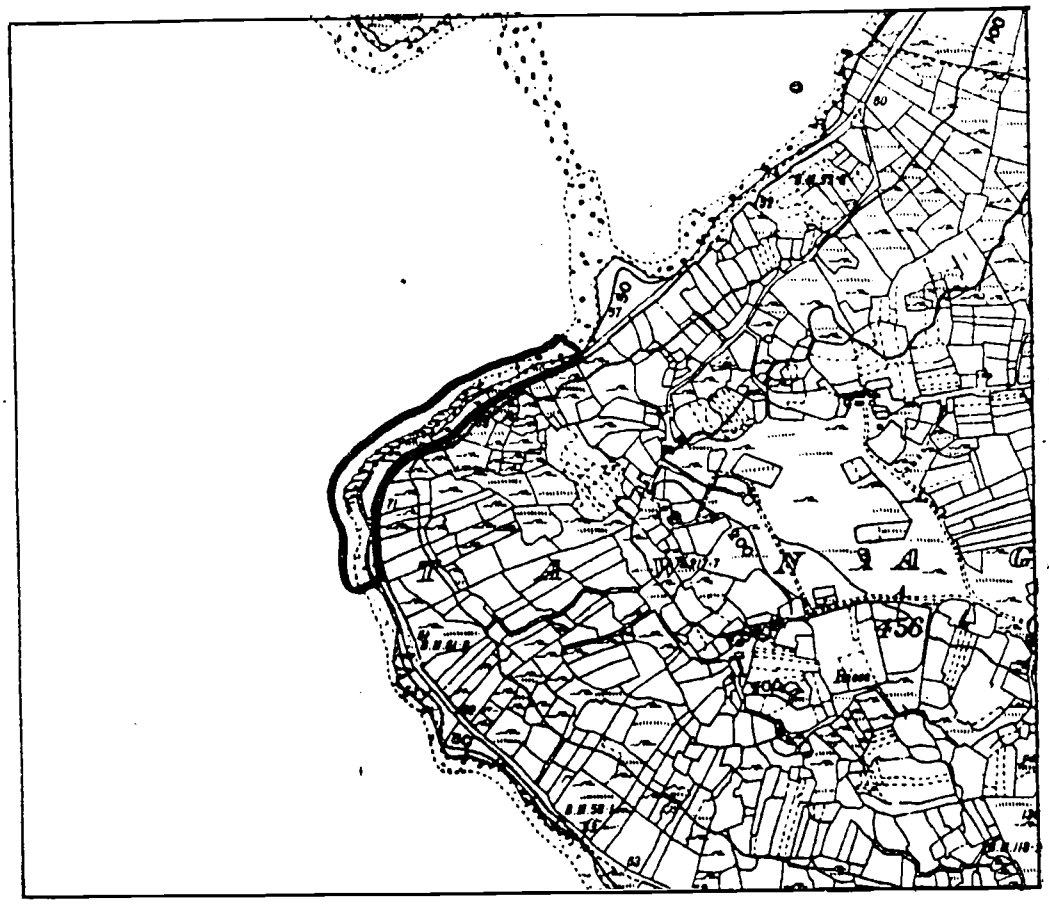
This site occurs on the edge of Lough Conn and is not always visible if the water level is high. It is an exposure of a major fault which bounds the north side of the Ox Mountains chain. Over an area of approximately 50 x 10m the fault shows a 2-3m crush zone formed of the precambrian metamorphic rock which is now banked against Carboniferous compacted screes (breccia).

Evaluation: This is an accessible fault line of use in secondary education.

Vulnerability: Lakeside development, such as building or fencing, could prevent access to this site or obliterate some of it.

Recommendations: Development should not be permitted within the outlined area.

TAWNAGH MORE



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DERRYCRAFF

Grid Reference	M 019 728
Area	4 ha
Interest	Geological
Rating	Local importance
Priority	C

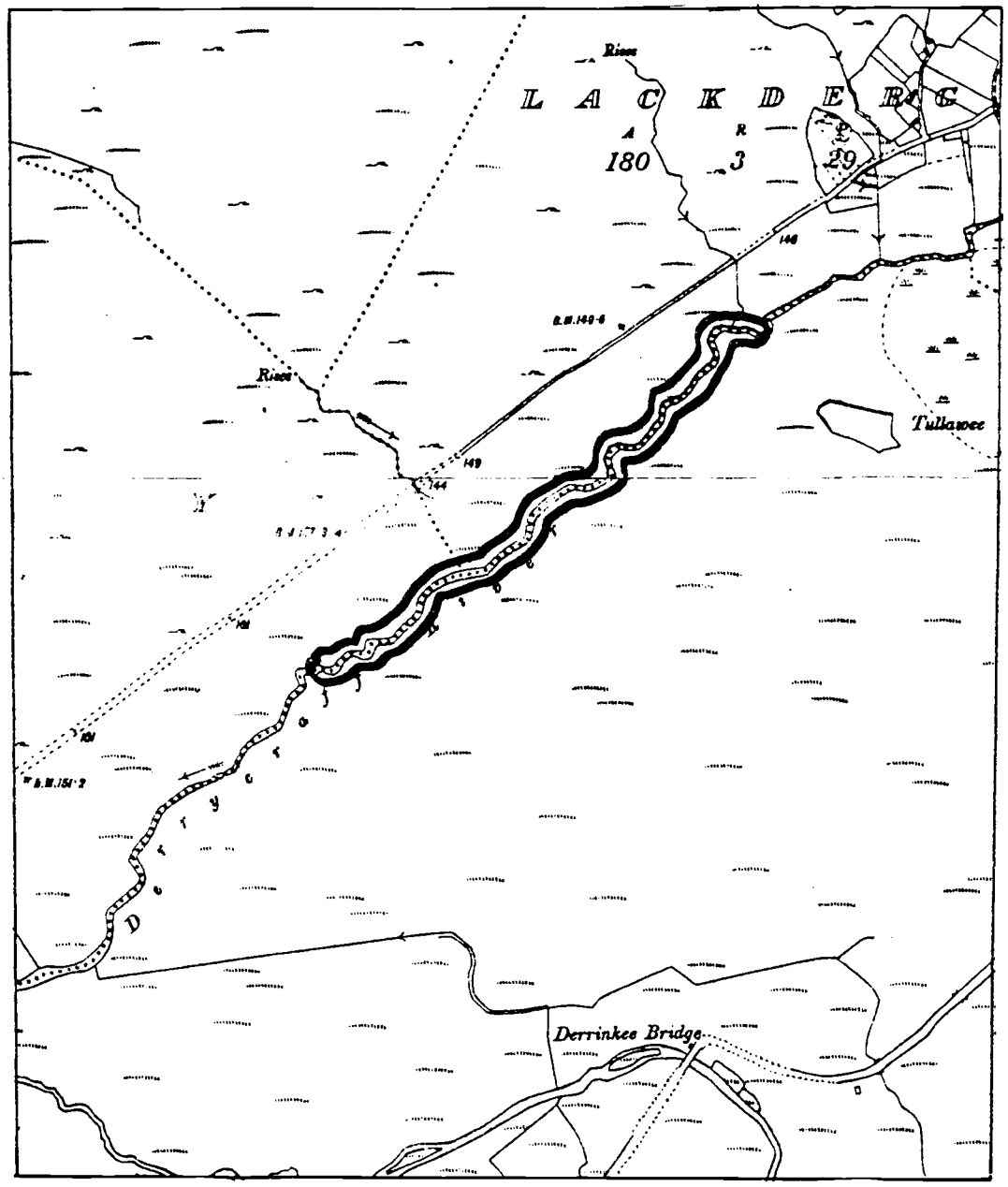
This site is a small exposure of the Erriff Valley Carboniferous in the valley of the Derrycraff River, tributary of the Erriff. An almost continuous section is presented through the transition from the lower Carboniferous conglomerates and breccias into the much more widespread carbonates. Algal beds are well developed near the top.

Evaluation: The section seen here is one of the only exposures of the Erriff Valley Carboniferous, a rock which is predominantly covered by glacial drift and blanket bog.

Vulnerability: The site could be obscured by forestry planting.

Recommendations: Access should be preserved to this site in the event of afforestation and the trees kept away from the river bank. The Forest and Wildlife Service should be notified of the area.

DERRYCRAFF



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MULRANY SALTMARSH

Grid Reference	L 82 95
Area	22 ha
Interest	Botanical
Rating	Local importance
Priority	C

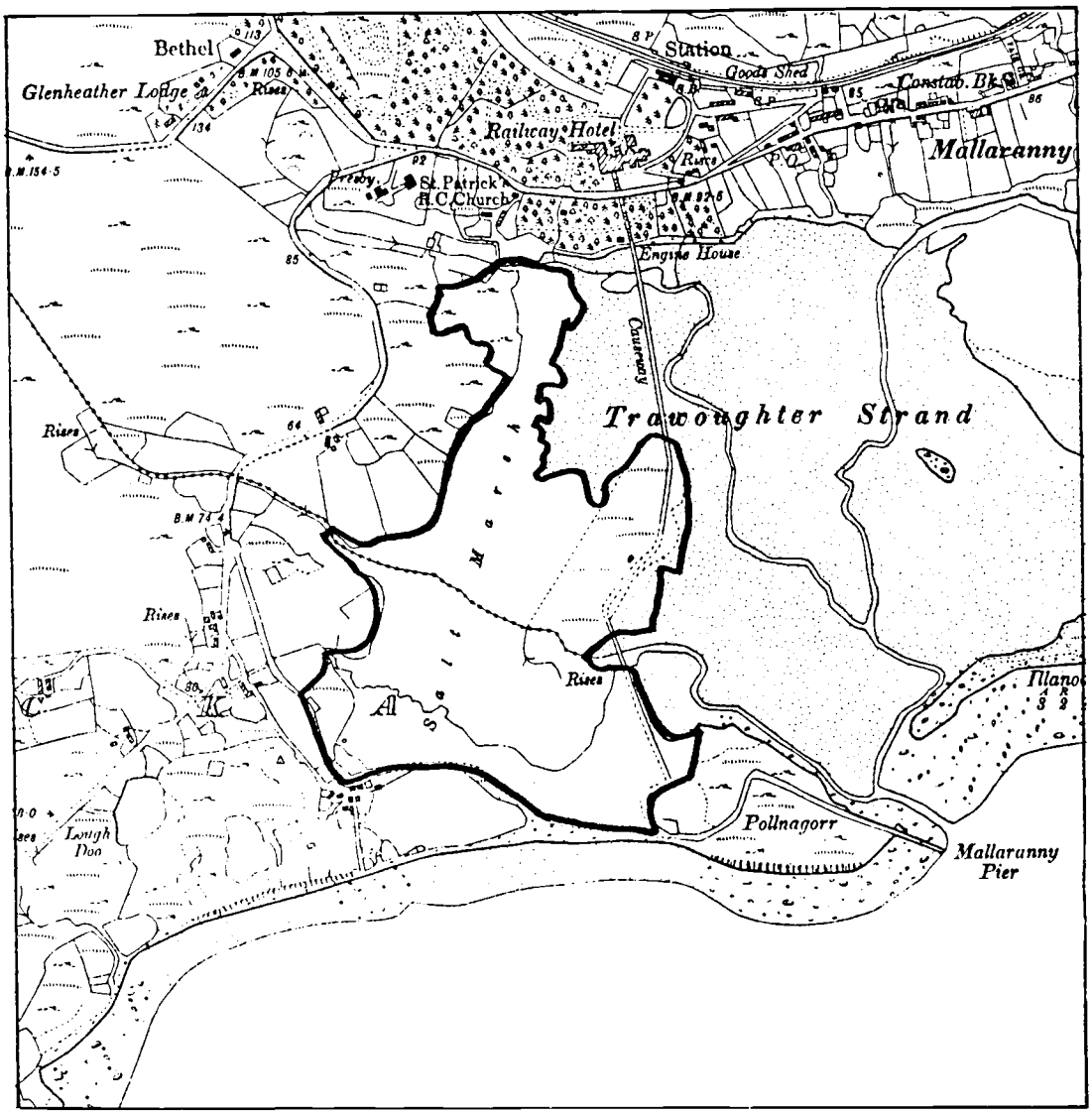
This distinctive saltmarsh has developed in the quiet sheltered conditions behind Mulrany beach. It is distincitve because of its complex drainage pattern, the normal tidal drainage being added to by a small local stream, and because of the intense grazing pressure to which the vegetation is subjected. The grassy sward that results is composed of typical species like thrift (Armenia maritima). Sea plantain (Plantago maritima), saltmarsh grass (Puccinellia spp.), rushes and sedges (Juncus gerardii and Carex extensa), sea pimpernel, (Glaux maritima) with glasswort (Salicornia europaea), sea blite (Suaeda maritima) further down towards sea level. A rim of sea rush (Juncus maritimus) occurs on the N.W. margin of the area giving the full maritime / terrestrial transition.

The marsh is used by some shore birds for feeding or resting, such as curlew, redshank, and dunlin but is probably too enclosed for larger flocks.

Evaluation: Saltmarshes occur on a small scale all around Clew Bay but one of this size is rare. It also shows the full transition from sea to land. It has a most unusual arrangement of channels, but few pans on the top surface. The high level of grazing which dwarfs all of the plants and prevents many of them from flowering is an interesting ecological factor.

The area would be very suitable for educational use because of its

MUIRANY SALTMARSH



Scale : 1 cm = 106 m

quality and accessibility.

Vulnerability: The bay could be cut off from sea influence by a small bank and the saltmarsh would thereby lose its saltwater input and its interest.

Recommendations: No reclamation work should be done that would influence this site.

OWENDUFF AT LAGDUFF LODGE (9)

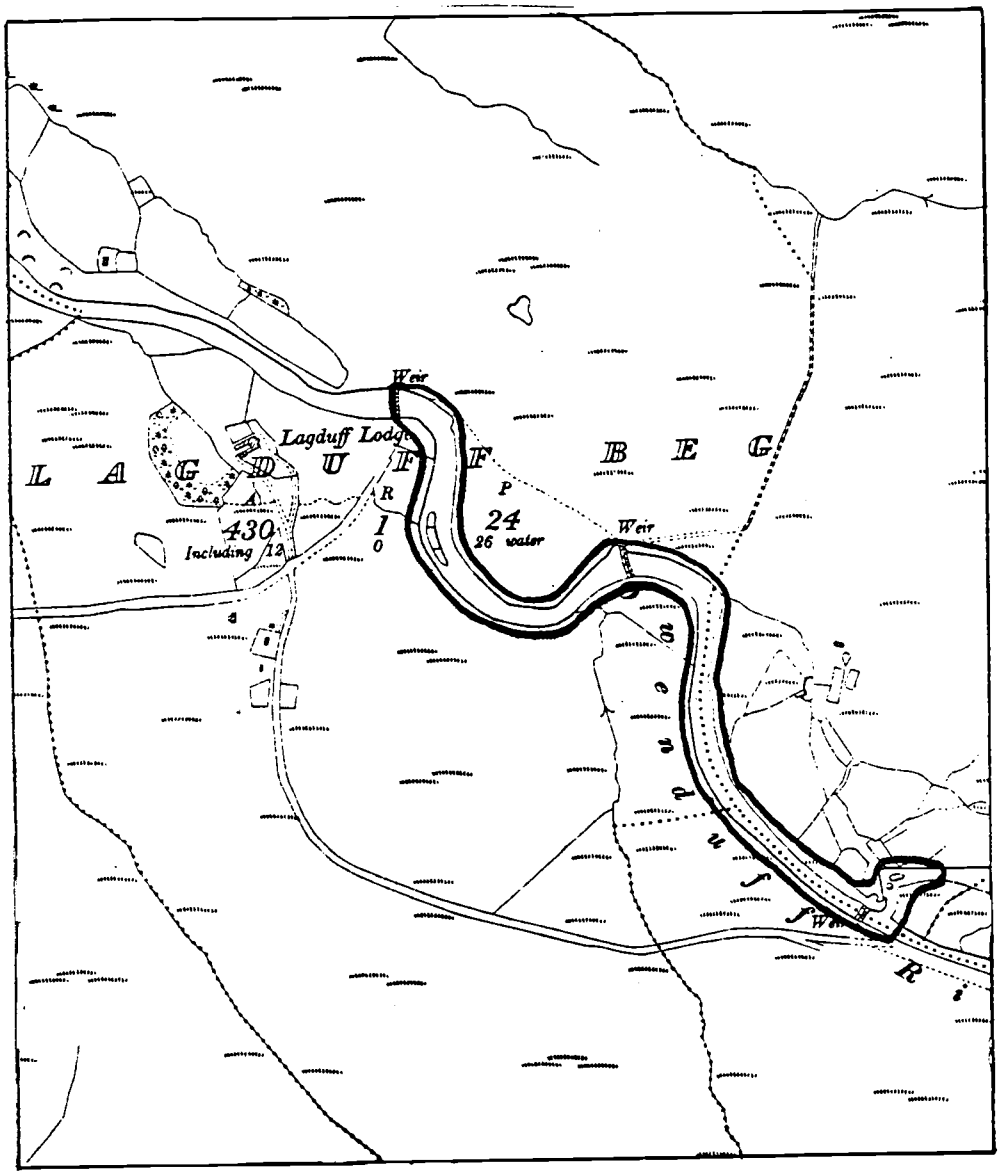
Grid Reference	F 82 14
Area	5 ha
Interest	Botanical
Rating	Local importance
Priority	C

The Owenduff River has a large catchment covered by blanket bog. It extends approximately 10 miles from north to south along the Nephinbeg range. When the bog is fully charged with water in winter and no more can soak in, sizeable floods occur on the river with the result that an area larger than its immediate channel is inundated regularly. The channel itself is choked with shingle and boulders in its shallower reaches. On the more protected of these channels, an unusual vegetation has developed, indicated by the occurrence of a plant, ivy-leaved bellflower (Wahlenbergia hederacea), whose nearest station is in County Kerry. The plant is associated with cushions of Sphagnum moss and is most abundant near the top of the flood level on SW-facing slopes. The other species that form the community are, in rough order of abundance:-

bog pimpernel	Anagallis tenella
white clover	Trifolium repens
black sedge	Carex nigra
bog violet	Viola palustris
self-heal	Prunella vulgaris
Yorkshire fog	Holcus lanatus

Evaluation: This is a site of ecological value because of the occurrence of a rare and beautiful plant. The species has been found recently in the same habitat beside the Altaconey River in the Srahmore valley but in much smaller quantity.

OWENDUFF AT LAGDUFF LODGE



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Vulnerability: Afforestation or the spread of Rhododendron are possible threats to at least part of this open community. Trampling or grazing by sheep would also have an adverse effect if it was concentrated in this area.

Recommendations: Animals should not be confined within this area, but normal grazing and fishing activities can continue as at present. Some Rhododendron clearance could be tackled by voluntary assistance if it became necessary.

KNAPPAGH WOODS

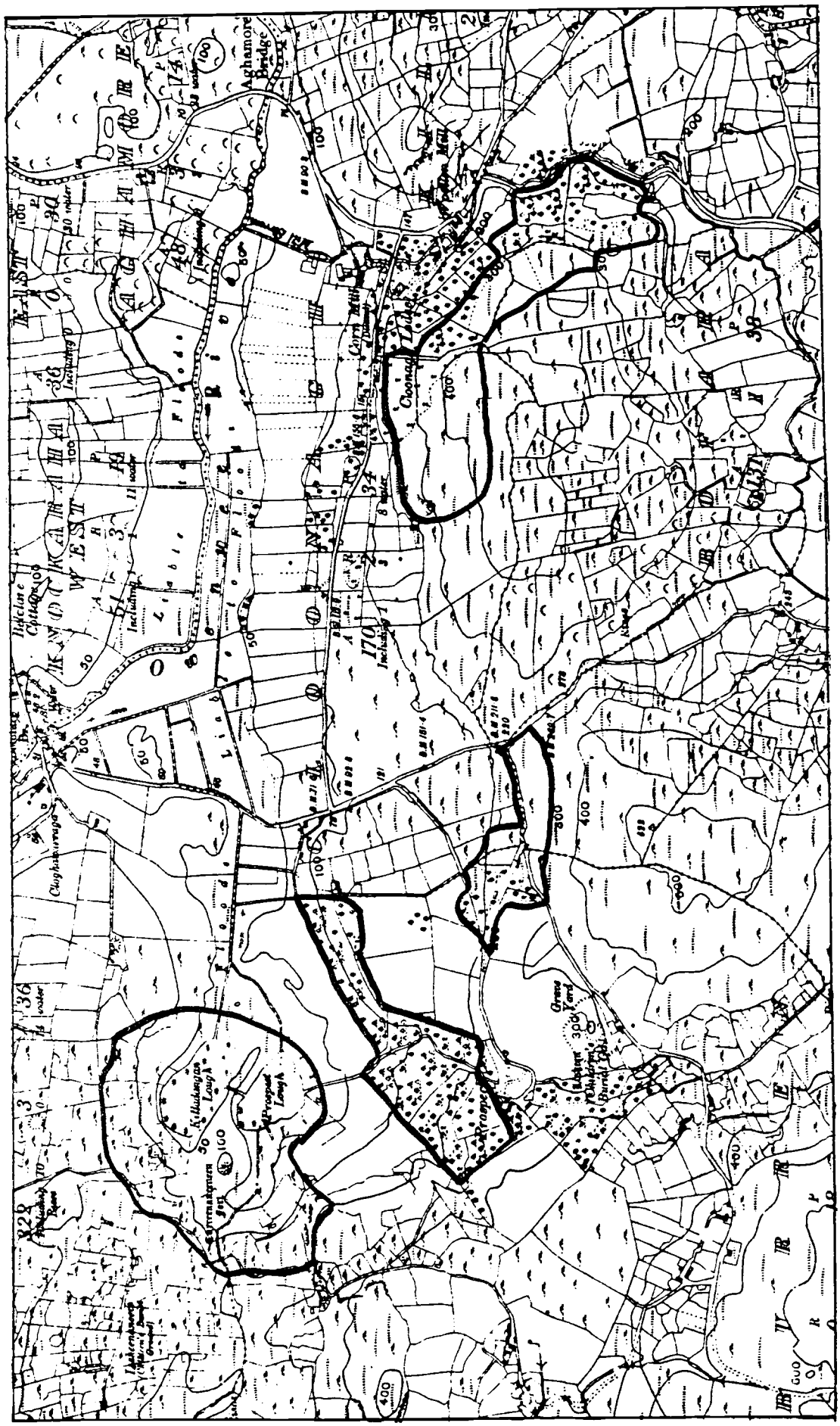
Grid reference	L 96 80
Area	34 ha
Interest	Botanical, zoological
Rating	Local importance
Priority	A

A considerable amount of deciduous woodland persists on the eastern flank of Croagh Patrick and among the jumbled hills and valleys along its north side. These hills are mostly of acid rocks, quartzite and a type of granite (diorite), and provide a poor soil though most interesting scenery. In the last forty years hill grazing pressure has declined sufficiently in the area for the fragmented woodland to spread once more into cleared land and to begin to regenerate again. Birch (Betula pubescens) and willow (Salix cinerea) take part in this colonisation so they are an important feature of the woodland. In the older parts oak (Quercus spp) and hazel (Corylus avellana) occur with some beech (Fagus sylvatica) at the eastern end.

Where the soil is deep enough the ground flora can be quite rich with ferns (Athyrium, Dryopteris borreri, D. dilatata), yellow pimpernel (Lysimachia nemorum), pignut (Conopodium majus), greater stitchwort (Stellaria holostea) and violets (Viola riviniana) among the higher plants. In the high light conditions of birchwood brambles (Rubus fruticosus) are generally dominant with some creeping bent (Agrostis stolonifera) and sorrel (Rumex acetosa).

In such an open wood insect diversity is high especially among flies (Diptera) and butterflies and moths (Lepidoptera). A good variety of these were seen.

The willow warbler is a characteristic bird in summer with robin, wren and blackbird.



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Evaluation: Much of this woodland is secondary in origin but it has been developing naturally for a number of years. The vegetation is at an interesting stage of succession and will continue to change.

Vulnerability: All woods are susceptible to drastic alteration, felling or replanting with introduced species. However a second threat, which is eventually as damaging, is grazing which prevents regeneration. Very little grazing now occurs in this area.

Recommendations: Land use should continue in its present form in this area. Woodland should not be felled for housing development which incidentally should be of the highest design standards for such a scenic area. Native tree species should be used for screening.

CLIFFS AROUND PORTURLIN (16)

Grid reference	F 90 42, F 85 42
Area	648 ha
Interest	Ornithological, Botanical
Rating	Local importance
Priority	C

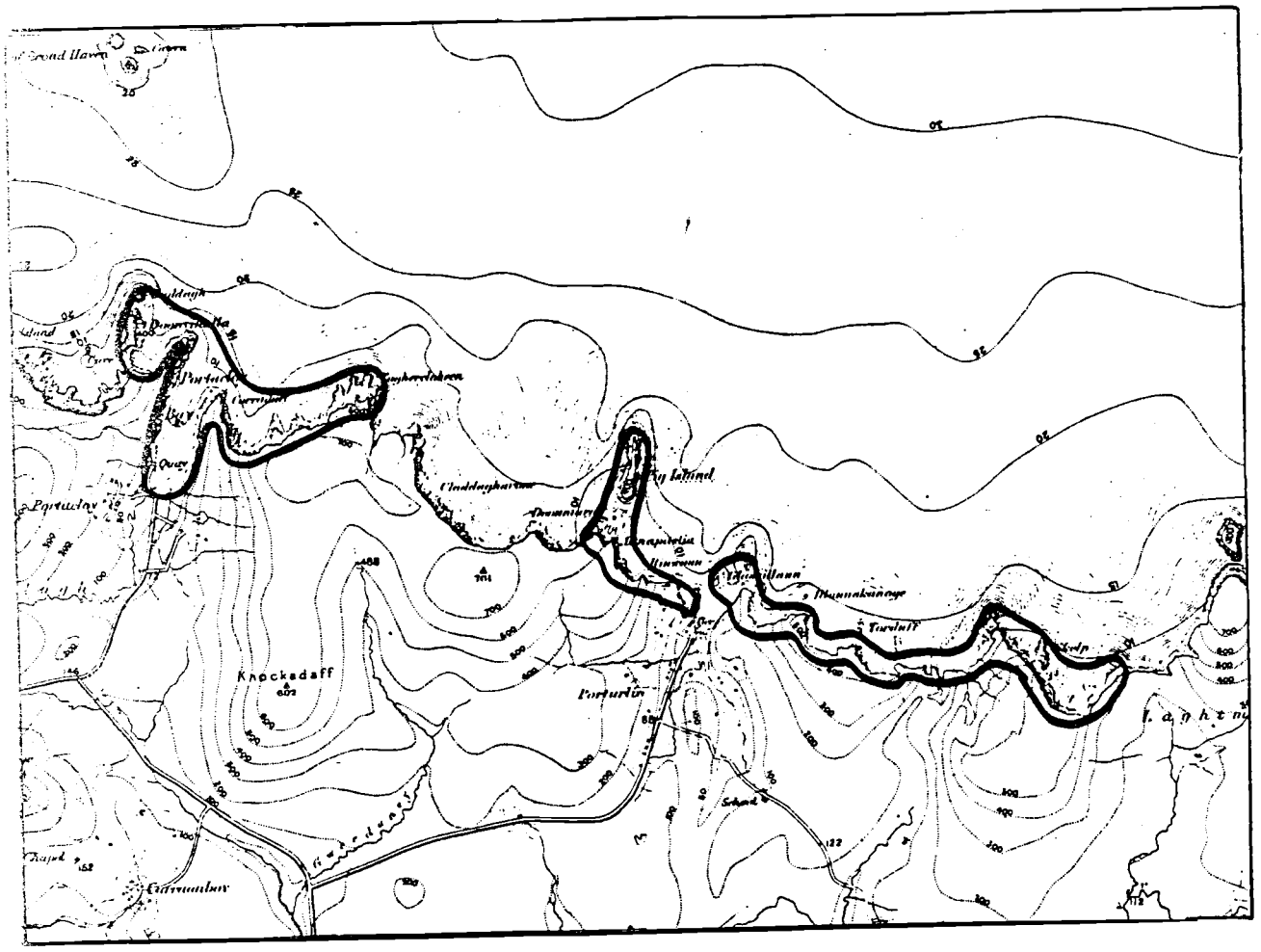
All degrees of shelter and exposure are found on these cliffs and the vegetation responds to each, varying from a turf of strictly maritime plants to a herb-rich heath and, on flatter slopes, to blanket bog. A representative patch of heath might include white clover (Trifolium repens), sweet vernal grass (Anthoxanthum odoratum), mat grass (Nardus stricta), sea plantain (Plantago maritima), eyebrights (Euphrasia brevipila, E. rostkoviana, E. cf occidentalis), bog pimpernel (Anagallis tenella), bent grass (Agrostis canina) and allseed (Radiola linoides). Butterwort (Pinguicula vulgaris) occurs in wetter places and sheep's bit (Jasione montana) on rocks. An unusual heather, between Erica tetralix and E. mackiana, has also been noted here.

It is mainly for its seabirds that this area is included in the report and the two stretches of cliff have a population as follows:-

	Porturlin-Skelp	Toghercloheen-Portacloy
Fulmar	214 pairs	766 pairs
Herring gull	- "	8 "
Kittiwake	- "	170 "
Razorbill	18 "	- "
Puffin	150 "	- "

Other cliff nesting species, the chough and raven also occur.

CLIFFS AROUND PORTURLIN



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Evaluation: The concentrations of breeding puffin and fumar are of local importance.

Vulnerability: Disturbance by people shooting from boats or the cliff top appears unlikely in this case and the only cause for concern should be the puffins getting caught in drift nets in the area of the Stags of Broadhaven.

Recommendations: Liaison should be maintained with the Department of Fisheries to minimise the destruction of wildlife in fishing nets.

MOCORHA LOUGH

Grid reference	M 22 54
Area	29 ha
Interest	Botanical
Rating	Local importance
Priority	A

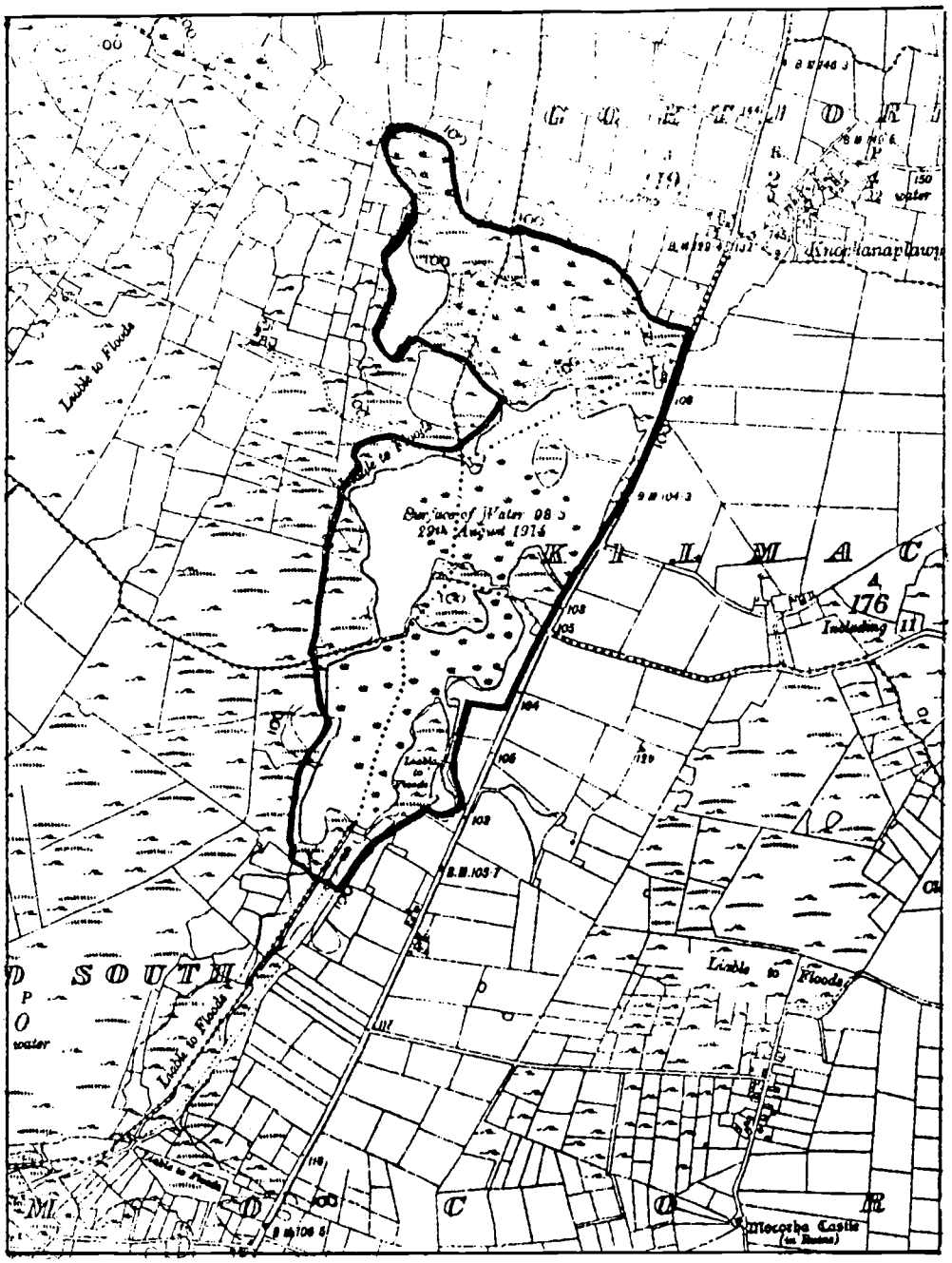
This shallow lake lies in a linear depression in a limestone running north-eastwards from Lough Corrib. It is practically all covered by fen vegetation which is largely saw sedge (Cladium mariscus) with some common reed (Phragmites australis) and lake rush (Scirpus lacustris). An area of fen dominated by black bog-rush (Schoenus nigricans) is found on the southern margin. These vegetation types were not examined in detail.

Evaluation: It would appear that this lake has the largest stand of Cladium in the county and one of the largest in the west of Ireland. It is thus of some ecological value and would be expected to show the full development of the particular animal community associated with it.

Vulnerability: Lowering the water table in this lake would cause the aquatic vegetation to lose its vigour and reduce the competitive advantage of Cladium. The community would therefore change with the infiltration of other species.

Recommendations: Any further drainage of the land in this area should leave the water table of the lake at its present level.

MOCORHA LOUGH



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MAYFIELD LOUGHS

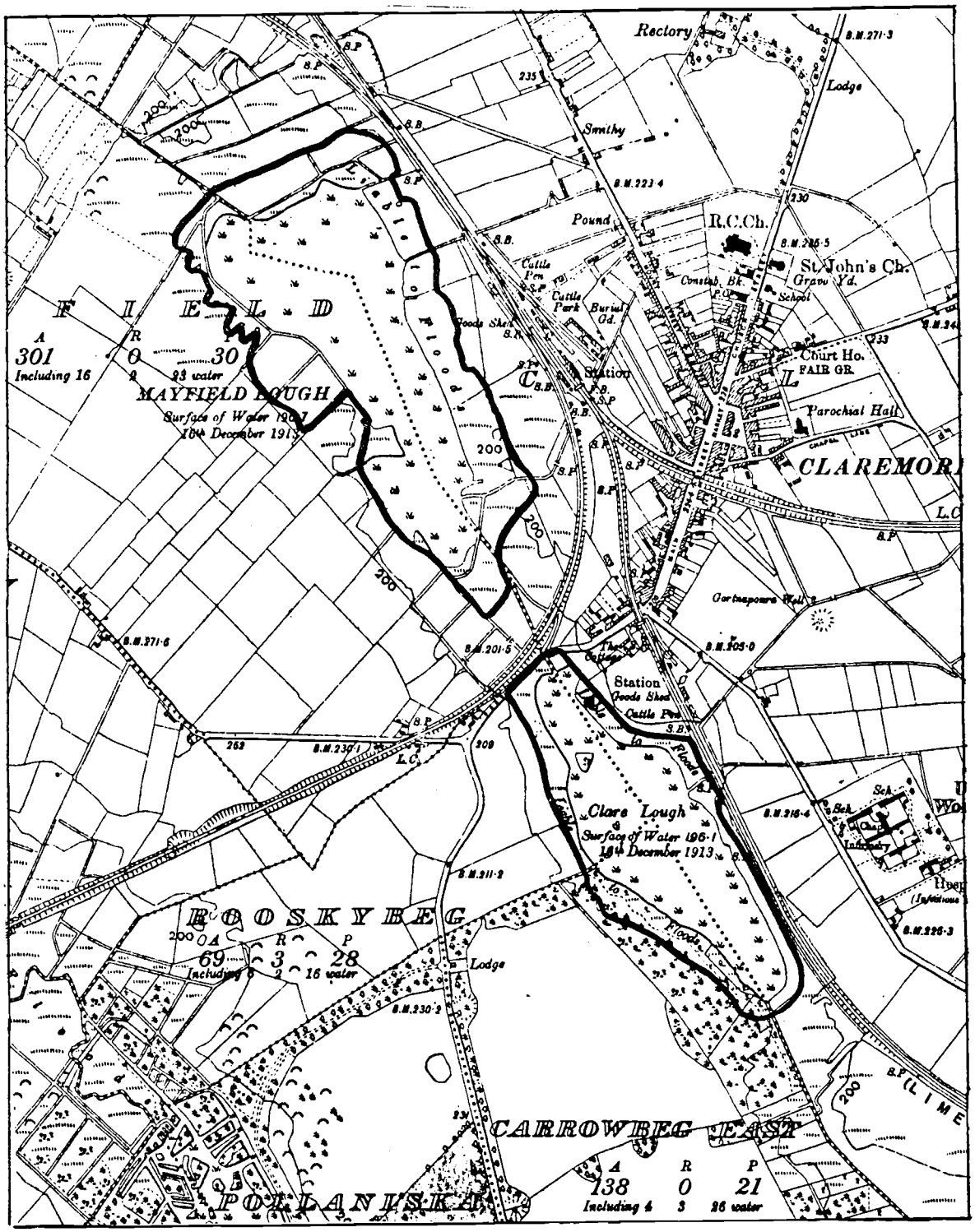
Grid reference	M 33 74
Area	32 ha
Interest	Botanical, zoological
Rating	Regional importance
Priority	B

The two Mayfield Loughs lie in the same depression, a natural hollow in the limestone partly filled with glacial drift. They are naturally highly eutrophic with rich soil and luxuriant vegetation. The main difference is that sewage from Claremorris finds its way into the southern lake and adds its nutrients to those already present. This seems largely responsible for the immense size and density of the reedbeds. The common reed (Phragmites australis) grows to 4m high and bulrush (Typha latifolia) to 2.5m. The associated marsh plants have grown out over the lake surface as a floating mat in places. They include species characteristic of clayey soils such as bur marigold (Bidens cernua), water speedwell (Veronica anagallis-aquatica), water cress (Rorippa nasturtium-aquaticum), amphibious bistort (Polygonum amphibium) and a stitchwort (Stellaria alsine). Two less common species occur, greater spearwort (Ranunculus lingua) and yellow loose strife (Lysimachia vulgare).

The bird life of the lake is relatively rich, a high density of aquatic species being found. These include black-headed gull, mallard, moorhen, coot, mute swan, sedge warbler, grasshopper warbler and reed bunting. Curlew, snipe and lapwing are associated with the surrounding marshes.

Bottom-feeding fish, such as tench and bream, are common.

MAYFIELD LOUGHS



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Evaluation: These lakes have some interest because, although originally similar in character they are now receiving widely different pollution loads. However they are mainly listed as naturally eutrophic waterbodies with a rich diversity of plant and animal species.

Vulnerability: Increasing exposure to sewage effluent will lead to more frequent algal blooms resulting in periods of deoxygenation and other undesirable effects. If fish life is to be encouraged on the southern lake more complete sewage treatment and a different outlet may have to be considered.

Recommendations: For the long term health of the southern lake alterations in the sewerage scheme for the town should be carried out after study.

Because of their proximity to the town the lakes could fulfil an interesting and important educational role if a certain amount of development was done (improved access, paths to different habitats etc.)

ROBE RIVER BOG

Grid reference	M 24 66
Area	78 ha
Interest	Botanical
Rating	Local importance
Priority	C

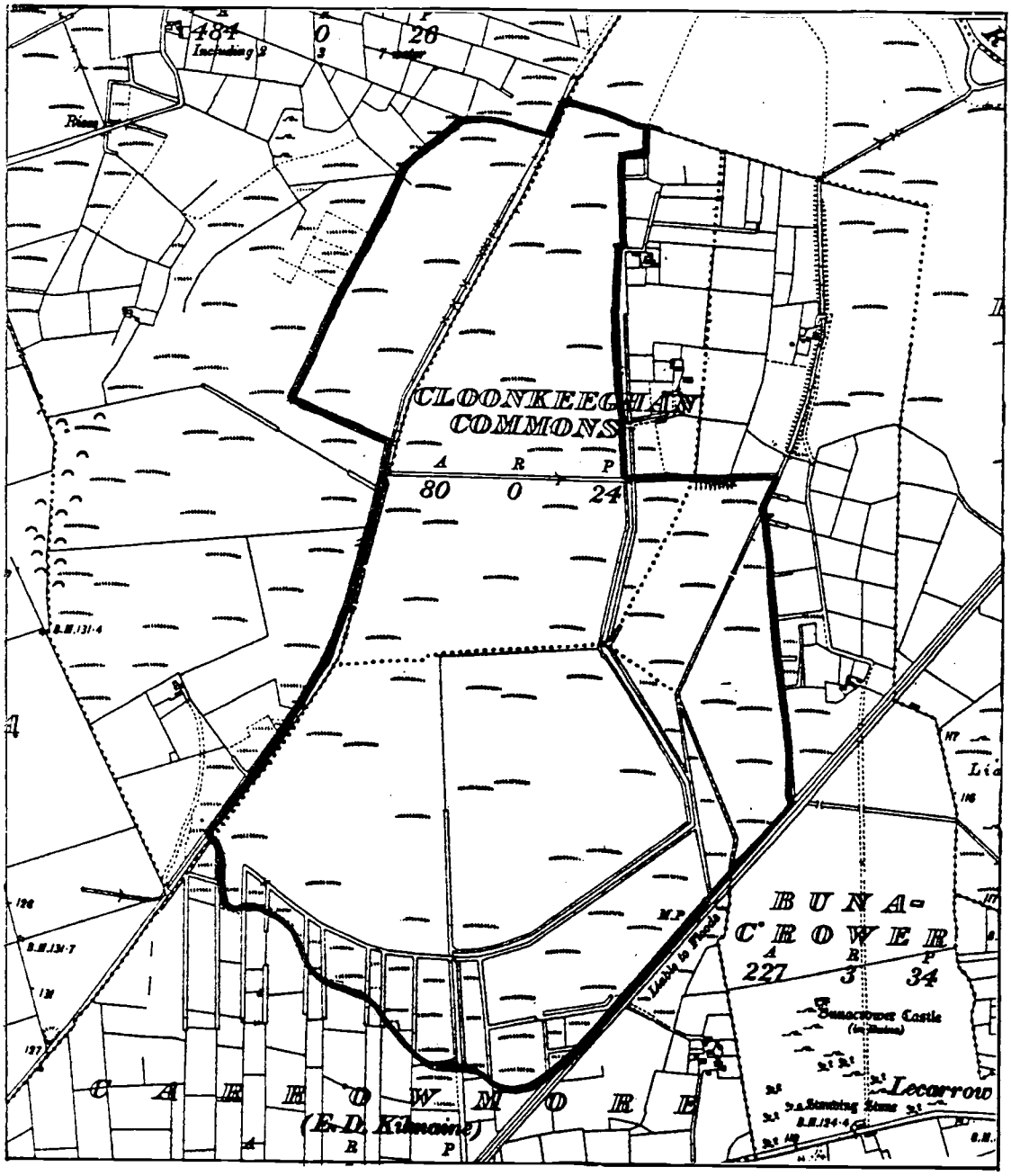
The extensive boglands around Ballinrobe have been largely cut for fuel. In the present area so much has been removed that few if any turf banks remain and the surface is of the basal fen peat and marl. On this a fen vegetation has developed with a few stands of open reedswamp (Phragmites australis) and bogbean (Menyanthes trifoliata) and some marsh cinquefoil (Potentilla palustris). Elsewhere there are large expanses of black bog rush (Schoenus nigricans) with its typical associates of purple moor grass (Molinia caerulea), grass of Parnassus (Parnassia palustris), meadow thistle (Cirsium dissectum)and sedges (Carex lepidocarpa and C. panicea). In damper places the moss, Scorpidium scorpioides, is common with willow herb (Epilobium palustre) and creeping willow (Salix repens).

Patches of bog vegetation occur in the northern part of the area where a sedge (Carex distans) grows on a variety of habitats.

The road through the bog was built with limestone soil brought in from the surroundings so it bears quite a different assemblege of species, including sea plantain (Plantago maritima), dog daisy (Leucanthemum vulgare), burnet saxifrage (Pimpinella saxifraga) and autumn gentian (Gentianella amarella).

The extensive wetland is used by small numbers of mallard, curlew and reed bunting for nesting and is visited by other species on migration (e.g. plover, whimbrel, godwit).

ROBE RIVER BOG



Scale : 1 cm = 106 m

Evaluation: This is a good example of the vegetation that naturally covers a completely cut-over bog. It has some relevance to the extensive areas of this habitat that could be created by Board na Mona when peat exploitation is finished on any site.

The occurrence of Carex distans in this inland site is of interest as it is a maritime species everywhere else in Ireland . Some study could be devoted to its presence here.

Vulnerability: The marsh vegetation would be altered by drainage of the surrounding land but although the site may be slightly dried out it seems destined to remain as non-agricultural land.

Recommendations: If drainage work is proposed which would lower the water table significantly some ecological research should be carried out on Carex distans beforehand.

ARDOGOMMON WOOD, WESTPORT

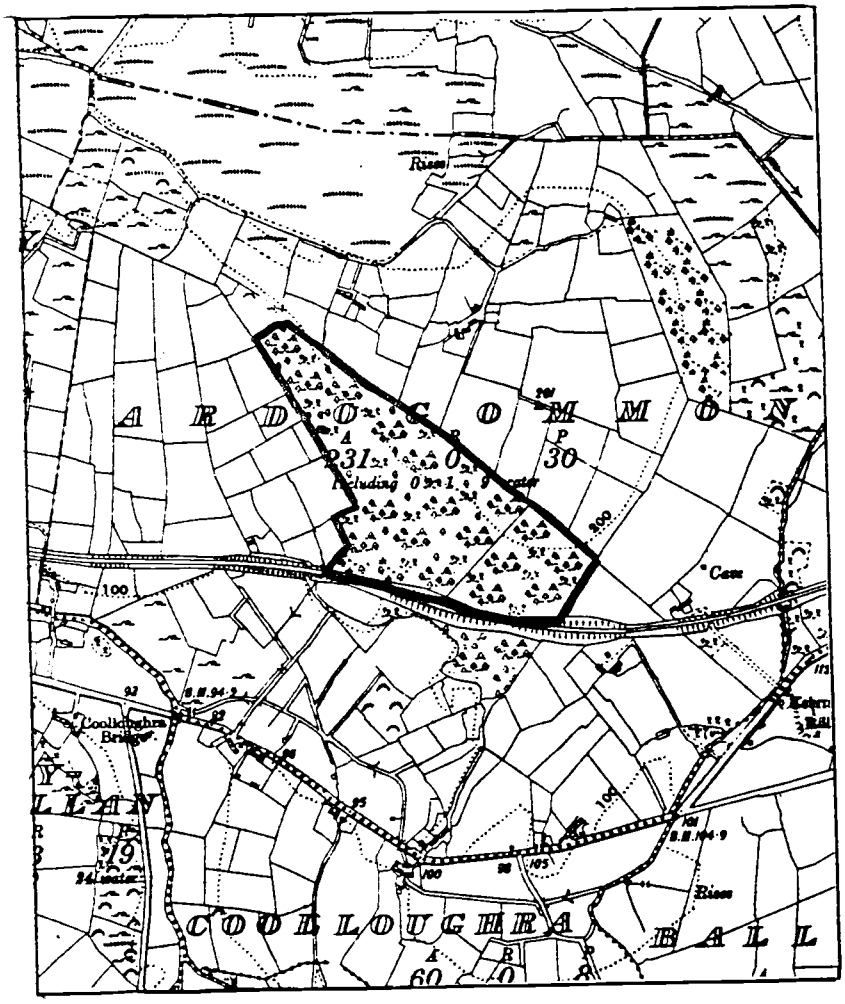
Grid reference	M 02 82
Area	9 ha
Interest	Botanical, zoological
Rating	Local importance
Priority	B

A surprising amount of deciduous woodland exists in the hilly country around Westport and adds greatly to the scenic quality of the landscape. The woods are associated with rocky parts of the limestone drift, with outcrops of bedrock and with steep slopes or have been planted on good soil for landscaping purposes. The present area is a steep slope overlooking the railway and has a partly planted and partly natural origin. A line of beech (Fagus sylvatica) follows the railway but elsewhere the largest trees are of oak (Quercus petraea, Q. robur), sycamore (Acer pseudo-platanus), goat willow (Salix caprea), ash (Fraxinus excelsior) and birch (Betula pubescens). The birch becomes more frequent towards the top of the slope with a willow (Salix cinerea) and some rowan (Sorbus aucuparia). Hazel (Corylus avellana) is the commonest understory and forms some of the canopy also.

The ground vegetation is grazed quite heavily but includes a good variety of herbs. Brambles (Rubus fruticosus), honeysuckle (Lonicera periclymenum) and bracken (Pteridium aquilinum) occur with enchanters' nightshade (Circaea lutetiana), wood speedwell (Veronica montana), bugle (Ajuga reptans) golden saxifrage (Chrysosplenium oppositifolium) and distant sedge (Carex remota) as well as a variety of more common species.

The wood is relatively rich in birdlife having suitable conditions for high forest species such as chiff-chaff, mistle thrush and great tit and scrub species like willow warbler, long tailed tit and robin. A representative

ARDOGOMMON WOOD, WESTPORT



Scale : 1 cm = 106 m

range of other animal life also occurs.

Evaluation: This is a relatively interesting wood with the typical flora and fauna rather better developed than in those nearer to Westport.

Vulnerability: The site would be adversely affected by largescale clearance or underplanting with conifers. Removal of individual trees is not a threat.

Recommendations: Any felling licence sent for approval by the Forest & Wildlife Service should if necessary be modified to take into account the scientific and amenity value of the area.

TEEVMORE CHANNEL

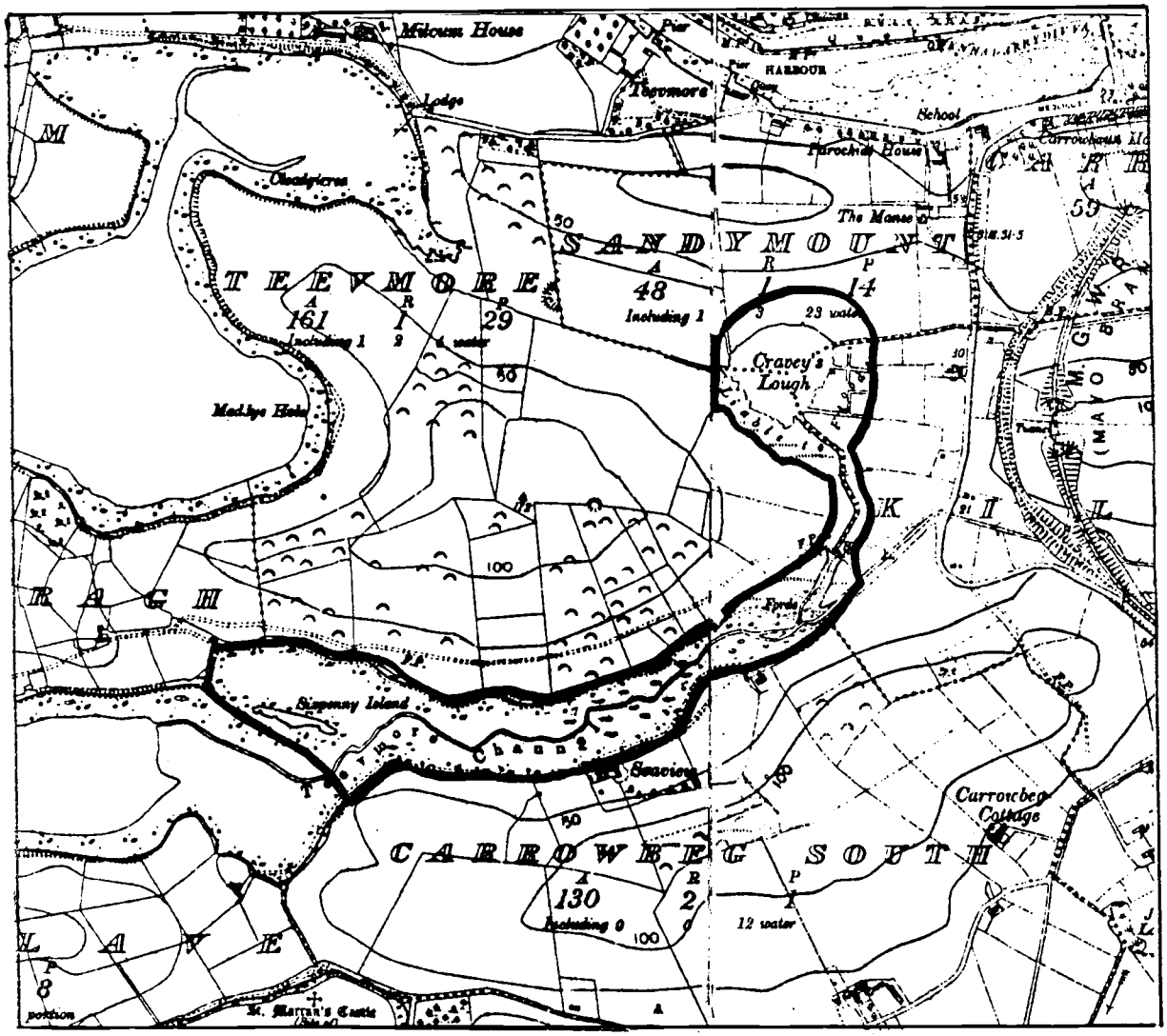
Grid reference	L 97 92
Area	14 ha
Interest	Botanical, zoological
Rating	Local importance
Priority	B

The mainland shore of Clew Bay consists of a swarm of drumlins set on drift at sea level or slightly above and running E-W or ENE-WSW. The result is a complex series of interlocking bays and mudflats, some extremely sheltered and a mile or more from the open sea. Teevmore Channel is one such bay and it is further protected by the remains of a wave-eroded drumlin (Sixpenny Island) at the west end. Here maritime vegetation grows well, little grazed by animals. The dimensions of two plants are somewhat unusual, the sea lavender (Limonium) being large and the sea aster (Aster tripolium) small. Fescue grassland covers the top of the clay bank (about 1m high) with silverweed (Potentilla anserina) and saltmarsh spurrey (Spergularia salina).

The normal saltmarsh zonation is shown on the slopes of this bank and around most of the rest of the shore. On the north side a belt of other plants occurs just above it. These are weeds that could naturally survive in this open habitat or in cultivation. Docks (Rumex spp.), sow thistle (Sonchus arvensis), orache (Atriplex patula and A. hastata) and scutch (Agropyron repens) were conspicuous among reed fescue (Festuca arundinacea) and fox sedge (Carex otrubae).

The saltmarsh flora extends northwards at the head of the bay merging gradually into the brackish and freshwater marsh around L. On the peaty soil sea rush (Juncus maritimus) remains common with knotted pearl-wort (Sagina nodosa), spike rush (Eleocharis spp.), grass of Parnassus

TEEVMORE CHANNEL



Scale : 1 cm = 106 m

(Parnassia palustris) and some water dropwort (Oenanthe lachenalii) and butterwort (Pinguicula vulgaris). The lake itself is filled with an alga (Enteromorpha sp) and a pondweed (Potamogeton berchtoldii) with blunt flowered rush (Juncus subnodulosus), clubrush (Scirpus tabernaemontani) and reed (Phragmites australis) around the edge.

The mute swan nests on the lake with little grebe while small numbers of duck occur there in the winter: wigeon, mallard and teal.

Evaluation: The gradual transition from salt to freshwater is of considerable ecological interest in an area where saltmarshes are rare. The muddy bay which has a typical fauna and flora with a high population of lugworm (Arenicola marina), has some feeding value for waders, especially curlew and godwit. It also offers some security for roosting birds.

Vulnerability: The saltmarsh and other shore habitats are probably secure from development. However the lake could be partially drained to the south and this seems to be occurring on a small scale at present.

Recommendations: No further drainage should be carried out within the area outlined on the map.

LOUGH GLENAWOUGH

Grid Reference	L 99 68
Area	73 ha
Interest	Zoological
Rating	Local importance
Priority	C

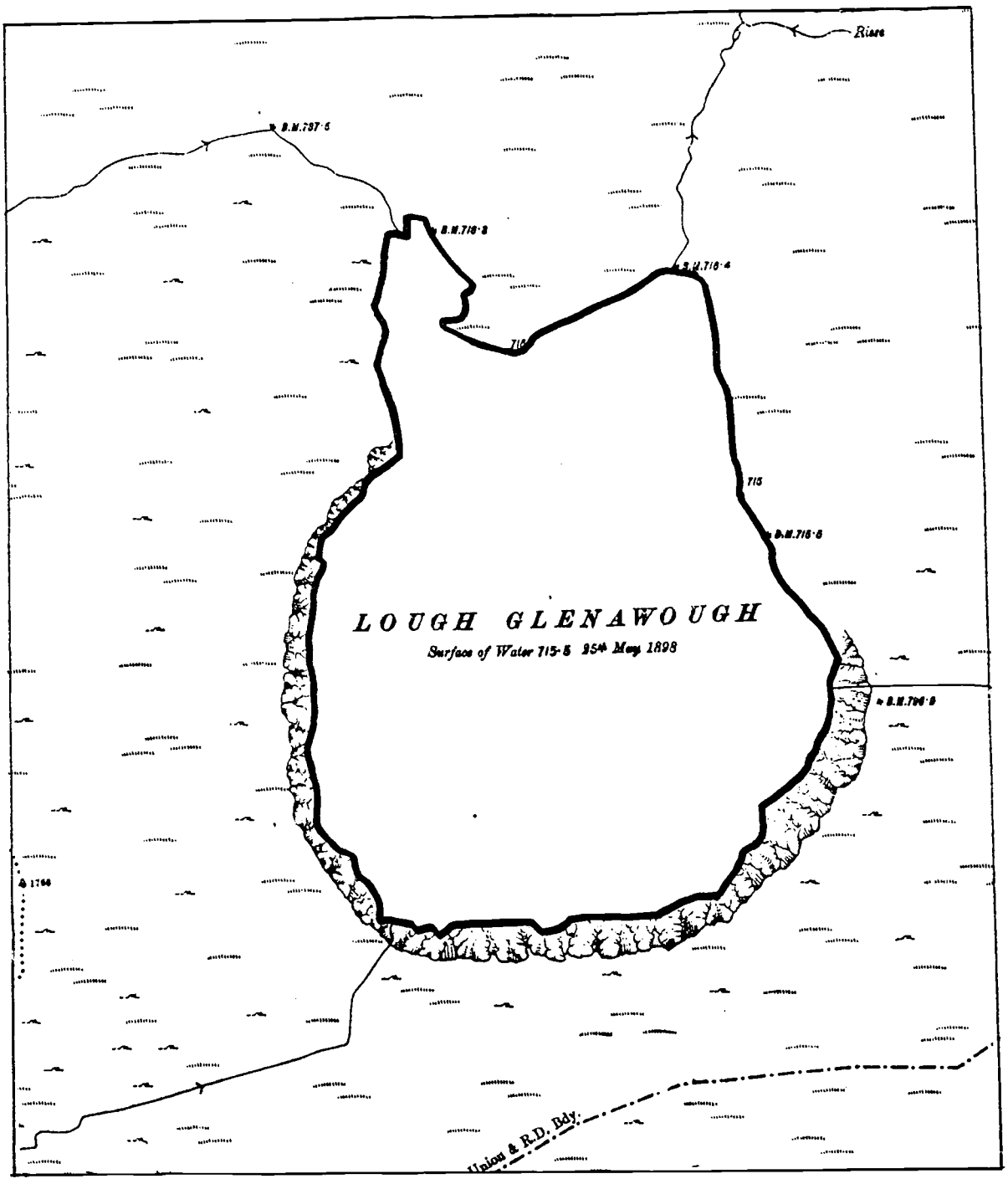
This is a large corrie lake excavated by a glacier in the Ordovician slates of Maumtrasna. It is surrounded by steep rocky cliffs on three sides, about 200 m high. The water is acid and the vegetation comprises a sparse cover of bulbous rush (Juncus bulbosus), water lobelia (Lobelia dortmanna), quillwort (Isoetes lacustris) and shoreweed (Littorella uniflora). These oligotrophic conditions suit char (Salvelinus sp.), probably by excluding competitors, so they are a relatively common fish.

Evaluation: The occurrence of char indicates an interesting glacial relict fauna which may include other such organisms.

Vulnerability: Nutrient inflow is the only significant threat to a waterbody such as this. In the present case it seems most unlikely.

Recommendations: Land use should remain in its present form in the surrounding catchment area.

LOUGH GLENAWOUGH



Scale : 1 cm = 106 m

ESKER AT KILLALA

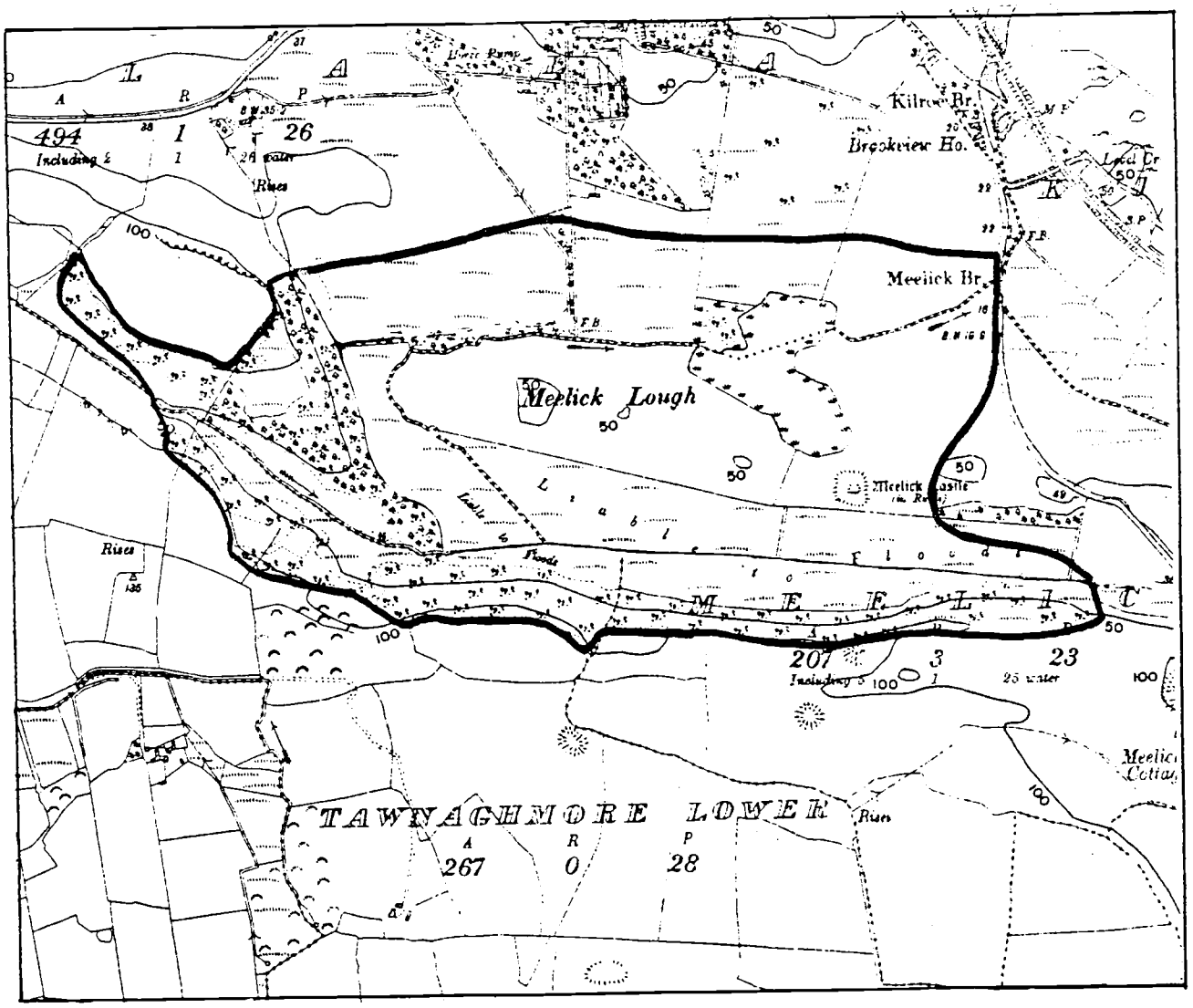
Grid Reference	G 21 29
Area	78 ha
Interest	Botanical, Zoological
Rating	Local importance
Priority	A

Just south of Killala the main Ballina road cuts through an esker ridge whose north and north-eastern sides are thickly covered by hazel (Corylus) woodland. A few willow trees (Salix cinerea and S. caprea) are scattered through the stand, with blackthorn (Prunus spinosa) and honeysuckle (Lonicera periclymenum) making up the rest of the woody species. The notable feature of the wood is the ground flora which occurs in an unusual degree of diversity, especially for western Ireland. The herb species include wood anemone (Anemone sylvatica), wood sorrel (Oxalis acetosella), pignut (Conopodium majus), wood sanicle (Sanicula europaea), woodruff (Galium odoratum) and wild strawberry (Fragaria vesca) which indicate that the esker gravels have a considerable lime content. The western situation is shown by the abundance of the ferns, in particular hard fern (Blechnum spicant), hart's tongue (Phyllitis scolopendrium), male fern (Dryopteris filix-mas), and the buckler ferns (D. dilatata and D. aemula), and also by the large leafy liverwort, (Plagiochila asplenoides). The thick canopy supports many bird species such as blackbird, chaffinch, robin, dunnock and willow warbler. Meelick Lough contains a population of the thin-lipped mullet (Liza ramode), an introduced species.

Evaluation : Eskers are interesting glacial land-forms which reach their best development in Ireland. While a number exist near the Roscommon border, they are rare in north Mayo, and are seldom covered by woodland. This site has considerable educational value because of its proximity to Killala and its accessibility.

The fish species mentioned has not been found naturalized in any other Irish lake.

ESKER AT KILLALA



Scale : 1 cm = 106 m

Vulnerability: Eskers are always vulnerable to excavation as they contain mostly sand and gravel. This particular site could also be cleared for grazing land though this is unlikely to be economical.

Recommendations: It is recommended that the woodland be covered by a Tree Preservation Order under Section 45 of the Local Government (Planning and Development) Act, 1963. This will safeguard the community against clearance which could otherwise be carried out in the general course of agriculture, probably without obtaining a felling licence.

If application is made to excavate material from the esker, the area should be re-examined and its values compared to other sites in the region before any decision is reached.

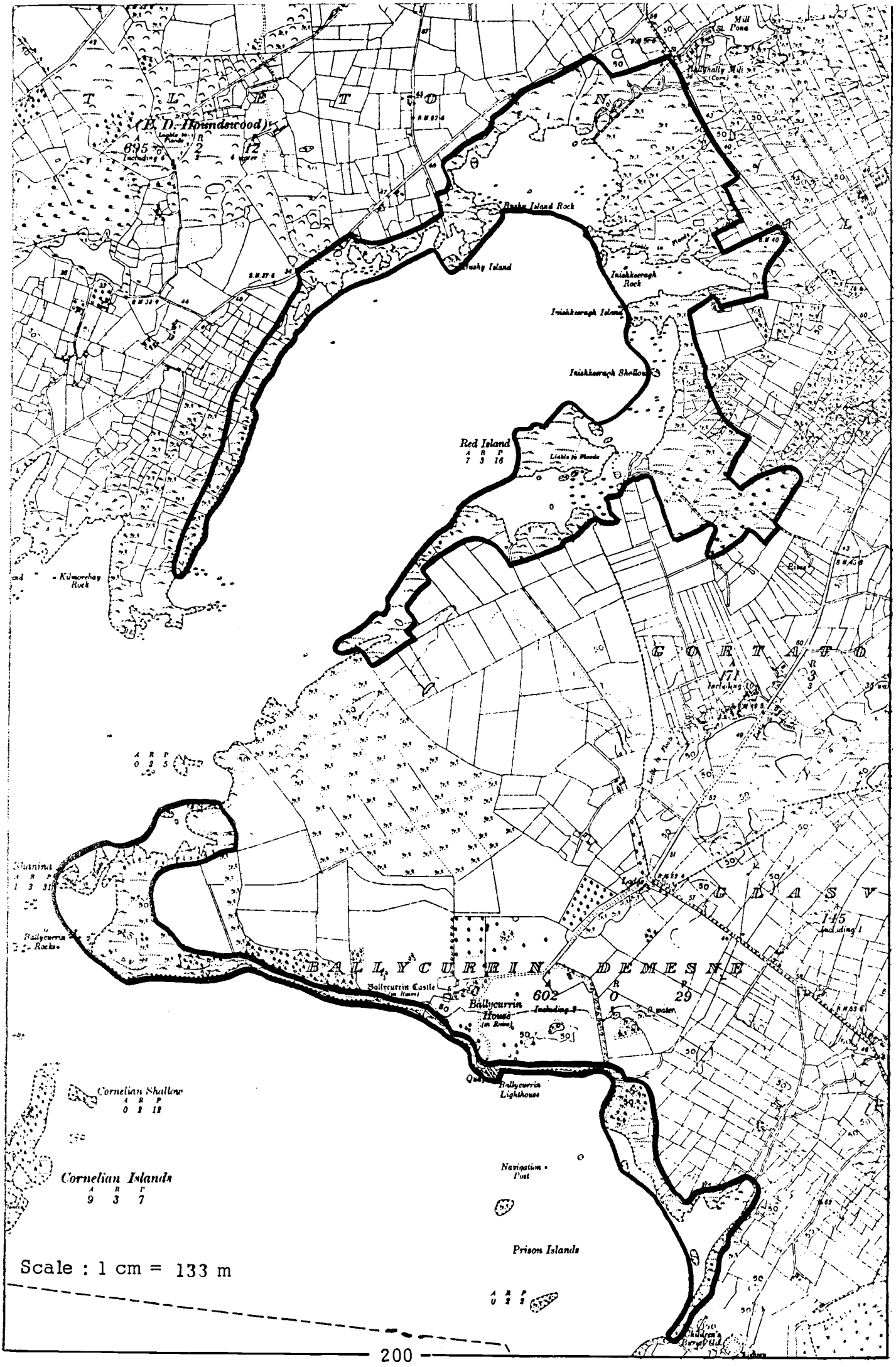
LOUGH CORRIB SHORE

Grid Reference	M 19 51
Area	102 ha
Interest	Botanical
Rating	Local importance
Priority	B

The eastern shore of Lough Corrib closely resembles that of Lough Mask since they are both on limestone. However, the N.N.E./S.S.W. grain of the rock exposures is absent in the present site and the shore is generally flatter. The edge of the lake is visible chiefly because of the line of scrub that the exposed rocks carry. The bays at Ballycurrin and Castletown are floored by shallow water, fen vegetation and low-lying limestone pavement and backed by windshorn hazel scrub. Extensive areas are flooded in winter which may make it slightly different from the Lough Mask shore.

At the upper flood level shrubby cinquefoil (Potentilla fruticosa) is widespread growing with juniper (Juniperus communis), heather (Calluna vulgaris), thyme (Thymus drucei) and mountain everlasting (Antennaria dioica). The lower shore is mostly dominated by black bogrush (Schoenus nigricans), invaded to various degrees by grassland species, e.g. quaking grass (Briza media), crested dog's tail (Cynosurus cristatus), sedges (Carex flacca, C. demissa, C. lepidocarpa), knotted pearlwort (Sagina nodosa), sea plantain (Plantago maritima) and meadow thistle (Cirsium dissectum). The upper shore has an interesting limestone flora including bloody cranesbill (Geranium sanguineum), golden rod (Solidago virgaurea), harebell (Campanula rotundifolia), with some meadow rue (Thalictrum minus).

Schoenus fen is not rich in animal species nor much frequented by birds.


(E. D. Houndscood)
Mill Pond
Rushy Island Rock
Rushy Island
Inishkeragh Rock
Inishkeragh Island
Inishkeragh Shallow
Red Island
Liable to Floods
Kilmorehay Rock
GORTAFEO
171
Including
GLASY
145
Including
BALLYCURRIN DEMESNE
602
Including
29
Ballycurrin Castle
(in Ruins)
Ballycurrin House
(in Ruins)
Ballycurrin Lighthouse
Ballycurrin Rocks
Cornelian Shallow
Cornelian Islands
Navigation Post
Prison Islands
Scale : 1 cm = 133 m

Evaluation · The site is valuable for the occurrence of the cinquefoil (Potentilla) with the indications it gives of this plant's ecology. The species is at its N.E. limit in Ireland at this site.

Vulnerability: Being associated with flooding the plant would probably be little affected by developments higher up the shore. However, an increase in grazing pressure would suppress the normal development of the vegetation.

Recommendations: Land use should ideally remain in its present form within the mapped area.

CLOONAGH LOUGH

Grid Reference	G 20 21
Area	53 ha
Interest	Botanical, Zoological
Rating	Local importance
Priority	B

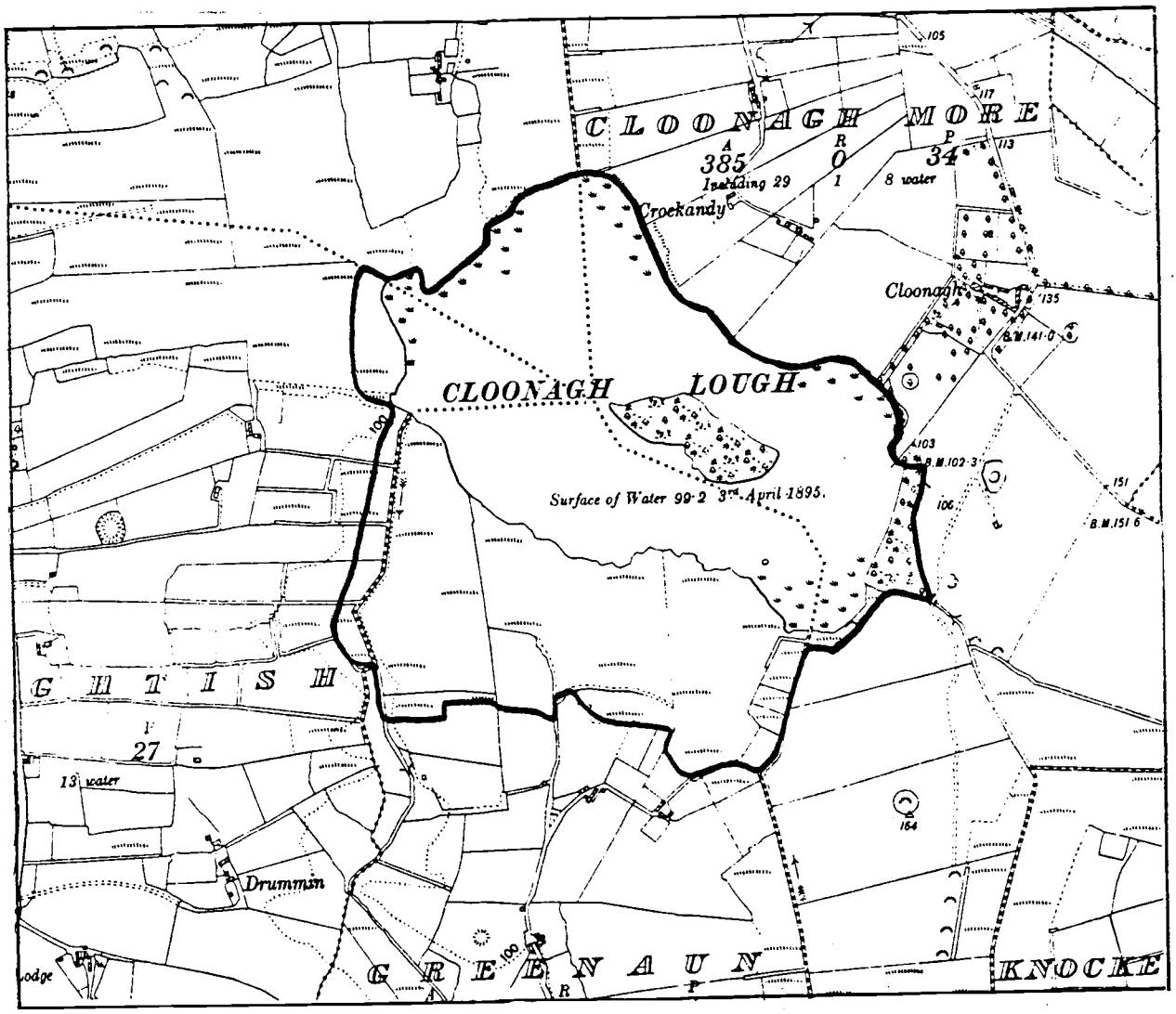
Although it is close to the north end of Lough Conn, this lake is of quite a different character being set in glacial drift in an area of rich farmland. Bogland, now cutover, approaches the lake from the west side and forms part of its shore while a line of stony drift hillocks occupies the south side. Extensive reedbeds occur in the lake and reduce the area of open water to about one quarter of the available basin.

The main marginal marsh is composed of bogbean (Menyanthes trifoliata) and marsh cinquefoil (Potentilla palustris) with such species as marsh marigold (Caltha palustris), St. John's wort (Hypericum tetrapterum), arrow grass (Triglochin palustre), fool's watercress (Apium nodiflorum), brookweed (Samolus valerandi) and spearwort (Ranunculus flammula). A marsh orchid (Dactylorhiza incarnata), bog cotton (Eriophorum angustifoloim) and a sedge (Carex diandra) are less frequent species.

The lake is naturally eutrophic and productive of insect and other invertebrate life. The sun-fly (Heliophilus) was especially abundant when it was visited. Bird life is correspondingly rich with mallard, coot, moorhen, heron, grasshopper and sedge warblers in summer. The lake would appear to suit wintering wildfowl well and numbers of mallard, teal and possibly wigeon are likely to be high. It offers one feeding area to the wildfowl associated with Killala Bay.

Evaluation: This area has an ecologically interesting juxtaposition

CLOONAGH LOUGH



Scale : 1 cm = 106 m

of habitats with acidic and neutral or basic sections. It has some comparative value with Lough Conn.

Vulnerability: The ecology of the lake would be adversely affected by an increase in the organic load reaching it (e.g. silage or other farm effluents). This would give rise to algal blooms, which may occur already, and would eventually lead to deoxygenation of the bottom waters and a loss of diversity and interest of the fauna. The lake is more vulnerable to this process than some others because of the relatively slow rate of exchange.

Recommendations: Slurry or other effluent should not be disposed of into the lake or its inflowing rivers.

LOUGH ALICK

Grid Reference	G 21 14
Area	41 ha
Interest	Botanical, Zoological
Rating	Local Importance
Priority	C

This lake lies in undulating country, one mile east of Lough Conn. It drains directly into the Moy, however. It is a calcareous lake with some accumulation of marl on the bottom and a rich fen flora. A full marginal vegetation is present, ranging from stands of blunt-flowered rush (Juncus subnodulosus), clubrush (Scirpus lacustris) and black bog rush (Schoenus nigricans) to patches of marestail (Hippuris vulgaris), water plantain (Alisma plantago-aquatica) and sedges (Carex rostrata, C. diandra).

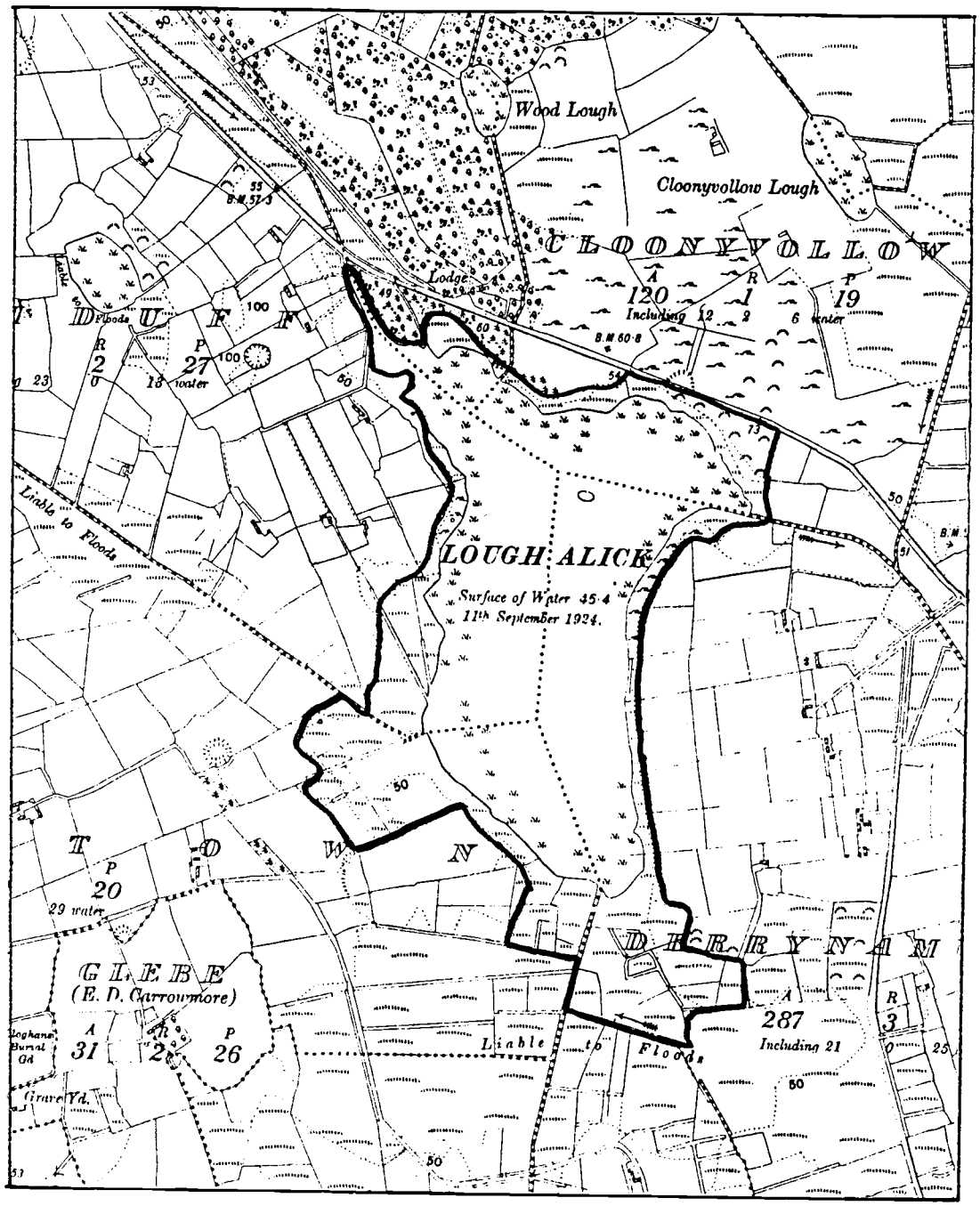
The fen is notable for its diversity of orchids, Epipactis palustris is especially common with Gymnadenia conopsea, Dactylorhiza maculata, D. purpurella, D. incarnata. Creeping willow (Salix repens) is also found as is red rattle (Pedicularis palustris), knotted pearlwort (Sagina nodosa) and yellow cress (Rorippa palustris).

The freshwater mussel (Anodonta) occurs in the lake while both black-headed and common gulls nest in small numbers. Snipe are frequent in the marsh.

Evaluation: This is an interesting lake with some marl development and would make a suitable area for field study, being accessible and of small dimensions.

Vulnerability: Eutrophication of the lake water, overgrazing of the

LOUGH ALICK



Scale : 1 cm = 106 m

marsh vegetation or lakeside building development would affect the area adversely. Renewed drainage is also a threat though the area has accommodated well to the initial lowering of the water level.

Recommendations: Land use should remain in its present form in the area and the lake should not be used for the disposal of agricultural effluents.

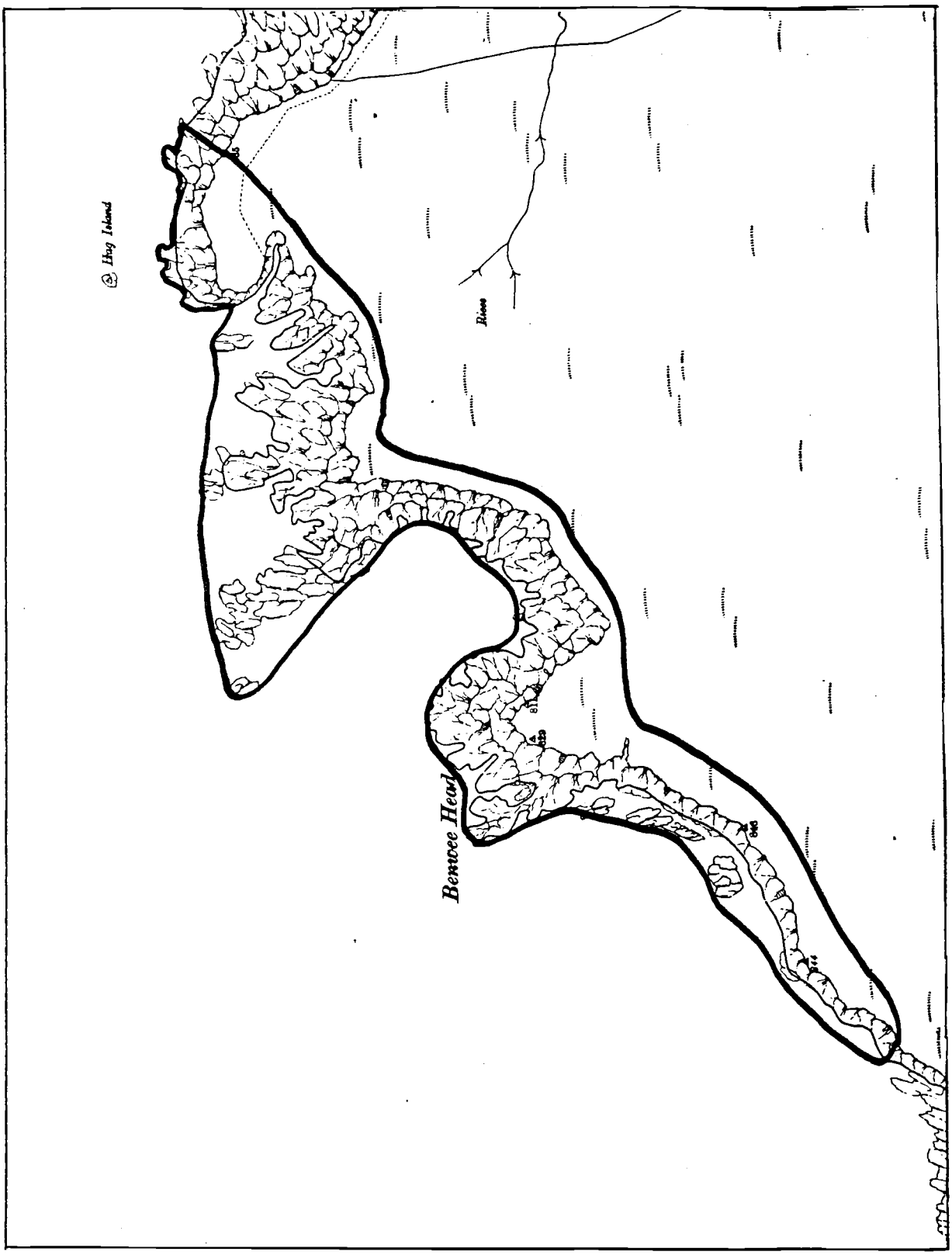
BENWEE HEAD

Grid Reference	F 81 44
Area	52 ha
Interest	Ornithological, Botanical
Rating	Local importance
Priority	C

The ancient rocks of north-west Mayo rise highest where quartzites are included in the sequence and along the north coast a type of quartzites builds immense sloping cliffs between Benwee Head and Belderg. A natural arch occurs at Benwee Head and it adds diversity to the screes and open rock elsewhere. It was on these cliffs that the fulmar first bred in Ireland in 1911 having colonised southward from Iceland and St. Kilda. The population now is 644 pairs and they nest anywhere where a ledge offers a site. The cliffs are not vertical so are not suitable for auks. The area was also the last nesting place of the golden eagle in Ireland except for a transitory nest in Antrim from 1953 - '60. At present, chough, jackdaw and possibly peregrine nest.

The vegetation of the cliff face includes maritime plants such as bladder campion (Silene vulgaris), thrift (Armeria maritima) and red fescue (Festuca rubra) with patches of heath (Calluna and Arctostaphylos uva-ursi) where it is not directly exposed to sea spray. The cliff top is covered by a plantain sward on thin peat but as well as the usual species (Plantago coronopus, P. maritima and Armeria maritima) a considerable amount of carnation grass (Carex panicea) and lesser spearwort (Ranunculus flammula minimum) also occurs.

BENWEE HEAD



Scale : 1 cm = 106 m

Evaluation: The area houses one of the main concentrations of breeding fulmars in Ireland, containing about 0% of the total. The occurrence of Ranunculus flammula in this form is unusual and has only been noted in Clare up to this.

Vulnerability: Nesting birds could only be affected by people shooting from the cliff top. The Plantago sward on the cliff top could be altered by trampling pressures.

Recommendations: Any cliff top path should be laid out with the unusual plant community in mind, so as to avoid as much of it as possible.

CARROWMORE LOUGH SHORE

Grid Reference	M 22 88
Area	23 ha
Interest	Botanical
Rating	Local importance
Priority	C

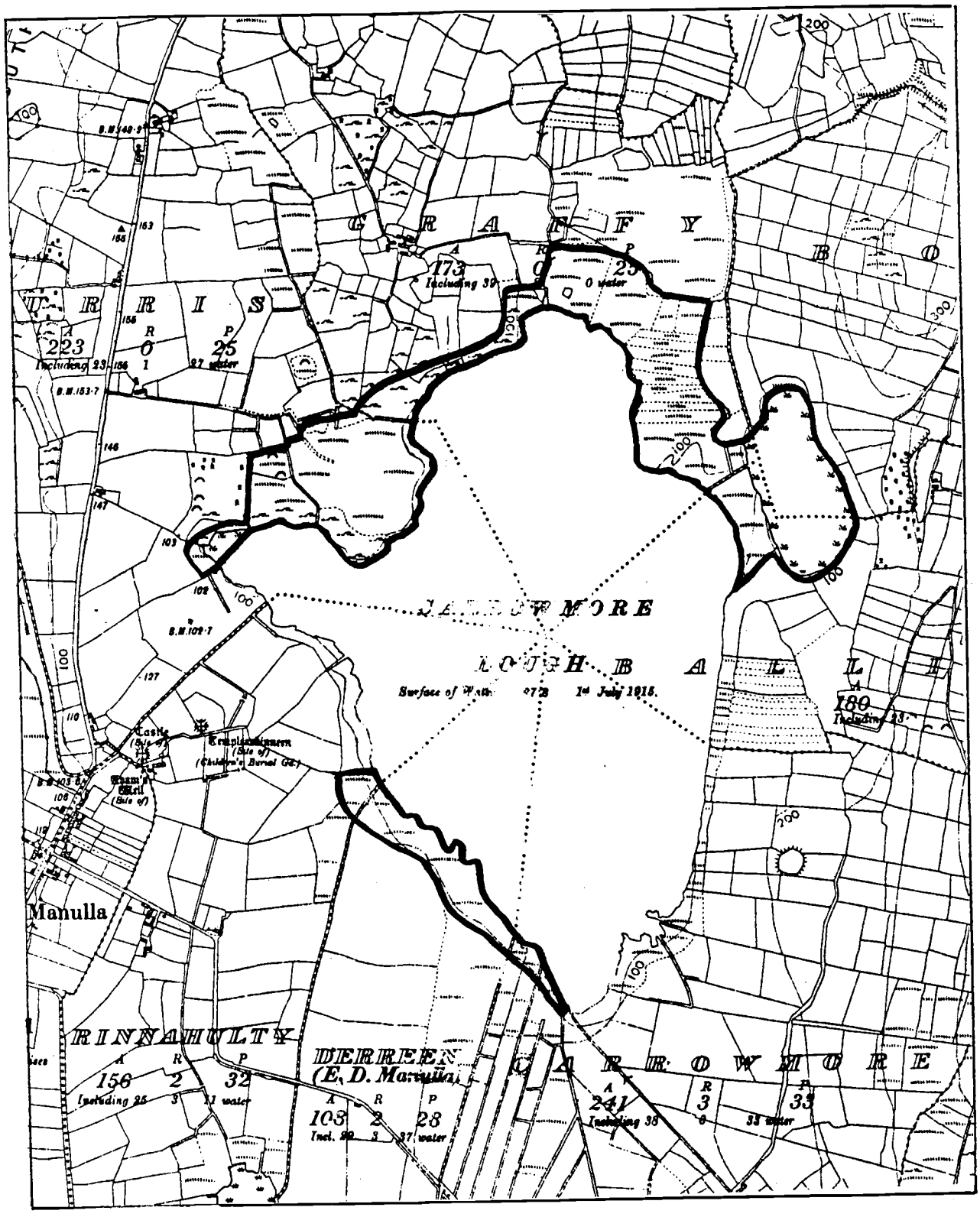
Carrowmore Lough is a deepish large lake with a varied shore, including cutover raised bog, limestone outcrop, fen and mineral marsh. Reed beds occur along some of the shore but the marly conditions do not favour their optimum development. The limestone ridges bear hazel (Corylus avellana) scrub with willows (Salix spp.). Nearby grassland has such characteristic species as carline thistle (Carlina vulgaris), bird's foot trefoil (Lotus corniculatus), mouse-eared hawkweed (Hieracium pilosella), autumn gentian (Gentianella amarella) and wild carrot (Daucus carota). The seasonally flooded shore brings in yellow wort (Blackstonia perfoliata), mountain everlasting (Antennaria dioica) and purging flax (Linum catharticum) while the fen on the lake side has a clubmoss (Selaginella selaginoides), creeping willow (Salix repens) and meadow thistle (Cirsium dissectum).

Different species occupy the cutover peat, the more interesting being royal fern (Osmunda regalis) and field gentian (Gentianella campestris) on the unflooded sites and grass of Parnassus (Parnassis palustris) and a sedge (Carex lepidocarpa) on those nearer the lake.

The bird life of the lake includes common gull, black-headed gull and great-crested grebe but it has not been examined in detail.

Evaluation: A characteristic type of lake in East Mayo is one, such as

CARROWMORE LOUGH SHORE



Scale : 1 cm = 106 m

this, that lies in a depression in calcareous rocks and is therefore marly, and in which the marginal vegetation has encroached on its former extent to form bogland. This creates a good diversity of communities.

Vulnerability: Changes in the lake would scarcely affect the marginal vegetation of interest except for the seasonably flooded land. Afforestation could be carried out on the cutover bog.

Recommendations: Land use on this area should continue in its present form.

STAGS OF BROADHAVEN (17)

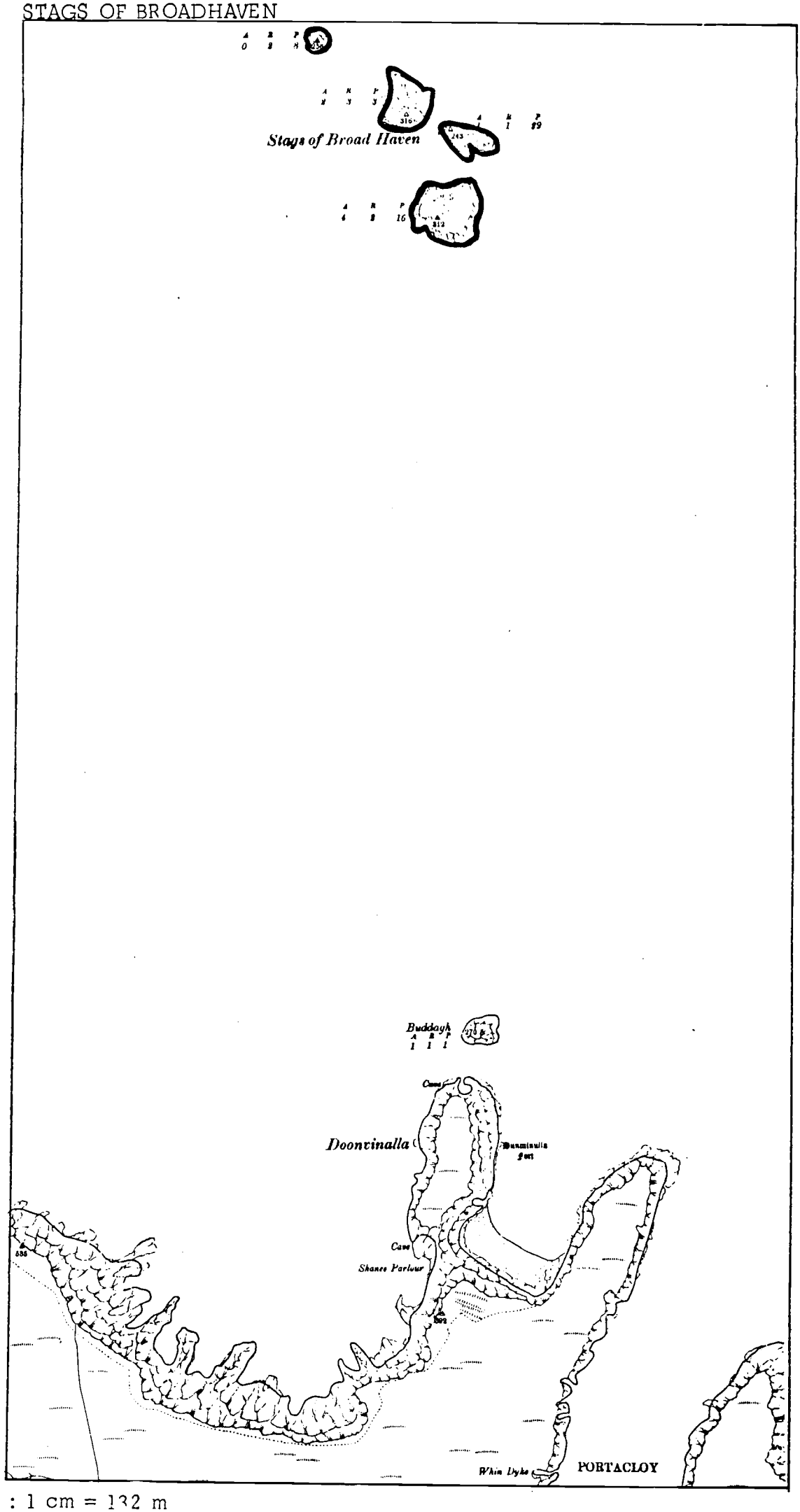
Grid Reference	F 8347
Area	2 ha
Interest	Ornithological
Rating	Local importance
Priority	C

These inaccessible rocks rise almost 100 m from the sea with a series of vertical cliffs and steep slopes. They have some ornithological importance as a breeding area of seabirds. The fulmar first nested (1911) here and on the mainland at Porturlin and large numbers now breed. There has been little investigation of the bird populations because of the difficulty on landing but storm petrels are plentiful and the Leach's petrel may also breed. Other species that nest are great black-backed gull, kittiwake, razorbill and puffin.

Evaluation: The site is given local importance because so little data is available. Should the Leach's petrel or sizeable numbers of puffin be proved to be regular nesters, the islands would be rated as of regional or national importance.

Vulnerability and Recommendations: The strait between the Stags and the north Mayo coast is a recognised drift-netting area so the auks in particular are susceptible to interference. The use of monofilament nets causes most bird mortality and should be prevented.

STAGS OF BROADHAVEN



Scale : 1 cm = 132 m

LOUGH CAHASY

Grid Reference	L 7578
Area	113 ha
Interest	Ornithological, botanical
Rating	Local importance
Priority	B

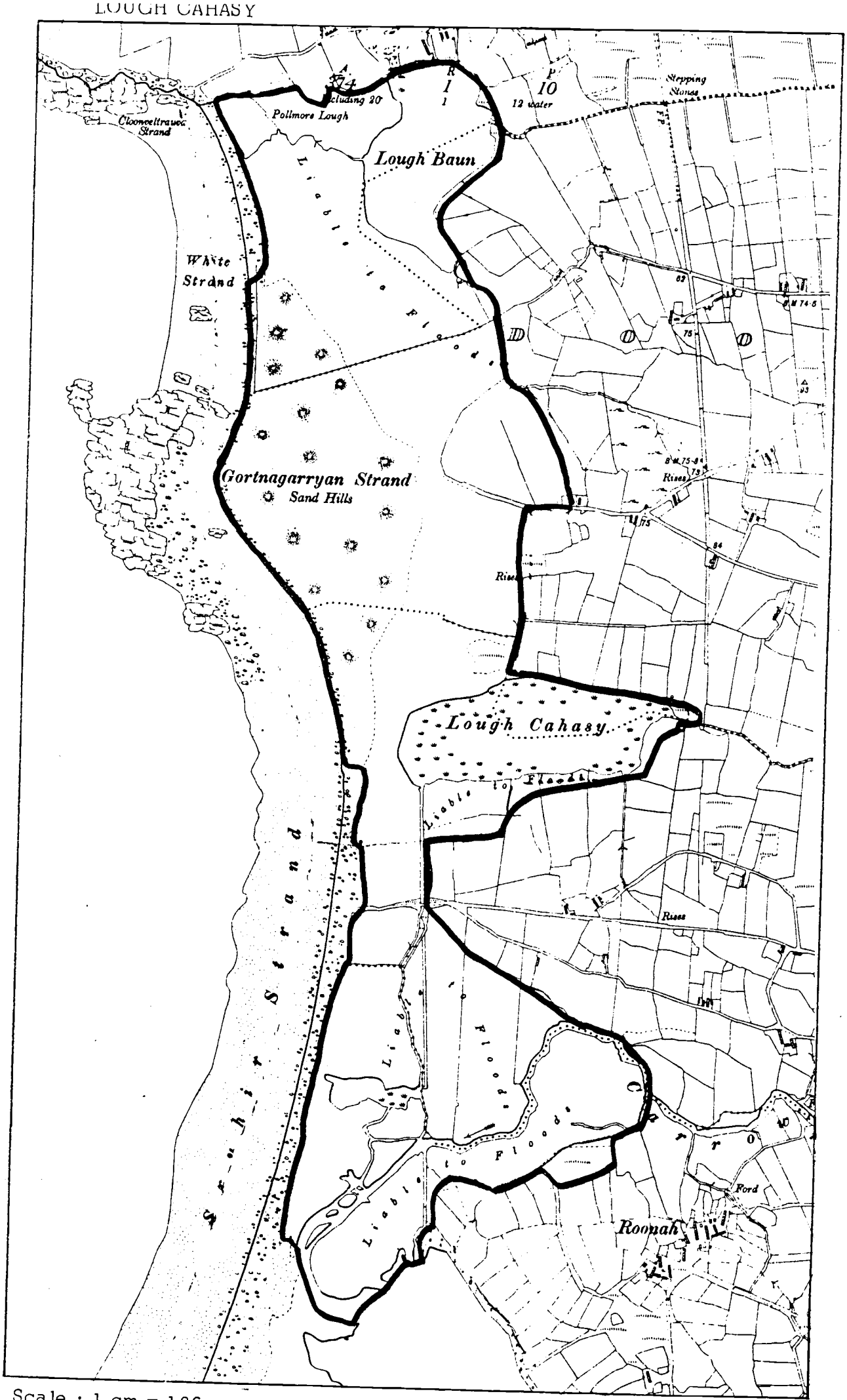
Lough Cahasy is one of the chain of wetlands on the N-S coast west of Louisburgh. The area of permanent water is about 8 ha but an additional 24 ha is subject to flooding in winter. This feature is attractive to wintering wildfowl while the callow vegetation that results provides feeding for a large number of wading birds at other times of the year.

The vegetation has certain interesting features in particular the brackish/ freshwater transition. The sand dunes have a herb-rich flora on the east side.

Evaluation: The present area is the most important in the series of lakes from Killadoon to Roonah Quay and its bird life is comparable to Actual numbers vary greatly with shooting pressure.

Vulnerability and Recommendations: Increased public access to the shores of this small lake would result in disturbance of the bird populations. Such development should, therefore, be concentrated at Cross or Emlagh.

LOUGH CAHASY



Scale : 1 cm = 106 m

SUMMARY OF RECOMMENDATIONS

NAME OF AREA	GENERAL PLANNING CONTROL *	SPECIAL AMENITY AREA ORDER	CONSERVATION ORDER	TREE PRESERVATION ORDER
Inishkea	X			
Old Head	X			
Pontoon Woods	X			
Belderg Harbour	X			
Lough Carra		X		
Clare Island Cliffs	X			
Bellacorrick Flush	X			
Owenduff Blanket Bog		X		
Glenamoy		X	X	
Illaunmaster	X			
Mweelrea	X			
Lough Mask Shore	X			
Inishglora	X			
Dooaghtry		X		
Cloughmoyne	X			
Garrycloonagh	X			
Lough Conn & Cullin	X			
Annagh Head - Scotchport	X			

*Specific recommendations for action are often made in the text in these cases.

SUMMARY OF RECOMMENDATIONS - cont'd...

NAME OF AREA	GENERAL PLANNING CONTROL *	SPECIAL AMENITY AREA ORDER	CONSERVATION ORDER	TREE PRESERVATION ORDER
Lough Mask	X			
Termoncarragh Lough	X			
Owenbirn Glassland	X			
Lough Akeel Quarry	X			
Inishturk	X			
Moy Estuary	X			
Kinlooey Lough				X
Sheefry Hills	X			
Croaghpatrick	X			
Coolbarren Lough	X			
Cuilkillew Wood	X			
Stella Maris	X			
Rockfleet Bay	X			
Bills Rock	X			
Barnarinnia Wood				X
Creevagh Head	X			
King's Hill	X			
Cappagh	X			
Glenisland River	X			
Shangort	X			

*Specific recommendations for action are often made in the text in these cases.

SUMMARY OF RECOMMENDATIONS - cont'd...

NAME OF AREA	GENERAL PLANNING CONTROL *	SPECIAL AMENITY AREA ORDER	CONSERVATION ORDER	TREE PRESERVATION ORDER
Curraun Plateau	X			
Clyard Kettleholes	X			
Croaghmoyle	X			
Mulranny Hill	X			
Downpatrick Head	X			
Lacken Saltmarsh	X			
Carrowmore Lough	X			
Kilcummin Head	X			
Burren Rock	X			
Inishkeeragh	X			
Drumleen Lough	X			
Rossmoney	X			
Ballynew outcrop	X			
Burren	X			
Tawnagh More	X			
Derrycraff	X			

*Specific recommendations for action are often made in the text in these cases.

SUMMARY OF RECOMMENDATIONS - cont'd...

NAME OF AREA	GENERAL PLANNING CONTROL *	SPECIAL AMENITY AREA ORDER	CONSERVATION ORDER	TREE PRESERVATION ORDER
Mulrany saltmarsh	X			
Owenduff (Lagduff)	X			
Knappagh Woods	X			
Porturlin Cliffs	X			
Mocorrha Lough	X			
Mayfield Lough	X			
Robe River Bog	X			
Ardogommon Wood	X			
Teevmore Channel	X			
Lough Glenowough	X			
Killala Esker				X
Lough Corrib Shore	X			
Cloonagh Lough	X			
Lough Alick	X			
Benwee Head	X			
Carrowmore Lake Shore	X			
Stags of Broadhaven	X			
Lough Cahasy	X			

*Specific recommendations for action are often made in the text in these cases.

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