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CONSERVATION AND AMENITY ADVISORY SERVICE

A PRELIMINARY REPORT ON AREAS OF SCIENTIFIC INTEREST IN COUNTY WESTMEATH

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This report is based on data abstracted from the files of the Conservation Unit, An Foras Forbartha, from the published literature and from several periods of field observations in November 1971 - January 1972. It is a provisional document subject to future research.

The report consists of the following parts:-

In the preparation of this report, the help of Miss M. Scannell and Mr. D. Synnott, of the National Museum Herbarium is gratefully acknowledged, as is that of Mr. D. Scott, Irish Wildbird Conservancy.

This report concerns country-planning. It should enable the county council to pick out those areas that are important on a national or local level and whose conservation can be based on strong scientific or educational grounds. The Conservation Advisory Service is attempting to identify a representative range of natural or semi-natural habitats throughout Ireland and also to list sites of special significance, usually containing a rare species or a rare natural phenomenon. Around these areas, development can proceed with relative impunity, once waste-disposal problems have been surmounted. It may be stressed that the amount of land available is such that development will very seldom mean the impoverishment of the national heritage, if it is properly planned.

However, it is true that scenically attractive areas which appeal because of the combination of hills, woodland and water, may introduce conflicts. They are naturally sought after by housing or recreation interests but, at the same time, they often contain communities of plants and animals, interesting because of their isolation from rural or urban development. To compromise between the opposing forces is always difficult, but it may be pointed out that large trees and especially the woodland community is an irreplaceable feature of the landscape on a timescale of 10-20 years. To give an example of the space available outside the natural woods from probably the most wooded part of the county; the Westmeath shore of Lough Ree runs to approximately 24 miles, including the inner loughs. That part which is wooded to any extent is 6.5 miles long and those areas worthy of conservation as woodland, are about 3.1 miles long. Outside these, there is sometimes a narrow strip of hazel scrub, valuable for screening purposes.

Conservation of natural communities may be important for amenity, scientific or educational reasons, or any combination of the three. Frequently the natural vegetation of an area gives to it a characteristic atmosphere, an indefinable value, but very real to those that walk or drive through it. Diversity is the key quality of the environment that attracts people to an area or that makes them find relaxation there; the contrast between cultivation and wilderness, between water and land or between trees and grass. Fortunately, diversity is also the sine qua non of rich biological communities.

Examples of all habitats must be preserved for scientific research. Uncultivated areas are essential as reservoirs for organisms that may be useful for soil conditioning or pest control in the future. Quite apart from their inherent interest and complexity they are needed also as control areas. Without them it would be impossible to judge the effectiveness of, or to improve man's attempts at land management. For example, how can pollution be controlled if no unpolluted watercourse or lake remains in which to decipher the natural breakdown processes? Or how can the great productivity of marshes and seasonally flooded land be harnessed, other than by rice growing, if no natural swamps are left? Finally, how can cutover bog be best used for tree growing if no natural self-sustaining bog community or no wooded peaty areas exist? These questions are of growing importance in a competitive world that demands efficiency and an optimum level of food production compatible with little damage to the ecosystem.

In education, field studies of all sorts are of immense value, and biological field studies are a stimulus that many other disciplines envy. Natural communities provide some of the clearest expositions of the ecological principles that operate through all growing and harvesting methods. In addition, there is the challenge of identifying and getting acquainted with numerous and very different species. Field work attracts practically all children at some stage and enables everyone to better appreciate being in rural surroundings. Already, since the introduction of biology teaching, there is greater awareness of the environment and interest in wildlife. Such constructive recreation should be encouraged by the maintenance of variety in the countryside.

It is the intention of this survey to encourage the use of the countryside by drawing attention to scientifically interesting places. All of those mentioned can support much greater numbers of people - less so in certain cases of marshes and bogs, or at certain times of the year. But the carrying-capacity of each site will eventually have to be analysed. How much recreational use can co-exist with a nesting wild-fowl population? How many people can walk a woodland floor without damaging the plant cover? Or what number of trees can be felled each year while preserving the attractive features of the wood? The idea of preserving any but the smallest areas intact and without change is unrealistic and multiple use should be encouraged. Many of the areas would respond to sound management and become much more productive.

The majority of the sites listed are now productive in the crude sense of producing fish, game birds or timber. All are productive if they encourage people to visit the area and make use of services nearby, and we believe that all contribute to the relaxation, mental health and happiness of the community, especially the generation of town-dwellers that now form most of our nation.

SECTION B

VULNERABILITY OF THE VARIOUS HABITATS

Areas of scientific interest can be damaged in many ways. They can be completely destroyed by scrub or tree clearance, by turf cutting or by arterial drainage, or they can suffer insidiously through pollution, fertilization, grazing or overuse for recreation.

Of these various instances the first poses the greatest threat because of the rapidity with which it can occur. In the absence of a fine large enough to be a sure deterrent, co-operation to maintain the county's deciduous woodlands at all levels of landowner, forester and the general public must be actively sought. It will seldom be sufficient to put a prevention order on an area which would lose its value immediately the trees are felled. The voluntary organisations have a role to play in this acting as observers throughout the county.

Turf cutting on a small, private scale is not occurring at either of the peatland sites included but Bord na Mona have plans to exploit one of them. It is suggested that the county council might take up this matter, if not to try to prevent such exploitation then at least to postpone it until the last possible moment. The demand for machine turf may fall as central heating becomes the standard form and thus save at least one eastern raised bog in the county. The marginal areas that are scheduled to remain uncut are of much less value than a deep bog and the most satisfactory agreement would be to cut them out completely and leave the latter untouched.

Burning of the vegetation related to turf-cutting causes undesirable modifications in the plant cover, so it should be discouraged if possible.

Drainage schemes of all sorts have serious consequences for the scientific interest of aquatic sites but the threat may not be as serious in Westmeath as elsewhere. Thus in some instances the areas are large lakes or the

marshes around them and when the water level is lowered the plant communities develop again at a lower level. No large marshy area exists that supports large numbers of wildfowl, but in the case of smaller lakes there is a danger that conditions suitable for the same plant community will not recur and important species will be lost. The particular example of the Scraw Bog, however, may be mentioned as it would never recover its present form after drainage.

Dredging of river beds with the resulting steepening of their banks has a damaging effect on fish life and also sometimes on wildfowl. On the Shannon large numbers of swans and dabbling duck occur in winter and they usually arrive before the river has flooded onto the surrounding fields. In this case, they feed at the sides of the channel on submerged or visible vegetation and a sufficient area must be preserved to maintain this autumn feeding.

As is well-known pollution of lakes changes their character to begin with, and if it is continued has bad effects on water quality and fish life. Aquatic communities of all sorts are the most vulnerable since the incoming matter cannot be localized but is transported everywhere in the water: they also require less nutrients than the land. For these reasons, development upstream of important areas must be carefully controlled, and alternative sites for domestic or agricultural developments, or drainage routes from them, must always be considered if such an area is involved. Where a greater distance of river or stream bed is available, it can be used within reason to deal with larger quantities of effluent. The lack of turbulence, and, therefore, oxygenation, does add considerably to waste disposal problems throughout the county, however.

Several farming operations are potentially destructive, apart from straightforward pollution by silage effluent or intensive livestock units. Excessive fertilization produces run-off of nutrients, especially nitrates and these are particularly bad for nutrient-poor ecosystems such as acid lakes and bogs. Introducing such run-off into any natural community will change the species composition.

Grazing has a similar effect. It selects out of the vegetation those species that are most resistant to constant cutting and allows them to multiply at the expense of others. This reduces the diversity of the flora and also often its interest.

Light grazing is seldom detrimental except that it prevents the natural colonisation of grassland by shrubs and trees, but as it is intensified such changes as those mentioned above occur and in extreme cases the vegetation may not be able to persist at all. Eskers are particularly vulnerable as their stony dry soils do not allow a fast recovery growth by grazed plants.

The last influence to be mentioned is that of recreation which probably deserves a place here at the moment only for its destructive aspect of flower or plant collecting. Opening up of areas with a rare noticeable plant may damage that species but in general enough individuals escape notice so that it persists from year to year. In future fragile ecosystems such as marshes, or unforested eskers may suffer excessive use such as sand dunes are at present receiving, but no problems of this exist in the county today.

SECTION C

INTRODUCTION TO THE AREAS OF SCIENTIFIC INTEREST IN CO. WESTMEATH

Westmeath is one of the more diverse counties in the midlands. A look at a geological map might lead one to suppose that the monotonous sheets of Carboniferous limestone are reflected by a similar monotony in the flora and fauna, but in fact the combination of shallow lakes (e.g. Coosan Lough), glacial eskers (Long Hill), bogs (near the Meath border), exposed rock (Rock of Curry), seasonally flooded land (River Shannon below Athlone), fens (L. Iron) and natural woodland (Lough Ree shores) makes the county of exceptional scientific interest.

It is renowned for its aquatic and marsh communities and is the centre of distribution for several plants and probably also for some invertebrates though much less in known about them at present. The plant species include Pyrola rotundifolia (round-leaved wintergreen), Carex appropinquata (a sedge), Lathyrus palustris (marsh pea) and Chara tomentosa (a stonewort alga). The wetlands run from acid peaty lakes and bogs to rich calcareous ones with thick marl deposits. Many are important for wildfowl - either as breeding or wintering areas - and the county has responsibility on a national scale for their survival.

It is natural, therefore, that a good range of aquatic sites is included in the following pages. As well as these there are several areas of natural or semi-natural woodland, especially on the Lough Ree shore and at the south-east end of L. Derrevaragh. So little deciduous forest exists in the midlands that any remnants have an increased value because of their rarity. They are usually found on exposed lake islands or shores or on steep hill-slopes so the trees do not attain large size. However, such stretches have usually developed naturally and thus are ecologically valuable.

Conservation plans within the county must centre around the maintenance of habitat diversity and since the rarest element in this is deciduous woodland it is suggested that several areas of it be protected by conservation orders. Two of these, on the eastern eskers, are also valuable examples of this glacial feature which will eventually disappear if no action is taken. One of the wooded areas is the east end of L. Derravaragh which because of its scenic and educational attractions could be the subject of a Special Amenity Area order.

Coosan Lough probably contains the best development of the Shannon flora and fauna in its shallow waters. In view of the increase in recreational use of this part of L. Ree it is suggested that Coosan be scheduled for no development both because of its scientific value and to act as a contrast to Killinure Lough. A conservation order would seem the best solution.

The Scraw Bog, near L. Owel is, like the last site, internationally regarded and deserves immediate protection by Conservation Order.

In general, the council should be alert to threats to any of the areas listed. These have been outlined in the previous section. Where development has to be curtailed, the possibilities of a co-operative scheme on a different piece of land should be fully examined. In the instance of recreational building, clustered development separated by natural areas should be favoured.

As developments occur and as scientific knowledge increases, the importance and priority of the various areas are likely to change. Continual reassessment is required to monitor such changes. If a particular site loses its value through pollution, drainage or physical disturbance the others of its type will immediately become more important in the regional context. Likewise, if a new and particularly interesting species of organism is found in an unlisted site, one of the existing ones may be deleted after a detailed comparison. Priority for a site's protection may also vary as developments in its vicinity are proposed or are commenced. The description of "no planning control" necessary in the summary sheet of recommendations must be taken as meaning none for the present. As the countryside becomes more intensively used by agriculture and industry and for recreation, action will probably be needed to preserve all sites in their present condition.

SECTION D

RATING OF AREAS OF SCIENTIFIC IMPORTANCE

This is a measure of the relative importance of areas of scientific importance.

The importance of each area is indicated in terms of the following categories:

International Importance

1. Only area of its type in Europe.
2. One of a few such localities in Europe.
3. One of a natural series in Europe.
4. Recognised international importance.
5. Specialised educational importance.

National Importance

1. Only area of its type in Ireland.
2. One of a few such localities in Ireland.
3. One of a natural series in Ireland.
4. Recognised national importance.
5. General or specialised educational importance.

Regional Importance

1. Only area of its type in province.
2. One of a few localities in Ireland.
3. One of a natural series in region.
4. Fine example of its kind.
5. General or specialised educational importance.

Local Importance

1. Only area of its type in county.
2. One of a few localities in province.
3. Fine example of its kind.
4. General educational importance.

PRIORITY OF AREAS OF SCIENTIFIC INTEREST

This is a measure of the relative urgency necessary for protection of the areas of scientific importance.

Each site is given a priority rating of A, B or C.

The rating of any area is based on a combination of the following criteria:-

a) the importance of the area
b) the vulnerability of the area
c) the nature and imminence of any threats to the area.

AREAS OF SCIENTIFIC INTEREST IN COUNTY WESTMEATH

Area	Grid Ref.	Rating	Priority	Interest
Scraw Bog 16	N. 42 59	International	A	Botanical, ecological. Several rare species in an unusual habitat
Coosan Lough 21	N. 05 44	National	A	Botanical, ornithological. Fine example of the Shannon Flora; nesting wildfowl population.
Long Hill Esker 25	N. 37 36	National	A	Botanical, ecological, geomorphological. High wooded eskers with a rich ground flora and animal population.
Rahugh Ridge 31	N. 39 92	National	A	Botanical, ecological, geomorphological. High wooded eskers with a rich ground flora and animal population.
Hare Island 34	N. 045 468	National	B	Botanical, ecological. Natural woodland with several rare species.
Coosan Point 37	N. 045 455	National	A	Botanical, ecological. Natural woodland with good lakeshore community also.
Carranstown Bog 40	N. 64 54	National	A	Eastern raised bog in good condition. Comparatively species-rich.

Area (Map No.)	Grid Ref.	Rating	Priority	Interest
Lough Ennell 14	N. 40 45	National	B	Ornithological, ecological. Large wintering duck population. A rare species of duck nests. Good coverage has produced several rare lower plants and animals.
Hills at S.E. end of L. Derrevaragh 49	N. 46 63	Regional	A	Ecological, botanical, geological. Natural woodland with contrasting compositions. Rare rock type.
Lough Owel 54	N. 39 57	Regional	C	Zoological. Wintering wildfowl and a unique species of fish. Marginal flora rich.
Killinure Point 60	N. 051 460	Regional	A	Botanical. Several rare species of plants. Semi-natural woods.
Hill of Mael & Rock of Curry 62	N. 44 76	Regional	C	Botanical, ecological, geological. Exposed limestone; some pavement. Unusual flora.
Cloonbonny Bog 16	N. 06 38	Regional	C	Botanical, ecological. Raised bog with western (Atlantic) tendancies.
Quarry Bog & Slevin's Lough 19	N. 45 56	Regional	A	Ecological, botanical. Semi-natural woods on cutover bog. Large animal population.

Area	Grid Ref.	Rating	Priority	Interest
Lough Iron 73	N. 35 61	Regional	B	Botanical, ornithological. Rich fen community with rare species. Visited by white-fronted geese.
L. Derrevaragh (W. end) 77	N. 40 67	Regional	C	Ornithological, ecological. Wildfowl wintering area. Large flat areas of lake bed exposed.
Lough Glore 80	N. 49 72	Regional	C	Ornithological, botanical. Rich lake with good feeding for fish and wildfowl.
Lough Sewdy 84	N. 22 50	Regional	C	Interesting aquatic communities. Nesting area for many water birds.
Waterstown Lough 87	N. 10 45	Local	C	Ecological, botanical, ornithological. Acid-alkaline junction. An uncommon species of bird nests.
Lough Bane 90	N. 41 77	Local	C	Ornithological, ecological. Wintering areas for swans and duck. Lake surrounded by peat.
Bunbrosna Marsh 93	N. 37 61	Local	C	Botanical. Fen community. Several rare species.
Aghalasty Bog 57	N. 51 69	Regional	B	Ecological, botanical. Unusual habitat conditions.

Area	Grid Ref.	Rating	Priority	Interest
Ross Lough 96	N. 06 51	Local	C	Botanical. Unusual communities nearby. Shannon flora.
Derrynacegan Point 99	N. 43 81	Local	C	Botanical, ecological. Fen vegetation, backed by natural woodland.
Meehan Wood 102	N. 03 45	Local	B	Botanical. Hazel wood. Good representative flora.
Ardan Wood 105	N. 377 342	Local	A	Botanical, ecological. Oak woodland on edge of esker deposit.
Walshestown Fen 107	N. 39 54	Local	C	Botanical. Fen community with a rare species of plant.
Ballynagarbry esker 110	N. 18 39	Local	C	Botanical, geomorphological. Undulating esker. Grassland community.
Royal & Grand Canals No map 113		Regional	B	Ecological, botanical. Agencies for spread of aquatic plants and animals.
R. Shannon 115 No map	N. 05 38	National	B	Ornithological. Important area for wintering wildfowl; especially wild swans.
Hill of Usneach No map 116	N. 29 48	Regional	C	Botanical. Rare species found.

SECTION F

DETAILED REPORTS ON AREAS SURVEYED IN SUFFICIENT DETAIL

These are written under the following sub-headings:-

Name of Area
Acreage
Grid Reference
Scientific Interest
Rating
Priority
Description of Area
Evaluation
Vulnerability or Threats to the Area
Recommendations

In the descriptions the abundance of the species may be indicated by the following symbols:-

a	=	abundant
c	=	common
f	=	frequent
o	=	occasional
r	=	rare
l	=	locally (as a prefix)

Botanical nomenclature follows that of 'Flora Europaea', the standard work of which the first two volumes have so far been published. (1964 & 1968).

Name of Area:	SCRAW BOG
Acreage:	36 acres
Grid Reference:	N 42 59
Scientific Interest:	Botanical, Ecological
Rating:	International
Priority:	A

Description of Area: (See Map 1). The Scraw bog is a quaking bog that lies in a linear depression between hills covered by limestone drift. It is essentially a water body covered by a floating mat of vegetation though at the S.E. end there is more peat development. The southern side has a linear series of pools along most of its length, but everywhere except around the clumps of willow trees, water appears when the ground is walked upon.

There are two main communities; the wetter one is formed by Carex spp. (sedges), e.g. Carex lasiocarpa, C. rostrata with Juncus subnodulosus (rush) and Menyanthes trifoliata (bogbean); the drier by Sphagnum spp. or other mosses, e.g. Hylocomium splendens, Aulacomnium palustre. On this the cranberry (Vaccinium oxycoccus) attains great abundance as in places does Pyrola rotundifolia (round-leaved winter-green). Calluna vulgaris, and Erica tetralix (heathers) are found occassionally. In the centre of such areas the willow (Salix cinerea) grows into medium-sized trees in which ivy (Hedera helix) may be present.

The following plants are interesting:-

Drosera intermedia	long-leaved sundew	r
Galium uliginosum	fen bedstraw	l.f
Hydrocharis morsus-ranae	frogbit	l.c
Potamogeton coloratus	fen pondweed	f
*Dactylorhiza traunsteineri	marsh orchid	r
*Eriophorum gracile	a bog cotton	r
Carex dioica	a sedge	l.f
C. limosa	"	f
C. diandra	"	r
*Dactylorhiza x Kellerana	marsh orchid	r

* Only county record.

C. appropinquata	"	r
*Cinclidium stygium	moss	l.f
*Camptothecium nitens	"	l.f
Chara aculeolata	a stonewort	r
Nitella tenuissima	"	r

Just east of the area described, beyond a tranverse ditch, there is a clearing in the willow trees which is covered by a peculiar community. Consisting of Sphagnum magellanicum and other species, Pleurozium schreberi and Hypnum cupressiforme (mosses) with sheets of Empetrum nigrum (crowberry) and Vaccinium oxycoccus (cranberry) and also V. myrtillus, Calluna vulgaris and Erica tetralix, Eriophorum vaginatum (bog cotton), Molinia caerulea (purple moor grass) and Cladonia impexa (a lichen), this chiefly resembles the floor of a Scottish high level forest. The occurrence of stunted, spontaneous pine (Pinus sylvestris) adds to this illusion.

Snipe and curlew nest on the Scraw bog, and possibly Mallard also. All occur in winter when many pheasants were seen in the wood. (December 1971).

The presence of the unique collection of rare plants, some with boreal affiliations, suggests that the invertebrate populations may also be interesting.

Evaluation: The area is important on two counts. Botanically, it contains a galaxy of rare plants unequalled by any other wetland site in the country, except perhaps the Garron plateau, Co. Antrim, and ecologically it shows the transition from an alkaline fen community to an acidic bog community. This may indicate what happened beneath all the raised bogs in the country, and poses questions as to the history of the Scraw bog itself. Though superficially resembling a cutover bog that is growing over again, the occurrence of plants of such restricted range suggests otherwise.

It is the centre of distribution of Pyrola rotundifolia (wintergreen) in Ireland, the only eastern station for Eriophorum gracile (a bog cotton), and the only recent site for Drosera intermedia (sundew) in the eastern half of the country. The Nitella (stonewort) is found in one other county.

As can be imagined, the area offers exceptional interest for research and some work on the depth and structure of the bog is now being carried out. To botanists it is the most widely-known locality in the county, and is frequently visited.

Vulnerability: The Scraw Bog would be adversely affected by drainage and pollution. The vegetation might also be injured by too frequent trampling since paths remain in the sedges for many weeks and being lines of water are apt to be avoided by succeeding visitors.

The present land-use in the basin seems to co-exist with the plant cover and analysis of the effects of any change should be undertaken. An increase in fertilization especially if connected with arable farming, might be expected to alter the bog community. For the same reason drainage of additional domestic farm effluent into the river water system would be damaging.

S.E. of the bog a sizeable forest is being planted and spruces have been recently set only ten yards away from the edge of the Scraw bog proper. Up to the present, the Pine-crowberry area mentioned above has almost escaped but it is not likely to be left.

Recommendations: Diversion to other watersheds of new sources of pollution should be examined when the need arises. The small size of the basin would simplify this. Also a possible increase in arable farming and the changes this might bring should be fully monitored.

It is suggested that a small section on the NE side be fenced to allow a natural vegetation to develop in the transition zone, without grazing and trampling. Such a region would be of scientific value and it would only mean the loss to the field in question of about three yards of poor vegetation for a distance of 20-30 yards.

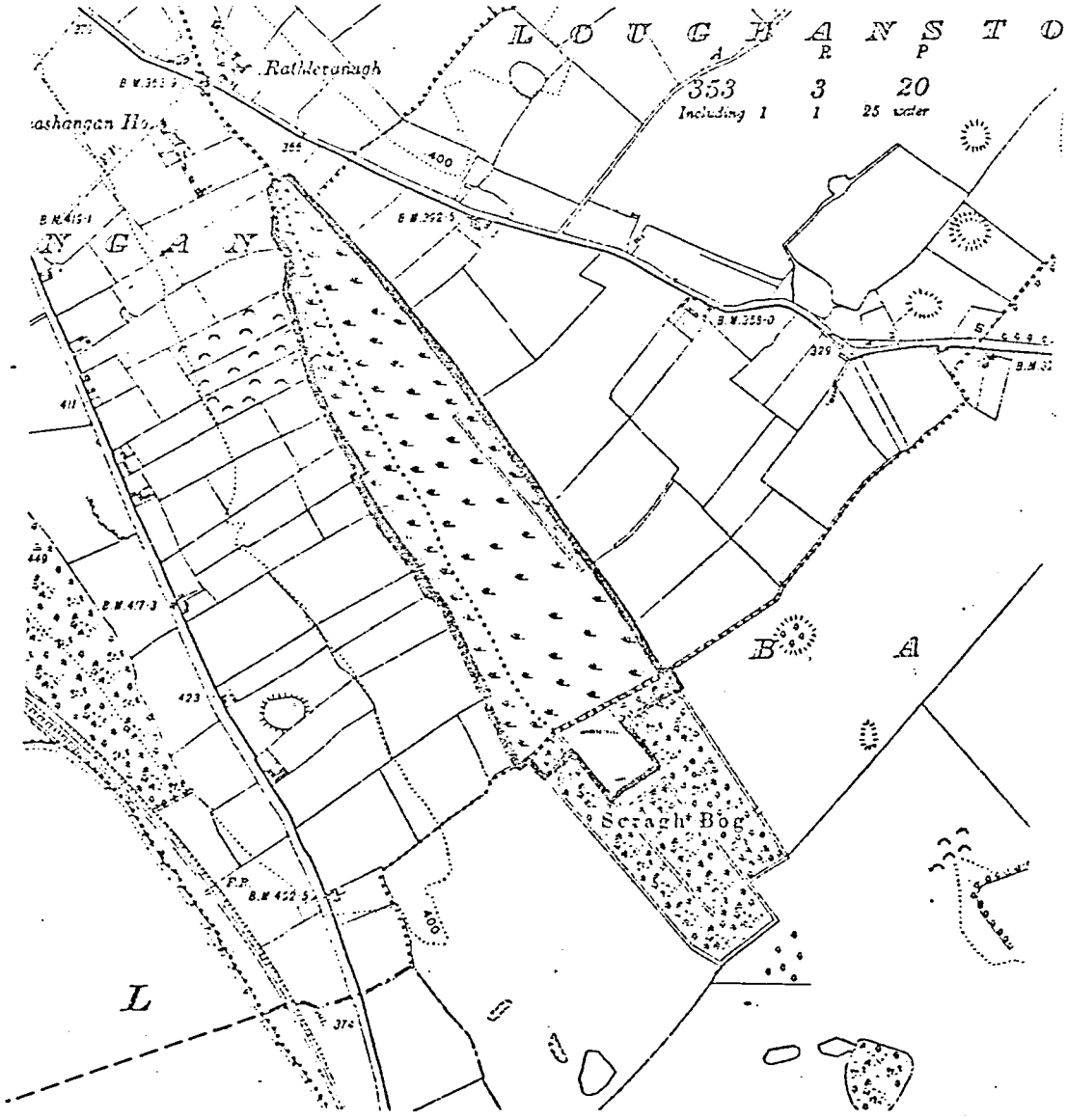
The open area within the trees at the S.E. end is worthy of preservation in its own right and it is very vulnerable at the moment to afforestation by spruce. Action must

be taken to prevent this and indeed the creation of a buffer zone to each side of it is most desirable. The drainage is to the N.W. and in this way a portion approximately 30 yards wide of natural (Salix willow) vegetation would have a conditioning effect on water leaving the plantation.

It is recommended that the area shown on the map be covered by a Conservation Order, under Section 46, Local Government (Planning and Development) Act 1963. It is a matter of some urgency to prevent complete afforestation in that part S.E. of the townland boundary of Ballynagall.

MAP SHOWING AREA OF SCIENTIFIC INTEREST - 1

Scale: 6 inches to 1 mi



Name of Area: COOSAN LOUGH

Acreage: 240 acres

Grid Reference: N 05 44

Scientific Interest: Botanical, ornithological

Rating: National

Priority: A

Description of Area: The south and west shores of Coosan Lough were visited in November, 1971, together with the west side of Ballykeeran Bay. (See Map 2).

An extensive reedswamp community of Phragmites australis (reed) and Schoenoplectus lacustris surrounds the shores of this part of the inner loughs. It is backed by marshy ground which contains a very rich fen flora and behind this pasture rises higher land broken occasionally by limestone spurs and hazel or oak woods.

The fen flora consists largely of Cladium mariscus (saw-sedge), Carex rostrata (bottle sedge), and Schoenus nigricans (bog rush) but there are large patches of other sedges, e.g. Carex lasiocarpa, C. paniculata etc.

The following species were noted amongst others:-

Caltha palustris	marsh marigold
Ranunculus lingua	greater spearwort
Thalictrum flavum	meadow-rue
Lysimachia vulgaris	yellow loosestrife
Myosotis scorpioides	forget-me-not
Menyanthes trifoliata	bog bean
Carex nigra	sedge
C. lepiodocarpa	"

In addition, Thelypteris palustris (marsh fern), Cicuta virosa (winter hemlock), Galium uliginosum (fen bedstraw) and Hydrocharis morsus-ranae (frogbit) and Carex vesicaria have been recorded in the past and all must still occur.

In one place near the ponds on the west side of Ballykeeran Bay, willow trees, (Salix cinerea), Rhamnus cathartica (buckthorn) and Viburnum opulus (guelder rose) are growing in intimate association with Carex paniculata tussocks - in fact, the classical carr succession.

Above the level of the sedge-dominated communities, the following interesting species occur:-

Equisetum variegatum	horsetail
Sagina nodosa	knotted pearlwort
Linum catharticum	flax
Pedicularis palustris	red rattle
Parnassia palustris	grass of Parnassus
Triglochin palustris	arrow grass
Dactylorhiza fuchsii	spotted orchid
Dactylorhiza incarnata	meadow orchid
Platanthera chlorantha	butterfly orchid
Epipactis palustris	marsh helleborine

In drier areas still, Ophrys apifera (bee orchid), Campanula rotundifolia (hare bell). Briza media (quaking grass) etc. are found.

The inner loughs harbour a rich fauna, especially of molluscs. Many gastropod snails were seen and remains of the mussel (Anodonta) were frequent.

A wildfowl count on 12/1/'69 showed -

Mallard	228	(111 in Killinure L.)
Teal	16	
Wigeon	1	
Tufted duck	41	(129 in Killinure L.)
Mute swan	4	
Whitefronted goose	6	
Coot	16	

The breeding population of mallard is relatively high.

The thickets and woods in the area are one of the centres of distribution for the garden warbler in Ireland. They also provide nesting sites for many other passerines and for Pheasants.

Evaluation: Coosan Lough with the west shore of Ballykeeran Bay forms a unit of exceptional scientific interest. The Shannon flora is developed to the fullest extent and contains about ten plants, rare on a county or country basis.

It has a rich fauna that supports sizeable numbers of wintering and breeding ducks, especially of mallard, a declining species.

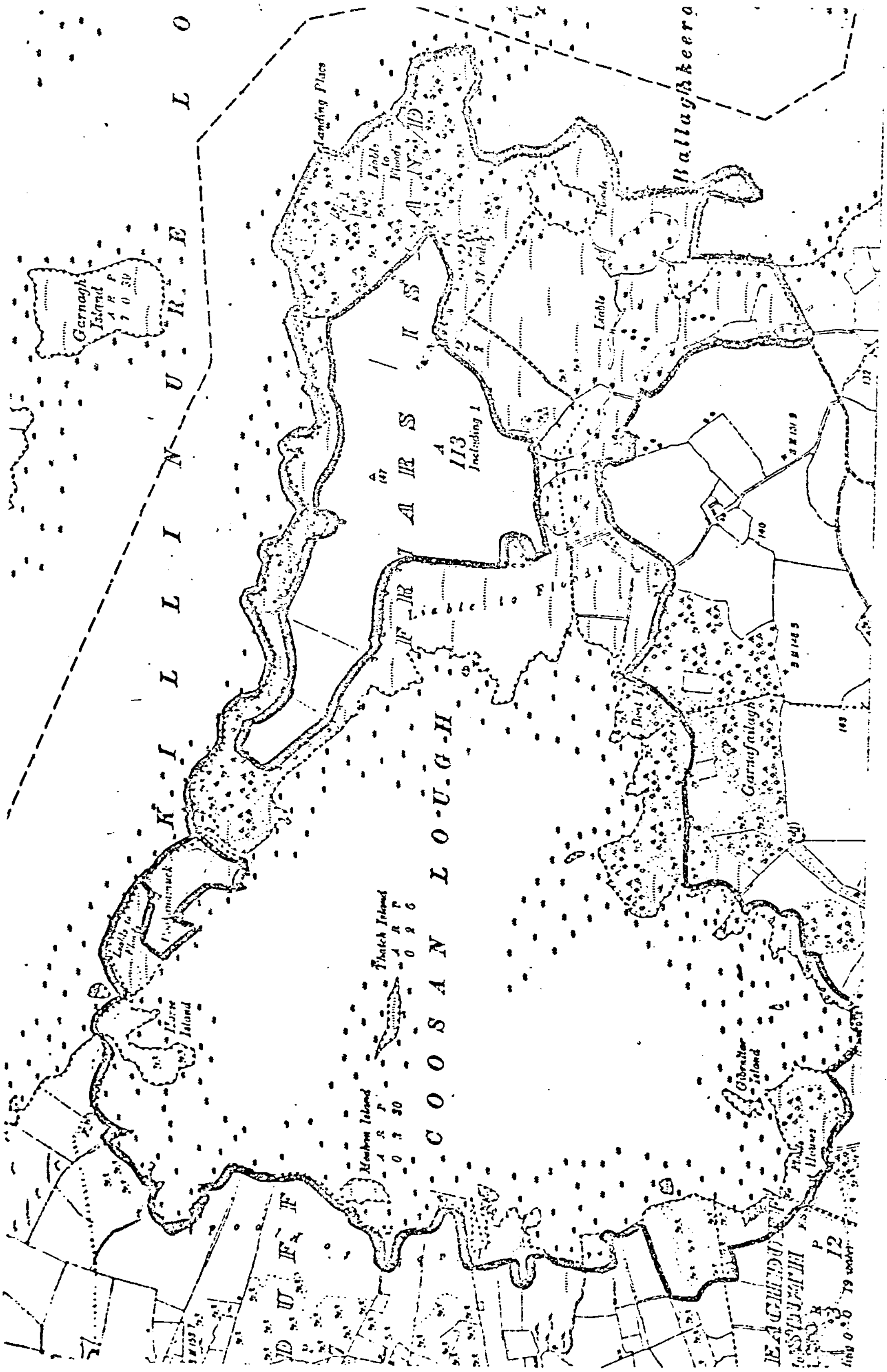
The agricultural land, punctuated by woods, that rises behind the broad expanses of reedbed makes the area of great scenic attraction. Its appeal seems to come from the untouched aspect of the land, and it would make a very valuable contrast to a more-developed Killinure Lough and Coosan Pt. Killinure Lough with an area four times as great as Coosan L. (approx. 740 acres as compared to 188) should be adequate to meet all the recreational demands put upon the inner loughs.

Recommendations: The no-shooting order at present covering the area should be extended to a conservation order limited by the boundaries shown.

Development should be concentrated on the eastern shore of Coosan Pt. and on the east or north shore of Killinure L. Water access to Coosan L. which is adequate now for small boats should not be improved.

MAP SHOWING AREA OF SCIENTIFIC INTEREST - 2

Scale: 6 inches to 1 mi



Name of Area:	LONG HILL ESKER & SWALLOW LOUGH
Acreage:	117 acres
Grid Reference:	N 37 36
Scientific Interest:	Botanical, Ecological, Glaciological
Rating:	National
Priority:	A

Description of Area: The area under discussion is shown in maps 3 and 4. It was visited in November and December, 1971.

Long Hill esker differs each side of the Tyrellspass-Kilbeggan road. To the north natural woodland, made up of hazels of very large size, well-grown ash and hawthorn and scattered Sorbus hibernica (whitebeam) covers each side of the esker with a rich understorey vegetation including almost all of the commoner woodland plants and a rare species of grass*. South of the road beech has been planted and is spreading towards Swallow Lough. It forms complete cover close to the road and the floor is carpeted with its leaves. This restricts the herbs to some extent.

Among the species recorded from Long Hill are:-

Rosa arvensis	field rose	o
Hypericum androsaemum	tutsan	o
Fragaria vesca	wild strawberry	f
Potentilla sterilis	barren strawberry	f
Viola riviniana	violet	f
Geum urbanum	wood avens	f
Sanicula europaea	wood sanicle	c
Conopodium majus	pignut	c
Galium odoratum	woodruff	f
Stachys sylvestris	hedge woundwort	o
Ajuga reptans	bugle	f
Glechoma hederacea	ground ivy	c
Lysimachia nemorum	yellow pimpernel	c
Primula vulgaris	primrose	c

Endymion non-scripta	bluebell	f
Orchis mascula	early purple orchid	o
Festuca gigantea	tall brome	o
*F. altissima	a grass	r

Northwest of Swallow Lough the woodland clears and a characteristic grassland flora is represented with Briza media (quaking grass), Carex flacca (sedge), Galium verum (lady's bedstraw) and Carlina vulgaris (carline thistle) among other species.

The lake itself has a fluctuating water level and is full of Charophytes. It is bounded on the SW side by the esker gravels and on the NE side by glacial drift. Here, extensive reedswamp occurs with Phragmites australis (reed), Equisetum fluviatile (water horsetail) and Phalaris arundinacea (reed grass) abundant and the following species:-

Polygonum amphibium	amphibious persicaria	f
Eleocharis palustris	spike rush	c
Hydrocotyle vulgaris	pennywort	f
Myosotis scorpioides	forget-me-not	f
M. caespitosa	"	f
Hippuris vulgaris	marestail	o
Typha latifolia	bulrush	l.f.
Lycopus europaeus	gipsywort	o
Sparganium emersum	bur-reed	o
Oenanthe aquatica	water dropwort	o
Rorippa islandica	yellow cress	o

At the northern end gravel is being extracted from the esker. Close to this area there is an interesting herbaceous vegetation with large expanses of Carex flacca (sedge), Origanum vulgare (marjorom), Pilosella vulgaris (mouse-ear hawkweed), Carex caryophyllea (spring sedge), Antennaria dioica (cat's-foot), and Festuca ovina (sheep's fescue). Blackstonia perfoliata (yellow wort) and Sorbus hibernica (whitebeam) also occur.

The peculiar fungus, Morchella sp. (morel) is recorded from the woodland. Wildlife seen on the occasions of visits included badger, pheasant, jay, moorhen and flocks of tits, including long-tailed.

Evaluation: The interest of Long Hill is twofold. Firstly, it is a fine example of an esker - a distinctive Irish landform of very different origin to those in Scandinavia. Eskers throughout our history have had an important role in communications and defence. However, they are a valuable source of sand and gravel. Material is being extracted from many of the better ones and in Co. Dublin several eskers have been totally removed.

Secondly, because the slopes are steep they were not kept in grass and the woodland that has developed has done so naturally, becoming rich in species. The size of the hazel trees is remarkable and the occurrence of Sorbus hibernica as a woodland constituent also merits attention. The spring flora makes the area attractive at that time of the year. Wildlife is abundant and the wood forms a refuge for animals and birds that feed on the surrounding agricultural land as well as species restricted to woodland.

Swallow Lough is interesting in having a variable water level and a good sequence of vegetation is seen from water to dry land. Several uncommon species of plants occur.

The whole area has outstanding potential for field studies being easy of access, and diverse in habitat and species. It also is very suitable for the setting up of a permanent nature trail.

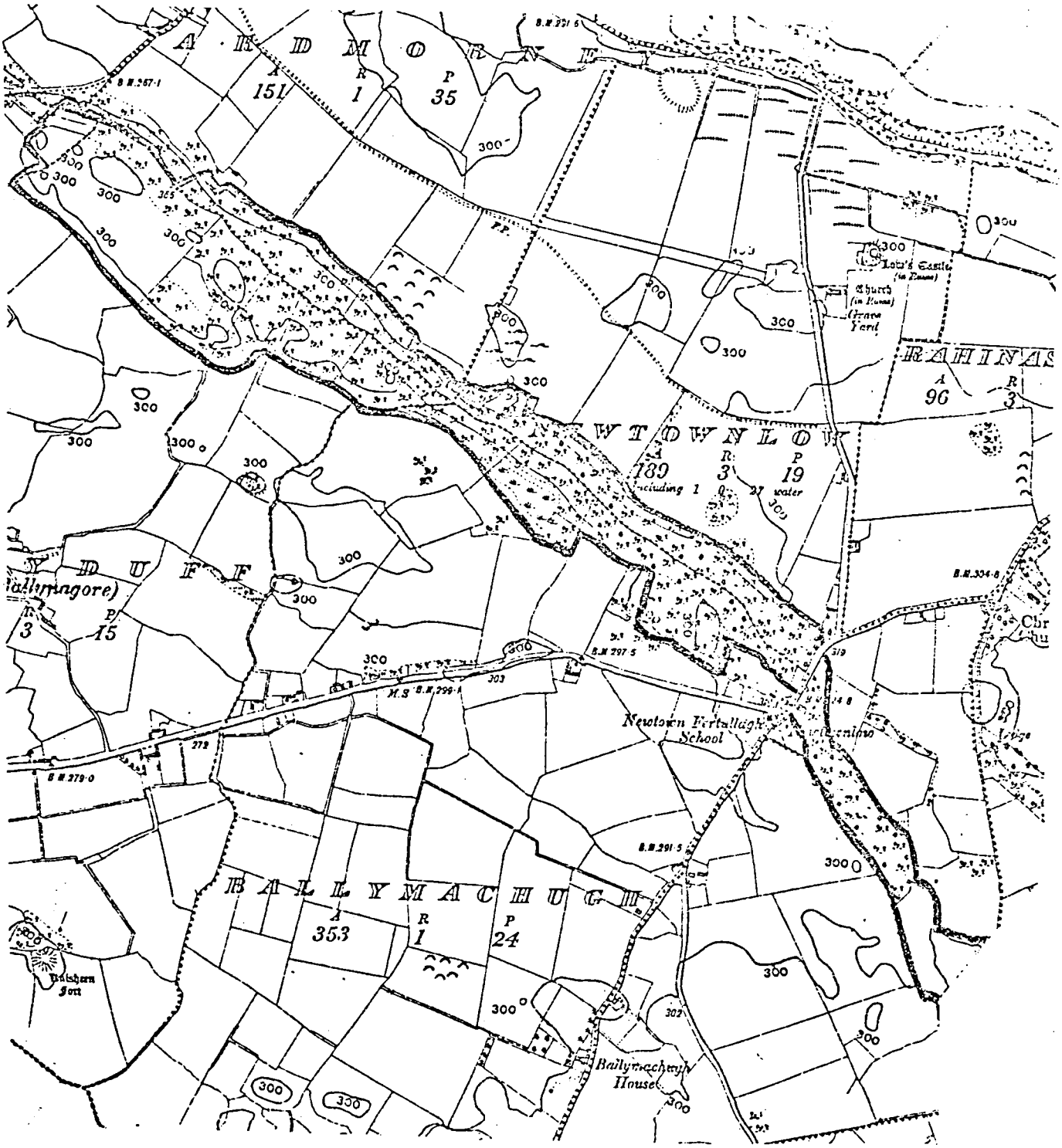
Vulnerability: Removal of material though it bares the sediments to the eyes of geomorphologists, at the same time destroys any biological interest in the area. The largest eskers are most vulnerable to exploitation, but they are also the rarest.

Recommendations: The area shown should be preserved in its entirety, preferably by a conservation order, and consideration should be given to setting up interpretive facilities for the public.

At the northern end extraction of gravel should be only allowed up to the limits shown. Cessation there would not cause any equipment losses as none is installed. The move to smaller eskers should be encouraged. There are many of these nearby whose complete removal would do only the most limited scientific damage.

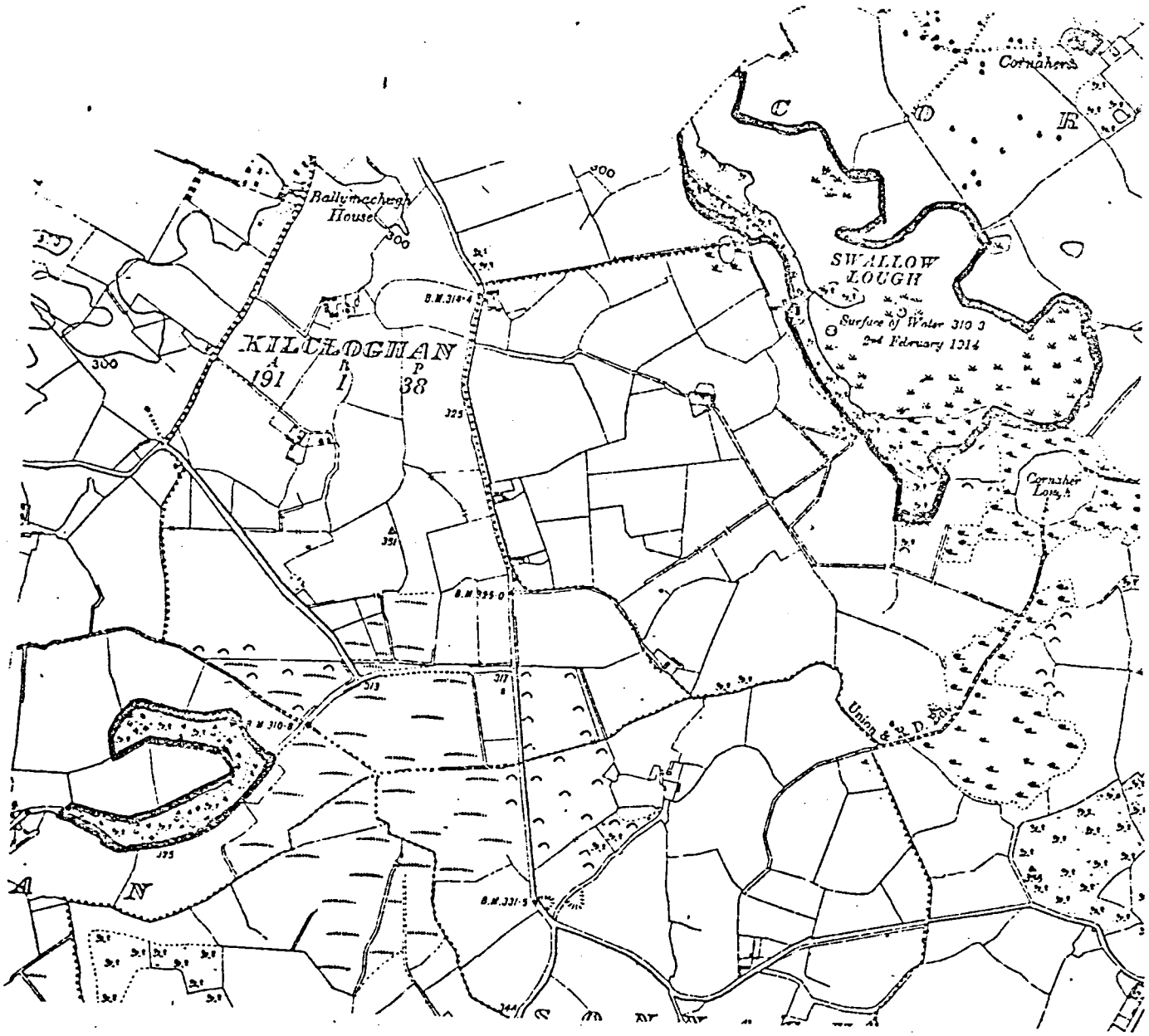
MAP SHOWING AREA OF SCIENTIFIC INTEREST - 3

Scale: 6 inches to 1 mi.



MAP SHOWING AREA OF SCIENTIFIC INTEREST - 4

Scale: 6 inches to 1 mi.



Name of Area: RAHUGH RIDGE (KILTOBER ESKER)

Acreage: 74.4 acres

Grid reference: N 39 32

Scientific interest: Botanical, ecological, glaciological

Rating: National

Priority: A

Description of Area: Kiltober esker was visited in December 1971. The area of interest is shown in map 5.

If anything the vegetation on this esker is more natural than at Long Hill. It differs in having no beech and in having a lower canopy, certainly in places. Also oak (Quercus robur) is more frequent and is regenerating. The same list of plants could be obtained with the possible exception of Festuca altissima. Bryophytes seem commoner and Atrichum undulatum, Brachythecium rutabulum Eurhynchium striatum, and Plagiochila asplenoides were noted as common species.

Several grassy areas occur on its south side in which characteristic species occur. Some are being actively enlarged by scrub clearance and grazing sheep.

Four pheasants were seen in this wood, and there was again evidence of badgers.

Evaluation: Two things make Rahugh Ridge more valuable than Long Hill. One is the presence of oak, presumably the climax forest tree of the area. Its first establishment, spread and influence on the rest of the vegetation are interesting ecological facets of plant succession.

Equally important for glaciologists is the preservation of the end of an esker: regions of transition frequently are more useful than regions of stability and the N.E. part shows a broadening of the ridge and its splitting into subsidiaries.

Vulnerability: Same as for Long Hill. Sand extraction is at present occurring east of Rahugh School and at the S.W. boundary of the area.

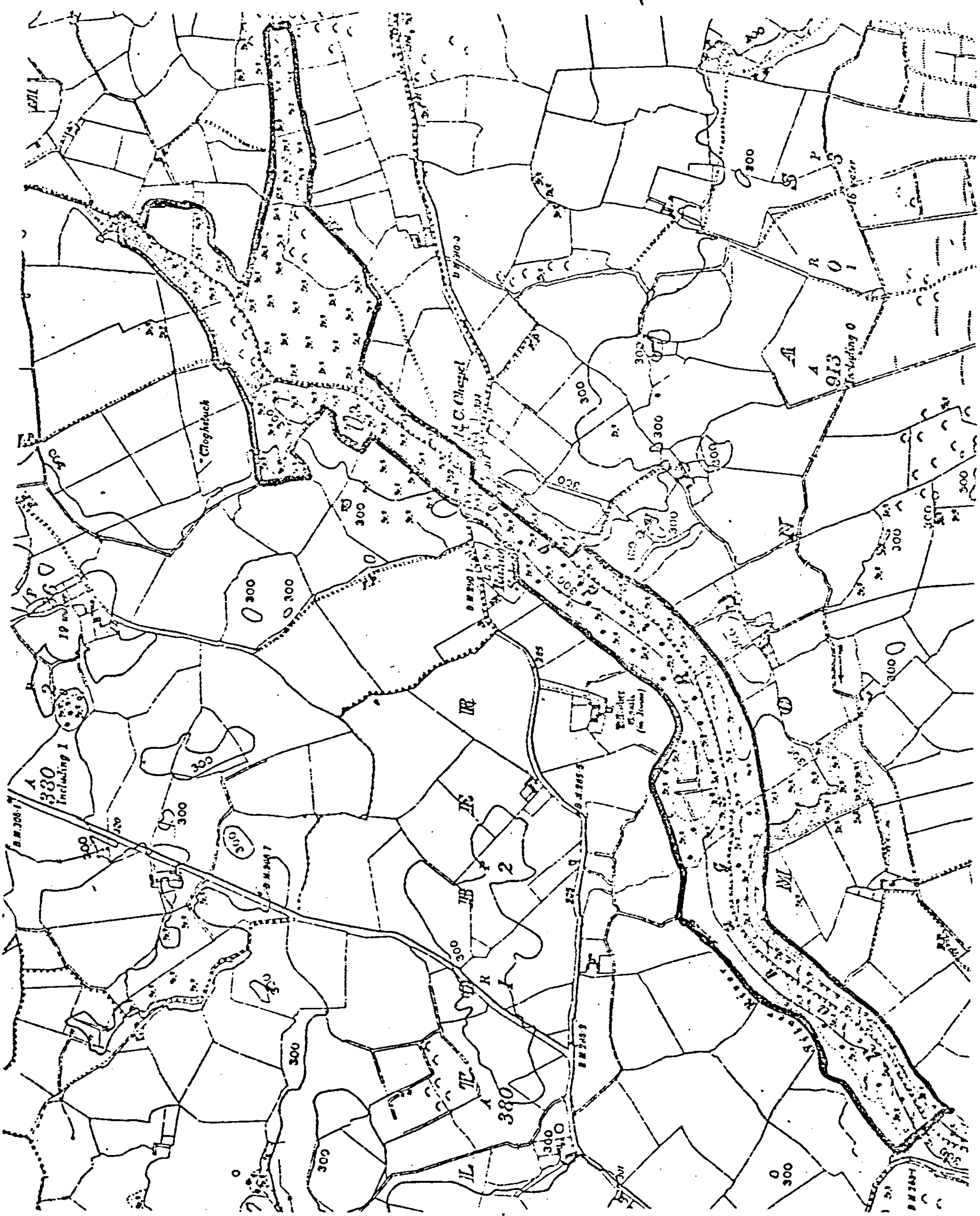
Recommendations: The sand pits should not be allowed to breach the ridge and it is suggested that sand removal should be concentrated at the S.W. end and discouraged east of Rahugh School.

Felling of hazel and other trees along the south side should not be allowed to spread further as a wood on the south side is a valuable comparison for the more extensive cover on the north. Grazing animals should be confined by agreement with the landowner.

A conservation order is desirable to prevent the gradual destruction of the esker itself and of its scientific interest.

MAP SHOWING AREA OF SCIENTIFIC INTEREST - 5

Scale: 6 inches to 1 mi



Name of Area: HARE ISLAND

Acreage: 65.7 acres

Grid reference: N 045 468

Scientific interest: Botany, ecology

Rating: National

Priority: B See Map 6

Description of Area: Hare Island was not visited on this survey but it has been described by so many visiting botanists since Barrington and Vowell (1887)* that it has become the mecca of this part of Lough Ree. This fame arose from the presence of large amounts of Cephelanthera longifolia (white helleborine).

Species that have also been recorded include:-

Thalictrum flavum	meadow-rue
Thalictrum minus	"
Saxifraga tridactylites	rue-leaved saxifroge
Rosa spinosissima	burnet rose
Sorbus hibernica	whitebeam
Rubus idaeus	raspberry
Veronica montana	wood speedwell
Hieracium umbellatum	hawkweed
Epipactis helleborine	broad-leaved helleborine
Ophrys apifera	bee orchid
(Orobanche hederae	ivy broomrape)

The Orobanche for which this was the first (of two) Westmeath stations occurs near the old church but possibly too within the wood.

The woods on Hare Island are possibly the most untouched of all the areas listed and though a few introduced species are found in the community, they do not detract from its value.

*P.R.I.A. Ser 11 4, 700

A list of beetles from the island is published* and it forms one of the only such records of the Westmeath invertebrate fuana.

Evaluation: Hare Island appears to be possibly of greater scientific value than the other woods but in view of its accessibility it cannot be said to be of greater value to the community. However, its densely wooded shore is a feature adding to the attraction of Lough Ree when viewed from land or lake.

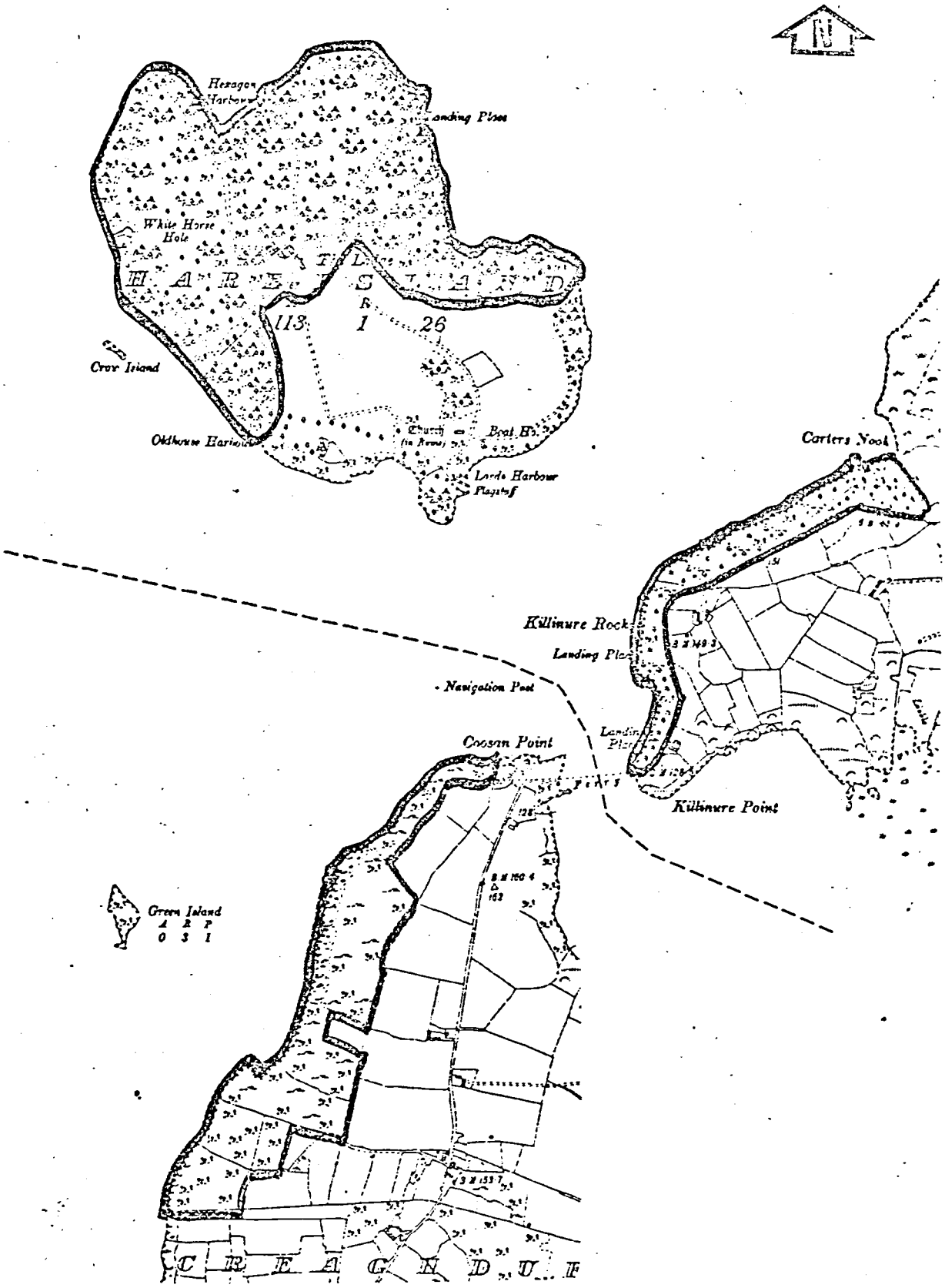
Recommendations: The wooded part of Hare Island should be covered by a conservation order on the basis of most of the species listed on the previous page. Such an order could be prepared by An Foras Forbartha, under Section 46, Local Government (Planning and Development) Act, 1963.

In this way, scrub clearance or underplanting with conifers could be prevented.

* Irish Naturalist 9, p. 19. (1900)

MAP SHOWING AREA OF SCIENTIFIC INTEREST - 6

Scale: 6 inches to 1 mile



Name of area	COOSAN POINT
Acreage	23.9 acres
Grid reference	N 045 455
Scientific interest	Botanical, ecological
Rating	National
Priority	A

Description of area

The area of interest is shown on Map 6. The eastern boundary of it was not surveyed in November 1971 when the shore was visited so may not today represent the edge of the woodland. The boundary should run along this edge.

The wood consists, for the most part, of hazel, ash, oak and alder. Holly is common as an understorey shrub while nearer the foreshore well grown specimens of Rhamnus cathartica (buckthorn) and Viburnum opulus (guelder rose) occur with hawthorn.

Herbs in the woodland include :

Dryopteris filix-mas	male fern
Viola riviniana	violet
Potentilla sterilis	barren strawberry
Fragaria vesca	strawberry
Ajuga reptans	bugle
Glechoma hederacea	ground-ivy
Conopodium majus	pignut
Sanicula europaea	wood sanicle
Primula vulgaris	primrose
Oxalis acetosella	wood sorrel
Galium odoratum	woodruff
Cephalanthera longifolia	helleborine

The last mentioned is a very rare species previously thought to be restricted to a few of the islands in the lake.

The shore below the wood is largely ungrazed, and bears a typical Lough Ree flora e.g. Rosa agrestis, Rosa spinosissima, (roses) Campanula rotundifolia (harebell), Daucus carota (carrot), Solidago virgaurea (golden rod), Galium boreale (bedstraw) and rarely Hieracium perpropinquum (hawkweed).

At lower levels Schoenus nigricans (bog rush) dominates the vegetation with Achillea ptarmica (sneezewort), Dactylorhiza incarnata (meadow orchid), Parnassia palustris (grass of Parnassus) and Euphrasia scotica (eyebright) as well as commoner speci es, and Teucrium scordium (water germander) for which L. Ree is famous.

As well as this diverse higher plant flora, calcicole mosses are common and on large boulders in Lough Ree an interesting zonation of species is present.

The point has attracted*zoologists and 23 caddis flies have been recorded, with 5 lacewings, 3 psocids, 2 stoneflies, and 8 mayflies.

Evaluation

This is possibly the most natural section of woodland on the mainland, apart from the eskers of the east. As such it represents an important scientific resource for the study of plant succession and other aspects of ecology. Added to this the ungrazed Schoenus area below and the general diversity of the flora makes the area of unquestionable value.

This site has a more complete set of communities marking the transition from water to dry land than any other and could be visited by school groups.

Vulnerability :

Clearance is the most likely as well as the most damaging change that could occur to the area.

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* King J. & Halbert J. P.R.I.A. Vol. 28, B, No. 2.

An increase in visitors might lead to the extinction of Cephalanthera because it is conspicuous but since the wood is now difficult to penetrate, this is unlikely. Trampling of the shore flora would definitely be detrimental to the value of an ungrazed site but most people will keep to the path. Cattle however would cause more damage.

Recommendations

Steps should now be taken to prevent sections of the wood from being cleared and to protect it from grazing cattle.

The path from Coosan Point that follows the shore over fences and walls should not be improved. It acts as a good filter for the numbers of people that visit the point, who are thus confined, if unenergetic, to the northernmost few hundred yards.

If another access point is desired to the Lough Ree shore there is a suitable track a little south of the area leading from B.M. 165.0 on the main road.

It is suggested that the area should be the subject of a conservation order in view of the rarity of such a natural site and of two of its plant species.

Name of Area	CARRANSTOWN BOG
Acreage	356 acres
Grid Reference	N 64 54
Scientific Interest	Ecological, Botanical
Rating	National
Priority	A

Description of Area. This is a fine eastern raised bog, showing all the features of the formation, including a hummock-pool complex, with pools at all stages of infilling, subsidiary raised areas ('islands') of Eriophorum vaginatum (bog cotton), a central water movement line with a characteristic vegetation, and in addition a raised mound (Screggan on Map 7) of uncertain origin. As yet, there is little influence of man except for a long drain extending almost to the highest point and some marginal cutting at the north end, as well as a Bord na Mona railway.

The list of plants includes all the normal species with the possible exception of Empetrum nigrum (crowberry). This probably grows somewhere on the surface and Carex limosa (a sedge) is also likely to occur. The visit was in winter so it was not seen. The more interesting plants are mentioned below:-

Vaccinium oxycoccus	cranberry	r
V. myrtillus	frochan)	on Screggan
V. vitis-idaea	crowberry)	
Rhynchospora fusca	a sedge	f
Lycopodium selago	fir clubmoss	o
Menyanthes trifoliata	bogbean	o
Juncus effusus	soft rush	o
J. bulbosus	bulbous rush	o
Utricularia sp.	bladderwort	o

The moss flora is diverse including Campylopus sp, Dicranum, Aulacomnium, Drepanocladus, Polytrichum, Leucobryum, Cephalozia, Calypogeia etc. as well as at least eight species of Sphagnum.

Lichens also are well represented by Parmelia and Ramalina on shrubs and by six species of Cladonia, including the rare C. rangiferina (reindeer moss).

The Screggan mentioned above is crowned by a single Quercus (oak) tree and below it is much Prunus spinosa (blackthorn), Salix aurita (willow), Rubus fruticosus (bramble), Pteridium aquilinum (bracken) and Epilobium angustifolium (rose-bay willowherb).

Red grouse, meadow pipits and snipe were seen on the bog and there was evidence of merlin or peregrine as well as hares.

Evaluation: This is the best example of eastern raised bog in the county and in view of the exploitation that has overtaken the majority of such bogs its importance will only increase in the future. At this stage, before a thorough analysis of raised bogs has taken place, Carranstown seems worthy of national rating. The eastern raised bog is an ecosystem in danger of almost total extermination. In Westmeath the patches that Bord na Mona has decided to preserve intact have an impoverished flora, being drier and often more altered than the deep peat bogs such as this one. Thus, there is no comparison between the value of those areas and Carranstown Bog.

This station forms the eastern boundary, with Carlow, of the range of Rhynchospora fusca. It is also one of only two sites for Vaccinium vitis-idaea in the Central Plain. The lichen Cladonia rangiferina is a relatively rare species and seems to favour the less disturbed bogs.

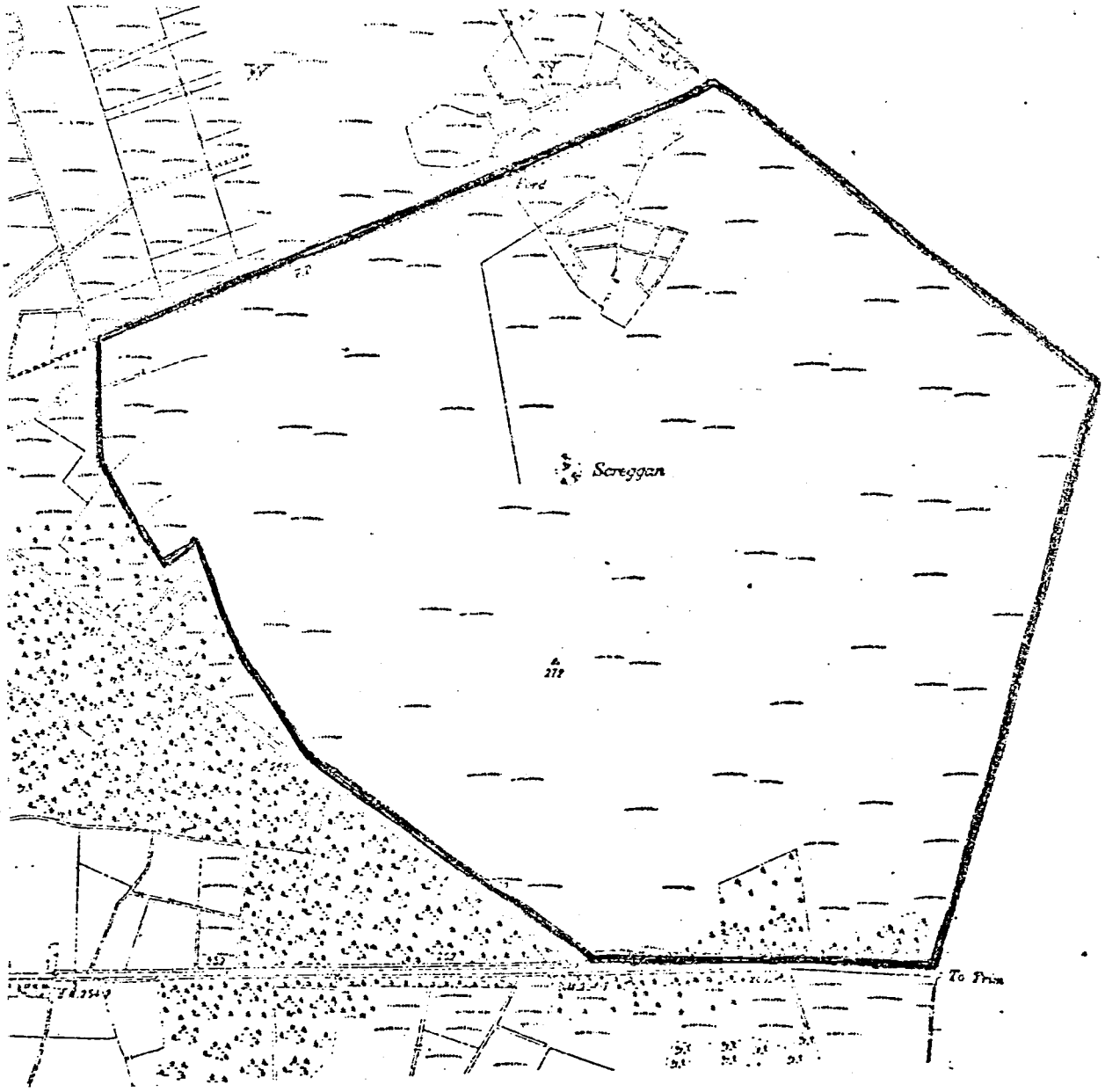
Threats to the Area: This bog is on the programme for acquisition in the next few years by Bord na Mona but, as yet, this has not been initiated. When turf-cutting begins its interest will be completely destroyed.

Recommendations: The excellent state of the bog's surface and the relative scarcity of uncut bogs makes it imperative that action be taken to preserve this part of our scientific heritage. It would be an admirable site for a conservation order since it is not being cut at the moment and is not yet owned by Bord na Mona.

This move would be acknowledge by the international peatland research community which has been calling for such action for many years. Though Bord na Mona has decided not to cut a similar bog in Offaly, no county council has yet made an active move to conserve such a community.

MAP SHOWING AREA OF SCIENTIFIC INTEREST - 7

Scale: 6 inches to 1 mi



Name of Area	LOUGH ENNELL
Acreage	958 acres
Grid Reference	N 40 45
Scientific Interest	Ornithological, ecological
Rating	National
Priority	B

Description of Area Lough Ennell (see Map 8) is a large shallow limestone lake that is very productive, supporting large fish and wildfowl populations. The bottom is of marl and during storms this is churned up, turning the water cloudy. The edges are frequently stony though there are areas of reedswamp, especially at the south end where the R. Brosna leaves the lake, at Butler's Bridge and south of Tudenham Park.

Much of the shore is dryish being former stony lake-bed and the limestone grassland established on this includes a variety of attractive species, e.g.:-

Lotus corniculatus	bird's foot trefoil	c
Linum catharticum	purging flax	a
Alchemilla vestita	lady's mantle	f
Polygala vulgaris	milkwort	f
Potentilla anglica	trailing tormentil	f
Daucus carota	wild carrot	f
Blackstonia perfoliata	yellow wort	o
Euphrasia rostkoviana	eyebright	f
Pilosella vulgaris	mouse-ear hawkweed	f
Antennaria dioica	cat's foot	o
Carlina vulgaris	carline thistle	o
Leucanthemum vulgare	dog daisy	f
Coeloglossum viride	frog orchid	r

In the wetter places Caltha palustris (marsh marigold), Samolus valerandi (brookweed), Scutellaria galericulata (skull-cap), Baldellia ranunculoides (lesser water plantain) and Carex lepidocarpa (sedge) are found, while on moist pebbles the rare lichen Thelidium pyrenophorum may be found.

The reedswamp includes the following species:-

Cicuta virosa	water hemlock
Alisma plantago-aquatica	water plantain
Juncus obtusiflorus	rush
Eleocharis palustris	spike-rush
Glyceria maxima	reed grass

and others have recorded Hydrocharis morsus-ranae (frogbit), Carex elata, and C. appropinquata (sedges) also.

The woods on the east side are reasonably natural and contain many of the commoner woodland herbs, including Endymion non-scripta (bluebell). In addition, there is an old record for Lamiastrum galeobdolon (yellow archangel) and for Lecanora subfusca agg., an infrequent lichen which grows on tree trunks.

The lake contains an encrusting alga (Schizothrix fasciculata) that forms little pebbles of lime which float and are frequently cast up. It was described in 1895 and still occurs. As well as this, speciments of char, Salvelinus scharfii named first from L. Owel and not found elsewhere have been taken.

L. Ennell is of great wildfowl significance. Mallard, tufted duck, red-breasted merganser breed there, while the pochard has done so. In winter it has the largest concentration of diving ducks in the east midlands. A 1969 count is quoted below:-

Mallard	180
Teal	65
Wigeon	80
Pochard	300
Tufted duck	1230
Goldeneye	20
Mute swan	55
Coot	350

Other nesting birds are great-creasted grebe, snipe, woodcock, common sandpiper, dunlin, redshank, common tern and garden warbler.

Two Hemiptera (bugs) are at the northern end of their Irish range here, Picromerus bidens and Monarthia humili and beetles have also been collected: one of them, (Donacia obscura) is regarded as very rare in the country. There are several species characteristic of midland aquatic sites.

Evaluation Lough Ennell is a valuable fishing lake and research work is continually being done on fish stocks.

It is the most important wildfowl area in the county and because of its size it must act as a refuge from other more easily shot-over lakes. The pochard which has only a small breeding population in Ireland has recently nested there.

The shores are interesting floristically but only remarkable for Carex appropinquata which was originally described from Ladestown as the first Irish locality. However, the pebbles formed by the blue-green alga, Schizothrix fasciculata are not recorded elsewhere in these islands.

The caravan park at Tudenham is a fine example of the use of trees in such an area. It should be an example to the rest of the country.

In view of the proximity of L. Ennell to Mullingar it is eminently suited to educational usage. For recreation also it is a valuable resource and one which would be relatively hard to spoil.

Vulnerability Strip development along the shore would damage the visual attractivenss of the lake; the single house about half a mile north of Liliput House is a good example of this effect. However, the existing development south of Tudenham is well concealed by woodland which is not scientifically important.

The areas of botanical interest are not likely to be damaged since they are low-lying and marshy. But there may be slight cause for concern regarding disturbance of wildfowl. In the summer this would come from people landing on the islands, though the small size of most of them prevents such attention. Dysart Island coule be examined however in the breeding season to see if the breeding population merited the prevention of landing by visitors till the end of June.

Threats to the Area In winter there is apparently disturbance from people shooting wildfowl from powered boats.

Pollution seems to be the main threat to maintaining Lough Ennell in its present form. Domestic effluent from Mullingar may have raised the productivity of the lake above past levels but this cannot continue without detrimental effects, e.g. algal blooms.

Recommendations Use of Lough Ennell that proves harmful to the wildfowl population or that of other wildlife should be curtailed. This would include overshooting, over-production caused by pollution, or disturbance during the nesting season.

In view of the importance of Lough Ennell it is recommended that a Special Amenity Area order be passed, under Section 42, Local Government (Planning & Development) Act 1963. The boundary of such an area should be at least the old shore line before the first of the several lowerings of the lake level. In many cases this is defined by a fence or hedge parallel to the present shore. A fringe of deciduous woodland, hwere one exists, is included in the area as are the trees in the Tudenham caravan park. These are important for amenity purposes.

Map 8 shows a detail from the east side of Lough Ennell. Elsewhere the boundary of the area follows the lakeshore as shown in the 1911 revision of the 6" sheet O.S.

(KNOCK EYON WOODS)

Name of Area: ~~WOODS AT S.E. END OF LOUGH DERREVARRAGH~~

Acreage: 173.0 acres

Grid Reference: N 46 63

Scientific Interest: Ecological, botanical

Rating: Regional

Priority: A

Description of Area: These five sites, shown on Map 9 , are treated together since they have a basic similarity but individual features. They add up to give this part of Westmeath a striking scenic appeal as well as housing a strong contingent of uncommon species.

The rock type that runs from Lough Owel to Oldcastle is a hard siliceous black limestone. It has withstood erosion to form many small hills and where these have been too steep to cultivate or for cattle to graze, woodland has returned or persisted naturally. On the steepest slopes, for example the south side of Knock Eyon, the soil is really a limestone scree and this keeps the soil reaction more alkaline than in the flatter areas. Hazel-birch woodland is widespread, usually with abundant holly and less frequent Euonymus europaea (spindle tree) and Viburnum opulus (guelder rose). Oaks (Quercus sp.) are occasionally found as is Salix capraea (goat willow). The ground flora is rich and includes all the common species, as well as the following:

*Melica uniflora	wood melick-grass	l.a.
*Viola reichenbachiana	dog violet	f
Rubus saxatilis	stone bramble	o
*Carex divulsa	a sedge	o
Aquilegia vulgaris	columbine	r
*Festuca altissima	tall fescue	r

The woodland on Knock Eyon, Knock Ross (with Swida sanguinea (dogwood) in addition) and Knock Body has this composition, though some introduced species

do occur on the latter. Above its limits on Knock Eyon a neutral or acidic grassland is developed with Agrostis stolonifera (fiorin grass), Holcus lanatus (Yorkshire fog) and Succisa pratensis (devil's bit) common. In this Erica cinerea and Calluna vulgaris (heathers) occur with *Orchis morio (green-winged orchid), Ophioglossum vulgatum (Adder's tongue) and *Botrychium lunaria (moonwort).

Knock Eyon is the site for two unusual bryophytes, Machesinia mackaii and Calypogeia arguta.

Crookedwood and the promontary below it have a markedly different flora showing definite acidic tendancies. Oaks form the dominant tree though rowan (Sorbus aucuparia) and hazel occur also, with birch (Betula pubescens). Holly is infrequent but it is the only species that is regenerating in the small wood N.W. of Crookedwood. Here overgrazing has also introduced Stellaria media (chickweed) and Urtica dioica (nettle). The following species indicate how different these two areas are:

Luzula sylvestris	great woodrush	l.a.
Pteridium aquilinum	bracken	c
*Silene dioica	red campion	f
Stellaria holostea	greater stitchwort	f
Digitalis purpurea	foxglove	f
Vaccinium myrtillus	frochan	o
*Blechnum spicant	hard fern	o
*Milium effusum	millet-grass	r
Dryopteris aemula	buckler-fern	r
*Polystichum aculeatum	hard shield-fern	r

Three other locally rare species have been recorded in the past *Hypericum humifusum (trailing St. John's wort), *Teucrium scorodonia (wood sage), and *Luzula pilosa (hairy woodrush).

Evaluation: The differences in flora related to topography make this area of immense educational value, especially since they occur in such close proximity. As well as this, the vegetation appears natural and contains several rare species (those indicated by asterisk above are unrecorded elsewhere in the county or only found in one other place). Oak is invading the hazel woods on Knock Eyon and has

reached full development in Crookedwood. This probably contains the best grown trees in the county. The absence of Rhododendron gives the woods an added value.

The invertebrate and vertebrate populations of the area were not examined but are most probably large and diverse.

Not only is this area of exceptional scientific interest, it is also the most scenically attractive part of Westmeath. The lake country can best be appreciated from one of the hill-tops and from Knock Eyon, fourteen other counties can be seen. Footpaths run in each of the areas and access especially to Knock Eyon, by the old coach road, is good.

Vulnerability: Forestry and housing development pose the greatest potential threats to the area. Both would require felling which has already reduced the area of Crookedwood by about half.

Building development might spoil the amenity value of the area but because of the undulating nature of the land it could possibly be effectively hidden.

Recommendations: It is suggested that steps be taken to safeguard the future of these woods, especially of Crookedwood which is vulnerable because of the amount of timber present.

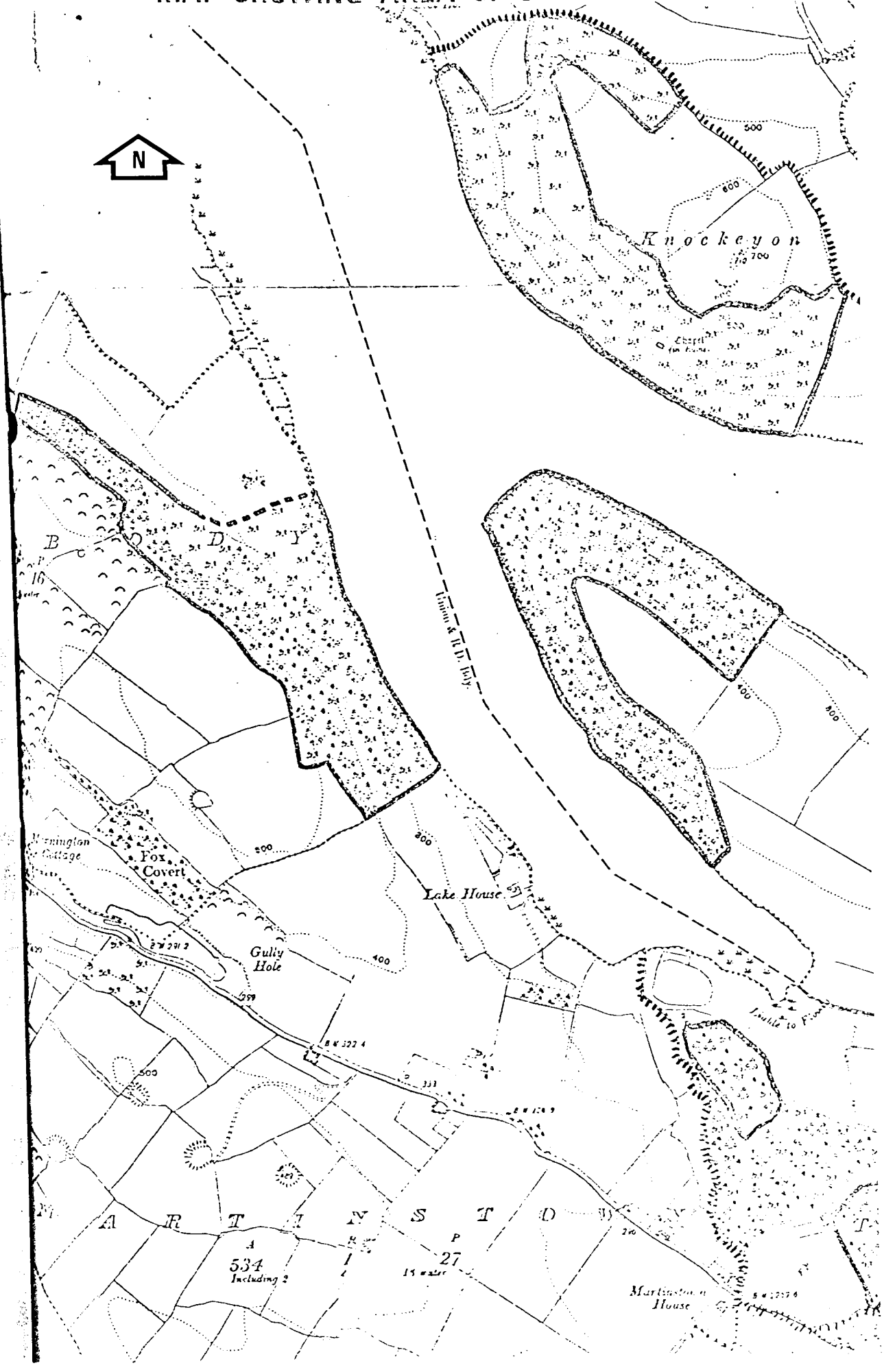
Housing development should be strictly controlled and limited to only one of the inlets of L. Derrevaragh if it is allowed at all. A Special Amenity Area Order is suggested.

It would seem that the area is worthy of being considered as a national park. It has the ingredients of a recreational area - water, woods, footpaths, hills and a scenic appeal without the drawbacks of a wildfowl breeding population or a fragile ecosystem such as a bog. It also has a valuable flora and shows the workings of ecological processes excellently.

If this is being considered it may be pointed out that land use would not have to change though excessive grazing should be controlled. A single area is clearly more desirable than five discreet units so a boundary has been suggested. See Map 9

This area would contrast with the strictly boating appeal of L. Ennell and might take the pressure off this lake to some extent. It would form a valuable "outdoor museum" for a large population centre (Mullingar). It is also close to a main road.

MAP SHOWING AREA OF SCIENTIFIC INTEREST —



Name of Area	LOUGH OWEL
Acreage	544.3 acres
Grid Reference	N 39 57
Scientific Interest	Zoological, (Birds & Fish)
Rating	Regional
Priority	C

Description of Area — Lough Owel (see map 10), differs from Lough Ennell in that the water is much clearer, the marginal vegetation thinner and the deposition of calcium carbonate slightly less widespread. The lake is said to be spring-fed and its exit today is in two directions, into L. Iron to the west and via canals into L. Ennell on the south. This latter route has been followed by a fish peculiar to L. Owel, Salvelinus scharffi (Scharff's char) which now occurs in both lakes.

Apart from this animal, Lough Owel is most important as a wildfowl feeding area in winter. There is also an interesting marshy area near the south end with several rare plants, e.g. Thelypteris palustris (marsh fern), Stellaria palustris (marsh stitchwort)*. In the lake itself several pondweeds occur: Potamogeton lucens, P. praelongus and P. gramineus. Scutellaria galericulata (skull-cap) is widespread on drier parts of the shore, with the commoner species. (see other lake shore descriptions).

A wildfowl count available shows duck populations as follows:-

Mallard	11
Shoveller	150
Tufted duck	650
Pochard	1000

Breeding birds include mallard, tufted duck, great crested grebe, snipe redshank and possibly common tern. There is a heronry nearby.

* Carex curta (a sedge) also occurs.

Evaluation It is seen that the lake may support as many duck as L. Ennell though lesser numbers are present normally. In view of this being the type locality for Sharff's char, a variety still unique to Westmeath, it might be regarded as of international importance by an ichthyologist, but there are at least 14 other races in Great Britain and Ireland.

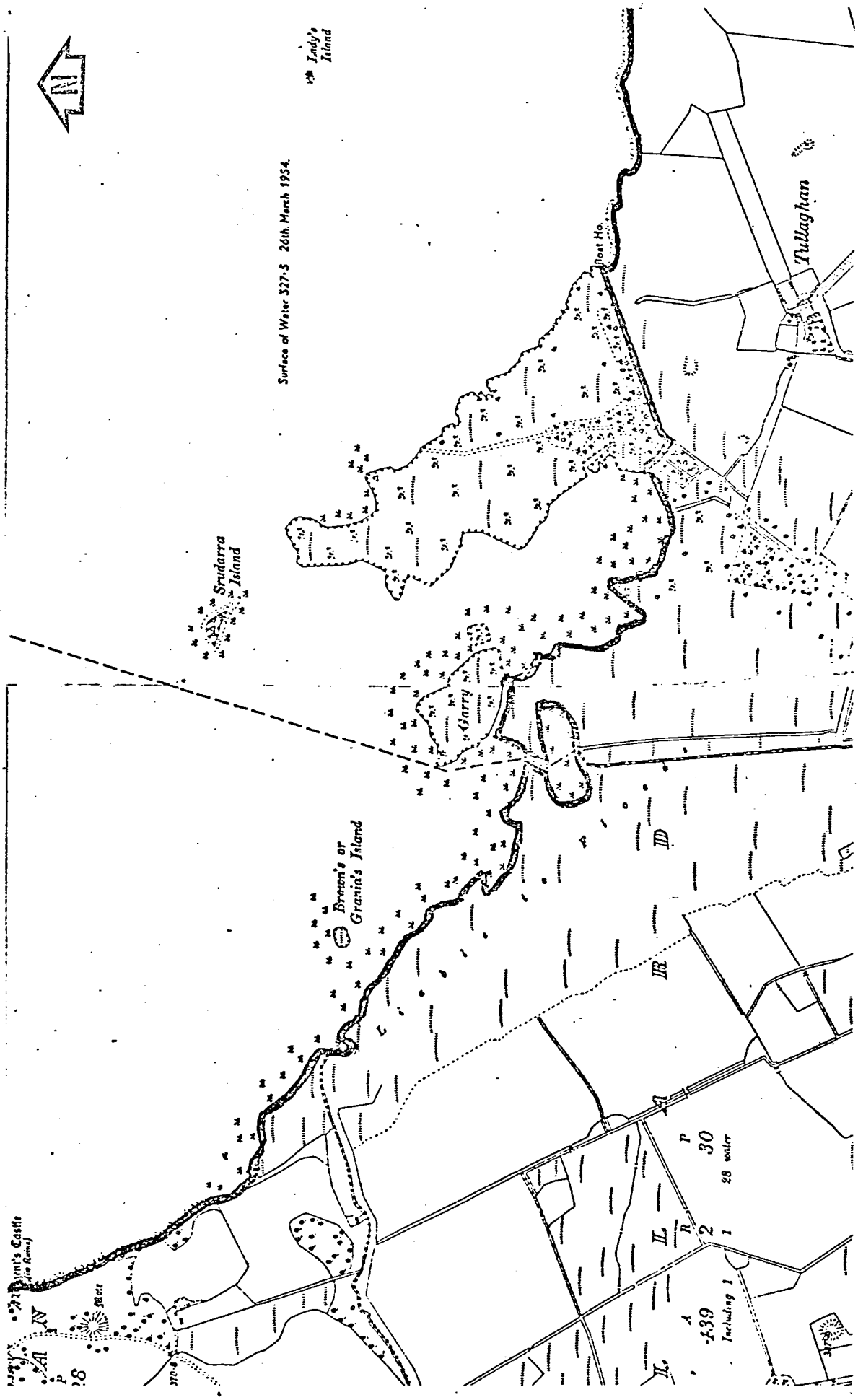
Vulnerability The lake is of sufficient area that disturbance is not likely to be an adverse factor on the wildfowl that use it, except from boats. Its use as water supply for Mullingar does not conflict with its scientific values at the moment but larger fluctuations in water level might lead to a reduction of the marginal vegetation with consequent loss of feeding for dabbling ducks.

Recommendations Developments in lake usage during the months that wildfowl are present should be watched for their effects and curtailed if necessary.

Note: Map 10 shows a detail from the south shore of L. Owel. Elsewhere the boundary of the area follows the shore as indicated on the O.S. 6" sheet surveyed in 1911.

MAP SHOWING AREA OF SCIENTIFIC INTEREST - 10

Scale: 6 inches to 1 mi.



Name of Area	AGHALASTY BOG
Acreage	29 Acres
Grid Reference	N. 51, 69
Scientific Interest	Ecological, botanical
Rating	Regional
Priority	B

Description of Area This small bog (see Map 11) may be based on a glacial kettle-hole. At any rate, it has no inflow or outflow and seems to have persisted since late glacial times. A core shows the typical succession from lake mud to fen peat to acid peat (raised bog type). It now appears at a transitional stage between fen and bog: the marginal vegetation is of Schoenus, Juncus (rushes) with typical fen plants as well as the rare Carex curta (sedge) while the centre is formed of a Sphagnum sheet, interlaced with abundant Eriophorum vaginatum (bog cotton) roots and tussocks. The area has two unusual bryophytes:- Sphagnum capillaceum and Acrocladium stramineum (mosses).

Boring has also indicated an unusual ecological situation - the preexisting raised bog has been flooded and the present surface is in fact a mat of vegetation floating on 18" of water.

Evaluation The interest in this area is related to its small size for this allows complete investigation in a relatively short time without the need for generalizations.

In ecological studies it is a perfect example of the interplay of ground water and atmospheric water since its level is controlled by the local water table. The centre and edges differ in their sources of nutrients, while the sudden flooding poses an interesting ecological problem.

Work is now in progress to establish the ecological processes operative in the past and present.

Similar sites may or may not exist elsewhere in the midlands. At the moment a regional rating seems appropriate but further work, if is indicates the peculiarity of this site over others, might raise this to national level.

Threats to the Area The remains of a drain are seen in one corner of the marsh but water flow has probably ceased in it.

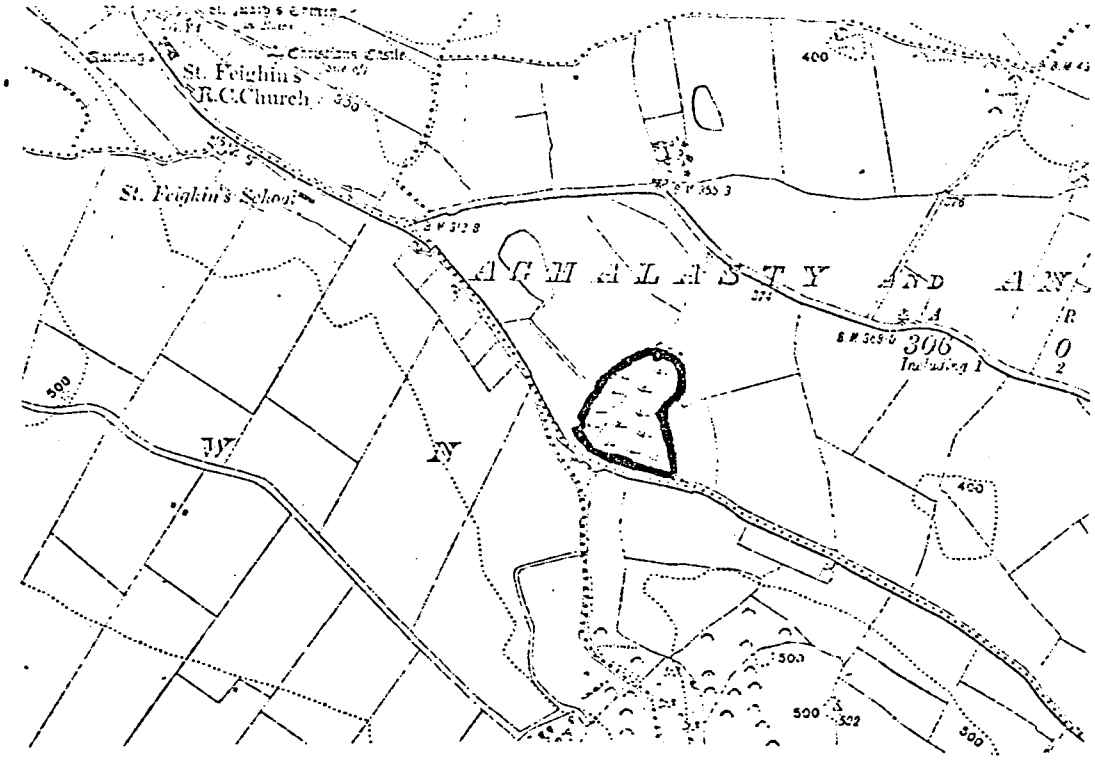
Drainage would destroy the present interest in the site.

Recommendations

Drainage efforts should not be renewed in the vicinity. The small size of the bog might make such action uneconomic.

MAP SHOWING AREA OF SCIENTIFIC INTEREST - II

Scale: 6 inches to 1 mil



Name of area: KILLINURE POINT

Acreage: 10 acres

Grid reference: N 051 460

Scientific interest: Botanical

Rating: Regional

Priority: A See Map 6.

Description of Area: This is another patch of native woodland by Lough Ree. In this case it is situated on very rocky ground of quite steep slope and because of this bare rock, conditions must have partly resembled those in the Burren district of Co. Clare before the tree cover was fully established.

The trees are well grown, oak and ash being prevalent near the point and birch and beech further north. On the limestone slabs, Asplenium adiantum-nigrum (black spleenwort) has one of its only Westmeath stations with Polypodium australe (polypody fern) and Ceterach officinarum (rusty-back fern).

The shore is again lined by Rhamnus catharticus and Viburnum opulus but Swida sanguinea (dogwood) and Malus pumila (crab-apple), two rare trees in the wild state, are found also with Sorbus hibernica (white beam). This area is further enhanced by the presence of Viola canina (heath violet) and Thalictrum minus (meadow-rue), as well as the commoner lake shore species.

The lakeshore itself is stony which suits such species as Teucrium scordium, Littorella uniflora (shore weed), Eupatorium cannabinum (hemp agrimony) and Achillea ptarmica (sneezewort).

The beech trees that have spread into the area are regenerating. The species is favoured by birds and many tits were seen as were jay and pheasant.

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Evaluation: This area has a well developed tree cover, representing a later stage in succession than the hazel woods nearby. A group of rare species, characteristic of exposed limestone is found that does not seem to be repeated elsewhere along the mainland shore; except possibly on the point north of Rinardoo Bay.

For this reason it is as valuable as Coosan Point and has perhaps a greater concentration of wildlife.

Recommendations: Efforts should be made to prevent the removal of trees, with the possible exception of beech.

At the south end development is unlikely due to the steepness of the slope, but that which was allowed on the north part of the wood should be curtailed at its present limits. With suitable planting, more houses, of preferably greater attractiveness, could be built at Carter's Nook, north of the area.

Name of area : HILL OF MAEL AND THE ROCK OF CURRY

Acreage : 205.8 acres

Grid reference : N 44 76

Scientific interest : Botanical, Ecological, geological

Rating : Regional

Priority : C

Description of area (see Map 12) These two hills are formed of grey limestone which outcrops on the summits and on the lateral cliffs. The Rock of Curry is the only sizeable sheer cliff (about 150 ft. in height) in the county and seems to be the eroded remains of a flat limestone reef (Nevill 1958)*. It bears characteristic fossils, different sorts of corals at the base and the summit and thin pockets of brachiopods throughout. Since the bedding is horizontal it resembles the Burren area of Co. Clare and in fact there is some pavement development on both hills.

The grassland on top shows acidic tendencies with Sieglingia decumbens (heath grass) and Succisa pratensis (devil's bit) especially where any depth of soil has developed. Closer to the rock Anthyllis vulneraria (kidney vetch), Knautia pratensis (field scabious), Gentianella campestris (field gentian), Thymus drucei (wild thyme) are found in a sward of Festuca rubra (creeping red fescue) and F. ovina (sheep's fescue).

On the limestone the following occur :-

Asplenium trichomanes	spleenwort
A. ruta-muraria	wall rue
Sedum acre	wall pepper
Galium saxatile	heath bedstraw
Hieracium sp.	hawkweed
Aira caryophyllea	silvery hair grass
Geranium lucidum	shining cranesbill

while Swida sanguinea (dogwood) and Umbilicus rupestris (pennywort), grow in cracks on the cliff itself. Ivy covers part of the rock surface and the ivy broomrape (Orobanche hederae) is established on this.

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* P.R.I.A. Vol 59 B, 285

The hazel scrub below is based on scree from the cliff while that on the Hill of Mael has taken over old fields. Euonymus europaea (spindle tree), holly (Ilex aquifolium), hawthorn and ash are scattered throughout and the woodland flora is rich and interesting. It includes Alliaria petiolata (garlic mustard). Gorse (Ulex europaeus) is widely spread, especially on the higher ground.

Vast numbers of wintering thrushes, song thrush, redwing, blackbird and fieldfare use this scrub for roosting and it also supports a large population of breeding birds. These include raven, jay, sparrowhawk, kestrel and long-tailed tit.

Evaluation:
This area is unique in Westmeath, mainly because of the limestone exposures, and there are few other areas of limestone pavement in the midlands. On the Hill of Mael variations in grazing pressure are seen to control the appearance of mossy limestone pavement and this would be ideal for experiments designed to elucidate the history of the Burren.

Competition between gorse and hazel scrub is occurring and would be interesting in an analysis of plant succession. These two aspects emphasize the ecological importance of the area, quite apart from the unusual habitat.

Several rare plants occur. The Hieracium is found nowhere else in the county, Orobanche hederae only in one other place and Thymus drucei in two. Umbillicus is usually to be found only on ruins while the Swida looks unquestionably native ; unlike its status in several other places.

The habitat looks very suitable for lepidoptera and may support elements of the western limestone fauna.

Name of Area:	LOUGH BANE
Acreage:	38.9 acres
Grid Reference:	N 41 77
Scientific Interest:	Ornithological, Ecological
Rating:	Local
Priority:	C

Description of Area: This lake, which is shown in Map 20, was visited in December 1971. It is small and surrounded by bogland. Its level has been lowered in the past and there is a level area of Spagnum with Eriophorum angustifolium (bog cotton) surrounding the lake below extensive areas of Molinia caerulea (purple moor-grass).

The immediate shore is dominated by Phragmites australis (reed) and Carex rostrata (bottle sedge) while behind this the following plants occur:-

Equisetum fluviatile	water horsetail	l.c
Sagina nodosa	knotted pearlwort	c
Angelica sylvestris	wild angelica	c
Hypericum tetrapterum	St. John's wort	f
Galium palustre	marsh bedstraw	f
Myosotis caespitosa	forget-me-not	f
Mentha aquatica	water mint	f
Senecio aquaticus	marsh ragwort	o
Triglochin palustris	arrow grass	o

The lake supported a suprising density of wildfowl when visited:-

Whooper swan	53
Teal	16
Wigeon	7
Curlew	14

Also, local knowledge suggests that 40 - 50 mallard are regularly found.

Evaluation: The situation and appearance of the lake suggests that its reaction is neutral. As such, it is one of the only lakes in Westmeath that is not calcareous and being far from agricultural and residential development amd fed by relatively short ditches it may be expected to be free from pollution. This is in contrast to the nearby L. Kinale and L. Sheelin. It is, thus, doubly useful in ecological research.

It is not known if the lake forms a main feeding area for wildfowl but the presence of so many swans makes it at least an important refuge, perhaps from the more disturbed parts of Lough Derrevaragh. It is well known locally for mallard and teal which are usually present.

Vulnerability: Pollution would damage the scientific value of the area.

A young forest extends to the south shore of the lough, which might become less attractive to wildfowl if it became surrounded by coniferous trees.

Recommendations: New sources of effluent that may arise should be fed into watercourses that give directly on to the Inny River not into L. Bane.

Further trees, if planted, should be set well back from the lake so as not to shade the marginal or aquatic vegetation.

Whereas Filipendula ulmaria (meadow sweet), Mentha aquatica (water mint) and Molinia caerulea (purple moor-grass) are somewhat commoner.

At Creggan Lough, Potamogeton coloratus (pond weed), Sparganium minimum (least bur reed), Myriophyllum verticillatum and M. spicata (water mil foils) and another species of Utricularia (bladder wort) were found in the summer of 1971. It is likely that all these also occur in the present area and that further research would add to the list.

Much of the land looks very suitable for breeding snipe and herons and mallard probably nest in the willow wood. Water rails were heard calling in December 1971 and a few diving duck seen.

Evaluation

As has been suggested, the willow wood north of the lake appears to be a unique habitat among the areas surveyed and further investigation is desirable. This might raise its rank to regional rather than local importance.

The lake is of a different type than all the others listed and resembles Coosan Lough most closely. The peaty areas on the N.W. and S sides influence the water composition, and seem to partly inhibit marl deposition.

Vulnerability

The lake would be affected by pollution from agricultural or domestic sewage.

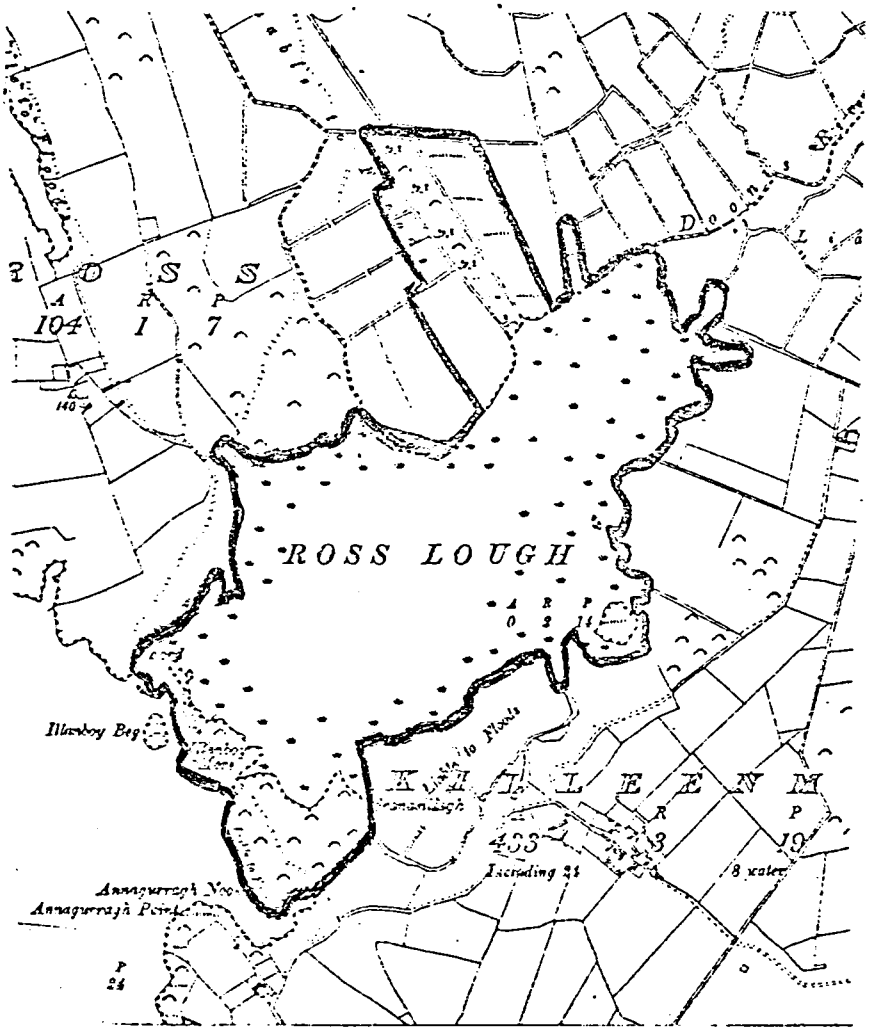
Recommendations

New sources of effluent should be directed away from the catchment area of Ross Lough.

The willow wood should be protected from felling on a large scale

MAP SHOWING AREA OF SCIENTIFIC INTEREST - 22

Scale: 6 inches to 1 mi.



Name of Area:	DERRYMACEGAN POINT
Acreage:	12.7 acres
Grid Reference:	N 43 81
Scientific Interest:	Botanical, ecological
Rating:	Local
Priority:	C

Description of Area: (See Map 23). The Westmeath shore of Lough Sheelin is made up largely of peat bog except in this area where the limestone drift reappears to form a low peninsula. The south-east corner of the Point is sheltered and much marl has accumulated. On this has developed an excellent example of fen vegetation: the flora is almost complete and being ungrazed is in good condition. There are large areas of Schoenus nigricans (black bog-rush) and Carex lepidocarpa (a sedge) and such typical species as:

Angelica sylvestris	angelica
Festuca arundinacea	tall fescue
Valeriana officinalis	marsh valerian
Pedicularis palustris	red rattle
Parnassia palustris	grass of Parnassus
Epilobium obscurum	marsh willow-herb
E. palustre	"
Cirsium dissectum	fen thistle
Lycopus europaeus	gipsywort
Samolus valerandii	brooklime

Bryophytes are well represented with species of Acrocladium, Cratoneuron, Drepanocladus, and Philonotis, among others.

The fen is backed by alder-birch wood which is colonizing the lower shore. In this Viburnum opulus (guelder-rose) and Euonymus europaea (spindle tree) occur frequently.

Further out the point the woodland widens and the shore becomes more stony. Ash and hazel assume dominance in the wood with scattered Crataegus, (hawthorn) Betula (birch), Euonymus and Malus pumila (apple). The Fraxinus (ash) trees are some of the oldest seen in the county, but are kept reasonably small by exposure. The ground flora here contains several species of local interest:

Alliaria petiolata	garlic mustard	f
Veronica montana	wood speedwell	o
Melica uniflora	wood melick-grass	o

On the lake shore, Rosa sherardii (rose), Linum catharticum (purging flex), Tussilago farfara (colt's foot) appear with a creeping willow, Salix aurita + repens.

Tufted duck were numerous offshore at the time of this visit and probably nest on the islands nearby.

The area is extended to the S.W. to include the peat junction where a completely different community begins though some elements trangress the boundary.

Evaluation: This is a good area botanically and valuable for being mostly ungrazed. Several interesting species occur, Melica being the least common in the county.

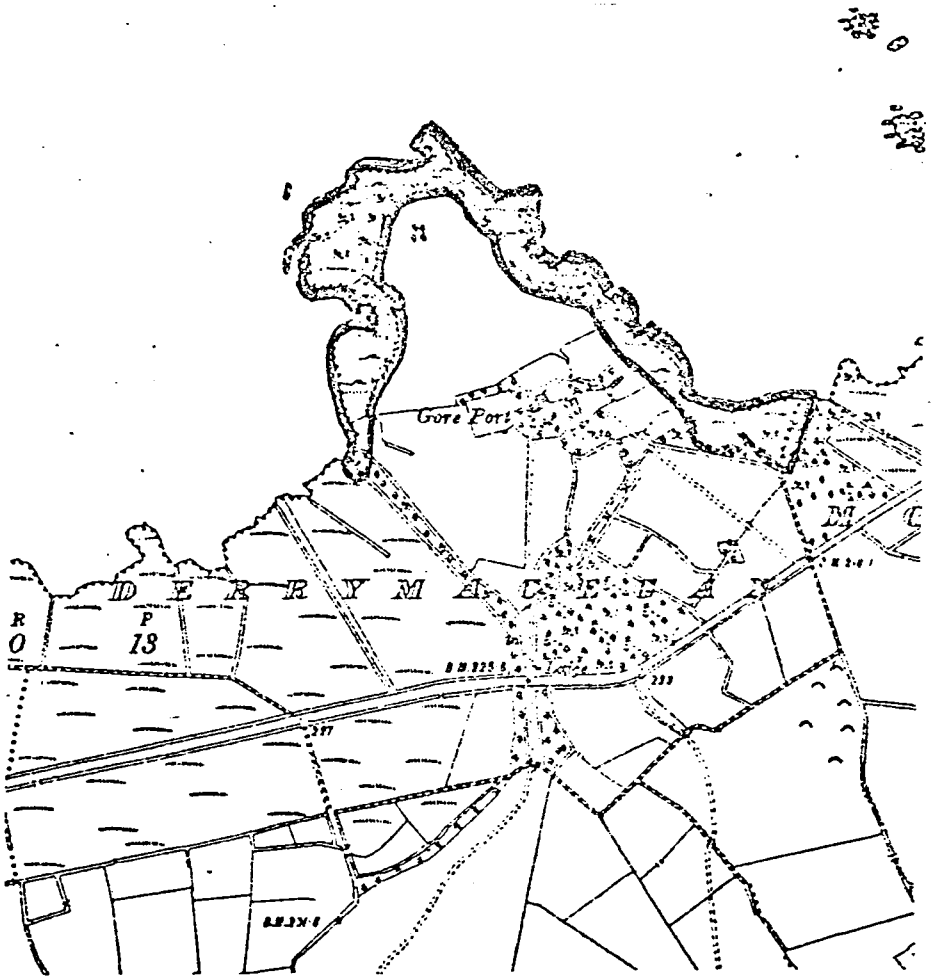
Because of the diversity of habitat, from open lake to high forest invertebrate populations should be varied. In particular, the area seems suitable for lepidoptera.

Vulnerability: Felling or underplanting with conifers is a potential threat to the area though the small area and rocky substrate may prevent this. The bog to the S.E. has been afforested with spruce.

Recommendations: Alteration of the woodland should be prevented, if necessary by a Tree Preservation Order.

MAP SHOWING AREA OF SCIENTIFIC INTEREST - 23

Scale: 6 inches to 1 mi



Name of Area:	'MEEHAN WOOD'
Acreage:	27.5 acres
Grid Reference:	N 03 45
Scientific Interest:	Botanical
Rating:	Local
Priority:	B

Description of Area: The area of interest is shown on Map 24. It was visited in November 1971.

The wood covers a dry stoney part of the lake-shore and is formed almost entirely of hazel, with a few birch. The ground flora is rich and representative of a hazel wood. It is similar to that listed for Coosan Point but bryophyte development is richer and there are luxuriant patches of mosses such as Rhytidiadelphus triquetrus, R. squarrosus, Thuidium tamariscinum, Thamnium alopecurum, Ctenidium molluscum Pseudoscleropodium purum, and Hypnum cupressiforme. Epiphytic bryophytes are notably rare on hazel and only Ulota sp. and Frullania sp. were seen.

The grassland outside is an important area bearing, in addition to the widespread lake-shore flora;

Aquilegia vulgaris	columbine
Rubus saxatilis	stone bramble
Alchemilla vulgaris agg.	lady's mantle
Campanula rotundifolia	hare bell
Thymus drucei	wild thyme
Antennaria dioica	cat's foot
Carlina vulgaris	carline thistle

Pheasants were heard in the wood and there is known to be shooting. An abundance of small birds, including long-tailed tits and golderests were seen and also a sparrow hawk.

Evaluation: This is a pleasant hazel wood cut by numerous paths and served by a footpath, with stiles from L. Ree Yacht Club. The shore is grazed lightly keeping it free from invasion by scrub. Many of the noticeable flowers respond to this treatment and have become common.

This is one of the two main areas for Thymus drucei in the county. It is a plant that is surprisingly rare here and it may be at a limit of its tolerance, a valuable ecological site.

The wood is a good example of the first stage of the succession to climax forest and with those to the north forms part of an excellent series.

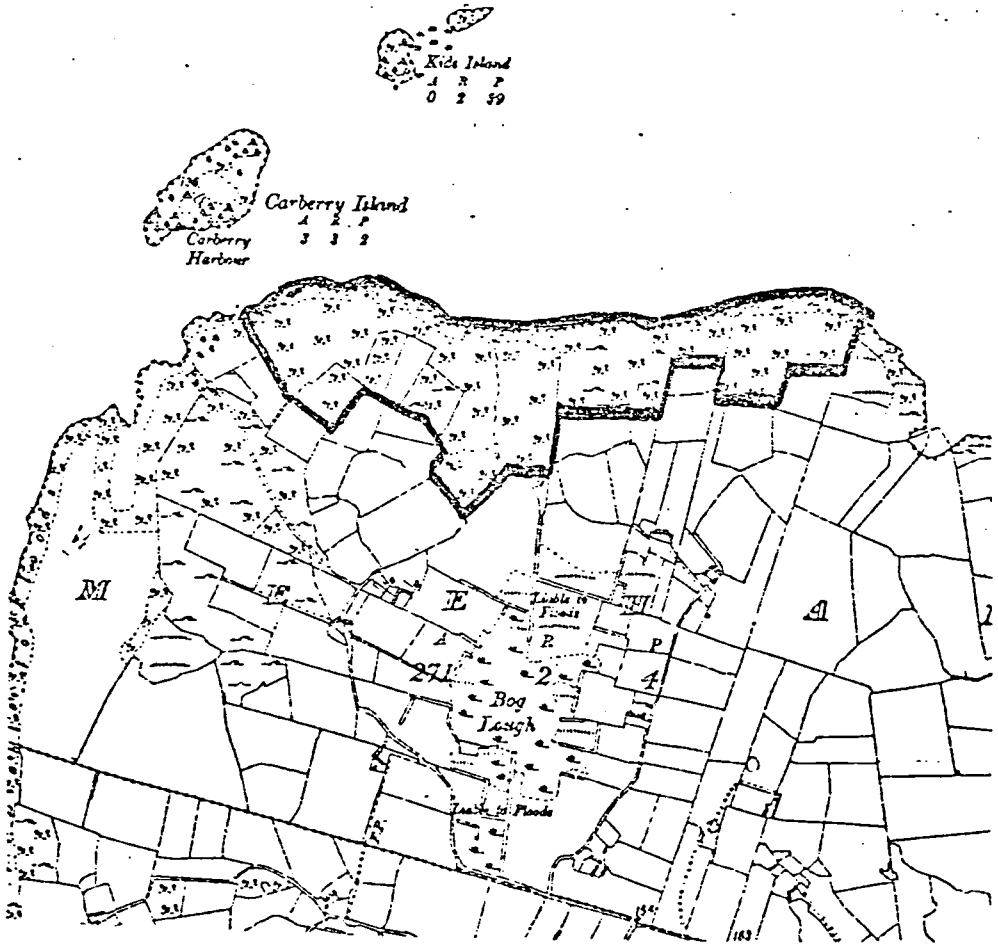
Vulnerability: The main danger to this wood seems to be clearance for building and there is part of the foundations of a house in the wood on which work has ceased.

Recommendations: Planning permission should only be considered on either side of the present area where there is adequate room and also where a narrower strip of hazel scrub exists, valuable for screening.

The wood should, if necessary, be preserved by a conservation order.

MAP SHOWING AREA OF SCIENTIFIC INTEREST - 24

Scale: 6 inches to 1 mi.



Name of area: 'Ardan Wood'

Acreage: 5 acres

Grid reference: N 377 342

Scientific interest: Botanical, ecological

Rating: Local

Priority: A

Description of area:

The crescentic area on Map 4 is a steep slope forming the edge to a broader kame deposit of glacial drift than the normal eskers. It is wooded mostly by large oaks (Quercus robur) with a mixed and varied ground flora. Shrubs include holly, hazel, Euonymus europaea (spindle tree), brambles (Rubus fruticosus agg.) and roses (Rosa canina & R. arvensis).

Epiphytic mosses and lichens occur frequently and there was also a good fungal flora when visited in early November 1971.

Evaluation:

Though these trees were probably planted the community appears little different from a natural wood.

It is a valuable demonstration of the natural climax forest type that the other esker vegetation is approaching; and forms an important part of the series of woodlands in the east of the county.

Oak trees are renowned for the abundance of the invertebrate and lower plant communities associated with them. They are instructive examples of the complexity and interrelations in the ecosystem and are particularly valuable in this case for their size.

This wood is likely to house nesting sparrowhawks, and possibly long-eared owls.

Threats to the area:

It is not known if felling in this area is contemplated. Clear felling however, in a very short time, destroy any interest in the wood.

Recommendations:

Though from a scientific viewpoint the area should preferably be left totally uncut it is more realistic to allow periodic thinning of the larger trees if regeneration is assured. The cooperation of the owner should be sought to maintain a productive deciduous wood and if necessary a Tree Preservation Order be invoked.

Name of Area	WALSHESTOWN FEN
Acreage	43 acres
Grid Reference	N. 39 54
Scientific Interest	Botanical
Rating	Local
Priority	C

Description of Area (See Map 25). This is a partially cut-out bog in which bog holes frequently occur. N.W. of the lake a fen vegetation is developed and the surface quakes in places. On old peat ridges different species occur than elsewhere, for example:-

Luzula multiflora	a woodrush
Dactylorhiza maculata	heath orchid
Hypericum pulchrum	St. John's wort
Potentilla erecta	Tormentil
Osmunda regalis	Royal fern

The dominant species vary from Phragmites australis (reed), Cladium mariscus, (saw sedge), Schoenus nigricans (black bog-rush) to Molinia caerulea (purple moor-grass), Filipendula ulmaria (meadowsweet) and Carex nigra (sedge). Subsidiary in abundance are Juncus subnodulosus (rush), Cirsium dissectum (a thistle), Parnassia palustris (Grass of Parnassus) Potentilla palustris (marsh cinquefoil), Carex acutiformis, C. diandra (sedges) and Festuca arundinacea, (tall fescue).

The rarer species include

Selaginella selaginoides	lesser clubmoss
Epipactis palustris	marsh helleborine
Ophrys insectifera	fly orchid

Snipe were seen in winter (January 1972) and a single Pheasant flushed.

Evaluation The importance of this site hangs on the occurrence of the fly orchid, a species unknown in Westmeath until 1971 and found only in 12 of the 40 vice-counties of Ireland. With a station by Lough Corrib, Walshetown forms the northern boundary of the species' distribution. If this plant is subsequently found elsewhere in the county the importance of this site might decrease, and it should be reexamined for comparison with the new site.

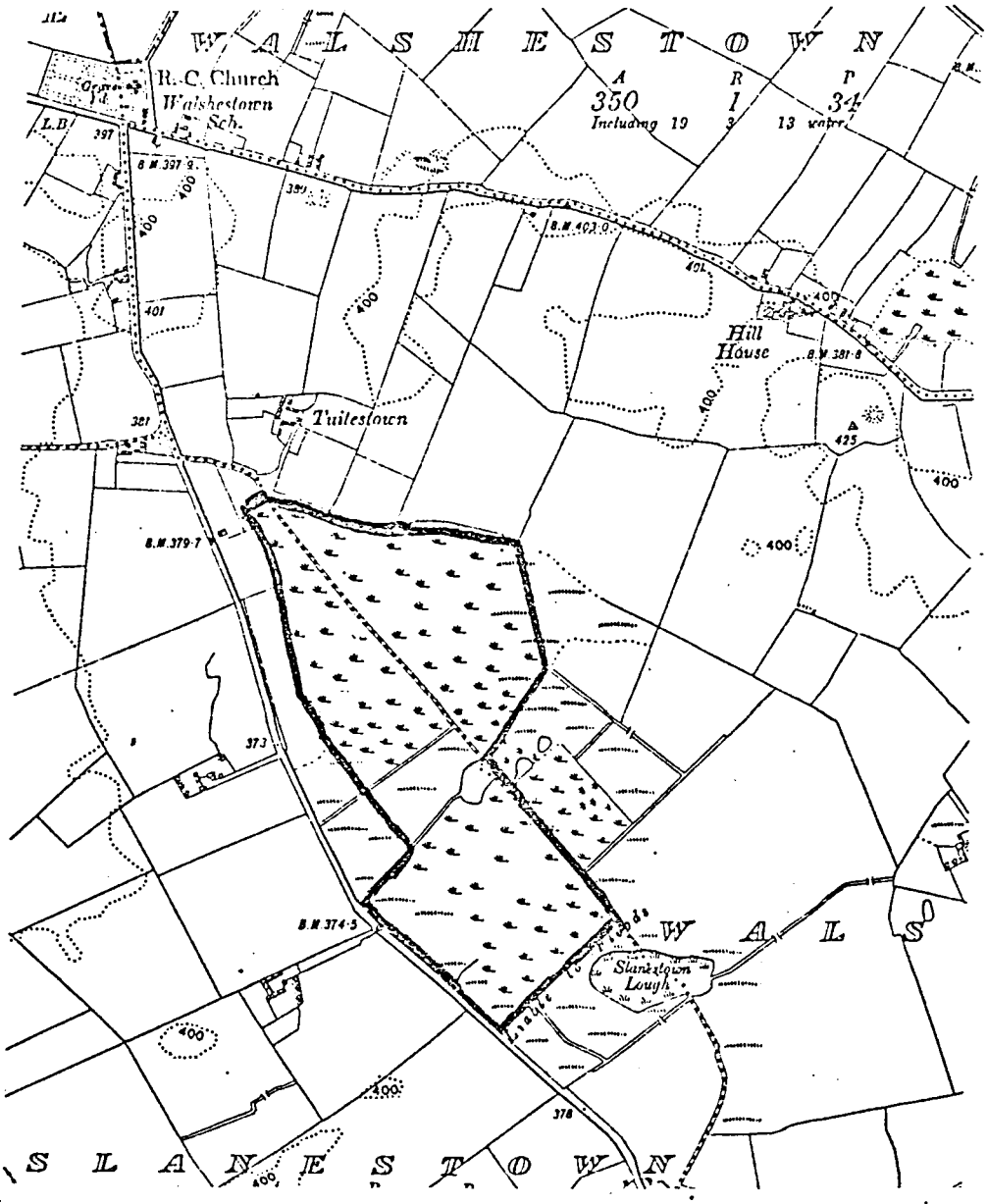
Threats to the Area Drainage would adversely affect the site and Ophrys, with its inadequate powers of establishment might not migrate to a lower level.

It is not known if any drainage is planned.

Recommendations The site should be preserved from drainage by agreement with the landowner.

MAP SHOWING AREA OF SCIENTIFIC INTEREST - 25

Scale: 6 inches to 1 mi



Name of Area:	BALLYNAGARBRY ESKER (44.3 acres)
Grid Reference:	N 18 39
Scientific interest:	Botany, geomorphology
Rating:	Local importance
Priority:	C

Description of Area:

(See Map 26). This esker is one of the most striking in the Moate area and is more complex than a simple linear ridge. Several grassy hills occur and some of their axes are at an angle to the main line of the esker. The vegetation is largely grazed though a little hawthorn scrub persists on the steeper slopes and the summits. The plant assemblage is characteristic of cleared eskers with Festuca rubra (redfescue) and Carex flacca (a sedge) common.

These species are added to by:-

Pteridium aquilinum	bracken
Hypericum pulchrum	St. John's wort
Daucus carota	wild carrot
Primula veris	cowslip
Centaurium erythraea	centaury
Euphrasia sp.	eyebright
Leontodon taraxacoides	hawk bit
Carex caryophyllea	spring sedge

Some of the rarer plants listed by Praeger (1899)* from this general area are likely to still occur. They include Ononis repens (rest harrow), Gentianella amarella (gentian), Erigeron acre (blue fleabane) and Centaurea scabiosa (greater knapweed).

Where the road joins the esker, hazel woodland is found and a superficial survey showed ash and holly, Phyllitis scolopendrium (hart's tongue), Glechoma hederacca (ground ivy), Aquilegia vulgaris (columbine), Hypericum perforatum (St. John's wort) and Zerna ramosa (brome grass), among other species.

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* Irish Naturalist (1899) 8, 87-103

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Evaluation:

This is an attractive undulating area that commands a good view and is interesting from the point of view of the glaciologist and botanist. The presence of bracken indicates a tendency for acidity to develop in the soil and the area would be ideal for investigating or demonstrating the relation of this to topography.

The proximity of the site to Moate makes it of value for education in biology or geography. If any of the four plant species mentioned as occurring in the past, should be found to do so today, the rating would become regional rather than local.

Vulnerability:

Slight overgrazing occurs at the moment and the stony soil shows through in places. This may result in the extinction of some of the flora but most grassland plants are resistant to it.

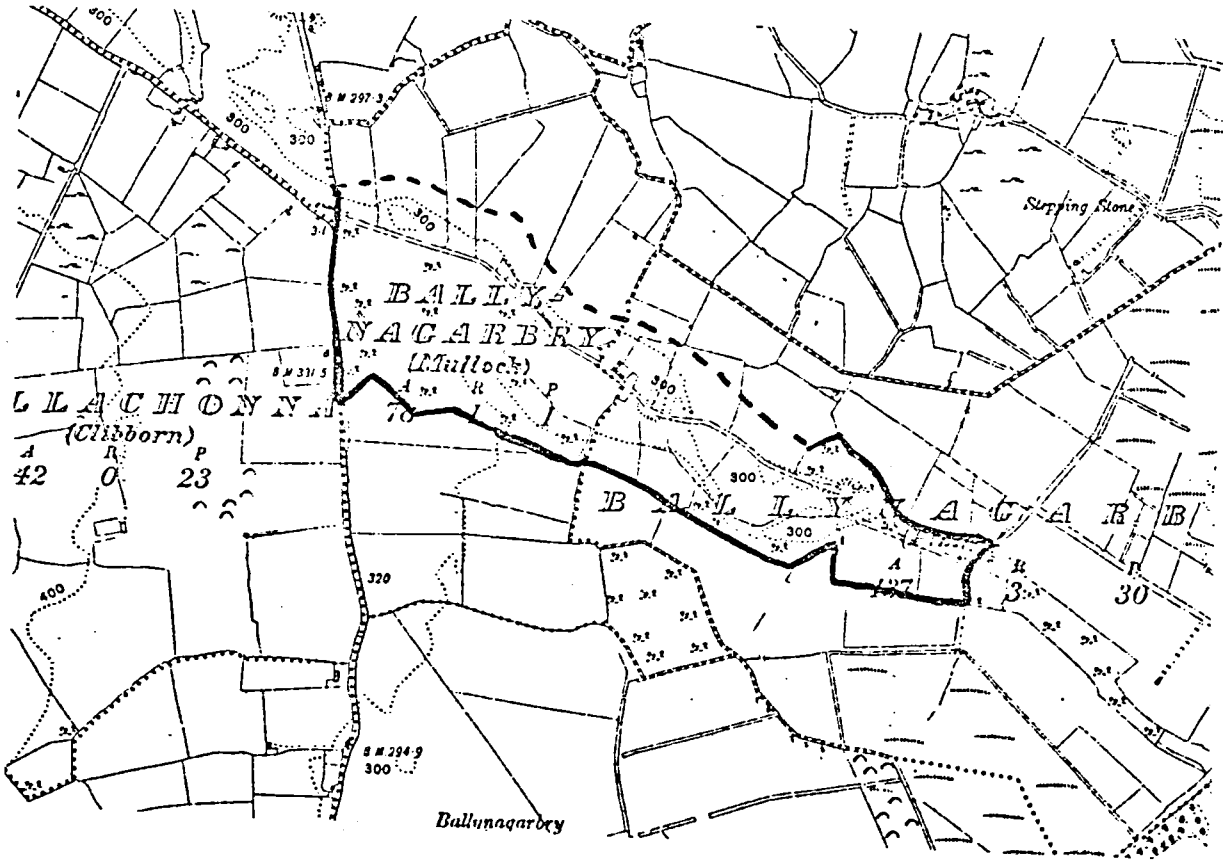
Sand removal is not occurring in this area at the moment, but it would destroy the site if allowed.

Recommendations:

The area shown should be preserved and planning permission for sand removal should only be granted outside it.

MAP SHOWING AREA OF SCIENTIFIC INTEREST - 26

Scale: 6 inches to 1 mi



Unmapped Sites

There are several sites which by their nature prevent adequate mapping at this stage.

1. Royal & Grand Canal The canals have allowed aquatic floras and faunas to spread between river basins in a systematic way. Formerly, such movement was often limited by the watershed, but now a water connection exists from several places in the midlands to the east coast.

The flora typical of the Shannon including Glyceria maxima (reed grass), Hydrocharis morsus-ranae (frogbit), and Sagittaria sagittifolia (arrowhead) now stretches along the Royal Canal in Westmeath and is added to by other interesting species from place to place. The following are such:-

Oenanthe aquatica	water dropwort
Eleocharis acicularis	spike rush
Lemna trisulca	ivy-leaved duckweed
Equisetum variegatum	horsetail
Ranunculus circinatus	water crowfoot
Potamogeton coloratus	pondweed
P. lucens	"
P. pectinatus	"

Several invertebrates including aquatic snails, water beetles and dragonflies are similarly controlled in their distribution by the canal,* which also provides nesting sites for a few mallard, mute swan, moorhens and little grebes.

It would be invidious to single out a stretch of the Canal where this community is best developed without walking its entire length. However, much of it is of scientific interest.

* For Mollusca, see I.N.J. 16, 85.

Recommendations It is probably unrealistic to support the maintenance of the entire length of the canals though they offer interesting examples of species past and present migrations. However, individual stretches should be conserved by renewal of lock gates etc. Some of these can be used for water recreation, others as the centre of linear parks. In the former case it is important that the existing biological communities be examined before any firm decision is made to develop a site. Little damage is done by periodic removal of water weeds but their constant control may destroy any scientific interest in the area.

It is suggested that the canals be maintained around population centres with one or two control areas further out.

2. R. Shannon, south of Athlone (N 0538)

As has been indicated elsewhere (see page 5) this is a valuable wildfowl wintering area. Feeding is provided by the river itself and its marginal vegetation but it is especially used when in flood on the adjacent fields. The security offered by an extensive sheet of water is probably as imp tant as the water itself, which allows dabbling ducks and swans to swim over edible field vegetation. The following wildfowl count for the river south to the boundaries of Westmeath was done in 1969, and is supported by the aerial survey (1967) *

Bewick's swan	135)	Aerial Survey
Whooper swan	207)	340
Mute swan	57	
Wigeon	581)	
Teal	215)	
Tufted duck	65)	c. 500
Pintail	15)	
Pochard	3)	

This population is shared by Roscommon and Westmeath and is by far the most important site for wild swans and wigeon in the latter county, certainly in cold weather. Throughout the season the area is frequently shot-over.

Recommendations Deepening the channel, especially at the edges would be detrimental to the feeding area available. In addition, if flooding was prevented by this, there would be a drastic reduction in the numbers of wildfowl present.

As shooting pressure increases, the wildfowl may suffer too much disturbance to feed adequately. For this reason the advisability of creating a no-shooting area for a certain distance along the river should be reviewed periodically, in conjunction with responsible wildfowlers.

* Results of an aerial survey of Irish wildfowl and their wetlands. An Foras Forbartha (1971).

3. Hill of Usneach (N 29 48)

On this hill there is an unlocalised record for an extremely rare lichen - Clathoporina calcarea. It was found on a limestone wall, probably on the south side and has been recorded from nowhere else in Ireland. Even if its exact location were known, it would seem advisable not to draw attention to it as the rocks could be removed or broken down. Lichens are the slowest plants to grow and spread with difficulty. They are thus more vulnerable than other types.

Recommended action for each area of scientific interest

	No Protection Necessary	General Planning Control	Special Amenity Area Order	Conservation Order	Tree Preservation Order
Scraw Bog				X	
Coosan Lough				X	
Long Hill esker				X	
Rahugh Ridge				X	
Hare Island				X	
Coosan Point					X
Carranstown Bog				X	
Lough Ennell			X		
Derrevaragh Woods			X		
Lough Owel		X			
Aghalasty Bog		X			
Killinure Point					X
Hill of Mael		X			
Cloonbonny Bog	X				
Quarry Bog					*?

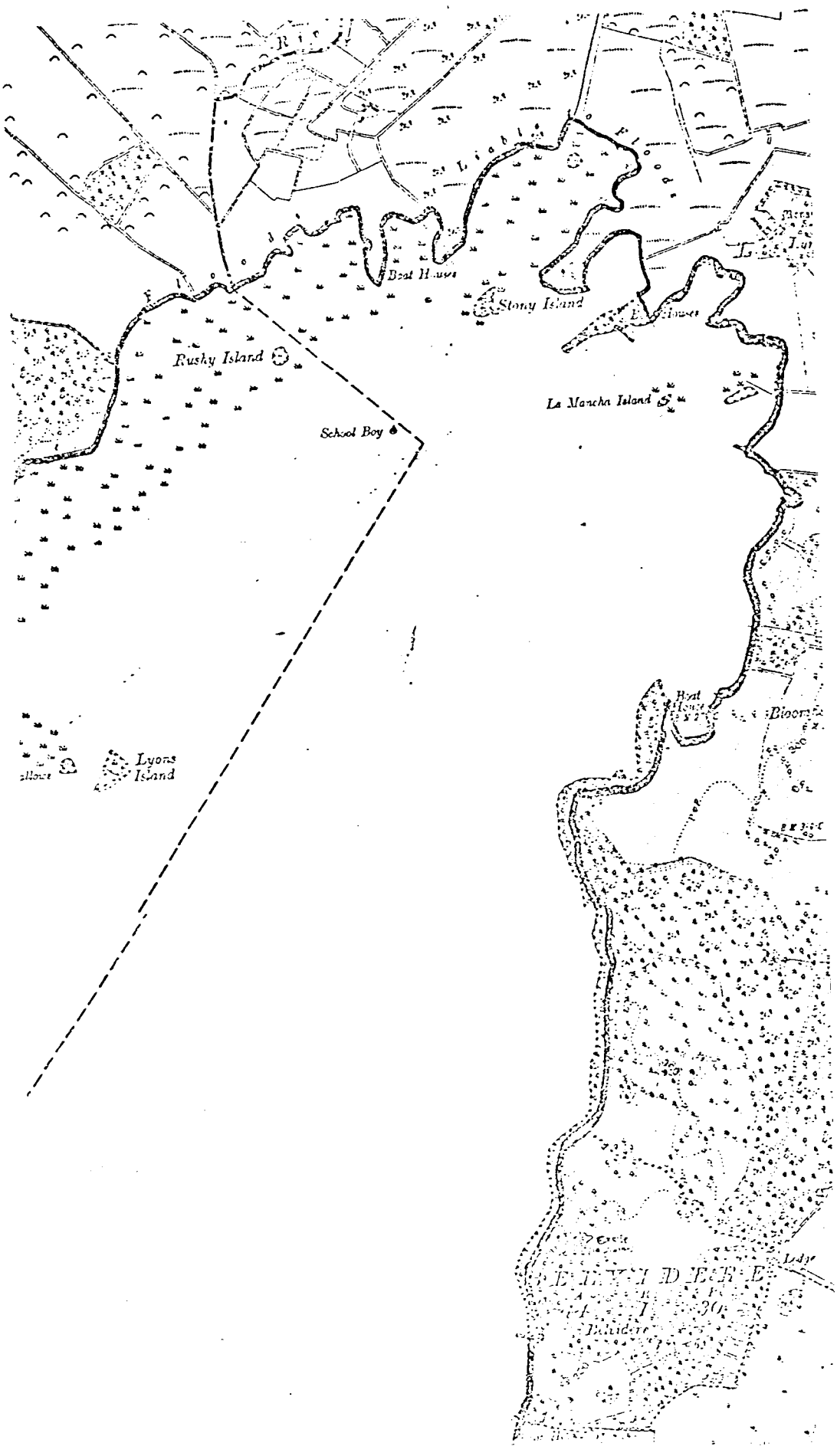
*? indicates that a managemnet agreement might be preferable to a Tree Preservation Order. With a co-operative landowner this would involve selective thinning of trees allowing adequate regeneration. The legal basis for this, if it was necessary, would be a Tree Preservation Order reviewed every five years and applied to differing individual trees within a stand.

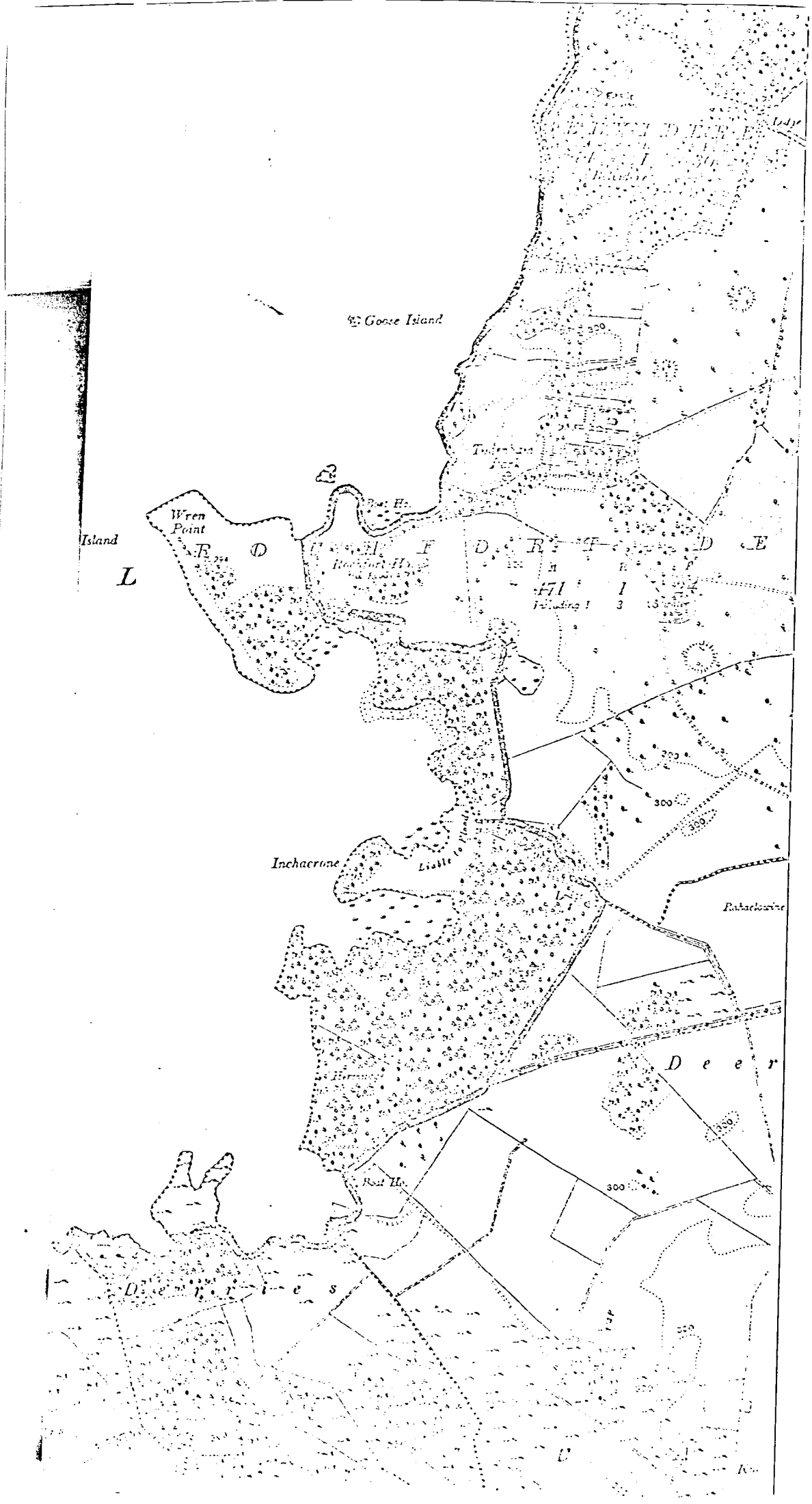
	No Protection Necessary	General Planning Control	Special Amenity Area Order	Conservation Order Or	Tree Preservation Order
Lough Iron		X			
L. Derrevaragh (W. end)		X			
Lough Glore		X			
Lough Sewdy		X			
Waterstown Lough		X			
Lough Bane		X			
Bunbrosna Marsh		X			
Ross Lough		X			
Derrynacegan Point	X				
Meehan Wood		X			
Walshestown Fen	X				
Ardan Wood					*?
Ballynagarbry Esker		X			
Royal & Grand Canals		X			
River Shannon		X			
Hill of Usneach	X				

* ? indicates that a management agreement might be preferable to a Tree Preservation Order. With a co-operative landowner this would involve selective thinning of trees allowing adequate regeneration. The legal basis for this, if it was necessary, would be a Tree Preservation Order reviewed every five years and applied to differing individual trees within a stand.

MAP SHOWING AREA OF SCIENTIFIC INTEREST — 8

Scale: 6 Inches to 1 Mile

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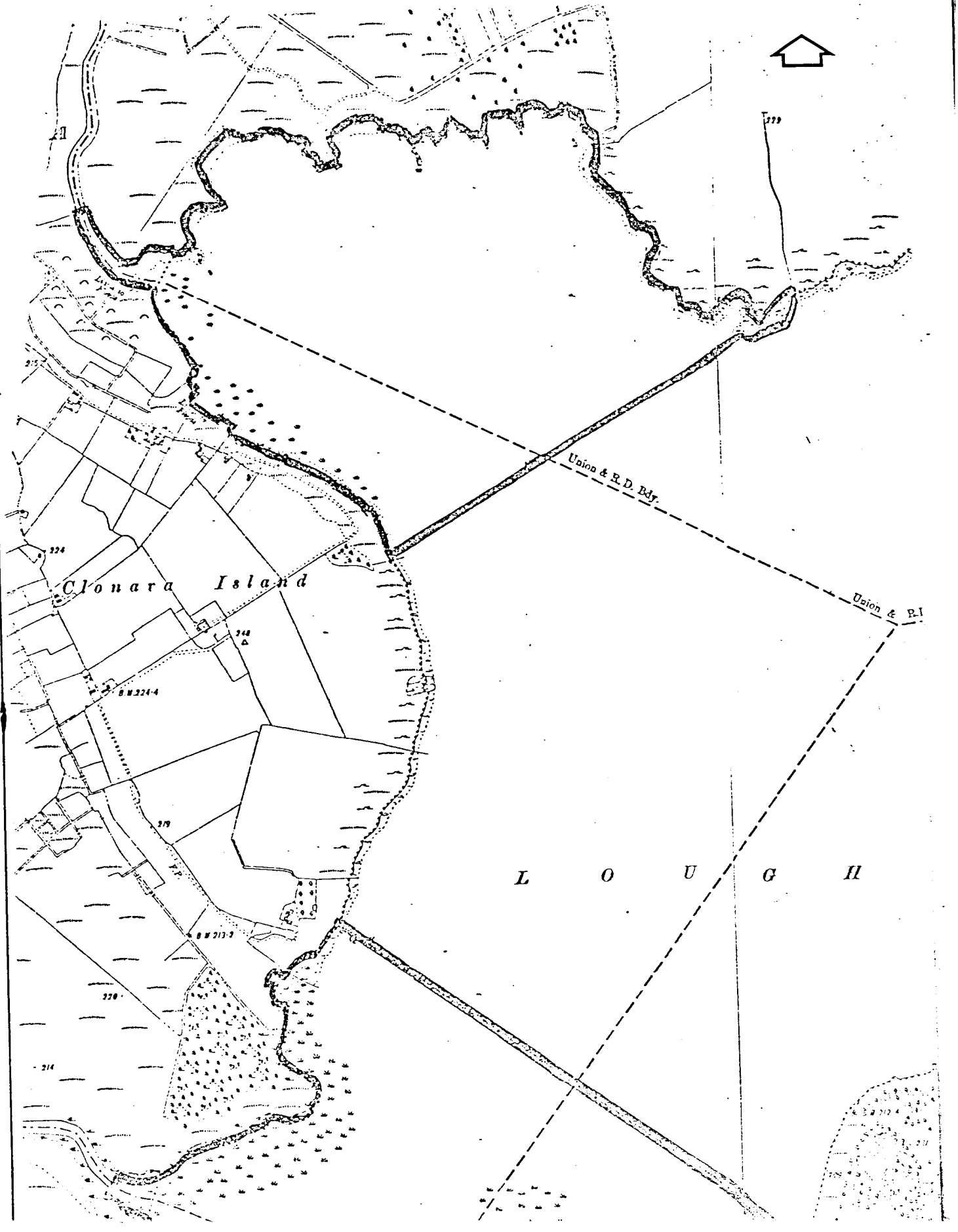
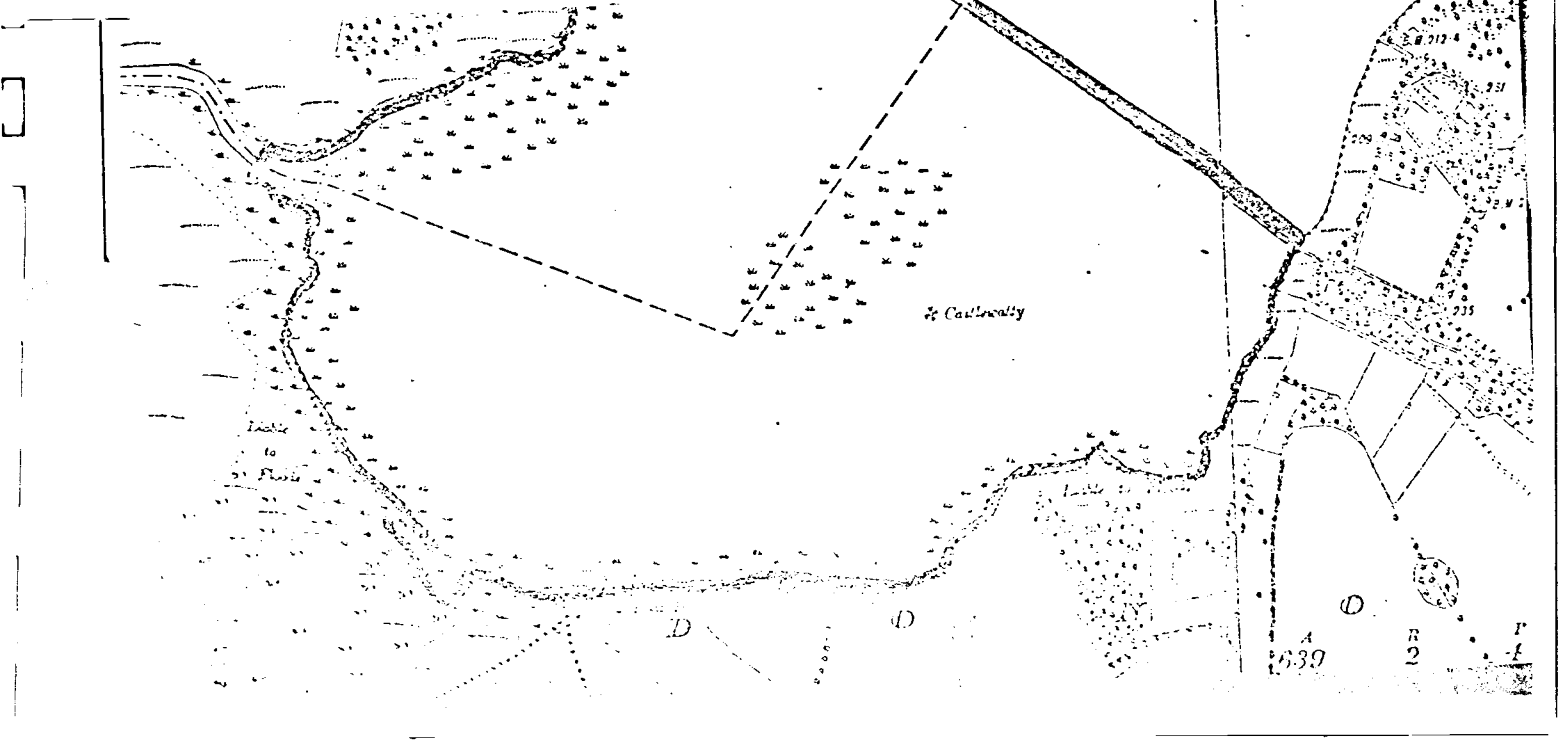
Wren Point
Island
Inchacrone
Deer
300

MAP SHOWING AREA OF SCIENTIFIC INTEREST - 16

Scale: 6 inches to 1 mile

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R 2