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The National Institute for Physical Planning and Construction Research

CONSERVATION AND AMENITY ADVISORY SERVICE

A Preliminary Report on Areas of Scientific Interest in Co. Tipperary S.R.

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ACKNOWLEDGEMENTS

The authors express thanks to Mr. Francis Synge, M.Sc. of the Geological Survey who kindly provided information on some of the geological sites.

The maps presented in this report are based on the Ordnance Survey by permission of the Government (Licence number 221/73).

SECTION A

PREFACE

In the pages which follow less than 4,000 acres are described as worthy of conservation. This area represents approximately o·7% of the total surface of the South Riding; over half of it is high mountain terrain without any prospect of development in the foreseeable future. Some of the remainder is under trees and is already being suitably managed and only a small number of sites are under adverse pressure.

The areas which have been selected for preservation are in most cases clearly limited and outside the immediate area of interest development of various kinds could proceed. Some of the aquatic sites are however more susceptible - particularly to the adverse effects of eutrophication (water enrichment) and even toxic pollution. As development progresses in the county special attention should be paid to the likely effects of aerial and water contamination. Another kind of pollution, by noise or human disturbance, could be detrimental to the few potential wild-fowl haunts and attention should be paid to this factor when permission to develop in their immediate vicinity is sought.

Sites of scientific interest are valuable as places of education, research and for amenity and recreation. In terms of the first two, South Tipperary is fortunate: some of its wetlands and woods are deserving of intensive study, having been largely overlooked to date. The exposure of limestone pavement, is one of only five examples in the country and is the most southerly.

The animal and plant diversity in areas of scientific interest is an important factor in recreation. This applies particularly to deciduous trees which are being replaced on a wide scale by conifers. The woods which are identified here are generally distributed throughout the county and, if managed correctly provide essential reservoirs for typical fauna and flora which will at a later date, come to occupy coniferous woods, at present too young to contain it.

trees should include small block clearance rather than large scale timber removal at any time. As high a proportion of deciduous trees as possible should be planted with coniferous species. Trees should not be planted too close to the wildfowl habitat. The land is likely to be suitable for oak growth and regeneration and this species should be set as a high proportion of deciduous species planted. Deer are numerous in the forest and should be controlled.

It is stressed that this report is preliminary based on the best information to hand at the time of writing. Now that attention has been focussed on this rather neglected county is it likely that further exploration could be well rewarded. Quarrying and mining for example will expose rock formations, some of which could be useful to research and education. The progressive increase in diversity as a coniferous wood grows up has been referred to above.

The best use of any interesting feature, particularly biological entities, by the public will however, involve management. A forest path can support only so many people before the vegetation is killed off and wetlands are especially vulnerable in this respect. Eventually, in order to protect the resource and permit maximum public access paths will have to be designed and perhaps entry limited etc. Continual vigilance in order to monitor the condition of areas of interest is the best means of ensuring their survival and their best use by the public.

SECTION B

VULNERABILITY OF VARIOUS HABITATS

Areas of scientific interest can be gradually or quickly destroyed. Their value may be eroded by overgrazing or a gradual build-up of deletrious matter, whether toxic or organic. Alternatively they may be more dramatically destroyed by drainage, tree clearance or quarrying. All of these influences could be operative on a wide scale in South Tipperary and, as will be seen from the text, some are already influencing the sites which are described in the following pages.

Quarrying is a threat whose effects are generally only seen in areas of geological importance and South Tipperary is probably unique in Ireland in having a woodland which is at risk by the removal of the limestone hill in which it is growing. Killough hill woodland has already been largely removed and will disappear completely if efforts are not made to ameliorate the effects of quarrying there.

Drainage can also have a sudden and catastrophic effect on aquatic communities and could have serious effects in Tipperary. Some of the aquatic sites are however fortunate in being topographically difficult to drain.

A more likely threat is contamination of freshwater by organic matter. Both sewage plants and intensive livestock units are likely sources and possible contamination from both should be taken into account upstream of areas of scientific interest.

Woodlands are most generally at risk from clearance for building or replanting purposes. When a slow growing deciduous wood is replaced by a faster developing coniferous species the woodland community is drastically altered although in time some diversity may be restored. Initially however, the coniferous trees are planted closely together and the result is exclusion of light on which the ground flora and fauna depend. Where

replanting does occur some attempt can be made to lessen its deleterious effects by judiciously spacing the trees and harvesting the coniferous tree crop. Recommendations to this effect will be made where relevant in the ensuing text.

Once man enters any habitat he affects it in some way. Even by simply allowing his livestock to graze a woodland floor its flora will gradually change in composition as will the form and size of individual plants. In recreation it may be paradoxical that interest in a biological community can bring deleterious effects to it. Trampling sand dunes for example results, if carried to extremes, in the elimination of flora and may even end with the disintegration of the sand hills. While public pressures on areas of importance is to be welcomed as an expression of interest it is a force which must be controlled if the features of importance are to be maintained. At present in South Tipperary no site is at risk from over-use. A careful watch must be kept however to ensure this situation persists.

SECTION C

INTRODUCTION TO THE SCIENTIFIC HERITAGE OF CO. TIPPERARY (S.R.)

The bedrock of South Tipperary is composed of Palaeozoic Rocks. The lowest or Old Red Sandstone Series (Devonian) forms three inliers to the south of the county the Galtee, Knockmealdown and Slievnamon Mountains. The north-west of the county coincides with the Keeper Hill inlier. The centre of the county is saucer like, comprising upper Carboniferous limestones.

Few features of the solid geology are noteworthy but the Pleistocene period las left remains which deserve preservation. The Glen of Aherlow which was temporarily dammed to form a glacial resevoir is one of these. Deltas formed by incoming meltwaters and a glacial "plug" which walled up the lake remain. The Weichsel end moraine which stretches across southern Ireland is well exposed at two points in the county and at a third river terraces cut in ice-deposited gravels occur. The corries on the Galtee Mountains are important glacial remains and Lough Diheen has a most unusual structure.

Although fossil bearing rock sites are confined to one exposure at Hollyford, micro fossil remains occur at Ballymacadam, south of Cahir. in the lignite deposits.

Rainfall over the country is moderate varying from 35 inches/year in the north of the South Riding to as much as 60 inches/year in the south. The cumulative annual temperature is not markedly high, though it could accomodat many of the animals and plants which normally occur in the warmer conditions of the south coast.

The low lying countryside of the central part of the country is covered with mineral soils, grey-podzolics and gleys. In the west of the county the drift forms hummocks and hollows which enclose small waterbodies. A group of these fens occurs to the north of Tipperary town. They display

a succession from open water through various stages of dominance by plants to alder woodland. The fens are noteworthy because they contain various rare plants like Typha angustifolia, Oenanthe fistulosa and Equisetum variegatum all of which now occur irregularly in the central limestone areas of Ireland.

Most of the fens seen in this grouping were safe from drainage which would be costly. Infill on a small scale was occurring at one however and could, if practised on a wider scale, be a means of destroying the habitat.

At least one other place of potential interest, Castlelake Marsh (not included in site descriptions, grid reference S. 041, 405) has been burned and drained. The network of drains which have lowered the water table are separated by small intervals and slotted pipes have been inserted into the dividing soil banks. In the vicinity of Turreen Spring (marked on O.S. 6" Map) a marshland flora still survives consisting of Filipendula ulmaria (meadowsweet), Succisa pratensis (devil's bit scabious), Angelica sylvestris (angelica) and Cladium mariscus (saw toothed sedge). Although a partial recovery to previous diversity may occur in time if the scheme becomes uneconomic to maintain a complete disappearance of marshland characteristics seems to be more likely. However, the Castlelake Marsh should be kept under review.

Woodlands on these lowland mineral soils are represented by ash and hazel and some good examples remain. One which has developed from open grassland in recent historic time is Killough Hill. Here there are few rarities but the limestone at the top of the hill is unusual, being in the form of a limestone pavement. The site has a selection of native invertebrates on the trees and the interstices of the rock. Killough is significant as one of the four exposures of limestone pavement in the country, isolated from the main region, the Burren in Cos. Clare/Galway. It is the most southern occurrence of this kind of habitat and as such deserves intensive study.

The Devonian hills are covered with a shallow mountain soil, consisting of podzols. The natural climax tree species in these areas are oak and birch but the lower slopes have been largley replanted with commercial timber, mostly spruce and pines.

South Tipperary is unusual in having no large area of open water and is, with the exception of the fens referred to above, without a still water-body. The River Suir which drains South Tipperary has no outstanding biological features meriting protection, except for its bankside marshes below Carrick. However, it has considerable commercial potential and should be carefully managed. The National Report on Water Quality (An Foras Forbartha, 1972) demonstrates that north of Holycross the condition of the river is not good but south of this point it improves considerably. A check on the inflows should be exercised in an effort to maintain this valuable resource.

At some sites listed in the following pages, it appears coniferous plantations will eventually replace the deciduous trees entirely; at others there is a danger that they may obscure interesting landforms. In both these cases contact should be made with the Forestry Division at the earliest opportunity while advance plans are still being made, in order to preserve a mixed type of woodland with large blocks of deciduous trees, and to prevent unsuitable afforestation. Belts and lines of deciduous trees can in no way maintain an intact community and only contribute an amenity function to a wood whereas even quite small blocks preserve a good deal of the scientific interest.

In some woods the surviving oaks have been over-run by rhododendron which occasionally reaches epidemic proportions. (e.g. considerably more harmful than weeds of pasture like thistles and ragwort. Its eradication should be given priority and the Forestry Division should be encouraged and possibly assisted to this end.

SECTION D

List of Sites of Scientific Interest

Name of Area	Page No.	Grid Reference	Rating	Priority	Interest
Ballymacadam	14	S.060,121	International	C	Geological and botanical : A deposit of lignite of Tertiary age containing pollen of extinct plants.
Weichsel end Moraine and associated features	17	S.363,349 S.286,232 S.085, 180	National	C	Geological : Some large topographical features resulting from ice deposition of sands and gravels.
Galtee Mountains	21	R.90, 24	National	C	Botanical and ecological : The only inland mountain range having such a diverse and interesting flora.
Hollyford Quarry	24	R.935,562	National	C	Geological : An exposure of rocks of Wenlockian (Silurian) age which are rare in Ireland
Knockastakeen Forest	27	R.930, 275	National	C	Zoological : A coniferous forest containing a rare insect species.
Killough Hill	30	S.110,508	National/Regional	A	Ecological, botanical and zoological : A limestone hill with a natural tree cover and typical invertebrates and ground flora.
Glacial features in the Glen of Aherlow	34	R.90, 30	National/Regional	A-C	Geological : Features associated with the glacial Lake of Aherlow.

Name of Area	Page No.	Grid Reference	Rating	Priority	Interest
Inchinsquillib Wood	39	R.912,502	Regional	A	Ecological : A semi-natural wood with an unusual plant species.
Grove Wood	42	S.218, 333	Regional	A	Ecological, botanical and zoological : A young wood with a rich flora and fauna.
Marshes and ponds near Annacarty	45	R.93, 44	Regional	B	Ecological, botanical and zoological : A series of richly vegetated waterbodies with a diverse fauna,displaying various stages of succession.
Suir below Carrick-on-Suir	51	S.422,214	Regional	C	Botanical, ecological : An interesting marsh with unusual plant species.
Mitchelstown Caves	54	R.925,163	Regional	C	Geological, zoological and botanical Limestone Caves displaying dripstone formations and having a well described fauna.
Dundrum Sanctuary	57	R.957,442	Regional/local	C	Ecological, zoological and botanical: Alder marsh and pond containing typical fauna and flora.
Scaragh Wood	60	S.020,250	Local	A	Ecological, botanical and zoological: Some stands of oak displaying good regeneration.
Cahir Park Woodland	63	S.052, 234	Local	B	Ecological and ornithological : A planted wood with typical fauna and flora

Name of Area	Page No.	Grid Reference	Rating	Priority	Interest
Knockanavar Wood	66	R.863, 503	Local	B	Ecological, botanical and zoological : A semi-natural wood in a steep-sided valley, likely to survive with the minimum of protection.
Shanbally Wood	69	R.971, 150	Local	B	Ecological, botanical and zoological a small wet woodland in an other-wise cultivated area.
Carrowkeale Woods	72	R.965,510	Local	B	Ecological, botanical, zoological and ornithological : Semi natural acidic woodland, potentially rich in fauna and flora.
Glenboy Wood	75	S.12, 09	Local	B	Ecological : A birch wood community of plants and animals.
Knockroe Fox Covert	78	S.032, 385	Local	C	Ecological, botanical and zoological : a hazel wood with typical fauna and ground flora.
Power's Wood	81	S.177,380	Local	C	Ecological, botanical, zoological and ornithological : A small, neglecte deciduous wood containing typical fauna and flora.
Ardmayle Lily Pond	83	S.053, 453	Local	C	Ecological : A small waterbody containing animals and plants of still waters, a rare phenomenon in the county..
Kilcooly Abbey Lake	86	S.298, 581	Local	C	Ornithological, botanical and ecological : An artificial lake managed as a wildfowl Sanctuary.

SECTION E

RATING OF AREAS OF SCIENTIFIC IMPORTANCE AND EXPLANATION OF BOTANICAL TERMINOLOGY

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

BOTANICAL TERMINOLOGY

The following terms are used to indicate the occurrence of plants at biological sites:

c	common
a	abundant
r	rare
l	used as a prefix, locally

The latin names of plants are those found in the standard work, Flora Europaea, of which the first three volumes have appeared. The english names are taken mostly from the Concise British Flora in Colour by W. Keble Martin. (Michael Joseph, 1965)

SECTION F DETAILED SITE DESCRIPTIONS

Name of Area	BALLYMACADAM
Acreage	1 acre
Grid reference	S. 060, 232
Scientific Interest	Geological and botanical
Rating	International importance
Priority	C

Description of the area and its evaluation

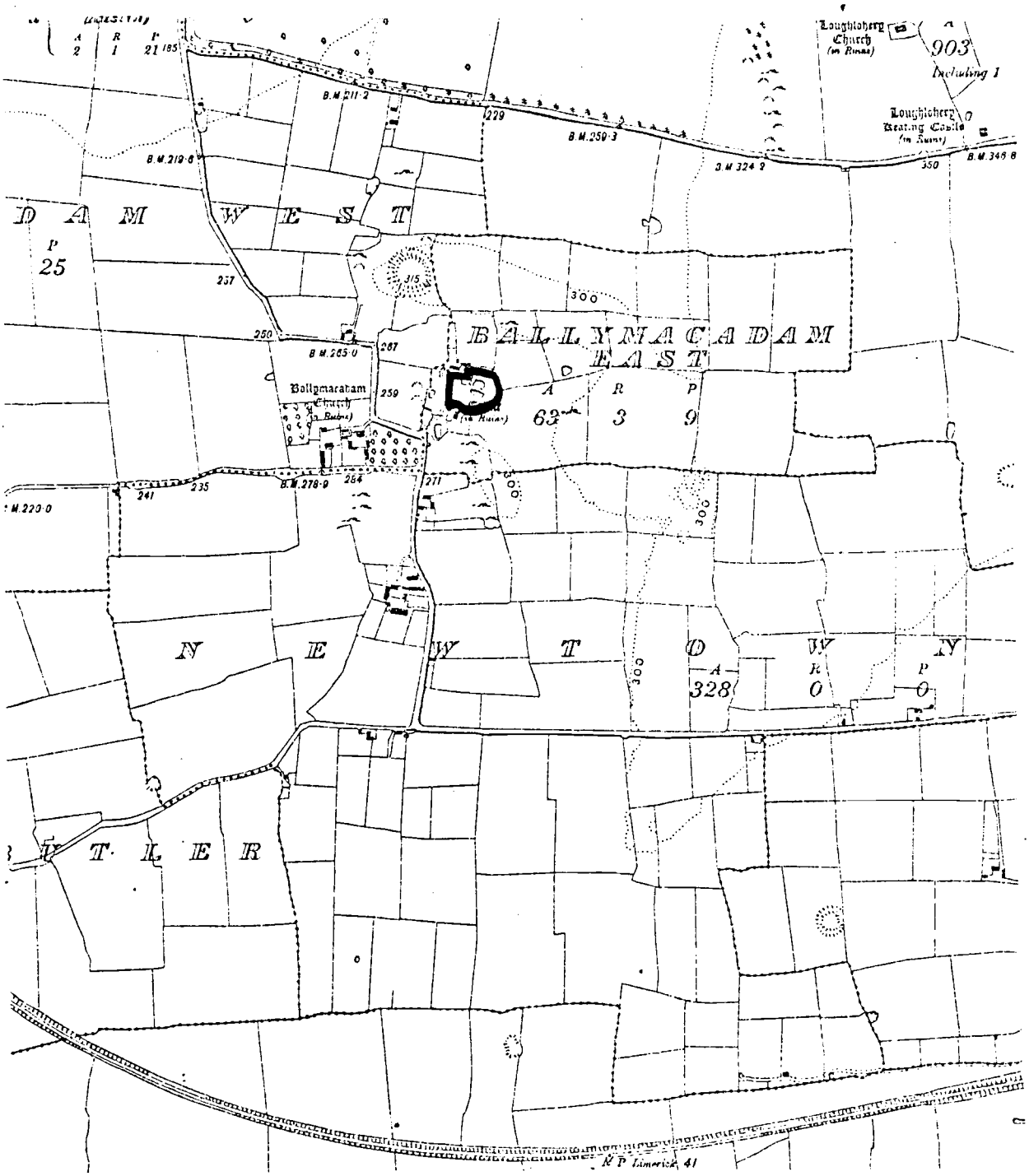
The site is shown on the accompanying 6" map. It occurs on the boundary between the townlands of Ballymacadam east and west. The feature of interest is a deposit of clay which occurs in a hollow of the bluish-grey limestones. The deposit represents the insoluble residue of dissolved limestone beds which contain a high concentration of chert (silica) in the vicinity of Cahir. The siliceous clay is unfossiliferous except for the presence of lignite which occurs in lenticels (lens shaped deposits) 7 feet thick. The whole deposit is circular in shape and 300 feet in diameter and at maximum 90 feet deep, a more general depth being 20 feet. Lignite occurs at the surface in one place but more generally at a depth of 15 feet.

The lignite is rich in pollen of a small number of plants which have been determined to genus, but not to species. Pollen of oaks makes up the greater part of the deposit but the majority of the plants occurring there now occur mainly in the tropics. The deposit which is thought to be of middle or early Tertiary age can be regarded as a "museum store" of pollen which could be used to elucidate Ireland's botanical history.

Similar deposits occur at Loughlohery, $\frac{1}{2}$ mile to the north and at Knockgraffon, 3 miles north of Cahir but the Ballymacadam site is regarded as the best of its kind for research purposes.

MAP SHOWING AREA OF SCIENTIFIC INTEREST —

Scale: 6 Inches to 1 Mile



Publications

Bishopp (1948) Sources of industrial silica in Ireland. Geological Survey of Ireland Emergency paper number 3.

Watts, W.A. (1957) A tertiary deposit in Co. Tipperary Sci. Proc. R.D.S. 27 (N.S.): 309-311

Watts, W.A. (1962) Early tertiary deposits in Ireland Nature 193: 600-601

Threats to the area

The china-clay deposit was used in the manufacture of clay pipes and to provide a whitener for military uniforms in the early 1900's. In the 1940's Carrigaline Potteries used the clay and it is still mined, though on a smaller scale. The greatest potential threat, therefore is the removal of large quantities of clay without an evaluation of plant material contained in the lignite.

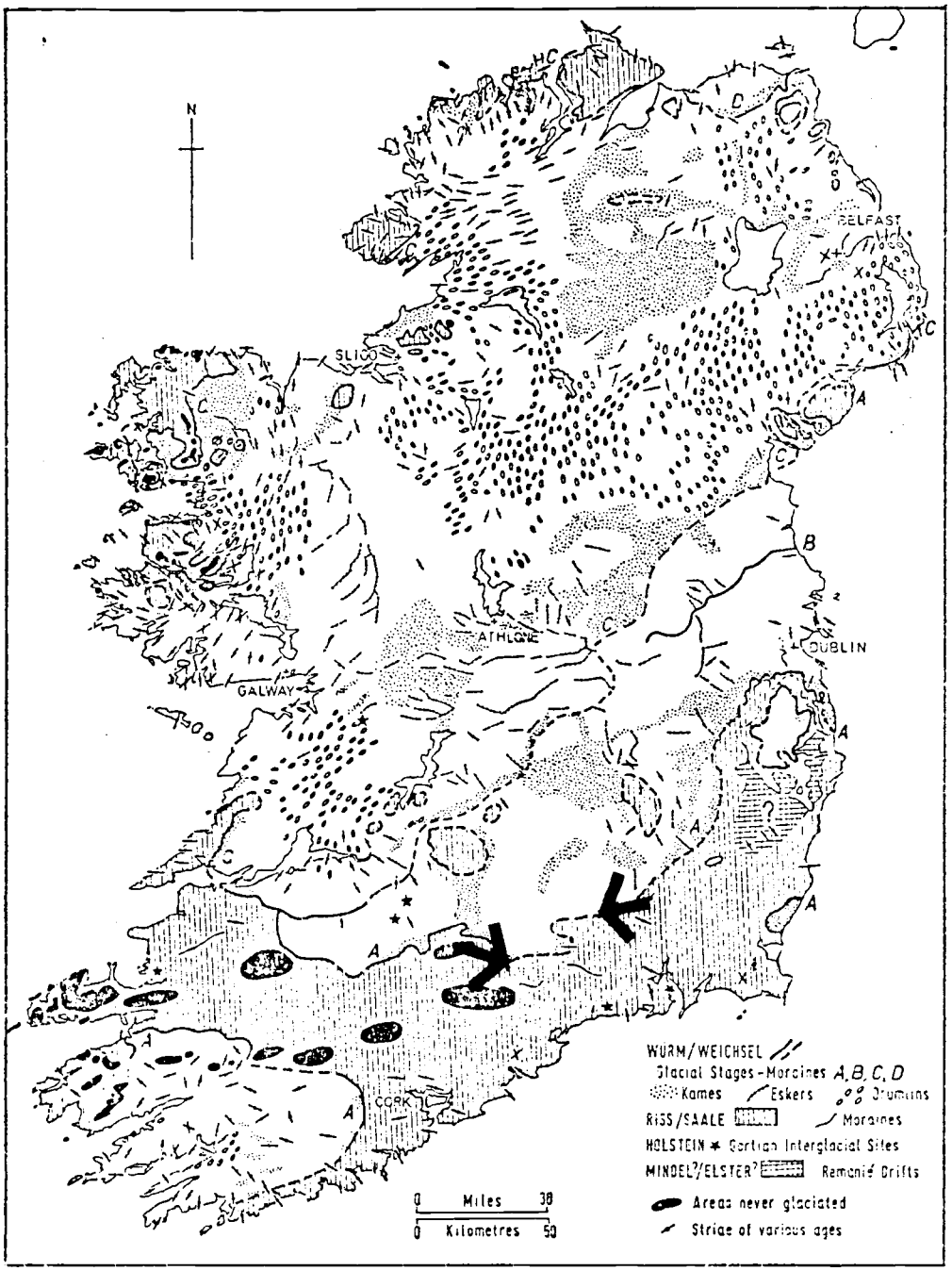
Recommendations

No major action is required to preserve the remains occurring at Ballymacadam. However, a notice on-site stressing the need to obtain planning permission before excavation should be put up. In the event of a major mining operation the Geological Survey and An Foras Forbartha should be informed so that samples can be taken before the deposit is completely removed.

Name of Area	EXPOSURES OF THE WEICHSEL END MORAINE AND ASSOCIATED FEATURES
Acreages	14; not calculated; 9 acres
Grid References	S.363, 349 Ninemilehouse S.286, 232 Kilsheelan S.085, 180 Ardfinnan
Scientific interest	Geological
Rating	National importance
Priority	C

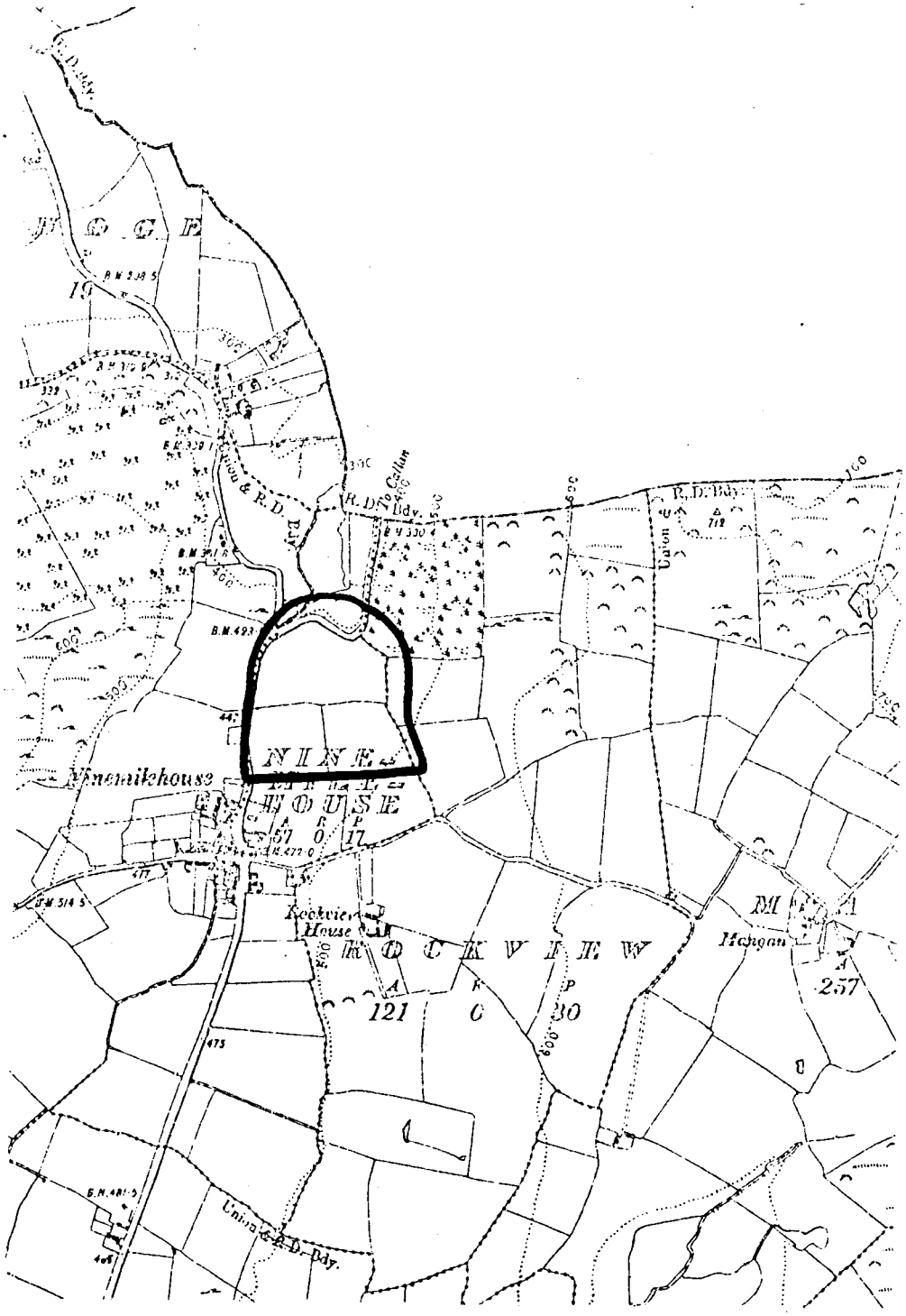
Description and evaluation of the areas

The Weichsel end moraine marks the most southern advance of the northern ice sheet during the Pleistocene period. The moraine is a hill composed of sand, gravel and boulders and running in a roughly east-west direction (see below)



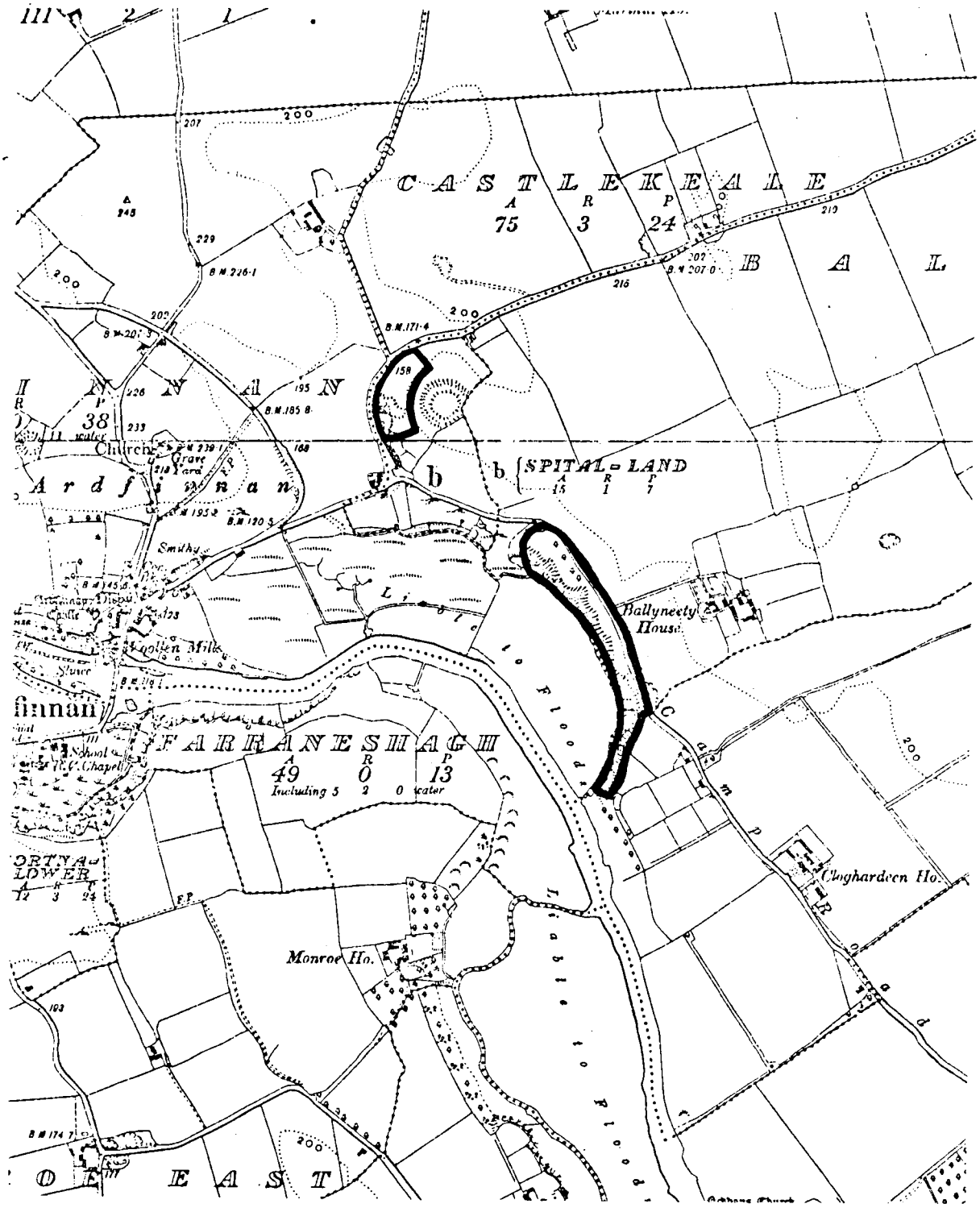
MAP SHOWING AREA OF SCIENTIFIC INTEREST — 1

Scale: 6 Inches to 1 Mile



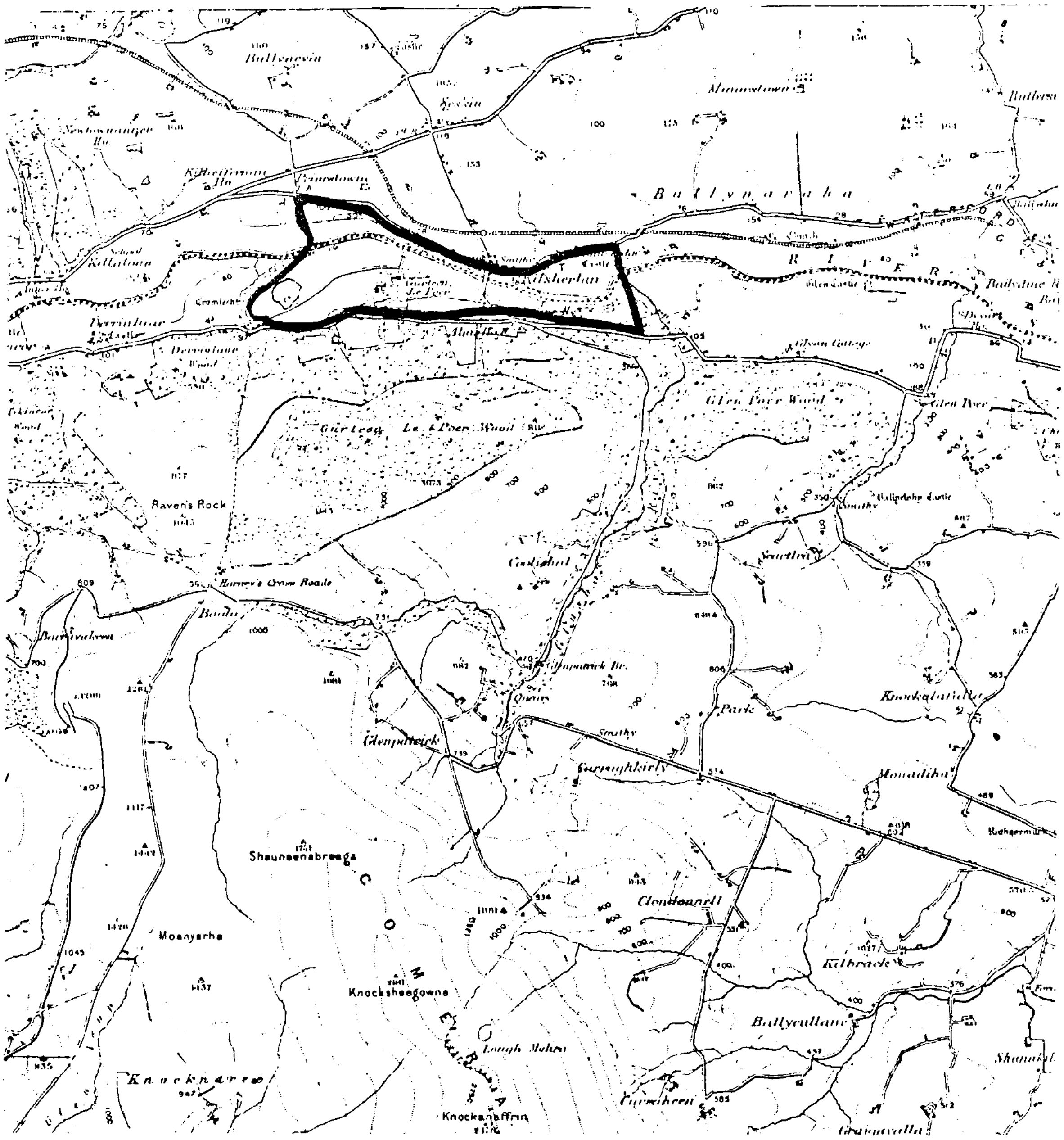
MAP SHOWING AREA OF SCIENTIFIC INTEREST — 2

Scale: 6 Inches to 1 Mile



MAP SHOWING AREA OF SCIENTIFIC INTEREST — 3

Scale: 1 Inch to 1 Mile



Features of interest are the following:
at Ninemilehouse the Weichsel end moraine is visible. The exposure is a low grassy bank on the western side of the North-South road. A map of the exposure is shown (1).
Ardfinnan Another part of the moraine is exposed at the town in some sand-pits which appear to be out of use at present. The materials contained are intermixed, as is the case for sands and gravels carried in ice. A map of this exposure is attached (2).
Kilsheelan. Here the River Suir valley is wide and flat. At the Southern side (in Co. Cork) it is bounded by the moraine while, to the north, the valley rises through a number of low hills.

The flat valley floor at Kilsheelan is a result of ice planing. The resulting terraces which are formed of ice-deposited gravels are more extensive on the Southern side of the river but also occur as a narrow strip on the north bank. This is shown on the 1 inch scale in map 3 (attached).

Threats to the Areas

These glacial phenomena are large topographical features which are under no immediate threat. Further quarrying at Ardfinnan would expose a large deposit and this would contribute to a knowledge of the structure. At Ninemilehouse and Kilsheelan there is no obvious threat to the survival of the features of interest although these might become obscured by road-building, infill or afforestation.

Recommendations

No immediate action is recommended for the three glacial features and no action at all is required at Ardfinnan. At Kilsheelan infill from the road to the glacial river terrace should be avoided by exercising of planning control.

Name of area	GALTEE MOUNTAINS
Acreage	2,000 acres
Grid reference	R 90, 24
Scientific interest	Botanical, ecological
Rating	National
Priority	C

Description of area

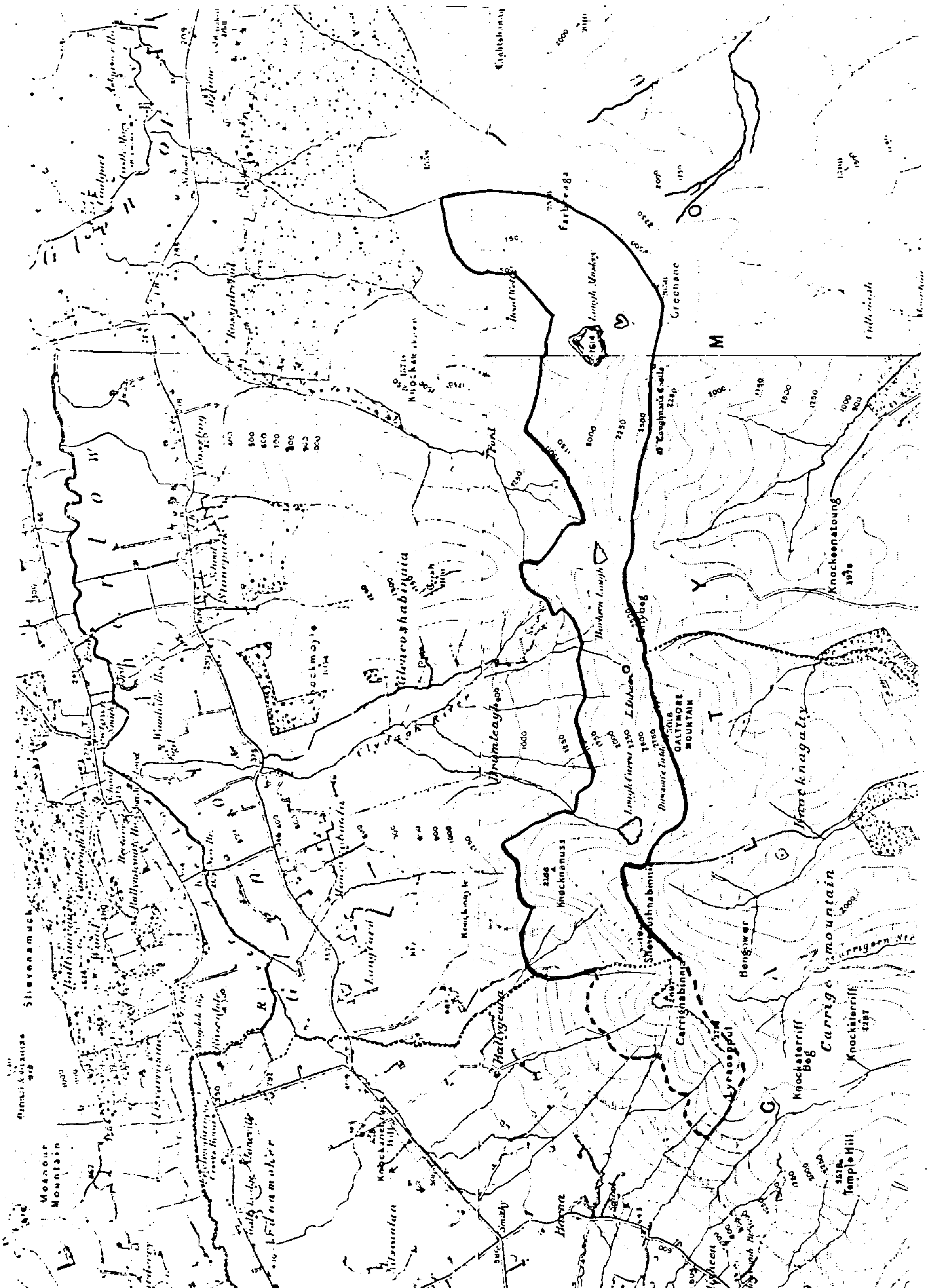
This range of mountains extends for about fifteen miles in an E.W. direction, but a quarter of this lies in Co. Limerick. The rocks are either sandstones or shales and it is on this latter formation, which overhangs most of the corries on the north side, that most of the interesting vegetation is found.

The community contains many plants and probably some invertebrates of arctic character and these are found on the cliffs above Lough Curra, L. Diheen, L. Borheen and L. Muskry. The waters of the lakes are acidic and peat-stained and very poor in vegetation but their form and origin is of some geomorphological interest. (See Lough Diheen p.35)

Typical mountain plants such as Calluna vulgaris (heather), Eriophorum vaginatum (bog cotton), Rhacomitrium lanuginosum (a moss) and Sphagnum spp. are abundant while Empetrum nigrum (crowberry) and Carex bigelowii (a sedge) occur on the flat summits. The cliffs contain scattered trees of Betula pubescens (birch), Salix aurita (a willow) and Sorbus aucuparia (rowan) with good patches of Luzula sylvatica (woodrush), Vaccinium myrtillus (frochan) and Hymenophyllum wilsonii (filmy fern). Many other fern species occur also, such as Dryopteris dilatata, D. aemula (buckler ferns), Polystichum setiferum (shield fern) and Cystopteris fragilis (brittle bladder fern). Among the more interesting species which grow in a few places are:

MAP SHOWING AREA OF SCIENTIFIC INTEREST —

Scale: 1 Inch to 1 Mile



Asplenium viride	mountain spleenwort
Thalictrum minus	meadow rue
Rhodiola rosea	roseroot
Saxifraga stellaris	starry saxifrage
S. hypnoides	mossy saxifrage
S. rosacea	mossy saxifrage
S. spathularis	St. Patrick's cabbage
Cardaminopsis petraea	mountain rock-cress
Meconopsis cambrica	welsh poppy
Epilobium angustifolium	rose-bay willowherb
E. brunnescens	creeping willowherb
Geum rivale	water avens
Rubus saxatilis	stone bramble
Oxyria digyna	mountain sorrel
Campanula rotundifolia	harebell
Saussurea alpina	alpine saw-wort
Hieracium spp.	hawkweed
Salix herbacea	least willow

Evaluation

This is a nationally important site in view of the occurrance of a diverse and interesting flora. For one species the Galtees form one of two sites in Ireland. Several lowland species reach high altitudes in this range while its inland position makes it unique among Irish mountain groups. None of the other inland ranges has a flora approaching the Galtees in variety or interest.

Vulnerability

The interesting species occur in general on cliffs out of the range of grazing sheep and on ground too steep or too high for afforestation. Thus collection would appear to be the only threat to them.

Recommendations

Land use in the area should continue in its present form and if any sort of development is contemplated that will bring more people to the mountains, a Conservation Order should be placed on the south of the area outlined.

Name of Area	HOLLYFORD QUARRY
Area	Less than 1 acre
Grid Reference	R. 935,562
Scientific Interest	Geological
Rating	National importance
Priority	C

Description of the area

The site is a small roadside quarry located by the main Tipperary to Nenagh Road. The location is shown on the accompanying 6" map.

Evaluation

The quarry is of an outcrop of Silurian rock. The Silurian period is a part of the Palaeozoic era and its remains are widespread in Ireland. The quarry in this case is an exposure of Wenlockian age (a sub-division of the Silurian), examples of which are rare.

The rocks are of stratigraphic (position in vertical series), palaeontological (fossil-wise) sedimentological (due to grain sizes represented) and structural (fracturing etc. of strata) importance. The fossils are graptolites and retiolitids.

Publications

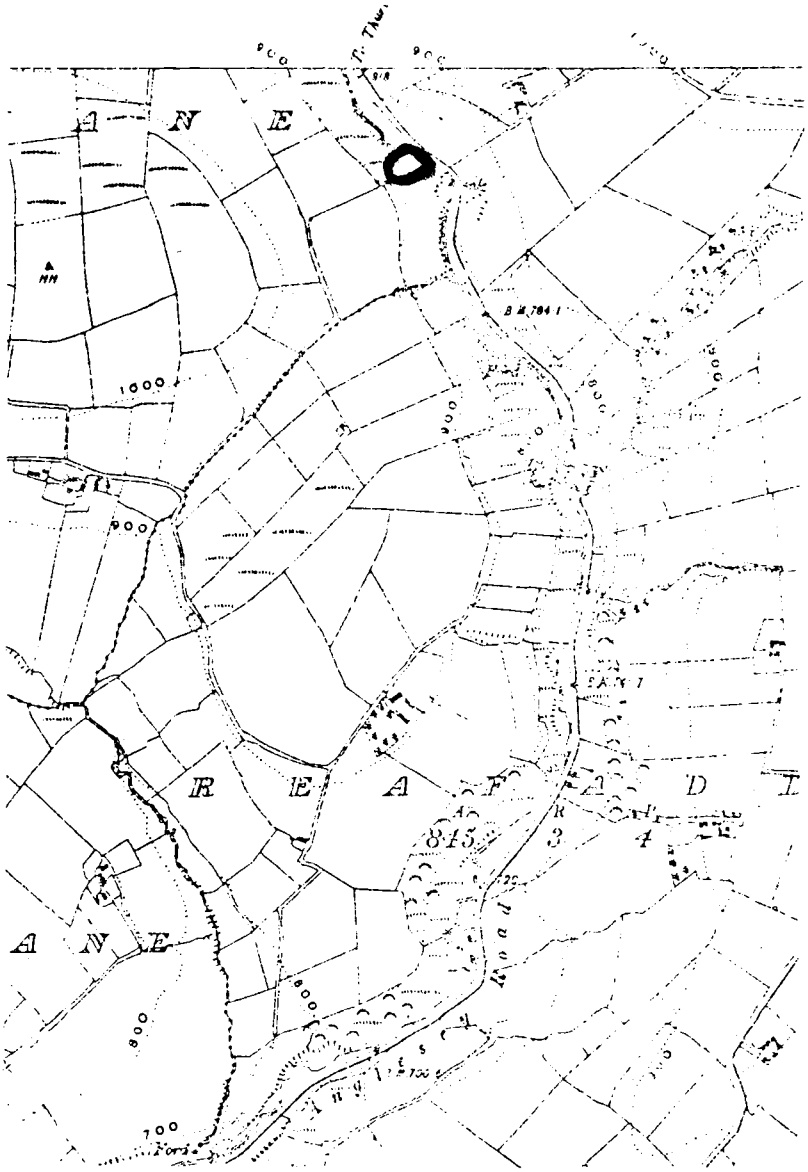
Doran, R.J.P., The Palaeozoic rocks between Tipperary town and Milestone, County Tipperary (Ph.D. thesis - T.C.D. - in prep.)

Cope, R.N. (1934), Cytrograptids and Retiolitids from Co. Tipperary, Geol. Mag. 91: 319-324.

Cope, R.N. (1959), The Silurian Rocks of the Devilsbit mountain district, County Tipperary, Proc. R.Ir.Acad. 60: 217-242.

MAP SHOWING AREA OF SCIENTIFIC INTEREST —

Scale: 6 Inches to 1 Mile



Threats to the area

None is obvious. The site is too small to be used as a location for a dwelling house and reopening of the quarry for commercial purposes is not thought likely. Casual rubbish tipping is however a possibility.

Recommendations

This site is used at present by geological field parties for educational and research purposes. Basic planning protection will serve to maintain the site.

Name of Area	KNOCKASTAKEEN FOREST
Acreage	790 acres
Grid reference	R. 930,275
Scientific Interest	Zoological
Rating	National importance
Priority	C

Description and Evaluation of the Area

The site which is a coniferous forest is situated on the northern face of the Galtee Mountains.

The forest is made up of Pinus sylvestris (scot's pine), P. contorta (contorted pine) and Picea abies (spruce) and the ground flora comprises the usual woodland herbs among which Calluna vulgaris (ling) is common, indicating the acidic nature of the soil.

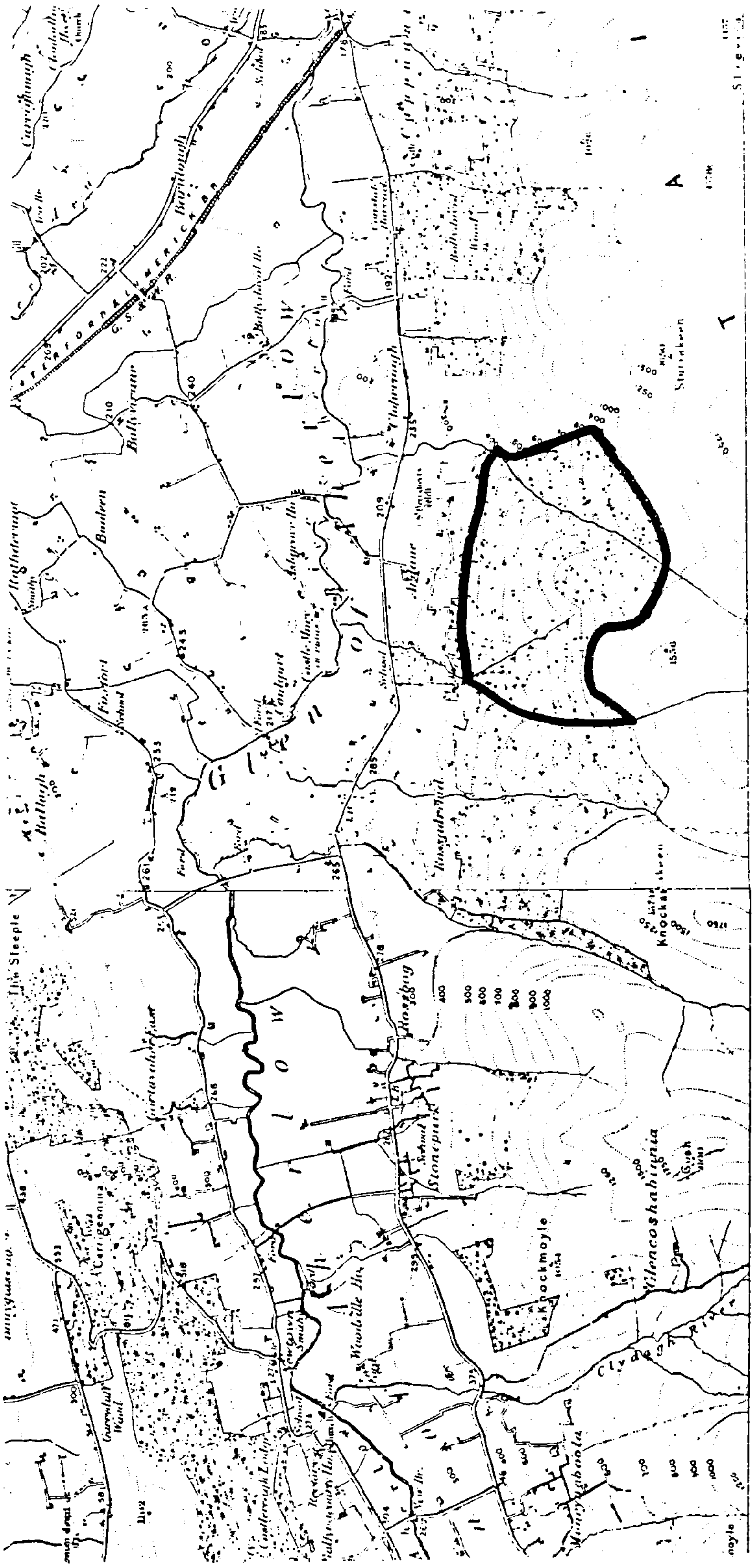
Wood ants of the genus Formica were reported in the wood during the 1950's. They are widely scattered throughout the forest but are concentrated in largest numbers in the area surrounded by a black line on the accompanying one inch map. During a recent census forty-five nests were reported and though it is thought that this figure is a minimum estimate it is thought there are not more than fifty in all. The ants are of commercial value as a pest control as well as being of considerable scientific interest. From Knockastakeen wood colonies have been distributed to other parts of Ireland and some colonies are known to occur at other places (see C.A. Collingwood, A Survey of Irish Formicidae Proc. R. Ir. Acad. 59 (B) 11:213 - 219). This site in South Tipperary is possibly the largest concentration of nests in the country.

Threats to the Area

The ants in Aherlow do not occur in such vigorous colonies as are generally encountered in alpine conditions and this is thought to be a result of climate which is mild in Southern Ireland. There is no other threat to the survival

MAP SHOWING AREA OF SCIENTIFIC INTEREST —

Scale: 1 Inch to 1 Mile



of the colonies on the Galtees. The Forestry Division of the Department of Lands is anxious to conserve existing nests and encourage their spread for pest control.

Recommendations

Land use should remain in its present form.

Name of area	KILLOUGH HILL
Acreage	105 acres
Grid reference	S. 110, 508
Scientific interest	Ecological, botanical, zoological
Rating	National/Regional
Priority	A

Description of the area

The site is shown on the accompanying 6" O.S. map. It was described by the original geological survey as a typical limestone escarpment having an abrupt north slope "formed by the .... termination of its beds while the other side is a gentle slope conforming more or less perfectly with the inclination of the beds." Rock is now exposed on top and on the north slope where it has been eroded into limestone pavement.

The southern side of the hill is partly under grass, and drift soil normally overlies the limestone. Ash is well established here with some elder and scattered oak trees but only small patches of closed canopy are found.

Higher up and to the north side a hazel wood becomes dominant with some ash and rowan (Sobus aucuparia) and shrubs such as Euonymus europaeus (spindle-tree), Viburnum opulus (guelder rose) and Rosa canina and R. arvensis (roses). The woodland floor has a characteristic assemblage of herbs and mosses, including:-

Oxalis acetosella	wood sorrel	a
Endymion non-scriptus	bluebell	a
Circaea lutetiana	enchanter's nightshade	c
Primula vulgaris	primrose	c
Geranium robertianum	herb robert	c
Galium odoratum	woodruff	f
Fragaria vesca	strawberry	f
Glechoma hederacea	ground ivy	f
Veronica chamedrys	germander speedwell	f
Lysimachia nemorum	yellow pimpernel	f
Arum maculatum	arum lily	o
Ranunculus ficaria	wild celandine	o
Epipactis helleborine	broad-leaved helleborine	o
Dryopteris filix-mas	male fern	o
Athyrium filix-femina	lady fern	o

Invertebrates when sampled in July consisted of typical bark-dwellers, seven species of Psocoptera, three Neuroptera and a number of small beetles. The accumulated leaflitter held mites and springtails which were also found in the debris in the limestone pavement. Here leaf litter could be up to a foot in depth and with a high humidity many of the more primitive groups of insects with thin skins were well-represented. These included springtails (Tomocerus sp.), bristle-tails (Petrobius maritimus), centipedes (Lithobius spp.), millipedes (Cylindroiulus latestriatus and Ophiulus pilosus), spiders (Megalumus sp.) and wood lice (Oniscus asellus). These were the most numerous occupants of the crevices though false scorpions, beetles and worms were also taken.

The plants of the limestone pavement included:-

Festuca ovina	sheep's fescue	f
Galium verum	lady's bedstraw	f
Carex flacca	a sedge	f
Carlina vulgaris	carline thistle	o
Camptothecium lutescens	a moss	f
Phyllitis scolopendrium	hart's tongue	f
Asplenium ruta-muraria	spleenwort	o
Neckera crispa	moss	c
Ctenidium molluscum	moss	c
Sedum acre	wall pepper	o

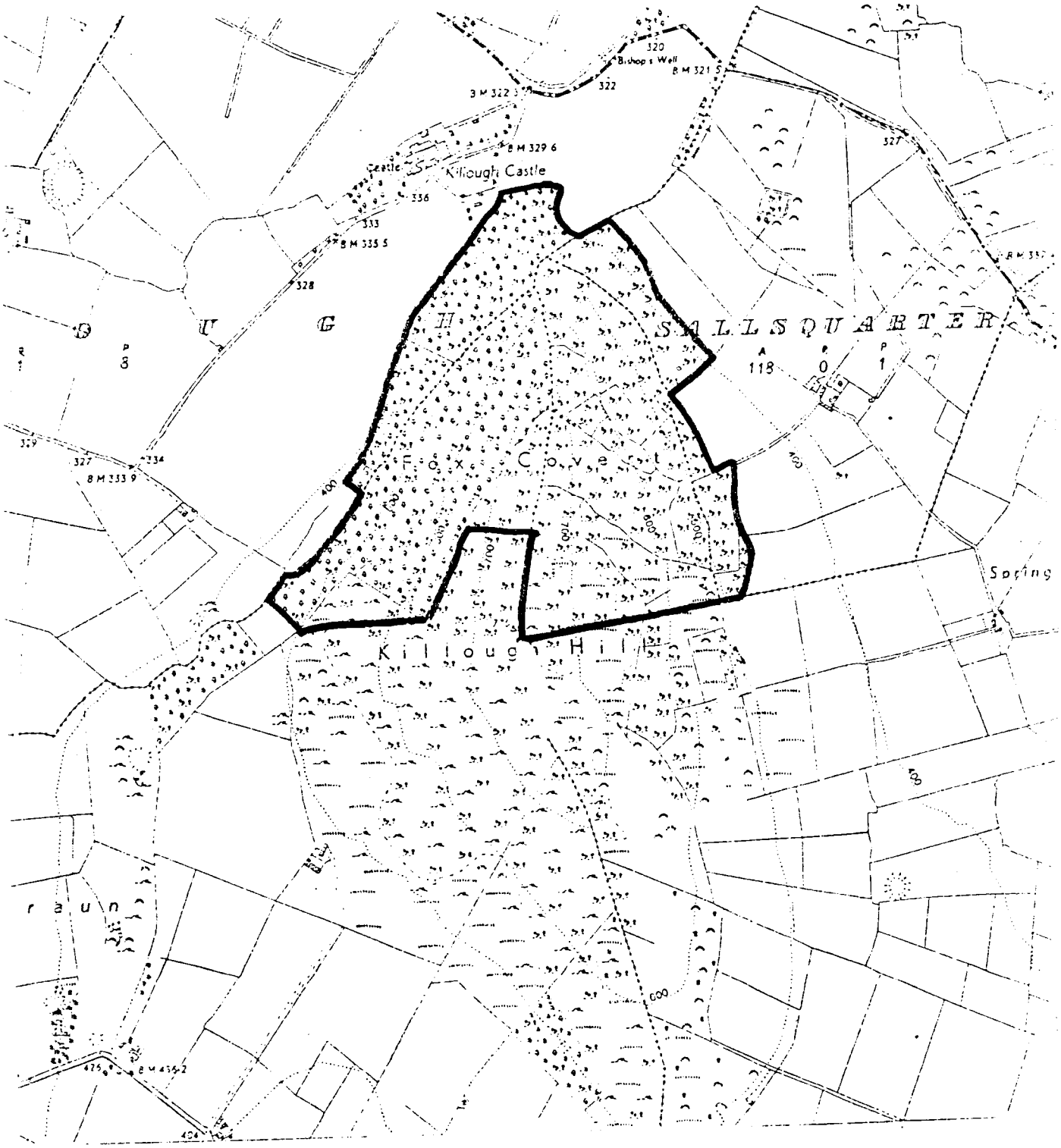
Evaluation

The woodland on Killough Hill is of relatively recent origin but is developing well with a very good ground flora. It also houses a large bird population and varied mammals. The open areas of pavement and limestone grassland are perhaps more important since they are a rare feature in the country. To date only four exposures of pavement are known outside the western Clare-Galway area (see map). These have the same interest which oceanic islands have, being isolated from each other. A comparison of the invertebrate fauna with an area of the Burren (Richards, Proc. R.I.A. 62, 1) brings out some similarities especially the prevalence of scavengers, but the presence of a spider family (Dysderidae) suggests a different food chain at Killough.

The site has good educational potential as well as its considerable scientific interest.

MAP SHOWING AREA OF SCIENTIFIC INTEREST —

Scale: 6 Inches to 1 Mile

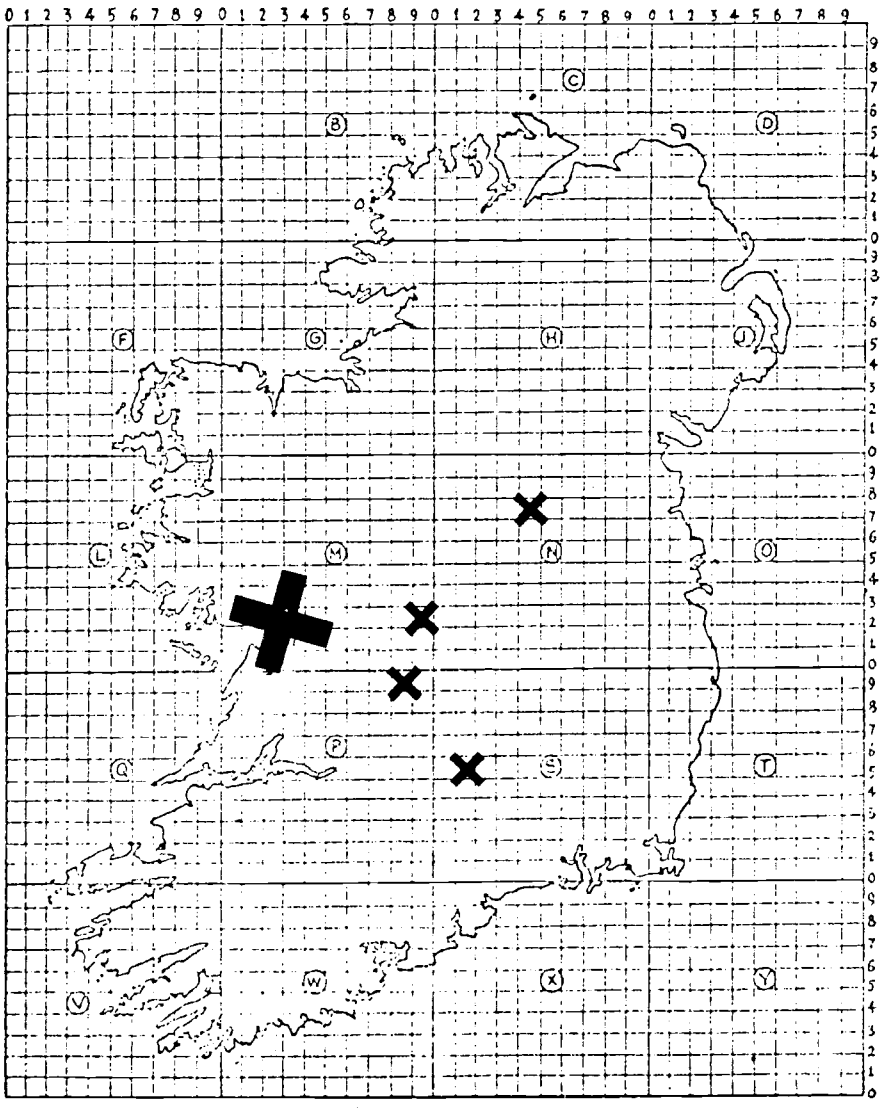


Threats to the area

The main threat comes from the large quarry which is cutting into the central part of the hill. The hazel woods have been bulldozed in places and limestone dust is widely scattered.

Recommendations

From a biological viewpoint this site is one of the most valuable in South Tipperary so as much as possible of the pavement and hazel wood should be preserved. The outlined area on the 6" sheet should be protected by a Conservation Order and the quarry should be allowed to spread in other directions, especially to the east.



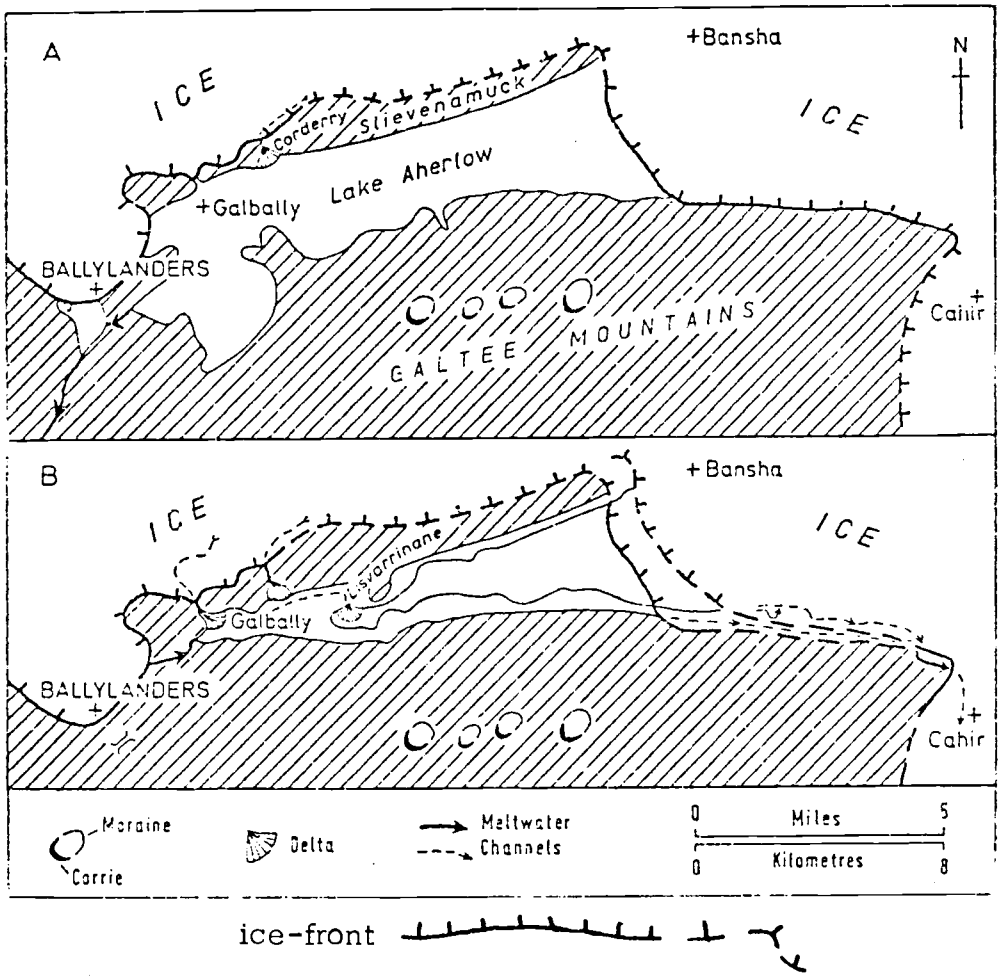
Known exposures of limestone pavement in Ireland

Name of Area	GLACIAL FEATURES IN THE GLEN OF AHERLOW (See also botanical sites in the Galtee Mountains)
Acreage	166 + 5 = 171 acres
Grid Reference	R.90,30 (centre of valley)
Scientific interest	Geological
Rating	Regional - possibly national importance
Priority	Varies from A (Corderry) - C (Lough Diheen); see threats to the area .

Description and evaluation of the areas.

The Glen of Aherlow (shown on accompanying maps) is surrounded in either side by the Galtee Mountains which are a Palaeozoic inlier. The inlier breaks into two fingers which enclose the Glen in an east-west direction. The floor of the valley is formed of limestone.

On the two figures below the glacial history of the valley is illustrated.



During the Weichsel (2nd phase) glaciation ice built up to the south of Slievenamuck and melt-water entered the valley at Corderry and west of Bansha. The glacial lake which formed in the valley drained out by an overflow channel near Ballylanders. This sequence is shown in Fig. A. The second Figure (B) illustrates a later stage of the process in which there was a slight retreat of the ice-front. The drop in water-level was accompanied by the formation of two more inflow deltas at Galbally and Lisvarrinane and the Ballylanders outflow was replaced by an inflow channel from the ice front. At this stage melt-water was released from the lake at the eastern end of the Galtees where it passed into the Suir valley at Cahir.

Meanwhile successive snowfalls accumulated on the Galtees where the resulting ice formed a series of corries.

Interesting features which deserve conservation are the following: Ballylanders outflow channel (in Co. Limerick). The Galbally delta has been quarried and, on the eastern side, the Lisvarrinane delta might be quarried but for the regional water table which is too high there. The Corderry delta is a good example of a glacial delta and deserves protection.

There are four corries on the Galtee mountains, facing north. Lough Diheen is the smallest and the most visually impressive. Set in front of a steep enclosure wall it contains a shallow lake. A moraine which was clearly deposited in two phases closes the mouth of the structure.

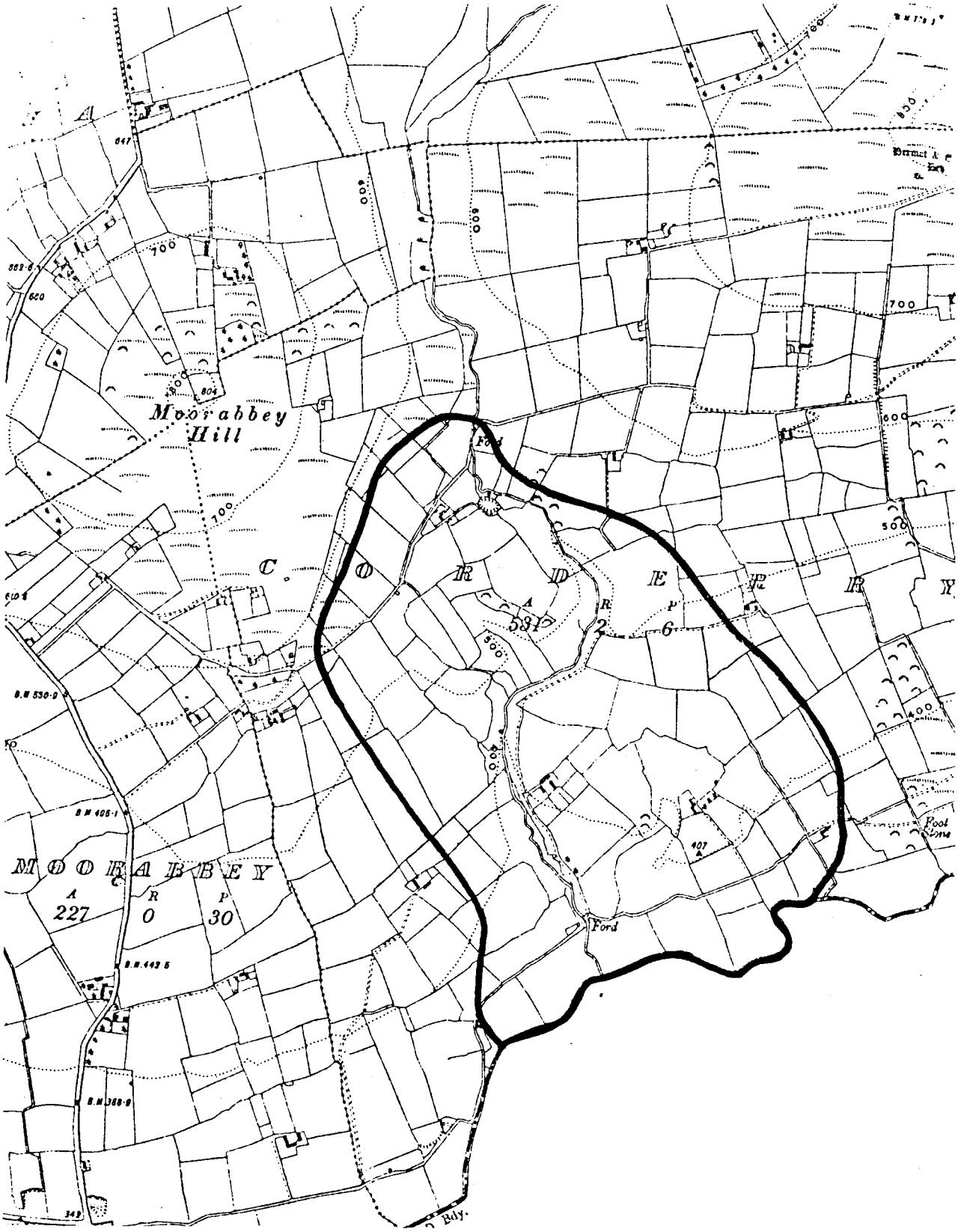
Threats to the Area

The Corderry delta is likely to be exploited if conservation measures are not adopted. Delta gravels are very pure (well sorted) and hence are valued highly for road metalling etc.

There is no likely threat to the survival of Lough Diheen but coniferous afforestation could obscure the outlines of this and the other site. At Diheen afforestation is unlikely (the corrie is at 1800 feet O.D.) At Corderry it is a possibility although the high agricultural values of the land probably make forestry an unlikely development.

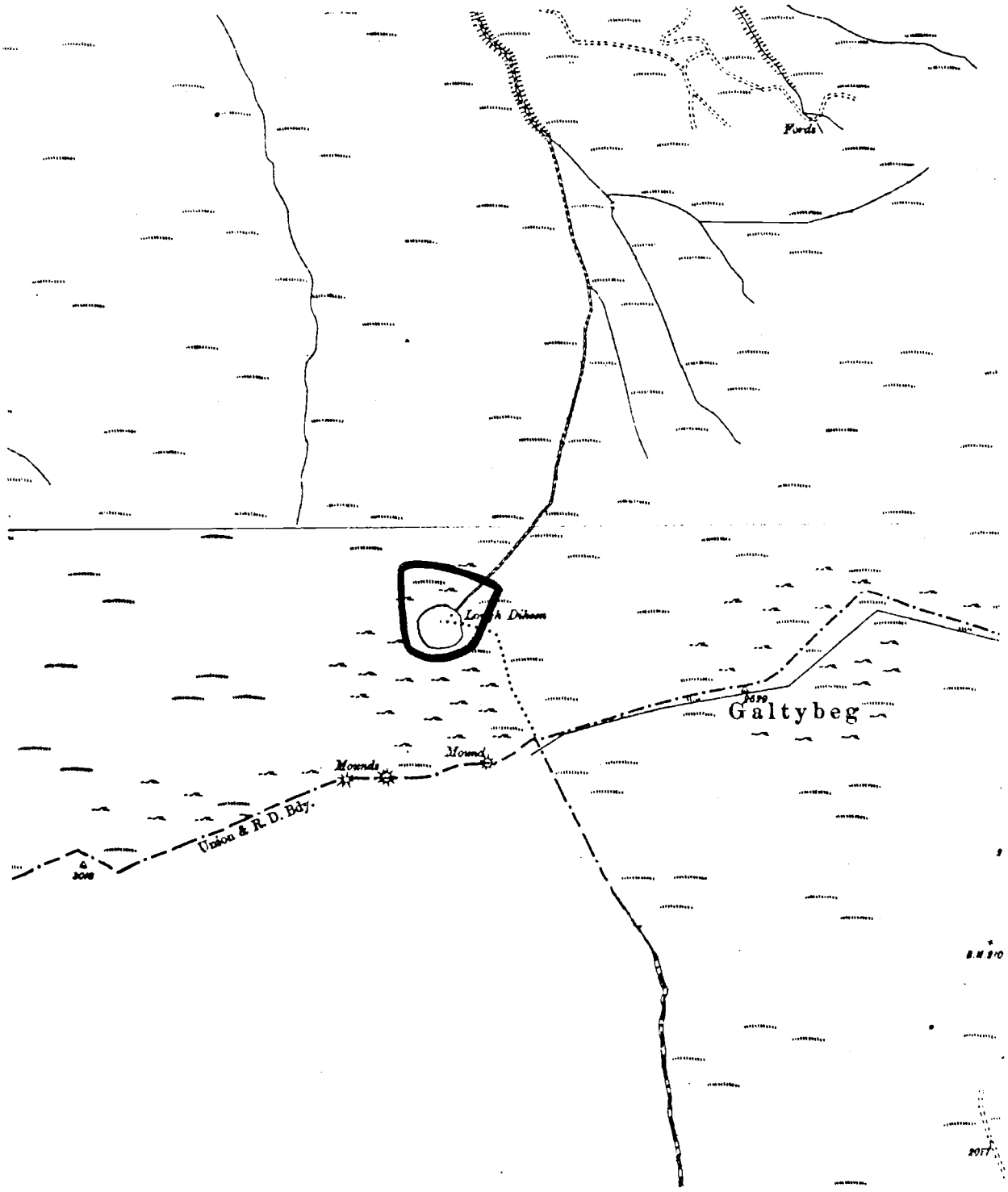
MAP SHOWING AREA OF SCIENTIFIC INTEREST —

Scale: 6 Inches to 1 Mile



MAP SHOWING AREA OF SCIENTIFIC INTEREST —

Scale: 6 Inches to 1 Mile



Recommendations

The Corderry delta could be protected by a refusal of permission to mine gravels at the site. In addition, afforestation should not take place on this site although it would only affect the area visually. The Department of Lands could well be notified of the County Council's concern to preserve the Corderry delta in its present form, before any land acquisition takes place.

No action is recommended for Lough Diheen, except for a similar notification to the Department. As stated above afforestation is unlikely to occur here.

Name of area	INCHINSQUILLIB WOOD
Acreage	22 acres
Grid reference	R. 912, 502
Scientific interest	Ecological
Rating	Regional
Priority	A

Description of area

On these acid rocks several naturally developed woods are found, the best one being west of the road from Cappagh White to Hollyford. It is predominantly of hazel at the moment but natural succession is transforming it into an oakwood. The hazel canopy is overtopped in places by strong growing (8") oak trees (Quercus petraea). Birch (Betula pubescens) and ash (Fraxinus excelsior) are other species that occur commonly as large trees while there is a limited amount of Ilex aquifolium (holly) below the main canopy.

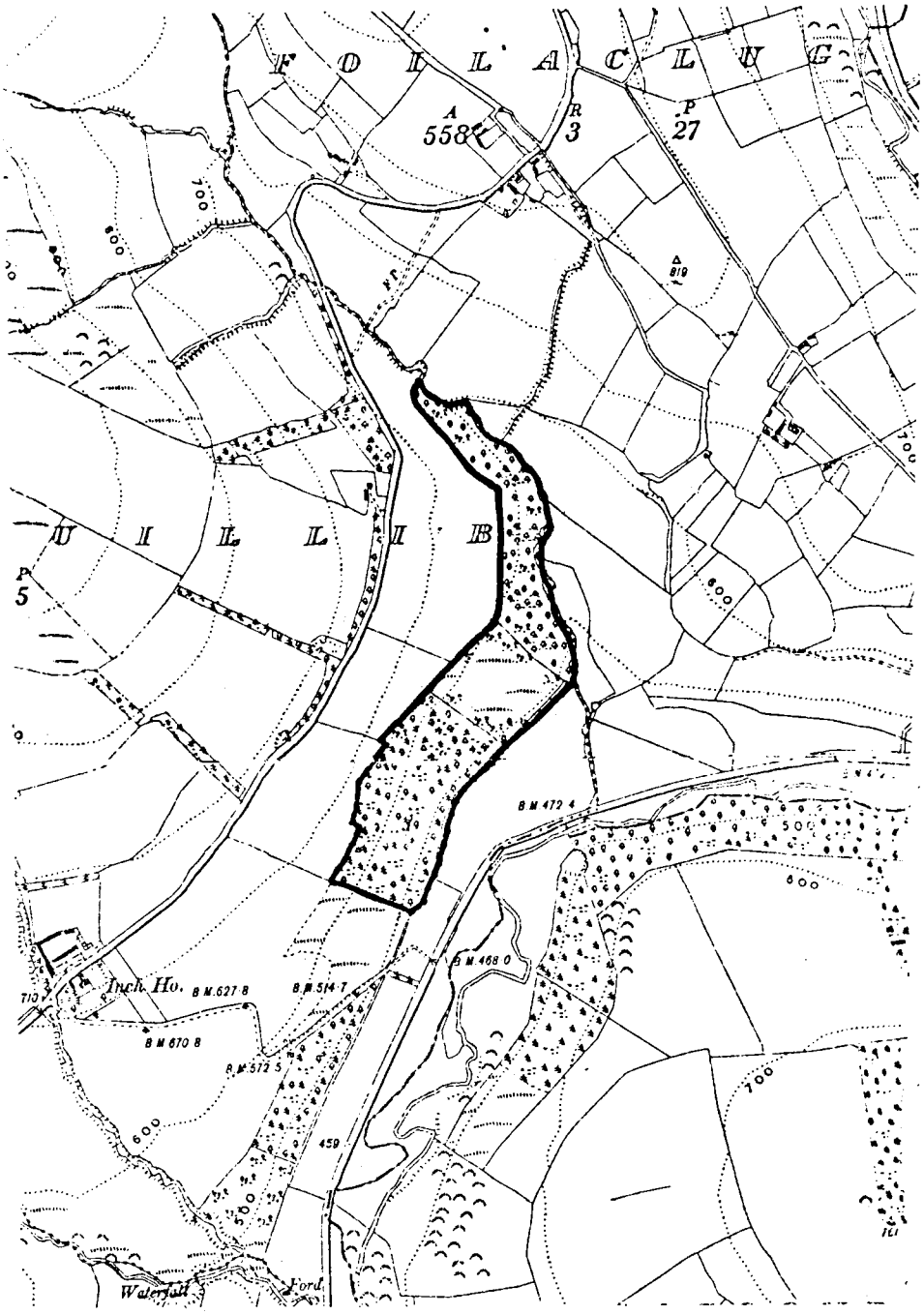
The ground floor is well developed but fairly poor in species which is characteristic of this sort of woodland. It includes:

Carex sylvatica	wood sedge	c
Primula vulgaris	primrose	c
Endymion non-scriptus	blue bell	f
Oxalis acetosella	wood sorrel	f
Conopodium majus	pignut	f
Blechnum spicant	hard fern	f
Veronica chamaedrys	germander speedwell	f
Sanicula europaea	wood sanicle	o
Circaea lutetiana	enchanter's nightshade	o
Carex remota	a sedge	o
Luzula sylvatica	great woodrush	l.f.
L. pilosa	spring woodrush	o
Athyrium filix-femina	lady fern	o
Veronica montana	wood speedwell	o
Arrhenatherum elatius	false oat	o

Bird life is moderately rich including some of the larger, less common species.

MAP SHOWING AREA OF SCIENTIFIC INTEREST —

Scale: 6 Inches to 1 Mile



Evaluation

Though there is no indication of continuity with the ancient natural forest, this site has been left alone to develop naturally without introduced species or much management. It thus has considerable ecological interest and is probably the best woodland site now in the county. It is ungrazed and a certain amount of regeneration is taking place.

The occurance of Arrhenatherum in woodland is of interest in the ecology of this species.

Threats to the area

Substantial clearance is now affecting the middle section of this wood for agricultural purposes. This must be regarded as the major threat as it may extend further in area, but indescriminate felling of the trees before they reach maturity, or underplanting with conifers should not be overlooked.

Recommendations

An immediate Tree Preservation Order under Section 44 Local Government (Planning and Development) Act, 1963, should be put on the remainder of this wood especially the northern section.

Name of area	GROVE WOOD, FETHARD
Acreage	77 acres
Grid reference	S. 218, 333
Scientific interest	Ecological, botanical, zoological
Rating	Regional
Priority	A

Description of area

Grove Wood is situated on a sandstone hill just south of Fethard. The canopy is formed by ash, hazel and birch (Betula pendula) in the lower part and oak above where the trees are older but moderately small due to exposure. The clayey soils in the lower part have a typical flora for this woodland type, e.g.

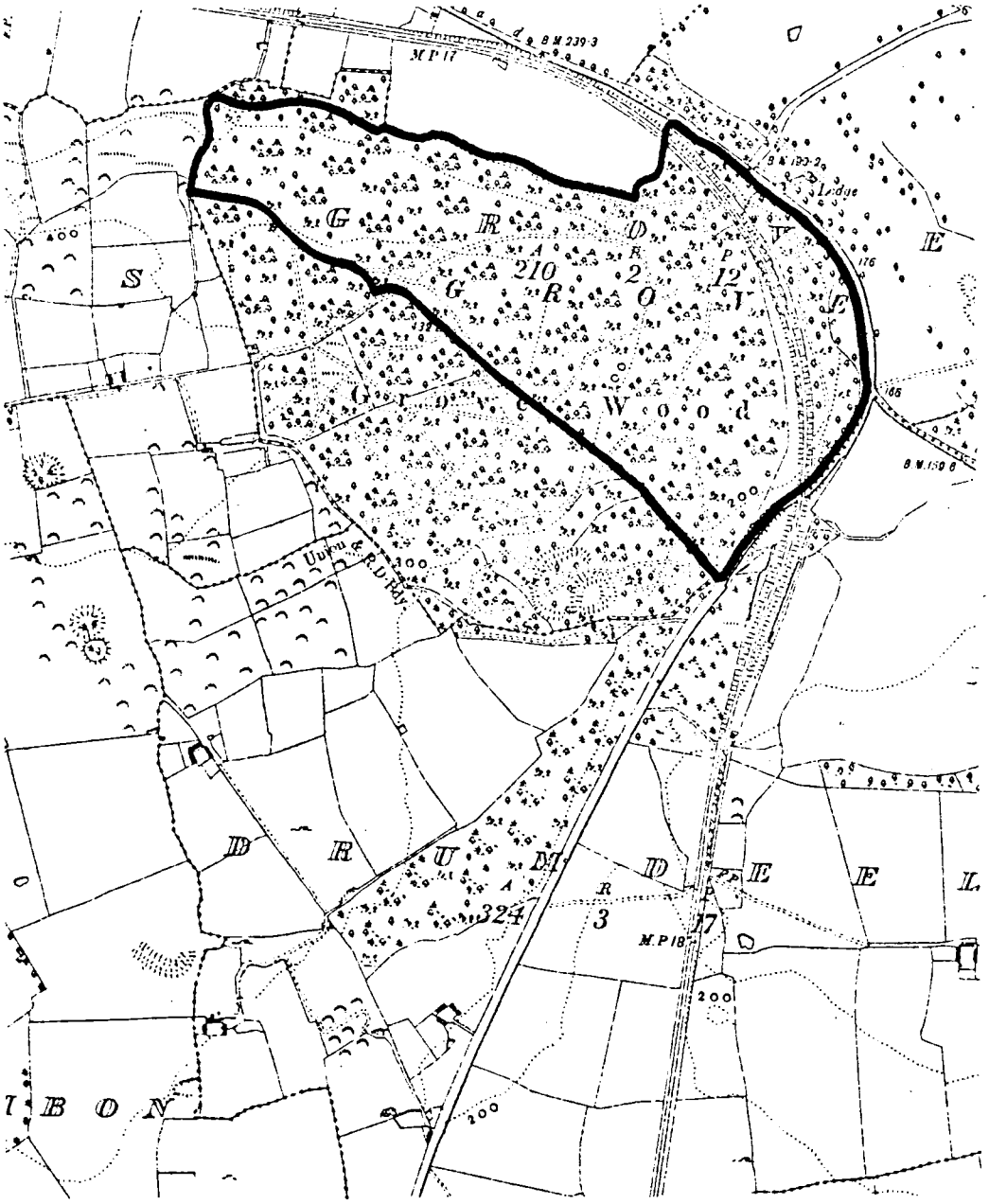
Hedera helix	ivy	a
Carex sylvatica	wood sedge	c
Circaea lutetiana	enchanter's nightshade	c
Anemone nemorosa	wood anemone	l.c.
Oxalis acetosella	wood sorrel	c
Ajuga reptans	bugle	f
Endymion non-scriptus	bluebell	f
Glechoma hederacea	ground ivy	f
Conopodium majus	pignut	f
Dryopteris dilatata	buckler fern	f
D. filix-mas	male-fern	f
Ranunculus auricomus	goldilocks	o
Carex remota	a sedge	o
C. nigra	a sedge	o
C. lævigata	a sedge	r
Phyllitis scolopendrium	hart's tongue	r
Epipactis helleborine	helleborine	r
Veronica montana	wood speedwell	r
Bromus ramosus	wood brome	o

Other shrubs that occur include Viburnum opulus (guelder rose), Euonymus europaeus (spindle-tree) and Ilex aquifolium (holly) while Salix caprea (goat willow) is quite common as a tree.

The older part of the stand, the oak trees towards the top of the hill occur in a more heathy community with Teucrium scorodonia (wood sage), Rubus fruticosus (bramble), Holcus mollis (creeping soft-grass),

MAP SHOWING AREA OF SCIENTIFIC INTEREST —

Scale: 6 Inches to 1 Mile



Stellaria holostea (greater stitchwort) and Moehringia trinerva (a sandwort). Oxalis and Endymion are again common with much Lonicera periclymenum (honeysuckle) and some Luzula sylvatica (greater woodrush), L. pilosa (spring woodrush) and Blechnum spicant (hard fern). Betula pubescens is the usual birch in among the oak.

There is quite a rich fauna is the wood both of mammals(including squirrels) and birds.

Evaluation

This is a wood of considerable amenity value as it is visible from a distance. It also has a rich flora though it is relatively young, and would be of considerable use in education.

The oak canopy is ecologically interesting and it is one of the only stands on relatively base rich soil (derived from glacial drift) in the county.

Threats to the area

Widespread felling of all species is occurring on the south side of the hill and the ground in being replanted with larch. Already at least half of the oak stand has disappeared and there is no indication that any will be left.

Recommendations

Grove Wood to the limits shown should be covered as soon as possible by a Tree Preservation Order under Section 45 Local Government (Planning and Development) Act, 1963. In this way half of it would remain as a productive coniferous unit and the other half as an amenity and educational (deciduous) area. This latter would benefit from the laying out of walks including a nature trail and a picnic site.

Name of area	MARSHES AND PONDS NEAR ANNACARTY
Acreage	57 acres
Grid reference	R. 93, 44 (Greenane R.914 395)
Scientific interest	Ecological, botanical, zoological
Rating	Regional
Priority	B

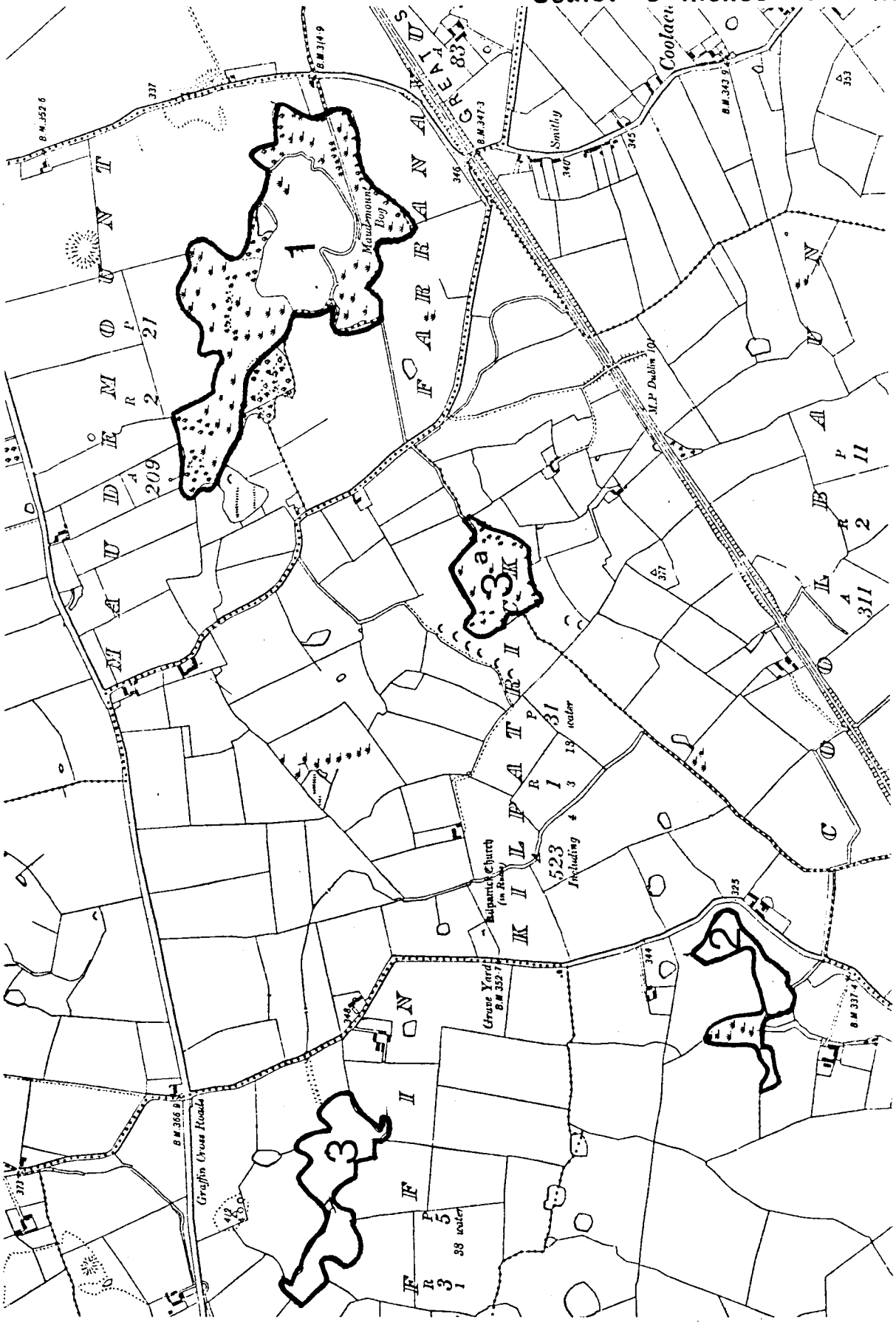
Description of area

The drift cover of all this area, from Tipperary to Cappagh White and Dundrum, is undulating with frequent hollows and ridges. Some of the former are very regular and of small size and so can be called kettle-holes while others are larger with surface water. Drainage from these areas is very slight so the streams leading from them are small. This means that there is little communication between sites and they each have developed peculiar features, though this is also related to their depth at formation and the consequently speed of vegetation infill.

Of the open water examples one is highly calcareous with marl deposits and calcareous fen vegetation at its edge (1). Juncus obtusiflorus (blunt-flowered rush) and Carex lepidocarpa (a sedge) are perhaps the commonest species here with small amounts of Molinia carulea (purple moor grass) and Eriophorum angustifoliam (bog cotton). The more interesting species include Potamogeton coloratus (pondweed) in the very clear water, and Galium uliginosum (fen bedstraw), Epipactis palustris (marsh helleborine), Equisetum variegatum (a horsetail) and Cladium mariscus (saw sedge) at the margins. Many other marsh species occur at the edges of this waterbody and in the kettleholes that were completely grown over, they formed a floating mat of vegetation. Menyanthes trifoliata (bog bean) is especially important in this situation with Potentilla palustris (marsh cinquefoil), Lychnis flos-cuculi (ragged robin), Ranunculus flammula (lesser spearwort), Mentha aquatica (water mint), Veronica scutellata (marsh speed well), Carex rostrata, C. diandra and C. disticha (sedges).

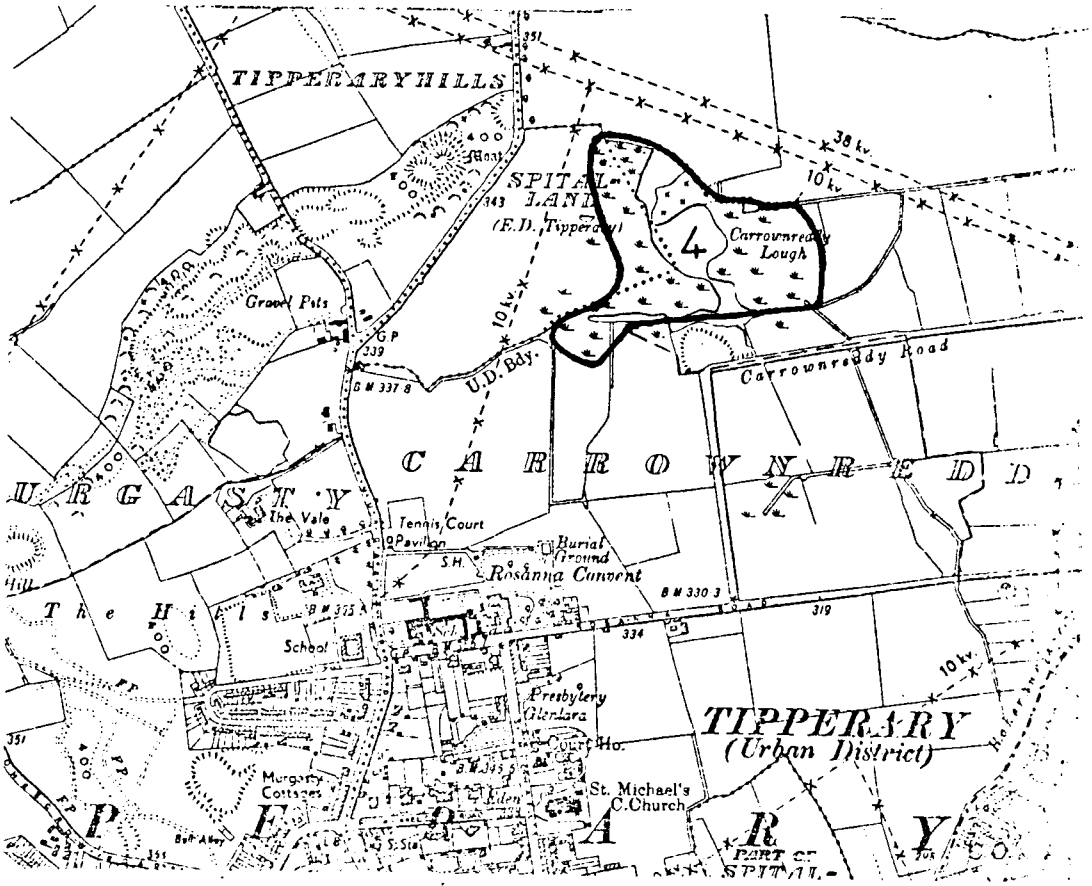
MAP SHOWING AREA OF SCIENTIFIC INTEREST — 1-3

Scale: 6 Inches to 1 Mile



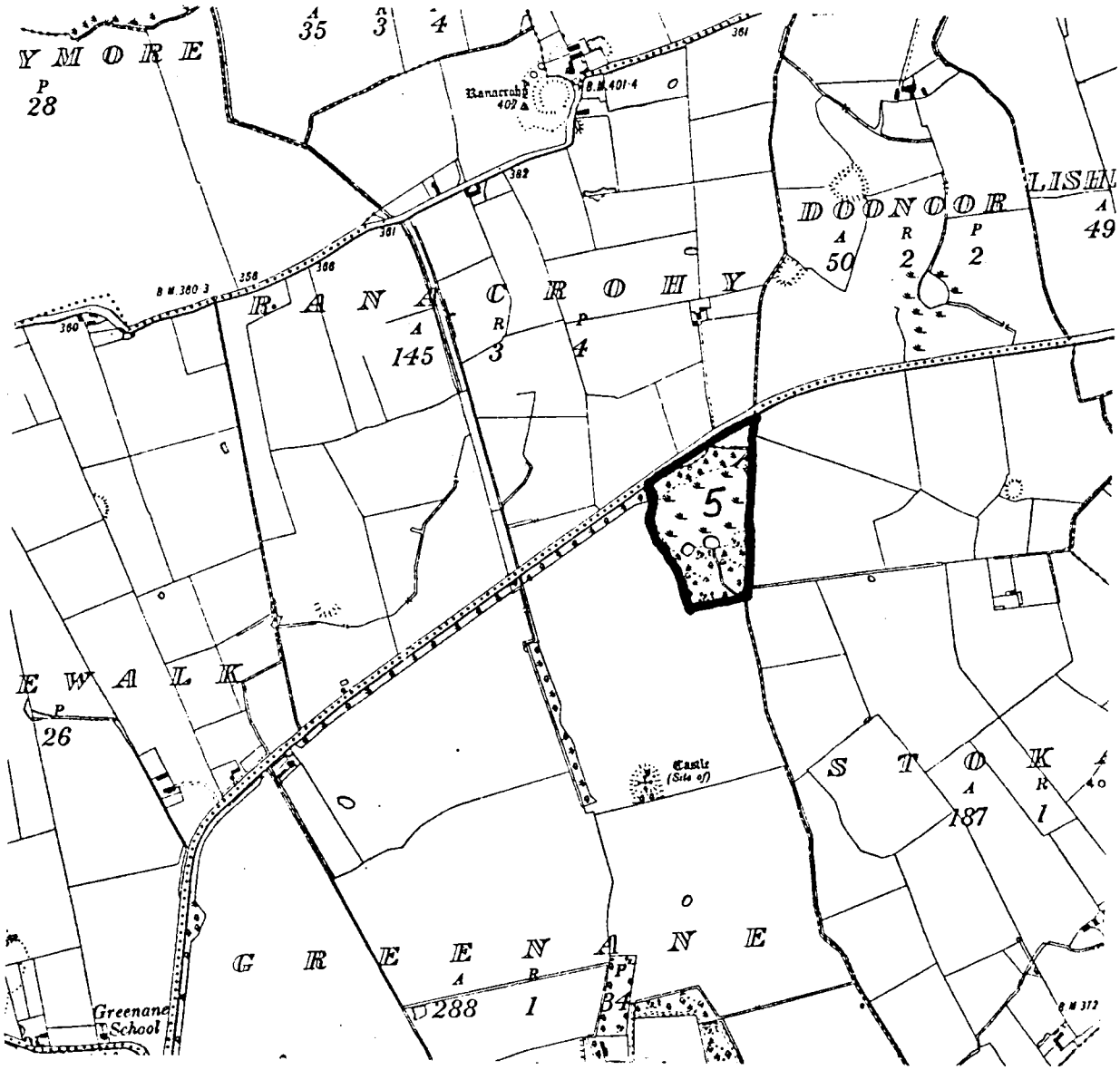
MAP SHOWING AREA OF SCIENTIFIC INTEREST —4

Scale: 6 Inches to 1 Mile



MAP SHOWING AREA OF SCIENTIFIC INTEREST — 5

Scale: 6 Inches to 1 Mile



Site (2) is also calcareous with Chara spp (stonewort) in the water but (3) is a larger pond, muddier in appearance and probably about neutral. The species content is different here with both species of Typha (bulrush), Iris pseudacorus (yellow flag), Alisma plantago-aquatica (water plantain), Lycopus europaeus (gipsy wort), Scutellaria galericulata (skull-cap), Oenanthe fisulosa (water dropwort), Ranunculus sceleratus (crowfoot) and much Riccia fluitans (a liverwort) and Lemna minor (duckweed) in the water.

Site (4) just north of Tipperary is almost grown over and some alder colonisation is taking place, associated with tussocks of the sedge Carex paniculata. Ranunculus lingua (greater spearwort) is common here with Menyanthes and much Agrostis stolonifera (creeping bent), Galium palustre (marsh bedstraw) and Equisetum fluviatile (water horsetail). Berula erecta (water parsnip), Epilobium palustre (marsh willowherb), Caltha palustris (marsh marigold), Sparganium erectum (bur-reed) and Valeriana officinalis (marsh valerian), make up the complement of the larger species of herbs. Sites 3a and 5 represent the end of the vegetational successions, being largely overgrown and containing some trees.

Zoologically the sites are rich and a generalised account of the insect fauna follows. Abundant mosquitoes (Culicidae) were found at all the areas but Chironomidae (non-biting midges) were taken only where open water occured. Of these the dominant forms were carnivores (Tanypodinae, especially Anatopynia and Dentaneura). These feed on a large biomass of small crustaceans, Cladocera and Copepoda, secondary carnivores included Argiopid (orb spinning) spiders and coccinellid beetles. Other aquatic insects taken included Limnephilus sp. (a small caddis fly) found even where vegetation completely covered the water surface. Mayflies of the genus Baetis (olives) on the other hand occurred only in two sites containing visible springs.

Small Tortricid moths were numerous while Zygoptera (dragonflies etc.) were represented by Lestes sponsa, Pyrrhosoma nymphula and Coenagrion pulchellum and puella. Other orders of insect whose larvae live in water were well represented, included seven species of hoverfly. Smaller species of Hymenoptera (wasps and sawflies) were some of the most numerous organisms present (especially Sphecoidea) while bugs

(Hemiptera - Velia) and beetles (Gyrinus natator) were also frequent. The alder fly Sialis was taken at one fen.

Evaluation

This is an exceptionally interesting series of marshes in which many facets of ecology such as succession, alkalinity and migration are all well shown and invite study, together with a richness and diversity of plant and animal species.

Vulnerability

These sites are difficult to drain but possibly easier to fill in using modern equipment. At Tipperary the marsh in question adjoins the town refuse tip and this is a source of pollution, and infill for it.

Recommendations

The landowners should be approached to keep these marshes in their present state. They all could be used for educational purposes but No. 4 at Tipperary is pre-eminent in this respect. It should be retained in some form and though there is room beside (E. of) the present tipping area for additional dumping, it should be an objective to find a new site at the earliest opportunity.

Marsh 1 would be best protected by a Conservation Order as it is the most unusual and interesting wetland in the county.

Name of area	SUIR BELOW CARRICK-ON-SUIR
Acreage	53 acres
Grid reference	S. 422, 214
Scientific interest	Botanical, ecological
Rating	Regional
Priority	C

Description of area

The low marshes and fields below Carrick-on-Suir are flooded both by the river and the tide and though the pasture fields have been protected by newly formed banks, they retain wet patches, and their ditches hold a continuation of the riverbank community. This is dominated by willows (eg. Salix viminalis, S. alba, S. triandra) while sedges and grasses occur below, especially Carex riparia (greater pond sedge), Phalaris arundinacea (reed canary grass), and Glyceria maxima (reed grass). The herb flora is rich but its arrangement has been confounded by the recent earthworks which have also introduced many weed species. The following plants occur:

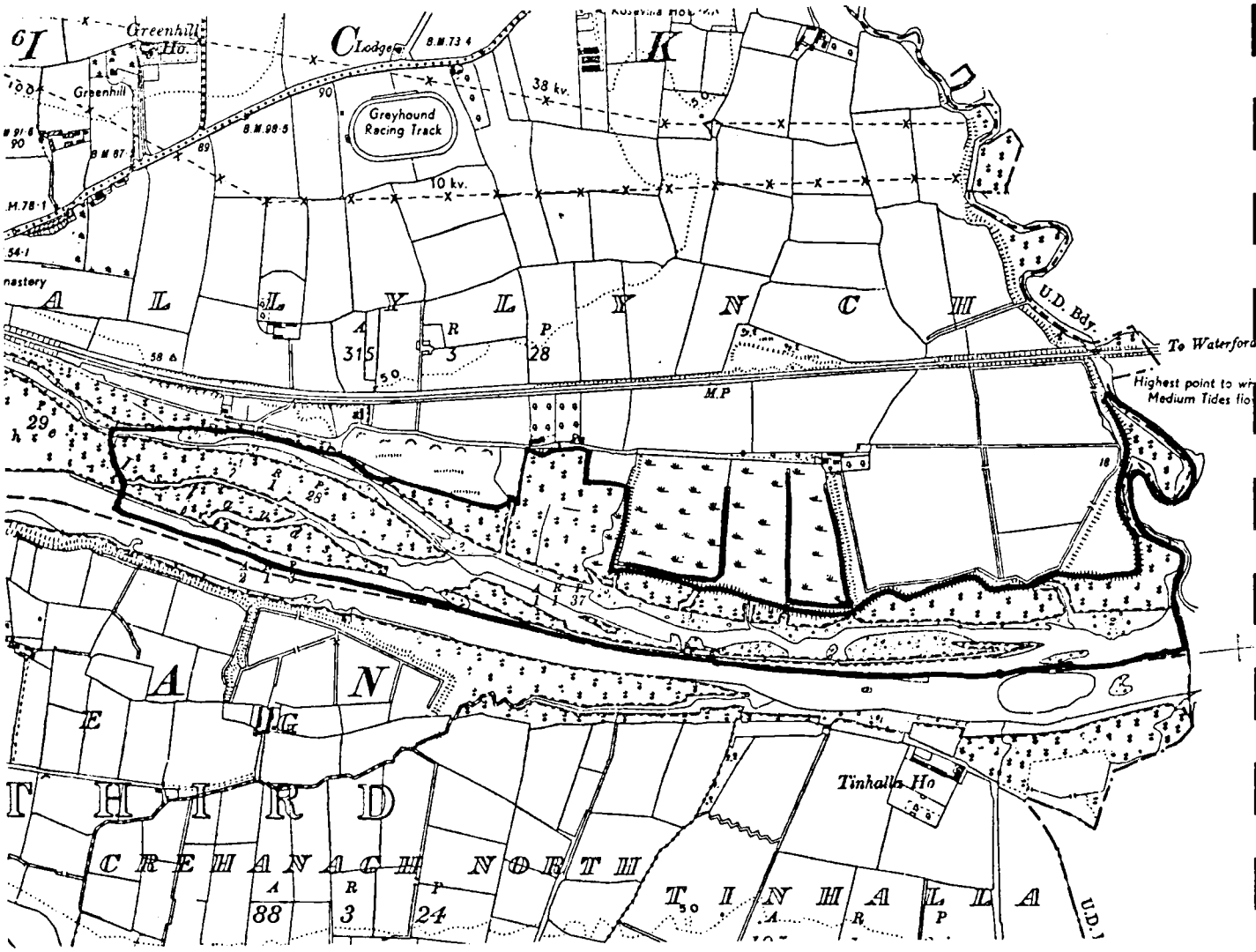
Epilolium hirsutum	great willow herb	l.a.
Iris pseudacorus	yellow flag	c
Valeriana officinalis	marsh valerian	c
Mimulus guttatus	monkey flower	c
Oenanthe crocata	water dropwort	f
Berula erecta	water parsnip	f
Veronica anagallis-aquatica	marsh speedwell	f
V. catenata	marsh speedwell	o
Scrophularia aquatica	water figwort	o
Carex otrubae	a sedge	o
Myosotis scorpioides	forget-me-not	l.f.
Catabrosa aquatica	water whorl grass	r
Rorippa palustris	marsh yellow cress	f
R. amphibia	water radish	r
Pulicaria dysenterica	fleabane	r

Animal life is also rich in this area especially in insects, eg. hoverflies and the brackish conditions so far inland are an interesting factor. However, as recorded in the National Report on Water Quality*, pollution by both organic wastes and toxic materials takes place at Carrick so aquatic life is somewhat reduced. The presence of the town refuse dump, now disused, may add to any toxic effect.

*An Foras Forbartha, 1972.

MAP SHOWING AREA OF SCIENTIFIC INTEREST —

Scale: 6 Inches to 1 Mile



Evaluation

This is an interesting stretch of marshland which has many unusual species, but in places a somewhat upset community structure. Being so close to the town it is of great significance for environmental studies in education.

Vulnerability

Aquatic river life is adversely affected by pollution at the moment though most plant species are resistant to it.

Riverbank development including infill, further drainage by sluices etc. would damage the scientific value of the site.

Recommendations

Any riverside developments should leave the marshland as intact as possible.

Access for a walk way along the north bank could well be provided to encourage educational use of the area.

Name of Area	MITCHELSTOWN CAVES
Acreage	Not calculated, an underground site
Grid reference	R.925,163
Scientific Interest	Geological and zoological
Rating	Regional importance
Priority	C

Description and evaluation of the area

The site which is shown on the accompanying 6" map is an extensive limestone cave system. The caves are situated in the limestone syncline between the Galtee and Knockmealdown mountains. This dips at 35-40° and it is at this angle that the major caverns are formed. The entrance of the new cave has been formed by quarrying but the old cave was opened by collapse of a joint fissure. In all the caves are $1\frac{1}{2}$ miles in length. A description of them appears in J. C. Coleman, The Caves of Ireland (Anvil Books, Tralee (1965)).

The caverns internally display many fine dripstone formations and their present owner has carried out consdierable work on the "new cave", installing electric light and improving access.

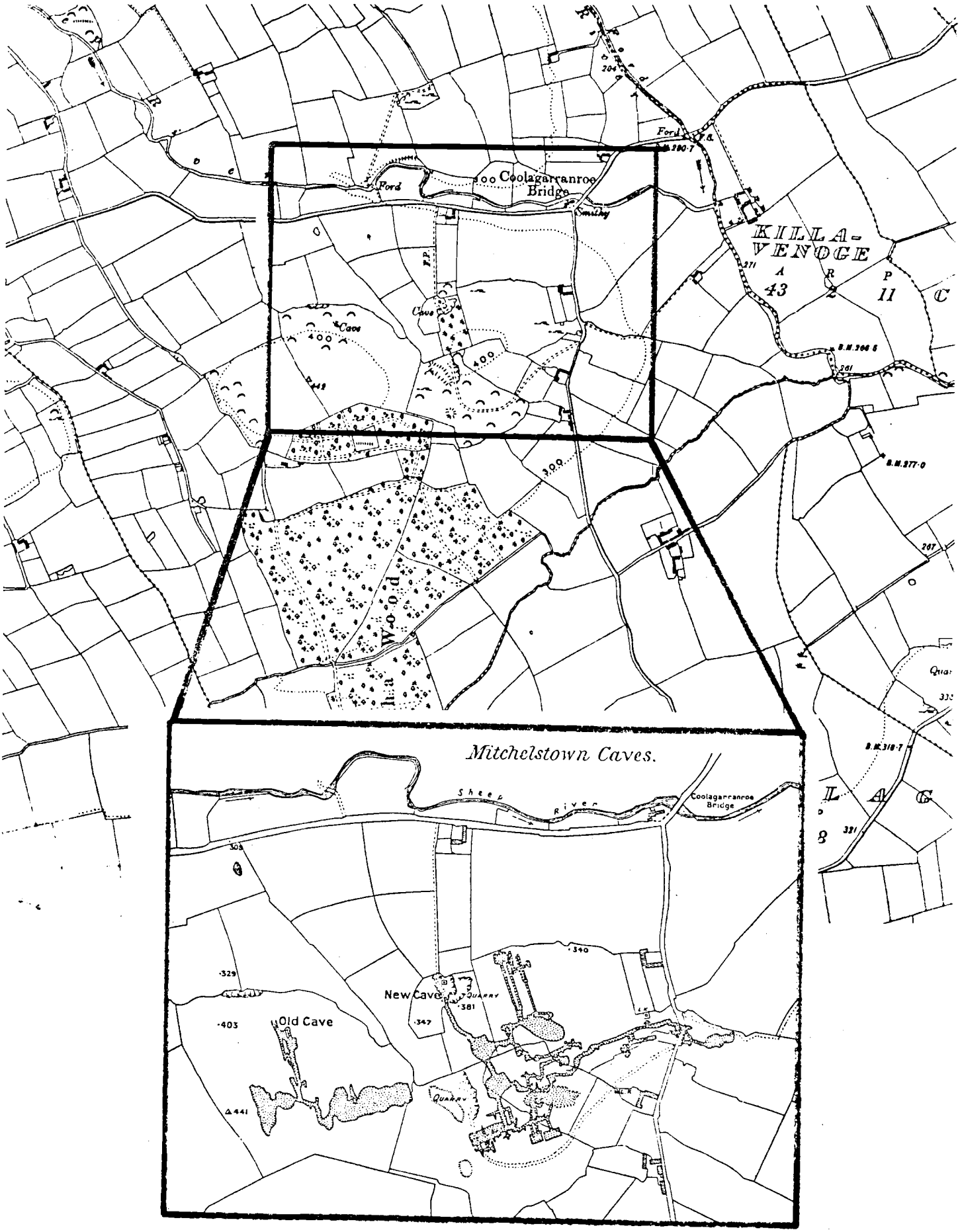
An important feature of the caves is their fauna which was originally described by G.H. Carpenter in 1895 (Ir. Nat. 4). It must be stressed that this description overlooked flora which should also be investigated. A number of fungi are known to live in subterranean conditions. A pale spider with reduced sight of the genus Porhomma was described from the new caves along with an annelid and a springtail, both of which should be re-examined. The fauna of Mitchelstown is the best known cave-life in the country.

Threats to the area

The Mitchelstown caves are well known as a tourist attraction which is visited by hundreds of people every year. Present indications are that access to visitors will be further improved. Inevitably there has

MAP SHOWING AREA OF SCIENTIFIC INTEREST —

Scale: 6 Inches to 1 Mile



been a certain amount of damage to dripstone features; visitors have broken stalactites and removed cave pearls while smoke from tilly camps and candles has blackened the cave roof. The door on the new cave has also cut off contact with the outside world on which cave fauna depends to survive and there was no sign of the spider Porhomma when the caves were recently inspected. The owner is however anxious to enhance the cave by maintaining fauna and he invites suggestions as to how best this should be done.

Recommendations

No action is required to preserve these caves. Applications to quarry limestone in the vicinity of the system should however be referred to An Foras Forbartha or the Geological Survey before permission is granted.

Name of Area	DUNDRUM SANCTUARY
Acreage	38 acres
Grid Reference	R.957, 442
Scientific interest	Ecological, zoological and botanical
Rating	Local - Regional importance
Priority	C

Description of the area and evaluation

This site, whose location is shown on the accompanying map, is mostly a coniferous plantation under the management of the Department of Lands - Forestry Division. Labelled "Sanctuary" it contains a wide range of mammals and birds including deer, fox, waterfowl in small numbers, sparrow hawks etc.

There are two main places of interest from the scientific point of view: an aldermarsh to the north of the site and an artificial and shallow pond further to the south. The flora here is that of a calcicole water-body and Chara (stonewort) is abundant. Carex aquatilis (a sedge) is an interesting species. Both aquatic habitats contain a typical invertebrate fauna and a typical flora. Otherwise trees are mainly conifers especially spruce. The forest contains some small experimental plots.

Threats to the area

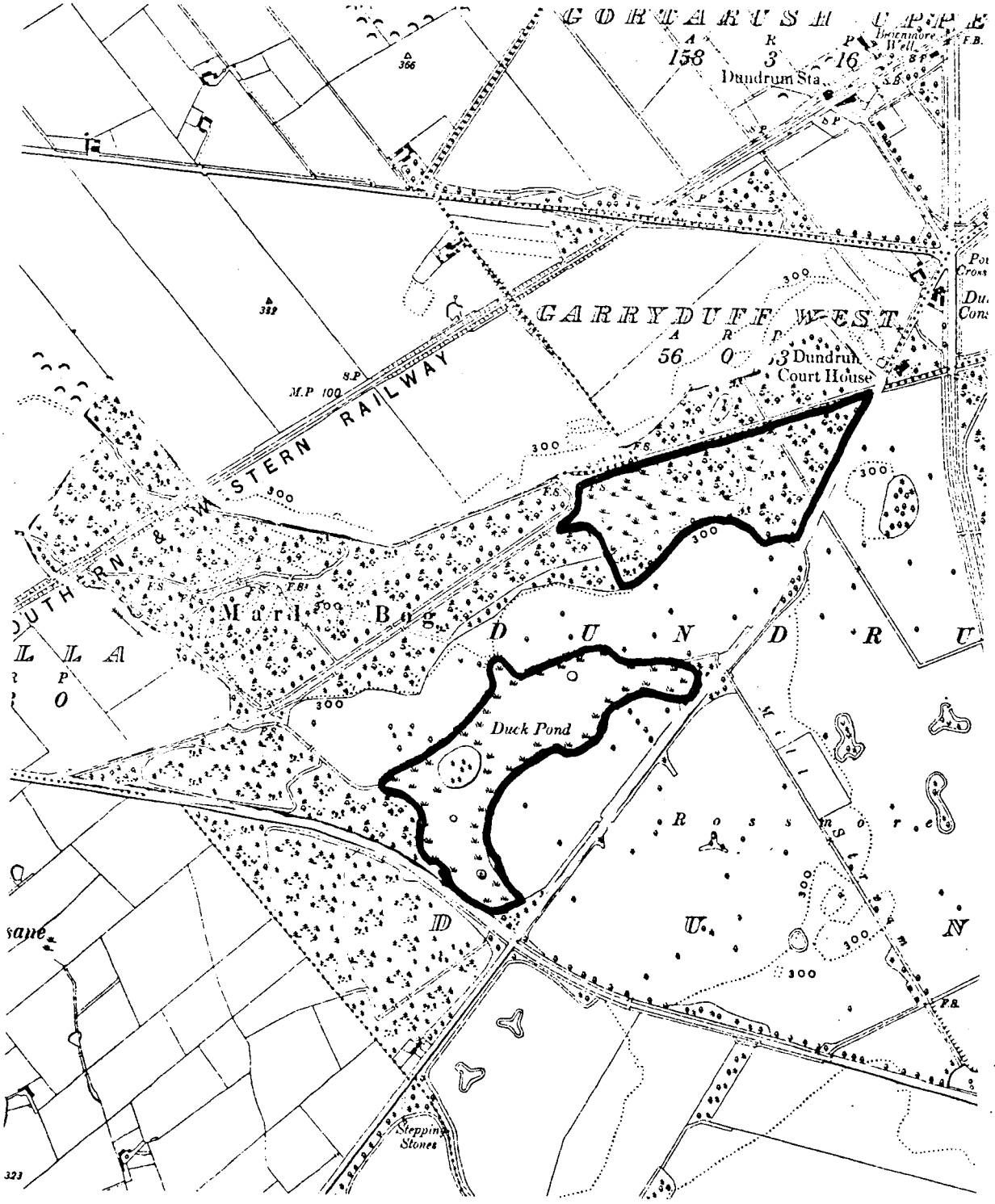
While the fate of this area as a forest seems to be assured there are aspects of its development which could be improved. A universal plantation of similarly aged trees which are closely packed could adversely affect existing values at the area. The long term effects of drainage could also prove unfavourable to the plants and animals already occurring in the forest.

Recommendations

No representations by the Local Authority need be made to the Department of Lands but some suggestions might be usefully passed on. Some major points are as follows: The planting regimen for coniferous

MAP SHOWING AREA OF SCIENTIFIC INTEREST —

Scale: 6 Inches to 1 Mile



trees should include small block clearance rather than large scale timber removal at any time. As high a proportion of deciduous trees as possible should be planted with coniferous species. Trees should not be planted too close to the wildfowl habitat. The land is likely to be suitable for oak growth and regeneration and this species should be set as a high proportion of deciduous species planted. Deer are numerous in the forest and should be controlled.

Name of Area	SCARAGH WOOD
Acreage	26 acres
Grid Reference	S.020,250
Scientific interest	Ecological, botanical and zooligical
Rating	Local importance
Priority	A

Description of the area and its evaluation

The site which is shown on the accompanying 6" map is a large area of coniferous afforestation which replaces an earlier oak wood. The remnants of ground and shrub flora indicate that this forest was at one time a very good example of oak woodland. Sarothamnus scoparius (broom) and holly survive in small amounts with a depleted but still representative ground flora. Vaccinium myrtillus (bilberry) and Luzula sylvatica (greater wood rush) are common with such calcifuge species as Melampyrum sylvaticum (cow wheat) and Lathyrus montanus (bitter vetch).

The forest is a large one and the best remaining oaks are in the area outlined on the accompanying map. Oak regeneration was examined and found to be good except where inhibited by Rhododendron.

Threats to the Area

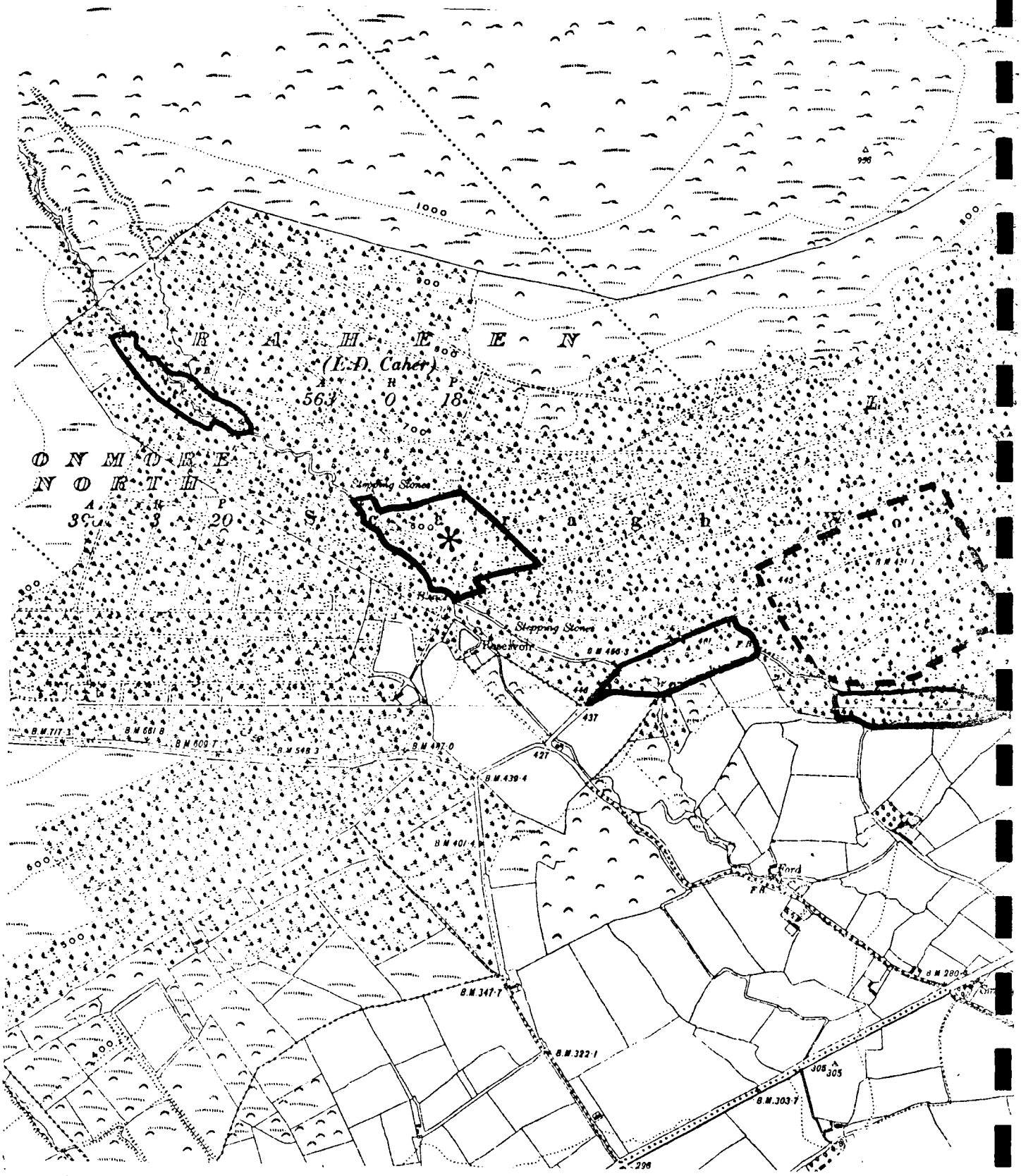
The most obvious is the progressive replacement of deciduous trees with conifers. Rhododendron is well established especially where asterisked and may yet over-run the wood completely to the detriment of the remaining scientific interest.

Recommendations

This site is under the control of the Department of Lands, but it is a large one and close to a centre of population.

MAP SHOWING AREA OF SCIENTIFIC INTEREST —

Scale: 6 Inches to 1 Mile



Thus the local authority will have an interest in it and should see that it is utilised for as many purposes as possible (education, recreation, amenity). Deciduous planting would enhance visual aspects of the woods as well as its scientific interest and oak would be a suitable species for use here - especially in view of its regenerative status. The area outlined (broken line) on the accompanying map should be considered as a likely place for concentrating oak seedlings or permitting regeneration to proceed naturally without the inhibitive effects of coniferous plantings. Representations to this effect could be made to the Forest and Wildlife Service by the Local Authority.

Name of area	CAHIR PARK WOODLAND
Acreage	52 acres
Grid reference	S. o52, 234
Scientific interest	Ecological, ornithological
Rating	Local importance
Priority	B

Description of the area

Several small woods occur in Cahir Park, some of the best being on the valley sides overlooking the River Suir. Here they are composed mainly of planted deciduous trees, oak, beech and elm being common. These are well grown and reach a large size while some individual trees of lime (Tilia europaea) and chestnut (Hippocastaneum) are present also. The shrub layer consists of holly, (Ilex aquifolium), laurel (Prunus laurocerasus), snowberry (Symphoricarpos rivularis), privet (Ligustrum spp.), rhododendron, and some Viburnum opulus (guelder rose), almost all of introduced origin. However, native species of herbs have immigrated into this foreign assemblage; they include:-

Glechoma hederacea	ground ivy	c
Veronica chamedrys	germander speedwell	c
V. montana	wood speedwell	o
Alliaria petiolata	garlic mustard	l.c.
Endymion non-scriptus	bluebell	f
Brachypodium sylvaticum	false brome-grass	f
Sanicula europaea	wood sanicle	f
Dryopteris filix-mas	male fern	f
Moehringia trinerva	three-veined sandwort	o

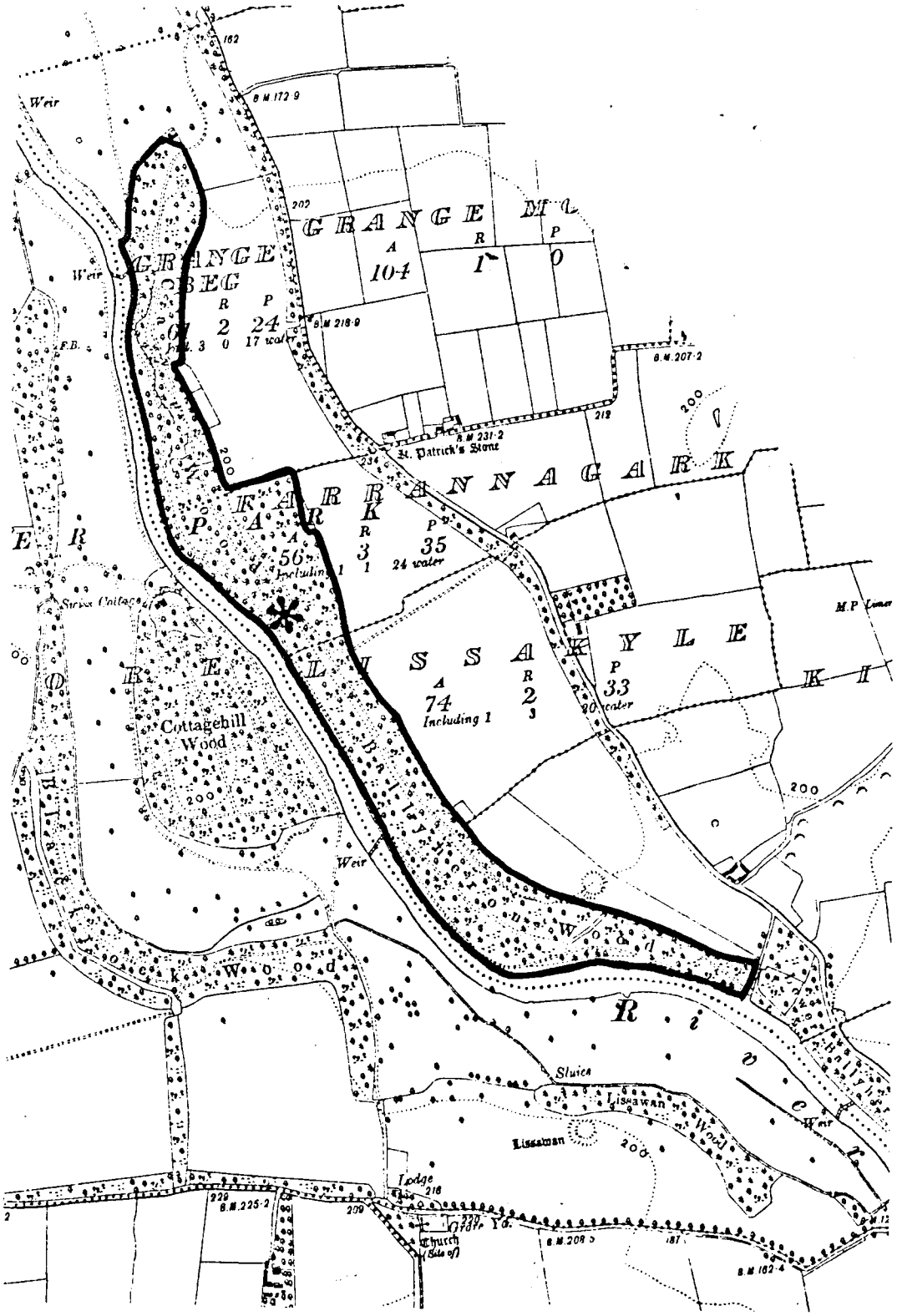
Herb cover is in general scanty but this may partly be due to intensive grazing by rabbits.

Evaluation

Like woods on the Waterford border the Cahir Park trees are of greater significance for amenity rather than of purely scientific interest. The fact that part of the site (how much is not certain) is an established recreation centre is relevent to the amenity values of the area.

MAP SHOWING AREA OF SCIENTIFIC INTEREST —

Scale: 6 Inches to 1 Mile



In scientific terms neither the parent trees, shrubs or herbs are of great interest because of their obviously artificial origin. Even the oak wood comprises trees of one bole size, suggesting a planted origin. However, the bird fauna is interesting and includes blackcaps. The proximity of a large waterbody contributes an admixture of habitats which is reflected in the bird fauna (herons, for example, occur). Red squirrels are common in the woods and other large mammals (fox and badger) are likely. The insect fauna includes typical bark and foliage frequenting species, large Diptera (two-winged flies) and Coleoptera (beetles). Again, the proximity of water contributes diversity to the invertebrates which are present.

Threats to the Area

None is obvious here at present. Deciduous trees are being planted and it is hoped that replacement of existing stock by the same species as they reach maturity and are renewed will continue.

Recommendations

The proximity of these woods to a town and the use of part of the area concerned for recreation purposes underlines the value of the site for amenity purposes. It would be useful to consider the likely pattern of recreation here further and, if necessary, to devise a plan to offset pressures. The scientific aspects of the area should be developed, at least in places. A nature trail would be a good idea - possibly in the small forest park. Here rhododendron should be eradicated immediately anyway and, indeed, any likely source of infection of the plant from seed should be combatted at once anywhere in the area outlined.

Name of Area	KNOCKANAVAR WOOD
Acreage	40 acres
Grid Reference	R.863,503
Scientific Interest	Ecological, botanical and zoological
Rating	Local importance
Priority	B

Description of the area and evaluation

This site, shown on the accompanying map, is a steep sided river valley containing deciduous woods which consist of hazel, birch, rowan and some oak. Most of these species are regenerating well although the development of new timber varies somewhat with the presence of grazing animals at different points along the valley.

Where the tree canopy is best developed there is profuse growth of woodland ground flora, dominated by Luzula sylvatica (greater wood rush) and Vaccinuim myrtillus (bilberry). The usual range of woodland herbs occur with these and the invertebrate fauna includes some spectacular insect species, notably Longicorn beetles. The usual mammal species are likely to occur and the presence of foxes, rabbits and red squirrels was confirmed. Passerine birds are likely to consist of the usual range of species.

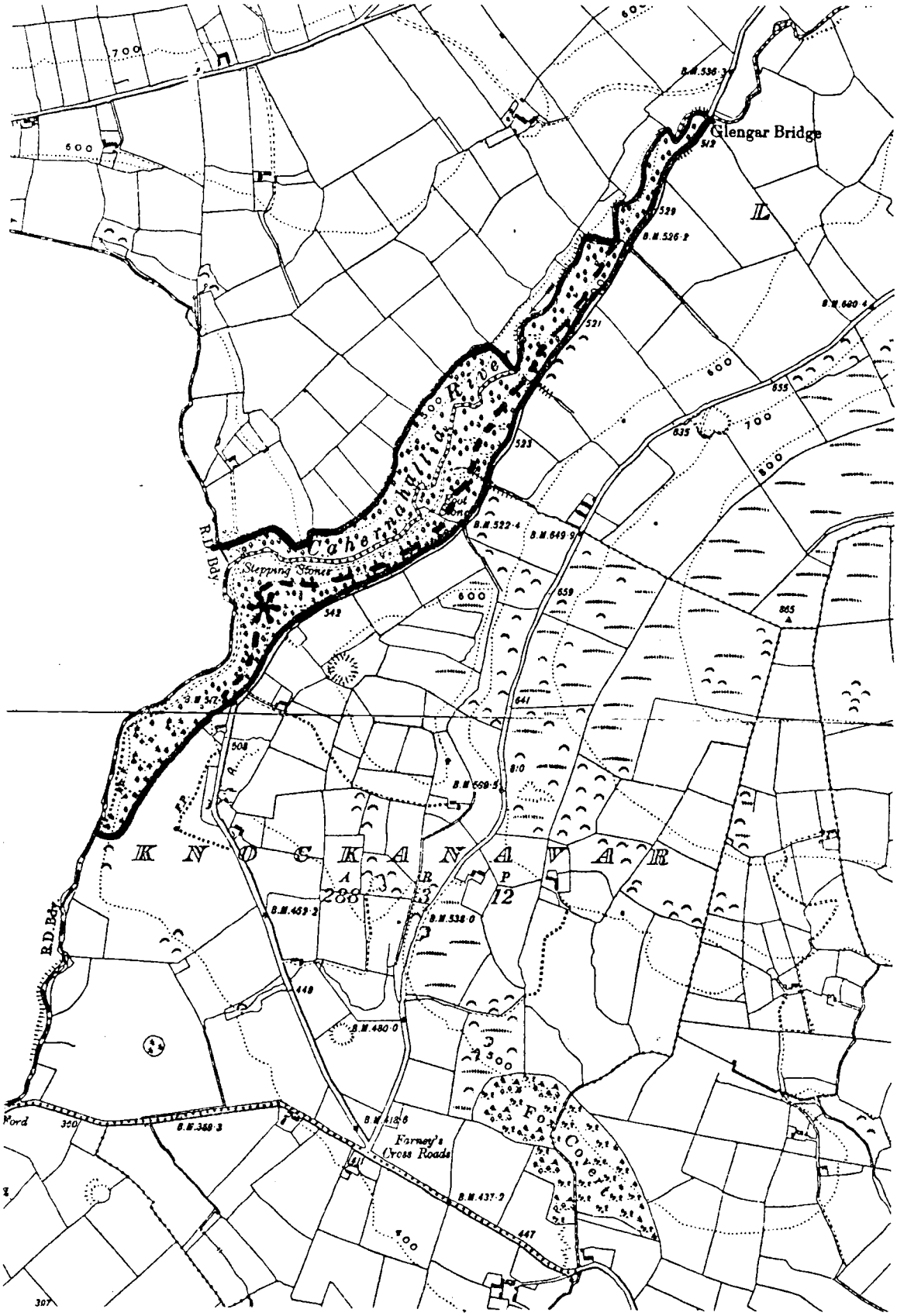
Because of its steep sides most of this valley is likely to remain untouched (but see below). It is thus a reservoir of typical plant and animal life which will survive with the minimum of protection.

Threats to the Area

The only likely development in this valley is replanting with coniferous trees and this would be difficult in most of the area because of the steep sides. Part of the flatter land (marked with an asterisk)

MAP SHOWING AREA OF SCIENTIFIC INTEREST

Scale: 6 Inches to 1 Mile



however appears to be in the course of clearance and it is likely that coniferous trees might be set here.

Recommendations

It is desirable that as much as possible of this valley should remain in its present state because of its occurrence in cultivated land, and its relatively undisturbed state. Whenever action to secure this is initiated the precise extent of coniferous woods (*) should be determined. Should these extend far in a north-south direction, it might be as well to remove some of the coniferous plantings. If it is not possible to maintain the entire valley in its present state then the 500 foot contour on the eastern side should be agreed as the limit of any development encroaching on the trees. A Tree Preservation Order under the Local Government Planning Act (1963) should be used only as a last resort to achieve this end and a management agreement with the owner(s) should instead be sought. Most important, if a T.P.O. is to be used, other areas of equal rating and priority but of larger size elsewhere in the county should be dealt with first.

Name of Area	SHANBALLY WOOD
Acreage	42 acres
Grid reference	R. 971, 150
Scientific Interest	Ecological, botanical, zoological
Rating	Local importance
Priority	B

Description of the Area

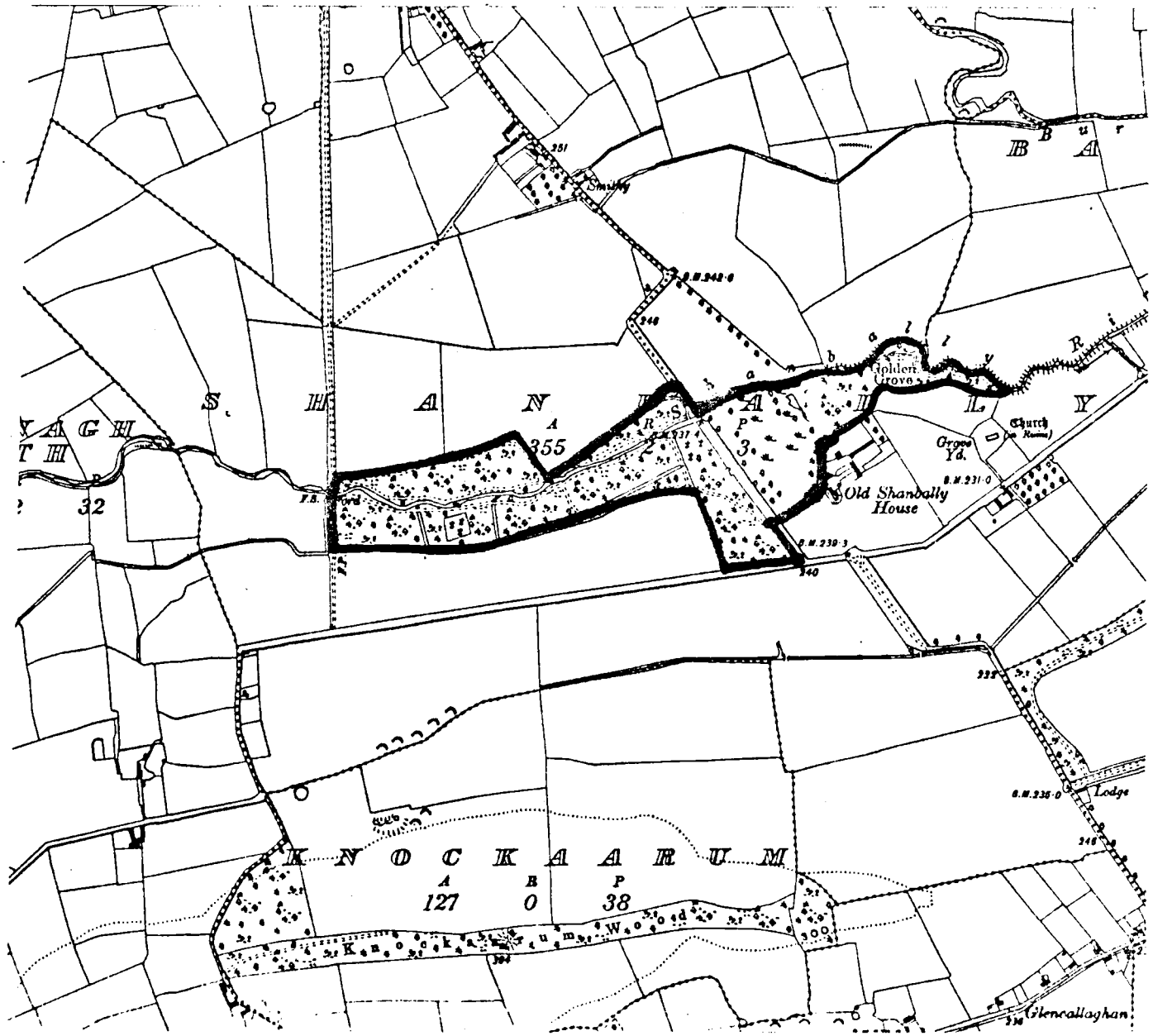
This site is a small planted wood consisting of beech, ash, sycamore and some oak. The shrub layer contains hawthorn, elder, holly, box and rhododendrom which, so far, is limited in extent. The eastern side of the site is predominantly of beech and there are some wet patches occupied by Iris pseudacorus (yellow flag). On the other side of the road which subdivides the area into two parts shallow drainage channels concentrate the water. However the land is low lying and the flora is characteristic of wet woodland, the range of species including Iris, Ajuga reptans (bugle) and Filipendula ulmaria (meadowsweet) in addition to the usual herbs:

Orchis mascula	early purple orchid	l.c.
Sanicula europaea	wood sanicle	r.
Geranium robertianum	herb robert	c.
Arum maculatum	arum lily	c.
Rumex sp.	dock	c.
Primula vulgaris	primrose	c.
Conopodium majus	pignut	c.
Viola riviniana	dog violet	c.
Equisetum spp.	horsetail	l.c.
Endymion non-scriptus	bluebell	l.a.
Ranunculus	buttercup	c.

The passerine bird fauna comprises some common species which were present in moderate numbers but rarities were not in evidence. Invertebrates present were the usual range of generally distributed insects and molluscs. Bark frequenting insect species were briefly examined and found to include species normally found in woodlands of this kind; there was no sign of representatives of the Southern element of Neuroptera and Psocoptera which might be expected at this latitude.

MAP SHOWING AREA OF SCIENTIFIC INTEREST —

Scale: 6 Inches to 1 Mile



Evaluation

This small woodland is one of a few patches of trees in a predominantly cultivated area.

Threats to the Area

Being wet probably throughout the year this land is not likely to be used for agricultural purposes. It is possible however that "commercial" forestry might replace the trees already existing here.

Fly tipping of domestic rubbish is occurring in the western side of the site and is likely, if not checked, to continue on a more extensive scale. At worst this could obliterate part of the ground flora or, at least, make the site an unpleasant place to visit or in which to work.

Recommendations

This site should remain in its present state although, ideally, it could be improved by addition of more beech or even oak. Conifers, if planted at all, should be set judiciously with consideration for the existing scientific values of the site. The spread of rhododendron which is occurring should be checked by eradicating this shrub altogether and casual dumping of refuse should be stopped. It would be desirable to discontinue any enlargement of the drainage channels on the western side of the site.

It may be necessary to impose a Tree Preservation Order under the Local Government Planning Act (1963) to maintain the scientific values of this area. Otherwise general planning control should suffice.

Name of Area	CARROWKEALE WOODS
Acreage	34 acres
Grid reference	R.965,510
Scientific interest	Ecological, botanical, zoological and ornithological
Rating	Local importance
Priority	B

Description of the Area

The site which is outlined on the accompanying map is a steep-sided river valley. The northern end of the wood which occupies most of the site was visited (where marked with an asterisk) but it was not feasible to verify all the scrub boundaries on the O.S. 6" map. Some small patches of marshland occur on the eastern bank and here the flora consists of:

Equisetum sylvaticum	horsetail	l.c.
Filipendula ulmaria	meadowsweet	a.
Carex paniculata	panicle sedge	l.a.
Holcus lanatus	yorkshire fog grass	c.
Rubus fruticosus agg.	bramble	c.

The most common tree species in the woods is Sorbus aucuparia (rowan): birch and Salix spp. (willows) come next in frequency and there is some oak. Crataegus (hawthorn) and holly form a shrub layer and the ground surface is bare in places. The usual woodland herbs are represented.

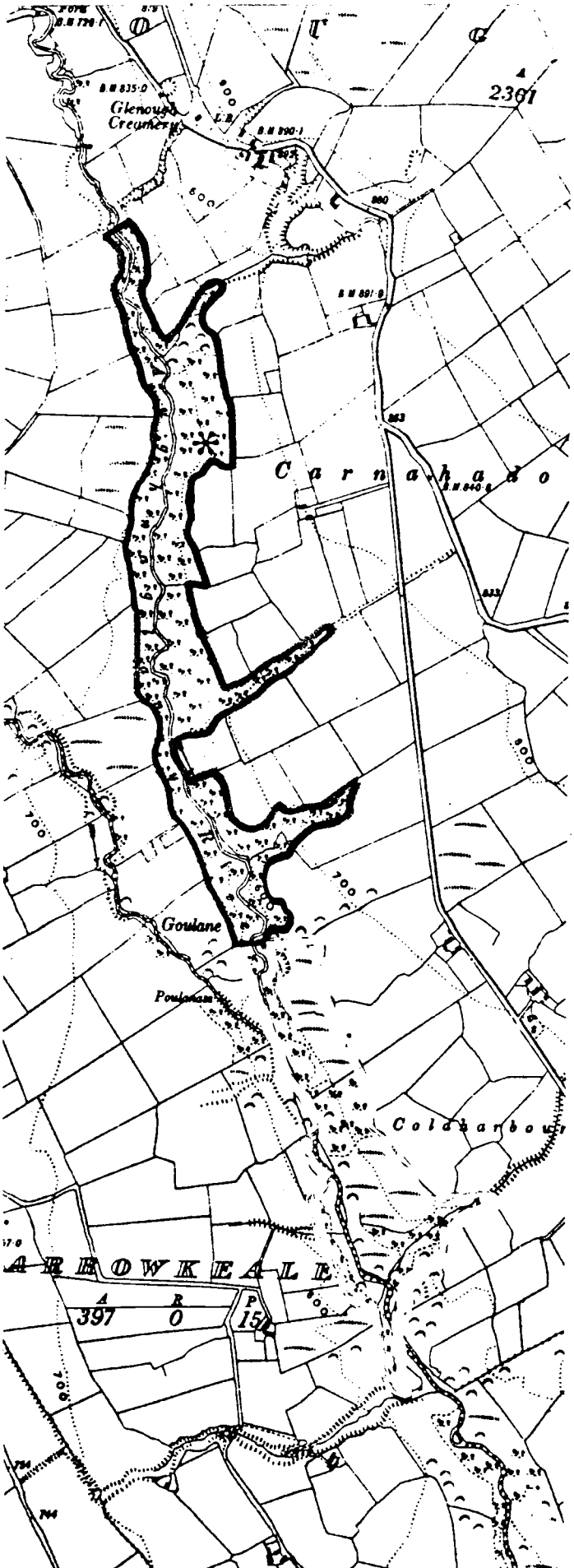
The valley is, from its topography and vegetation, a potentially rich area for birds, invertebrates and medium sized and small mammals. Signs of fox and squirrels were both seen.

Evaluation

The site is a reservoir of typical plants and animals in this vicinity. In composition it is similar to Knockanavar Wood and both are the more valuable for being in largely cultivated areas and for having a topographical configuration which does not lend itself to agricultural practises. Basic protection would therefore serve to maintain the

MAP SHOWING AREA OF SCIENTIFIC INTEREST —

Scale: 6 Inches to 1 Mile



scientific interests here (but see below) and the fauna and flora should be maintained with the minimum of effort.

Threats to the Area

The only likely development in Carrowkeale Valley is confferous afforestation which would displace existing deciduous woods.

Recommendations

Every effort should be made to maintain the existing diversity of these woods. Particularly important will be the percentage of deciduous trees and, even if these are reduced, a sizeable proportion would, in the event of partial replanting with conifers, suffice to maintain the floral and faunal variety of the site.

General planning control should be exercised in this valley to maintain existing values there.

Name of area	GLENBOY WOOD
Acreage	31 acres
Grid reference	S. 12, 09
Scientific interest	Ecological
Rating	Local
Priority	B

Description and evaluation of the area

The outlined area contains a small area of mature oakwood and a much larger one of birchwood. This was more widespread before it was mostly cleared for afforestation: it persists especially by the upper tributaries of the Glenboy River. The oak stands are on wet shaley soil and include such characteristic species as:-

Luzula sylvatica	greater woodrush	l.a.
Stellaria holostea	greater stitchwort	c
Anthoxanthum odoratum	sweet vernal grass	c
Athyrium filix-femina	lady fern	c
Vaccinium myrtillus	bilberry	c
Lonicera periclymenum	honeysuckle	c
Blechnum spicant	hard fern	f
Oxalis acetosella	wood sorrel	f
Deschampsia flexuosa	wavy hair-grass	f
Digitalis purpurea	foxglove	f
Dryopteris filix-mas	male fern	o
Dicranum majus	a moss	o
Luzula pilosa	spring woodrush	o

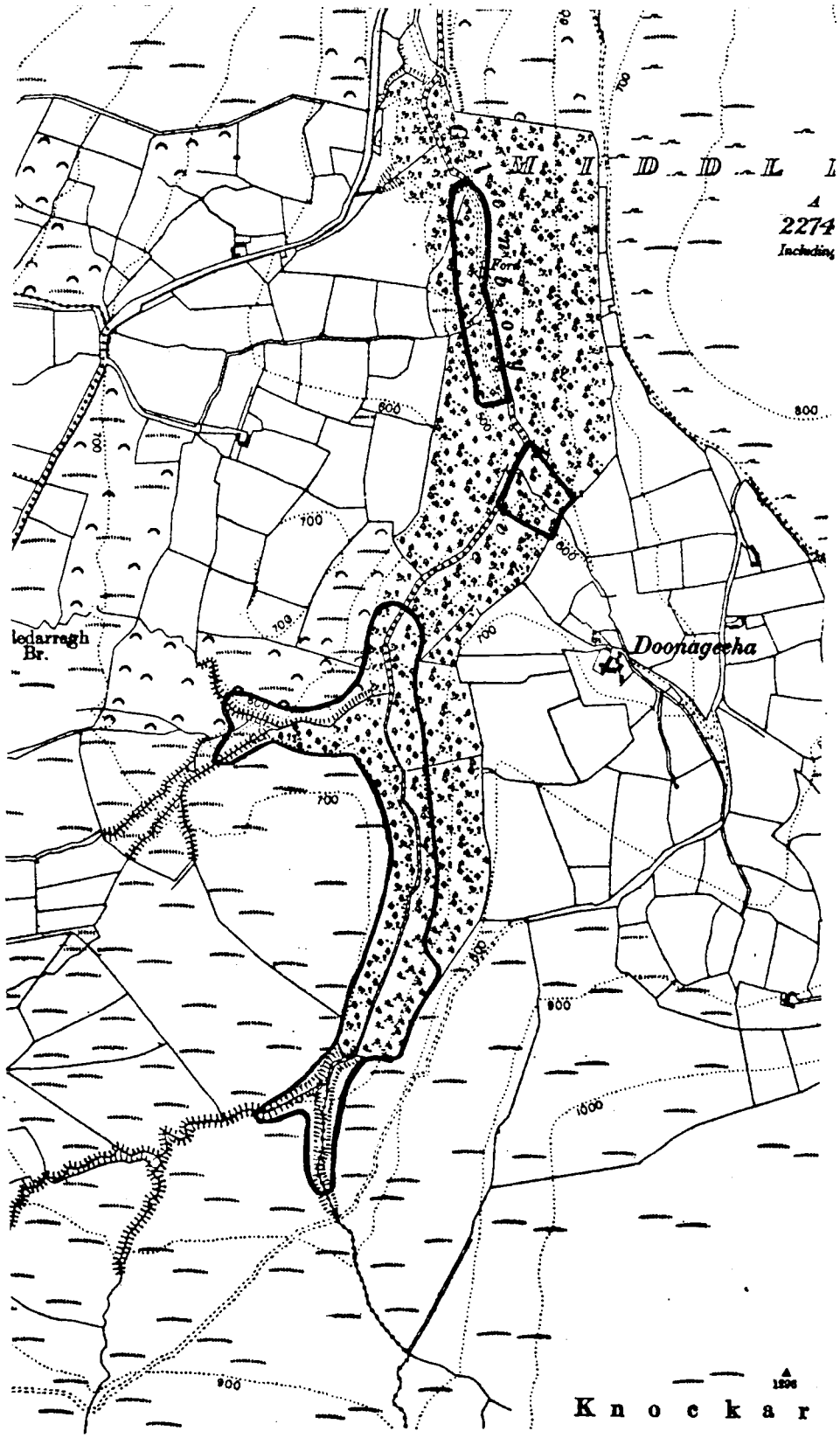
A number of ash trees occur by the river and reach 60 feet in sheltered situations. Rowan (Sorbus aucuparia) and birch (Betula pubescens) with holly (Ilex aquifolium) make up the complement of tree species.

The parts of the area dominated by birch were not examined closely but can be expected to have a similar flora including more light-demanding species such as bracken (Pteridium aquilinum) and brambles (Rubus fruticosus).

In a region where deciduous woodland is rare, this area houses a concentration of the mammals and birds that depend on it for their way

MAP SHOWING AREA OF SCIENTIFIC INTEREST —

Scale: 6 Inches to 1 Mile



of life. It is far from schools but has considerable amenity value when seen from the overlooking roads. One of these seems to be developing as a scenic route on the Knockmealdowns. The birch wood community is rare in the county and this is one of only two sites listed. It usually shows a tendancy to develop naturally into oakwood and so is of some ecological interest.

Vulnerability

Coniferous afforestation has been encroaching on the present area for several years and may continue to spread.

Recommendations

An agreement with the Forestry Division should be sought to preserve intact the stands of trees shown overleaf. This should be initiated by the County Council in their role as preservers of woods and trees of amenity value or special interest.

Name of Area	KNOCKROE FOX COVERT
Acreage	28 acres
Grid reference	S.032,385
Scientific Interest	Ecological, botanical and zoological
Rating	Local importance
Priority	C

Description of the area and evaluation

The site which is shown on the accompanying map is a small hazel wood in an undisturbed state. The southern boundary is formed of a thick Prunus spinosa "hedge" and the northern side is fairly steep hill. The ground flora consists of the following plants.

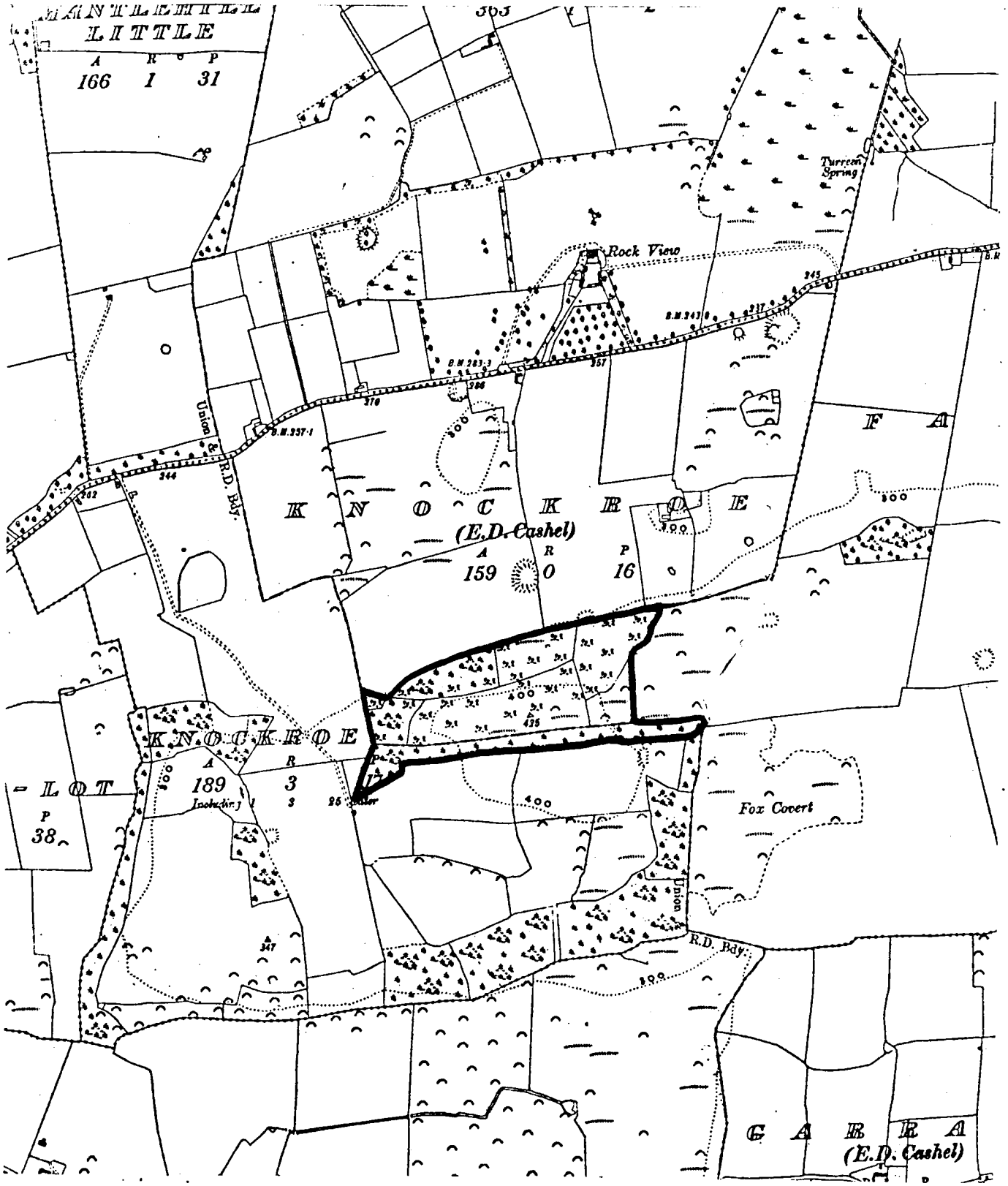
Lysimachia nemorum	yellow pimpernel	c
Endymion non-scriptus	bluebell	l.a.
Lonicera periclymenum	honeysuckle	c
Arum maculatum	arum lily	c
Primula vulgaris	primrose	c
Fragaria vesca	wild strawberry	c
Orchis mascula	early purple orchid	r
Sanicula europaea	wood sanicle	c
Conopodium majus	pignut	c
Circaea lutetiana	enchanter's nightshade	c
Allium ursinum	wild garlic	l.a.
Glechoma hederacaea	ground ivy	r

Shrubs and trees include box, hawthorn and apple.

From the list of ground flora and trees presented above this wood clearly has a typical flora. There were no signs of cattle when the site was examined and a well marked path runs down the southern edge of the woods leaving the herb flora undisturbed.

MAP SHOWING AREA OF SCIENTIFIC INTEREST —

Scale: 6 Inches to 1 Mile



Foxes and squirrels are present together with a moderate number of passerine birds. The site is some distance away from likely disturbance which is an additional point in its favour.

Threats to the area

None seems likely at present and the area has the appearance of being purposely maintained in its present condition. The surrounding land is however productive and the possibility of clearing the A.S.I. and putting it under grass will always be there.

Recommendations

The site should be kept under review and, if threatened, steps should be taken to preserve it, possibly by use of a Tree Preservation Order under the Local Government Planning Act, 1963. This action is not recommended in the foreseeable future however.

Name of Area	POWER'S WOOD
Acreage	13 acres
Grid Reference	S.177, 380
Scientific Interest	Ecological, botanical, zoological and ornithological
Rating	Local importance
Priority	C(?)

Description and evaluation of the area

This small wood (shown on the accompanying map) consists of ash and hazel, as do the majority of South Tipperary's woods. There is some oak, beech and holly here also. The ground flora contains a range of typical species among which honeysuckle, bramble and bluebell are dominant. The wood is in an undisturbed condition, old trees which have fallen are rotting and there has apparently been no attempt to harvest them. The wood has an aspect of neglect, a feature which contributes to the diversity of the animal life which occurs there. Passerine birds are numerous although the species represented are widespread. Although the site is small and not very close to a centre of population for purely scientific reasons it would be desirable to maintain it.

Threats to the area

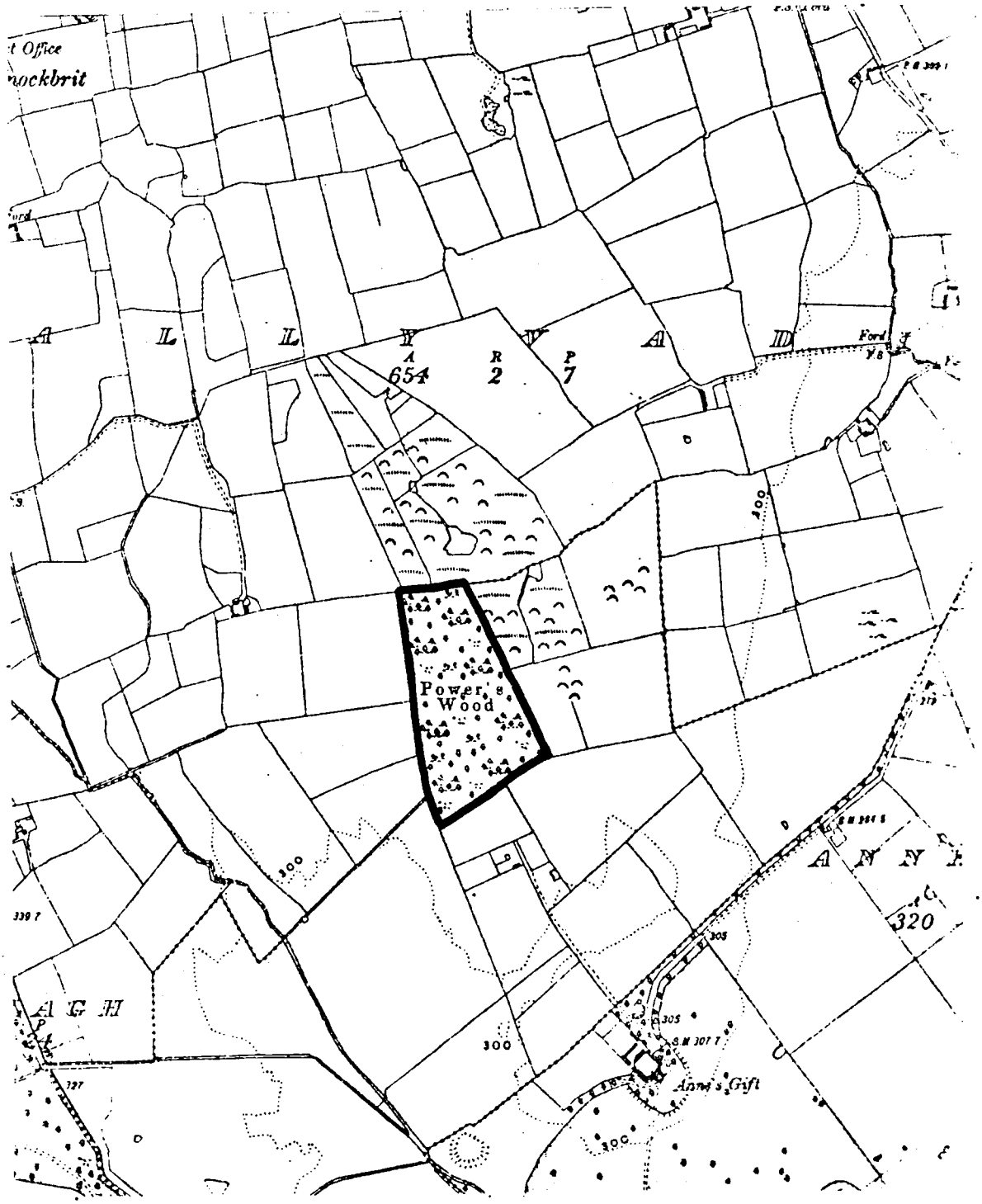
It would be unrealistic to suppose that this site will remain as it is indefinitely and steps should be taken by the Local Authority to discover what plans, if any, exist for it.

Recommendations

It would not be desirable to place either a Conservation Order or a Tree Preservation Order under the Local Government Planning and Development Act (1963) until other sites of greater importance have been dealt with. In the meantime a management agreement with the owner should be sought. If a T.P.O. and C.O. are used in the future, beech should be excluded from its protection.

MAP SHOWING AREA OF SCIENTIFIC INTEREST —

Scale: 6 Inches to 1 Mile



Name of area	ARDMAYLE LILY POND
Acreage	4 acres
Grid reference	S. 053, 453
Scientific interest	Ecological
Rating	Local importance
Priority	C

Description of the area and its evaluation

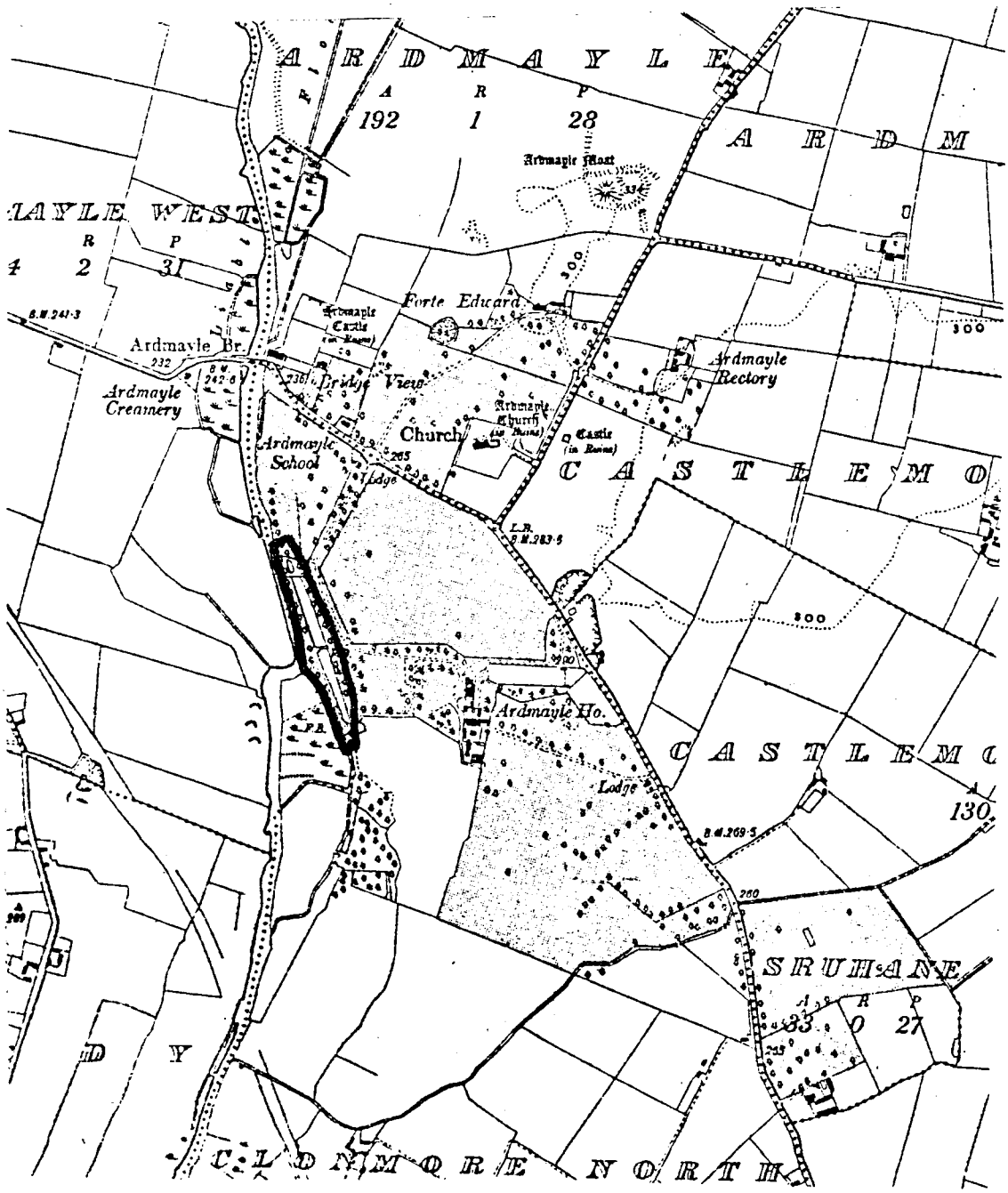
The site is shown on the accompanying 6" map. It is a long, narrow, possibly artificially excavated pond, parallel with the River Suir. Each side is bordered with lime, sycamore and alder trees while the shallow water is occupied by Iris pseudacorus (yellow flag), Sparganium erectum (bur reed) and Carex remota (remote sedge). The surface of the pond supports Nuphar lutea (yellow water lily) and Nymphaea alba (white water lily) with Elodea canadensis (Canadian pond weed) and Utricularia vulgaris (bladder wort) submerged. Around the waterbody the mud is vegetated by Lycopus europaeus (Gipsywort), Equisetum fluviatile (water horsetail) and some Phalaris (canary grass).

Into the still water of the pond have moved invertebrates from the nearby river. Those which would normally dwell in sluggish or still waters are established and, although this fauna could not be said to be profuse, still waters with a fairly open surface are rare in the county, thus contributing a scarcity value to this site. Gyrinus (Coleoptera), Asellus (Crustacea), Corixidae (Hemiptera), cased caddis and the snail Lymnaea peregra are the most obvious forms of life and small Cladocera (water fleas) and Copepoda (small crustacea) are also common.

The main value of this pond is its close approximation to a small centre of population to which it may be of educational value. The pond might support small numbers of wild-fowl in winter.

MAP SHOWING AREA OF SCIENTIFIC INTEREST —

Scale: 6 Inches to 1 Mile



Threats to the area

None is obvious although eutrophication by animal waste is a possibility.

Recommendations

The low values of the site do not warrant any action on it.

Name of area	KILCOOLY ABBEY LAKE
Acreage	10 acres
Grid reference	S. 298, 581
Scientific interest	Ornithological, botanical and ecological
Rating	Local importance
Priority	C

Description of the area and its evaluation

The small lake shown on the accompanying map displays signs of being man-made although it probably originated as wet, low lying ground which was later shaped to its present form by a previous occupant of the estate. Some modification of the shoreline is still continuing. The lake is managed as a wildfowl sanctuary, possibly for shooting purposes and nest boxes are distributed around the margin. The summer population of wildfowl and waterbirds was very small when the site was visited and winter counts are not available. However, the lake surface is one of the largest areas of open water in the south Riding and as such is the only feeding place in a large area for waterbirds.

The lake water supports a varied flora including a species of Utricularia (bladderwort), Chara (stonewort) and Typha (bulrush), the latter forming a marginal band. Typha angustifolia (narrow leaved bulrush), which is rare in Ireland, occurs there.

Threats to the area

As long as the estate remains intact it is likely that the present use of the lake will continue. No threat seems likely although the present situation could be improved (see below).

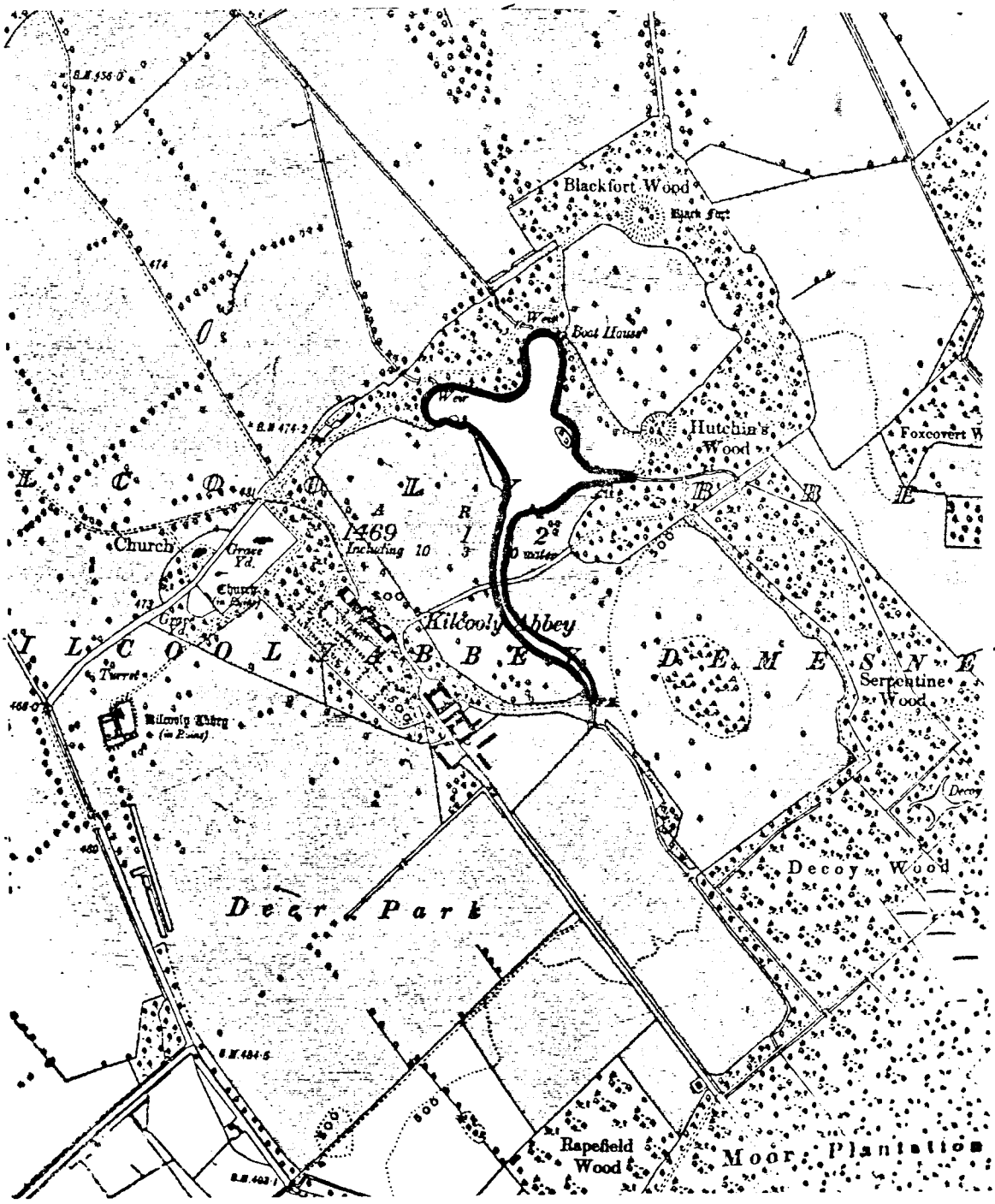
Recommendations

In view of the scarcity of open water in the south Riding every effort should be made to continue the present form of land use on the Abbey grounds. General recommendations which could be made in passing

but on which no specific action is at present required are: a partial clearance of trees from the immediate lake side would give greater visibility to wildfowl and possibly encourage them in larger numbers. The estate grounds have other features of scientific interest (the woods contain deer for example) which might be used as an attraction and for educational purposes in the future. Survey work to discover the full range of fauna and flora should be encouraged. The future of the wildfowl reserve will depend largely on the form of land use in the vicinity. The only specific recommendation made here therefore is that any development within the estate boundaries should be referred to An Foras before planning permission is granted so that its implications might be considered.

MAP SHOWING AREA OF SCIENTIFIC INTEREST —

Scale: 6 Inches to 1 Mile



SECTION G

SUMMARY OF RECOMMENDATIONS FOR SITES OF SCIENTIFIC INTEREST IN CO. TIPPERARY (S.R.)

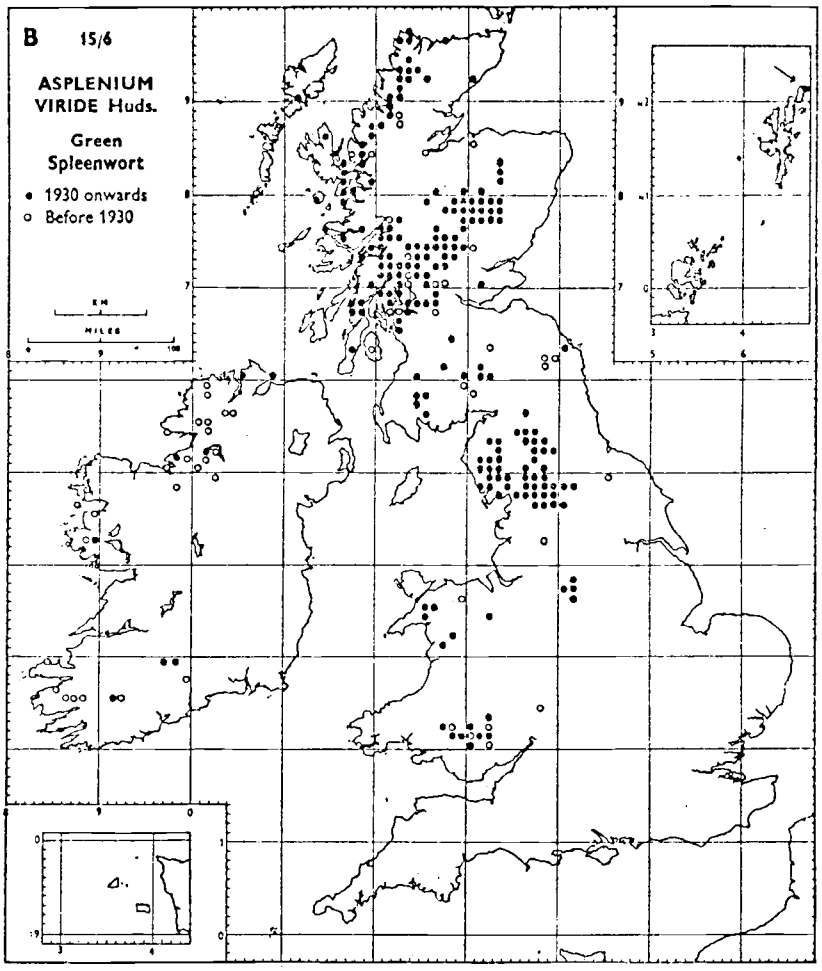
	No Action Required	General Planning Control	Conservation Order	Tree Preservation Order	Action Other, Refer to Site Description
Ballymacadam	*				
Exposures of Weichsel End Moraine (3 Sites)		*			
Galtee Mountains			*		
Hollyford Quarry		*			
Knockastakeen Forest	*				
Killough Hill			*		
Glen of Aherlow (2 Sites)	*				
Inchinsquillib Wood				*	
Grove Wood, Fethard				*	
Marshes and Ponds near Annacarty (6 Sites)			*		

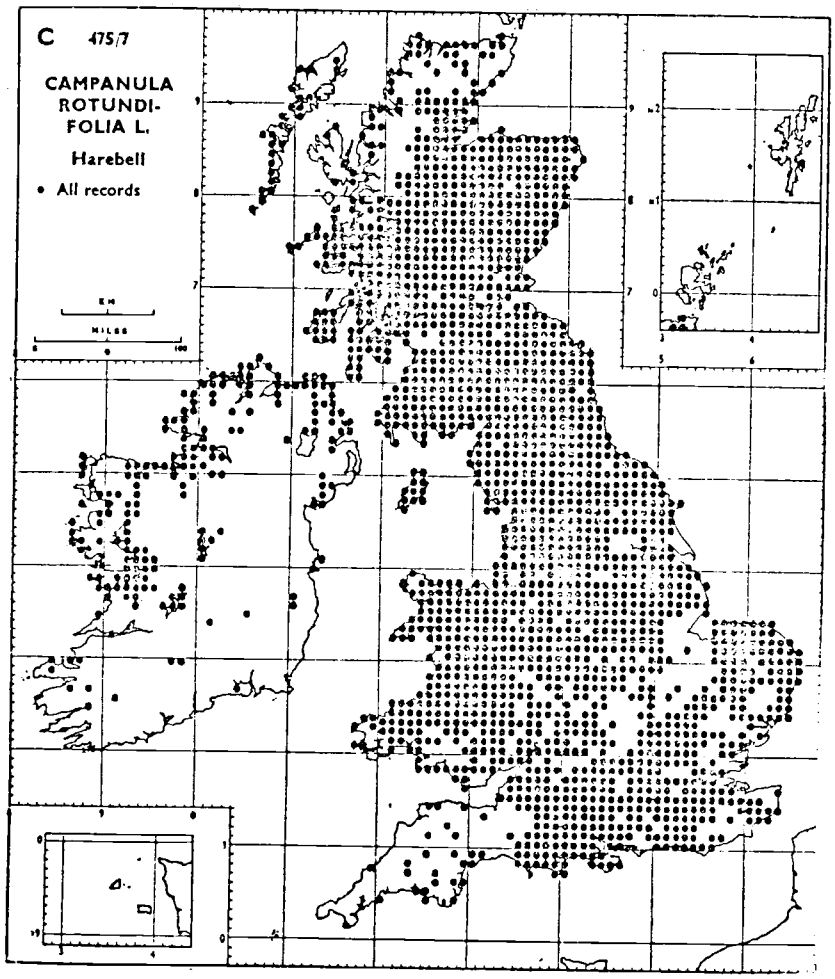
	No action Required.	General Planning Control	Conservation Order	Tree Preservation Order	Action Other, Refer to Site Description
Suir below Carrick-on-Suir					*
Mitchelstown Caves	*				
Dundrum Sanctuary	*				
Scaragh Wood					*
Cahir Park Woodland					*
Knockanavar Wood				*	
Shanbally Wood				*	
Carrowkeale Woods		*			
Glenboy Wood					*
Knockroe Fox Covert				*	
Power's Wood				*	
Ardmayle Lily Pond	*				
Kilcooly Abbey Lake					*

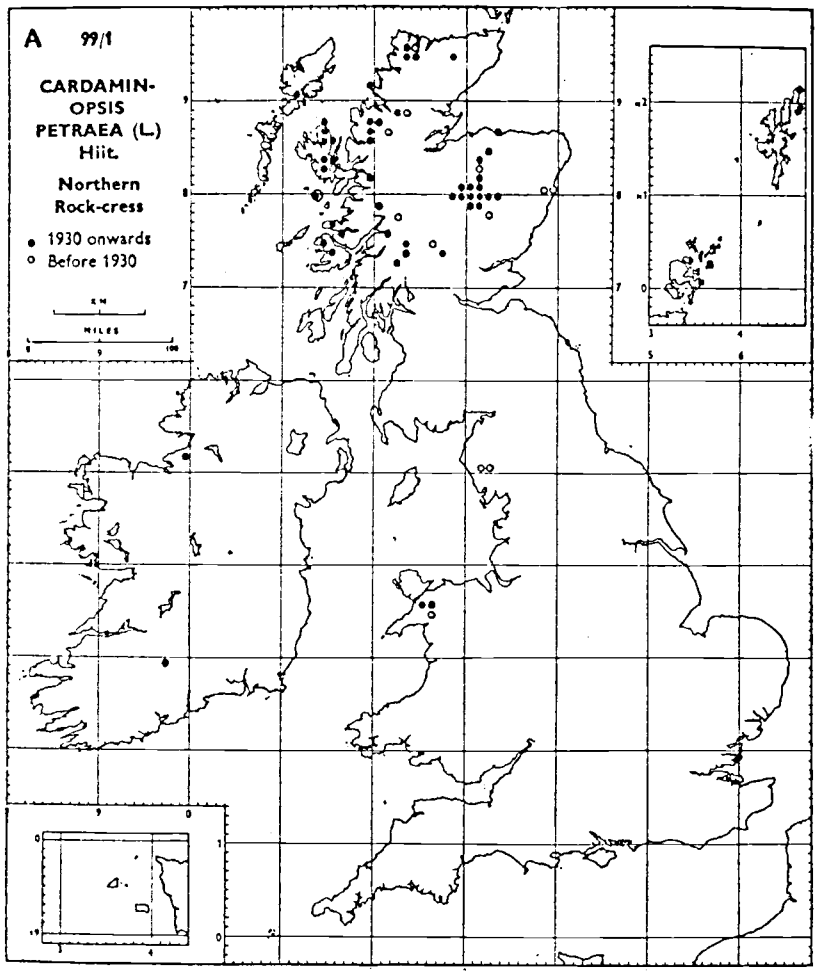
SECTION H

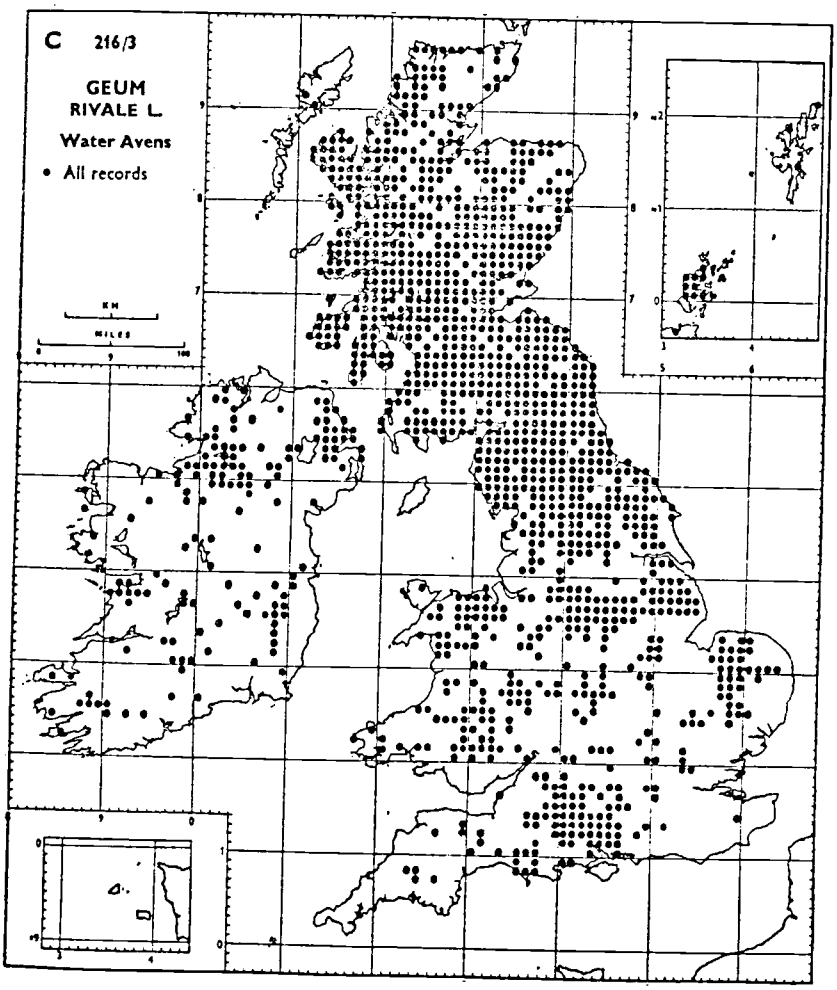
The distribution in Ireland and Britain of some of the rarer plant species mentioned in this report (From: Atlas of the British Flora by F.H. Perring & S.M. Walters B.S.B.I. 1962).

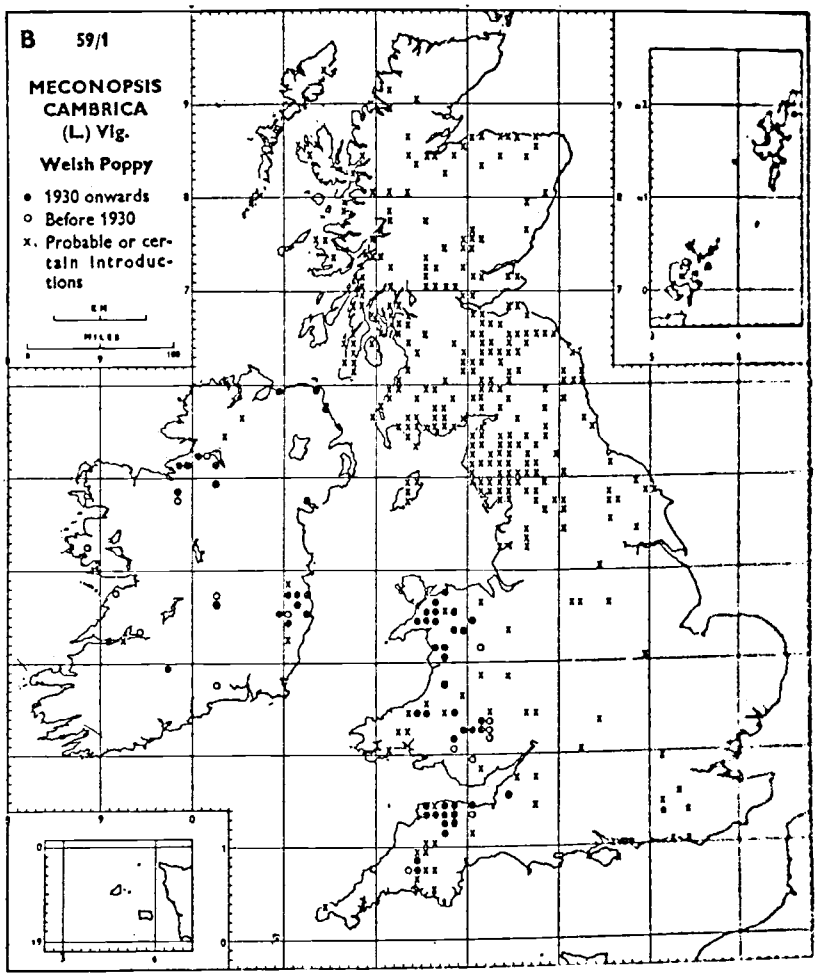
Plant names are arranged in alphabetical order.

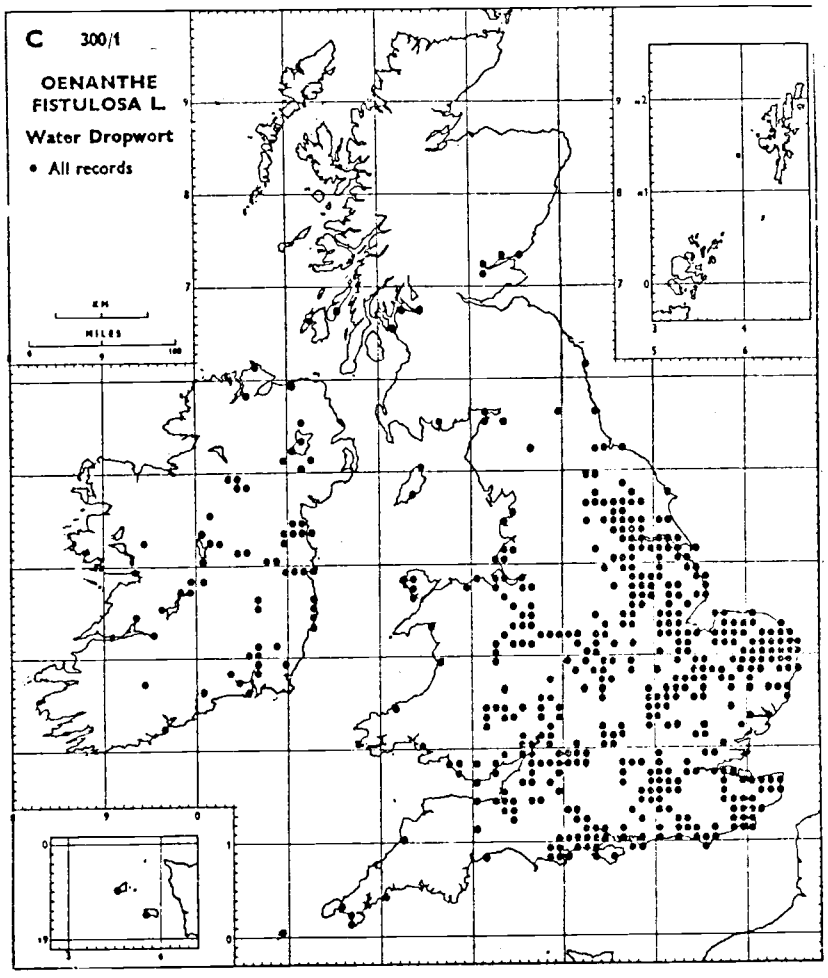

B 15/6
ASPLENIUM VIRIDE Huds.
Green Spleenwort
• 1930 onwards
○ Before 1930
KM
MILES

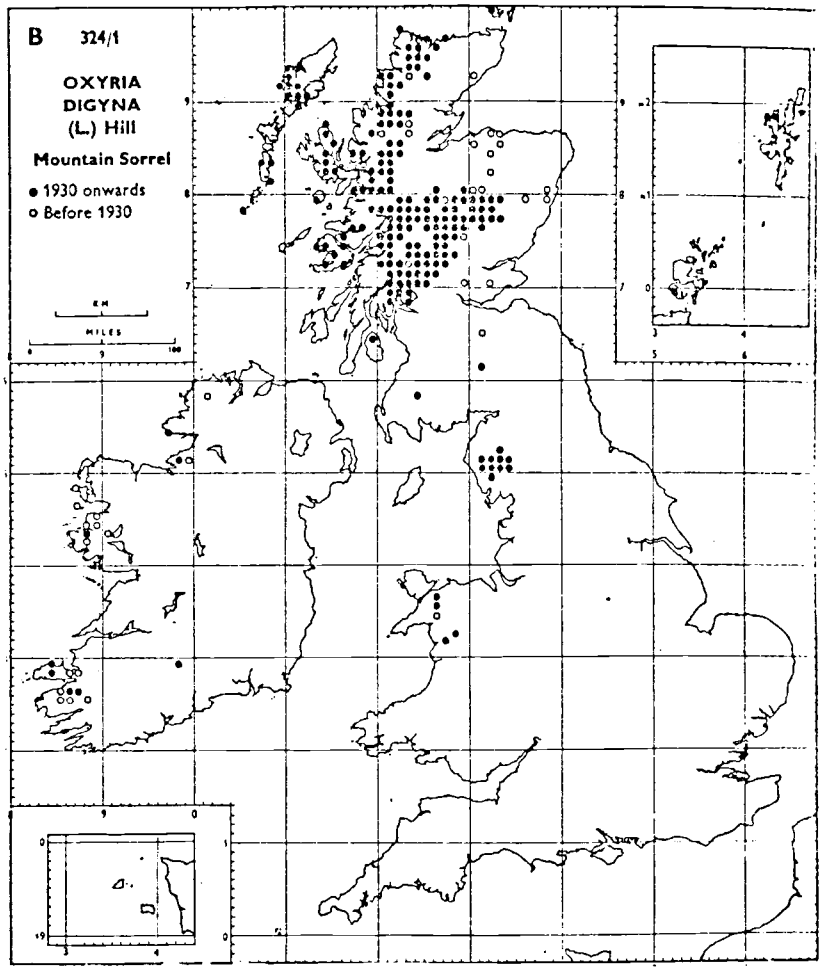

C 475/7
CAMPANULA ROTUNDI-FOLIA L.
Harebell
• All records
KM
MILES

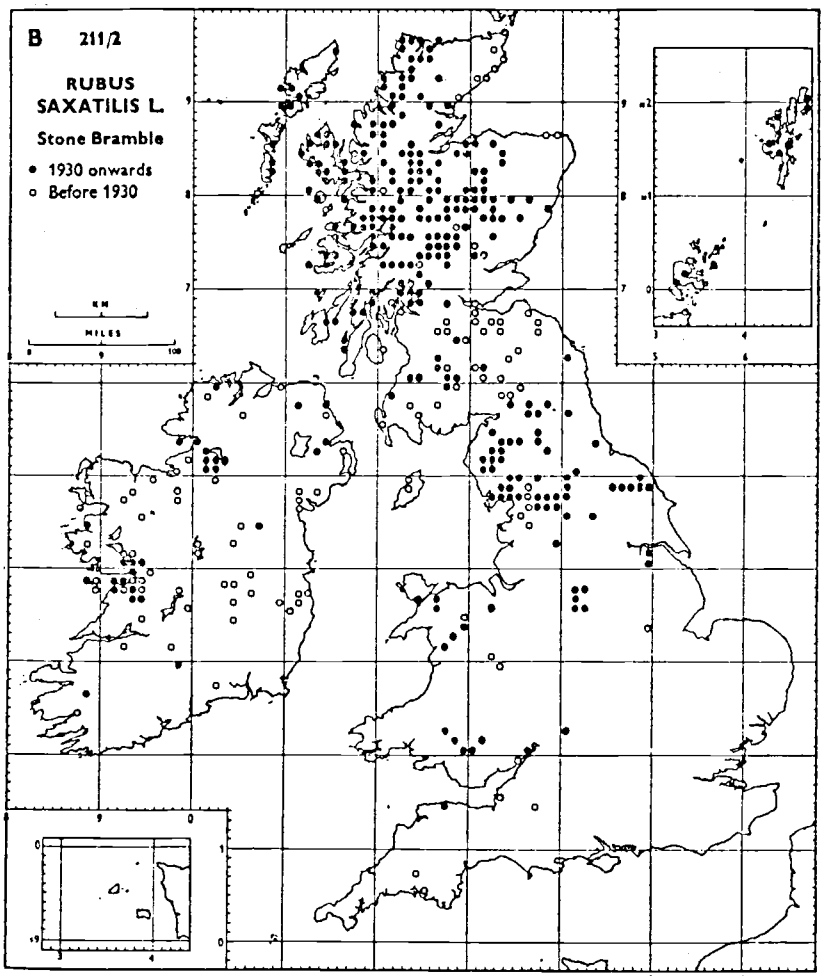

A 99/1
CARDAMIN-
OPSIS
PETRAEA (L.)
Hiit.
Northern
Rock-cress
• 1930 onwards
○ Before 1930
KM
MILES

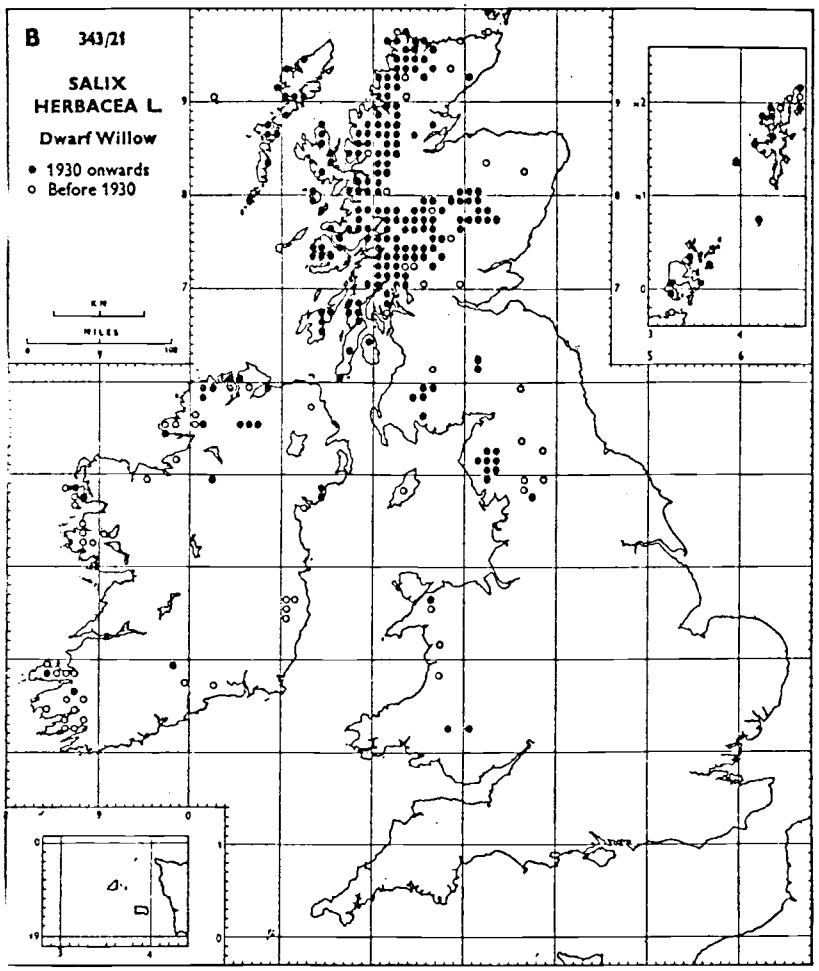

C 216/3
GEUM
RIVALE L.
Water Avens
• All records
KM
MILES

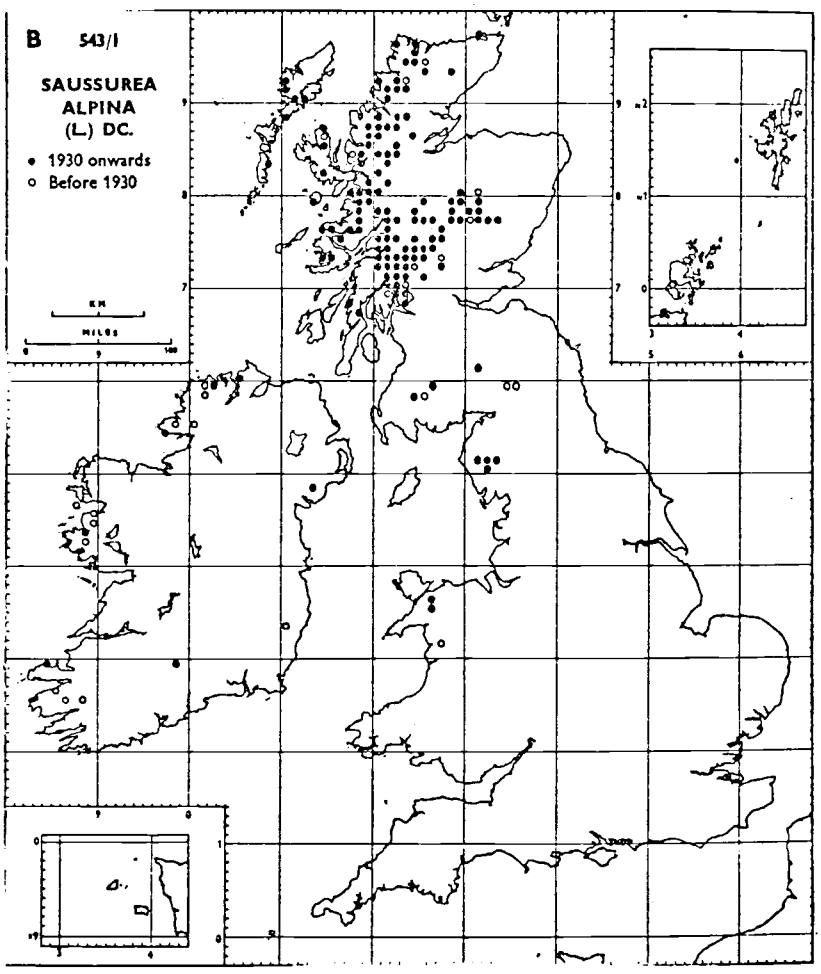

B 59/1
MECONOPSIS CAMBRICA (L.) Vig.
Welsh Poppy
• 1930 onwards
○ Before 1930
× Probable or certain introductions
KM
MILES

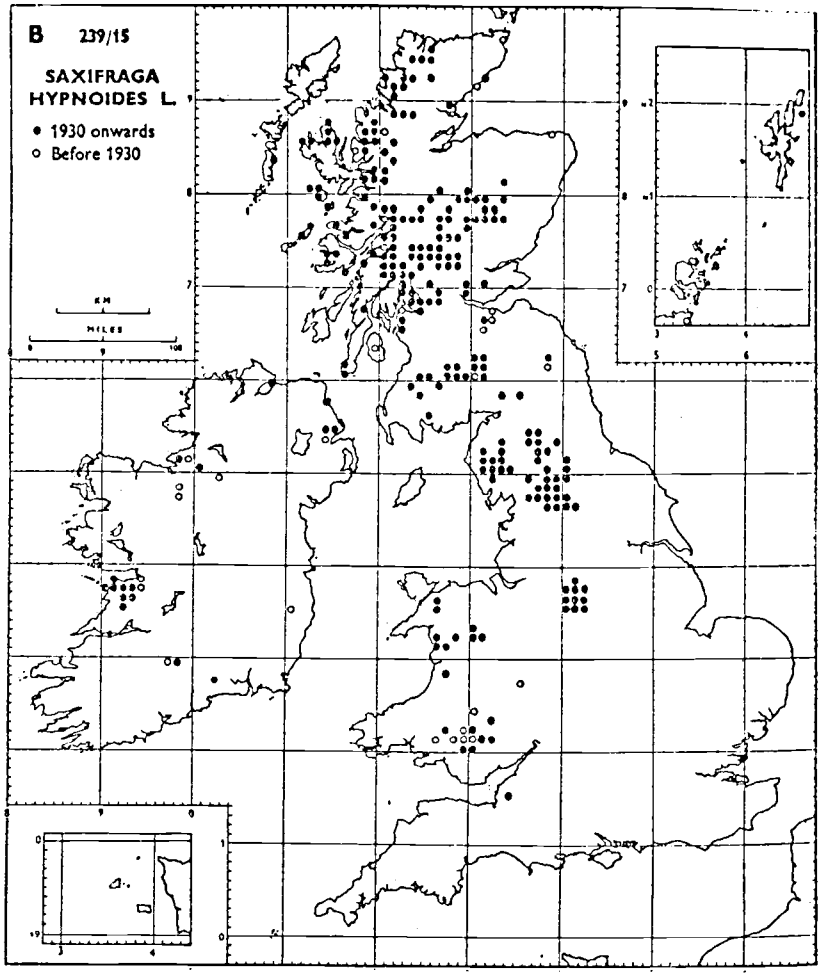

C 300/1
OENANTHE FISTULOSA L.
Water Dropwort
• All records
KM
MILES

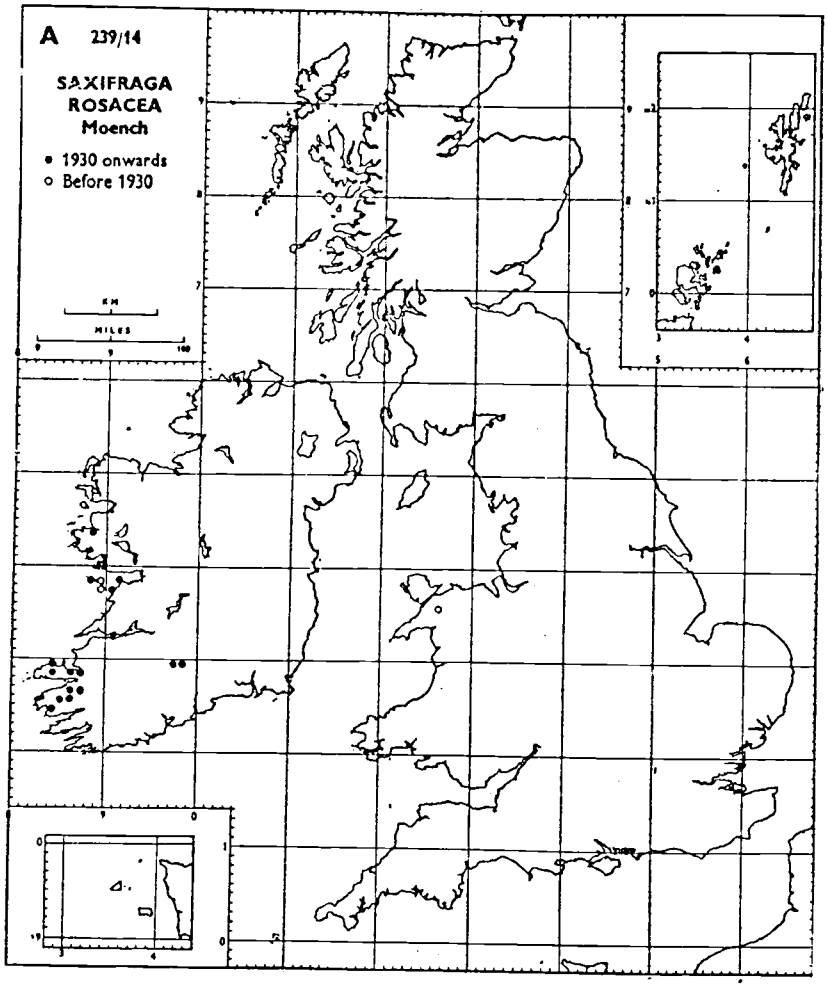

B 324/1
OXYRIA
DIGYNA
(L.) Hill
Mountain Sorrel
● 1930 onwards
○ Before 1930
KM
MILES

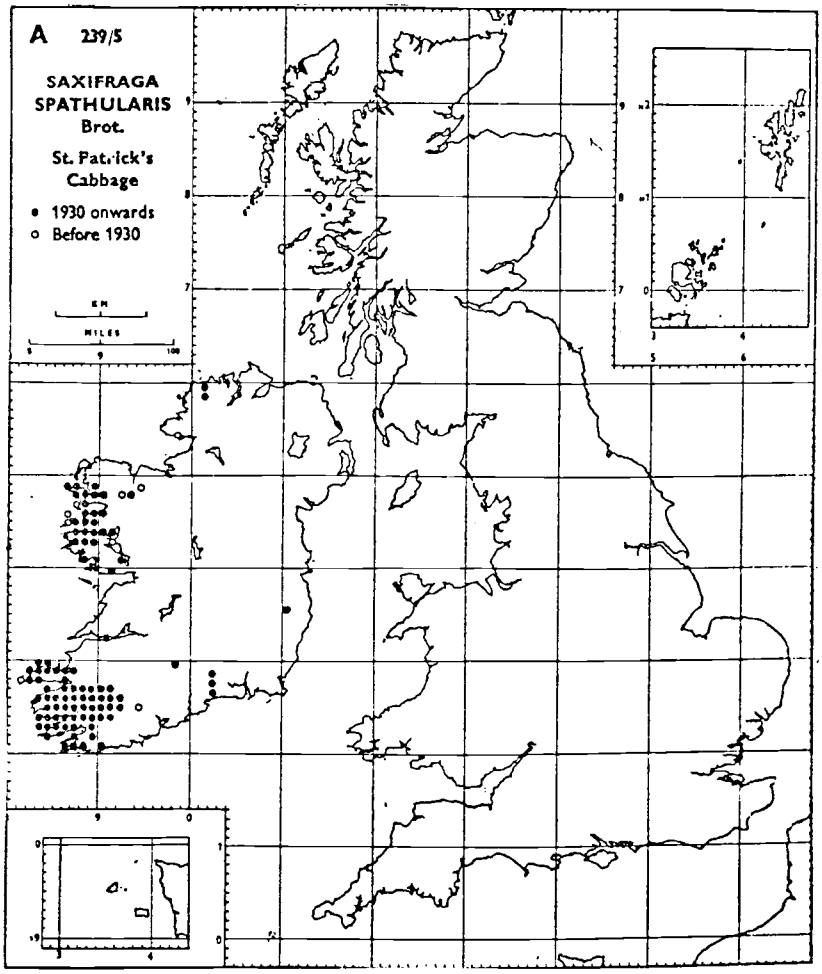

B 211/2
RUBUS
SAXATILIS L.
Stone Bramble
● 1930 onwards
○ Before 1930
KM
MILES

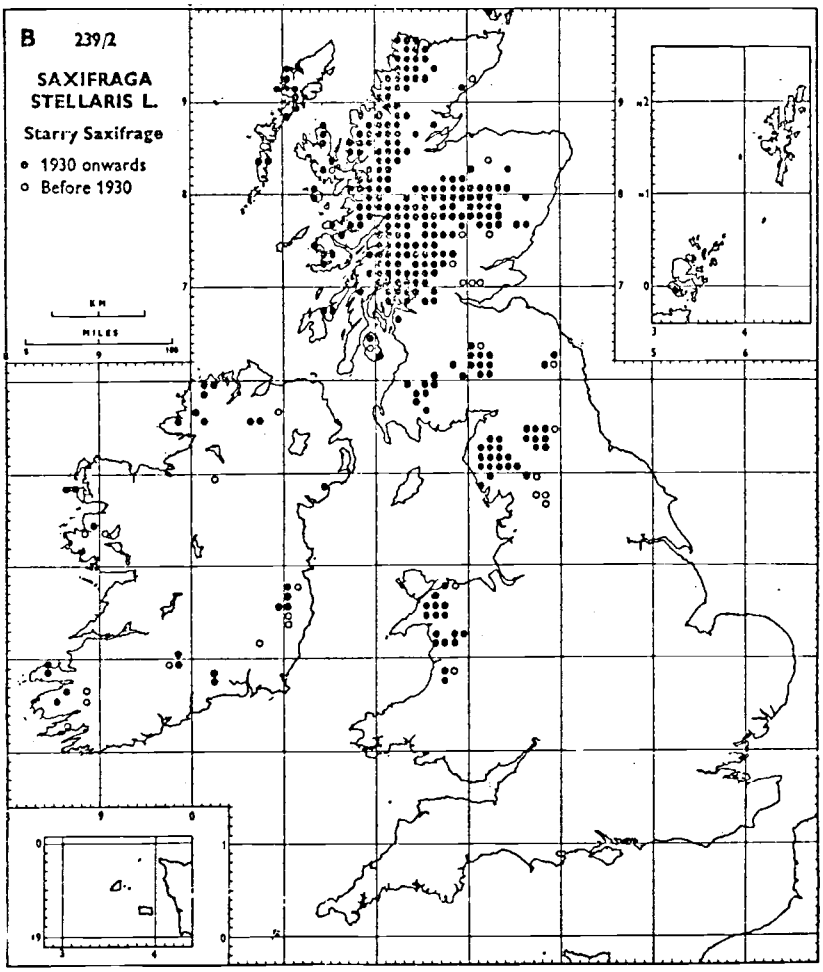

B 343/21
SALIX HERBACEA L.
Dwarf Willow
• 1930 onwards
○ Before 1930
KM
MILES

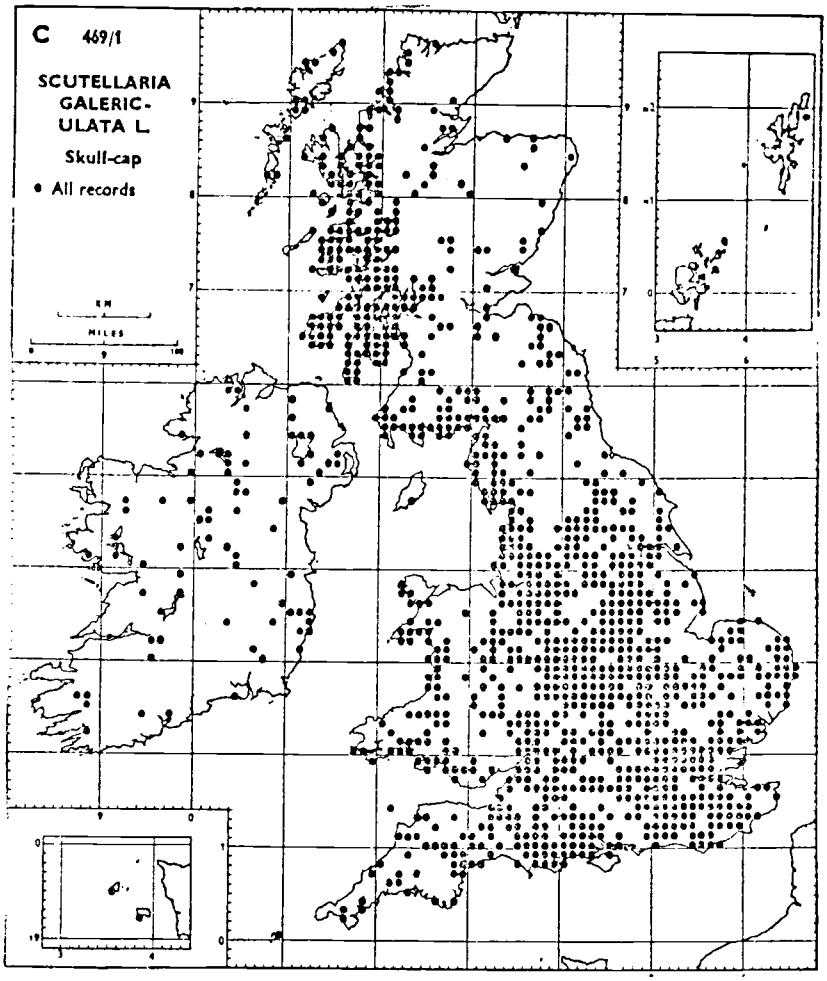

B 543/1
SAUSSUREA ALPINA (L.) DC.
• 1930 onwards
○ Before 1930
KM
MILES

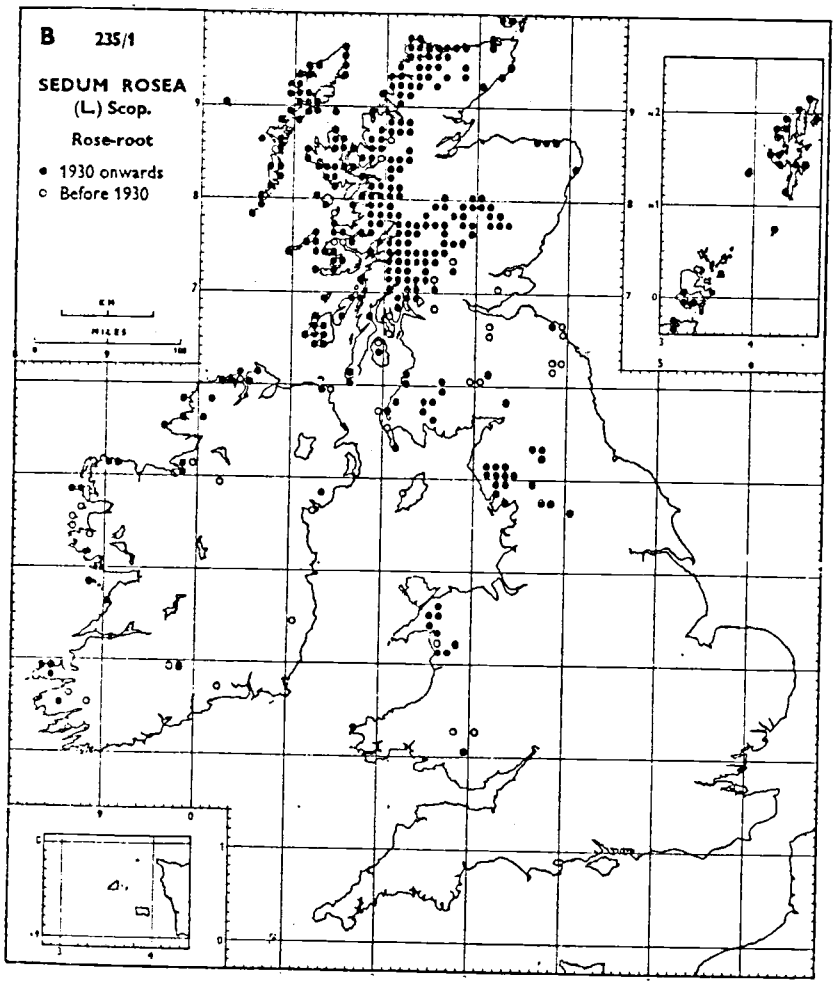

B 239/15
SAXIFRAGA
HYPNOIDES L.
• 1930 onwards
○ Before 1930
KM
MILES

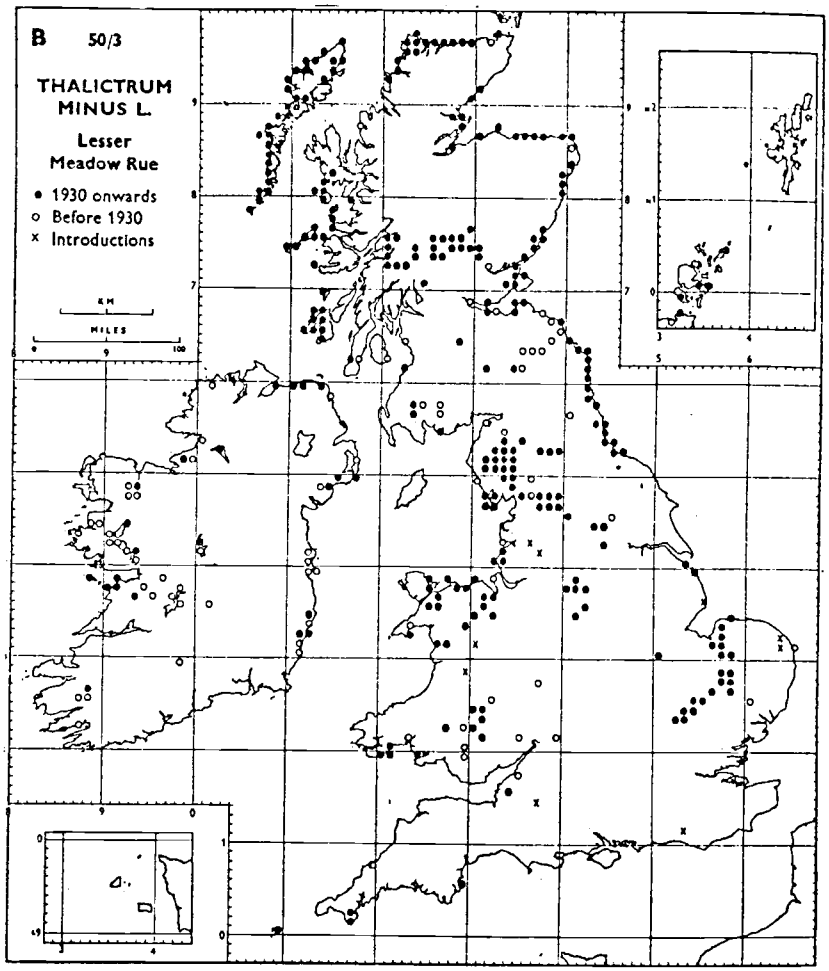

A 239/14
SAXIFRAGA
ROSACEA
Moench
• 1930 onwards
○ Before 1930
KM
MILES

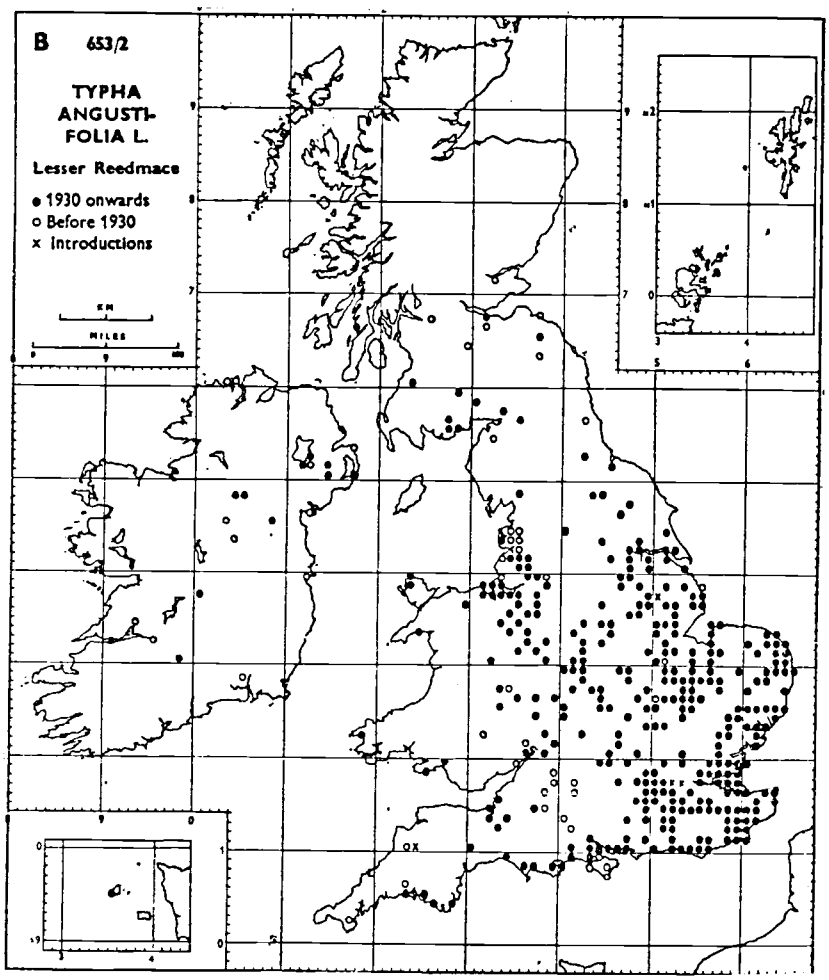

A 239/5
SAXIFRAGA SPATHULARIS Brot.
St. Patrick's Cabbage
• 1930 onwards
○ Before 1930
KM
MILES


B 239/2
SAXIFRAGA STELLARIS L.
Starry Saxifrage
• 1930 onwards
○ Before 1930
KM
MILES


C 469/1
SCUTELLARIA GALERIC-ULATA L.
Skull-cap
• All records
KM
MILES


B 235/1
SEDUM ROSEA (L.) Scop.
Rose-root
• 1930 onwards
○ Before 1930
KM
MILES

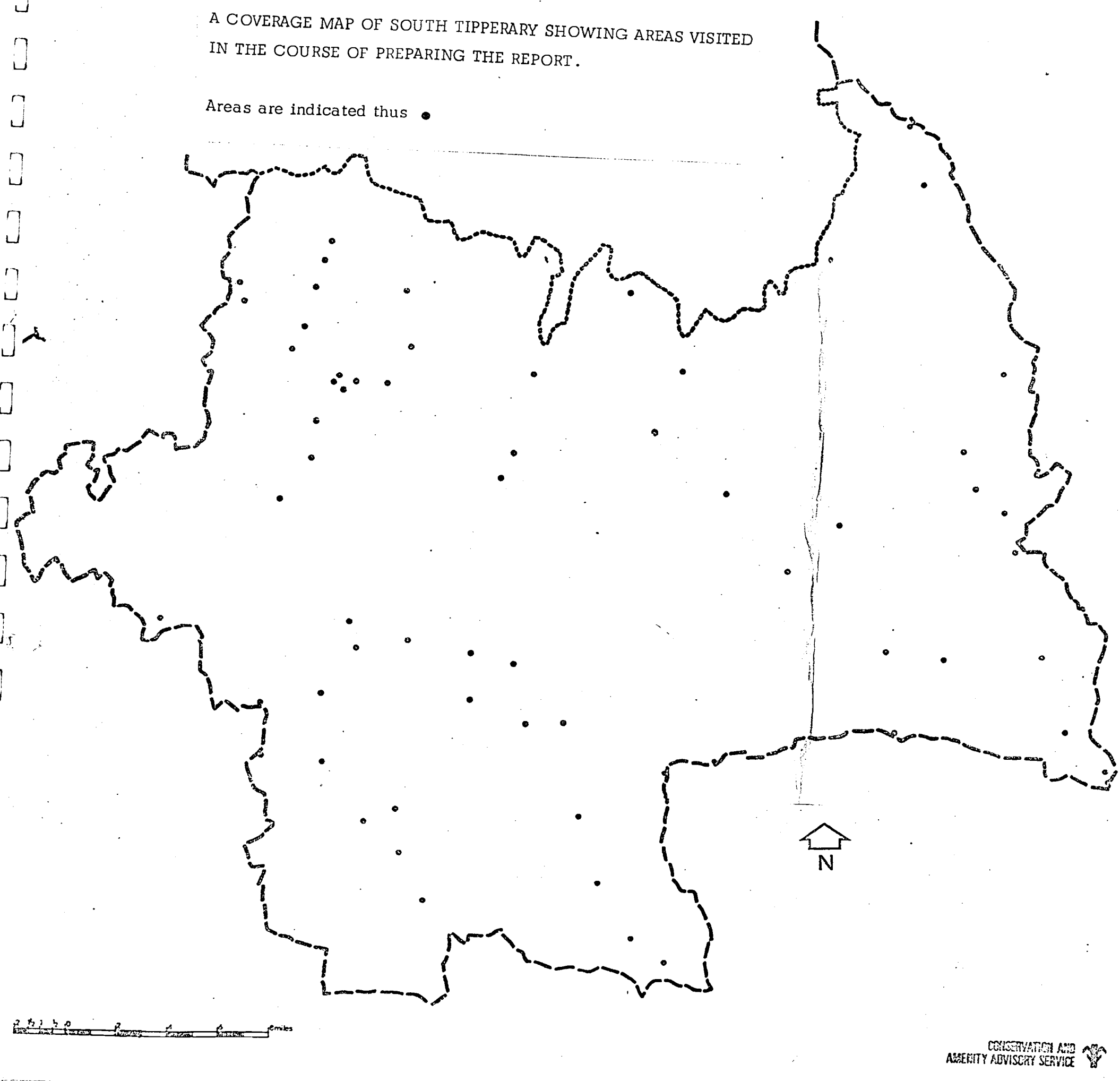

B 50/3
THALICTRUM MINUS L.
Lesser Meadow Rue
• 1930 onwards
o Before 1930
x Introductions
KM
MILES


B 653/2
TYPHA ANGUSTI-FOLIA L.
Lesser Reedmace
• 1930 onwards
o Before 1930
x Introductions
KM
MILES

	General Planning Control	Special Amenity Area Order	Conservation Order	Tree Preservation Order
Derinch Island	X			
Ardtermon Fen	X			
Doonee Rock	X			
Dunneill R.	X			
Rinn	X			
L. Arrow (parts)	X			
Horse Island	X			
(Raghly) Yellow Strand	X			
Wood nr.Five Mile Bourne				X

A COVERAGE MAP OF SOUTH TIPPERARY SHOWING AREAS VISITED IN THE COURSE OF PREPARING THE REPORT.

Areas are indicated thus ●



CONSERVATION AND AMENITY ADVISORY SERVICE