A SECOND REPORT ON AREAS OF SCIENTIFIC INTEREST

IN COUNTY DUBLIN

Prepared for Dublin County Council

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FOREWORD

This report is a revision of the original 'Preliminary Report on Areas of Scientific Interest in County Dublin' (January 1973). It retains the same format as that report, and accounts of those sites have been augmented by a 1988 summary. Five new sites have been added, one removed and some of the existing ones re-ordered or combined. The first revision of sites was done in 1980 for 'Areas of Scientific Interest in Ireland' (An Foras Forbartha, 1981) and this summary is included as Appendix I. The Forest and Wildlife Services then added a few sites, mostly based on their ornithological work. In addition, they have assembled all old records of plants, protected under the Flora Protection Order (1987). This information is included in Appendix II.

This report has been compiled by E Ni Lamhna and R Goodwillie and we would like to acknowledge the help of G Sevasatopulo, T Curtis, O Mern, D Doogue, S Reynolds, R Nairn, J Wilson, N Taylor and P Wyse-Jackson.

SECTION A

PREFACE

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

However, conflicts will arise in scenically attractive areas where some or all of the elements of water, hills, woodland and rock are combined to make a desirable landscape, sought after by housing or recreational interests. At the same time such places often contain communities of plants and animals interesting because of their isolation from rural or urban development. Usually it will be possible to compromise between the opposing forces but occasionally development will have to be curtailed to preserve the scientific interest in an area.

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

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

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

It is the intention of this survey to encourage the use of the countryside by drawing attention to scientifically interesting places. All of those mentioned can support much greater numbers of people - less so in certain cases of marshes and bogs, or at certain times of the year. But the carrying-capacity of each site will eventually have to be analysed. How much recreational use can co-exist with a nesting seabird population? How many people can use a path in the sand dunes without damaging the

plant cover? Or what number of trees can be felled each year while preserving the attractive features of the wood? The idea of preserving any but the smallest areas intact and without change is unrealistic and multiple use should be encouraged. Many of the areas would respond to sound management and become much more productive. The majority of the sites listed are now productive in the crude sense of producing fish, game birds or timber. All are productive if they encourage people to visit the area and make use of services nearby., and we believe that all contribute to the relaxation, mental health and happiness of the community, especially the generation of town-dwellers that now form most of our nation.

SECTION B

INTRODUCTION: CONSERVATION IN COUNTY DUBLIN

County Dublin has a varied solid geology for its size. The greater part is based on carboniferous limestone, usually covered by glacial drift. At its southern end, this terminates against the granite intrusion of the Dublin Mountains which is surrounded by a schist aureole of altered Ordovician rocks. Upper carboniferous shales cover a large area in the north of the county and a mixture of Devonian, Silurian and Carboniferous sandstones occur in the north east. Old volcanic rocks intrude into these at Portrane and form most of Lambay Island while Cambrian slates and quartzite are found in the Howth peninsula - a former island joined to the mainland by a raised beach at Sutton.

Part of the coastline is of these rocks but there are also two stretches of glacial drift cliffs and a much greater length of sand dunes. Indeed, these are nationally important features of the county.

While the habitat diversity that is implied by this account gives the county a rich biological and geological heritage, a survey of this heritage must involve rather different criteria in Dublin than with other counties. The difference is derived from the pressures on the environment that Dublin suffers. It has the highest population density in Ireland and includes a city of three-quarters of a million people that shows no real tendency to stop growing. The consequent pressures for building land are tremendous and the most harmful type of development from an amenity point of view - the building of isolated modern houses in unspoilt surroundings - will only increase in the immediate future with a general rise in income levels. As well as this, the growing size of schools and their interest in biology, and the general increase of leisure time, means that many more field activities will be taking place, inducing further pressures on the remaining areas of semi-wild vegetation.

The pressure of Dublin and its consumption of land, inflates the value of scientific sites in the surrounding countryside. This is not to say that their

importance (rating) has been upgraded in the following report, but rather that more sites are included than might otherwise have been. These are generally given local importance: some are essentially amenity sites, e.g. Saggart Slade, St. Doulagh's Quarry or Loughlinstown Woods, and these are noted as such in the following list, Section E.

These small sites are also important from an ecological point of view. Agricultural usage as it intensified leads to a clearing of hedges and field borders and the land thereby loses reservoirs of wild plants and animals which require this cover to survive. Some of these organisms are predators of pest species of insect or other animal, and thus have an important regulatory role. In a dry spring, such as 1972, wind erosion can occur especially on the lighter soils, but this is only the most obvious form of the protection afforded by hedges. 'Biological protection' continues throughout the year.

On the subject of hedges and their management it should be remembered that the lower and more closely clipped the hedge, the fewer the birds that can nest in it and the fewer game birds that can feed at its base. A policy of annual clipping should seriously be questioned as cutting every two or three years is much better. Hedge bases and roadside verges contain a surprising variety of woodland species, sometimes the only examples within a whole region and a few specific stretches could be identified where management should be of the least drastic sort. These are listed at the end of the report. In general, the mowing of road verges is much more preferable than spraying them with herbicides, as this allows a greater diversity of plant species to persist.

Conservation in the Dublin region should be carried out mindful of the great pressures that exist. Other counties may have many years in which to plan their development around and in harmony with the natural environment, but for Dublin, valuable sites can become derelict within a few years if positive action is not taken now. As examples, the following could be quoted: drainage has recommenced at the Bog of the Ring, dumping is continuing in Rogerstown estuary, Spartina grass is spreading rapidly in this and Malahide

estuary, tree felling is occurring in Saggart Slade, sand dunes are massively eroding on the Velvet strand while the Bull Island is threatened by pollution from a large rubbish tip.

More than a statement of intent is required for areas of scientific interest. Management policies should be worked out for each site where other uses conflict with the natural values. The golf courses are a good example, as here slight modifications of traditional forms of land management would ensure that a good quota of the valuable communities survives. For areas that are valuable for mass recreation, e.g. Bull Island, Howth, it is felt that amenity studies on a larger scale than the present report can give, should be commenced at once. In this context, the Glenasmole Valley could be a vital amenity area for south-west Dublin and a sensitive development policy could provide for many uses of it. Experience in other counties has shown that reservoirs are compatible with many forms of recreation and it would seem that Glenasmole is at the moment a wasted asset. An Foras is in a position to carry out such comprehensive studies in the near future.

In the following pages, certain statutory action has been suggested, and this seems more essential in County Dublin than elsewhere. Such firm action by the Council would elicit a response from the public and it is felt that developers would be inclined in future to work more closely with the planning authorities. In some cases, it will be seen that the Council itself has been implicated as producing a threat to an area. An alternative course of action has been suggested in each case, (see p. 7 in addition).

As development occurs and as scientific knowledge increases, the importance and priority of various areas will change. If a particular site loses its value through pollution or physical disturbance, the others of its type will immediately become more valuable in the regional context. It is proposed to reassess the areas at intervals to keep this report up to date.

SECTION C

VULNERABILITY OF NATURAL AREAS

The scientific value of an area can be damaged in many ways. It can be quickly destroyed by scrub or tree clearance, by drainage or the dumping of refuse, or it can suffer more insidiously through pollution, fertilization or overuse in recreation.

Tree felling by its nature is difficult to prevent. Though a Tree Preservation Order is a great help, it is also necessary to enlist the cooperation of all levels - landowner, forester and the general public. The voluntary organisations can play a role here, acting as observers throughout the county.

Drainage is occurring at one site at the moment - on the heavy clay soils of the Bog of the Ring - though whether it will be wholly successful is not clear. If it is, it will destroy the last major freshwater marsh in the county.

Refuse tips threaten a variety of areas and are probably the greatest threat to the areas of interest outlined in this report, since many of these are low lying and undeveloped. Not only does refuse cover the sites, but as it decomposes it liberates nutrients and sometimes toxic materials which in turn can pollute water courses and estuaries. The time seems opportune for changes to be made in the design of tips and in the treatment of refuse. It is felt that consideration should be given to profile tipping, in which the tip is built up above the level of the surrounding land. This may almost double the capacity of a tipping area and at the end of its life, the tip can be landscaped and planted, as is done widely in Germany. It would seem advisable to concentrate on fewer but larger tips based on this method, rather than let local tips multiply even further. In this way sites could be chosen which are least damaging to the environment. The most acceptible refuse disposal method now available seems to be incineration which reduces refuse to approx. 10% of its volume. It must be remembered that cost analysis of this process cannot give meaningful results as there is no way to work out the costs of continued open tipping to amenity and to the environment.

After the catastrophic destruction of areas, comes their deterioration due to pollution. Sewage pollution is a major contributing factor, if not the only one, to the fall-off in diversity of marine organisms in Dalkey Sound, and probably to the spread of * anaerobic conditions in the sediments at Bull Island. The full impact of industrial pollution has not been studied, but in view of the fact that the disposal of heavy metals and toxic organic wastes is not monitored and is controlled only at the planning stage of relatively modern factories, it is likely to be considerable and of importance to the fish breeding grounds in the Irish Sea.

The erosion of sand dunes threatens parts of all the dune systems listed, and it is a problem that will increase as more people become mobile enough to visit the coast. To deal with the damage effectively requires that each dune system be treated as a unit in order not simply to divert the problem to a different area. Management will include some restrictions of public access as people prefer to walk on the bare eroding areas than on intact vegetation. Such areas then have no chance of attaining an aerodynomically stable shape and consequently of being revegetated. It may be easier to introduce such necessary curbs if the area is already one of Special Amenity under the 1963 act.

On the topic of vulnerability, the subject of size should be mentioned. Where geological sites are concerned size is not an important factor as simple preservation is effective. In biological communities however there are certain minimum areas below which a species will not survive. Small populations of a plant or animal species are also more susceptible to adverse conditions. Though it may be easier to conserve small areas and in fact some of them are those most threatened by development, the large sites, more diverse and therefore more important, should not be lost sight of. To leave the larger sites unattended while total efforts are made over the small ones would be most unwise as they would gradually become devalued and possibly derelict - like Baldoyle estuary, formerly valuable but now almost filled by Spartina grass. Conservation of both must proceed together.

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* 'oxygen-less'

SECTION D

RATING OF AREAS OF SCIENTIFIC IMPORTANCE

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

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

International Importance

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

National Importance

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

Regional Importance

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

Local Importance

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

PRIORITY OF AREAS OF SCIENTIFIC INTEREST.

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

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

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

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

SECTION E

DETAILED REPORTS ON EACH AREA

These are written under the following sub-headings:

- Name of Area
- Acreage
- Grid Reference
- Scientific Interest
- Rating
- Priority
- Description of Area
- Evaluation
- Vulnerability
- Recommendations

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

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

Botanical names follow those in 'Flora Europaea', the standard work of which the first three volumes are now available. English names, in general, are those in "The Concise British Flora in Colour" by W. Keble Martin.

BALLYBETAGH BOG

Grid Reference:	O 20 20
Area:	10 ha
Interest	Geological and Ecological
Rating	International

Description of Area

Three or four separate areas of marshland are found in the area known as Ballybetagh Bog (See Map). Two of them, the north-west and middle bogs occur in County Dublin, the south-east bog is shared with County Wicklow and Mulligan's Bog is totally within that county.

The north-west and middle bogs lie in a small valley which is an old glacial spillway, much smaller and at a higher level than its more famous neighbour, the Scalp. The sites are dryish grassy fens which are spring-fed and drained by a large cut into the centre, now filled by sedges. The south-east bog is in a flatter and more open site. There is more surface water in evidence as drainage has not been so thorough and the vegetation is of greater interest than elsewhere.

Some fen species, eg, Carex rostrata (Bottle sedge), Dactylorhiza incarnata (Early marsh orchid), Pedicularis palustris (Red rattle) and Paranssia palustris (grass of Parnassus) occur.

Ballybetagh Bog is renowned for the number of skeletons of the extinct giant Irish deer (Megaloceros giganteurs) that have been dug out if it. The first was discovered during Famine times when the (unnecessarily) large drainage ditch was being dug as a relief project. Several collections were made in the years after discovery, the major ones in 1878 and 1913. The middle and south-eastern bogs were extensively dug and yielded the remains of 60-100 giant deer with some reindeer bones. More analytical excavations were done in 1880 and 1934 (Jessen and Farrington, 1938) which examined the whole range of fossils of the period, about 11,000 years ago. This gave an idea of the vegetation and environment in which the deer lived, and the work was further extended in 1976 (Watts, 1977) and during Autumn 1983 by Burnosky.

Evaluation

It is the intensity of the research effort in this one small area that gives it its value. This has created Ballybetagh as a classical site of Quaternary studies - see Watts (1977). The bone of giant deer have been found in upwards of 150 sites in the country, but nowhere else have their surroundings been subjected to so much investigation.

Vulnerability

Deep drainage is the main threat to this area. Some such work was carried out in 1983 on the northern bog but as it largely re-did old drainage work, it did not affect the scientific value of the area. The animal remains lie in peat and clay layers from 1-5m below the present surface.

The danger from drainage is that it could cause the surface layers to dry out so that the peat would begin to oxidise and thereby destroy the fossils (pollens and other fragments). Also any drainage work could so disturb the sediments by excavation and decamping that the deposit would become useless for analysis.

Recommendations

The digging of any drains on the bogs marked overleaf, below a depth of 0.5m should be discouraged.


A
B
C
BALLYBEG
St. Brigid's
Convalescent Home

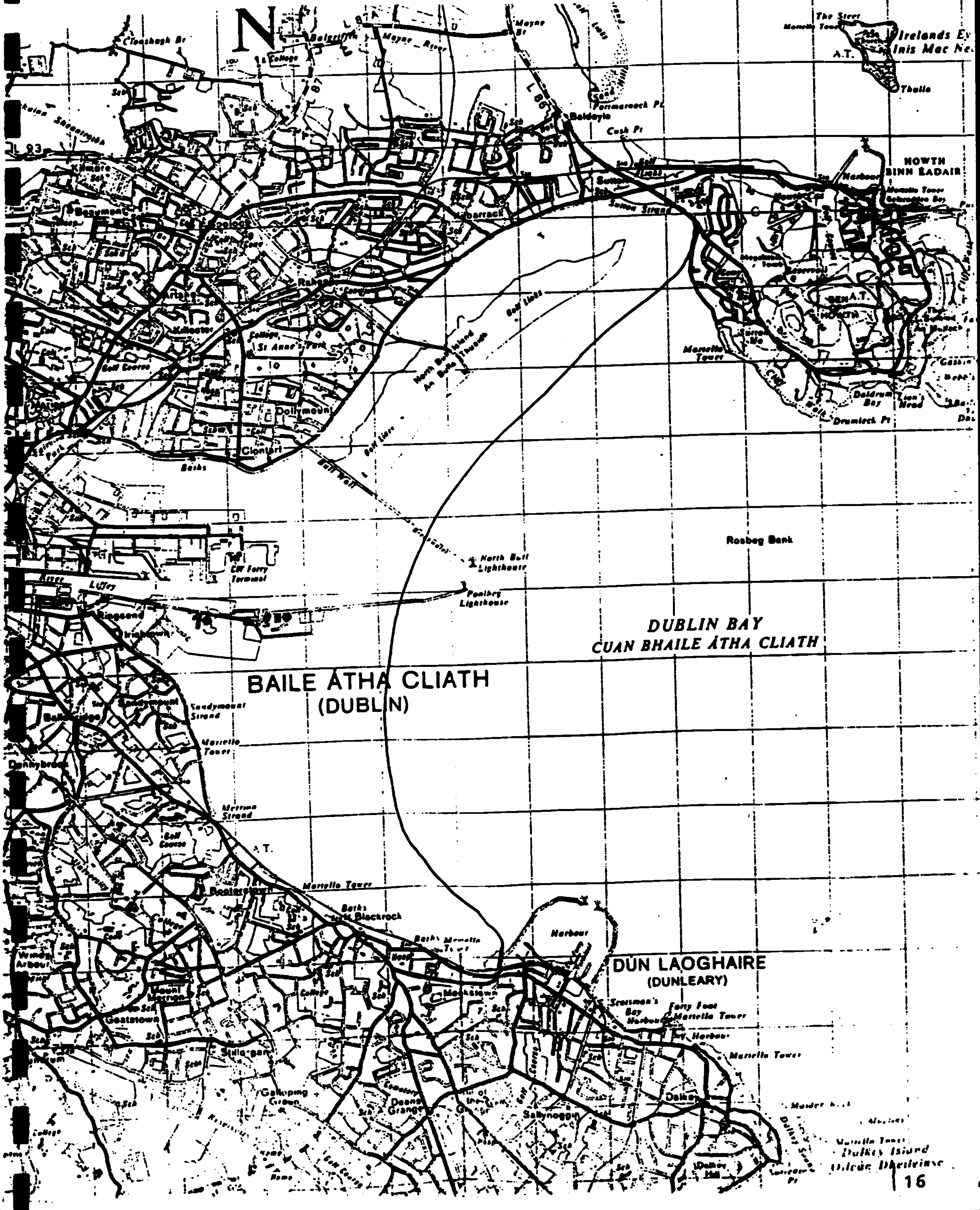
DUBLIN BAY

Grid Reference:	O 22 33
Area:	25km^2
Interest:	Ornithological, Ecological
Rating	International

Dublin Bay is of scientific value mainly for its bird life. The mudflats stretching from Sutton to Salthill must be considered as a unit as the birds move from one part of the bay to another for feeding, in response to the state of the tide. Roosting, at high tide, takes place largely on the Bull Island but some birds remain on Merrion Strand and the sea wall, as well as a few at Booterstown Marsh.

The bay is used by most species outside their breeding seasons so that largest numbers of waders and wildfowl occur from August to March. However, a few terns nest in the northern half and feed throughout the area in spring and summer. The nesting sites are largely within the port area and these birds (up to 150 pairs) tend to move about from year to year in response to disturbance.

MAP SHOWING AREA OF SCIENTIFIC INTEREST --



DUBLIN BAY A

BULL ISLAND

Grid Reference: O 22 37

Area: 6.5km^2

Interest: Ornithological, zoological, botanical

Rating: International

Description of Area

The North Bull is a long sand spit built up by wave and wind action since 1800. It consists of an almost flat beach in front of a sand dune system formed of well-defined paralleled dune ridges. A sizeable dune slack occurs in one place between two such ridges. Inland of the dune system extensive deposition of silt has occurred to form a large level saltmarsh. This is separated from the mainland by mudflats which support huge numbers of wildfowl and waders at certain times of the year. The mudflats provide rich feeding with Enteromorpha (an alga), Zostera angustifolia (eel grass), Ruppia maritima (tassel weed), and Salicornia spp (glasswort) for herbivorous birds and for animal feeders, Corophium, Carcinus (crustacea), Hydrobia, Littorina, Cardium, Scrobicularia and Mytilus (molluscs), and Peloscolex, Arenicola, Nephthys (worms). The birds that occur may on occasions number 25,000 and are broken down as follows (1984-1986 figures):

Dunlin	10,000
Knot	9,000
Bar-tailed godwit	2,400
Black-tailed godwit	270
Oyster catcher	4,000
Redshank	2,300
Curlew	2,000
Grey plover	600
Ringed plover	170
Wigeon	3,400
Teal	2,200
Brent Goose	1,260
Shelduck	650
Pintail	600
Shoveler	330
Mallard	400

Many other species have been seen including rare species of waders. Interesting passage migrants such as ruff, spotted redshank, little stint, wood, green and curlew sandpiper are regular. Of the less common wintering species, gadwall and avocet are both annual.

Above the mudflats the saltmarsh extends back to the sandhills exhibiting a fine zonation of species with height. This is complete north of the causeways and shows several unusual features, for example a high proportion of Aremeria maritima (sea pink) and Blysmus rufus (red blysmus), and a very flat surface. It has been described by O'Reilly & Pantin (1957)[1], Chapman (1960)[2], Jeffrey (1977)[3] and An Foras Forbartha (1977)[4].

The saltmarsh areas, used for roosting and some feeding by the wildfowl and waders are in danger of being reduced in size. Not only have the upper reaches south of the causeway been cut by a high fence and open ditch but on the north side, the expansion of the St Anne's golf club has covered a substantial area.

The sand dune communities are interesting and develop well in the absence of fire. Winter annuals are fully represented though the east coast perennials are not all present, probably due to the relative youth of the system. Since the age of the island is known, plant succession and the dune ridges can be roughly dated which is of value to this site. Plant species are still spreading to the North Bull, Hypericum dubium (St. John's wort) and Juncus acutus (sea rush) being the latest arrivals.

One of the most interesting discreet areas in the sand dunes is the large dune slack known as the alder marsh. Here a base-rich freshwater marsh community exists with Schoenus nigricans (black bog rush., Juncus spp. (rushes), Cardamine pratensis (lady's smock) and many other species of

Recommendations

1. Picnic fires should be discouraged by informative notices.

2. A study on the condition of the foredunes, especially near the points of access and along the beach south of St. Anne's, should be initiated, as measures to reduce erosion must be taken soon.

3. The upper saltmarsh area north of the causeway must not be further reduced as it is vital to the birds requirements at times of high tides. It is also an important vegetational zone which has been totally modified south of the causeway.

4. Pollution levels on the mudflats must be reduced if at all possible. The controllable ones come mainly from the new dump on the island and from the small streams entering on the mudflats, the Santry, Kilbarrack and Naniken rivers.

5. The Spartina (rice grass) must be effectively removed. Since even small vegetative parts will root and grow, thorough treatment is essential. Chemicals now exist which control this plant and they are especially effective against seedlings.

6. Management of the mudflats as a bird reserve may require some lowering of surface levels north of the causeway. While the encouragement of tidal scour by opening the causeway might have this effect, it could also be achieved by bulldozing, provided the material could then be satisfactorily disposed.

7. The channel between the island and the mainland should be covered by a conservation order under the Local Government (Planning & Development) Act, 1963. The island itself could well be managed as an Area of Special Amenity.

It is evident that a complete study of the Bull Island as an amenity area should be undertaken with reference to all component factors, both economic and scientific.

interest, some quite rare. An invertebrate (shrimp) species occurs in the marsh and in fact the whole island has provided many records of other invertebrates, Lepidoptera, Hemiptera and Coleoptera.

Evaluation

The mudflats between the Bull Island and the mainland form a internationally important area for waders and wildfowl. It is the most important estuarine area in the Republic and its populations are only outnumbered by those at Strangford Lough. On an area basis the North Bull contains the greatest density of water birds in Britain or Ireland and the fact that it occurs within the city boundaries makes it unique in Europe.

This proximity to the city also means that it is a very important educational area and it is frequently visited by school and university groups. It has supported and continues to support university research work.

Vulnerability

The vegetation of the Bull Island is threatened by fires for the dune cover is very thin and bare sand, susceptible to further erosion, is produced by a single fire.

The processes of dune formation and repair depend on a steady supply of windblown sand blown off the beach at low tide. Fears have been expressed that the compaction induced by traffic may curtail or eliminate this supply but this has not been studied.

Sheer numbers of visitors have led to erosion in specific areas near to the points of access and the foredunes at the south end have been isolated by car traffic. This situation has improved slightly since the opening of the causeway but the continued rise in numbers of visitors will have harmful

effects without management.

The saltmarsh areas, used for roosting and some feeding by the wildfowl and waders are in danger of being reduced in size. Not only have the upper reaches south of the causeway been cut by a high fence and open ditch but on the north side, the corporation dump has covered a substantial acreage to date. The plans show that 40-50% of the upper saltmarsh (Juncetum) will be obliterated if it is continued.

Pollution on the mudflats has led to abundant algal growth and where this is thick the invertebrate fauna is reduced to three species, two small worms and the snail, Hydrobia. Only this latter is a food species of the birds so the algal mats represent areas almost useless to wildfowl. Nutrient enrichment has been caused by effluent from the rivers that flow into the Blue Lagoon, the Santry river comes from the Edenmore refuse tip, from the generally polluted waters of Dublin Bay and from local refuse dumping, first of all from the causeway and later from the tip on Bull Island. It is very probable that this will increase if dumping is continued and lead to much greater algal growth followed by anaerobism (oxygen loss), on the mudflats.

Siltation has markedly increased since the construction of the causeway due to the more sheltered conditions and possibly the nutrient enrichment as well. This is shown by the rapid colonisation of the mudflats by Salicornia spp (glasswort) and Spartina (rice grass). Both these species encourage silting by further slowing water movements. Salicornia seeds are a food item of some ducks and the stands of the plant are low and still attractive to wading birds. The dry conditions reduce food species somewhat however. By contrast, Spartina is an aggressive coloniser and covers the mudflats with a pure dense sward, unattractive to wildfowl or waders. Its rapid rate of spread threatens the future of the mudflats north of the causeway.

1988

This study has been completed (references appended) and an interpretive centre has been built on the island. This has greatly improved its educational value.

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[1] O'Reilly, H & Pantin, G (1957) Some observation on the salt-marsh formation in Co Dublin, Proc RIA 58 B 5

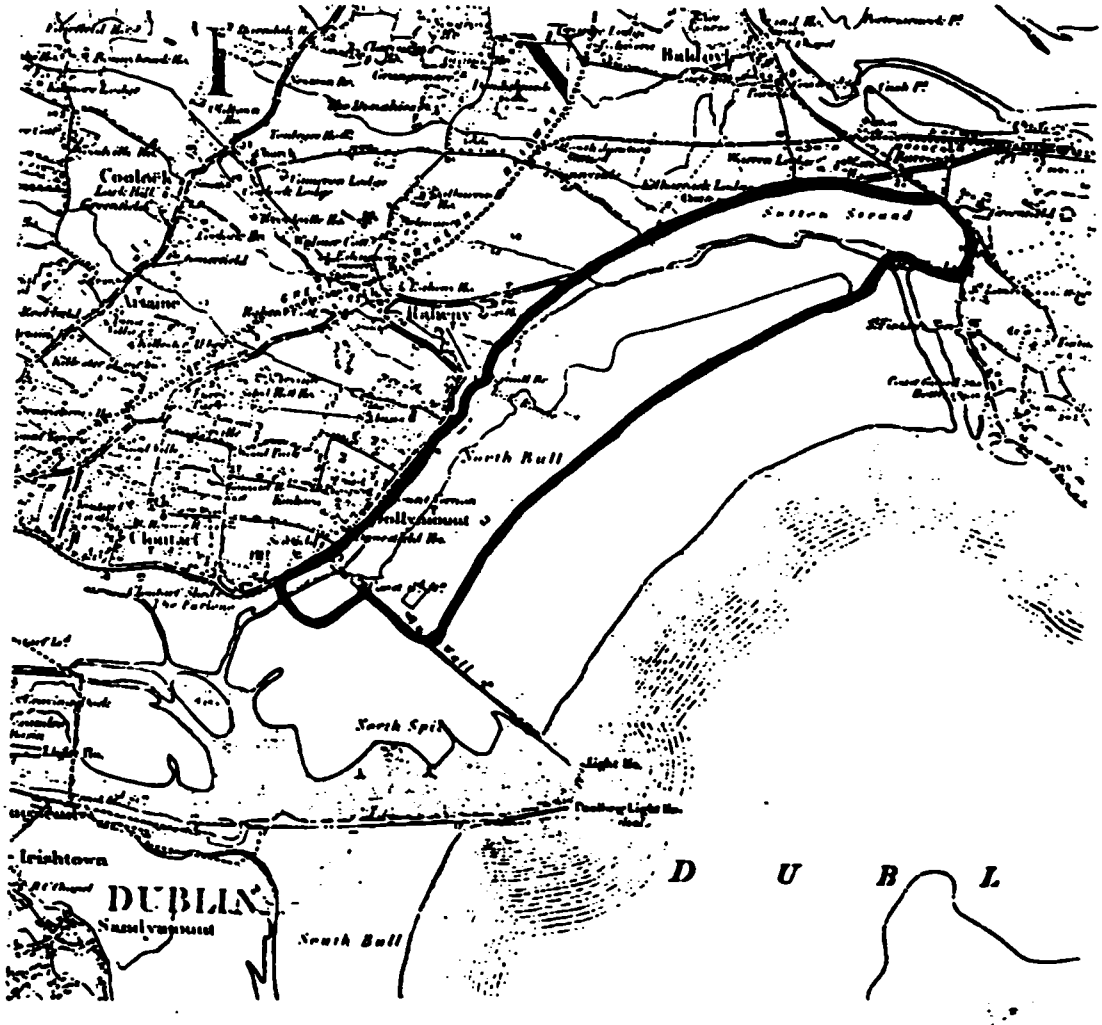
[2] Chapman, V J (1960) Saltmarshes & Salt deserts of the world, New York

[3] Jeffrey, D W (Editor, 1977) North Bull Island, Dublin Bay, A modern coastal natural history - Royal Dublin Society.

[4] (1977) A study of Bull Island Co Dublin - A report prepared for Dublin County Council - An Foras Forbartha.

MAP SHOWING AREA OF SCIENTIFIC INTEREST

Scale: 1 Inch to 1 Mile



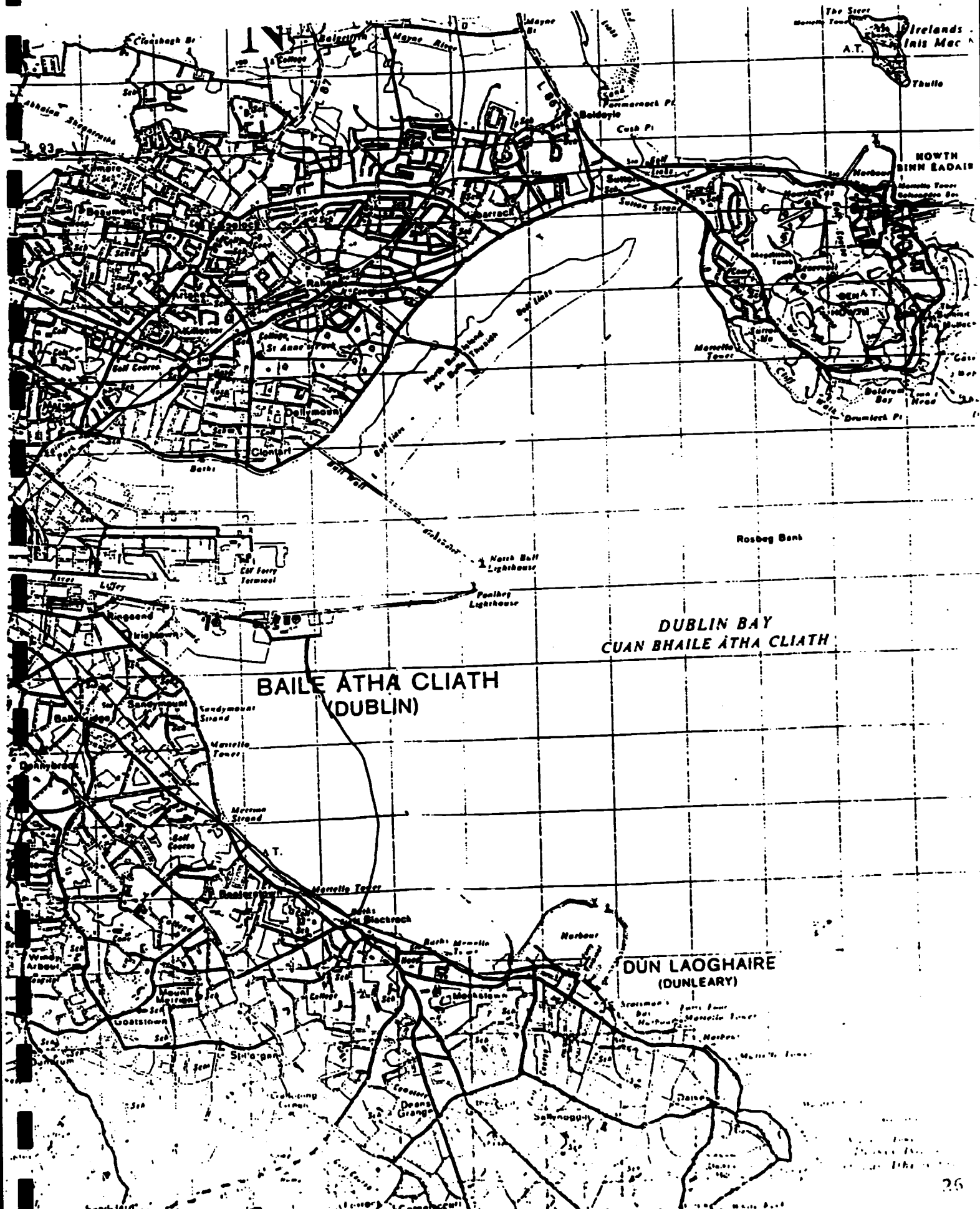
DUBLIN BAY B

SANDYMOUNT STRAND

Grid Reference	O 21 32
Area	Up to 650 ha at low tide
Interest	Ornithological
Rating	National

The flocks of waders that roost on Bull Island feed on Sandymount Strand at low tide. Such species as purple sandpipers turnstones, sea duck, great crested grebes and divers feed here. In August, an enormous flock of thousands of terns including roseate come to roost each evening. In early winter, brent geese feed close to the railway crossing at Merrion Gates.

MAP SHOWING AREA OF SCIENTIFIC INTEREST --



Name of area	BOOTERSTOWN MARSH;
Acerage	4 ha
Grid Reference	0 200 306
Scientific Interest	Ornithological, Botanical
Rating	Local
Priority	A

Descirption of area

There are three main habitats in this small area derived from the freshwater - saltwater gradient. The fresh or slightly brackish pond is followed by a grassy saltmarsh community of Agrostis stolonifera - Juncus gerardii (creeping bent - salt mudrush) and then the seaward ditches and pools with a fuller saltmarsh flora. Water relations are complex and the sources include a freshwater inflow from the culvert in the N W corner, and the sea which floods the area to a varying extent. Each tide inundates the S E corner and pools whereas only spring tides reach the depressions near to the pond.

This pond is surrounded by extensive reedbeds of Scripus maritimus (sea clubrush) and S. tabernaemontani (glaucous lakerush), both of which are spreading. Elsewhere the shore is of Juncus articulatus (jointed rush). Agrostis or J. gerardii with abundant Ranunculus sceleratus (celery-leaved crowfoot) and some Carex otrubae (a sedge). The mud surface is organic and very soft; it supports much green algae which is rich in Crustacea and some Zannichellia palustris (horned pondweed). Worms such as Tubifex and Eiseniella spp. occur in the mud.

This is the area most attractive to wildfowl and contains regularly mallard (up to 60) and teal (up to 35). Wigeon occur at times in winter (up to 30). The mallard nests as do moorhen, sedge warbler and reed bunting.

Further freshwater species which occur around the pond are:-

Galium palustre	marsh bedstraw	c
Equisetum fluviatile	water horsetail	f
Apium nodiflorum	fool's watercress	l.:
Mentha aquatica	water mint	:
Nasturtium officinale	water cress	l.:

Polygonum amphibium	amphibious persicaria	r.f
Triglochin palustris	arrow grass	o
Alisma plantago-aquatica	water plantain	o
Veronica beccabunga	brooklime	o
Hippuris vulgaris	marestail	o.v

The grassy community is floristically dull and also scarcely attractive to bird life but it is dissected by shallow ditches which are probably relict potato beds. Atriplex sp. (orache) is widespread here with Spergularia marina (sea spurrey) and Salicornia europaea (glasswort) at the sea end. These ditches provide feeding for snipe in winter though they are extremly saline due to evaporation. Specialised invertebrates may be present.

The complex of pools along the eastern side of the marsh has a high density of Aster tripolium (sea aster) and in the addition the following species:-

Glaux maritima	sea milkwort
Puccinellia maritima & P. distans	saltmarsh grass
Triglochin maritima	arrow grass

The prawn, Paleomonetes variens and the fish Aphia minuta are the main large organisms present.

Evaluation

Booterstown marsh has long been realised as a scientifically important site mainly because it is the only brackish marsh between Dublin and Greystones. It therefore has a concentrating action on birds which might be more diffusely distributed if more of the original coastline remained. It represents also a good example of a marsh transitional between fresh and saltwater and contains several species rare in Co. Dublin.

Many interesting wading birds have been recorded apart from the regularly visiting lapwing and redshank. It is one of the only marshes in the country where snipe can be seen in the open during daylight hours (up to 250 may occur) and it also is used for roosting by some of the birds from Merrion Strand.

Vulnerability

Changes are obviously occurring in the marsh, the more important ones being an increase in salinity and a spread of the tall reed vegetation. Both these changes discourage the number of bird species that visit the area and this part of the fauna seems to be deteriorating.

Temporary drying in summer occurs when the culverted stream does not supply enough water to balance evaporation from the pond. This also discourages bird life by reducing the food supply.

Recommendations

Though the future of Booterstown marsh is in doubt with new road development possibly affecting it, this seems slight reason for leaving it in its deteriorating condition. The ecological balance could be greatly improved by gaining control of the water sources by sluices and introducing a dependable freshwater supply. Some clearance of vegetation to increase the mud surface available would also be beneficial. These steps could be suggested to the tenant organisation.

There do not seem to be sufficient scientific grounds for maintaining the marsh area against all development but it is very valuable as a local amenity, and an educational area.

1988

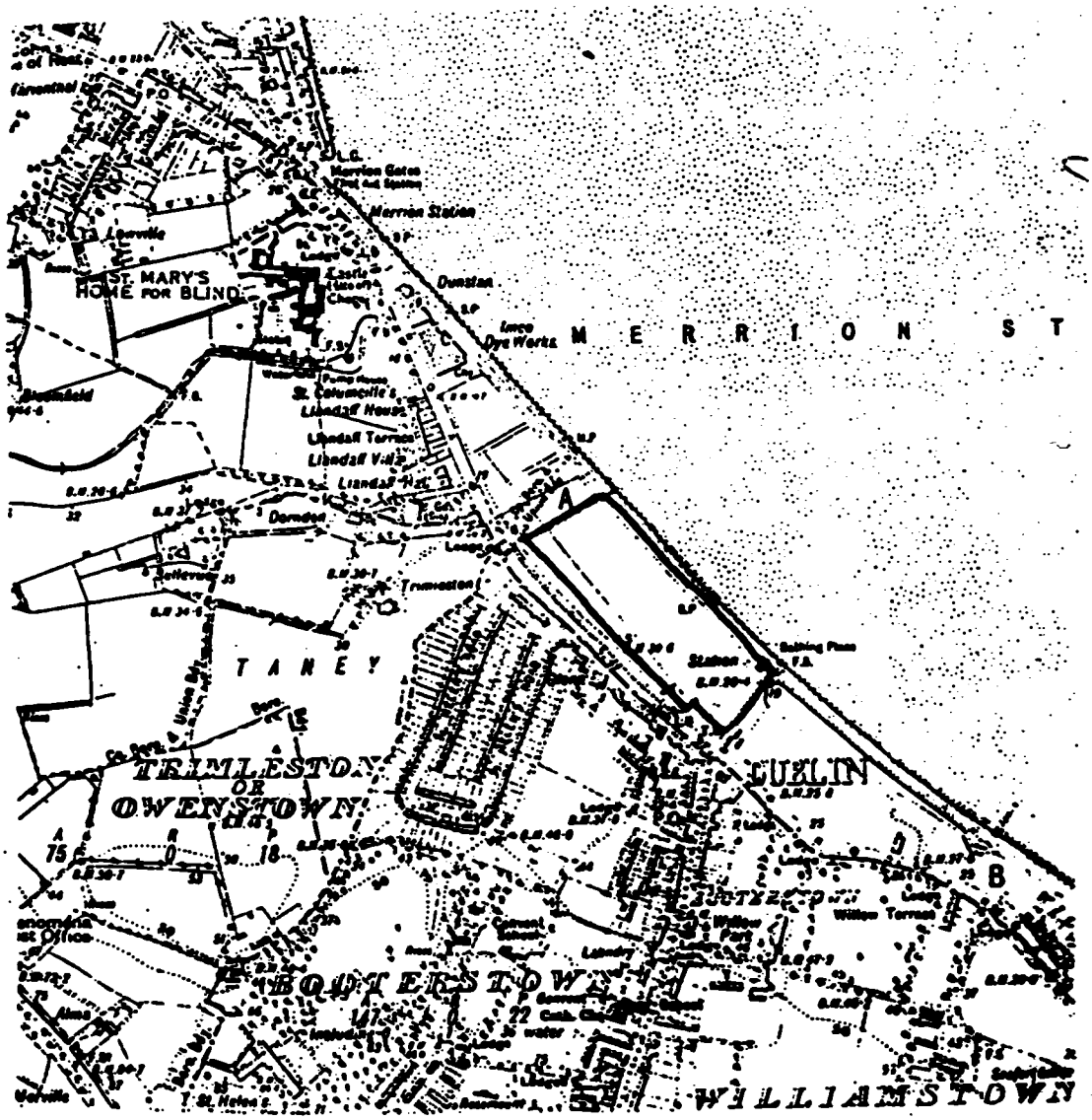
The area has been found to contain Puccinellia fasciculata (glaucous saltmarsh grass) a plant protected under the 1987 Flora Protection Order. This is one of only two extant sites in the country so adds considerably to the importance of Booterstown. If control of the water sources can be gained as recommended in a recent An Foras Forbartha report on the area, its scientific importance would be enhanced.

Reference

An Foras Forbartha (1986) Survey of Booterstown Marsh with suggestions for management.

MAP SHOWING AREA OF SCIENTIFIC INTEREST —

Scale: 6 Inches to 1 Mile



Name of Area — DALKEY COASTAL ZONE

Acreage	c. 96 ha
Grid Reference	O. 27 , 26
Scientific Interest	Zoological
Rating	National
Priority	A

Description of Area

The area which is shown on the accompanying map consists of a rocky shoreline, mainly of granite, with a small area of sand at the southern landward side. There is a small island with a gently sloping shore profile and the depth of water in the Sound reaches a maximum of 7 fathoms (14m).

There is little information on the composition of the substratum in the area but various rock grades, sands and gravels are available. These are assumed to provide interstices suitable for various organisms and are thought to be a major factor in the diversity of the area.

Evaluation

Dalkey sound and its environs have been highly regarded as a valuable marine collecting area for many years and a considerable amount of information has been collected in the vicinity. The Hayes-Crawford marine station which was operated by University College Dublin from 1949 to 1966 collected many records and Fisheries division, overseas collectors, Museum staff and zealous amateurs augmented these. The heavy investment in research over the years has enabled the accumulation of a vast amount of knowledge the existance of which is itself justification for maintaining the area in an unaltered form.

The East coast of Ireland is relatively recent in geological terms and consequently has distinctive features when compared with southern and western coastlines in the British Isles. Southern listed the Annelids of Dublin Bay (1910 The Marine worms (Annelida) of Dublin Bay and the adjoining district Proc. R. Ir. Acad. 28 (b) (6); 215-246) and concluded that most species occurring in the Bay have a wide distribution and that the Lusitanian element which is well represented elsewhere does not occur there.

As mentioned above the scientific literature on the area is immense. Haddon (1885, On the Fauna of Dublin Bay Proc. R. Ir. Acad. 4 : 523-531) remarks the Island vicinity is a rich locality for gymnoblastic hydroids. In his lists he notes the occurrence of Antedon bifida whose distribution elsewhere is rare. In Dalkey sound it is taken regularly.

O'Riordan (1964. A Recent record of the Crawfish Palinurus vulgaris Lat. from Dalkey, Co. Dublin Ir. Nat. J. 14 (9) : 212) recorded the crawfish from the area. This organism is common on south and west coasts but almost unknown on the east. Dalkey sound is especially noteworthy for the occurrence of west and south coast invertebrates - the squat lobsters (Galathea spp.) and swimming crabs (Portunus spp.) are other examples. Rarities from other parts of Western Europe which occur are:- Devonshire cup corals, nudibranchs (sea hares), Marthasterias (star fish) and peculiar races of anemones (see Dixon, G.Y. 1888 remarks on Sigartia renusta and S. nivea Sci. Proc. R.D.S. 6: 111-127).

Up-to-date surveys of the animals of the sound, in the light of recent knowledge, are not complete but the few contemporary studies in existence indicate a considerable investigation of the fauna: Roe (1957-58). The littoral Harpacticids of the Dalkey (Co. Dublin) area with descriptions of six new species Proc. R. Ir. Acad. 59 (B) (12) : 221 - 225) lists 106 species of a Crustacean group, 8 of which are new to science.

Another paper by Duhig (1961 The Amphipoda of Dalkey Island and its neighbouring waters Proc. R. Ir. Acad. 61 (B) (4) : 59-77) records 81 species in a small crustacean group.

In summary then Dalkey is a diverse marine area of considerable interest. In addition it is close to Dublin city and is readily accessible. This is an important point because Bray Head which may have some interesting ecological features has not been so intensively investigated. Dalkey is visited regularly by diving parties and university field groups.

Vulnerability

Being an aquatic area the Sound is susceptible to various kinds of pollution from the land. Sewage is a good example and it must be remembered that discharge of industrial wastes is frequently accomplished with domestic sewage. Specialists who have worked in the Sound for several years have noted a decline in characteristic forms of life and certain brittle starfishes are not now so plentiful as previously; unfortunately precise data do not exist so that an assessment of the extent of the damage in numerical terms is not possible.

Diving has also depleted the fauna in the area and its impact is confined to the larger and more obvious organisms e.g. Echinus esculentus (the common starfish). Recent fisheries legislation has made the taking of some other shellfish by divers illegal and partial protection is afforded by this. The diving fraternity are also aware of the value of the Sound and are making an effort not to over-exploit it. University departments also feel the area is under sufficient stress to warrant their staying away and thus holding off extra pressures.

There is a possibility in the future that an oil terminal might be set up in Dublin Bay. If this happens a likely mooring for the larger tankers would be the deep water east of the Muglins Rock. This site would be disastrous for the island, its surroundings and possibly also for the conservation and amenity of the vicinity.

Recommendations

Serious consideration should be given to the creation of a marine park in this area. Official recognition of its values would go some way to protecting it.

A desirable development would be consideration now of an alternative

1988

The area of interest is enlarged to included Dalkey Island, the Muglins and its associated rocks since these are the pre-migratory roost of large numbers of the Irish Sea terns including the roseate. For several weeks in autumn, these birds feed in Dublin Bay; here and on Merrion Strand if the tide is out.

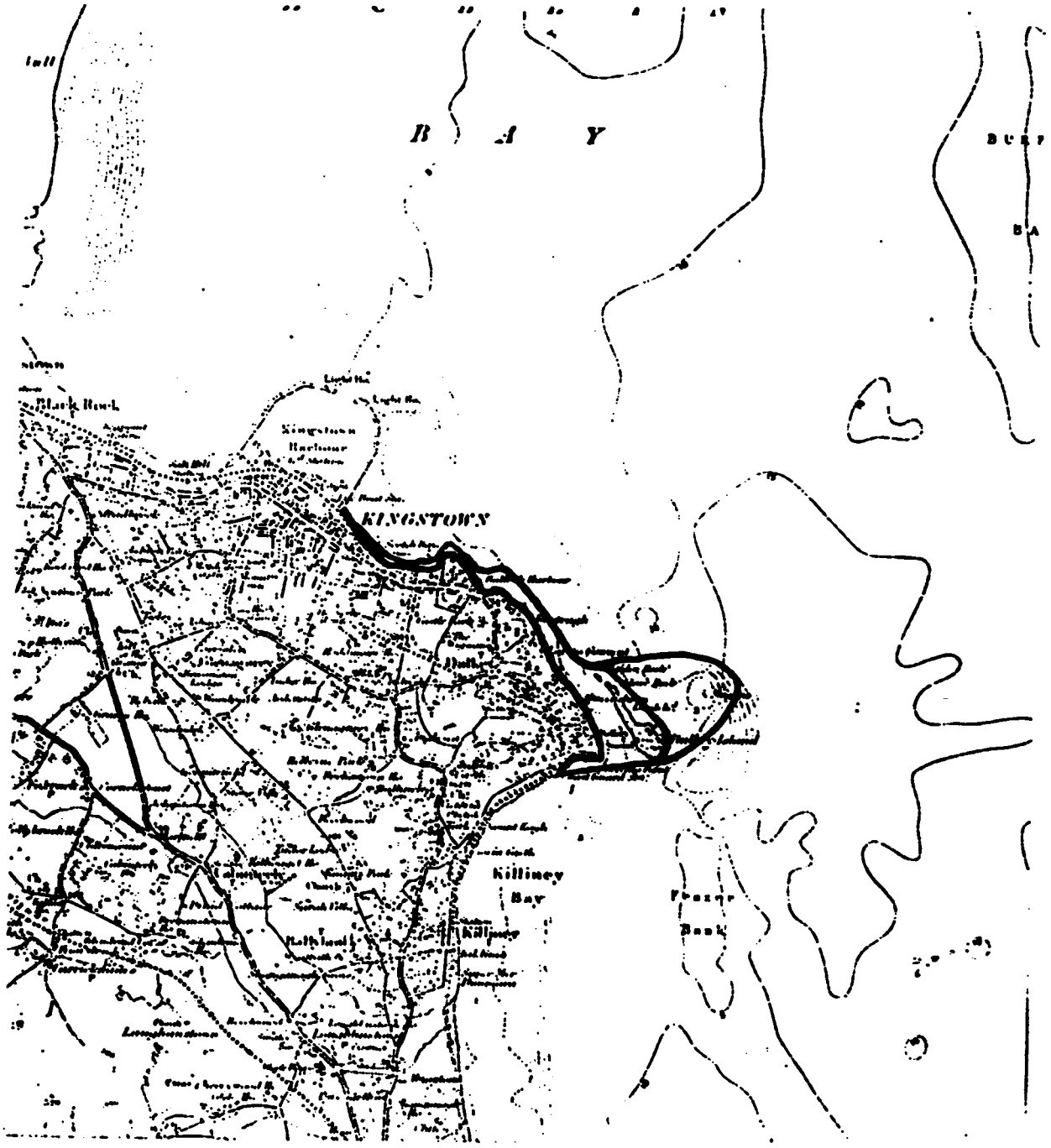
In spring herring gulls and great black-backed gulls nest on both islands.

The fauna of the areas is still of scientific importance. While pollution in Dublin Bay is considered to have increased since 1972, most species of interest still occur and there is little evidence of the establishment of a sewage based ecosystem.

There has been an increase in mussel beds and in starfish but this is attributed to fishing of the mussel beds for juveniles to be grown in Wexford Harbour. The clear spaces created allow new mussels to settle.

MAP SHOWING AREA OF SCIENTIFIC INTEREST —

Scale: 1 Inch to 1 Mile



HOWTH AND IRELAND'S EYE

Grid Reference: O 29 37

Area: 12 km^2

Interest: Ornithological, botanical, zoological

Rating: National

Description of Area

The Howth peninsula is an island of Cambrian slates and quartzites similar in type to those at Bray Head, joined to the mainland by a post-glacial raised beach. Limestone occurs on the north-west side while glacial drift is deposited against the cliffs in places. The soil therefore provides suitable conditions for a great variety of vegetation types and in fact the flora of Howth* is probably the most diverse of any parish in Ireland. Added to this is a large area of sea cliffs used by nesting seabirds. The most interesting parts are the areas of natural vegetation adjacent to the cliffs. The summit vegetation is of heath and bog, two formations widely represented in Dublin and Wicklow.

Stands of bracken (Pteridium aquilinum) are widespread in the coastal section. These have abundant bluebells (Endymion non-scripta) in them, and in places Viola riviniana (violet), Glechoma hederacea (ground ivy), etc. Bracken grows on the slightly deeper soils and where rock is at or near the surface other more interesting species occur, e.g.

Geranium sanguineum	l.c
Scilla verna	l.c
Erodium maritimium	f
Trifolium ornithopodiodes	o
T. striatum	o
Viola hirta	l.f
Ornithopus perpusillus	r

* See Hart, H.C. (1887), The Flora of Howth. Dublin.

Ligustrum vulgare	privet	o
Blackstonia perfoliata	yellow wort	o
Orobanche hederae	ivy broomrape	r
Osmunda regalis	royal fern	r
Bryonia dioica	white bryony	r

Of maritime species the more important are: Inula crithmoides (rock samphire), Artemesia maritima (sea wormwood), Limonium binervosum (sea lavender), Atriplex littoralis and A. laciniata (orache) and Asplenium marinum (sea spleenwort). Many maritime lichens occur, some unknown elsewhere in Ireland.

The south side of Howth is the most diverse botanically as many of the above plants grow only on warm soil. It is also rich in invertebrates and apart from the ants mentioned below has supplied many records of woodlice, grasshoppers and butterflies and moths. The isopods (woodlice) are perhaps the rarest organisms. Three southern species were first recorded at Howth and not found elsewhere in Ireland for many years - Philoscia couchii, Metoponorthus melanurus and Eluma purpurascens. One of these is still restricted to Howth, as far as is known.

Howth and Ireland's Eye are most widely known for their seabird colonies which must be appreciated by a majority of visitors. Kittiwake is the most distinctive and two or three cliffs are densely covered by its nests. Numbers as far as are known are:

	Howth	Ireland's Eye
Kittiwake	1,700 pairs	650+
Herring gull	70 pairs	530
Great black-backed gull	6 pairs	60
Guillemot	560 individuals	1,458+
Razorbill	270 individuals	270
Lesser black-backed gull		21
Fulmar	105 pairs	40
Cormorant	2 pairs	20
Shag	25 pairs	11

The Red Rock Area and the western part of Ireland's Eye are inhabited by several ant species. Ants are known to occur as monstrosities for a variety of environmental reasons and, in the 1940's, large numbers of aberrant forms were collected at Howth and Ireland's Eye. Monstrosities occurred in the red ants whose taxonamic position is not now clear because of recent revision in the group but two species, Myrmica laevinodis and M sabuleti were mentioned. M sabuleti would now appear to be M sabrinodis while M laevidnodis is a subspecies of M rubra. Both species are common in Ireland - see maps below.

The Elbowed Red Ant, *Myrmica scabrinodis*, Nyl.

The Common Red Ant, *Myrmica rubra*, L.

The ready production of aberrant forms of the two species in the region of Howth has long been a matter for speculation. Radioactive rocks in the vicinity have been proposed as a cause and vibrations from the Bailey Lighthouse are also thought to be responsible. Ant cultures reared in captivity have been noted to display similar structural anomalies. Further research on these ants would be desirable and the populations on Howth should be maintained for this reason. These colonies are the only known consistent aberrants in Western Europe.

Vulnerability

The bird populations are susceptible to disturbance and though their nesting areas can seldom be reached, there are conspicuous points above these where people can cause unnecessary damage.

Fire can injure vegetation and invertebrates and is a threat wherever there is inflammable material such as gorse. Some of the species of dry open sites are favoured by fire which curtails the spread of tall shading vegetation. Human pressures of trampling or flower-picking should not be discounted but their extent needs to be assessed properly.

Recommendations

It is now several years since the ant colonies were assessed. It is intended they should be examined again in the near future and a precise conservation report prepared.

Development of some interpretive system for the public seems essential in this much visited area.

1988

No further work has been done on these ants since the report was written in 1972.

This area is still of national scientific importance.

Bibliography

Donisthorpe, H. 1946 Fifty gynandromorphus ants taken in a single colony of Myrmica sabuleti Merment in Ireland. Entomologist 79: 121-131 1 plate.

Donisthorpe, H. 1947 Entomologist 80: 277-279

Donisthorpe, H. 1938 An ergatandromorph of Myrmica laevinodis and the list of gynandromorphs etc. brought up to date. Entomologist 41: 251-252.

Donisthorpe, H. 1946 some gynandromorph ants and a possible pteregate from Ireland Entomologist 79: 277-279.

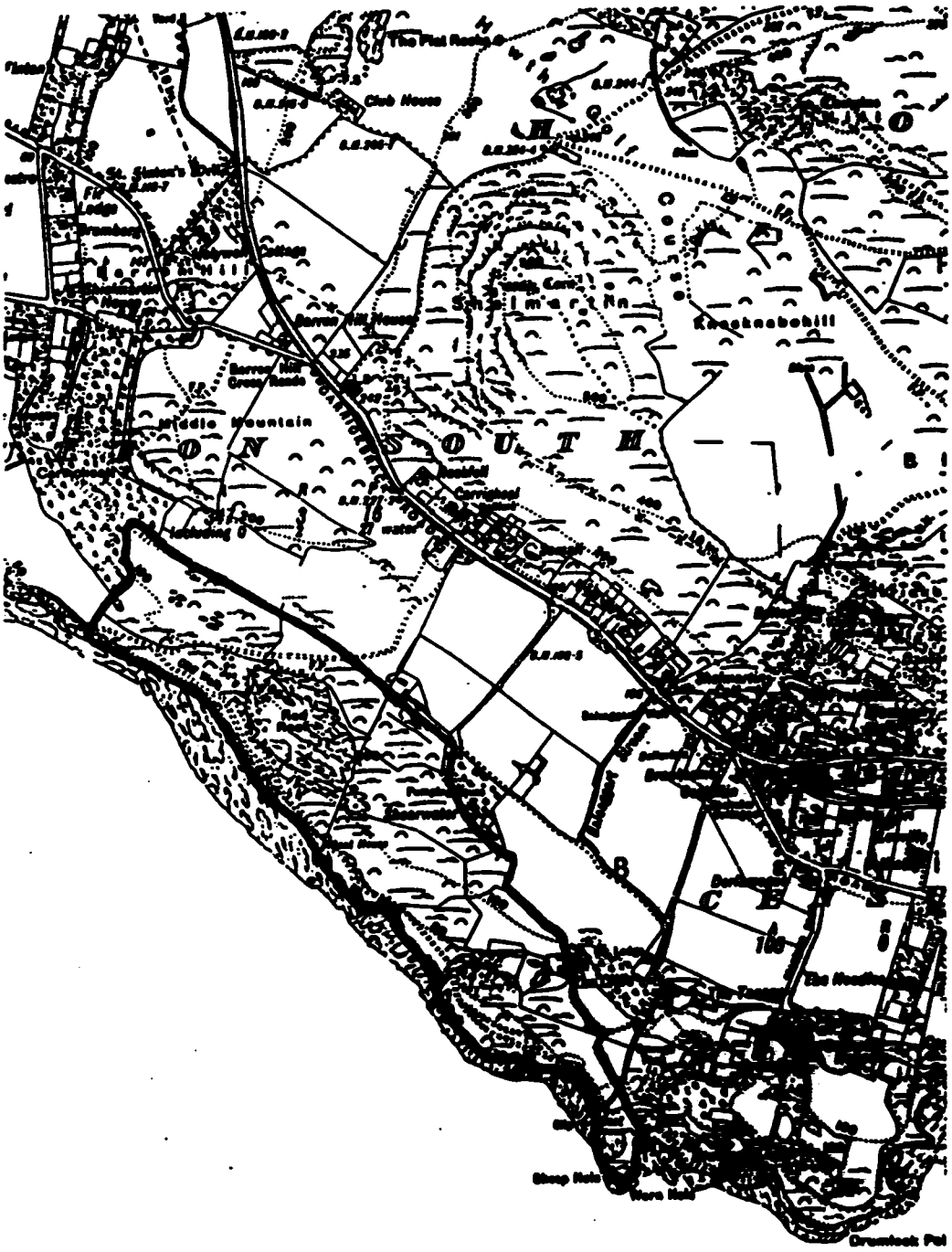
Morley, D.W. 1946 Ant gynamromorphs and other mosaics Nature 157: 741-742.

Wheeler, W.M. 1937 Mosaics and other anomalies among ants Columbia University Press.

Morley, D.W. 1953 Ants Collins, New Naturalist, London.

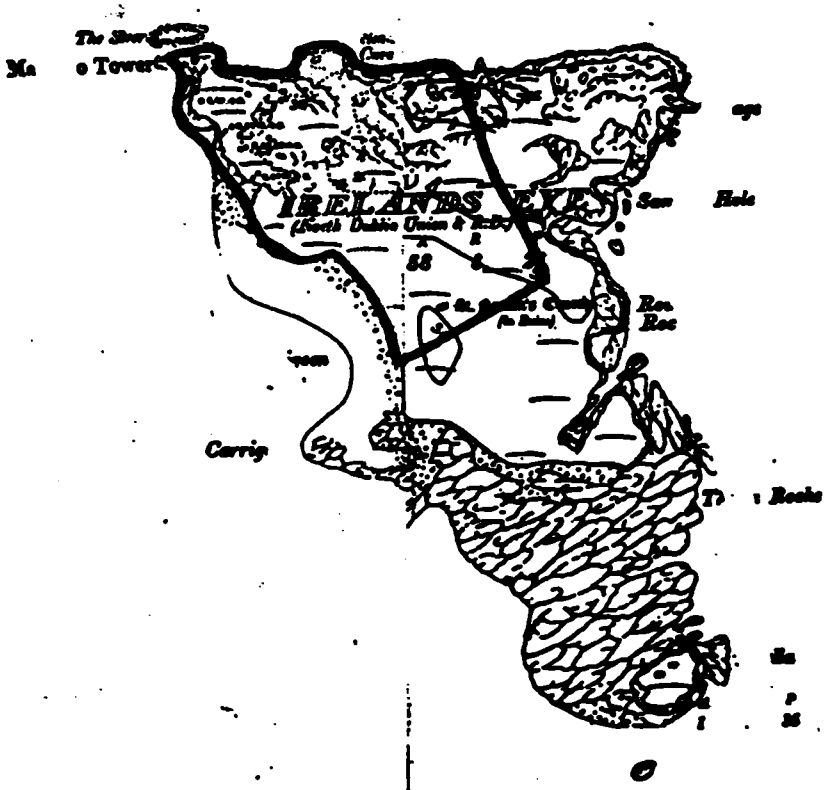
MAP SHOWING AREA OF SCIENTIFIC INTEREST —

Scale: 6 Inches to 1 Mile



MAP SHOWING AREA OF SCIENTIFIC INTEREST —

Scale: 6 Inches to 1 Mile



MAP SHOWING AREA OF SCIENTIFIC INTEREST

Scale 4 inches to 1 mile

Name of area	LAMBAY ISLAND
Acerage	2 km²
Grid Reference	O. 31, 50
Scientific Interest	Ornithological, Botanical, Sedimentological, Petrological, Geomorphological
Rating	National
Priority	C

Description of area

Lambay Island is formed of old volcanic and sedimentary rocks now partly covered by glacial drift. By far the largest section is of an andesite rock type in which porphyry occurs as dykes or sills. Old Red Sandstone forms part of the sedimentary rock sequence with some silurian shales.

The biology of the island has been investigated in greater detail than most other areas of Ireland*. The plant communities then included substantial areas of bracken and grass, more isolated patches of heather and on the screes of the southern hill an interesting 'desert' community of annual species and Sedum anglicum (stonecrop).

Maritime plants occur on a small sandy beach at the harbour e.g. Eryngium maritimum (sea holly). Salsola kali (prickly saltwort) Polygonum raii (bistort) and Agropyron junceum (sand couch) but elsewhere are confined to rocks and shingle. Crithmum maritimum (samphire), Inula crithmoides (golden samphire), Beta vulgaris (see beet) and Silene maritima (sea campion) are common.

Associated with the bracken stands are a variety of herbs usually found in woodland such as:-

Endymion non-scripta	bluebell	a
Primula vulgaris	primrose	c

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* Hart, H.C. (1883) Flora of Lambay. Proc. R.I.A. 3. 670.

* Irish Naturalist (1907). 16, 1 - 112.

Ranunculus ficaria	lesser celandine	c
Glechoma hederacea	ground ivy	f
Silene dioica	red campion	f
Agrimonia odorata	agrimony	o

It is the communities on the thinner soils that include the more interesting species of plants. Sedum anglicum (stone crop), Erodium maritimum (sea storksbill) are the commonest species in the scree areas with Cerastium diffusum (a chickweed), Aira praecox (spring grass), Teucrium scorodonia (wood sage) and Hypericum humifusum (St. John's wort).

The cliff top flora includes Trifolium striatum (a clover), Vicia lathyroides (spring vetch) and Scilla verna (sea squill) where the gull colonies do not extend to this level.

The bird life of the island has long been noted as all the marine species except the terns, gannet and storm petrel breed there. The colony of lesser blackbacked gulls is notably large while the puffin used to nest in quantity. A colony persists today.

The wintering birds include a flock of grey lag geese (up to 400) and barnacle geese (to 110).

Lists of other plant and animal group, e.g. algae, beetles, mites, worms provide a base line on which to plan future work.

Evaluation

Lambay Island is valuable both in its own right and as a control area with which to compare other islands. Its geology is interesting and the main rock type is rare over the country. The exposure of Old Red Sandstone, that shows here and at Portrane is the only occurrence of this rock in the eastern part of Ireland.

Lambay is by far the most valuable ornithological island in the county. The more important bird species are the puffin and manx. shearwater, the former finds here its only east coast nesting site between the Saltee and Rathlin Islands.

Barnacle geese have been fairly regular in recent winters and Lambay represents their only east coast wintering station except for Co. Antrim. The numbers of grey lag geese are more important in the total Irish population and in some winters half or more of the total have been seen on the island.

Though several rare plant species occur, the ecological interest of the island is more important as in Lambay we have an island without public pressures and with easily classified agricultural use. The importance of such a control area for the more populated areas of Howth Head and Ireland's Eye is considerable.

Vulnerability

Under the present land ownership there is little threat to the scientific interest of the area, though large scale reseeding might adversely affect the native flora. However, disturbance would be harmful to the bird populations especially to the auk colonies during the nesting season, and the flocks of geese in winter.

Recommendations

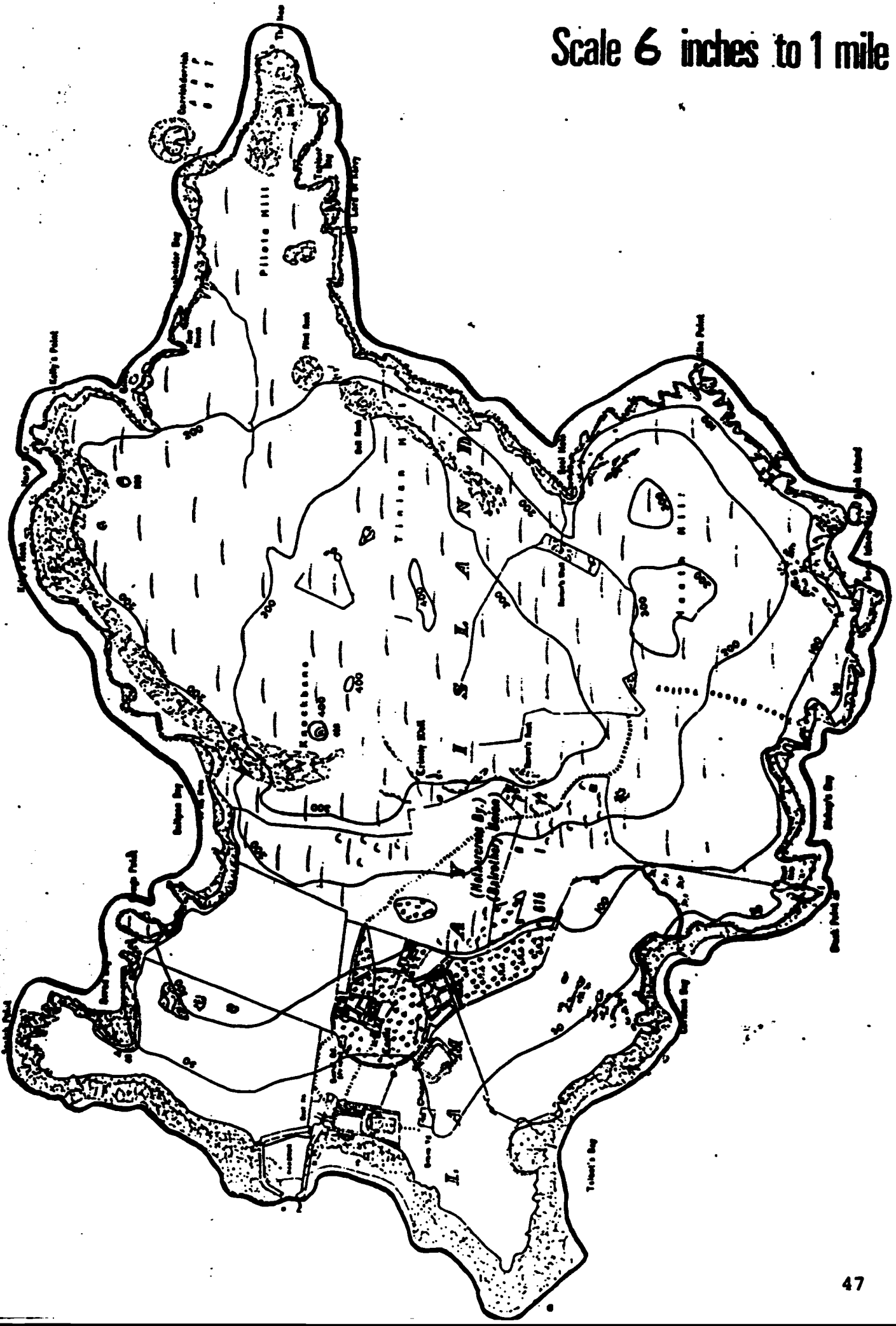
In view of the importance of the bird life on the island and the enlightened ownership it is suggested that a conservation order be put on Lambay. This would secure a safer future in the event of a change in the owner's policy.

1988

This area was surveyed in 1986 by Oscar Merne of the Wildlife Service. There are now 43,000 guillemots, 1,500 razorbills, 200 pairs of puffins, 1000 pairs of cormorants, 1,800 pairs of slags, 700 pairs of fulmars and 3,000 pairs of kittiwakes. There are also considerable numbers of gulls. These numbers are considered to be of international significance and certainly raise the overall rating of the island to national importance.

MAP SHOWING AREA OF SCIENTIFIC INTEREST

Scale 6 inches to 1 mile



MALAHIDE A

Name of Area	MALAHIDE ISLAND
Acreage	1.5 km²
Grid Reference	O. 24, 46
Scientific Interest	Botanical, Zoological, Ornithological
Rating	National
Priority	A

Description of Area

The dune formation which bars the mouth of Swords Estuary is a finely developed shingle and sand spit. Several dune ridges and further spits at the south end give it a complex character while cultivation on the western side brings in other vegetation types to add to the dune and golf course communities. At the northern end a big blowout is the only evidence of largescale erosion found in the area.

The area is varied in character with small dune slacks as well as the highest dunes in the county. Although much of it is taken up with a golf course most of the original plant species survive in areas of 'rough', considerably more than at Portmarnock, it is thought. On the damp ground of the slacks such species are found, as:-

Agrostis stolonifera	bent grass	a
Salix repens	creeping willow	f
Prunella vulgaris	heartsease	c
Selaginella selaginoides	clubmoss	o
Equisetum variegatum	horsetail	o
Parnassia palustris	grass of Parnassus	o
Epipactis palustris	marsh helleborine	o
Schoenus nigricans	black bogrush	o

The drier areas of stabilised dunes are rich in Rosa spinosissima (burnet rose), Festuca rubra (red fescue) etc. and species such as Koeleria cristata (crested

hairgrass), Cynoglossum officinale (hound's tongue), Gentianella amarella (field gentian), Blackstonia perfoliata (yellow wort), Erigeron acre (blue fleabane), Carlina vulgaris (carline thistle), Anacamptis pyramidalis (pyramidal orchid) and Cerastium arvense (a chickweed) are frequent. Ophrys apifera (bee orchid), Orchis morio (green-winged orchid), Antennaria dioica (pearly everlasting), Viola canina (dog's violet), Scilla verna (spring squill) are somewhat rarer.

On the mature dunes where the grass cover is breaking down through drought, grazing or nutrient depletion, an abundance of annual species occur together with the moss Tortula ruraliformis; Aira praecox (spring grass), Erophila verna (whitlow grass), Cerastium semidecandrum, C. diffusum (chickweeds), Myosotis ramosissima (forget-me-not), Veronica arvensis (wall speedwell), Valerianella locusta (lamb's lettuca) and Saxifraga tridactylites (rue-leaved saxifrage) are all frequent.

Cultivation on the west side of the spit has allowed many alien species to become established, sometimes (as with Lupinus arboreus (tree lupin)) in natural surroundings. Papaver hybridum (a poppy), Descurania sophia (flixweed), Silene alba (white campion), Lycopsis arvensis (bugloss), Silybum marianum (milk thistle), Melilotus altissima (melilot) are examples of these.

Malahide Island has been a collecting ground for a variety of invertebrates and certain species of Hemiptera (e.g. Rhyparochromus chiragra), lepidoptera (Gymnancyla, Aristotelia), and hymenoptera have only been recorded in this locality. The larger insects such as hoverflies, butterflies, beetles are also well represented. In addition, several tern species nest on the beach area.

Evaluation

This area is probably the best developed and most natural sand dune system in the county. Though less of the Bull Island is covered by a golf course, its dunes are lower in profile and its flora somewhat impoverished. The remnants of cultivation also add interest to the present area and one of the species has not been recorded recently elsewhere in the country.

The vegetation is threatened by fire to a certain extent. Although a single fire does only limited damage since the plants with their associated animals reinvade fairly quickly, repeated outbreaks or (as happened in 1972) a fire over a large area causes more permanent damage and can allow wind erosion to commence on the high dunes.

Since many interesting species occur on the golf course grounds, they may be damaged by spraying of weedkillers or fertilization.

Any well-used point of access to the beach is threatened.

Recommendations

A management policy for the golf course whereby it can remain in good condition in co-existence with the considerable scientific value of the area should be worked out. An important part of this would be adequate precautions against fire, and notices detailing its damaging effects might be displayed.

It is essential that the present blowout be revegetated and prevented from spreading any further. A fore dune ridge of sorts exists which would help control sand removal if it was allowed to develop naturally. The simplest recommendation would be to fence off the entire area as such a bare sand slope encourages use of the dune and subsequently, its further deterioration. Other measures should be taken in addition and these could be elaborated in a separate report, after study.

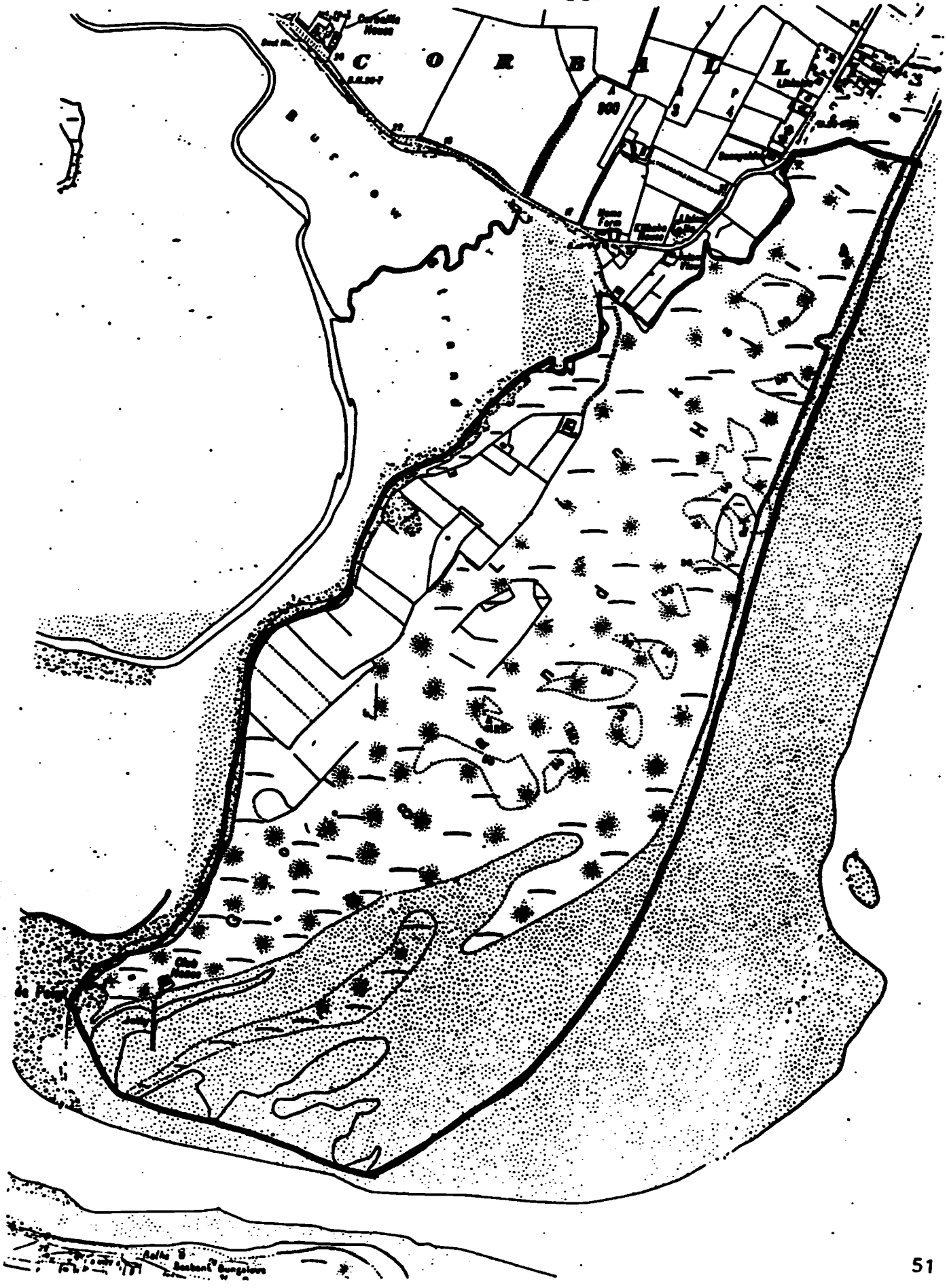
A Special Amenity Area Order covering this area would seem to be an effective part of its management. This would prevent building of holiday chalets which might occur with subdivision of the present plots, and it would also make control measures on the beach area easier.

1988 This area is still of scientific importance although drainage by the golf club has reduced the dune slack area. Terns no longer nest on the beach. The vegetation of the dunes has been described in detail and several interesting vegetation associations occur there.

Reference: Ni Lamhna, E (1982), The vegetation of saltmarshes and sand dunes at Malahide Island Island County Dublin.

MAP SHOWING AREA OF SCIENTIFIC INTEREST —

Scale: 6 Inches to 1 Mile



MALAHIDE B

MALAHIDE/SWORDS ESTUARY

Grid Reference O 22 47

Area 6.5km^2

Interest Ornithological, botanical, zoological

Rating Regional

Description of Area

This estuary has varied deposits of sand, mud and shingle. Small patches of saltmarsh occur around the margins and just east of the railway on the north side an extensive stand of Spartina (rice grass) is found. The head of the estuary is surrounded by fields of permanent grassland in which Plantago maritma (sea plaintain), Aster tripolium (sea aster) and Scripus maritimus (sea clubrush) grow in the depressions. Certain rarer plant species have been recorded for other parts of the estuary eg., Cochlearia anglica(scurvy grass) Ruppia maritima and R. spiralis (tassel weeds).

The area is mainly important for its passage migrant and wintering birds but in addition some relatively rare invertebrates have been found, eg., Cyrtorrhinus flaveolus, Salda pilosa (Hemiptera).

The bird populations are varied and ten species of wildfowl occur regularly. Peak counts are roughly as follows:-

Teal	100
Wigeon	400
Scaup	15
Goldeneye	200
Redbreasted merganser	100
Great crested grebe	60
Brent Goose	200
Oystercatcher	600
Golden plover	1,200
Redshank	400
Knot	800
Dunlin	600

The area is important especially for redshank and lapwing in the winter but a variety of waders occur in quite small numbers. Several rare species have been seen at one time or another in this estuary.

Evaluation

The Swords/Malahide estuary is the third most important in Co. Dublin after the North Bull and Rogerstown. It provides alternative feeding grounds for brent geese which regularly fly between here Baldoyle and the North Bull and the same applies to the other species. After the shooting season, some of the decline in bird populations at North Bull, appears at Malahide.

The estuary is the most important area for goldeneye and scaup in the county and it is also the only site for one plant species.

Vulnerability

Though shooting pressure is a threat to the maintenance of the bird population at their present level, the presence of two 'protected' estuaries both north and south is an important alleviating factor.

The main threat is the spread of Spartina (rice grass) which is at present reduci the mud area available for feeding by brent geese and wigeon.

Recommendations

Control of Spartina to its present limits or better, complete removal must be regarded as essential to the well being of the estuary as a wildfowl resort.

1988

This area continues to be of scientific importance on account of its bird life. In terms of our national responsibility for birds, it is of particular importance to wintering brent geese.

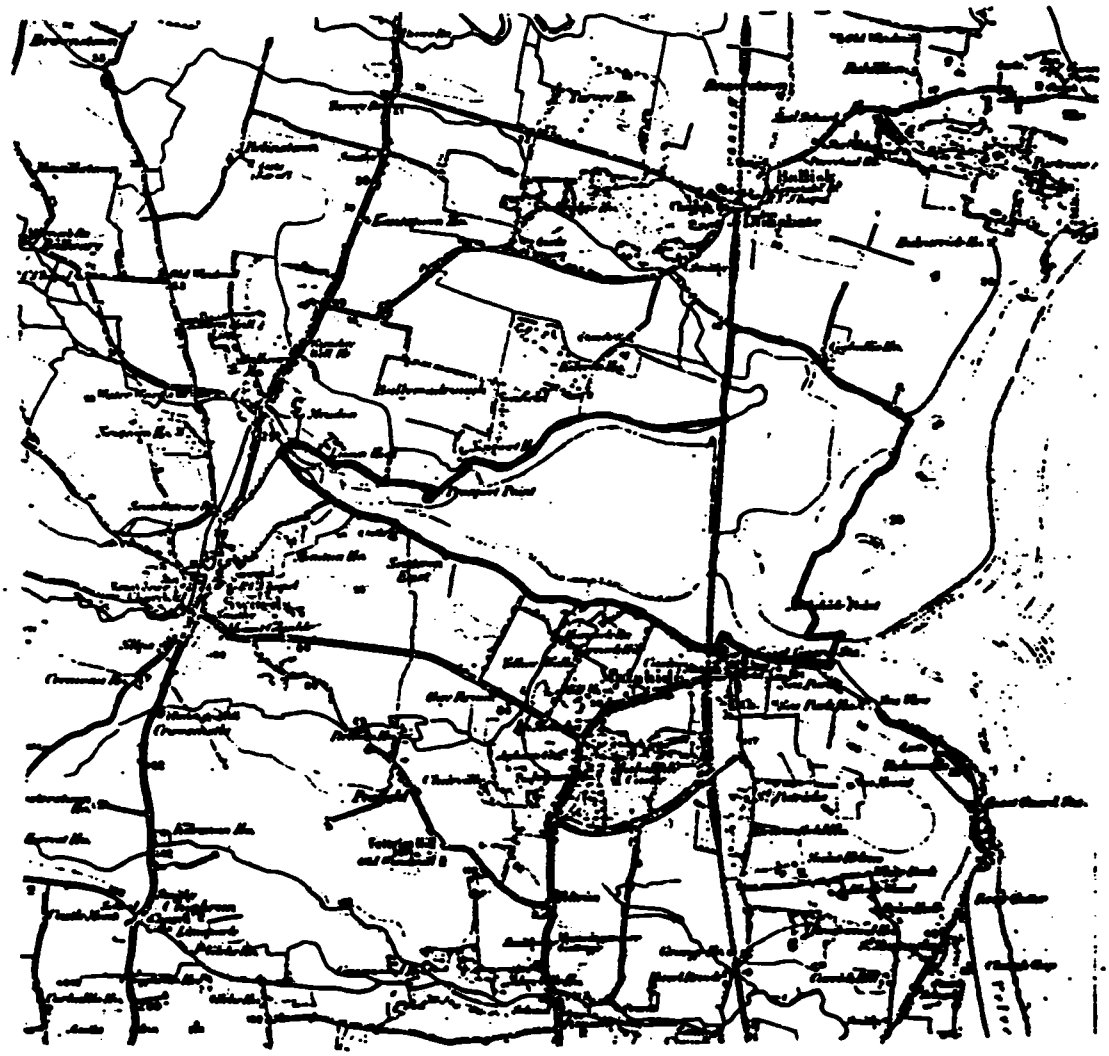
Macdonald, R A 1987 — The breeding population and distribution of the cormorant in Ireland - Irish birds 3 405-416

Merne, O J 1986 — Greylag Geese in Ireland March 1986 Irish Birds 3 207-214.

Wrong reference (Lindley?)

MAP SHOWING AREA OF SCIENTIFIC INTEREST —

Scale: 1 Inch to 1 Mile



Name of area	PORTMARNOCK - MALAHIDE COAST
Acreage	13 ha
Grid reference	O. 24 , 44
Scientific interest	Geological Stratigraphical Palaeontological
Rating	National importance
Priority	C

Description of the area

The site is a coastal exposure of dark grey limestones and shales, dipping gently northwards. The site stretches from the first exposure of rock on the foreshore south of Malahide village to the Velvet Strand.

Publications

Smyth, L.B. 1920 The carboniferous coast section at Malahide, Co. Dublin Sci. Proc. R. Dublin Soc. 16 : 19-24

Chatterton, B. 1965 Unpublished B.A. thesis.

Evaluation

The lower Carboniferous or Dinantian rocks are subdivided into two groups, the Visean and Tournaisian, the second being the lower. The Tournaisian rocks may be further subdivided into a lower Cleistopora zone (which is a transition stratum from Devonian to Carboniferous,) containing fossils from both periods. The Zaphrentis and lower Canina zones are higher and contain large caninoid corals which make their first appearance in these strata.

The faunal assemblage is varied and abundant at Malahide and is the only continuous section through the Tournaisian rocks in the Dublin basin. The fossil beds have near equivalents in Northern England and are thus national representatives of an international series.

A number of new fossil species have been discovered at this site.

The coastal rocks specified at this site are of great interest to visiting

geological field groups, from this country and abroad and the site will be listed in a forthcoming guide to the geology of the Dublin area. The site is also valuable for present and forthcoming research and is used by the Dublin public for recreational purposes.

Vulnerability

Foreshore development could adversely affect the area by obscuring the exposures.

Recommendations

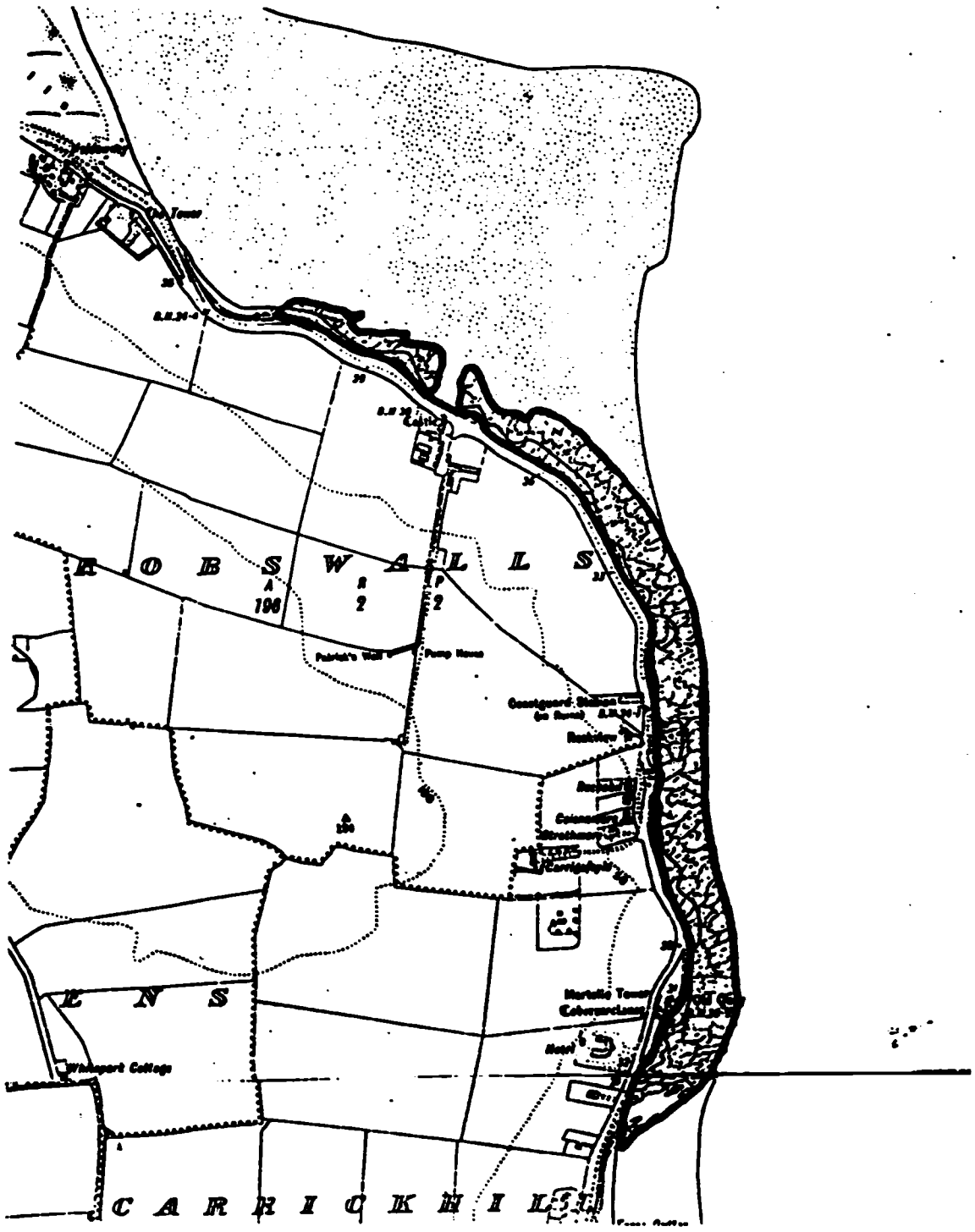
This site should be maintained as at present without interference with the rock exposures.

1988

This area is still of scientific importance.

MAP SHOWING AREA OF SCIENTIFIC INTEREST —

Scale: 6 Inches to 1 Mile



Name of Area	ROCKABILL ISLAND
Acreage	2.5 ha (this refers to islands only but see map)
Grid Reference	O. 321. 626
Scientific Interest	Ornithological
Rating	National
Priority	C

Description of Area

The site, a rocky offshore island, is shown on the accompanying map.

Evaluation

The island is a seabird nesting and roosting place. Counts taken during the breeding seasons of 1968 and 1969 during the Operation Seafarer census revealed the following numbers of nesting birds:-

	1968	1969
Common tern	50	30-40
Arctic tern	2	2
Roseate tern	100	100
Kittiwake	30	10
Herring gull	30	c.50
Greater black backed gull	3	c.20
Black guillemots	3	-

Sandwich terns and lesser black backed gulls have been known to breed on the island. All of these species roost there as do cormorants.

These figures are, by the standards of the larger and more densely populated offshore islands, small. However, the numbers of Roseate terns are noteworthy because this species is not common.

Vulnerability

The rarer, more nervous nesting birds, notably the terns, display large fluctuations at Rockabill - as they do elsewhere. About 1965 they are said not to have nested there at all. In order to maintain them at the rock, the area must be kept free of disturbance. The most likely form of disruption would probably be casual shooting of birds in the vicinity of the island and this should be controlled if necessary by a Conservation Order.

Recommendations

According to the present distribution of birds (for 1968 and 1969) on the island, gulls are restricted to the Bill and the more unusual species occur on the island proper. Should this situation change and the gulls invade the island, the rarer species could be disturbed and even disperse. Competition between terns and herring gulls has become a problem in other seabird colonies. Eventually, management of the site by man could become necessary.

Rockabill, in the light of what is at present known of it, is apparently secure for the immediate future. Unless conditions change, it should be possible for its scientific values to persist unaided.

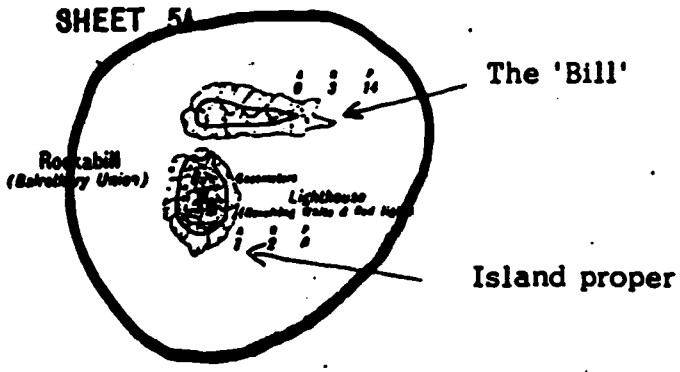
Sites of greater importance and priority should be attended to first.

1988

Rockabill Island in 1988 was the single most important colony in north-west Europe for roseate terns. 310 pairs nested there - this is 50% of the total north-west Europe population. The other region where there is a concentration is in the Azores, otherwise roseate terns nest in small groups of up to 10 pairs. As a consequence of this it must now be considered to be of national importance.

MAP SHOWING AREA OF SCIENTIFIC INTEREST —

Scale: 6 Inches to 1 Mile



NOTE: The boundary presented here would be a reasonable limit to consider in the future should any disturbance to the island arise. Within the circle certain types of activity might be prohibited.

Name of Area	SHANAGANAH
Acreage	4 km coastal section
Grid Reference	O. 26 ,24
Scientific Interest	Geological
Rating	National Importance
Priority	B

Description of Area

The site which is shown on the accompanying map is a cliff face. The littoral area has old forest remains which are visible at extreme low water.

Evaluation

The area is important geologically because it displays features of quaternary glaciation and its effects. The drowned forest for example resulted from inundation of sea water with the melting of the ice masses in the far north.

The cliff sections display a cut through deposit left by the retreating ice and these are of great value because they include a series through the Saale (or earlier) and the Weichselian (or later) glacial series. The boulder clays, (mixtures of rocks, stones and clay, show signs of water sorting (fluvio-glacial sands) and local pressure effects are also evident. Both types of boulder clays are distinguishable. The Saalian remains contain Ailsa Craig microgranite which was dragged from the Firth of Clyde. Some of these fragments have been released by erosion and may be found in the beach gravels under the cliff exposures.

Vulnerability

The cliff is subject to erosion at a rate of approximately 1m./year. Some of the deposits of interest are suitable for use as pottery clays, but as yet they have not been exploited. Their collection however could prove detrimental to the exposures of interest.

Recommendations

The scientific interest of the site depends on the exposure of boulder clay. Thus, any coastal defences in this area should be of the groyne type.

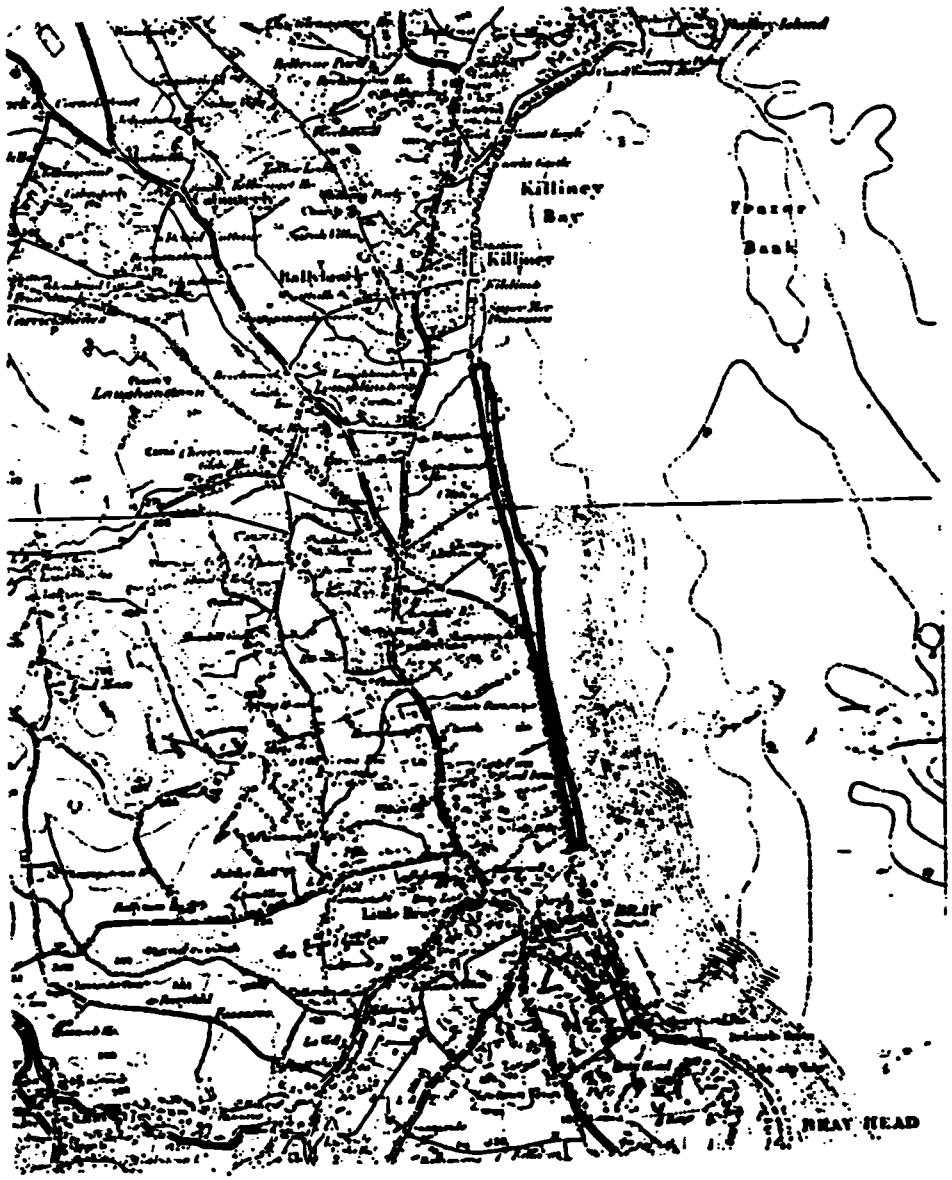
Permission should not be given for removal of pottery clay from the cliff face.

1988

This section is still an area of scientific importance.

MAP SHOWING AREA OF SCIENTIFIC INTEREST —

Scale: 1 Inch to 1 Mil



Name of area	SKERRIES - RUSH COAST A SKERRIES - LOUGHSHINNY
Acreage	24 km coastal section
Grid Reference	O. 26, 57
Scientific Interest	Geological
Rating	National importance
Priority	C

Description of the area

The area is shown on the accompanying maps. The rocks are conglomerates, limestones and shales.

Publications

Matley, C.A. & A. Vaughan (1908) Carboniferous section at Loughshinny Quart. Journ. Geol. Soc. 64: 413-474.

Evaluation

The exposure at the site reveals a unique section through the Holmpatrick limestones, Lane conglomerate, Lane limestone, and shales. Noteworthy limestones which can be identified by characteristic fossil remains are the Dibunophyllum and the Posidonomya limestones. The shales contain a plant grouping consisting of Lepidodendron and Rhodeanium and bivalve shells (lamellibranchs). The two conglomerates each possess characteristic features: the Rush conglomerate is interstratified with shales, contains fossils and is 500 ft thick. The Lane conglomerate is homogenous and coarse throughout and is 200 ft thick.

Additional features of interest are small calcite veins which were originally opened by torsional forces in Loughshinny Bay.

The exposures are visited by geological groups from this country and abroad and active research is taking place there at present. The rocks and small

patches of strand are of amenity and recreation value to people from a wide area. A geological itinerary of the Dublin region which is at present being prepared lists the area as one of value.

Vulnerability

Coastal erosion would appear to be the most serious threat to the site and, in Loughshinny bay, it has resulted in a retreat of the cliff face, shales are particularly vulnerable.

Recommendations

Protective measures for vulnerable parts of the rock face should be kept under review and any development in the future should be in accordance with the geological value of the site.

1988

There is a fair amount of dumping in this area which is a cause of concern. There is also a possibility that the trans-Irish Sea gas pipe could come ashore at Loughshinny. Its line should be set so as to avoid the more important rock exposures.

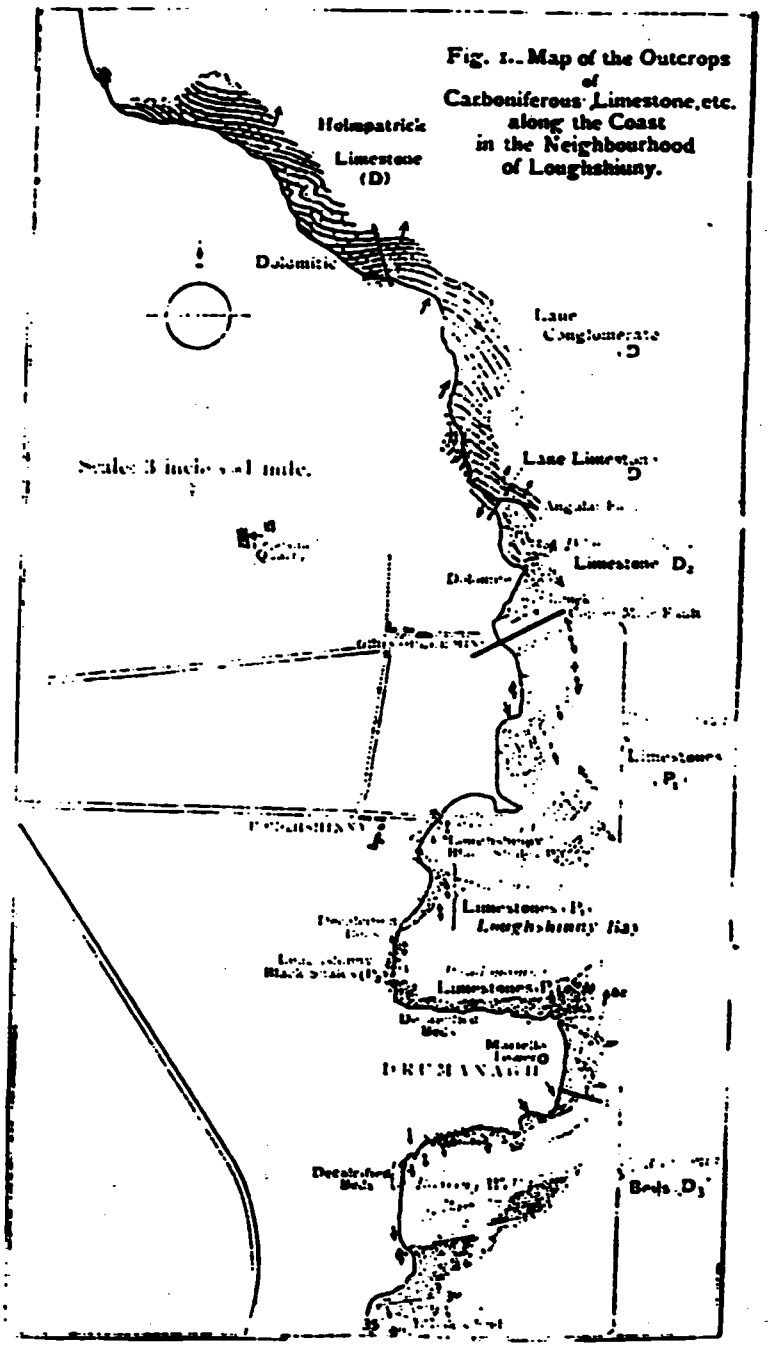


Fig. 1.—Map of the Outcrops of Carboniferous Limestone, etc. along the Coast in the Neighbourhood of Loughshinny.

Name of Area	RUSH
Acreage	1 km coastal section
Grid Reference	0.272.542
Scientific Interest	Geological sedimentological palaeontological
Rating	National Importance
Priority	C

Description of Area

The site is shown on the accompanying map. It is an exposure of conglomerate rock.

Publications

Curry, J. 1969, Unpublished thesis, T.C.D.

Matley, C.A. & A. Vaughan, 1906, The Carboniferous rocks at Rush. Quart. Journ, Geol. Soc. 62: 275-323

Smyth, L.B. 1950, A Visean cephalopod fauna in the Rush slates of Co. Dublin Proc. R. Ir. Acad. 15:

Evaluation

The conglomerate is a turbidite which has originated by sediment build-up in shallow water. Rounded beach fragments and a fine matrix were stratified at this stage, but a shock wave, possibly originating as an earthquake, began an avalanche and the fine and coarse materials were inter-mingled. The resulting rock displays various features which characterise turbidites; slumping, convolutions and inversions are visible (these terms refer to the disorganisation of stone fragments as a result of shock). Lensing beds and laminations were formed by the settlement of fine material in spaces among the coarse materials. Cross bedding occurs where sand ripple marks were covered by fine sand, thus preserving their shape and load structures occur where heavy materials made a deep impression on fine underlying sediments.

Bioclastic inclusions are trilobites, brachiopods, bryozoa, gastropods and foraminifera and an important goniatite horizon also occurs.

Turbidites are rare in the Carboniferous and occur only in the basinal strata (i.e. the lowest rocks). The Rush exposure is unique in Ireland. It is visited by geological groups and active research is proceeding there at present. The site will be included in a forthcoming itinerary of the Dublin district.

Vulnerability

There are no obvious threats to the site although there is some dumping of refuse on the rocks which is unpleasant to visitors.

Recommendations

At present no active conservation measures are required but these should be kept under review, should the situation change.

1988

This area is now considered to be of national rather than international importance

MAP SHOWING AREA OF SCIENTIFIC INTEREST —

Scale: 6 Inches to 1 Mile

Name of Area	CLONDALKIN QUARRIES
Acreage	3 ha
Grid Reference	O. 080,300.
Scientific Interest	Stratigraphical, Sedimentological, Palaeontological
Rating	Regional Importance
Priority	B

Description of Area

The areas shown on the accompanying map are quarries which are no longer actively worked.

Publications: Browne, A (1965) Unpublished M.Sc. thesis.

Lamart, A. (1938) Contemporaneous slumping: Bray series and North Dublin Proc. R. Ir. Acad. 45: (B) (1).

Evaluation

The site is an exposure thorugh limestones of the Visean group (a sub division of the lower Carboniferous period). The rock types which are exposed include turbidites which were formed in water as a result of conglomeration of available stone fragments. In this case limestone fragments were most plentiful, but Leinster granite was also available; its inclusion in turbidites is rare.

It has been estimated that the limestones in the vicinity of Clondalkin are approximately 1,600 feet thick. They contain a typical selection of Visean fossils the most common of which is Dibunophyllum. Another type of inclusion is Chert (flint) which at Clondalkin assumes unusual shapes in the limestone. Stratigraphically the thick limestone beds are of additional interest as a result of the folding they display and large features of the thick beds include slumping (distortion of the stratigraphy). Clondalkin quarry is therefore of interest stratigraphically, sedimentologically and because of its fossil content It is visited by student groups and is a valuable exposure for research on the limestones of the vicinity and it will be listed in a forthcoming itinerary of the Dublin District, (in preparation).

Vulnerability

The quarry might be filled in by domestic refuse or other material. Alternatively the use to which it is now put, the dumping of asphalt blocks, could be increased or continued.

Recommendations

Conservation interests will be served as long as the exposures in this quarry are accessible, visible and its interesting features are not damaged. The first two of these three points could be affected by the likely uses to which the site might be put (above) but it is felt that any further quarrying of the site is a remote possibility.

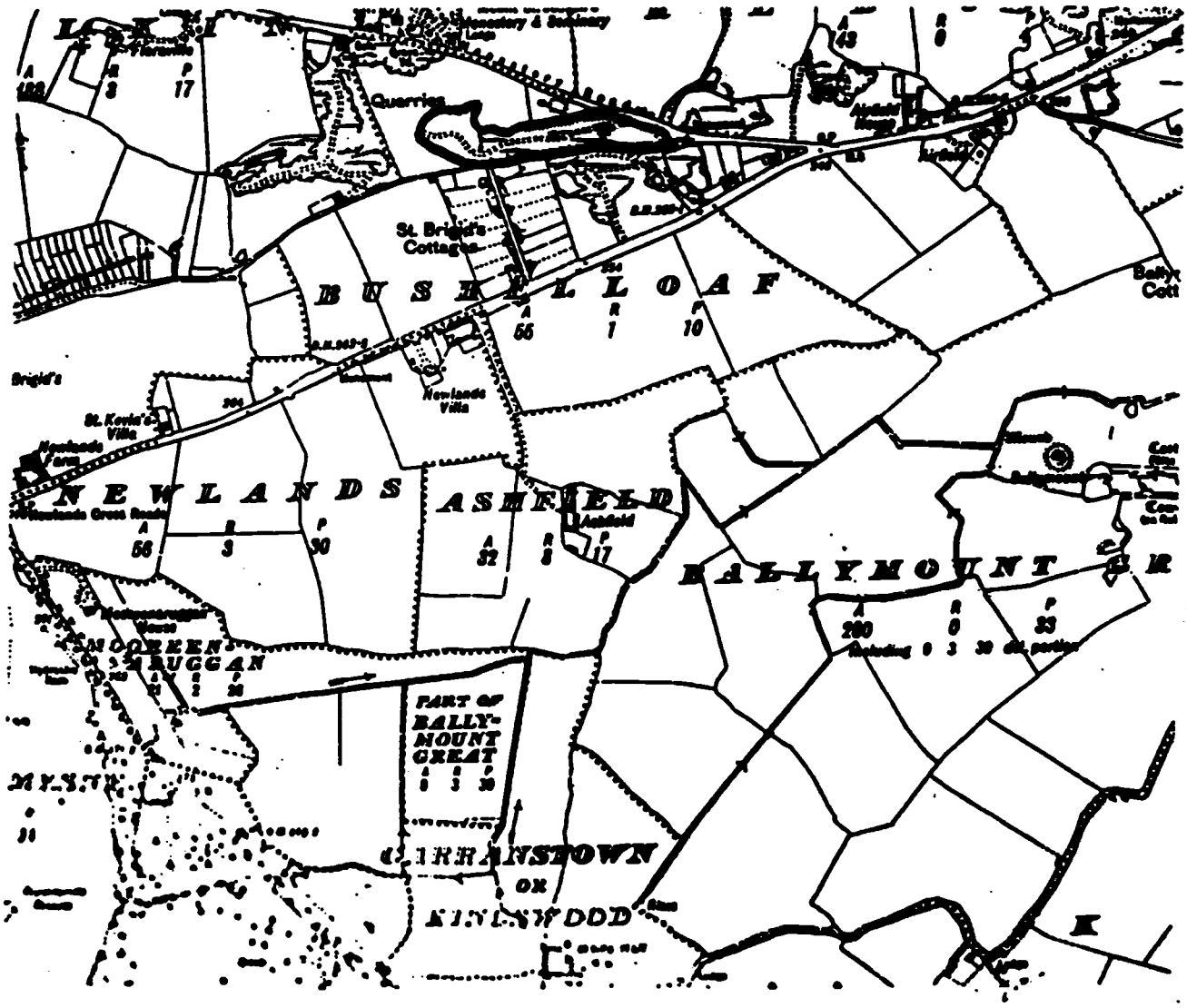
It is essential that the quarry should not be filled in and its exposures obscured either by refuse or asphalt blocks. Any development within it should ensure than access by interested persons to the exposures will be permitted.

1988

The exposures of interest in this quarry are still visible and accessible.

MAP SHOWING AREA OF SCIENTIFIC INTEREST —

Scale: 6 Inches to 1 Mile



Name of Area	CURKEEN HILL QUARRY
Acreage	0.5 ha
Grid Reference	0.255.585
Scientific Interest	Geological — Sedimentological, Palaeontological, Stratigraphical
Rating	Regional Importance
Priority	A

Description of Area

The area which is shown on the accompanying six inch map is a quarry whose faces are between 15 and 45 feet high.

Publications: Matley, C.A. (1906) The Carboniferous Rocks at Rush. Quart. Jour. Geol. Soc. 62: 275-322.

Evaluation

The Carboniferous sequence of limestones, shales and conglomerates on the coast at Rush has been described under another heading in this report. It is an extremely thick exposure (approx. 2,500 feet) and the Curkeen Hill Quarry is cut into higher strata and so provides an opportunity to investigate a more complete range of the rock types present.

The Curkeen Hill Quarry exposes limestones which are technically referred to as the D2 zone, after the fossil Dibunophyllum which is a characteristic inclusion of the rocks. The limestones are thought to be older than those occurring on the coast and they are a lighter colour.

In addition to providing a source of information for research the quarry is visited by geological field groups and it is an important demonstration exposure for the rock types in the vicinity.

Vulnerability

Dumping has occured on the site and is threatening to cover important exposures as well as making the site unpleasant to work in.

Recommendations

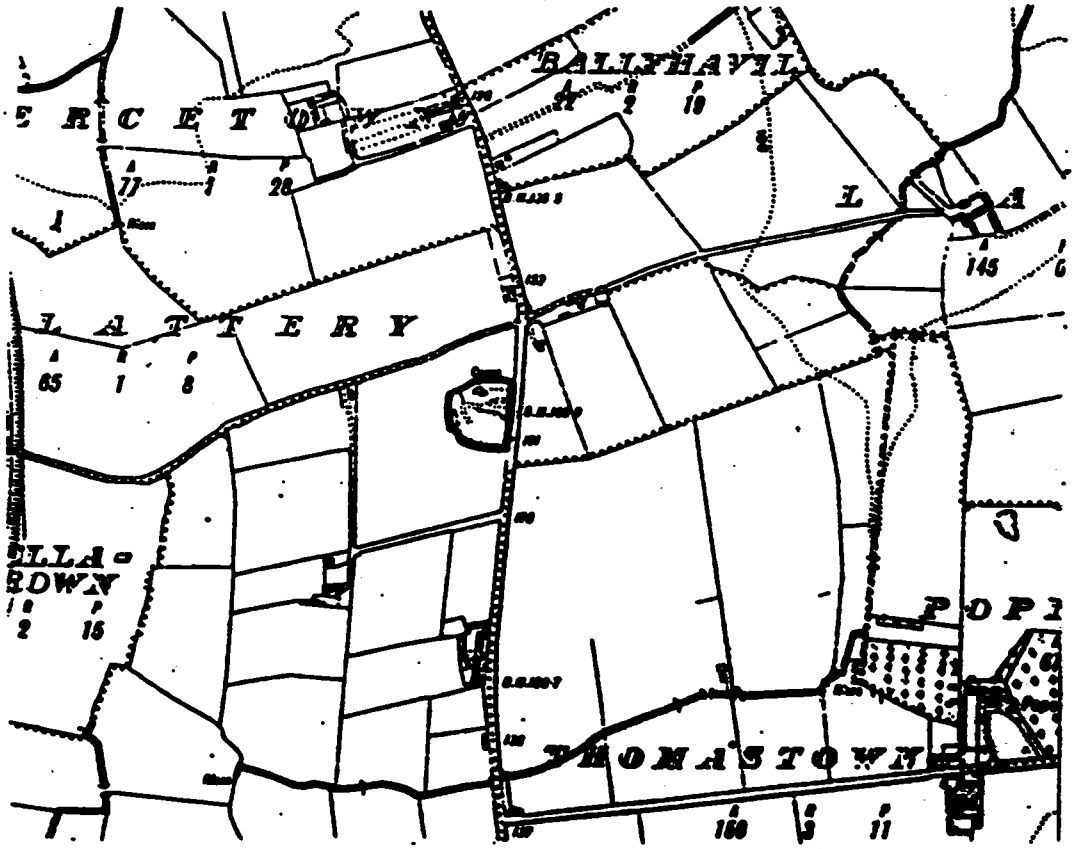
Conservation interests in this site will be satisfied if the exposures are given basic protection and remain visible. To this end dumping should be stopped.

1988

The cliff of interest was left exposed when landfill was being carried out so the exposures are still visible.

MAP SHOWING AREA OF SCIENTIFIC INTEREST —

Scale: 6 Inches to 1 Mile



Name of area	GLENASMOLE VALLEY
Acreage	50 ha
Grid Reference	0 09 22
Scientific Interest	Botanical, Zoological
Rating	Regional
Priority	B

Description of area

The non-calcareous bedrock of the Glenasmole valley has been invaded by deep drift deposits which now line the valley sides and are the cause of much of the importance of the area. Partly they are covered by natural hazel scrub, and on the less precipitous parts by a herb-rich grassland. There is much seepage through the deposits which brings to the surface water rich in bases and induces local patches of calcareous fen. These are best seen near St. Annes where Carex flacca (a sedge), Briza media (quaking grass) and Molinia caerulea (purple moor-grass) are joined by such species as:-

Parnassia palustris	grass of Parnassus
Trifolium medium	zig-zag clover
Galium uliginosum	fen bedstraw
Eleocharis quinqueflora	spike rush

The drier sites in this area have a varied pasture flora in which several orchid species are conspicuous. The sward includes Anthoxanthum odoratum (sweet vernal grass), Agrostis stolonifera (bent) and Cynosurus cristatus (crested dogstail) and the other herbs are:-

Carex caryophyllea	spring sedge
Polygala vulgaris	milkwort
Leontodon taraxacoides	hawksbit
Lotus corniculatus	birdsfoot trefoil
Anthyllis vulneraria	kidney vetch
Ononis repens	rest harrow
Listera ovata	twayblade
Gymnadenia conopsea	fragrant orchid
Platanthera chlorantha	butterfly orchid
Blackstonia perfoliata	yellow wort
Gentianella amarella	field gentian

An abundance of Rosa spp (roses) occur in the hedges of this area including one unusual species while there are other rarer plants found.

On the other side of the upper lake a marshy field rich in Sphagnum species of moss and with a generally highly acidic flora contains an interesting species of plant together with such commoner types as:-

Carex demissa	a sedge
C. echinata	a sedge
C. nigra	a sedge
Erica tetralix	cross-leaved heath
Juncus flammula	lesser spearwort
Vaccinium myrtillus	frochan
Succisa pratensis	devils bit
Lycopodium selago	clubmoss
Anagallis tenella	bog pimpernel

The lake shores themselves with the exception of one stretch have little vegetation, typical of a reservoir. The exception is the west side of the upper lake where a Lythrum - Phalaris (purple loosestrife - reed grass) marsh occurs with several interesting species. At other places individual species grow, some newly arrived, e.g. Littorella uniflora (shoreweed), Carex aquatilis (a sedge).

The invertebrates in the lakes are of few species but the contrast between the upper more stony lake and the lower which is floored by peaty mud is instructive. The simplicity of the communities is also valuable for study. Caddis flies (fam. Limnephilidae) are dominant in the upper lake while they are replaced by detritus feeders such as fly larvae (Diptera) and small worms in the lower.

Two small inflow streams were examined and found to contain a representative fauna of mayflies, stoneflies, blackflies, etc. The commonest organism was Hydropsyche (caddis) which is typical of the most frequent stream community in the country. A specimen of Diura bicaudata (stonefly) suggests that the Wicklow mountain high-level fauna may also be present in the Dodder and its tributaries.

Another important site is the hazel wood on the east side of the valley below the upper lake. This has originated naturally on the unstable calcareous slopes and includes birch (Betula pubsecens), Salix caprea (goat willow) and Sorbus hibernica (whitebeam) as well as the hazel. The herb flora is very rich, both in the woodland and in the clearings and it contains many interesting species -

some extremly rare. The value of the community is shown by the presence of such species as:-

Luzula pilosa	spring woodrush
Lamiastrum galeobdolon	yellow archangel
Veronica montana	wood speedwell
Monotropa hypopitys	yellow birds nest

The whole valley is an important eutrophic region set at relatively high altitude. Productivity is high and supports a rich terrestrial invertebrate fauna especially under the deciduous trees and this in turn encourages bird-life. Small numbers of tufted duck, grebes, coot and heron occur on the lakes, while the lack of disturbance allows an almost complete mammal fauna to exist.

Above the upper lake conditions become abruptly acid and along the headwaters of the Dodder, the Cot and Slade brooks, interesting mineral flushes occur. Equisetum sylvaticum (wood horsetail) grows here with Thelypteris oreopteris (mountain fern) while two rare species are associated with the rivers.

Evaluation

As can be seen this is an exceptionally diverse and important region that can best be treated as a single unit. In this there is a gradual transition from acid to alkaline conditions, two artificial lakes which are obtaining a relatively interesting flora by immigration, some natural woodland and many taller planted trees. Much of the valley being under one owner and fairly free from disturbance a good variety of bird and mammal species is encouraged.

On a national scale Glenasmole is one of the highest drift-filled valleys in the country.

Vulnerability

Several threats to this large area are possible, perhaps the greatest one at this time is new building of bungalows. This would detract from the considerable amenity value of the valley as well as harming water quality be seepage from septic tanks.

The terrestrial communities are scientifically more important. The pastures at St. Anne's would be badly affected by fertilizer spreading as this would cause grass to spread at the expense of the herb species.

Afforestation may be mooted in the field by Castlekelly Bridge and in the headwater region of the river. It also would threaten the future of these areas.

Sand works at the northern end are destroying part of the hazel wood.

Recommendations

It is suggested that the whole valley be treated together and made an Area of Special Amenity. Within this area in this way, pressures from housing might be more easily resisted and more detailed protection can be given to the three main sites.

Since much of the area is in the possession of the County Council, its future may be secure but it is important that the hazel woodland is not reduced in size beyond the limits shown overleaf, that no development occurs in the field at Castlekelly Bridge and that fertilization is restricted in the fields near St. Annes. If the grazing rights here are leased, this could be made a condition of the lease but if the fields are privately owned, the landowner should be contacted.

The field at Castlekelly Bridge could effectively be protected by a Conservation Order which was designed for just such a case, while a Tree Preservation Order would be suitable for the woodland.

In view of the proximity of Tallaght there will be growing pressure for the use of the valley for recreation. This use should be encouraged. It is quite compatible with a reservoir if it is properly planned and it is most desirable that a long term strategy be worked out at this stage. Such factors as the provision of a car park at Fort Bridge, the prohibition of vehicles on the roads within, and the setting out of one or a number of nature trails, might find a place in such a plan.

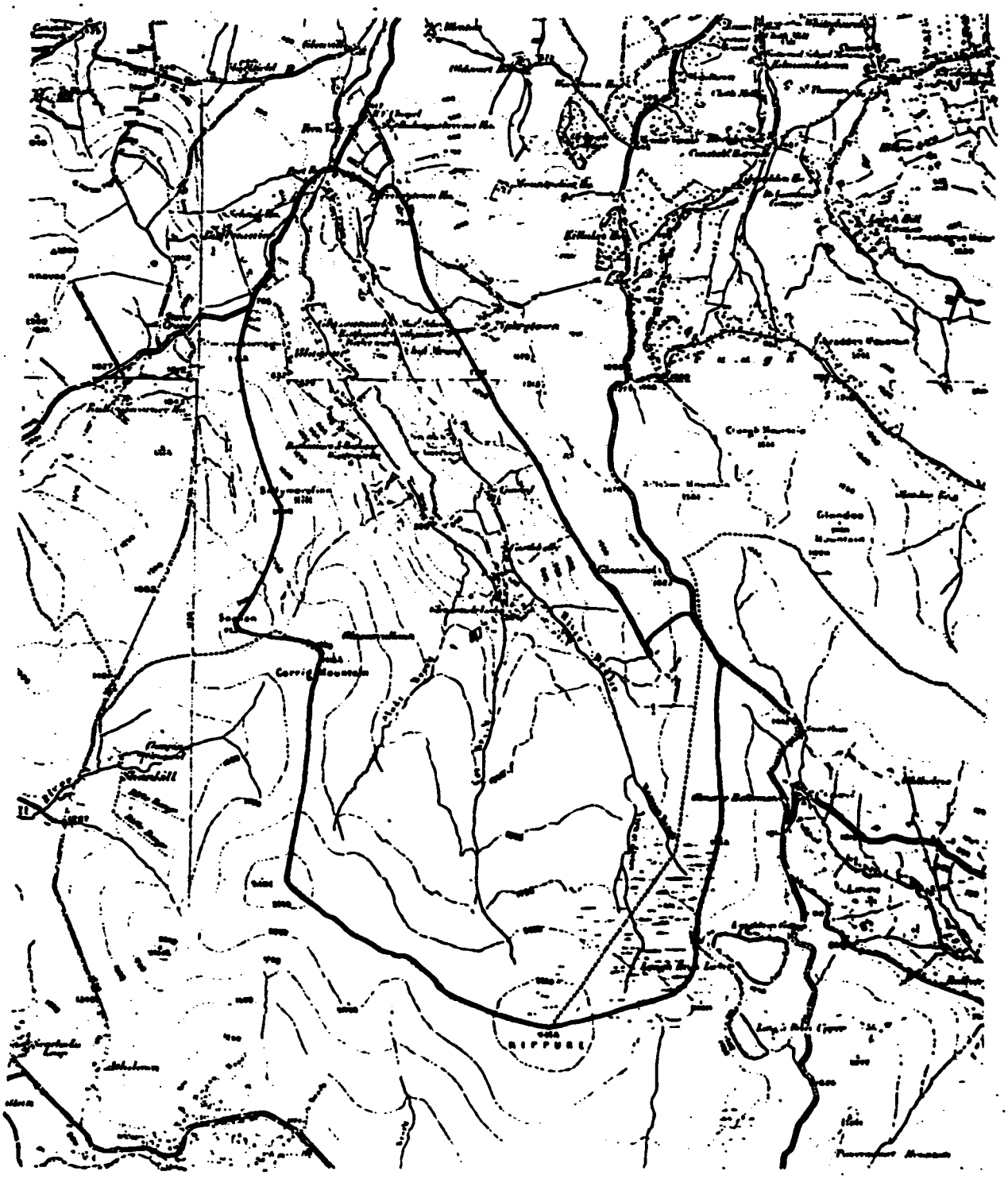
The planting of deciduous trees on the west side of the valley among the conifers should be considered. It would further diversify the area.

1988

This area is still of scientific importance.

MAP SHOWING AREA OF SCIENTIFIC INTEREST —

Scale: 1 Inch to 1 Mile



Name of Area	KILLINEY HILL AND SHORE
Acreage	42 ha
Grid Reference	0 26 25
Scientific Interest	Botanical, ecological, geological
Rating	Regional
Priority	C

Description of Area

Killiney Hill is at the edge of the Wicklow mountain intrusion so is formed of a mixture of granite and mica schist. It provides one of the best exposed junctions of these rock types, on the beach at Whiterock at which interesting mineralization has taken place due to contact metamorphism. The minerals include biotite, andelusite and garnet. Aplite and pegmatite veins are also exposed while sheeting joints and partially ingested screens of country rock are well seen. The seaward parts of the hill have in addition a covering of calcareous glacial drift so that a variety of habitats is present.

While the woods on the hill have considerable amenity value and are also important to a large bird fauna, they have little scientific importance as they are all artificial. Sycamore and horse-chestnut have been most widely planted with elm and beech and some coniferous species, especially larch. Towards the summit ash and oak appear and there is some Ilex (holly). The ground flora in these regions is mainly Hedera helix (ivy), Rubus fruticosus, (bramble) and ferns (Dryopteris dilatata) but there are herbs such as Veronica chamaedrys (germander speedwell) Oxalis acctosella (wood sorrel) and Geranium robertianum (herb robert). On the extensive patches of bare ground Mnium hornum and M. undulatum, Thuidium tamariscinum and Brachythecium spp (mosses) are common.

The open and bushy habitats on the east side and the summit have many interesting features. Many of the rock surfaces are roches moutonnes while near the summit spodumene is found in a small scarp exposure. Vicia sylvatica (wood vetch), Corydalis claviculata (yellow fumitory) and Rubia peregrina (madder) grow amongst the Ulex europaeus (gorse) and brambles while the shallow soils overlying rock support a community of winter annuals and early flowering perennials such as Scilla verna (spring squill) and Allium vineale (crow garlic).

The drift banks above and below the railway have a warm climate which encourages many sun-loving insects especially hymenoptera and orthoptera (grasshoppers) while plants with a southern distribution are also widespread. The most famous of these is the introduced Senecio cineraria which is not naturalised anywhere else in the country. Other interesting species include:-

Geranuim sanguineum	bloody cranesbill	l.a.
Erodium maritimum	sea storksbill	c
Trifolium ornithopodioides	fenugreek	o
T. striatum	soft clover	o
T. scabrum	rough clover	o
Ophrys apifera	bee orchid	o
Euphorbia portlandica	portland spurge	f

The actual seashore has a maritime vegetation on rock (eg. Inula crithmoides) (golden samphire,) Spergularia rupicola (rock spurry) and on the sand - eg Glaucium flavum (yellow horned poppy) and Calystegia soldanella (bindweed). There is a sizeable breeding colony of fulmars in this area.

At the southern end of Killiney beach there is some sand accumulation on which Ammophila (marram grass), Elymus arenarius (sea lymegrass), Eryngium maritimum (sea holly) and Cakile maritima (sea rocket) grow.

The shingle banks around the mouth of the Shanganagh river contain much Carex arenaria (sand sedge) and Ononis repens (rest harrow) in the fixed vegetation and Beta maritma (sea beet) Honkenya peplaides (sea sand wort) on the loose stones. Raphanus maritmus (sea radish) is frequent while a rarer species has been found. The stream contains Zannichellia palustris (horned pond weed).

Evaluation

Killiney Hill is to south of Dublin what Howth is to the north- namely a very popular amenity area with much scientific interest as well. It is a good location for field trips and is used at the moment for this - both geological and natural history ones. The contact metamophism has been widely quoted in the literature.* The flora is rich with several east coast rarities while there are many insect records from here also. The flora at the south end of the beach is the only example of a sand-dune community on the south side of the city.

Vulnerability

Present management is likely to maintain the biological interest of the area. This includes occasional fires, as otherwise the gorse spreads to the detriment of other communities. The natural diversity of the area would be harmed by any increase of 'park' treatment; eg cleaning out of path edges, ivy on walls, further planting of horticultural species (Prunus etc.) or tarring of paths.

The shore communities might be damaged by beach development including the area at the south end of the beach.

The geological sites are relatively secure but railway work or path making at Whiterock might be damaging.

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* Brindley, J. Proc. R.I.A. 58, No. 3.

Recommendations

The importance of Killiney Hill might well be recognised by making it an Area of Special Amenity under the Local Government (Planning & Development) Act, 1963.

The area is very suitable for some interpretive service, probably a nature trail, and is large enough to accomodate both this and unorganised recreation.

Further physical management of this esentially wild area should only be done if it is forced on the council by pressure of numbers.

1988

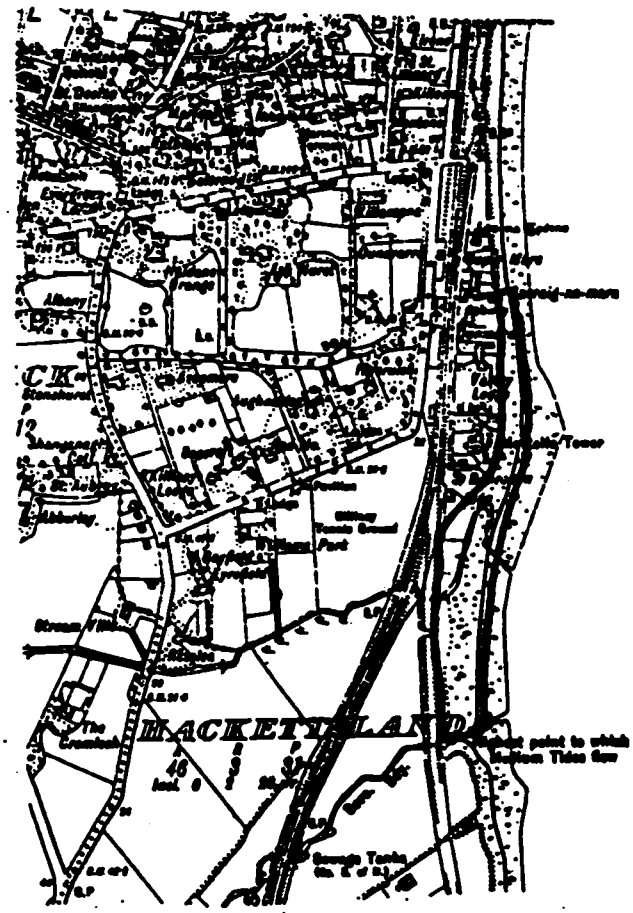
This area is still of regional scientific importance.

MAP SHOWING AREA OF SCIENTIFIC INTEREST —

Scale: 6 Inches to 1 Mile

MAP SHOWING AREA OF SCIENTIFIC INTEREST —

Scale: 6 Inches to 1 Mile



NEWLANDS CROSS

Area	0.5 ha
Grid Reference	O 070 315
Interest	Geological/Geomorphological

Description and Evaluation

The site was discovered during the laying of the gas pipeline from Kinsale to Dublin. It contains early post-glacial deposits of gastropod shells, the assortment of shells found has implications in the sequence and speed of the return of the fauna to Ireland after the close of the last Ice Age. It is an important clue to piecing together this story and has overturned some previous theories.

Vulnerability and Recommendations.

The pipe and the deposits are now buried again. However, their presence must be taken into consideration during any future excavations in the area.

The site as known today is protected by the gas pipe itself.

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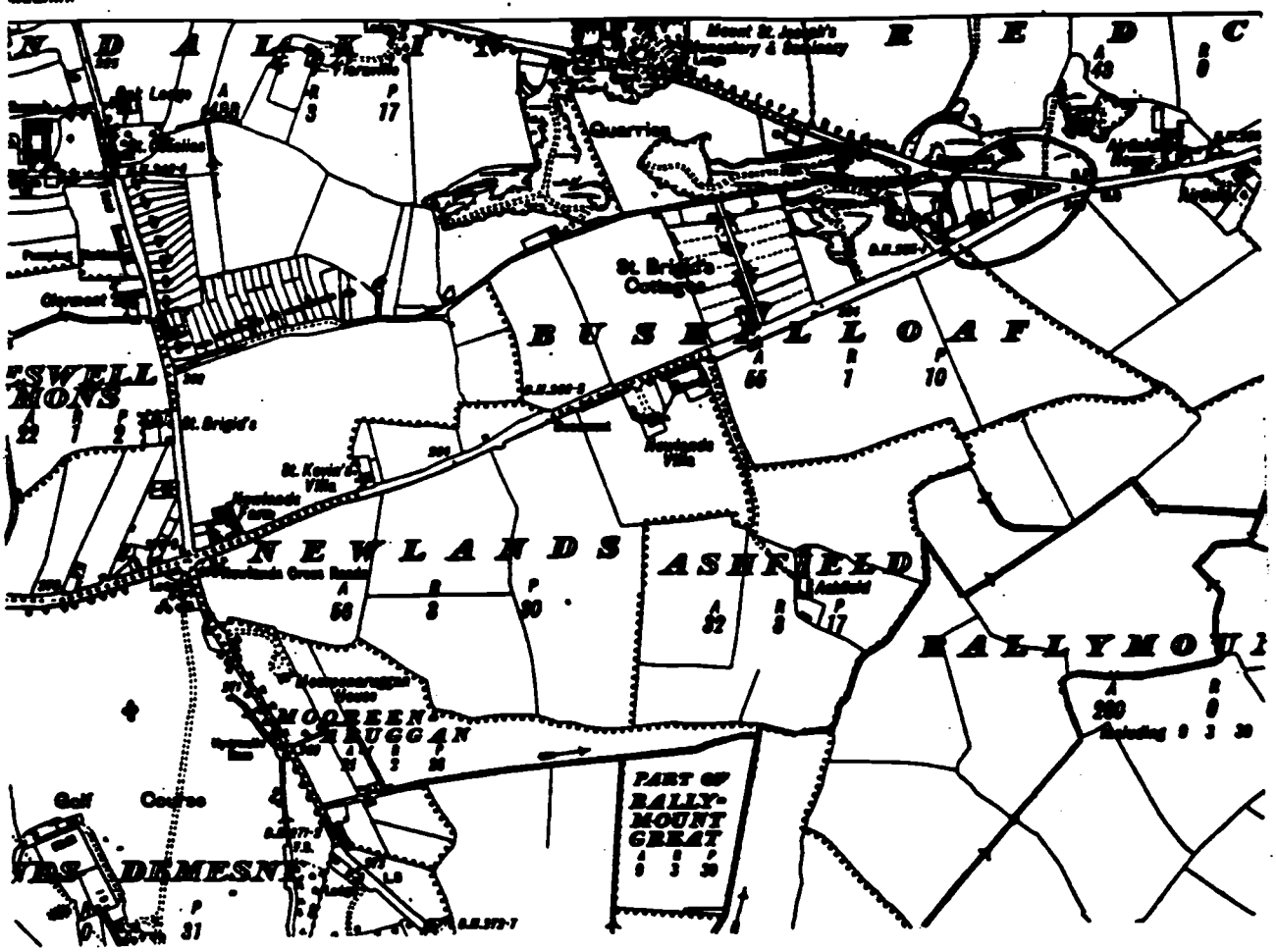

KNOCKMITTEN TY
BUSHELLOAF
NEWLANDS
ASHFIELD
PART OF RALLY-MOUNT GREAT
Golf Course
DEMESNE

Name of Area	PORTMARNOCK DUNES/BALDOYLE ESTUARY
Acreage	78 hectares
Grid Reference	O. 25, 41
Scientific Interest	Botanical, Zoological ornithological
Rating	Regional
Priority	B

Description and Evaluation of Area

This dune system was formerly the richest botanically of any in the county. Though most if not all the species survive, the development of the golf course to a higher international standard than that, for example at Malahide, has decreased the areas of semi-natural vegetation that would otherwise have had considerable ecological interest. Around the edges of the course however, much important ground still survives. It includes the northern part of the dune system and the two seaward dune ridges of the southern part. These are in good condition and actively growing with Agropyron junceum (sand couch) and Ammophila arenaria (marram) accumlating sand. Towards the northern end of the Velvet Strand this structure has broken down under pressure of visitors, leading first to the disappearance of the foredune ridge and then to erosion of the top of the seaward dune. It culminates close to the town where a large area of erosion has removed all stabilizing vegetation and sand movement has occurred for several years. A sycamore wood is presently being inundated with sand which is also blowing onto the driveway and grounds of the hotel. A thickness of two feet of sand can be deposited by a single storm.

The vegetation of the more natural areas is typical of an east coast dune system with such species as Trifolium arvense (hare's foot clover), Carlina vulgaris (carline thistle), Cynoglossum officinale (hounds tongue), Echium vulgare (vipers bugloss), Vicia lathyroides (spring vetch), Campanula rotundifolia

(harebell), Blackstonia perfoliata (yellow wort), Viola hirta (hairy violet) and Myosotis ramosissima (forget-me-not) on the drier soils as well as more commc species (Lotus, Ononis,Rosa,Hypochaeris etc.,). In dune slacks and in generally more sheltered places the following have been found:-

Schoenus nigricans	black bog rush
Ophrys apifera	bee orchid
Epipactis spp.	helleborines
Dactylorhiza incarnata	marsh orchids
Equisetum variegatum	horsetail
Selaginella selaginoides	clubmoss

The saltmarsh though largely overgrown with Spartina (rice grass), still retains some interest. Portmarnock is the site for two of the woodlice that were previously thought to be restricted to Howth and as well as this it has been much investigated for microlepidoptera (moths), for beetles and bugs. Indeed eight species of beetle were first recorded in this area and have not been found elsewhere to date.

Vulnerability

Erosion of the dunes in its active state, as at the northern end of the area, or in an incipient state, as at the other points of access, will damage both the amenity and the scientific values of the area. With the new housing developments at the north end of the golf course it is likely that increased usage of the dunes will induce some similar erosion.

Fire is also a damaging influence and on the golf course, spraying of weed-killers or fertilization.

1988

The dunes are now being considered for inclusion in a Special Amenity Area Order and to this end, a management plan for the area has been drawn up for Dublin County Council.

If this plan is carried out, there will be considerable easing of the erosion which is still taking place on the dune. This will be achieved both by repairing the existing erosion and by directing the public along pathways designed to cater for them.

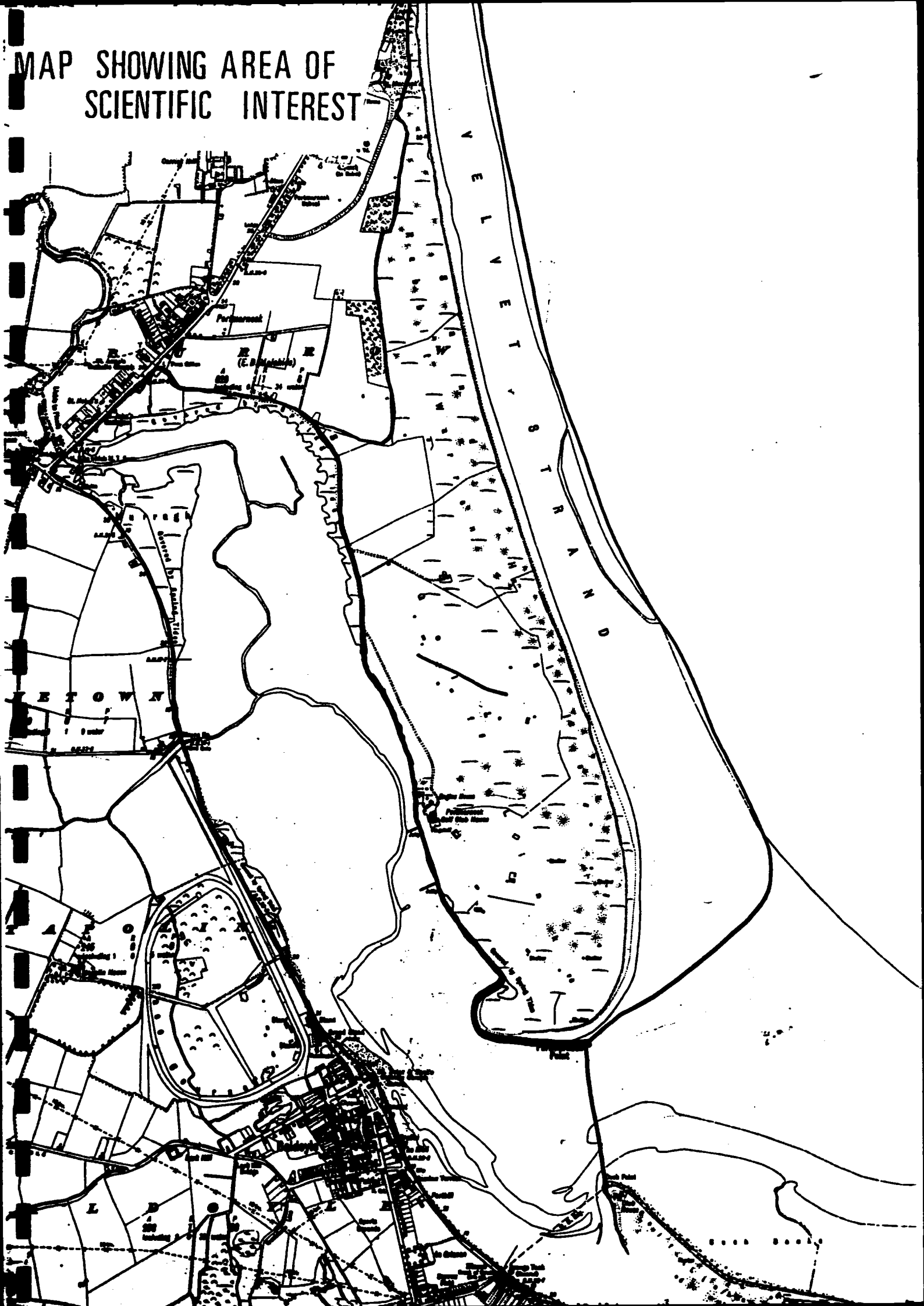
Baldoyle Bay

This area to the west of the dune system is the winter feeding ground for pale-bellied brent geese. During the last ten years, the population of brent geese in Dublin Bay has increased and some have overflowed into Baldoyle Estuary and to Merrion Strand. Wigeon also feed here in winter. However, because large sections here have been overgrown with Spartina grass, this estuary has the lowest number of birds of any of the north Dublin estuaries.

Reference:

An Foras Forbartha (1988) Management plan for Portmarnock sand-dunes.

MAP SHOWING AREA OF SCIENTIFIC INTEREST



Name of Area	PORTRAINE INLIER
Acreage	2.5 km coastal section
Grid Reference	O. 260.501
Interest	Geological, petrological, stratigraphical, structural, botanical, zoological.
Rating	Regional

Description of Area

The site is shown on the accompanying 6" map. The site is a coastal section but the arrangement of the constituent rocks is characteristic of an inlier.

Publications

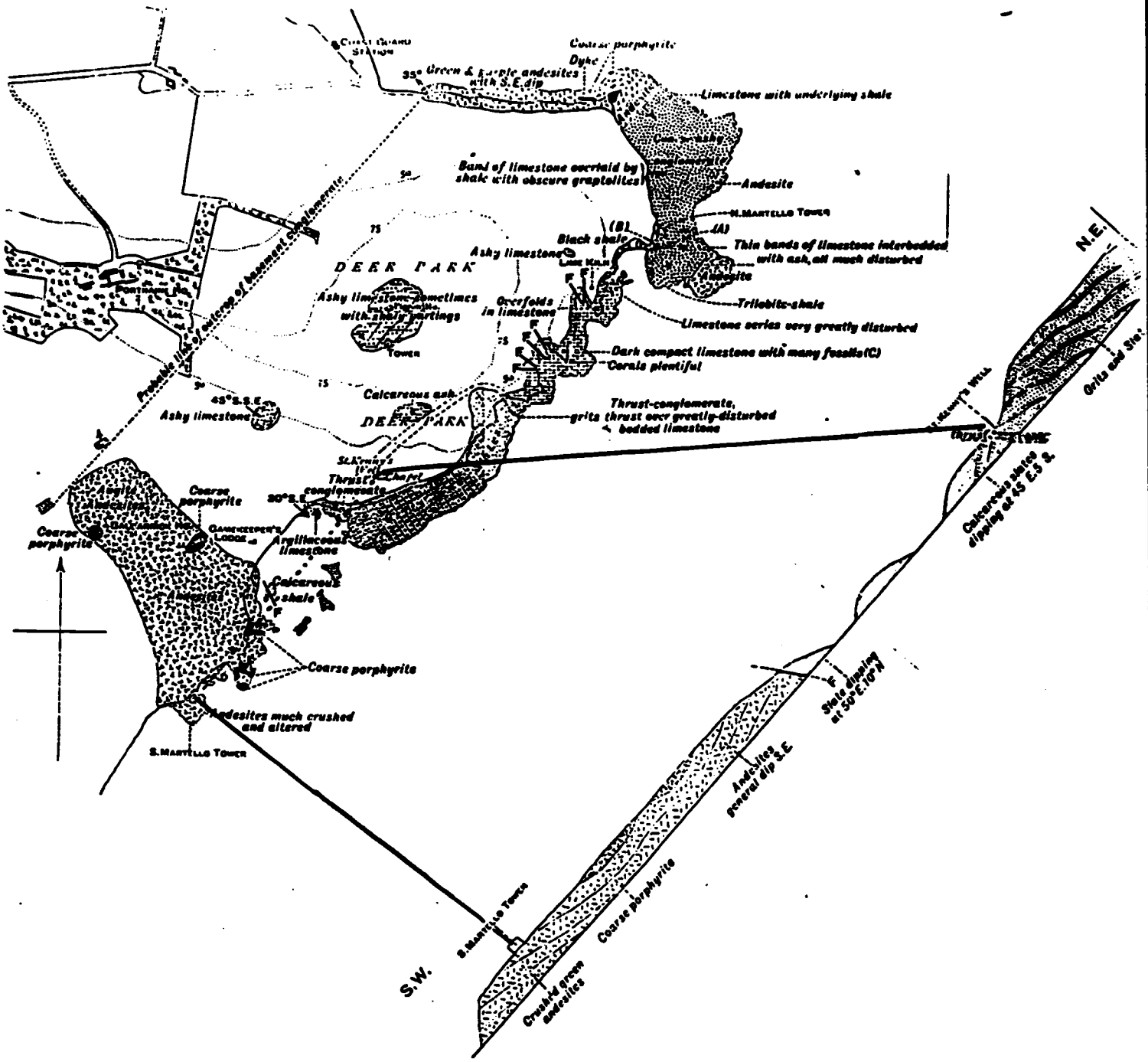
The stratigraphy of the area is discussed in various papers. The most specific of these is:

Gardiner, C. J. & Reynolds, S. H. 1897. An Account of the Portraine Inlier (Co. Dublin). Quart. Jour. Geol. Sci. 53.

Evaluation

The site is occupied by an inlier, i.e. a structure in which older rock is surrounded by rock of younger age.

In this case, the rocks forming the inlier are composed of several well-marked groups. The northern end is an area of volcanic rocks with limestones, shales and grits to the south. The volcanic rocks then appear again. A great deal of folding and faulting has occurred and this complicates the exposure. The grit series apparently forms the younger part of the exposure and the volcanics the older. The feature is shown diagramatically overleaf:



The site is also of great importance for its limestones facies and fauna. The latter does not include many rarities but has a representative selection of species. The site has important <u>slump structures</u> and <u>slide conglomerates</u> (both features being a result of faulting and displacement) and the conglomerates contain both sedimentary and volcanic inclusions. Various features of volcanic interest are also displayed.

Vulnerability

Some inland quarries which used to display good exposures of the inlier structure have now been filled and improvements to the beach area are likely. These could include in-filling and thus obscure important exposures. Virtually any development at the beachhead would be detrimental to the site by covering stratigraphic and other features.

Recommendations

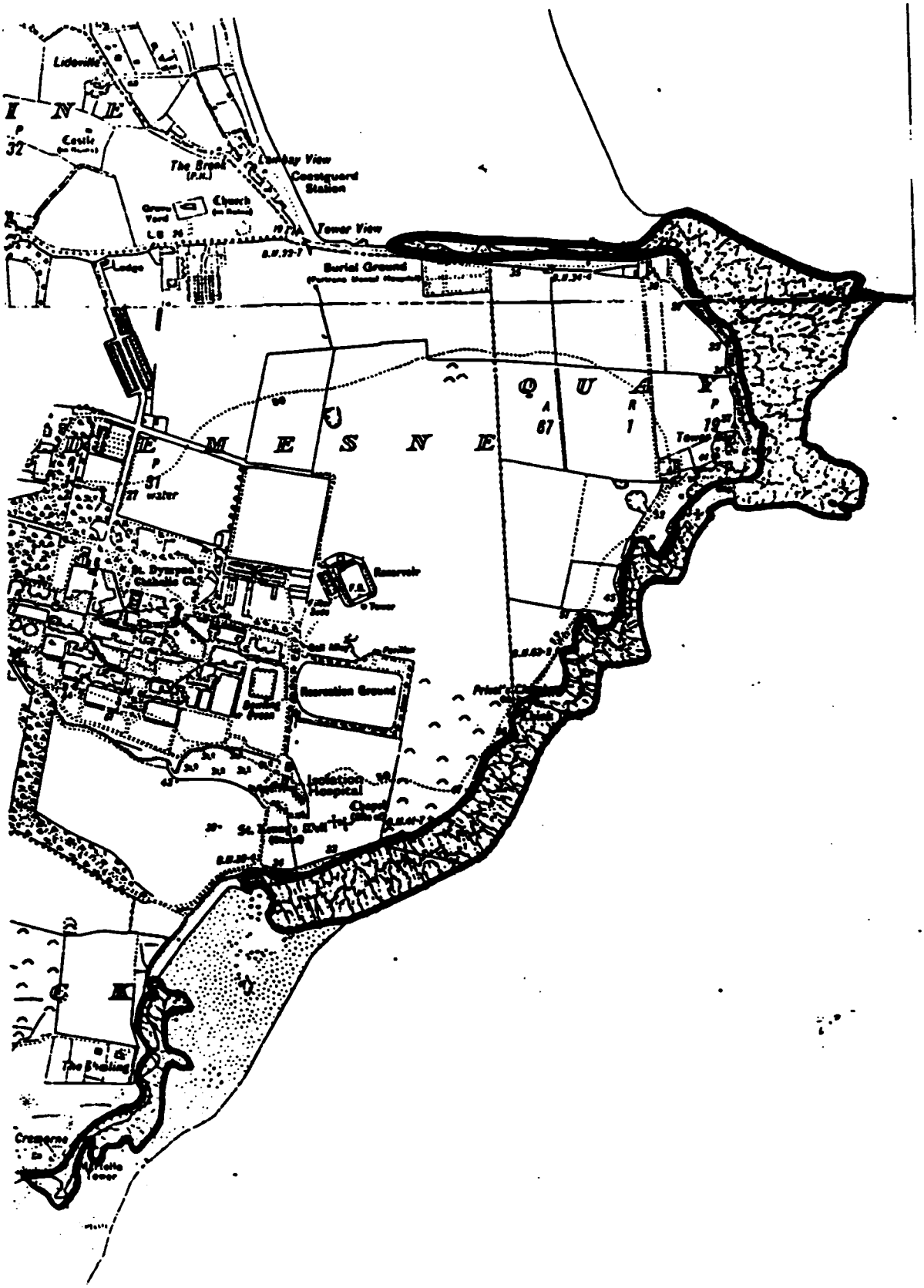
The beachhead should be left in its present condition and any development within the area shown on the 6" map should be referred to An Foras for further advice.

1988

This area is still of scientific importance and is used mainly for educational purposes.

MAP SHOWING AREA OF SCIENTIFIC INTEREST —

Scale: 6 Inches to 1 Mile



Name of Area	ROGERSTOWN ESTUARY
Acreage	4 km²
Grid Reference	O. 23, 52
Scientific Interest	Ornithological, Botanical
Rating	Regional
Priority	A

Description of Area

The area is cut by the main northern railway into a western and eastern section. The eastern part is slightly sandier and deeper so there is less colonisation of the mud surface by plants which in the western part covers a substantial amount of the surface. Here there are many areas of Salicornia europaea (glasswort) and Spartina (cord grass) is colonising the banks of winding streams out towards the middle and also as larger patches at the edges. Much of the edge of the estuary is grassland with Festuca rubra (red fescue) and patches of Halimione portulacoides (sea purslane) and Atriplex sp. These are backed by stands of Agropyron repens (couch grass) and other grassland species. Where the shore is lower and covered by more tides Aster maritma (sea aster) Juncus maritimus (sea rush), Plantago maritima (sea plantain) and Cochlearia officinale (scurvy grass) occur. There are no extensive patches of saltmarsh but Limonium humile (sea lavender) and Cochlearia anglica (scurvy grass) do occur.

The mudflats are rich in plant food species such as Zostera marina (eel grass), Ruppia maritima (tassel weed) and Enteromorpha spp. (algae). The algae are concentrated around the northern end of the railway causeway and cover the majority of the mud surface. Normal estuarine annimals seem to be absent from these areas and Corophium volutator which does occur is relatively rare until halfway across the estuary. Here also typical species occur such as ragworms, cockles (Cardium edule) and clams (Mya arenaria). The south side of the estuary seems much richer in animal life than the northern. The primary importance of the area is as a

winter month (Hutchinson, 1979):

	1971-1975
Teal	500
Wigeon	1,100
Pintail	200
Shoveler	100
Goldeneye	
Shelduck	600
Mute Swan	
Brent Goose	400
Oystercatcher	500
Golden Plover	600
Curlew	500
Redshank	500
Knot	1,300
Dunlin	1,300

Other wader species include grey plover, greenshank, spotted redshank, curlew, sandpiper, etc.

Evaluation

After the North Bull, Rogerstown Estuary is the most important estuary for wildfowl and waders in Co Dublin. The maximum number of birds present during winters 1971-1975 was 5,300 wildfowl and 7,800 waders.

Vulnerability

The refuse tip beside the railway on the northern shore gives cause for concern since apart from its straight forward consumption of the mudflat area it gives rise to pollution. Some of this is simple eutrophication - the normal pollution load of domestic refuse being aggrevated in this case by agricultural wastes from the market gardeners. This has probably led to the impoverishment of the fauna from those parts near to the dump and the abundant growth of green algae on the mudflat surface. Toxic materials from local industries may also be dumped here and be a contributory factor.

Eutrophication and subsequent loss of wildfowl food could also be caused by pollution in the incoming rivers though at the moment these are not grossly polluted. Their fauna suggests a eutrophic waterbody, probably enriched by agricultural fertilisers in the waters upstream.

The most immediate threat to the area is the spread of Spartina grass to cover the mudflats. This would largely eliminate their attractiveness to wildfowl. There seems no reason why this grass should not cover the entire western half of the area. It has spread within the last 12 - 14 years.

Recommendations

Dumping of any sort is clearly undesirable in this area. Not only are there no checks on the type of material dumped, but being in contact with the sea what is dumped is liberated to the estuary at large and causes immediate nutritional effects. An immediate improvement in the position could be achieved by establishing a boom of * soil or rubble some distance off the dump and then dumping inside this. Nutrients leaving the dump would be partly inhibited by this means. As well as this the agricultural wastes must be checked. It seems that the Rush soils being sandy and poor in humus should receive such plant material as a matter of course. Some control must be exercised on the refuse received for dumping so that toxic substances are not liberated into the estuary. It is clear that in the long term an alternative site should be found for the municipal tip.

The Spartina growth should be checked as soon as possible, probably by spraying. Experience at the North Bull should give results that can be followed elsewhere.

Some shooting still occurs in the area though this is probably a minor cause of disturbance. It should naturally be prevented in line with the ministerial no-shooting order.

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* This could be further elaborated for particular soils.

If it is considered essential to run a road across the estuary it should follow the line of the railway and be as close as possible to it. A bridge, wide enough to allow the full flow of the tide into and out of the estuary, must be incorporated in line with the railway bridge.

North west of Portraine, a narrow strip of sandhills which is free fro development is found at the seaward edge of the main dune area. Towar the point these break away as a sand spit behind which a sizeable salt- marsh has grown up.

The area is approximately 200 x 450 yards in size and is open to the sea at the north end. Basically it is a Halimione - dominated marsh (sea purslane) and this plant seems to be actively colonizing the higher regions which before* were rich in Limonium humile (sea lavendar).

At the northern end the species in order of abundance are:-

Halimione portulacoides	sea purslane
Puccinellia maritima	saltmarsh grass
Suaeda maritima	sea blite
Salicornia europaea	glasswort

In the middle region Limonium humile, (sea lavendar), Plantago maritima (sea plantain), Armeria maritima (sea pink), Aster tripolium (sea aster) and Triglochin maritimum (arrow grass) come in.

At the south end there is some encroachment by sand from the dunes but this is scarcely occurring now. Limonium binervosum (sea lavender) and Glaux maritima (sea milkwort) come in here with some Honkenya peploides (sea sandwort).

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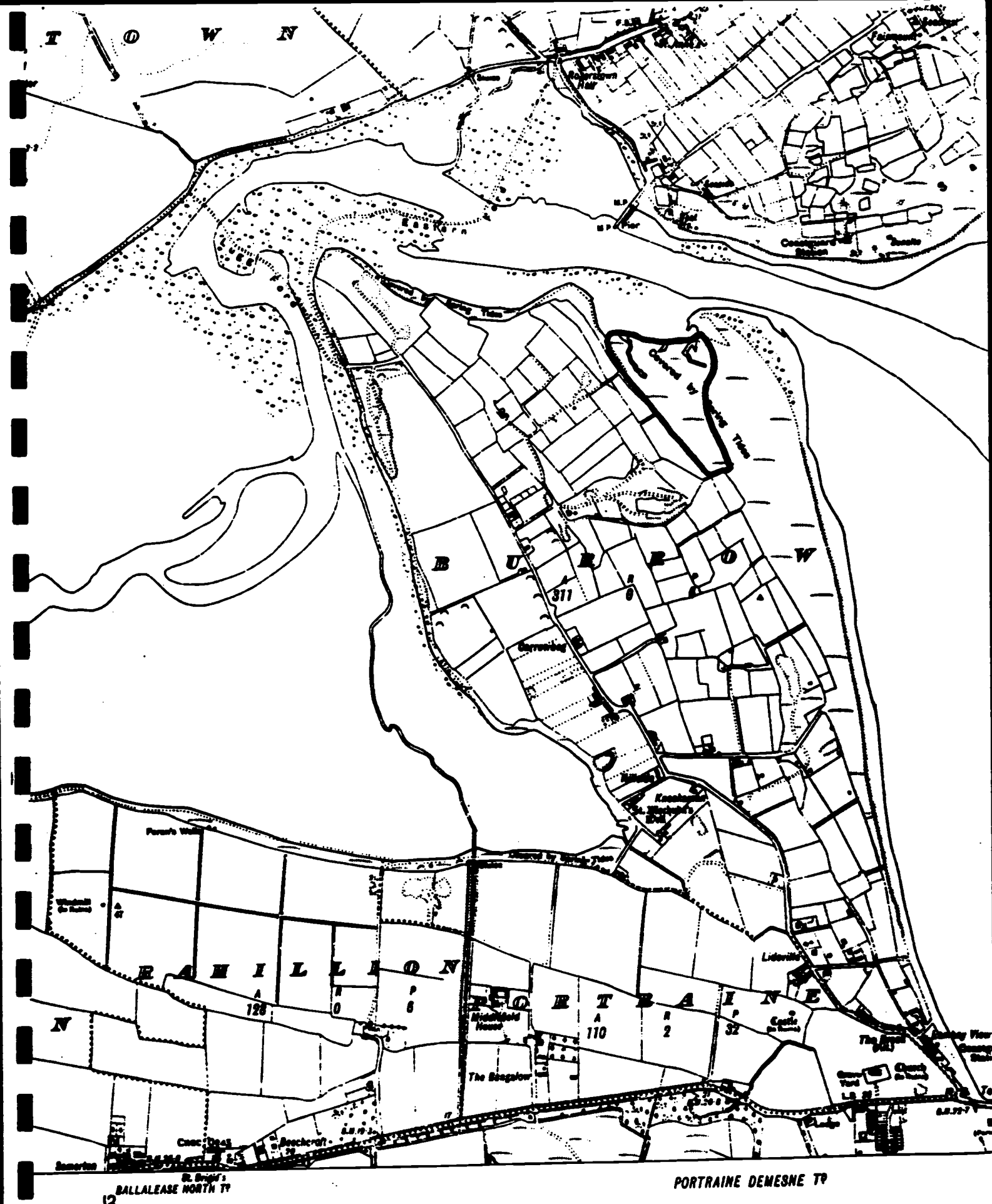
* O'Reilly, H. & Pantin, G. (1957). Some observations on the saltmarsh formation in County Dublin. Proc. R.I.A. 58B, 89.



/ the Ordnance Survey and Published by the

hance Survey Office, Phœnix Park, Dublin.

er of Spring Tides observed in Dublin Bay on 8th April 1837, this Datum being 8 218 feet below Mean Sea Level

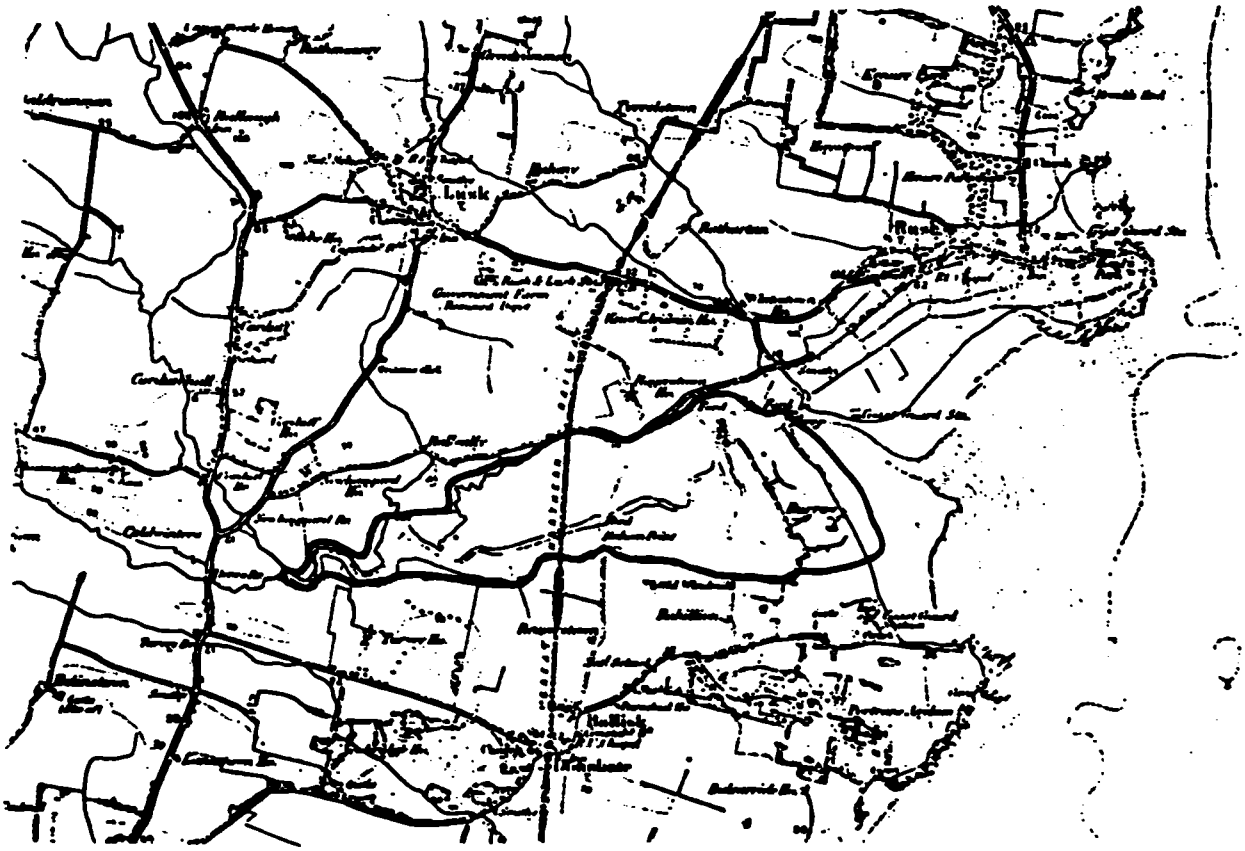
1988

That part of the estuary east of the railway bridge is now a Nature Reserve. It is about 80% of the existing mudflats and is especially important for brent geese, shelduck and waders. Other duck are more frequent on the river side.

Some of the waders that graze in the bay roost on a patch of saltmarsh north of Portrane so this area is now included in the site.

MAP SHOWING AREA OF SCIENTIFIC INTEREST —

Scale: 1 Inch to 1 Mil



Name of Area	ROYAL & GRAND CANALS
Scientific Interest	Botanical
Rating	Regional
Priority	A & B

Description and Evaluation

Canals are ecologically interesting since they bring relatively still water into areas often without it, and because they are a communication between adjacent river catchments along which aquatic organisms and plants can move. By this means, many of the plants of the Shannon basin have spread into the environs of Dublin, for example Glyceria maxima (reed grass), Sagittaria sagittifolia (arrowhead), Butomus umbellatus (flowering rush). There is now a water connection between the Shannon, Liffey, Barrow and Boyne river basins and the aquatic organisms have taken advantage of this to move freely between them.

The Royal Canal is floristically richer than the Grand, though the latter is in much better condition. They share such interesting plant species as

Ranunculus circinatus	water crowfoot
Myriophyllum verticillatum	water milfoil
Oenanthe aquatica	water dropwort
Callitriche hamulata	water storwort
Sagittaria sagittifolia	arrowhead
(on canal banks) Bromus erectus	upright brome

Confined to the Royal Canal, as far as is known, are:-

Ranunculus lingua	greater spearwort
Oenanthe fistulosa	a water dropwort
Utricularia vulgare	bladderwort
Scutellaria galericulata	skull-cap

Potamogeton coloratus	a pondweed
P. perfoliatus	"
Carex diandra	a sedge
Equisetum variegatum	horsetail

The Grand Canal:

Ranunculus trichophyllus	a water crowfoot
R. peltatus	"
Myriophyllum spicatum	water milfoil
Potamogeton densus	a pondweed
Ceratophyllum demersum	hornwort
Zannichellia palustris	horned pondweed
Eleocharis acicularis	spike rush
Butomus umbellatus	flowering rush

The canals are usually lined by narrow reedbeds of Equisetum fluviatile (water horsetail), sometimes with Scirpus lacustris (lake rush), Glyceria maxima (reed grass), or Hippuris vulgaris (marestail), and more often with Sparganium ramosum (bur-reed) and Typha latifolia (bulrush). In these a few moorhen, mallard and mute swan nest. Behind this other sedges may occur, e.g. Carex rostrata, C. hostiana, C. acutiformis, Eleocharis palustris or E. acicularis with other plants such as Epilobium hirsutum, E. palustre (willowherbs), Myosotis palustris, M. caespitosa (forget-me-not) and Lythrum salicaria (purple loosestrife).

The canal banks are often built of glacial drift soils and being uncultivated they provide sites for a variety of calcicole species more normally found on eskers. Gentianella amarella (field gentian), Erigeron acre (blue fleabone), Hypericum perforatum (St. John's wort) etc.

Several marshes exist below the banks of the canal, as at Hazelhatch and this particular one is of considerable interest. An extensive stand of

Carex spp (sedge) exists, including C. acutiformis, C. riparia, and C. rostrata. These surround a marsh with much Acrocladium (moss), Pedicularis palustris (red rattle), Juncus articulatus (jointed rush) and some Parnassia palustris (grass of Parnassus) and Carex dioica (a sedge).

Vulnerability and Recommendations

The main threat to the Royal Canal is its drying out by ingrowth of plants and failing of locks. On the Grand Canal only temporary damage can be done by weed clearance provided it is mechanical rather than chemical.

Both canals are important amenities and it is recommended that individual stretches of the Royal Canal be maintained for local amenity and scientific sites. These could be identified during 1973 if required.

Further tree planting is suggested on the Grand Canal and weed clearance on the sides of the canal should be carried out on only one bank in any year. This could be suggested to the maintenance authority. Chemical sprays should not be used.

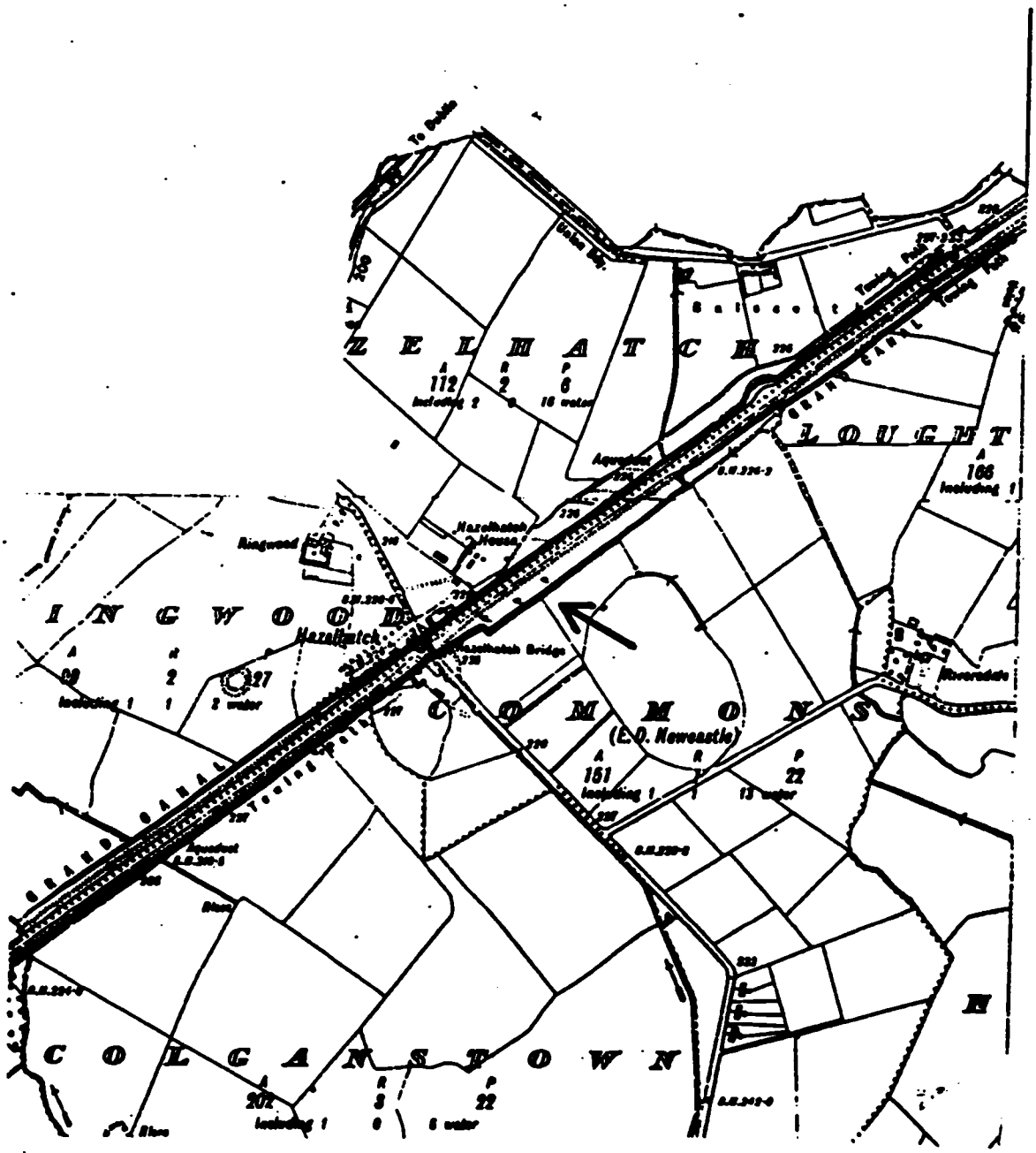
1988

The Grand Canal is still of scientific importance and in the city, the stretch from Leeson Street to Mount Street is particularly valuable because of the occurrence of Groenlandia densa (opposite leaved pondweed). This plant is protected under the 1987 Flora Protection Order. Other pondweeds and Ceratophyllum demersum (Hornwort) occur here. The severe cleaning operations carried out in this area from time to time are not good for the plant life but have led to only temporary extinctions.

The Royal Canal has deteriorated seriously since 1972, and a lot of the wetland species formerly recorded are no longer there. Oenanthe fistulosa (water dropwort), Utricularia vulgaris (bladderwort), and Ranunculus circinatus (crowfoot) have not been seen recently in the Dublin stretch of the canal although they occur further upstream.

MAP SHOWING AREA OF SCIENTIFIC INTEREST —

Scale: 6 Inches to 1 Mile



THE SCALP

Grid Reference: O 215 200

Area: 16ha

Interest: Geomorphological

Rating: Regional

Description and Evaluation

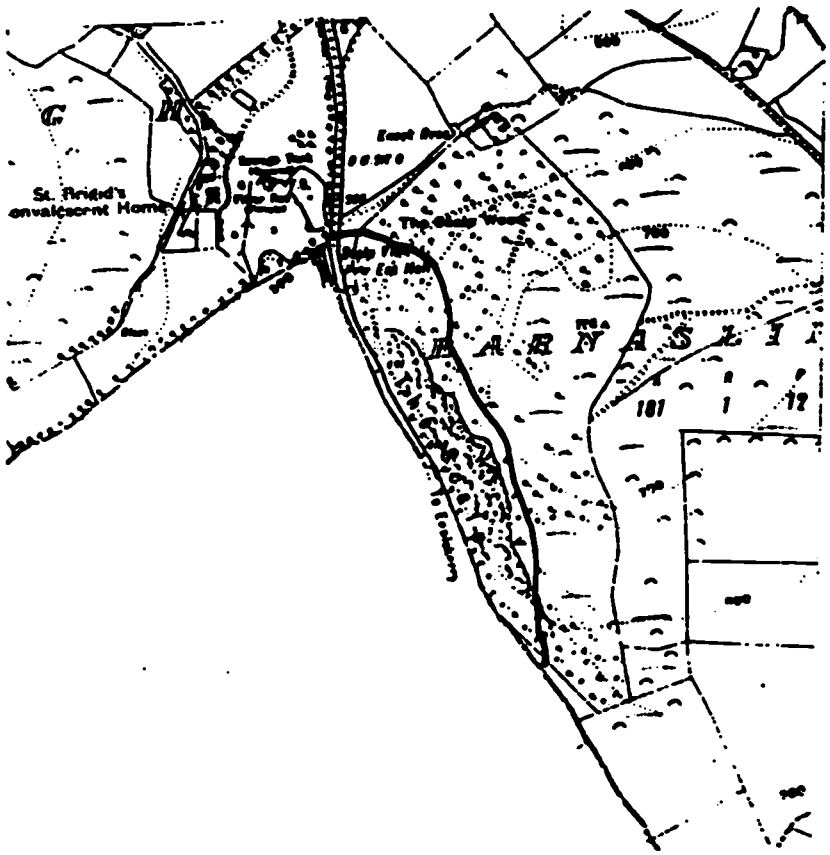
This is the best and most accessible glacial outwash channel in the Dublin area. It is now a dry valley with block scree on both sides covered by heath and woodland vegetation.

The channel was excavated by meltwater escaping southwards into glacial lake Enniskerry during the last stages of the most recent Ice Age. It is the largest of a series of notches in this part of the country, eg at the Dingle (q,v), Carrickmines, and at Ballybetagh Bog.

Vulnerability and Recommendations

The Scalp as a landform could be obscured by building development close to the road or by further afforestation. Both these changes should be resisted and the area kept in as 'raw' a state as possible. Any opportunity to remove existing conifers should be taken.

MAP SHOWING AREA OF SCIENTIFIC INTEREST —



SKERRIES ISLANDS - SHENICKS, ST PATRICK'S AND COLT

Grid Reference	O 268 596
Area	100ha
Interest	Geological, ornithological
Rating	Regional

Shenick's Island is of most interest geologically. It is composed of lower Palaeozic rocks consisting of Ordovician volcanic, siltstones and shales. On the south-east of the island there is a patch of red breccia which rests unconformably on the Ordovician strata. The underlying strata are not horizontal - which is most frequently the case where an uncomformity exists.

The islands are known for their wintering birds, 20-30 Greyflag and over 100 brent geese. Over a thousand golden plover and lapwing were counted there in 1987-1988, together with dunlin, turnstone, oystercatcher, curlew, and purple sandpiper. The vegetation provides cover for short-eared owls in winter.

In summer, there are colonies of herring and great black-backed gulls breeding on all three islands (totalling 800) and St Patrick's Island has a colony of shags, of over 150 pairs.

Handbook of the City of Dublin and the Surrounding District. British Association. 1908.

Hull, E. et al. Explanatory memoirs to accompany sheets 102 & 112, illustrating parts of the Counties Dublin and Meath. 2nd Edition. Mem. Geol. Surv. Ireland..

Matley, C.A. & Vaughan, A. 1908. The Carboniferous Rocks at Loughshinny, (Co. Dublin). Q. Irl. Geol. Soc. Lond. 64: 413 - 474.

Smyth, L.B.. 1949. The Carboniferous System in North County Dublin. Q. Irl. Geol. Soc. Lond. 105: 295 - 326.

Turner, J.S. 1938. The Dublin District, vis-a-vis the Craven-Bowland Lowlands. Trans. Leeds Geol. Ass. 5: 204 - 216.

Turner, J.S. 1938. Upper Palaeozoic Stratigraphy of the Dublin District. Proc. R. Ir. Acad. 45: (B): 1 - 32.

Because of its fine display features, this site is visited by university field groups from this country and abroad. The rocks making up the feature of interest are a valuable amenity to the city of Dublin.

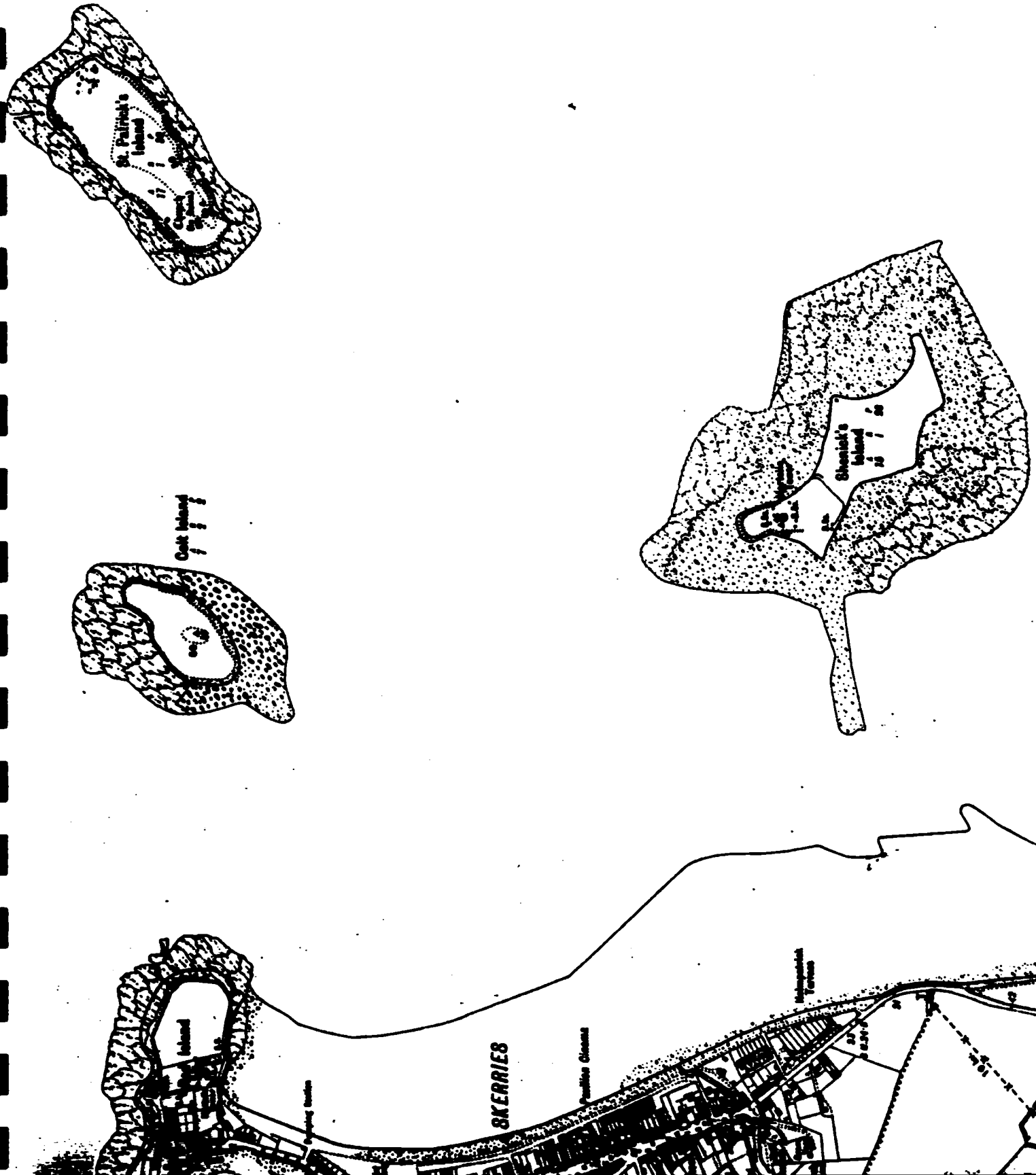
Vulnerability and Recommendations

The geological site is apparently safe, being partly below water, and only quarrying is likely to threaten it. At present, there is no sign of this threat materialising.

These islands are now a bird reserve owned by the Irish Wildbird Conservancy. This should protect them in the long-term but the birds could still be subjected to some disturbance from people landing on the islands. Wardening could take care of this.

MAP SHOWING AREA OF SCIENTIFIC INTEREST —

Scale: 6 Inches to 1 Mile



Name of area	BALROTHERY LAKE
Acreage	14 ha
Grid reference	O. 188, 608
Scientific interest	Botanical, ornithological
Rating	Local
Priority	C

Description of area

This is a shallow artificial lake set in sloping farmland. Though a reservoir, it has developed quite a lot of marginal vegetation including abundant Eleocharis palustris (spike rush), Equisetum limosum (water horsetail), Juncus effusus (soft rush), and Iris pseudacorus (yellow flag). There is good bottom growth in the lake including such species as:-

Polygonum amphibium	amphibious persicaria	l.a.
Hippuris vulgaris	marestail	c
Myriophyllum spicatum	water milfoil	l.c.
Apium inundatum	floating marshwort	f
Ranunculus aquatilis	water crowfoot	f
R. trichophyllus	"	f
Sparganium emersum	bur-reed	f
Alisma plantago-aquatica	water plantain	o
Littorella uniflora	shoreweed	o
Lemna minor	duckweed	f
L. polyrhiza	"	f

Further species that occur on the lake shore are Galium palustre (marsh bedstraw), Lythrum salicaria (purple loosestrife), Epilobium palustre (marsh willow herb), Typha latifolia (bulrush), Carex disticha (a sedge), Rorippa palustris (yellow cress) and Bidens tripartita (bur-marigold).

All these species combine to make the habitat attractive to dabbling duck,

especially mallard and teal. Almost all are food plants and supply seeds for the winter food of duck. Diving duck, e.g. pochard and tufted duck occur in small numbers (usually less than 10) but there may be up to 40 mallard. Coot, redshank and water rail also occur.

Evaluation

A reservoir is always an interesting ecological site since plant colonisation can be followed on a known timescale. Balrothery Lake has been gathering species during this century, the two latest being species very rare in the county.

The lake provides good feeding for wildfowl and is in general eutrophic.

Vulnerability

Some of the fertility of this lake may be derived from fertilizer run-off from the surrounding fields but as yet there is no evidence of harmful eutrophication.

This, or the leaching of pesticides into the waterbody would be the most harmful influence.

Recommendations

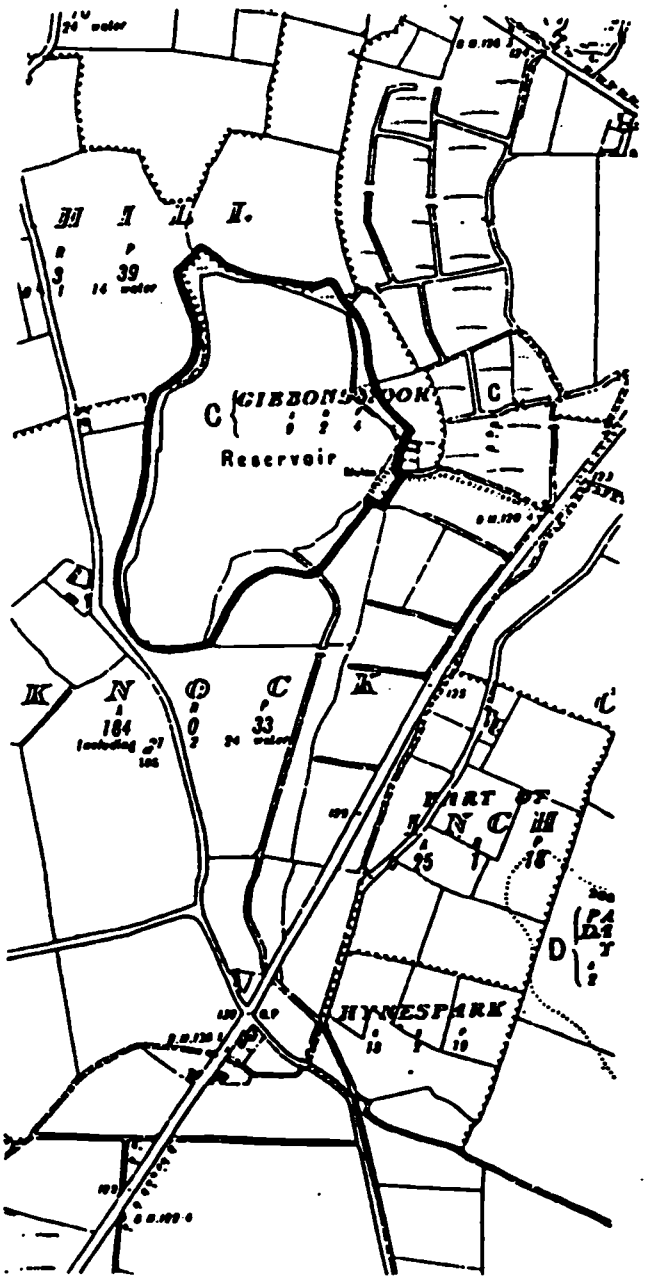
Land-use in the area should continue along its present lines. There should be no increase in fertilization levels as a safety precaution for water quality.

1988

The lake is still an area of scientific interest, both for its plants and its bird life.

MAP SHOWING AREA OF SCIENTIFIC INTEREST —

Scale: 6 Inches to 1 Mile



Name of area	BOG OF THE RING
Acreage	43 ha
Grid reference	O. 18, 60
Scientific interest	Botanical, Zoological, Ornithological
Rating	Local
Priority	A

Description of area

A flat lowlying area with impeded drainage, the Bog of the Ring shows some peat development in its upper horizons. There are isolated pools of standing water - certainly in winter - but the greater part of the surface is covered by a Iris pseudacorus - Poa trivialis (flag iris,rough-stalked meadow grass) community in which Juncus effusus (soft rush) and Filipendula ulmaria (meadowsweet) are common. Other species which occur in this dryish habitat are:-

Epilobium hirsutum	great willowherb	l.a.
Equisetum arvense	field horsetail	c
Potentilla anserina	silverweed	f
Angelica sylvestris	angelica	f
Phalaris arundinacea	reed grass	l.f.
Stellaria graminea	field stitchwort	o
Lythrum salicaria	purple loosestrife	o
Dactylorhiza maculata	spotted orchid	o

The wetter places with pools have a more interesting flora. Juncus articulatus (jointed rush), Carex lepidocarpa (a sedge) and Typha latifolia (bulrush) surround the patches of open water in which the following species grow:-

Hydrocharis morsus-ranae	frogbit
Utricularia vulgaris	bladderwort
U. neglecta	"
Apium inundatum	floating marshwort
Callitriche obtusangula	water starwort

Ranunculus aquatilis	water crowfoot
Sparganium emersum	bur-reed
Scirpus fluitans	floating mud-rush
Chara hispida	stonewort

Other marshy places allow Rorippa amphibium (amphibious yellow cress) to grow, with Dactylorhiza incarnata (marsh orchid) Lythrum portula (water purslane), Apium graveolens (wild celery), Bidens cernua and B. tripartita (bur-marigolds) and Berula erecta (water parsnip).

The Bog of the Ring retains its attractiveness for snipe and other waders (water rail, curlew, lapwing etc.) but is now visited by much fewer mallard and teal than formerly. This is no doubt due to the decrease in areas of open water, as well as the general drying out of the marsh.

Evaluation

The Bog of the Ring is the only sizeable freshwater marsh in the Dublin area and is of first rate importance as an educational area. It is frequently visited by field-trips. Several species of plant are of interest. About five of these are very rare in the county and on the east coast generally, there are also several entomological records of importance from the area.

Vulnerability and Recommendations

Drainage which is continuing, has definitely reduced the wildfowl populations visiting the area by causing plant growth to cover areas of open water. It also has probably reduced the extent of the interesting plant species though it seems that almost all survive in some place.

The failure of even deep drainage ditches to dry out appreciable areas of the marsh give the impression that the peat and clay soils of the region will never be highly productive. There are thus considerable grounds for developing the remaining wetland area as a nature reserve and wildfowl shoot. Though of relatively small size, the making of small pools at intervals would allow

the area to hold substantial numbers of mallard both for breeding and wintering. It would also maintain or increase the botanical interest which would attract field work. This aspect could be developed with a nature trail or other display.

It is recommended that the Council should consider purchasing the marsh area as it is only by this means that its continued existence and rational development can be assured.

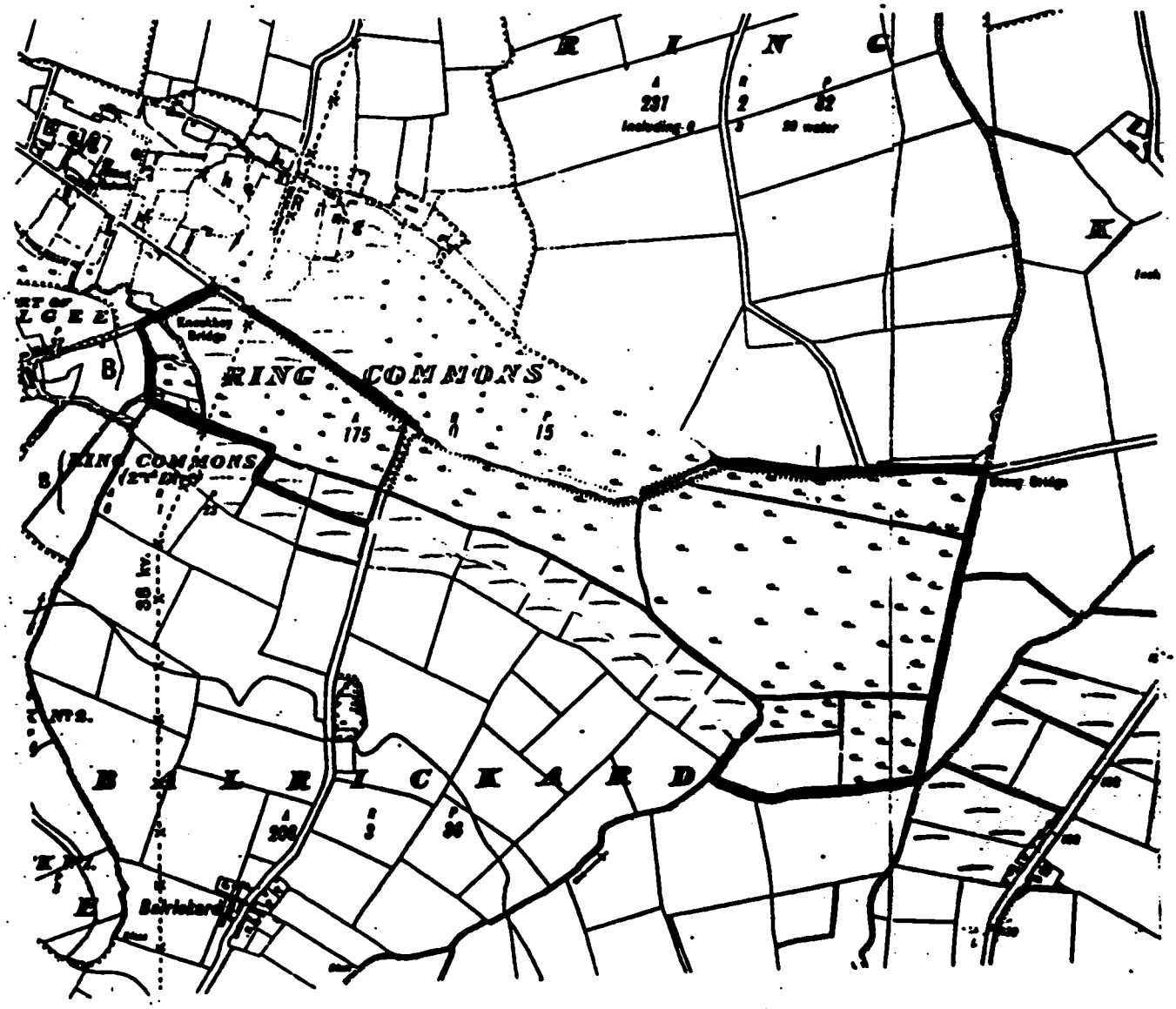
A Conservation Order might also be considered.

1988

This site has been greatly diminished by the creation of a cricket pitch in the centre. There is no longer any marsh of interest on the north side of the road and the extent of the marsh now is delineated in the map below. It can only be considered of local importance.

MAP SHOWING AREA OF SCIENTIFIC INTEREST —

Scale: 6 Inches to 1 Mile



Name of area	THE DINGLE GLEN
Acerage	7 ha
Grid Reference	0 212 222
Scientific Interest	Botanical
Rating	Local
Priority	C

Description of area

The Dingle is a dry valley formed as a glacial lake overflow channel and thus resembling the Scalp. It was cut in granite which in one place retains a water rounded surface formed at this time. Elsewhere a block scree occurs. Formerly cleared the area is now recovering a woodland cover with the pioneer species of holly, blackthorn and willows. Hawthorn is fairly common but only individual trees of ash, hazel and oak occur. Euonymus europaeus (spindle tree) and Salix capraea (goat willow) are rare.

Trees and shrubs are mostly restricted to the valley bottom and on the slopes above a heathy vegetation is found of Ulex - Pteridium (gorse-bracken) character. In this the following species occur:-

Teucrium scorodonia	wood sage
Agrostis tenuis	brown bent
Erica cinerea	bell heather
Umbillicus rupestris	wall pennywort
Sedum anglicum	stonecrop
Galium saxatile	heath bedstraw
Festuca rubra	red fescue
Sarothamnus scoparius	broom
Aira praecox	spring grass
Sieglingia decumbens	heath grass
Stellaria holostea	greater stitchwort
Luzula sylvestris	woodrush
Solidago virgaurea	golden rod
Corydalis claviculata	yellow fumitory
Polypodium cf. interjectum	polypody

A moderately rich woodland flora occurs beneath the trees. It includes four fern species, Digitalis purpurea (foxglove), Geum urbanum (wood avens), Melica uniflora (wood melick grass), Ajuga reptans (bugle) etc. At the southern end of the cut, marshy conditions allow Juncus spp (rushes) to grow with Ranunculus lenormandi (crowfoot) and Epilobium spp (willowherb).

The area supports a rich passerine bird population, and a variety of mammals and invertebrates.

Evaluation

Two rare species are found in this area but it is more as a refuge site for a diverse flora and fauna that it is included. It is visited by naturalists at the moment and the variety of habitat, from heath and bare rock to scrub and the woodland floor encourages a good variety of species.

Vulnerability

Development in the area is unlikely but forestry plantations may encroach on the site.

Recommendations

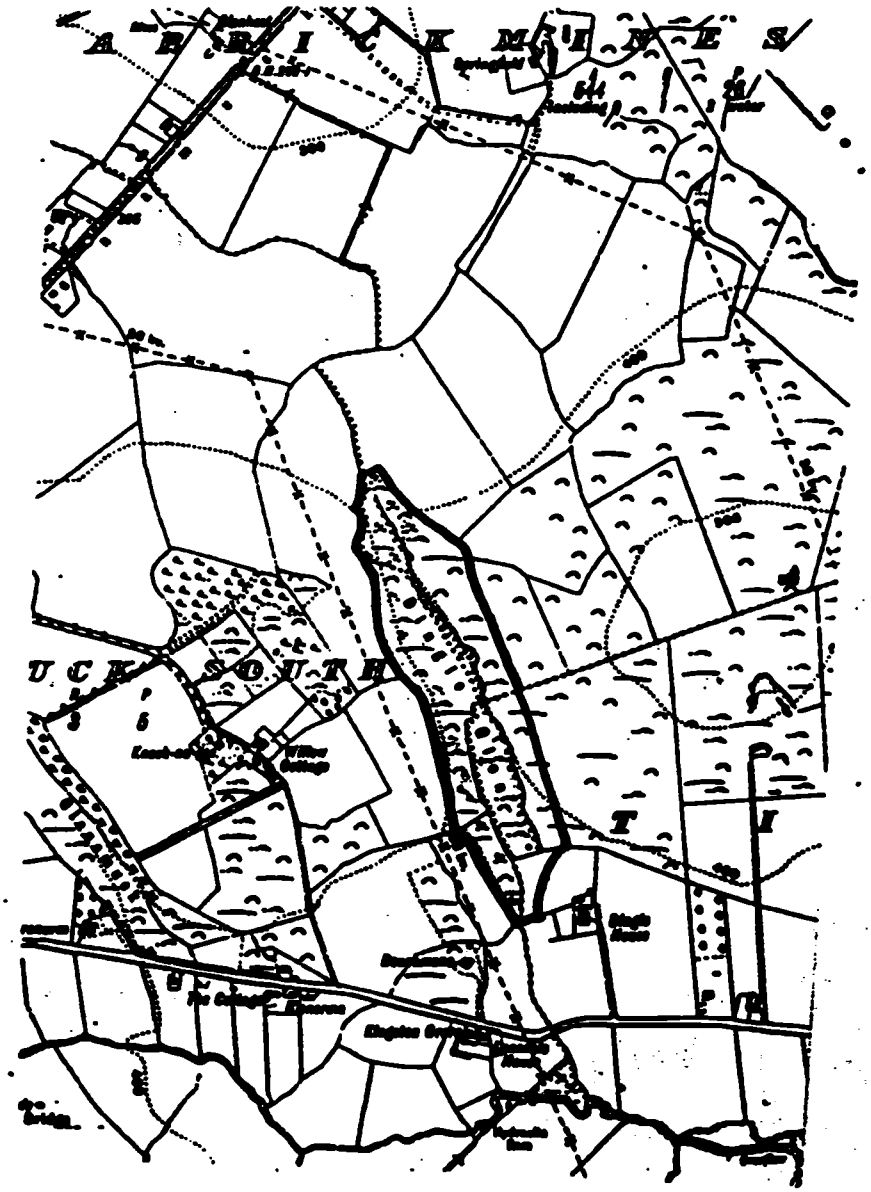
Land-use should remain in its present form in the area. With the spread of new building the valley could form an important recreational focus if left in a wild condition. The pathway could be cleared to improve access.

1988

This area is still of local scientific importance.

MAP SHOWING AREA OF SCIENTIFIC INTEREST —

Scale: 6 Inches to 1 Mile



DODDER VALLEY

Area 2km stretch of the Dodder bank

Grid Reference O 31 26

Importance Ecological

Rating Local

Description and Evaluation

This area on the north bank of the Dodder from Old Bawn Briddge to Firhouse Bridge is the last remaining piece of natural river bank vegetation in the Dodder in the built up Dublin Area.

The vegetation consists of woodland scrub mainly of willow, but up to thirteen species of tree have been recorded. Understorey vegetation contains Orchis mascula (early purple orchid and Ajuga reptans (bugle). There are wild flower meadows holding old established plant species. There is also a pond in the river bed at Firhouse which has flourished greatly since the floods of 1986. It has a great variety of plant species, and a whole range of water invertebrates. This pond is of great educational value.

Forty-eight species of birds have been recorded recently in the area including dabchick, kingfisher, dipper and grey wagtail. Part of the river bank supports a sandmartin colony of up to 100 pairs.

The area is particularly useful as an educational site in view of the proximity of Tallaght and Firhouse. So much of the Dodder banks have been defiled by dumping or flood control works that this stretch is unique as an semi-natural area.

Vulnerability and Recommendations

The ecological values of the site could be damaged by tree clearance or engineering works to the banks. Dumping on the banks or disturbance could also be a problem.

It is recommended that an informal riverside walk be established to allow access on one bank only. Its route should take into account the valuable areas and direct people away from places they could damage.


TYMON NORTH
484
TYMON SOUTH
104
Including 0
39
BALLYCRAM
102
KILLINNY
198
Including 1
3
22
1 water
111
Tymon Cottage
Tymon Villa
Ground Flt
Ground Flt (Council)
Bairothery
Firhouse
Tymon Lodge
Allenton House
Willington House

Name of Area	FELTRIM HILL
Acreage	38 acres
Grid Reference	O. 190,450
Scientific Interest	Geological - Palaeontological Sedimentological
Rating	Local Importance
Priority	A

Description of Area

The site which is a quarry is shown on the accompanying map.

Publications

Hudson, R.G.S., Clarke, M.J. and Sevastopulo, E.D., 1966 A Detailed Account of the fauna and age of a Wanlsortian Reef Knoll limestone and associated Shales, Feltrim, County Dublin. Sci. Proc. Roy. Dublin Soc. 16 (A) (2) 251 - 272.

Nevill, W.E., 1958 The Carboniferous Knoll-Reefs of East-Central Ireland. Sci. Proc. R. Ir. Acad. 59. (B) (14): 285 - 300.

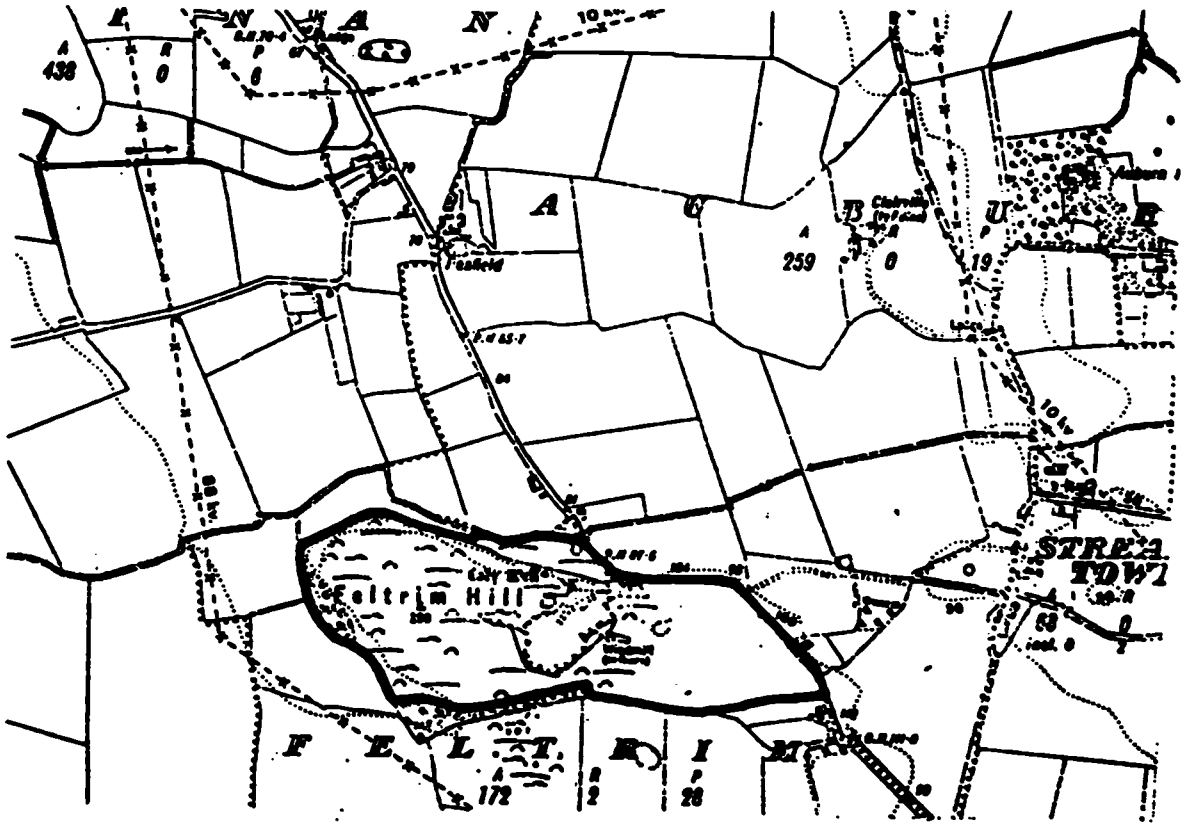
Evaluation

Feltrim Hill is a knoll-reef dating from the Carboniferous period. Such reefs were formed by an accumulation of rock and organic debris and they are not strictly comparable with coral reefs of today. Knoll-reefs are known from central Ireland and Northern England but they are comparatively rare in Britain. Feltrim Hill is regarded as a good example of the phenomenon and a number of fish species have been described from the lower shales. The distribution of knoll-reefs in eastern Ireland is shown diagramatically below. Feltrim is regarded as one of the best of these.

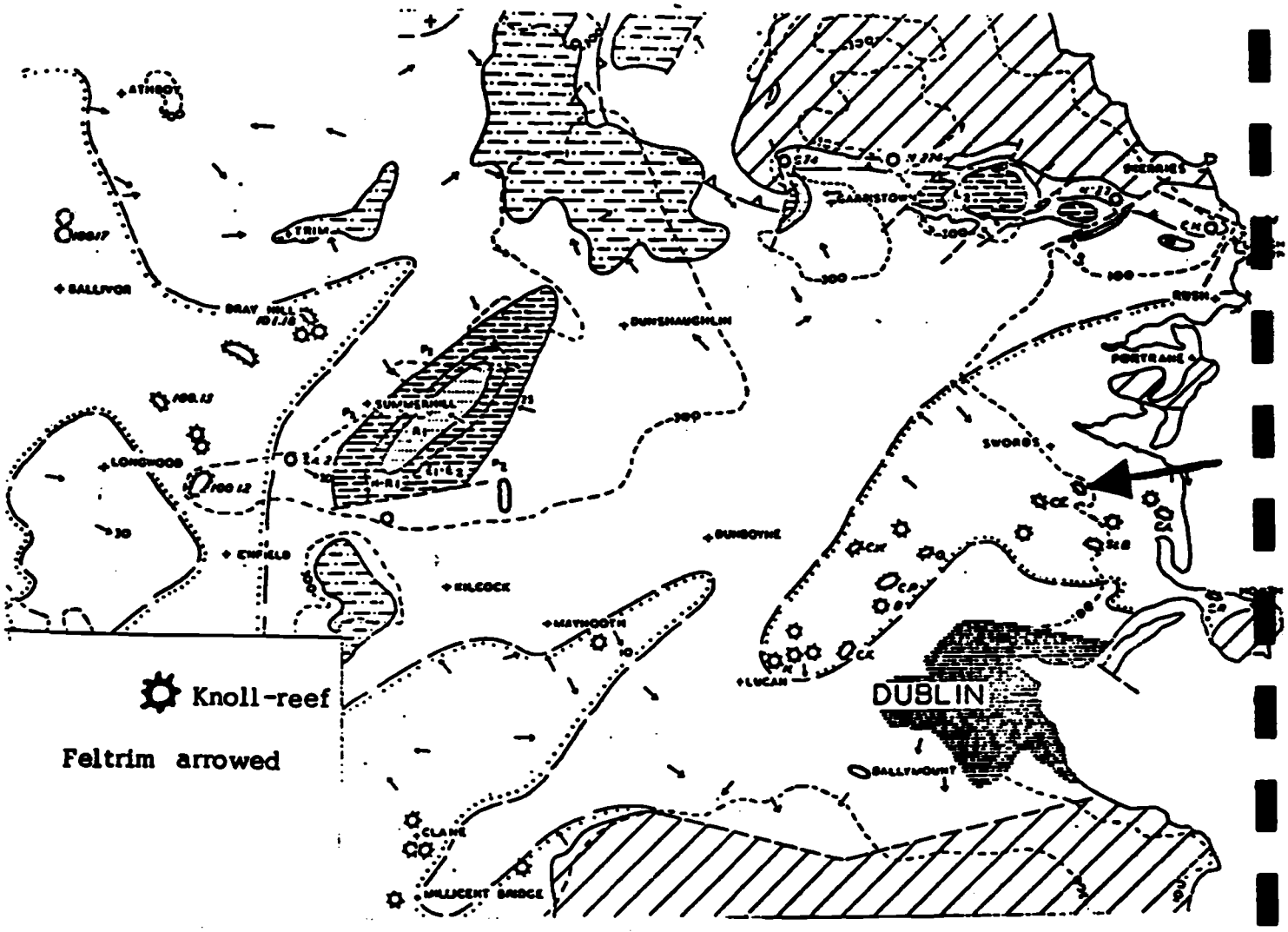
Quarrying at Feltrim has now removed the greater part of the limestone structure and only marginal exposures remain. The site is still valuable to geology classes but the removal of the greater part of the structure is responsible for its comparatively low rating.

MAP SHOWING AREA OF SCIENTIFIC INTEREST —

Scale: 6 Inches to 1 Mile



and Geranium columbinum but neither could be verified in the course of the preparation of this report.



Knoll-reef

Feltrim arrowed

Vulnerability

Complete removal of the knoll would reduce the remaining interest at the site.

Recommendations

At this time it would be desirable to plan for the best utilization of the site when quarrying has finished. It is likely that some peripheral limestone will remain and this should be available to interested people and should not be obscured by rubbish tipping or infilling.

1988

Quarrying in this area is still continuing. The exposures used for educational purposes remain and are used by geology classes. If it is proposed in the future to use this site for landfill, advice should be sought about the areas to be left exposed. It is essential that the eastern part be conserved. The Hill is now overrun with bracken and gorse, so there is little chance of finding the rare plant species formerly recorded there.

Name of Area	LOUGHLINSTOWN WOODS
Acreage	7 ha
Grid Reference	O. 253, 228
Scientific Interest	Botanical
Rating	Local
Priority	B

Description of Area

On the north bank of the Shanganagh River at Loughlinstown, original planting followed by substantial regeneration, has produced woodland of natural character in age structure and form. The western end retains its high canopy of beech, sycamore and elm with some laurel and holly below but little regeneration on an ivy-covered floor, but this grades into a dense thicket of bramble, and tree such as elm (Ulmus x hollandica), ash (Fraxinus excelsior), Prunus spinosa (blackthorn) and Corylus avellana (hazel). At the eastern end a stand of gorse (Ulex europaeus) on the light sandy soil is being invaded by tree species.

The valley bottom has much alder (Alnus glutinosa) and some willows (e.g. Salix fragilis) while a hogweed (Heracleum mantegazzianum) introduced originally from Kamchatka has spread widely. At times of high water the river overflows onto much of this area which gives its vegetation a slightly unusual character.

Characteristic but in no way uncommon herbs were seen but it is likely that the area supports many nesting passerine birchs, including blackcap, long-tailed tit, as well as woodcock.

Evaluation

This is chiefly an amenity woodland giving the first illusion of being in the country to the traveller going south from Dublin and a fine outlook for the hospital and other housing development on Commons Road. It also has some

ecological interest in its structure which is briefly outlined above, and serves as an important refuge area in a zone of pasturage. Many organisms which feed in the surrounding fields are totally dependant on such a refuge for shelter and consequent survival.

Vulnerability

As with any area of woodland, felling or reafforestation with coniferous species are the most serious threats.

Recommendations

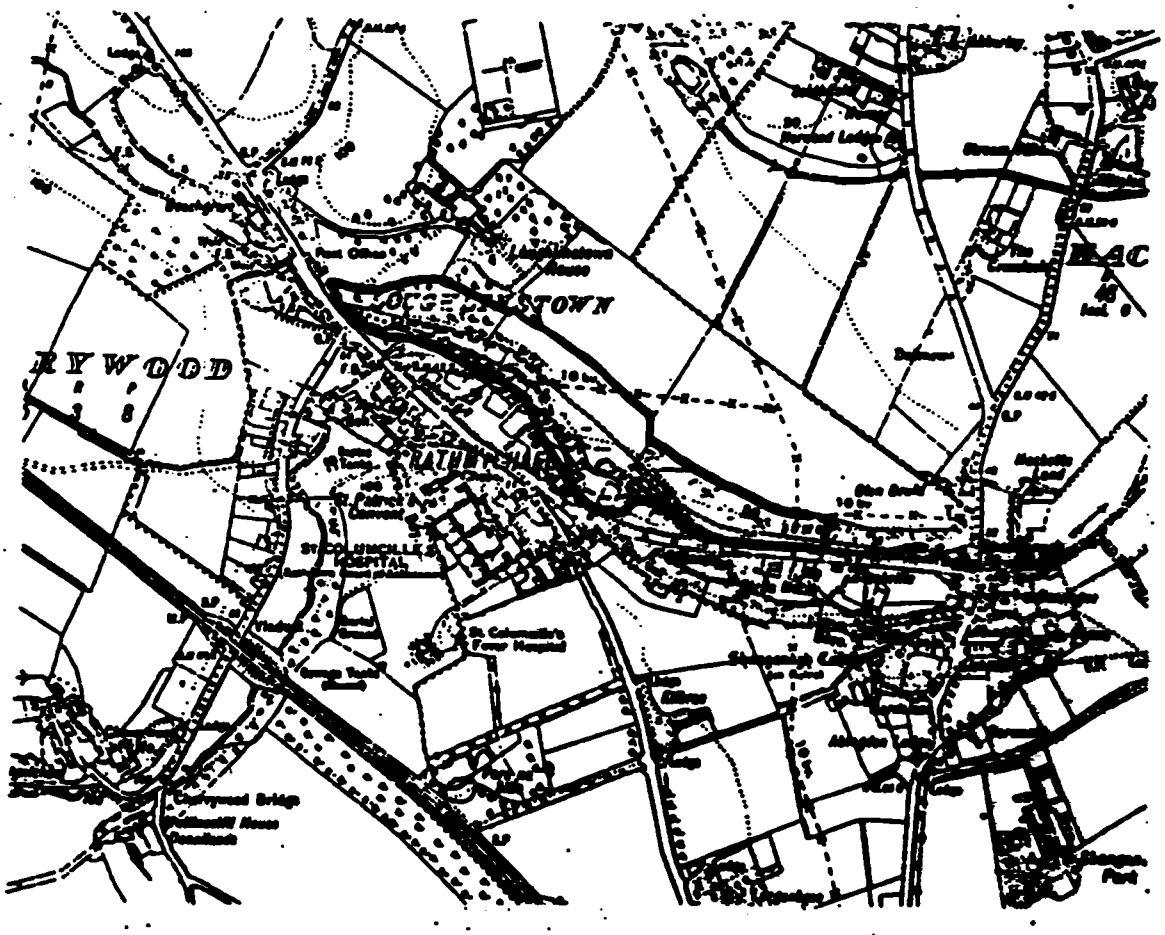
The area outlined should be preserved intact by agreement with the landowner or, if necessary, by a Tree Preservation Order.

1988

The Parks Department of Dun Laoghaire Corporation have proposed this area for the development of an Ecology Park. The Environment Awareness Bureau made a grant aid towards the cost of signposting and printing of information leaflets. If this proposal is successful, it will be the first project of its type carried out by an urban local authority in Ireland. Heracleum mantegazzianum (giant hogweed) is still common and as this can cause painful burn-like injuries if touched, it should be removed from places accessible to the public.

MAP SHOWING AREA OF SCIENTIFIC INTEREST —

Scale: 6 Inches to 1 Mile

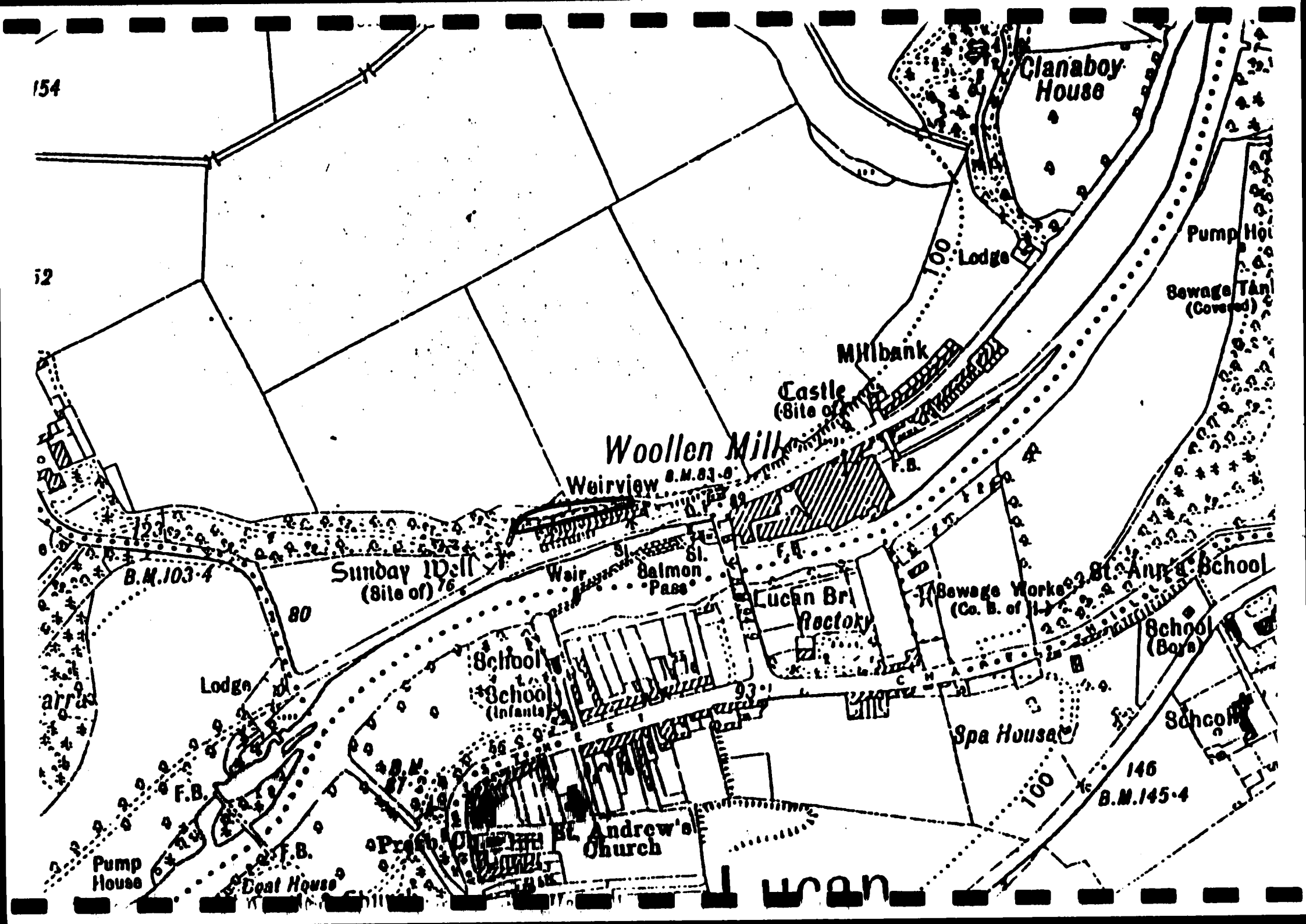


LUCAN OUTCROP

Area	.5ha
Grid Reference	O 06 36
Interest	Geological
Rating	Local

This cliff contains a good rock exposure which has been written up as a type section of folded carboniferous limestones. It is visited as an education site and is considered to be of regional importance.

It is under no immediate threat and does not require active conservation.


Clanaboy House
Lodge
Millbank
Castle (Site of)
Woollen Mill
Weirview
B.M.83·0
Sunday Well (Site of)
B.M.103·4
Weir
St. Salmon Pass
Lucan Br
Rectory
Sewage Works (Co. C. of I.)
St. Anne's School
School (Boys)
School (Infants)
Lodge
Spa House
St. Andrew's Church
Pump House
F.B.
Boat House
B.M.145·4
146
100
80
154
52

Name of Area	LUGMORE GLEN
Acreage	4 ha
Grid Reference	0 064 252
Scientific Interest	Botanical
Rating	Local
Priority	C

Description of Area

Lugmore Glen is a narrow valley cut in glacial drift which is now covered by a hazel woodland. In this Prunus spinosa (blackthorn) and Sambucus nigra (elder) are common. Salix capraea (goat willow) and Fraxinus excelsior (ash) make up the other tree species while the ground flora is rich and characteristic of neutral drift soils. It includes:-

Chrysosplenuim oppositifoluim	golden saxifrage
Alliaria petiolata	garlic mustard
Ajuga reptans	bugle
Oxalis acetosella	wood sorrel
Carex sylvatica	wood sedge
Glechoma hederacea	ground ivy
Lamiastrum galeobdolon	yellow archangel
Ciraea lutetiana	enchanter's nightshade
Galium odoratum	woodruff
Brachypodium sylvaticum	false brome grass
Veronica chamaedrys	germander speed-well
V. montana	wood speed-well
Digitalis purpurea	foxglove
Cardamine flexuosa	wood cress
Atrichum undulatum	)
Eurynchuim striatum	) mosses
Mnium undulatum	)

The wood also supports rich animal and bird populations including pheasant and woodcock.

Evaluation

Lugmore Glen is one of a number of sites of local importance which might not be listed at all if more natural woodland existed in the county. As it is, it has some ecological value as a hazel wood and contains a wide variety of plants and animals. It is occasionally visited by field groups and this use is likely to grow considerably, with the proximity of Tallaght. Though hazel woods occur in Glenasmole they are on precipitous slopes and access is much more difficult.

Vulnerability

Part of the woods have been cleared in the past for agriculture but allowed to grow over again. This could happen again though the slopes are quite steep.

Cattle pass through the wood at the moment and cause local damage to the floor vegetation. This grazing should not be allowed to increase.

Recommendations

There is no timber of commercial value in this area but nevertheless it seems that the woodland should be protected from clearance by a Tree Preservation Order, under Section 45, Local Government (Planning and Development) Act, 1963.

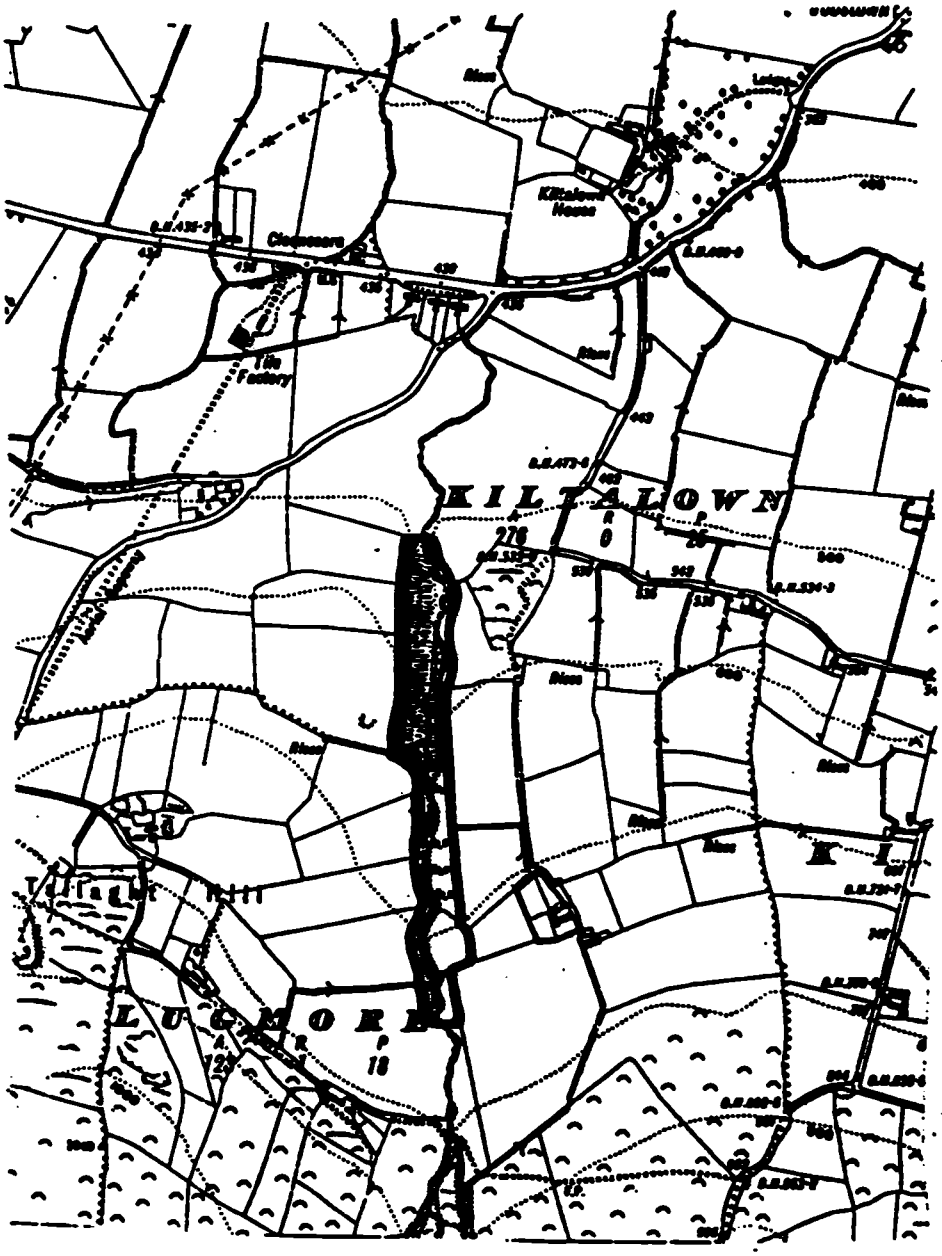
A right-of-way should be provided into the wood if one does not exist at present.

1988

The glen is now surrounded on both sides by golf courses and only survives because of its inaccessibility. There is still no right of way into the woodland and it has changed little since 1973.

MAP SHOWING AREA OF SCIENTIFIC INTEREST —

Scale: 6 Inches to 1 Mile



Name of Area	LUTTRELLSTOWN WOODLANDS
Acreage	44 ha
Grid Reference	O. 05, 36
Scientific Interest	Botanical, Zoological
Rating	Local
Priority	B

Description of Area

Luttrellstown has well established estate woodland with adequate amounts of native species, especially on the side of the river valley. Consequently there are many points of interest.

The larger trees include Acer pseudo-platanus (sycamore), Ulmus glabra (elm), Fagus sylvatica (beech), Quercus spp (oaks), Fraxinus excelsior (ash), Larix (larch) and a few other conifers, e.g. Sequoia, Pinus, Picea. An understory of Prunus laurocerasus (laurel) has sometimes been planted and there is also Ilex aquifolium (holly) but in places natural regeneration is forming thickets of low growth. Seedlings of the following species were found:- Sambucus nigra (elder), Fagus, Fraxinus, Quercus, Acer, Crataegus (hawthorn), and Ilex.

The more natural woodland at the south edge of the site has typical ground vegetation, e.g.

Hedera helix	ivy	l.a
Geum urbanum	wood avens	c
Brachypodium sylvaticum	false brome grass	c
Viola riviniana	a violet	c
V. reichenbachiana	" "	f
Glechoma hederacea	ground ivy	f
Primula vulgaris	primrose	f
Bromus ramosus	brome grass	f

Phyllitis scolopendrium	harts tongue	f
Rosa arvensis	field rose	o
Polystichum setiferum	shield fern	o
Dryopteris filix-mas	male fern	o
Geranium robertianum	herb robert	o
Thamnium alopecurum	) moss	f
Eurhynchium praelongum	) "	f
Fissidens taxifolius	) "	o

The rarer species of this habitat include Melica uniflora (melick grass), Poa nemoralis (wood poa), Festuca gigantea (tall fescue), Agropyron caninum (wood couch-grass), Luzula pilosa (spring woodrush), Neottia nidus-avis (bird's nest orchid) and Lathraea squamaria (toothwort).

A stream flows north-south through the area and horse chestnuts have been planted along it. In this situation Chrysosplenium oppositifolium (golden saxifrage) is abundant, Deschampsia caespitosa (tufted hair-grass), Galium aparine (goosegrass) and Circaea lutetiana (enchanter's nightshade) somewhat less so,and Hypericum hirsutum (St. John's wort) and Equisetum hyemale (dutch rush) rare. Stachys sylvatica (hedge wound wort), Lapsena communis (nipple-wort) and Veronica montana (wood speedwell) also occur.

Bird life in the woods is diverse with such species as woodcock, long-eared owl, sparrow hawk and heron nesting, as well as the normal passerines. Blackcap, long-tailed tit, treecreeper, stock dove also nest there.

The mammals present include badger, fox,red squirrel, stoat, and pygmy shrew.

Evaluation

Though mainly of planted origin the woods here are well enough established and ungrazed for substantial regeneration to take place. Many plant species of interest have spread from the Liffey banks and with a variety in tree species

and size a full bird fauna can exist. Luttrellstown together with St. Catherine's is the most important estate woodland in the county with high amenity value for the Liffey valley and considerable scientific interest.

Vulnerability

Felling of trees or reafforestation with purely coniferous species pose a significant threat to the area as these would destroy any existing scientific interest.

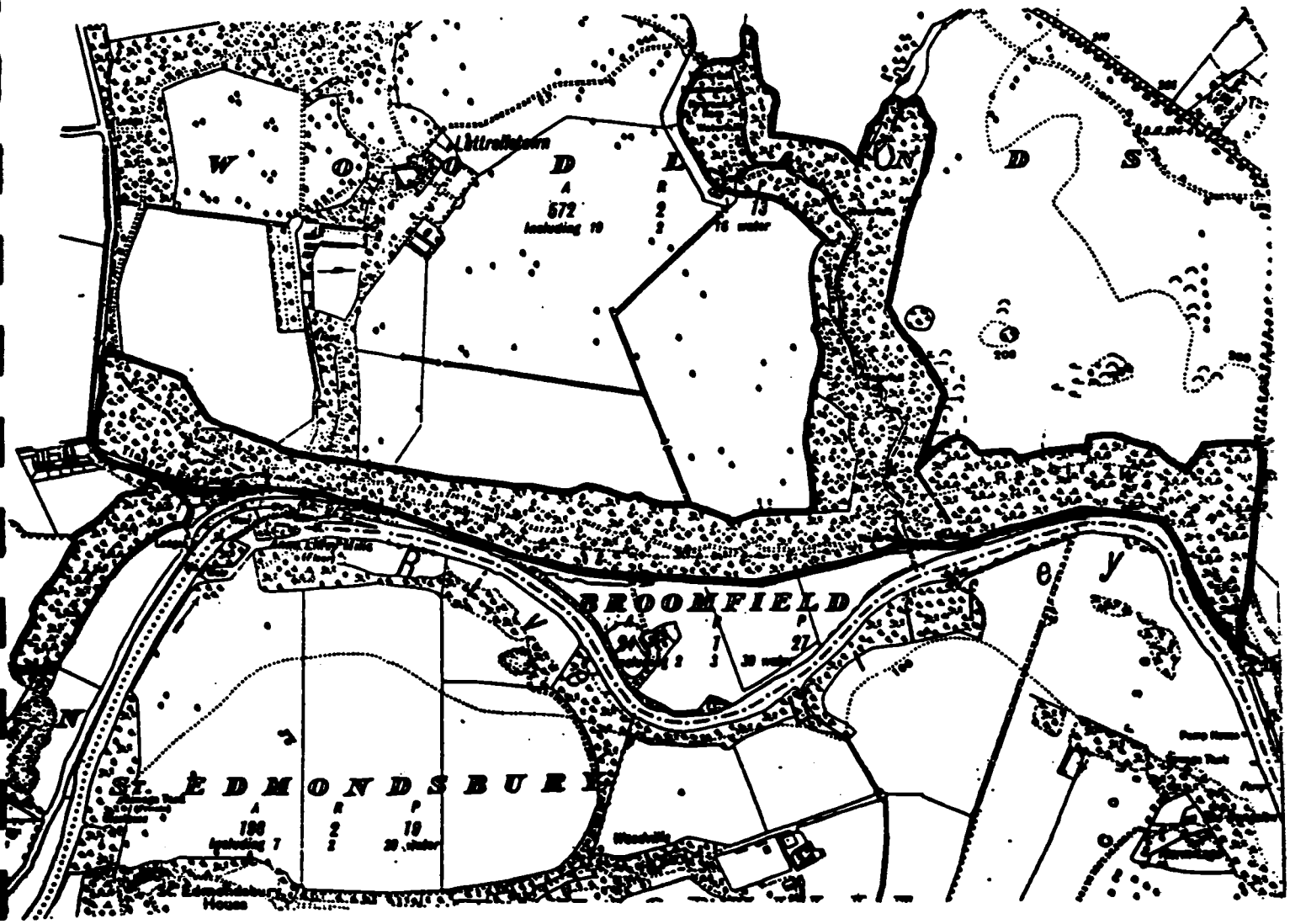
Recommendations

In view of the undoubted amenity value of this area as well as its scientific value, the area seems very suitable to be covered by a Tree Preservation Order, under Section 44, Local Government (Planning and Development) Act, 1963.

1988

This area is still of scientific importance as described above. Both it and St Catherine's woods, described below, are important woodland sites in the Liffey Valley and all of the rare species with the exception of the bird's nest orchid have been seen here recently.

MAP SHOWING AREA OF SCIENTIFIC INTEREST Scale 6 inches to 1 mile



Name of Area	SAGGART SLADE (including Crooksling)
Acreage	23 ha
Grid Reference	O. 03, 24
Scientific Interest	Botanical
Rating	Local
Priority	B

Description and Evaluation

This is a river valley with its steep sides covered by trees - usually of planted origin. Fine specimens of beech, elm, ash, oak and birch, (Betula verrucosa) are present with a natural ground flora, rich in Rubus fruticosus (bramble). Viola riviniana (violet), Sanicula europaea (wood sanicle), Oxalis acetosella (wood sorrel), Moehringia trinerva (wood sandwort), Endymion non-scripta (bluebell) also occur while the marshy edges of the stream have Veronica beccabunga (brooklime), Veronica scutellata (marsh speedwell), etc. Dactylorhiza incarnata (marsh orchid) occurs in one place.

Higher up the valley, in Crooksling Glen the vegetation becomes more natural and shrubs and trees such as Viburnum opulus (guelder rose), Sorbus hibernica (whitebeam) and Salix capraea (goat willow) appear. The following species have been recorded:-

Silene dioica	red campion
Veronica montana	wood speedwell
Lamiastrum galeobdolon	yellow archangel
Alchemilla glabra)	lady's mantle
A. vestita)	

The latter occur in open grassy conditions.

Crooksling Glen has sufficient habitat diversity, with coniferous woods nearby to have a rich insect fauna, especially of diptera.

Vulnerability and Recommendations

Saggart slade could well be developed as a recreation area with a riverside walk and some additional planting. As a semi-wild park it would cater for Tallaght, Rathcoole and Saggart itself. It is felt that Crooksling Glen above it should be developed little, if at all.

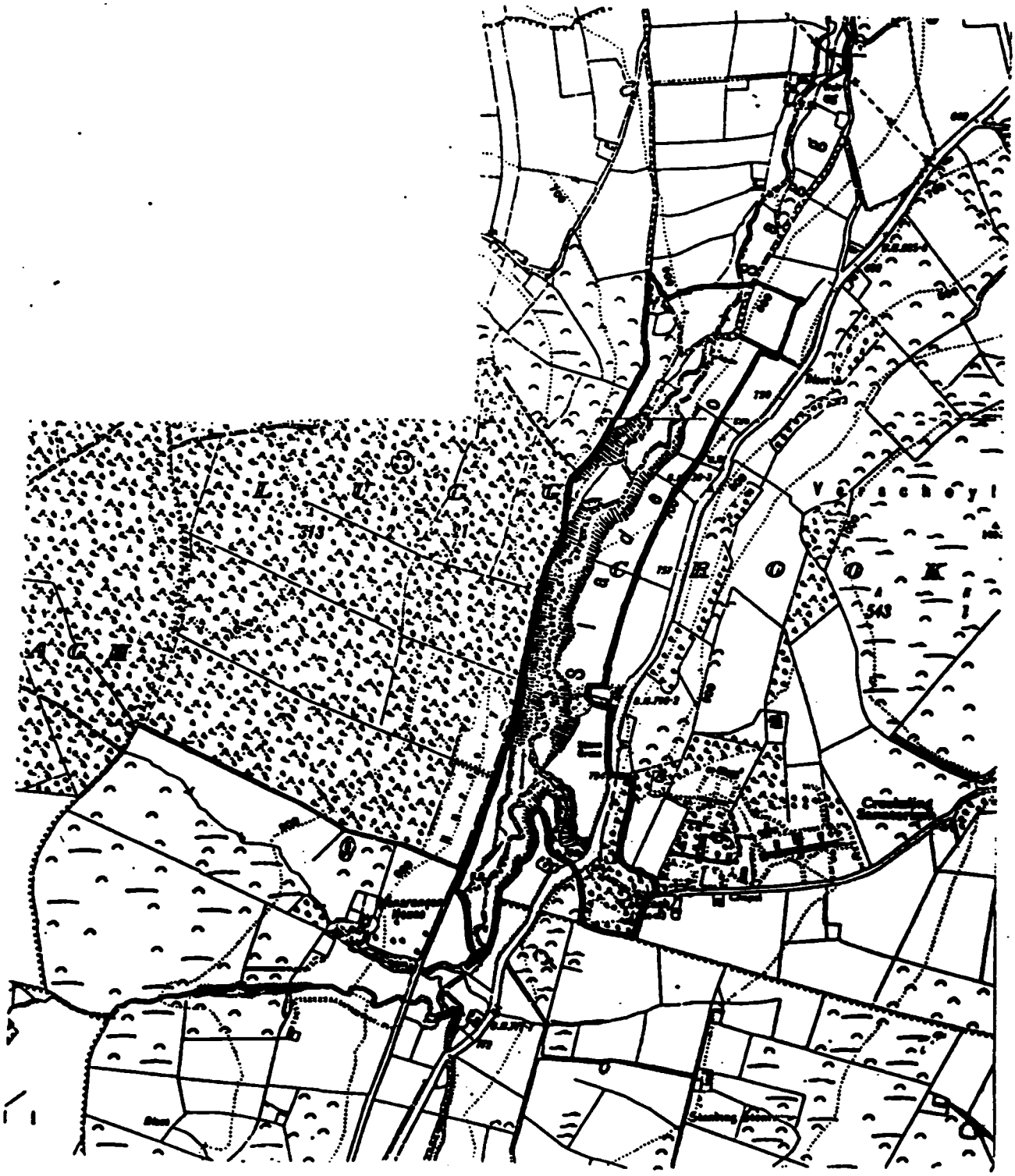
The areas are threatened by further coniferous planting and also by felling of the mature trees. This is occurring in Saggart slade and a Tree Preservation Order should be passed on them immediately.

1988

The area is still as described above. No development as a recreational area has taken place and it retains its scientific interest.

MAP SHOWING AREA OF SCIENTIFIC INTEREST —

Scale: 6 Inches to 1 Mile



Name of Area	RUSH SANDHILLS
Acreage	15 ha
Grid Reference	0.260, 534
Scientific interest	Botanical
Rating	Local Importance
Priority	A

Description of Area

The site which is shown on the accompanying map is a sand-dune system. At the north-west end of the sandhills much domestic rubbish has been deposited on the beach and oil appears to have been disposed of by being emptied on the strand. The poor condition of this part of the beach and the difficulty of access to the dunes further to the south-west where the golf-links occupy the landward, stable dunes, may discourage usage. The fore dunes are abrupt and short on the eastern end of the system, indicating they are not growing, but have reached their maximum extent. At the centre of the site, they are well vegetated, but at the western end coverage by the grass Ammophila is as sparse as 2 seedlings/m^2 in places. The western end of the dunes appears to be eroding rapidly and the fore dune system has been removed to expose the dune slack, which now extends from the rear dunes to the top of the strand. These changes are possibly due to a redirection of tidal currents.

The effect of man is obvious on almost every part of the sandhills. Apart from rubbish which occurs almost everywhere, houses have been constructed at the eastern end of the system. There are at least three major blow-outs just west of these which almost certainly result from human trampling and these might be even larger were it not for the sea buckthorn Hippophae ramnoides which discourages walking over the sandhills.

Evaluation

This sand dune system - though not in good condition, was known at one time to be a station for several rare plant species:

[illegible]	[illegible] poppy
Raphanus maritimus	sea radish
Reseda lutea	wild mignonette
Descurania sophia	flixweed
Echium vulgare	viper's bugloss

Carnpanula rapunculoides (creeping bell-flower) and Hippophae rhamnoides (sea buckthorn) - referred to above, are two aliens which had settled permanently there. Some of the above list may persist. In addition, the dune system has typical plant and animal communities associated with it.

Apart from its scientific merits, the sandhills could be a valuable amenity for the people of Dublin.

Vulnerability

Recreational pressures are having an adverse effect on the site and the casual tipping of rubbish is making them unsuitable for human recreation. There is some evidence of intentional firing of the marram grass and this could have disastrous consequences to the stability of the dunes.

Recommendations

Efforts should immediately be made to rectify the unhealthy state of these dunes. Attention should be given particularly to their stabilisation and to this end pedestrian access should be controlled. A further report detailing the carrying capacity of the dune system, etc. may be necessary. Vehicles of any kind should be prohibited from using the sandhills and measures should be implemented against disposal of litter and oil on the beach. There should be no further building within the dune system and fires of any kind should be prohibited.

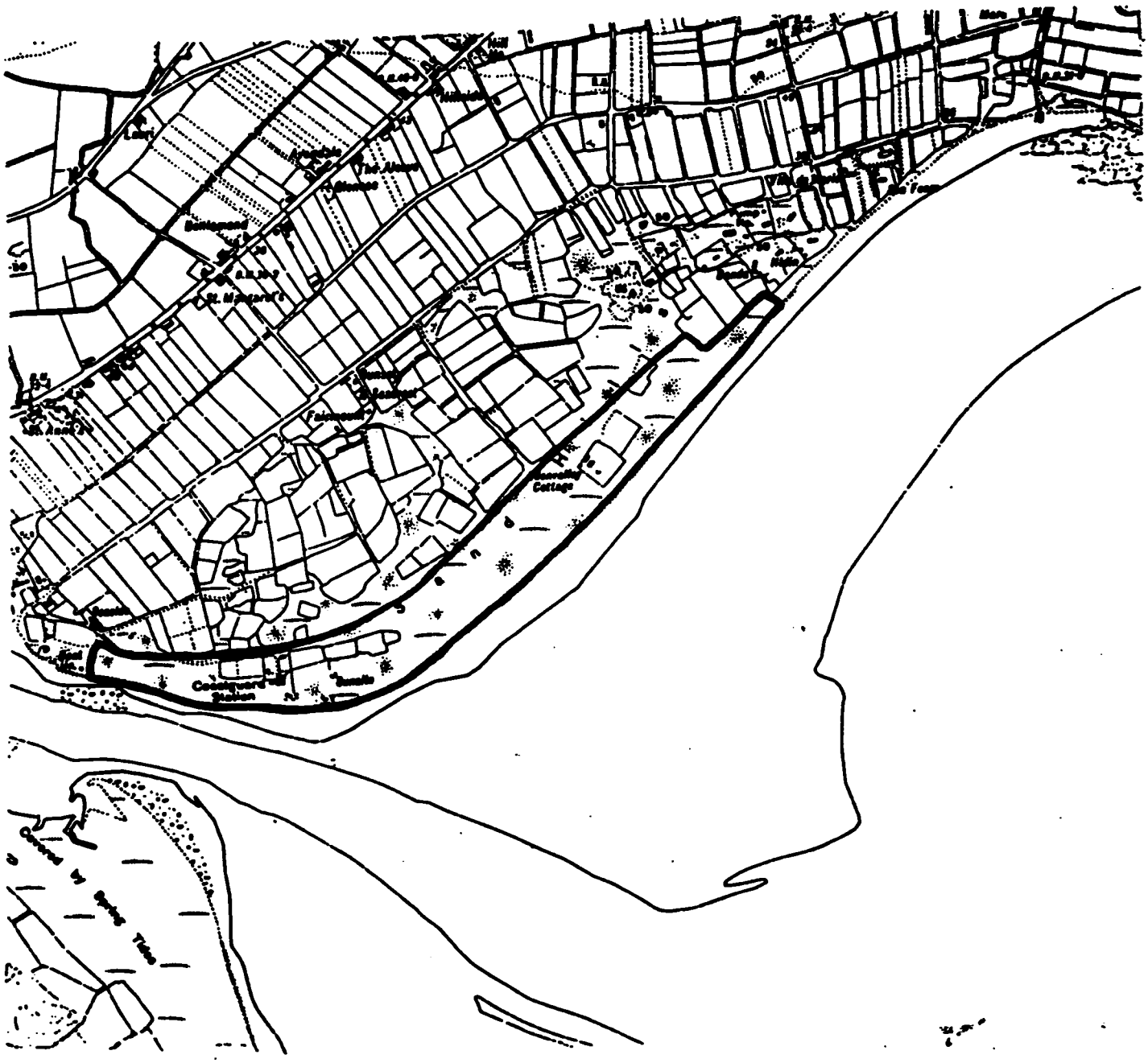
In the long-term, the protection of the scientific values at the site will ensure its survival for amenity and recreation purposes.

1988

The Hippophae (sea buckthorn) has continued to spread and now covers a considerable area. Management of the golf links has reduced the habitat available for the natural dune vegetation. However, the area is still an interesting dune system and it remains of local scientific importance.

MAP SHOWING AREA OF SCIENTIFIC INTEREST —

Scale: 6 Inches to 1 Mile



Name of Area	ST. CATHERINE'S WOOD
Acreage	15 ha
Grid Reference	O. 015, 352
Scientific Interest	Botanical
Rating	Local
Priority	B

Description of Area

This area is similar to Luttrelstown being estate woodland but there is more natural vegetation related to the important fact that the area extends to the banks of the R. Liffey without a road in between the two. Consequently some of the characteristic species of the river banks are present eg., Viburnum opulus (guelder rose), Crepis paludosa (hawksbeard) and Scrophularia umbrosa (figwort).

In the ground cover of the woods, which include fewer coniferous trees than Luttrellstown, there are some species differences. Lamiastrum gabobdolon (yellow archangel), Veronica montana (wood speedwell) and Melica uniflora (wood melick grass) are common and three interesting non-green plants occur:- Lathraea squamaria (toothwort) Monotropa hypopitys (yellow bird's-nest and Orobanche hederae (ivy broomrape). These woods are similarly attractive to birds and mammals and richer if anything for their size.

Vulnerability and Recommendations

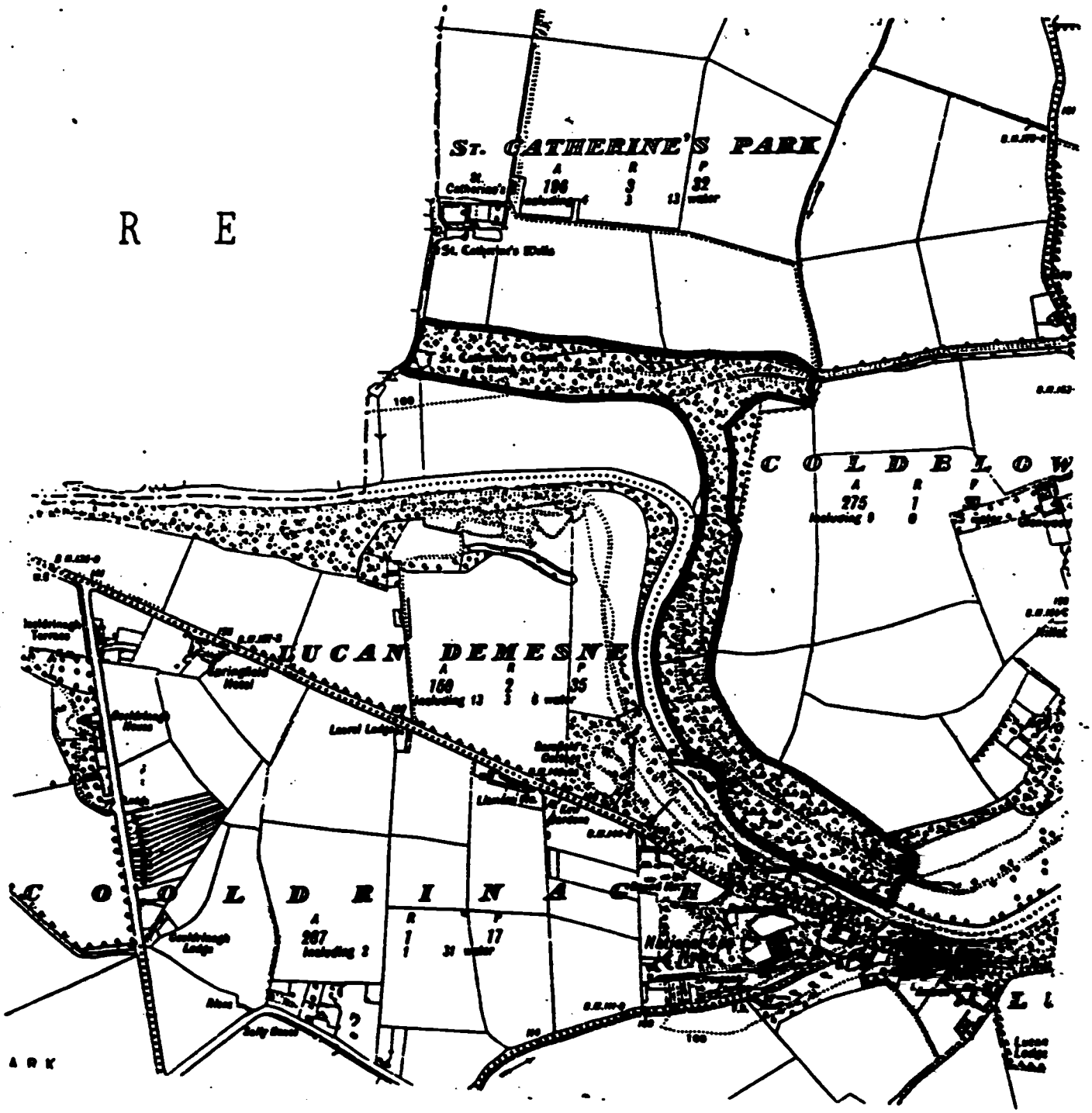
As for Luttrellstown (see p. 26).

1988

The woodlands have changed little and the area retains its scientific importance. All of the rare species have been seen here recently with the exception of the yellow bird's nest.

MAP SHOWING AREA OF SCIENTIFIC INTEREST —

Scale: 6 Inches to 1 Mile



APPENDIX I

SEARCHING FOR: DUBL

*** WILDLIFE SERVICE ***
PROTECTED PLANT SPECIES REPORT

TAXON	COUNTY	LOCATION	SITE DESCRIPTION	GRID-REFERENCE	LAST SEEN
Acinos arvensis	Dubl	Carrickmines	Tulla churchyard	O200200	1500 BritAss
Acinos arvensis	Dubl	Portmarnock	Unknown	O200400	1903 Colgan
Acinos arvensis	Dubl	Clonsilla	Unknown	O000300	1895 Colgan
Acinos arvensis	Dubl	Portrane	S peninsula,barley fld	O200500	1902 Colgan
Centaurium pulchellum	Dubl	North Bull, 2 sites	Nr clubhouse & saltmarsh	O200300	1971 Doogue
Galeopsis angustifolia	Dubl	Balbriggan,N.of	by railway	O100600	1894 Colgan
Galeopsis angustifolia	Dubl	Portrane	Nr Raheen Point,cornfield	O200500	1894 Colgan
Galeopsis angustifolia	Dubl	Square record	Unknown	O100300	1500 ?????
Galeopsis angustifolia	Dubl	Knockmaroon Hill	foot of Hill	O000300	1884 Vowell
Galeopsis angustifolia	Dubl	Three & Two Rock Mtn, btw	Old forest road	O100200	1967 Scannell
Galeopsis angustifolia	Dubl	Cardiffs Bridge	Unknown	O100500	1836 Mackay
Galeopsis angustifolia	Dubl	Ballycorus	Unknown	O200200	1943 SupFl.Dub
Galeopsis angustifolia	Dubl	Dundrum	Unknown	O100200	1866 Moore
Galeopsis angustifolia	Dubl	North Bull	by the New Causeway	O200300	1972 Curtis
Galeopsis angustifolia	Dubl	Cabinteely	Glendruid	O200200	1856 Barrington
Galeopsis angustifolia	Dubl	Feltrim	Unknown	O100400	1836 Mackay
Galeopsis angustifolia	Dubl	Skerries	gravel pit	O200600	1903 Colgan
Galeopsis angustifolia	Dubl	Donabate	Unknown	O200400	1902 Colgan
Galeopsis angustifolia	Dubl	Chapelizod/Luttrelstown	roadside & hedgebanks	O200300	1794 Wade
Galeopsis angustifolia	Dubl	Botharnabreena	lane to Ballymaice	O000200	1941 Suppl.Fl.Dub.
Galeopsis angustifolia	Dubl	Malahide	among crops near shore	O200400	1794 Wade
Galeopsis angustifolia	Dubl	Old Bawn	1km each side of br.	O000200	1903 Colgan
Galeopsis angustifolia	Dubl	Leixlip	Unknown	N900300	1896 Praeger
Galeopsis angustifolia	Dubl	Sutton	Unknown	O200300	1884 Vowell

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PROTECTED PLANT SPECIES REPORT

TAXON	COUNTY	LOCATION	SITE DESCRIPTION	GRID-REFERENCE	LAST SEEN	
Galeopsis angustifolia	Dubl	Howth, several sites	Drumleck&StFintans-Sutton	O200300	1884	Hart
Galeopsis angustifolia	Dubl	Clonsilla	Unknown	O000300	1884	Vowell
Galeopsis angustifolia	Dubl	Peatown	Unknown	Y100900	1836	Mackay
Groenlandia densa	Dubl	Clondalkin	betw it and Hazelhatch	O0 3	1903	Colgan
Groenlandia densa	Dubl	Lucan Canal	Unknown	O03 48	1900	Colgan
Groenlandia densa	Dubl	Dublin-Grand Canal	Ringsend to Dolphins Barn	O10 30	1987	Caffrey
Groenlandia densa	Dubl	Camac R	Nr Long Mile Rd	O0 3	1987	Wyse-Jackson
Hammarbya paludosa	Dubl	Three Rock Mtn	Unknown	O180230	1905	Waterfall
Hammarbya paludosa	Dubl	Glencullen	mtn SW of Glencullen Br.	O150200	1953	Watts
Hammarbya paludosa	Dubl	Glenasmole	Castlekelly Bridge	O105190	1977	Doogue
Hammarbya paludosa	Dubl	Glendhu mountain	Unknown	O014214	1894	Colgan
Hordeum secalinum	Dubl	Glasnevin	Unknown	O100300	1866	Moore
Hordeum secalinum	Dubl	Saucerstown	Broadmeadow	O100400	1955	Brunker
Hordeum secalinum	Dubl	Broadmeadow	Unknown	O100400	1948	Supp.Fl.Dub
Hordeum secalinum	Dubl	Scribblestown	low meadows & Royal Canal	O000300	1922	Brunker
Hordeum secalinum	Dubl	Portmarnock	Unknown	O200400	1866	Moore
Hordeum secalinum	Dubl	Lotts	Unknown	O100300	1836	Mackay
Hordeum secalinum	Dubl	Dollymount	Smylies Pond	O200300	1905	Brunker
Hordeum secalinum	Dubl	Brackenstown	Ward river, banks	O100400	1903	Colgan
Hordeum secalinum	Dubl	Finglas	Unknown	O100300	1836	Mackay
Hordeum secalinum	Dubl	Castleknock, towards	by the canal	O000300	1866	White
Hordeum secalinum	Dubl	Donabate	Unknown	O200400	1906	Knowles
Hordeum secalinum	Dubl	Square Record	Unknown	O200500	1971	Doogue
Hordeum secalinum	Dubl	Raheny	Unknown	O200300	1836	Mackay

SEARCHING FOR: DUBL

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PROTECTED PLANT SPECIES REPORT

TAXON	COUNTY	LOCATION	SITE DESCRIPTION	GRID-REFERENCE	LAST SEEN
Hypericum hirsutum	Dubl	Lucan Desmesne	Unknown	O000300	1905 Knowles
Hypericum hirsutum	Dubl	Square record	Unknown	O000300	1971 Doogue
Hypericum hirsutum	Dubl	Woodlands	Unknown	O100400	1901 Colgan
Hypericum hirsutum	Dubl	St Catherines Wood	Unknown	O000300	1904 Colgan
Hypericum hirsutum	Dubl	Blanchardstown, above	by Tolka	O000300	1903 Colgan
Hypericum hirsutum	Dubl	Knockmaroon	Unknown	O000300	1895 Colgan
Hypericum hirsutum	Dubl	Santry	Court Woods	O100400	1939 Supplement
Hypericum hirsutum	Dubl	Drimnagh	hedges Nr	O100300	1893 Colgan
Hypericum hirsutum	Dubl	Lansdowne valley	Unknown	O100300	1895 Colgan
Hypericum hirsutum	Dubl	Luttrelstown	woods	O000300	1953 Brunker
Logfia minima	Dubl	Three Rock Mtn	quarries on and at base	O100200	1988 Carvill & Reynolds
Logfia minima	Dubl	Howth	Shielmartin	O200300	1916 Bradshaw
Logfia minima	Dubl	Portrane-Skerries	shore between towns	O200500	1500 Mackay
Mentha pulegium	Dubl	Howth	Nr Bailey Post Office	O250350	1895 Mahaffy
Mertensia maritima	Dubl	Hampton Hall	Unknown	O200600	1806 Mackay
Mertensia maritima	Dubl	Portmarnock	Unknown	O200400	1831 Mackay
Mertensia maritima	Dubl	Loughshinny	Unknown	O200500	1794 Wade
Misopates orontium	Dubl	Dalkey	Unknown	O200200	1882 Malone
Misopates orontium	Dubl	Dundrum	Belalley Park	O100200	1849 More
Misopates orontium	Dubl	Howth	Quarry, Railway banks	O200300	1500 Fl.Howth
Misopates orontium	Dubl	Monkstown	Unknown	O200200	1872 Greenwood-Pim
Omalotheca sylvatica	Dubl	Saggart Slade	hills W of	O000200	1895 Colgan
Omalotheca sylvatica	Dubl	Lambay	Nr Trinity Well	O300500	1907 RLP
Omalotheca sylvatica	Dubl	Howth	high ground	O200300	1836 Mackay

SEARCHING FOR: DUBL

*** WILDLIFE SERVICE ***
PROTECTED PLANT SPECIES REPORT

TAXON	COUNTY	LOCATION	SITE DESCRIPTION	GRID-REFERENCE	LAST SEEN
Orchis morio	Dubl	Baldrumman	Unknown	O100500	1895 Colgan
Orchis morio	Dubl	Portrane	Unknown	O200500	1895 Colgan
Orchis morio	Dubl	Glenasmole	Unknown	O100100	1895 Colgan
Orchis morio	Dubl	Lusk	Unknown	O200500	1900 Colgan
Orchis morio	Dubl	Rush sandhills	Unknown	O200500	1945 Suppl.
Orchis morio	Dubl	Gormanstown	Nr Lowther Lodge	O100600	1946 Suppl.
Orchis morio	Dubl	Knocksedan	Nr Lowther Lodge	O??????	1932 Suppl.
Orchis morio	Dubl	Killiney	Unknown	O200200	1932 Suppl.
Orchis morio	Dubl	Howth	Nr summit train stop	O200300	1932 Suppl.
Ornithopus perpusillus	Dubl	Howth	S side	O200300	1966 Scannell
Ornithopus perpusillus	Dubl	Howth, Sutton side	Nr Martello Tower	O200300	1836 Mackay
Ornithopus perpusillus	Dubl	Howth	Carrickbrack	O200300	1887 Hart
Ornithopus perpusillus	Dubl	Howth	btwn lhthse & Glenavear	O200300	1887 Hart
Ornithopus perpusillus	Dubl	Howth, S side	N of Red Rock,rocky knoll	O200300	1957 SuppFl.Dub
Papaver hybridum	Dubl	Balbriggan	N of railway	O200600	1894 Colgan
Papaver hybridum	Dubl	Kilbarrack	Sweetmans House	O200300	1806 Mackay
Papaver hybridum	Dubl	Portrane	neglected Barley field	O200500	1985 P.Reilly
Papaver hybridum	Dubl	Raheny,gravel pit	Unknown	O200300	1824 Mackay
Papaver hybridum	Dubl	Portmarnock	Unknown	O200400	1894 Praeger
Papaver hybridum	Dubl	Rush	Unknown	O200500	1902 Colgan
Papaver hybridum	Dubl	Howth & Sutton	cliffs,Needles & Drumleck	O200300	1887 Hart
Papaver hybridum	Dubl	Skerries	Unknown	O200600	1872 More
Papaver hybridum	Dubl	Raheny-Sutton tramline	Unknown	O200300	1900 Colgan
Papaver hybridum	Dubl	Baldoyle-Portmarnock	roadsides & cornfields	O200400	1892 Colgan

SEARCHING FOR: DUBL

*** WILDLIFE SERVICE ***
PROTECTED PLANT SPECIES REPORT

TAXON	COUNTY	LOCATION	SITE DESCRIPTION	GRID-REFERENCE	LAST SEEN	
Papaver hybridum	Dubl	Square Record	Unknown	O100600	1500	Who
Papaver hybridum	Dubl	Coolock	St Dooloughs	O200300	1894	Praeger
Pseudorchis albida	Dubl	Glenasmole	St Annes, Kellys Glen	O100100	1956	Supplement
Pseudorchis albida	Dubl	Three Rock Mtn, Nr	Unknown	O100200	1804	Wade
Puccinellia fasciculata	Dubl	South Lotts	Unknown	O200300	1889	Scully
Puccinellia fasciculata	Dubl	Sandymount	Unknown	O100300	1840	Moore
Puccinellia fasciculata	Dubl	North Lotts	Unknown	O200300	1888	Scully
Puccinellia fasciculata	Dubl	Booterstown	salt ditch along railway	O200300	1988	Reynolds
Puccinellia fasciculata	Dubl	Ringsend	Unknown	O100300	1906	Lamb
Puccinellia fasciculata	Dubl	Blackrock	New Park	O200200	1889	More
Puccinellia fasciculata	Dubl	Pigeon House road	in clefts of S Wall	O100300	1905	Bruce
Saxifraga granulata	Dubl	Baldoyle-Portmarnock	Unknown	O200400	1890	Levinge
Saxifraga granulata	Dubl	Kilbarrack	Nr church	O200300	1919	Supp.Fl.Dub
Saxifraga granulata	Dubl	North Bull	Royal Dublin	O200300	1979	Blyth
Saxifraga granulata	Dubl	Baldoyle Race Course	Unknown	O200400	1902	Colgan
Stachys officinalis	Dubl	Howth	Carrickbrack	O200300	1887	Fl.Howth
Stachys officinalis	Dubl	Abbotstown, Nr	Unknown	O000300	1802	Wade
Viola hirta	Dubl	Raheny	by shore	O200300	1794	Wade
Viola hirta	Dubl	Lambay	S side @ far end	O300500	1882	Barrington
Viola hirta	Dubl	Baldoyle	on sandhills	O200400	1895	Colgan
Viola hirta	Dubl	Greenhills	Unknown	O000200	1900	Colgan
Viola hirta	Dubl	Sutton	The Cosh	O200300	Colgan	1901
Viola hirta	Dubl	Feltrim Hill	Unknown	O200400	1904	Colgan
Viola hirta	Dubl	Portrane sandhills	Unknown	O200400	1903	Colgan

SEARCHING FOR: DUBL

*** WILDLIFE SERVICE ***
PROTECTED PLANT SPECIES REPORT

TAXON	COUNTY	LOCATION	SITE DESCRIPTION	GRID-REFERENCE	LAST SEEN
Viola hirta	Dubl	Portrane	Unknown	O200500	1903 Colgan
Viola hirta	Dubl	Rogerstown	Ballayley, Nr	O200500	1902 Colgan
Viola hirta	Dubl	Howth	E side Old Bailey	O200300	1900 Colgan
Viola hirta	Dubl	Phoenix Park	Nr Chapelizod	O100300	1900 Colgan
Viola hirta	Dubl	Kilbarrack	Unknown	O200300	1870 Carroll
Viola hirta	Dubl	Knockmaroon Hill	Unknown	O000300	1799 Templeton
Viola hirta	Dubl	Portmarnock	Unknown	O200400	1869 Carroll

APPENDIX II

SECTION E: AREAS OF SCIENTIFIC INTEREST IN COUNTY DUBLIN

NAME OF AREA	PAGE NO	GRID REF	RATING	INTEREST	DESCRIPTION
1 Ballybetagh Bog		O 20 20	International	Geological	One of the best late Glacial sites in the country, of major importance for the European chronology of the period. Fossils occur in abundance: pollen, plant fragments and animal remains, especially giant deer.
2 Dublin Bay		O 22 33	International		
a) Bull Island and Mudflats		O 22 37	International	Ecological (O,B,Z)	An evolving sand spit formed since the building of the North Wall and datable in many parts. Sand dunes, grassland and alder marsh contain interesting flora and fauna. Salt marsh is a roost for almost all shore birds which feed in Dublin Bay. Wild fowl and waders (up to 30,000 in total) occur in numbers of international importance.
b) Sandymount/Merrion Strands		O 2032	Regional	Ecological (O)	The beach here is a feeding ground for about 25% of the shore birds in Dublin Bay. Particularly important for brent geese, gulls and migrating terns.
c) Booterstown Marsh		O 200 306	Local	Ecological (B,O)	A small accessible brackish marsh with interesting plant species and large numbers of snipe. Some interchange of birds with Merrion strand.
3 Dalkey Coastal Zone		O 27 36	National	Ecological (B,O,Z)	Rocky shore with well-researched marine fauna and flora. Muglins is used for roosting by large numbers of terns before migration while Dalkey Island has a gull colony and several unusual plants.
4 Howth and Ireland's Eye		O 28 38	National	Ecological (B,O,Z) Geological	Cliff sections of quartzites and silt stones show outstanding sedimentary structures. A wide variety of habitats occur, heath, rock, beach and cliff support interesting plants, unusual invertebrates, including aberrant monster forms of ants, and seabird colonies of note.

SECTION E: AREAS OF SCIENTIFIC INTEREST IN COUNTY DUBLIN

NAME OF AREA	PAGE NO	GRID REF	RATING	INTEREST	DESCRIPTION
5 Lambay Island		O 31 50	National	Ecological (B,O)	Ordovician, volcanic and sedimentary rocks are well displayed. The cliffs and adjacent land contain large numbers of seabirds, currently increasing. Uniform land use has maintained plant and animal communities and some rare species for many years.
6 Malahide		O 22 47	National		
a) Malahide Island		O 24 46	National	Ecological (B,Z) Geomorphological	The best developed and most natural dune system in the country with varied flora and fauna and notable dune slacks and saltmarsh.
b) Malahide/Swords Estuary		O 22 47	Regional	Ecological (O)	A ponded estuary which supports good numbers of diving water birds in winter. At its head, the saltmarsh and grassland is also important.
7 Portmarnock-Malahide		O 22 44	National	Geological	Foreshore exposure of the only continuous section through the Lower Carboniferous in the Dublin Basin. Type locality of several fossil corals.
8 Rockabill Island		O 321 626	National	Ecological (O)	Most important breeding site for roseate terns in north west Europe.
9 Shanganagh		O 26 24	National	Geological	A fine cliff exposure of Quaternary glacial sediments, kept fresh by coastal retreat. Tow till types occur, one originating from the Irish Sea area, the other from the midlands.
10 Skerries-Rush Coast		O 27 57	National		
a) Skerries- Loughshinney		O 26 56	National	Geological	Foreshore and cliffs show an unique series through lower carboniferous rock. Spectacular sedimentary structures at Loughshinney.
b Rush		O 272 542	National	Geological	Only exposure in the country of a conglomerate turbidite sequence of carboniferous age. Also a fossil locality.

SECTION E: AREAS OF SCIENTIFIC INTEREST IN COUNTY DUBLIN

NAME OF AREA	PAGE NO	GRID REF	RATING	INTEREST	DESCRIPTION
11 Clondalkin Quarries		O 070 310	Regional	Geological	Limestone (Visean) exposure with turbiditic features and exotic pebbles from the Wicklow granite.
12 Curkeen Hill Quarry		O 255 585	Regional	Geological	A valuable exposure of fossiliferous carboniferous limestone, shales and conglomerates.
13 Glenasmole		O 09 22	Regional	Ecological (B,Z) Geomorphological	One of the highest drift-filled valleys in the country with a good variety of plant and animal communities and some uncommon species.
14 Killiney Hill and Shore		O 26 25	Regional	Geological Ecological (B,Z)	Good example of mineralisation at the junction of the granite intrusion with country rock. Also unusual communities on warm cliffs, drift banks and shingle.
15 Newlands Cross		O 070 305	Regional	Geological	Deposit of late glacial fossils with interesting molluscs.
16 Portmarnock Dunes/ Baldoyle Estuary		O 24 41	Regional	Ecological (B,O,Z)	Good sand dune and drift line communities over limited parts of this area. Baldoyle is used as a feeding area by shore birds in winter, particularly brent geese.
17 Portrane Inlier		O 260 501	Regional	Geological Ecological (B,Z)	Coastal section with characteristic inlier rock assemblage complicated by faulting and folding. Seashore communities also well developed.
18 Rogerstown Estuary Including Portrane Saltmarsh		O 23 52	Regional	Ecological (O,B)	Wildfowl and wader feeding area: a total of up to 10,000 birds makes it the second most important site in the country. Important for brent geese and pintail. Adjacent saltmarsh (at Portrane) has well developed zonation.
19 Royal/Grand Canals			Regional	Ecological (B)	Interesting flora is maintained by occasional management. It includes Shannon species that have spread eastwards.

SECTION E: AREAS OF SCIENTIFIC INTEREST IN COUNTY DUBLIN

NAME OF AREA	PAGE NO	GRID REF	RATING	INTEREST	DESCRIPTION
20 Scalp		O 215 200	Regional	Geomorphological	Best example of a glacial overflow channel in Dublin area.
21 Skerries Islands		O 27 60	Regional	Geological	Shennick's Island shows the unconformity between the Ordovician (volcanic rocks0 and the devonian) old red sandstone). All islands of some importance to bird life, especially geese (150) and plover (1,000) in winter.
22 Balrothery Lake		O 188 608	Local	Ecological (B,O)	Small reservoir with interesting flora and some waterbirds.
23 Bog of the Ring		O 18 60	Local	Ecological (B,Z)	One of the only freshwater marshes still in existence in Dublin. Peaty and marshy ground with few species.
24 Dingle Glen		O 212 222	Local	Ecological	One of a series of glacial spillways in this area (eg, the Scalp) now a dry valley being invaded by heath and wood.
25 Dodder Valley		O 331 26	Local	Ecological (B,Z)	Natural river bank with characteristic flora and a good selection of brd species.
26 Feltrim Hill		O 190 450	Local	Geological	A carboniferous reef-knoll with fossiliferous shales as well as limestone.
27 Loughlinstown Woods		O 253 228	Local	Ecological	Woodland and scrub developing naturally with some interesting vegetation and bird life.
28 Lucan Outcrop		O 06 36	Local	Geological	Riverside cliff contains the type locality for the local carboniferous limestones.
29 Lugmore		O 064 252	Local	Ecological (B)	A narrow valley cut in hilly glacial drift. Hazel scrub has a species of interest.
30 Luttrellstown Woods		O 05 36	Local	Ecological (B,O,Z)	Long-established estate woodland with some natural areas. Ground flora relatively rich with some rare species; also interesting invertebrates and birdlife.

SECTION E: AREAS OF SCIENTIFIC INTEREST IN COUNTY DUBLIN

NAME OF AREA	PAGE NO	GRID REF	RATING	INTEREST	DESCRIPTION
31 Rush Sandhills		O 260 534	Local	Ecological (B)	Low sand dunes with some interesting vegetation.
32 Saggart Slade Including Crooksling		O 03 24	Local	Ecological (B)	Woodland, mainly planted origin but developing a typical ground layer which is rich higher up the valley.
33 St Catherine's Woods		O 015 352	Local	Ecological	Similar but with more natural features and a richer flora than Luttrellstown.