

Irish Coastal Habitats: A Study of Impacts on Designated Conservation Areas

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Foreword

The Irish coastline supports an immense richness of heritage, both of the built and natural heritage. The importance of the coastal zone for its natural heritage is acknowledged by the very many sites which have been identified for designation as either proposed Natural Heritage Areas, as Special Protection Areas or Special Areas of Conservation. This report reviews the threats faced by some of our most important coastal heritage sites, and shows clearly the enormous task facing statutory authorities in putting in place policies and practices to ensure that there is no further deterioration of the heritage value of these sites.

Having provided financial assistance to Jenny Neff to produce this report, the Heritage Council is pleased to make this report available through the world wide web. Through the publication of this report, the Heritage Council hopes to raise awareness of the issues facing nature conservation in these special areas, and hopes that in some way, this report will demonstrate the need for the introduction of effective Coastal Zone Management in Ireland.

The Heritage Council

Preamble

The author's long standing special interest in coastal habitats arose during her time as a Research Fellow in University College Dublin working on the National Vegetation Survey from 1970 to 1975 - and subsequently from 1980 to 1982. The survey concentrated on two main habitat divisions, one of which was coastal habitats. Returning to previously surveyed sites some years later, it was obvious that considerable deterioration had taken place in the intervening years - for the most part due to human intervention in some form or other. The impetus for the present study then developed.

November 1998

Chapter 1. Introduction



Bray Head - Co. Wicklow

The original aim of this study was to examine impacts in non-designated areas. However during the first field season it became obvious that, not only were many of the non-designated areas virtually "beyond" recovery, but also many of the 'proposed designated' areas visited showed significant effects of impacts. For this reason, and with the agreement of the Heritage Council, the focus of the Study for this report shifted to an evaluation of the level and range of impacts within the designated areas. At that time the Area of Scientific Interest (ASI) review survey which led to the establishment of proposed Natural Heritage Areas (NHAs) was underway.

For the purposes of this study a site is regarded as being "coastal" if it includes fore shore. The latter being taken to include tidal areas from the low tide mark upwards. The site would include its main habitat(s) and its associated habitat types. For example, in a dune system, the site is inclusive of fore dunes, fixed dunes, dune slacks, associated scrub, brackish marsh, lagoons etc. A few woodland sites and bogs are also included in the study as they include fore shore within their mapped boundaries.

Some field work was undertaken to examine the impacts at first hand. In addition to which, permission was sought and received from National Parks and Wildlife Service (NPWS) to trawl through the NHA files for all coastal sites. 284 main site files and 198 sub site files and site maps were examined in terms of: damaging operations (impacts), land use, potential threats, planning applications, applications for afforestation, aquaculture and EPA licences. Sub sites are - in general - former ASIs which have been joined to create a single NHA. Not all subsites have individual files with site-specific information. The data for each site were recorded on a coastal site record sheet (Appendix V) which was based on that used for the ASI review surveys. These data are presented in tabular form for each county in Chapter 3 below and in summary tables in Appendices I to IV and VII to X.

Only data of direct relevance to this study were extracted from the files. Source material for habitat and species information, ie. literature, internal reports etc. was also noted. The latter forms the basis of the bibliography in Appendix XII, the collation of which formed an integral part of the original study proposal; that is - to produce as comprehensive a bibliography on Irish coastal habitats as possible including associated issues and, where relevant, non-Irish references - for example general texts on particular coastal habitat types, agriculture etc. It should be noted that this is presented as a source bibliography and not necessarily reference material for this study and report. Although not vital to this study, it had been hoped to include information on the areas of designated sites. However as this area information was only available for some sites it was decided to exclude it except occasionally in the context of specific individual sites.

In addition to the information from the NPWS, all coastal local authorities and local tourist boards were given the opportunity to comment in general and on specific questions which were put to them, for example the granting of planning permission in designation areas (see Section 4 below). Information provided by them is also incorporated into the general text and comments.

Chapter 2. Designations

The following is a short resumé of the designations and legislation which apply to sites and species in Ireland and is given in order to put the conservation status of Irish coastal habitats into perspective.

2.1. Proposed Natural Heritage Areas

This is a proposed designation, established following the review survey of Areas of Scientific Interest (ASIs), and which forms the basic site network for habitat conservation (see Chapter 1 above). When the long-awaited Wildlife Amendment Bill is enacted NHAs will be protected by law. Until then, however, there is no legal basis for their protection. They will be referred to simply as NHAs hereafter. Coastal NHAs are listed on a county by county basis in Appendix I. A map of all NHAs is given in Figure 1. Many of the 284 coastal NHAs, or part thereof, also come under other designations.

2.2. Special Protection Areas

Special Protection Areas (SPAs) are designated under Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds (the Birds Directive). Under the directive Ireland is obliged to protect the habitats of birds which are vulnerable to habitat change or to their low population numbers ie. rarity. Aspects of habitat protection are in the context of pollution, deterioration of habitat and disturbance. This directive is implemented in Ireland under Statutory Instrument (1985). Appendix II lists the 61 coastal SPAs.

2.3. Special Areas of Conservation

Special Areas of Conservation (SACs) are designated under Article 3 of the Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (the Habitats Directive), as part of the Natura 2000 network. This network comprises Annex I habitats - "natural habitat types of community interest whose conservation requires the designation of Special Areas of Conservation" and the habitats of Annex II species - "animal and plant species of community interest whose conservation requires the designation of Special Areas of Conservation". In addition, the directive states that: "The Natura 2000 network shall include the special protection areas classified by the Member States pursuant to Directive 79/409/EEC.". A map of Irish proposed candidate SAC sites is given in Figure 2. Appendix I includes the annotation § for SAC designation beside the appropriate NHA and Appendix III lists the coastal proposed SACs. An initial list of 39 Irish SAC sites was submitted to the EU in August 1998 for approval, among them are nine coastal sites which are denoted with an asterisk in Appendix III. Proposed Special Areas of Conservation will be referred to as SAC hereafter for simplicity.

2.4. Designations under the Wildlife Act, 1976.

Coastal **Statutory Nature Reserves**, of which there are 17, and **Wildfowl Sanctuaries** (25) are listed by county in Appendix IV, the associated NHA of which the reserve or sanctuary form whole or part is also shown.

Seven coastal **Refuges for Fauna** have been designated in the last ten years. They all relate to breeding seabird populations and are mostly remote and inaccessible. They are all NHAs:

- Rockabill, Co. Dublin
- Cow Rock
- Lady's Island Lake, Co. Wexford
- Cliffs of Moher
- Old Head of Kinsale
- Horn Head
- Bull Rock

Protected Flora

Of the twenty six Red List species found within coastal habitats, 10 were included in the 1987 Protection Order, which is under review at the time of writing (Nov. 1998).

2.5. International Reserves/ Conventions

Biogenetic Reserves

Set up under the auspices of the Council of Europe, this reserve network was set up for site conservation through the maintenance of biological balance and at the same time enabling research to be carried out on the ecosystems. Just two of the Irish Biogenetic Reserves are coastal: Lough Hyne, Co. Cork, and Ballyteige Burrow in Wexford.

Biosphere Reserves

There is one Irish coastal site under this designation - North Bull Island, Co. Dublin. Biosphere Reserves were set up by

the United Nations Educational, Scientific and Cultural Organisation (UNESCO). The purpose of these reserves is to combine conservation, education, scientific research, monitoring and to involve the local community.

Wetland Sites of International Importance - Ramsar Convention

Ratified by Ireland in 1984, there are seven coastal Ramsar sites which are as follows:

- Rogerstown Estuary Nature Reserve
- Castlemaine Harbour Nature Reserve
- Baldoyle Estuary Nature Reserve
- Tralee Bay Nature Reserve
- North Bull Island and adjoining fore shore Nature Reserve
- The Raven Nature Reserve
- Wexford Wildfowl Reserve

Figure 1 Proposed Natural Heritage Areas (pNHAs)

(Map courtesy of the Duchás, The Heritage Service - NPWS)

Figure 2 Proposed Special Areas of Conservation (pSACs)

(Map courtesy of the Duchás, The Heritage Service - NPWS)

Chapter 3. Coastal Counties

3.2. Louth

Louth has a relatively short coastline at 90 km of which 75 km is soft coast, resulting in a large proportion being vulnerable to erosion either from human or natural pressures. Some coastal protection works are already in place (Plate 1). There are 5 coastal NHAs, four sub sites and three SPAs (Appendices I and II). They include substantial sites such as Carlingford Lough and Dundalk Bay which have areas of 1478 ha and 4717 ha respectively.

Table 1 gives a breakdown of the damaging operations in these areas. Grazing, building/civil engineering and the natural spread of an unwanted species (in this case Spartina) are the most significant impacting activities here. Table 2 shows the land use activities recorded, grazing and fishing being the most significant (Plate 2). The designated areas of Louth, particularly the SPAs of Dundalk Bay, Carlingford and the Boyne Estuary are inevitably at risk from the presence of the ports and associated industry of Drogheda (Plate 3) and Greenore. Table 3 gives a breakdown of threats.

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Table 1 *Co. Louth - Damaging Operations (Impacts)*

Impact	Site type:	NHA
Infill/Reclamation		1
Modific. to watercourse		1
Grazing		2
Burning		1
Fertiliser application		1
Hunting		1
Fishing		1
Littering		2
Dumping		1
Building/Civil Engineering		2
Holiday home development		1
Water polluting activities		1
Aquaculture		1
Collection of biological material		1
Nat. spread of unwanted spp.		2

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Table 2 Co. Louth - Land use

Activity	Site category:	NHA	SPA
Grazing:			
	unspecified	1	1
	sheep	2	1
	cattle	1	1
	horses	3	2
Boating		1	1
Marina		1	1
Fishing		2	1
Hunting/shooting		1	1
Golf		1	-
Horse Riding		1	1
Amenity Management		1	2
Conservation management		1	1
Water abstraction		1	1
Aquaculture		1	1
Industrial		1	1
Shipping (channel dredging)		1	1
Residential (scattered)		1	-
No organised land use/none specified		1	-

Table 3 Co. Louth - Threats

Threat:	Site category:	NHA	SPA
Tourism development (Holiday homes)		1	2
Inland mineral extraction		1	-
Coastal infill/reclamation		1	1
Building on shoreline		1	1
Golf		1	-
Recreation		1	1
Aquaculture(shellfish collection)		-	2
Airstrip (flight path)		-	1
Erosion (active)		2	-

As a possible indication of the level of impact on its coastal zone, it is interesting that Louth is one of three counties whose EU Blue Flag designations have remained at the

same level over the three years from 1996 to 1998.



Plate 1 - Coastal Protection - Co. Louth



Plate 2 - Carlingford Harbour - Co. Louth



Plate 3 - Industry - Boyne Estuary

3.3. Meath

Meath has the second shortest coastline - 21 km - all of which is classified as soft coast. There are 2 NHAs, three sub sites and one SPA in the county. It shares the Boyne Coast and Estuary NHA and the Boyne Estuary SPA with Co. Louth.

Table 4 shows that littering and illegal dumping appear to be particular problems with the coastal sites here, especially in Mornington Dunes NHA which is heavily used for recreation. The natural spread of *Spartina* in the Boyne and Nanny Estuaries continues. Meath's proximity to the population centres of Drogheda and north County Dublin make it particularly vulnerable. Another significant impact here is the regular exercising of race horses - increasing the risk of sand blow outs and subsequent erosion (Tables 5 and 6). Further holiday home and leisure activity development and associated impacts such as litter together with both race horse exercising and recreational riding probably pose the greatest threats here. With the recent increased level of litter and rubbish deposition it is probably not surprising that Meath was not awarded any EU Blue Flags in 1997 and 1998, though it did receive one for Bettystown in 1996.

Table 4 *Co. Meath - Damaging Operations (Impacts)*

Impact	Site category	NHA	SPA
Infill/Reclamation		1	1
Burning		1	-
Fertiliser application		1	1
Race horse exercising		1	-
Other recreation		1	-
Littering		2	1
Dumping		1	-
Building/Civil Engineering		1	1
Holiday home development		1	1
Water polluting activities		1	-
Introd. of exotic spp.		1	-
Nat. spread of unwanted spp.		2	1

Table 5 Co. Meath - Land use

Activity:	Site category:	NHA	SPA
Grazing:			
	unspecified	1	-
	sheep	1	-
	cattle	1	-
Fishing		2	1
Hunting/shooting		2	1
Golf		1	-
General recreation		2	-
Horse Riding		2	-
Amenity Management		1	-
Water abstraction		1	1
Industrial		1	1
Shipping (channel dredging)		1	1

Table 6 Co. Meath - Threats

Threat:	Site category:	NHA	SPA
Golf		1	-
Horse Riding		2	-
General recreation		1	-
Littering		2	1
Illegal dumping		2	1
Hunting		2	1
Fishing		1	1
Further housing development		1	-
Ulex burning (scrub clearance)		1	-
Water pollution (source unknown)		1	-
Afforestation (adjoining site)		1	-

3.5. Wicklow

The 61 km long coastline consists of soft coast (43 km) stretches such as the

Murrrough (Plates 5 and 6) and Buckronev - Brittas Dunes and Fen NHA/SAC are punctuated by the hard coast (18 km.) headlands of Bray Head NHA (front cover), Wicklow Head NHA and Mizzen Head. There are 8 coastal NHAs, including three sub sites, three SACs and two SPAs - both of which are part of the Murrrough NHA/SAC. The main impacts in Table 10 are associated with recreation and agriculture. This is in line with the land uses in Table 11 where grazing, amenity management and golf figure prominently. From Table 12 it can be seen that five soft coast sites are classified as vulnerable to erosion. These include the heavily used (recreation and beach activities) sand dune areas which suffer from their proximity to Dublin. However, despite the heavy recreational usage Wicklow's Blue Flag designations have risen from 2 in 1996 and 1997 to 3 in 1998. In the north of the county the soft cliffs are subject to wind and weather erosion (Plates 7 and 8).

Table 10 *Co. Wicklow - Damaging Operations (Impacts)*

Impact	Site category:	NHA	SAC
Infill/Reclamation		2	2
Agricult. Improvement		2	2
Scrub clearance		1	-
Drainage		2	2
Modific. to watercourse		1	1
Grazing		2	1
Burning		1	-
Hunting		1	-
Golfing		1	1
Camping/Caravanning		1	-
Development of amenity area		1	-
Littering		1	-
Dumping		2	-
Civil Engineering/storm protection		1	-
Removal of beach material		2	1
Quarrying		1	-
None listed		1	-



Plate 5 - Kilcoole Marshes, The Murrrough, - Co. Wicklow

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Plate 6 Poppies (*Glaucium flavum* and *Papaver* spp.)



Plate 7 - Coastal erosion south of Bray Head - Co. Wicklow



Plate 8 - Coastal erosion north of Greystones - Co. Wicklow

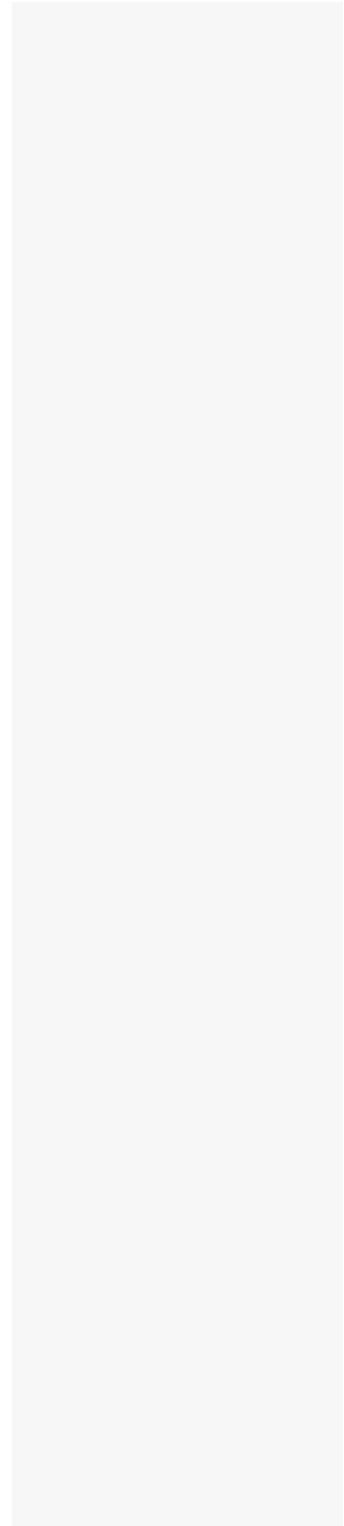


Table 11 *Co. Wicklow - Land use*

Activity:	Site category:	NHA	SAC	
Meadow (silage)		2	2	-
Grazing: unspecified		1	-	-
goats		1	-	-
sheep		3	1	-
cattle		5	3	-
Airports/airstrips		1	1	-
Boating		1	-	-
Recreation		1	-	-
Beach activities		1	-	-
Hunting/shooting		1	1	-
Golf		2	1	-
Horse Riding		1	1	-
Amenity Management		4	2	-
Conservation management		1	1	-
Quarrying/mining		1	1	-
Residential (urban)		1	-	-
Residential (scattered)		1	-	-
Lighthouse (buildings and roads)		1	-	-

Table 12 Co. Wicklow - Threats

Threat:	Site category:	NHA	SAC
Tourism development			
	(Holiday homes)	2	1
Housing development		1	-
River bank "tidying"		1	-
Landfill -inland		1	1
Golf (increase of area)		1	1
Recreation		1	-
Burning		1	-
Afforestation		2	1
Airstrip (further development)		1	1
Erosion: vulnerable		5	3
recent		3	1
active		2	2

3.6. Wexford

Of its 264 km, 211 km of the county's coast is soft - consisting of long sandy beaches and "soft" cliffs. Wexford has 22 NHAs, eleven sub sites, five SACs and eight SPAs - the latter being some of the most important SPAs in the country. For the purposes of this study the Barrow Estuary's three Kilkenny sub sites - the tidal River Barrow marshes (see Appendix I) - are included here as the main estuarine site is in Wexford.

As with Wicklow, the main impacting activities in Wexford are associated with recreation and agriculture (see Tables 13 and 14). It will be noted also that race horse exercising is significant in three NHAs (2 SACs and 2 SPAs) - parts of the dunes in north and south Wexford are given over to purpose made "rides" cutting a swathe through the dune vegetation. The severe erosion of the soft cliffs in north Wexford is weather related and therefore quite difficult to deal with (Plates 9, 10 and 11). However, the County Council is addressing the erosion problem in the recreational areas (Plates 12 and 13).

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Table 13 Co. Wexford - Damaging Operations (Impacts)

Site category: Impact	NHA	SAC
Infill/Reclamation	4	3
Agricult. Improvement	1	1
Scrub clearance	2	1
Drainage	4	3
Modific. to watercourse	1	1
Grazing	2	1
Camping/Caravanning	3	1
Coastal walking	3	1
Other recreation	7	3
Race horse exercising	3	2
Littering	2	-
Dumping	2	1
Building/Civil Engineering	2	2
Coastal protection measures	2	-
Water polluting activities	6	2
Aquaculture	1	1
Removal of beach material	3	1
Introd. of exotic spp.	2	-
Nat. spread of unwanted spp.	4	1
Afforestation	1	1
None listed	4	-

Table 15 shows that more than one third of the NHAs for which information was available are under threat from visitor pressure (Plates 14 and 15). Other significant threats include continued use of areas for race horse activities and water polluting activities. The latter includes agricultural pollution. Despite the heavy pressures of recreational use Wexford has been awarded 4 Blue Flags for each of the three years 1996 to 1998.

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Table 14 Co. Wexford - Land use

Activity:	Site category:	NHA	SAC
Arable farming		3	3
Forestry		1	1
Meadow (silage)		2	2
Grazing: sheep		3	2
cattle		7	3
horses		1	-
Agricultural buildings		1	-
Boating		1	1
Fishing		3	3
Hunting/shooting		3	3
Golf		1	-
Beach activities		5	-
Recreation -coastal walking		2	1
Caravans/camping		2	1
Horse Riding - recreation		2	1
- race horses		2	1
Amenity Management		5	1
Conservation management		3	2
Building/Civil engineering		1	-
Aquaculture		1	1
Quarrying/mining (includes sand/shingle etc.)		1	1

Table 15 Co. Wexford - Threats

Threat:	Site category:	NHA	SAC
Tourism development			
	(Holiday homes)	1	-
	Mobile home/caravan park devel.	2	1
	Removal of beach material	1	1
	Infill/reclamation	1	1
	Grazing	1	-
	Further spread of unwanted spp.	1	-
	Building/ civil engineering	2	1
	Drainage/ road widening	1	1
	Coastal protection works	1	1
	Building dev. inland of site	3	-
	Dumping	1	1
	Water polluting activities	3	2
	Golf (new course planned)	1	-
	Recreation dev. of further facilities	1	-
	Race horse activities	3	2
	Aquaculture(traffic)	1	1
	Visitor pressure	8	2
	Erosion: vulnerable	8	2
	active	8	3
	No known threats	4	-



Plate 9 - Vulnerable soft coast - north Co. Wexford



Plate 10 - Eroding soft coast - Co. Wexford

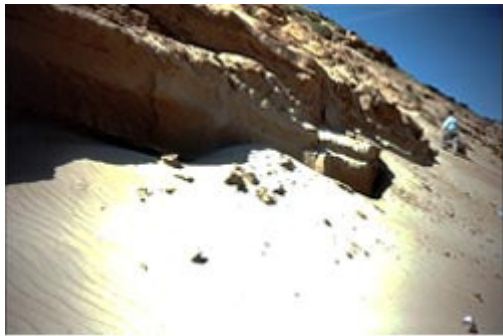


Plate 11 - Active Erosion - Co. Wexford



Plate 12 - Dune restoration works - Co. Wexford



Plate 13 - Board walk at Curracloe - Co. Wexford

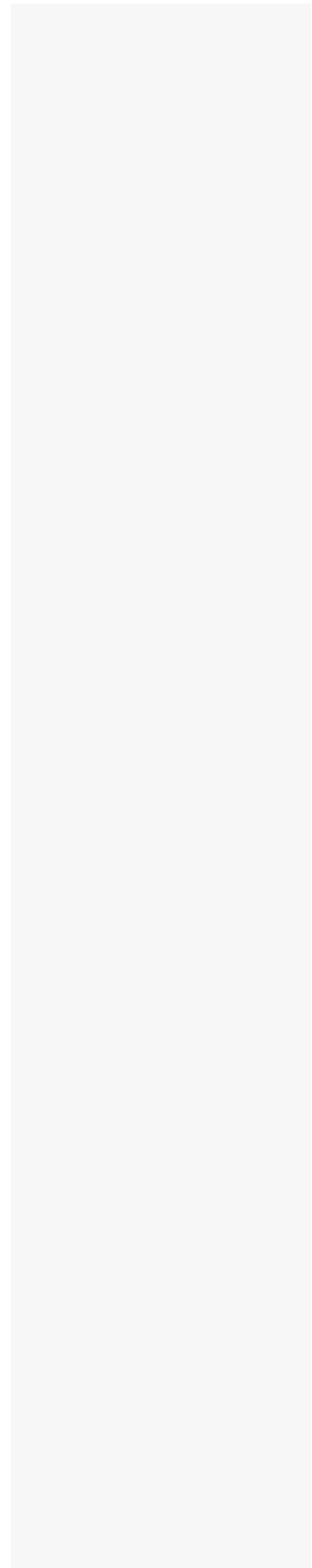




Plate 14 - Coastal Walking Route



Plate 15 - Beach Activities

3.7. Waterford

Waterford's 170 km coastline comprises 88 km soft and 81 km hard coast, in a series of bays and headlands. There are 8 coastal NHAs - no sub sites, one SAC and three SPAs. The most significant impacts are dumping (illegal and legal), infill and reclamation, grazing and building/civil engineering. Dumping in particular seems to be a problem for Waterford, being recorded as a damaging operation in six of the seven NHAs for which information was available. Tramore Dunes and Backstrand NHA/SAC is an important conservation area which suffers as a result of dumping and related activities.

In the context of future threats (Table 18), Dungarvan Harbour NHA (Dungarvan Bay SPA) is likely to come under increasing pressure from harbour development and aquaculture (both legal and illegal). The continued spread of Spartina poses a threat to the Blackwater Estuary SPA and to Tramore Backstrand SPA. While not an immediate threat in the Dungarvan SPA, Spartina is present in small quantities. Waterford is one of two counties whose Blue Flag designations have decreased in 1998, returning to three beaches as was the case in 1996, having been four in 1997.

Table 16 Co. Waterford - Damaging Operations (Impacts)

Impact	Site category:	NHA	SAC	SPA
Infill/Reclamation		3	1	2
Drainage		1	-	-
Grazing		2	-	2
Burning		1	-	-
Bait digging		1	-	1
Horses		1	1	1
Recreation (trampling)		4	1	1
Littering		1	1	1
Dumping		6	1	3
Building/Civil Engineering		3	1	2
Water polluting activities		1	1	1
Aquaculture		1	-	1
Removal of beach material		1	-	1
Quarrying (inland)		1	1	1
Nat. spread of Spartina.		1	1	1
None listed		1	-	-

3.8. Cork

Cork has a coastline of 1118 km - the second longest in Ireland. This represents 697 km of hard coast, 422 km of soft coast and 142 km of island coastline (Plate 16). There are 43 coastal NHAs which include seven sub sites, five SACs and six SPAs. Cork has a number of quite substantial sites in terms of area, the largest being Roaring Water Bay and Islands comprising over 3000 hectares.

Table 19 shows the recorded damaging operations for the county. No information was available for eight NHAs, one SAC and two SPAs. The most commonly observed impact is agricultural improvement, occurring in 10 NHAs - ie. more than 25% of those for which information was available.

This is hardly surprising when it is noted from Table 20 that various forms of agricultural activity are among the most frequent land use activities. The following impacts occur in eight sites (almost 25%): infill/reclamation, dumping and the natural spread of unwanted species (usually Spartina).

Drainage and littering occur in seven and six sites respectively, followed by water polluting activities and aquaculture - both in five sites. It is interesting to note that despite the level of the impacting activities listed as threats in Table 21, the most frequently quoted threats are tourism and recreational related (Plate 17), although agricultural improvement and use of agri - chemicals do feature. One of the more publicised and more controversial recent coastal development proposals is that of the Inchydoney Island Hotel, apartment and leisure complex at Clonakilty NHA/SAC. Past developments include the golf course on the Old Head of Kinsale (Plate 18) which resulted in the loss of coastal heath on the headland. The Lee Tunnel construction and

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associated infrastructure works is also a notable threat to the Cork Harbour sites. The Harbour sites are also at risk from oil spillage as was demonstrated by the recent occurrence following a pipeline rupture .

County Cork's Blue Flag beaches have remained at eight for the last three years - 1996 to 1998.



Plate 16 - Fastnet Rock - Co. Cork



Plate 17 - Sailing at Baltimore - Co. Cork



Plate 18 - Old Head of Kinsale

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Table 19 Co. Cork - *Damaging Operations (Impacts)*

Impact	Site category:	NHA	SAC
Infill/Reclamation		8	2
Agricult. Improvement		10	3
Hedge removal		1	-
Drainage		7	2
Modific. to watercourse		1	1
Grazing		4	1
Burning		2	-
Fertiliser application		4	2
Herbicide drift		1	-
Hunting		4	-
Fishing		4	-
Golfing		3	3
Camping/Caravanning		4	2
Other recreation		4	2
Littering		6	1
Dumping		8	1
Landfill		1	-
Building/Civil Engineering		3	-
Tourism pressure		1	-
Water polluting activities		5	1
Aquaculture		5	-
Removal of beach material		4	1
Collection of biological material		1	-
Scraw cutting		1	-
Nat. spread of unwanted spp.		8	2
Scrub encroachment		2	1
Afforestation		4	1
Vehicle damage		1	-
No observable damaging operations		2	-
No information		8	1

Table 20 Co. Cork - Land use

Activity:	Site category:	NHA	SAC
Arable farming		7	1
Forestry		3	2
Meadow		7	-
Grazing:			
sheep		10	2
cattle		15	2
horses		2	-
goats		1	-
rabbits		1	-
Agricultural buildings		3	-
Boating		12	3
Fishing		10	2
Hunting/shooting		8	1
Golf		3	-
Sports pitch		2	-
Caravans/camping		3	1
Horse Riding		3	1
Walking/climbing		5	-
Amenity Management		8	2
Conservation management		4	1
Aquaculture		5	-
Quarrying (sand)		1	-
Infill for Industrial devel.		1	-
Residential		6	2
Gardens		1	-
Roads		6	2
Lighthouse		2	-
Scraw cutting		2	-
No information		11	2

Table 21 Co. Cork - Threats

Threat:	Site category:	NHA	SAC
Agricultural improvement		3	-
Grazing: sheep		1	-
Agricultural chemicals/drift		3	1
Infill/reclamation		4	-
Drainage		2	1
Water pollution (sewage)		2	-
Pollution -industrial		1	-
Pollution - agricultural		1	-
Modification to water coursel		1	-
Litter		1	-
Golf (proposed new courses)		2	1
Holiday home development		1	-
Caravans/camping -devel.		5	1
Cliff path development		2	-
Removal of beach material		1	-
Building/civil engineering		1	-
Housing development		1	-
Spread of Spartina		4	-
Scrub encroachment		2	1
Landscaping		1	-
No known threats		5	-
No information		13	1

3.9. Kerry

The coastline of 684 km is divided almost in half between hard coast (306 km) and soft coast (378 km), with islands accounting for 104 km . Kerry has 43 coastal NHAs including twenty one sub sites, four SACs and seven SPAs. While many of the NHAs are small, often islands, some sites are quite sizable, for example Castlemaine Harbour NHA/SAC/SPA, covering some 9874 hectares and which is under threat - amongst other things - from shellfish collection.

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Table 22 Co. Kerry - Damaging Operations (Impacts)

Impact	Site category:	NHA	SAC
Infill/Reclamation		2	1
Agricult. Improvement		1	-
Hedge removal		1	-
Woodland felling		1	-
Drainage		1	1
Modific. to watercourse		1	1
Grazing - cattle		4	1
- sheep		3	1
- other		2	1
Burning		1	1
Fertiliser application		1	1
Golfing		1	1
Camping/Caravanning		1	1
Other recreation		1	1
Littering		1	1
Dumping		2	1
Building/Civil Engineering		2	2
Water polluting activities		3	2
Aquaculture		1	1
Removal of beach material		1	1
Quarrying (river gravel)		2	-
Nat. spread of Spartina		3	3
Afforestation		2	1
No observable damaging operations		1	-
No information		30	-

It is immediately evident from Tables 22, 23 and 24 that the number of sites with no information on file regarding damaging operations, land use and threats is very high. To some degree this can be accounted for by the fact that, for example, 13 NHAs had not been surveyed at all at the time of data extraction - and 15 were listed as "In House Consultations" (see Chapter 6 below).

The information presented in the tables is therefore only a partial indication as to the situation in Kerry, though the combined impacts of grazing is evident, as are water polluting activities and the natural spread of unwanted species such as Spartina. It is known, for example that golf course and holiday home development - to mention but two - pose genuine threats to some of Kerry's most sensitive habitats but these are not listed in the NHA files. However it is unlikely that the many offshore island sites will be at risk from tourist pressure, at least in the immediate future (Plate 19).

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Plate 19 - Blasket Islands - Co. Kerry

The number of Blue Flag beaches have increased dramatically from 5 in 1996, 11 in 1997, to 12 in 1998.

Table 23 *Co. Kerry - Land use*

Activity:	Site category:	NHA	SAC
Forestry		1	-
Meadow - silage & hay		3	2
Grazing: sheep		5	2
cattle		7	3
horses		3	3
Boating		3	2
Fishing		5	3
Hunting/shooting		1	1
Golf		2	2
Caravans/camping		3	3
Horse Riding		1	1
Beach activities		1	1
Amenity Management		3	2
Conservation management		1	1
Legal dumping		1	-
No organised land use/none specified		31	-

Table 24 *Co. Kerry - Threats*

Threat:	Site category:	NHA	SAC
Removal of river gravel		1	-
Removal of beach material		1	1
Coastal infill/reclamation		1	1
Agricultural effluent		1	1
Lack of grazing		1	-
Aquaculture		1	-
Spread of <i>Spartina</i>		3	3
Spread of <i>Hippophae</i>		1	1
Erosion- active		1	-
- vulnerable		1	1
No known threats		1	-
No information		35	-

Table 17 *Co. Waterford - Land use*

Activity:	Site category:	NHA	SAC	SPA
Grazing:				
unspecified		1	-	1
sheep		1	-	-
cattle		3	-	1
horses		1	-	1
goats		1	1	1
Boating		1	-	-
Fishing		4	1	2
Hunting/shooting		2	-	1
Recreation		2	-	1
Recreation -walking		4	1	1
Horse Riding		1	-	1
Illegal dumping		1	-	1
Coastal protection works		1	-	-
Aquaculture		1	-	1

Table 18 Co. Waterford - Threats

Threat:	Site category:	NHA	SAC	SPA
Infill		1	-	-
Drainage		1	-	-
Agricultural improvement		1	-	-
Recreation (extension of path near rare plant)		1	-	-
Building/Civil engineering		1	-	-
Sewage plant (planned)		1	-	-
Harbour development		1	-	-
Spread of Spartina		2	1	2
Aquaculture		1	-	1
No known threats		3	-	-

3.10. Limerick

Limerick's coastline is the Shannon Estuary, all 95 km being soft coast - including the 15 km of island coastline. There are 4 NHAs - with five sub sites - no SACs and one SPA which is the Shannon Fergus Estuary. Damaging operations and threats are related either to agriculture or port development (shipping and industrial) as might be expected in a large estuary surrounded by farmland. With the exception of hunting/shooting and boating (fishing), activities associated with recreation and tourism were not listed under landuse, or as threats and damaging operations for sites in this county.

Table 25 Co. Limerick - Damaging Operations (Impacts)

Impact	Site category:	NHA	SPA
Infill/Reclamation		1	1
Agricult. Improvement		1	1
Scrub clearance		1	1
Fertiliser application		1	1
Dumping		1	1
Building/Civil Engineering		1	1
Road development		1	1
Water polluting activities		1	1
No information		2	-

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Table 26 *Co. Limerick - Land use*

Activity:	Site category:	NHA	SPA
Grazing: sheep		1	1
cattle		1	1
Boating		1	1
Hunting/shooting		1	1
Conservation management		1	1
Legal dumping		1	1
Aquaculture		1	1
Roads		1	1
Reed cutting		1	1
None specified		3	-

Table 27 *Co. Limerick - Threats*

Threat:	Site category:	NHA	SPA
Wetland infilling		2	1
Water polluting		2	1
Spread of Spartina		2	1
None listed		2	-

3.11. Clare

At 366 km Clare's coastline is sixth longest in Ireland - hard and soft coast lengths being almost the same (182 and 184 km respectively). Islands account for 32 km of the total. It is a coastline of marked contrasts. The low-lying Fergus and Shannon Estuaries, Galway Bay coast (at Ballyvaughan and Finvarra), the dune systems of Carrowmore Marsh/White Strand NHA/SAC and those at Fanore contrast sharply with the rocky sea cliffs of Loop Head, the Cliffs of Moher and Black Head (where the Burren meets the sea). There are 14 coastal NHAs, sixteen subsites, four SACs and five SPAs. These sites are subject to a relatively high level of impact. The Galway Bay complex (shared with Co. Galway) is a very large NHA which covers over 11,000 hectares.

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Table 28 Co.Clare - Damaging Operations (Impacts)

Impact	Site category:	NHA	SAC	SPA
Agricult. Improvement		6	4	1
Scrub clearance		1	1	-
Drainage		1	-	-
Grazing		7	5	2
Fertiliser application		6	5	-
Bait digging		1	1	-
Hunting		5	3	1
Fishing		4	3	1
Golfing		2	2	-
Camping/Caravanning		5	5	-
Other recreation: beach activities		1	1	-
walkers		1	-	1
Littering		2	2	-
Dumping		7	3	1
Building/Civil Engineering		1	1	-
Water polluting activities		5	5	-
Aquaculture		1	1	-
Removal of beach material		1	1	-
Collection of biological material		2	1	-
Nat. spread of unwanted spp.		2	-	-
Afforestation		1	1	-
Peat cutting: hand		1	1	-
No observable damaging operations		1	-	-
No information		3	-	1

Table 28 shows that grazing and dumping are the most frequently observed damaging operations, noted in seven sites - ie. half of all coastal NHAs in the county. Agricultural improvement and fertiliser effects are almost as high at six, followed by camping/caravanning (Plate 20), hunting/shooting and water polluting activities - each in five NHAs. There is no information for three NHAs and no observable damaging operations in a fourth which means that of the remaining ten sites these impacts occur in 50% or more of the sites. Golf is listed as an impact in 20% of the sites for which information is available and it is a potential threat to the White Strand SAC at Doonbeg, though it was only recorded on one NHA file as a land use (Plate 21). Agricultural activities are the prevalent land uses and threats (Table 30).

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Plate 20 - Caravans at Fanore - Co. Clare



Plate 21 - Golf at Lehinch - Co. Clare

Table 29 *Co.Clare - Land use*

Activity:	Site category:	NHA	SAC	SPA
Meadow: hay		4	3	-
silage		2	2	-
Grazing: sheep		4	1	2
cattle		7	4	2
horses		3	1	2
rabbits		3	3	-
hares		1	1	-
goats		1	1	-
Boating		3	-	2
Fishing		3	-	2
Hunting/shooting		4	1	2
Golf		1	1	-
Sports pitch		1	1	-
Caravans/camping		4	4	-
Recreation: general		1	1	-
walkers/bird watchers		3/1	1	1
beach activities		1	1	-
Amenity Management		3	1	1
Conservation management		1	1	-
Quarrying(sand)		1	1	-
Lighthouse		1	-	-
Residential		2	2	-
Roads		2	2	-
Reed cutting		1	-	1
Peat cutting: hand		1	1	-
None specified		3	-	1

Coastal development and in particular holiday home construction is an active planning issue in the county (Appendix X and Plate 22). Parts of the coast have been protected against the force of the Atlantic, such as at Lehinch (Plate 23). Clare's EU Blue Flag designations have remained the same in 1997 and 1998 at four.



Plate 22 - Holiday home construction - Co. Clare



Plate 23 - Coastal protection - Lehinch, Co. Clare

Table 30 *Co. Clare - Threats*

Threat:	Site category:	NHA	SAC	SPA
Agricult. Improvement		1	1	-
Drainage		2	-	-
Grazing		3	2	2
Fertiliser application		2	1	-
Change in agricultural practice		1	1	-
Bait digging		1	1	-
Hunting		1	1	-
Fishing: unspecified		1	1	-
drift netting		1	-	-
Tourism development		1	1	-
Increased tourist pressure		1	1	-
Golfing		1	1	-
Camping/Caravanning		2	2	-
Further vehicular damage		1	1	-
Littering		1	1	-
Dumping		2	1	1
Shoreline development				
(incl. holiday homes)		1	-	1
Road development		1	1	-
Water polluting activities		2	2	-
Aquaculture		1	1	-
Removal of beach material (sand)		1	1	-
Collection of biological material		1	1	-
Spread. of exotic spp.		1	-	-
Nat. spread of <i>Spartina</i>		3	-	1
Bird disturbance(by shore-based				
activities)		3	-	1
Erosion: vulnerable		1	-	1
active		1	-	1
No known threats		-	-	-
No information		4	1	1

3.12. Galway

Galway's coastline of 689 km is third longest in Ireland and comprises 504 km of hard coast, 185 km soft coast and 100 km of islands. There are 42 coastal NHAs (including twenty-one sub sites), ten SACs and two SPAs. Many of this county's sites are offshore islands, including the Aran Islands. The level of information available for this county's sites was quite low. For example Table 31 shows that no information on damaging activities was available for 23 of the 42 NHAs.

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Table 31 *Co. Galway - Damaging Operations (Impacts)*

Impact	Site category:	NHA	SAC
Agricult. Improvement		8	6
Drainage		1	2
Grazing		10	7
Burning		3	1
Fertiliser application		3	3
Bait digging		1	1
Hunting		3	2
Fishing		3	2
Golfing		3	2
Camping/Caravanning		5	5
Sports pitch		1	1
Horse riding		1	1
Other recreation		1	1
Bird disturbance (by leisure activities)		2	2
Littering		6	3
Dumping		5	4
Building/Civil Engineering		6	4
Water polluting activities		4	3
Aquaculture		4	2
Removal of beach material		3	2
Collection of biological material		4	3
Collection geological material(rock)		3	3
Introd. of exotic spp.		1	-
Afforestation		1	1
Peat cutting: hand		2	-
Extension of cemetery (on machair)		1	-
Vehicular access to machair		1	1
Turf stripping on machair		1	1
No observable damaging operations		2	-
No information		23	-

With this taken into consideration, grazing impacts on more than 50% of the NHA sites. Agricultural improvement is a significant impact, as are: combined recreation activities, littering, dumping, building/civil engineering and aquaculture (Plate 24).



Plate 24 - Aquaculture - Killybeggs Harbour

The importance of agricultural activities in the coastal sites is evident from Table 32. Tourism and recreational activities are also notable, in particular caravans and camping, unspecified leisure activities and horse riding. Kelp gathering and water abstraction both appear as land use activities for the first time.

Table 32 Co. Galway - Land use

Activity:	Site category:	NHA	SAC
Arable farming		5	3
Meadow (hay)		5	4
Grazing: sheep		11	7
cattle		13	8
rabbits		4	4
horses		3	3
other		5	3
Agricultural buildings		5	5
Boating		1	-
Fishing		5	3
Hunting/shooting		3	3
Golf		2	1
Sports pitch		2	1
Caravans/camping		6	5
Horse Riding		3	3
Recreation: Tourism/leisure activities		4	4
Amenity Management		1	1
Conservation management		2	1
Water abstraction		2	1
Coastal protection works(gabions)		1	1
Aquaculture		2	1
Residential (urban)		1	1
Residential (scattered)		4	4
Roads		4	4
Lighthouse		1	1
Peat cutting: hand		2	1
Kelp gathering		1	1
No information		25	-

Table 33 shows that agricultural improvement, fertiliser effects and grazing are potentially the greatest threats, with erosion also important. Part of this would be due to grazing and other usage pressures. Mutton Island in Galway Bay, is under threat from the proposed sewage treatment plant which is to go ahead. This issue has been one of the highest profile planning issues associated with coastal habitats.

The Blue Flag designations for Galway have returned to the 1996 level of seven in 1998, having dropped to six in 1997.

Table 33 *Co. Galway - Threats*

Threat:	Site category:	NHA	SAC	
Agricult. Improvement		4	2	.
Changes in agricultural practice		1	1	.
Drainage		1	-	.
Grazing		6	3	.
Burning		1	-	.
Fertiliser application		6	1	.
Golf		1	1	.
Camping/Caravanning development		2	2	.
Sports pitch (erosion)		1	1	.
Building development		3	2	.
increase of tourism (land development)		2	1	.
Road development		1	1	.
Water polluting activities		3	2	.
Aquaculture		2	-	.
Removal of beach material		1	-	.
Collection of biological material		1	-	.
Habitat disturbance		3	1	.
Sewage plant construction		1	1	.
Erosion: active		5	3	.
vulnerable		5	3	.
No known threats		2	-	.
No information		24	-	.

3.13. Mayo

The county with the longest coastline at 1168 km, Mayo has 366 km of hard coast, 802 km of soft coast and 302 km of island coastline. The latter, of course, includes the many islands of Clew Bay, Clare Island, Achill Island and the islands of the west and north of the county many of which are important bird areas. There are 39 coastal NHAs, including thirty - two sub sites which reflects the number of large complex sites in the county, twelve SACs and seven SPAs. The NHAs of Mayo include spectacular cliff sites in the west (Meenaun Cliffs, Plate 25) and north (eg. Benederreen and Downpatrick Head) of the county. The largest site in the county is the Mullet/ Blacksod Complex which covers 15,700 hectares, and includes the Mullet Peninsula and Blacksod Bay.



Plate 25 - Keel and Meenaun Cliffs - Achill, Co. Mayo

Table 34 *Co. Mayo - Damaging Operations (Impacts)*

Impact	Site category:	NHA	SAC	SPA
Infill/Reclamation		1	-	-
Agricult. Improvement		7	4	3
Drainage		5	1	1
Modific. to watercourse		1	-	-
Grazing		17	9	3
Mowing/Cutting		2	2	-
Fertiliser application		4	2	1
Golfing		3	3	2
Camping/Caravanning		4	3	-
Other recreation		2	1	-
Littering		11	6	3
Dumping		9	6	1
Building/Civil Engineering		3	2	-
Water polluting activities		4	-	-
Aquaculture		1	-	-
Removal of beach material		5	2	1
Collection of biological material		1	-	-
Collection geological material		1	1	1
Nat. spread of unwanted spp.		7	2	1
Afforestation		1	-	-
Peat cutting: hand		3	1	-
Car park		1	1	-
Strip fencing on machair		2	-	-
Vehicles driving on site		3	1	-
No observable damaging operations		4	1	1
No information		15	1	3

As with Galway there is no information available for a high percentage of sites and the tables should be examined with this in mind. Looking at the damaging operations in Table 34, grazing and littering stand out as being the most significant, with dumping almost as bad. Many of Mayo's coastal grassland and salt marsh sites are subject to intense grazing pressures (Plate 26 Mallaraney salt marsh, Clew Bay). It is notable that sheep and cattle are recorded in almost the same number of sites as distinct from the overall national situation where cattle are more prevalent (Table 35). Mayo is one of the counties where, in the past, cattle would have grazed the coastal pastures in the winter time (see Chapter 6 below). As a result of intense grazing some sites have become severely eroded eg. the Doaghtry machair.



Plate 26 - Sheep grazing on Mallaranney salt marsh - Co. Mayo

Table 35 *Co. Mayo - Land use*

Activity:	Site category:	NHA	SAC	SPA
Arable farming		4	3	1
Meadow - silage		4	1	2
- hay		5	2	1
Grazing: unspecified		1	1	1
sheep		18	7	3
cattle		19	8	4
rabbits		3	2	1
Agricultural buildings		3	2	1
Airports/airstrips		1	1	1
Drainage works		1	1	1
Boating		7	1	2
Fishing		10	4	3
Hunting/shooting		4	2	-
Golf		4	3	1
Sports pitch		5	4	1
Caravans/camping		3	-	-
Horse Riding		1	1	-
Other recreation - walking		1	-	-
Amenity Management		6	2	-
Conservation management		2	1	1
Water abstraction		1	-	-
Coastal protection -dune stabilisation		2	1	1
Aquaculture		2	1	1
Quarry - disused		1	-	-
Roads		5	3	1
Peat cutting:		4	2	1
Rush cutting (for thatch)		1	-	-
No information		15	2	4

Another large site under extreme pressure from grazing, resulting in blow outs is Garter Hill in the north west of the county (Plate 27). In addition to farming, the social use of coastal grasslands is seen here, with sports pitches been noted in five of the sites and amenity management recorded in six sites.



Plate 27 - Garter Hill and south towards Scruwaddacon Bay - Co. Mayo

In terms of threats, grazing is recorded in nine out of the twenty-two sites for which there is information. Increased tourist pressure, including that leading to erosion, is noted for almost a quarter of the sites. Some areas are particularly subject to increasing pressure from tourism and leisure activities, among these are Achill Island and The Mullet Peninsula. Five sites are recorded as having no known threats.

EU Blue Flag designations rose from ten in 1996 to thirteen in 1997 and 1998.

Table 36 Co. Mayo - Threats

Threat:	Site category:	NHA	SAC	SPA
Infill/Reclamation		2	1	1
Agricult. Improvement		3	3	1
Grazing		9	6	-
Mowing/Cutting		1	1	1
Fertiliser application		2	1	-
Shooting		2	1	-
Fishing		3	1	-
Drift netting		1	1	1
Golf		1	-	-
Camping/Caravanning development		1	-	-
Increased tourist pressure (erosion)		5	4	1
Littering		1	1	1
Dumping		2	2	1
Water polluting activities		4	2	1
Aquaculture		1	-	1
Removal of beach material		2	2	1
Nat. spread of unwanted spp.		1	1	-
Peat cutting:		2	1	-
Disturbance of seabird colonies		2	1	1
Erosion - vulnerable		5	4	-
- active		4	3	1
No known threats		5	-	-
No information		17	3	3

3.14. Sligo

Most of Sligo's 195 km is classified as soft coast (132 km) and just 14 km is island coastline. There are 8 NHAs (twelve sub sites), five SACs and four SPAs. The most significant impacts are grazing, littering and water polluting activities. Table 38 shows that cattle and sheep are recorded in seven and six sites respectively. Unlike the previous two counties, Galway and Mayo, other farming activities are virtually absent as damaging operations and are recorded at a lower level under land use. Amenity management is recorded in four of the eight NHAs, this is almost certainly a direct effect of the presence of the urban influence of Sligo town. Tourist pressure is recorded as a threat in almost half of the sites.

Table 37 *Co. Sligo - Damaging Operations (Impacts)*

Impact	Site category:	NHA	SAC	SPA
Infill/Reclamation		1	1	-
Aircraft - bird disturbance		1	1	1
Drainage		1	1	-
Grazing		6	4	1
Fertiliser application		1	1	-
Hunting		2	1	-
Fishing		2	1	-
Golfing		1	1	1
Recreation		1	1	1
Littering		4	4	2
Dumping		3	2	-
Building/Civil Engineering		2	2	-
Water polluting activities		4	3	-
Aquaculture		2	2	2
Introd. of exotic spp.		1	1	1
Nat. spread of unwanted spp.		3	2	1
Vehicles driving on site		2	2	-
No observable damaging operations		-	-	-
No information		1	-	-

Threats to the Ballysadare Bay (NHA/SAC) intertidal habitat include toxic effluent flowing into the bay from a quarry for mineral extraction and the discharge of sewage. There is evidence from midden heaps that shellfish may have been collected from this bay from as early as 2000 BC. However in recent years the collection of cockles and muscles by locals has ceased due to the toxic levels present (An Bord Pleanála hearing, Feb. 1997).

Table 38 *Co. Sligo - Land use*

Activity:	Site category:	NHA	SAC	SPA
Arable farming		1	1	1
Forestry		1	1	-
Meadow - silage		1	1	1
Grazing: sheep		6	4	1
cattle		7	5	2
horses		1	1	-
rabbits		1	1	-
Boating		3	3	1
Fishing		5	4	2
Hunting/shooting		4	3	1
Golf		2	2	-
Sports pitch		1	1	1
Caravans/camping		1	1	-
Horse Riding		3	2	-
Sub -aqua diving		1	1	-
Amenity Management		4	4	1
Conservation management		1	1	1
Legal dumping		1	1	-
Drainage works		1	1	1
Aquaculture		2	2	1
Quarrying/mining (includes sand/shingle etc.)		1	1	-
Residential (urban)		1	1	1
Roads		2	2	1
No information		1	-	-

Table 39 Co. Sligo - Threats

Threat:	Site category:	NHA	SAC	SPA
Agricult. Improvement		1	-	-
Fishing		1	1	-
Water polluting activities		2	2	1
Aquaculture		3	3	1
Inland mineral extraction		1	1	-
Tourism pressure		3	2	1
Erosion:		1	-	-
No known threats		-	-	-
No information		2	1	-

Aquaculture is noted as a threat in three of the eight sites, and this is in part due to the practice of driving tractors on the fore shore, thus disturbing not only the habitat itself but also feeding waders, and in part the collection of the shellfish, resulting in the removal the food source.

Sligo's EU Blue Flag designations have remained the same for 1996 to 1998 - at three beaches.

3.15. Leitrim

Leitrim's coastline consists of 5 km of soft coast. It shares an NHA with each of its neighbouring counties, Sligo where the site is is also an SAC but little more than a "fringe" along the county boundary and Donegal. There are no subsites and no SPAs. The details for these sites are include elsewhere (ie. with the other two counties) so it is not considered necessary to reproduce them here.

The main damaging effect in Leitrim is water polluting activity where the river passes through the town before flowing into the sea. Threats are tourism pressure - related and siltation.

3.16. Donegal

Approximately two thirds of Donegal's 650 km coastline is "hard" (410 km) and includes some of the highest rocky cliffs in the country (). There are 36 coastal NHAs several of which are large complex sites with many subsites. For example: Gweedore Bay and Islands, Sheephaven, Lough Swilly (over 17,000 ha) and the North Inishowen coast. Donegal has the most coastal SACs (fifteen) and SPAs (eleven).



Plate 28 - Slieve League



Plate 29 - sheep grazing cliff tops in south west Donegal

Information on damaging operations (Table 40) is available for 18 NHAs, thus giving the following percentages for the four most frequently recorded impacts:

- Dumping 94% Building/ civil engineering 55%
- Grazing* 88% Water polluting activities 55%

**Table 41 shows that cattle are the most frequently observed grazers.*

While these four activities were frequently observed and are therefore obvious, perhaps the most significant aspect of the impacts on sites in this county is the range of activities which are seen as damaging. The removal of beach material at seven sites is a cause for concern. Activities such as infill/reclamation, scrub clearance, littering, peat cutting, removal of turf, trial bike riding, strip fencing etc. - the list goes on - occur at relatively few sites but the overall effect is that every site for which information was available was damaged in some way or other. As for Mayo (and to a lesser extent Galway) it appears that the machair sites are subject to a wide range of regular uses - ie. not just visitor/ tourist related - including the local cemetery. In many of these coastal areas the machair grasslands are a focus for local recreation as well as agriculture - sports pitches, sheepdog trails and horse racing to name but a few. This heavy usage is bound to impact on these sites.

The potential for golf course development is also an increasing concern, already there have been court orders relating to such activities in the Rosapenna area of the county. Golfing is unlikely to diminish, Grazing is recorded (Table 42) as being the single most significant threat to coastal sites in the county affecting all types of habitat, not just the lowland soft coast.

EU Blue Flag designations have risen from seven in 1996 and 1997, to 10 in 1998 including Bundoran Urban beach designation.

Table 40 Co. Donegal - Damaging Operations (Impacts)

Site category: Impact	NHA	SAC	SPA
Infill/Reclamation	4	1	1
Agricult. Improvement	7	5	-
Scrub clearance	2	2	-
Woodland felling	2	1	1
Drainage	7	6	1
Modific. to watercourse	5	3	2
Grazing	16	13	3
Mowing/Cutting	2	2	-
Burning	4	2	2
Fertiliser application	5	4	-
Bait digging	1	-	2
Hunting	2	-	1
Fishing	3	-	1
Golf	6	5	1
Camping/Caravanning	4	4	-
Horse riding	2	1	-
Other recreation	3	2	1
Littering	7	5	1
Dumping	17	14	2
Building/Civil Engineering	10	9	-
Water polluting activities	10	5	1
Aquaculture	5	2	-
Removal of beach material	7	6	1
Collection of biological material	3	2	2
Collection geological material	1	1	1
Introd. of exotic spp.	2	-	2
Nat. spread of unwanted spp.	9	8	1
Afforestation	3	1	2
Peat cutting	5	4	1
Water abstraction	1	1	-
Removal of turf (for lawns)	1	1	-
Trial bike riding	1	-	1
Strip fencing	1	1	-
No observable damaging operations	-	-	-
No information	19	-	6

Table 41 Co. Donegal - Land use

Activity:	Site category:	NHA	SAC	SPA
Arable farming		6	5	3
Strip farming		2	2	-
Forestry		2	1	-
Meadow - hay		3	3	1
- silage		3	2	2
Grazing: sheep		16	13	4
cattle		20	14	4
rabbits		5	4	1
goats		2	2	-
donkeys		1	1	1
horses		2	2	-
Agricultural buildings		2	2	-
Boating		7	2	1
Fishing		10	6	2
Hunting/shooting		5	3	1
Golf		9	6	2
Sports pitch		4	4	2
Caravans/camping		7	6	1
Horse Riding		2	2	-
Other recreation: walkers		1	1	1
Diving		2	1	-
Horse racing		1	1	-
Sheepdog trials		1	1	-
Amenity Management		9	6	2
Conservation management		4	3	3
Water abstraction		3	3	1
Legal dumping		1	-	-
Illegal dumping		1	1	-
Aquaculture		4	2	-
Quarrying/mining (includes sand/shingle etc.)		2	2	1
Residential (scattered)		3	3	1
Roads		8	7	3
Peat cutting		6	4	2
Kelp collection		1	1	-
Cemetery (in current use)		1	1	-
No information		3	-	1

Table 42 Co. Donegal - Threats

Threat:	Site category:	NHA	SAC	SPA
Infill/Reclamation		1	-	1
Silting		1	-	-
Agricult. Improvement		3	3	-
Drainage		4	3	-
Modific. to watercourse		1	1	1
Grazing		10	8	2
Burning		2	1	1
Fertiliser application		2	2	1
Bait digging		1	-	2
Hunting		1	-	1
Fishing		1	-	1
Golf		4	4	-
Camping/Caravanning		3	3	-
Other recreation		1	1	-
Amenity development		1	1	-
Continued use of trials bikes		1	-	1
Trampling		1	1	-
Building/Civil Engineering		1	1	-
Housing development		1	1	-
Water polluting activities (incl. agric.poll.)		6	4	1
Aquaculture		4	2	-
Removal of beach material		1	-	1
Collection of biological material (shellfish)		1	-	1
Shingle extraction		1	1	-
Nat. spread of unwanted spp.		1	1	-
Afforestation		2	1	1
Peat cutting		1	1	-
Airstrip development		1	1	1
Erosion - vulnerable		5	5	-
- active		3	3	-
No known threats		5	3	-
No information		14	-	6

Chapter 4. Planning Applications in Designated Areas

Any planning and licence applications (EPA, afforestation etc.) noted from the individual NHA files (up to February 1998) are summarised in Appendix X . Although not comprehensive, it does give an indication as to what is happening.

In an attempt to find out the current position relating to planning decisions and conservation designations, and at a time when many local authorities were reviewing their Development Plans every coastal local authority planning section was asked the following question:

" To what extent does the planning authority take these designations (including proposed designations) into consideration when evaluating planning applications. For example, do you automatically refuse planning permission or do you consider each application individually?"

Of the 13 local authorities which responded to this question, the following actual responses from nine authorities cover the points made. They are not in any particular order and are deliberately not identified, the local authority's name being removed where necessary.

i. "The Planning Authority takes full account of designations either existing or proposed when considering such matters. However, it is also of the opinion that blanket banning is not an appropriate response. Each proposal is considered on its merits and on advice (including that of the NPWS) and, generally, if a significant impact was likely, it would be a substantial counter-indication to the granting of permission".

ii. "We do use SAC designation as a reason to refuse but not on its own, normally other reasons will apply eg. pollution effects / visual amenity etc."

iii. "It is an objective of the Planning Authority set down in the Development Plan to preserve designated areas free from development. The Planning Authority are obliged to consider each planning application on its merits but having regard to the policies and objectives of the Development Plan. It can, therefore, be assumed that developments within designated areas would be deemed to contravene the Development Plan policies and be refused as such."

iv. "The County Council does not automatically refuse planning permission on the grounds of NHA/SAC/SPA designation. We are probably afraid to do so because of the compensation issue. We do try to adhere to guidelines and would see this being incorporated into a County Development Plan in the future. One of the main problems we have with landowners is the 'proposed' in NHA and pSAC. Basically the public reaction is that if it is proposed it is not actual and therefore why worry!"

v. "We would evaluate any application on its merits. We would not automatically refuse planning permission. We reviewed our Development Plan in December last. In the previous Plan we identified a strip of land 400m from the shore line as being an Area of High Scenic Quality. That figure has now been reduced to 200m. Within that strip it will be very difficult to obtain permissions in the future unless certain criteria are met to warrant any exemption to the policy."

vi. "Such planning applications are referred to Dúchas, The Heritage Service, who advise the Planning Authority of their requirements in this regard. Each application is considered on its merits."

vii. "Any developer would be required to do an EIS. We have started to review the Development Plan, SAC and SPA and proposed designations would be part of that. There have been no instances where we have had to refuse planning permission on the basis of designations, we would refer where necessary."

viii. "In considering proposal on the coastline, they are considered individually rather than an automatic refusals being issued. The County Council, in accordance with agreed refusal procedures, do refer applications in the specified designations to the appropriate bodies and agencies for their observation."

ix. "All existing designations and designations referred to in the current Development Plan are taken into account. The Council judges each application on its merits."

Chapter 5. Public Perception

A collection of more than eighty articles has been assembled over the period June 1996 to August 1998 on an adhoc basis, ie. from newspapers which were purchased as normal - only one national paper would have been seen on any given day - with perhaps a few exceptions.

The list of articles on coastal issues is presented in Appendix XI and serves as an indication of media interest in the different issues and also what is available to the general public.

Chapter 6. General Discussion

6.1 Level of survey

Prior to any analysis of the level of impact on sites it is important to put the data into general context regarding the NHA information available. The review of ASIs was carried out by a team of people and not all sites were surveyed. The coastal NHA sites can be divided into four survey categories:

	% of NHAs
Survey by ecologist	57.83
Survey by Ranger	6.62
In House (NPWS) Consultation*	27.52
Not surveyed	8.01

*"In house consultations" - The information for these sites would have come from existing NPWS files. Most sites thus annotated are bird sites, often small uninhabited offshore islands which would have no land use (often too small) and therefore no damaging operations and probably no threats.

Disparity in terms of the experience and expertise of recorders gives rise to an lack of consistency of approach because of the number of recorders involved, despite best efforts (ie. the well laid out and comprehensive National ASI Survey Guidelines for Ecologists and associated training) has inevitably resulted in variation in the interpretation of the some site information as observed. It should be pointed out that the recording of scientific information - such as habitat types, species and land use - is not an issue here, but rather those aspects which are open to individual interpretation eg. the assessment of damage or threat . The assessment of threat is often difficult and it is evident from spending many months examining the field records on the NHA files that some of the threats are possibly perceived rather than actual. However, for the purpose of giving a general indication of the level of threat to which designated conservation areas are subject, it is necessary to assume that all listed threats are real.

6.2 Sites with no information on file

Summary tables in Appendices VII, VII and IX show the number of sites for which there is no information in term of damage, land use and threat. This is taken into consideration when analysing the percentage levels of activities, for example there is no information on damaging operations (impacts) for 114 of the 284 NHA files checked, for two SACs and for seventeen SPAs. In a few cases the file itself was not available - usually for candidate SACs which were being surveyed at that time, others had not been surveyed at all (see 6.1 above). In Tables 43, 44 and 45 therefore, the figures expressed are percentages of the number of sites for which information was available in any given designation.

6.3 Analysis of impacts and threats

Table 43 shows percentage of sites subject to the fifteen most common damaging activities in coastal NHAs, SACs and SPAs as a whole. These activities occur in more than 20 of the 114 NHA sites for which information is available. They are shown in order of significance for NHA sites. Table 44 shows the percentage levels for the fifteen most frequently observed land use activities in NHAs.

Agricultural practices account for the most significant impacts. Grazing is the most significant impact on all three site categories. Almost half of all NHAs are subject to grazing on a level which is detrimental to the habitat, while almost three quarters of

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coastal SACs are at risk. Historically, it was cattle which grazed the coastal grasslands and salt marshes, being brought down to the coast for winter grazing. This level of grazing encouraged species biodiversity. Current, all year round intensive grazing has the reverse effect. Grazing is also the second most important threat, after erosion - some of which would be caused by grazing pressure. (See also 6.4 below).

Table 43 Percentage of sites subject to impacts

Designation:	NHA	SAC	SPA
Grazing	46.0	73.0	31.0
Dumping	40.2	56.2	31.0
Water polluting activities	28.9	37.5	41.0
Littering	26.6	35.9	61.0
Agricultural Improvement	26.0	39.0	21.0
Natural spread of unwanted spp.	25.4	32.8	41.0
Building/Civil engineering	21.8	37.5	21.0
Drainage	18.9	31.0	21.0
Infill/Reclamation	18.3	21.8	41.0
Fertiliser appl./drift	17.0	29.0	11.0
Camping Caravanning	16.5	34.0	6.6
Other recreation	16.5	29.0	11.0
Removal of beach material	15.9	23.4	11.0
Aquaculture	13.6	14.0	21.0
Golf	13.0	29.0	11.0
No observable impacts	5.9	1.5	

It should be noted however, that in some cases, the reverse situation pertains where lack of grazing is cited as a threat to the survival of habitat or species. This is where, for example, grazing has been removed altogether from a site which is threatened by scrub encroachment or the spread of unwanted species, hitherto controlled by grazing. Other significant agricultural impacts are land "improvement", and the use of agri-chemicals, either directly on the site or on adjacent lands (drift).

Next to agriculture comes illegal dumping which covers a wide range including: domestic rubbish, domestic appliances, cars, farm machinery, farm refuse - old hay, silage bags. Sites in Counties Waterford and Donegal appear to be particularly vulnerable. For example, in Donegal where illegal dumping was listed as a damaging operation in all but one of the sites for which information was available on file. Littering is also a serious problem.

Three of the top fifteen impacts are recreation or leisure related. Take, for example, caravanning/camping which is listed as a damaging operation in twenty eight NHAs, twenty two SACs and three SPAs. The overall percentages as a damaging operation are 16.5, 34 and 6.6 respectively for each site category. However, if they are taken as a percentage of the sites in which they actually occur as a land use, ie. 31, 22 and 7 sites respectively, then their impact percentage escalates to 90.3% for NHAs, 100% in SACs and 42.8% in SPAs. The "other recreation" category is undefined in the files and may include some of the activities specified separately in the county Tables and the Summary Tables, Appendices VII to IX eg. as beach activities, walking etc. (Plates 14 and 15). Building/civil engineering covers most areas of construction, domestic, industrial and visitor-related - though the latter was recorded separately for some sites. Holiday home

developments are an indication of increased visitor pressure (Plates 22 and 30).

Table 44 *Percentage of sites for land use activities*

	Designation:	NHA	SAC	S
Grazing	cattle	62.3	82.2	40
	sheep	44.0	64.5	30
Fishing		33.8	43.0	40
Amenity management		26.3	37.0	20
Boating		24.7	24.1	50
Meadow silage/hay		22.5	40.3	20
Hunting/shooting		22.5	29.0	30
Golf		16.8	33.8	10
Caravans and camping		16.6	35.0	10
Roads		15.0	33.8	10
Arable farming		13.9	25.8	20
Conservation management		13.4	22.5	30
Horse riding		12.3	22.5	10
Grazing: horses		10.8	17.7	10
Aquaculture		10.2	11.2	10

Considering the other impacts in Table 43, water polluting activities may be due to a number of sources which could include agriculture, fishing (Plate 31) industry, sewage - domestic or visitor related eg. public toilets by the coast (Plate 32) or recreation (Plate 33). Aquaculture - related impacts are varied, from chemical effects, to habitats disturbance and surface damage - particularly where, for example, tractors and other vehicles are used on the fore shore at low tide. The collection of shellfish, which is included under aquaculture for some sites, is a particularly harmful impact in those areas which are feeding grounds for wading birds. Plate 34 shows how shellfish collection can develop to a commercial scale, though in this case it should not be referred to as aquaculture.



Plate 30 - Holiday cottages, Co. Wexford



Plate 31 - Fishing trawlers



Plate 32 - Sewage outfall at Doolin, Co. Clare discharges onto the foreshore.



Plate 33 - Marina development



Plate 34 - Mussell dredger - fully laden



Plate 35 - Coastal protection works

Table 45 Percentage of sites subject threats

Designation:	NHA	SAC	SPA
Erosion	19.3	30.5	10.0
Grazing	18.1	32.2	10.0
Water polluting activities	15.8	25.4	20.0
Increased visitor pressure	11.1	16.9	10.0
Further spread of unwanted spp.	10.5	11.8	20.0
Agricultural improvement	9.3	15.2	10.0
Infill/Reclamation	8.7	6.7	20.0
Camping/ Caravanning	8.7	15.0	10.0
Aquaculture	8.7	11.8	10.0
Golf	8.2	13.5	10.0
Drainage	5.8	6.7	10.0
Building/Civil engineering	5.2	6.7	10.0
Removal of beach material	5.2	10.1	10.0
No known threats	17.5	30.5	10.0

Golf is relatively low on the list of most significant impacts in Table 43 in national terms, however this is rather misleading. As a damaging operation it is restricted to relatively few coastal sites on a national scale, ie. as a land use in thirty three NHAs, twenty one SACs and ten SPAs. Within these sites it is regarded as a damaging operation in twenty two NHAs, nineteen SACs and eight SPAs (66%, 90% and 80% respectively). Its threat level is also high. This is particularly alarming because, unlike many of the other impacts on coastal sites which might be quite localised, golf courses cover large areas and often a whole coastal system is affected - not necessarily entirely due to the golf course taking up the whole system but because all the other activities are "squeezed" into the remaining smaller areas of "intact" habitat. It is for this reason that the European Golf Association's initiative on environmentally friendly golf courses should be welcomed. It remains to be seen whether this will have any effect on the future development of golf courses in Ireland. The outcome of the appeal against the Doonbeg development (part of the White Strand Carrowmore Marsh NHA/SAC) in Co. Clare may be significant.

It is acknowledged that coastal protection is essential on parts of the coast. This does however have a significant impact upon habitats by the effects on any habitat's general ecology caused by leaching from the rock, stone and other materials brought in from outside the area (Plate 35). The ultimate impact is the total destruction of habitat, for example as shown in Plate 1.

6.4 Regional effects and localised impacts

Land use of coastal sites, and thus impact, varies considerably from one part of the country to another. For example in the east and south east of the country, soft coast habitats are associated for the most part with recreational and leisure activities by visitors. In the west and north west this is also the case, but to a much lesser extent as the sites tend to be used more by the local population for agriculture and leisure activities.

Certain habitats such as machair and shingle beaches/ridges are subject to specific impacts which are associated with the particular habitat. Such "specialised" impacts and threats do not occur widely throughout the country simply because the habitat does not occur widely. The impact may nevertheless be very threatening to the individual site's survival.

Taking the machair sites as an example of this, sports pitches, even horse racing are listed among the land use on machair sites, as are cemeteries (old and current) showing that these sites also fulfil a social and leisure function with the local community. Other activities such as scraw and turf cutting (for lawns and golf greens) tend not to be seen in the east of the country and, while these activities do not account for much impact in percentage terms, they may have a profound effect on the sites in which they occur.

The finding of large middens on some of the western sites shows the historical human use of soft coastal sites. Usage in itself is not damaging, however the level and type of use is significant. The change in agricultural practices, with the division of commonages and the introduction strip farming on machairs is a case in point. This system concentrates the grazing animals in smaller areas and encourages edge effects along fence lines, for example, increased poaching leads to surface break up and leaves the site more vulnerable to erosion.

Chapter 7. Conclusions

i There is no doubt that coastal habitats in the (proposed) designated conservation areas are subject not only to current damaging practices but are also at threat from both continuing - ongoing - impacts and new ones.

ii What next? It would be useful to examine some individual sites which are subject to "low level" multiple impact in detail over a period of time. In fact this is essential, if not already too late in many cases.

iii It will be interesting to see what effect REPS (Rural Environment Protection Scheme) has on coastal areas once the management plans have been put into practice.

iv Will the controls and measures for SACs, NHAs (including SPAs with SACs here) be sufficient to halt the "death by a thousand cuts" of coastal habitats? For, with the exception of a few large scale impacts such as grazing, this is exactly what is happening; ie. many relatively low scale impacting activities of the kind which tend to be ignored because of their small, perhaps local scale, and which when accumulated poses a massive threat to a large section of the coastline.

Chapter 8: Appendices

Appendix 1. Coastal Proposed Natural Heritage Areas by county

(B = SAC)

County	Site	Subsite(s)	main habitat
<i>Louth</i>			
	Carlingford Lough		sea inlet/bays
		Ferry Hill woods	mixed woodland/foreshore
	Dundalk Bay		mud flats/sand flats
		Castlebellingham Shore	shingle beach
	Dunany Point		clay sea cliffs
	Clogher Head		coastal heath
	Boyne Coast and Estuary		large composite site
		Baltray Dunes	sand dunes
		Boyne Estuary	mud flats/sand flats
<i>Meath</i>			
	Boyne Coast and Estuary		
		Boyne Estuary	mud flats/sand flats

		Mornington Dunes	sand dunes
	Laytown Dunes/Nanny Estuary		tidal river/mud flats
		Laytown Dunes	sand dunes
<i>Dublin</i>			
	Rockabill Island		rocky islets
	Skerries Islands		rocky islands
	Loughshinny Coast		lowland dry grassland
	Rogerstown Estuary β		mud /sand flats/salt marsh
		Rush Sandhills	sand dunes
		Portraine Saltmarsh/Dunes	sand dunes
	Portraine Shore		bedrock/& sandy shore
	Lambay Island		rocky sea cliffs
	Malahide Estuary		large composite site
		Malahide Island	sand dunes
	Baldoyle Bay		mud flats/sand flats
		Portmarnock Dunes	sand dunes
	Irelandís Eye		rocky cliffs
	Howth Head		large composite site
	North Dublin Bay β		sand dunes/mud/sand flats
	Dolphins, Dublin Docks		moorings
	South Dublin Bay		mud flats/sand flats
	Boosterstown Marsh		brackish marsh
	Dalkey Coastal Zone and Killiney Hill		large composite site
		Killiney Hill	large composite site
<i>Wicklow</i>			
	Bray Head		large composite site/heath
	The Murrough β		wetland complex/shingle
		Kilcoole - Newcastle	tidal marshes
		Broad Lough	wetland
	Wicklow Town Sites		grassland/tidal river shore

	Wicklow Head		heath/rocky cliffs
	Magherabeg Dunesβ		sand dunes
	Buckronev - Brittas Dunes and Fen β		sand dunes/brackish fen
	Arklow Sand Dunes		sand dunes
	Arklow Rock - Askintinny		heath
		Askintinny Dunes	sand dunes
<i>Wexford</i>			
	Kilpatrick Sandhills β		sand dunes
	Kilgorman River Marsh		salt marsh
	Ballymoney Strand		bedrock/& sandy shore
	Courtown Dunes and Glen		complex/ sand dunes
		Courtown Glen	tidal river/woodland
	Ardamine Woods		woodland/sandy beaches
	Donaghmore Sandhills		sand dunes
	Cahore Point North Sandhills		sand dunes
	Cahore Polders and Dunes		grassland/sand dunes
	Ballyteige Marsh		salt marsh/brackish lake
	Kilmuckridge - Tinnaberna Sandhills β		sand dunes
		Tinnaberna Sandhills	sand dunes
	Wexford Slobs and Harbour		large composite site
		Curracloe - Ballynaclash	sand dunes/clay cliffs/marsh
		Castlebridge Marsh	marsh
		Raven Point Nature Reserve	complex dune system
		Ballynaclash Sandhills	sand dunes
	St. Helenís Burrow		dry grassland
	Ladyís Island		brackish lake

	Lake B		
	Tacumshin Lake B		brackish lake
	Saltee Islands		rocky sea cliffs/heath
	Ballyteige Burrow B		large composite site
	Keeragh Islands		sea islets
	Bannow Bay		mud flats and sand flats
		Fethard Saltmarsh	salt marsh
	Hook Head		rocky sea cliffs
		Baginbun Head	rocky sea cliffs/sandy shore
	Duncannon Sandhills		sand dunes/ marsh
	Ballyhack		scrub/shingle beaches
	Barrow Estuary (3 sub sites in Co. Kilkenny)		brackish marshes
		Ballinlaw Ferry	
		Carrickloney	
		Rochestown Marsh	
<i>Waterford</i>			
	Waterford Harbour		tidal estuary complex
	Kingís Channel		salt marsh
	Dunmore East Cliffs		rocky sea cliffs
	Tramore Dunes and BackstrandB		complex dune system
	Ballyvoyle Head to Tramore		rocky sea cliffs
	Dungarvan Harbour		mud flats and sand flats
	Helvick Head		rocky sea cliffs
	Blackwater River and Estuary		mud flats and sand flats
<i>Cork</i>			
	Blackwater River and Estuary		mud flats and sand flats
	Ballyvergan Marsh		reed beds/swamps
	Ballymacoda (Clonpriest and Pillmore)		mud/sand flats/dunes/s.m.

	Capel Island and Knockadoon Head		heath and rocky cliffs
	Ballycotton, Ballynamona & Shanagarryβ		large composite site
	Ballycotton Islands		dry grassland
	Whitegate Bay		mud flats and sand flats
	Rostellan Lough, Aghada Shore & Poul nabibe Inlet		mud flats and sand flats
		Poul nabibe Inlet	mud flats and sand flats
	Cuskinny Marsh		brackish lakes
	Great Island Channel		mud flats and sand flats
	Dunkettle Shore		mud flats and sand flats
	Douglas River Estuary		mud flats and sand flats
	Monkstown Creek		mud flats and sand flats
	Lough Beg (Cork)		mud flats/ wet grassland
	Sovereign Islands		rocky islands
	James Fort		dry grassland/walls
	Garrettstown Marsh		brackish marsh
	Garrylucas Marsh		fens and flushes
	Old Head of Kinsale		rocky sea cliffs/heath
	Courtmacsharry Estuary β		composite site
	Seven Heads and Dunworly Bay		heath/sea cliffs/reed bed
	Clonakilty Bay β		mud flats and sand flats
	Dirk Bay		sand dunes/ marshes
	Kilkeran Lake and Castlefreke Dunes β		composite coastal site
	Roscarbery Estuary		mud flats and sand flats
	Lough Hyne Nature Reserve & Environs		sea inlet
		Knockomagh Wood	mixed woodland

	Roaringwater Bay and Islands		composite site
		Cape Clear Island	rocky sea cliffs/heath
		Calf Islands	
		Sherkin Island	rocky sea cliffs
	Barley Cove to Ballyrisode Point		complex site
		Lissagriffin Lake/Barleycove	brackish lake/dunes/salt m
		Crookhaven	rocky cliffs/heath
	Three Castle Head to Mizen Head		complex site/heath etc.
	Owenís Island		island
	Sheepís Head		heath
	Whiddy Island		shingle beach
	Glengariff Harbour and Woodland		large complex site
	Sheelane Island		sea stacks/islands
	Orthonís Island, Adrigole Harbour		rocky island/sea inlets& bays
	Roancarrigbeg & Roancarrigmore		small islands
	Kilkinnikin		heath
	Garinish Point		heath/lowland grassland
	Dursey Island		heath, dry grassland/rocky
	Bull and Cow Rocks		sea stacks/islands
	Eyeries Island		sea stacks/islands
	Kilcatherine Heath		heath
	Cleanderry Wood		dry broad-lvd. woodland
<i>Kerry</i>			
	Spanish Island		shingle beaches
	Lehid Harbour		composite site
	Roughty River Estuary		mudflats, salt marsh
	Kenmare River Islands		rocky islands
		Inishkeelaghmore	rocky island

	Rossdohan Island		rocky & shingle shore
	Derrynane Bay Islands & Marsh, Lambís Hd		composite site
		Lambís Head/Abbey Island	
		Derrynane Marsh	
		Moylaun Island	sea stacks/islands
	Ballinskelligs Bay & Inny Estuary		sea inlets and bays
		Inny Estuary	mud and sand flats
		Waterville Sandhills	sand dunes
	Deenish and Scariff Islands		lowland grassland
	Little Skellig		rocky island
	Great Skellig		rocky island
	Puffin Sound - Horse Island Cliffs		rocky sea cliffs
		Puffin Island	rocky sea cliffs
		Horse and Long Islands (Kerry)	rocky sea cliffs
	Valencia Island Cliffs		rocky sea cliffs
		Dohilla Quarry	
	Glanleam Wood		mixed woodland
	Valencia River Estuary		mudflats/s.m./grassland
	Doulos Head to Cooncrome Harbour		rocky sea cliffs
	Killarney National Park (coastal section)		
	Castlemaine Harbour β		large composite site
		Inch Spit and Mudflats	mud/sand flats/ sand dunes
		Rossbehy Creek & Sandhills	sand flats/ dunes
		Cromane Point to RosculenPt	clay cliffs
		Inch to Anascaul Cliffs	dry grassland

	Burnham Inlet		mud flat/mixed woodland
	Emlagh East Salt Marsh		salt marsh
	Ventry Dunes and Marshes		sand dunes/wetlands
	Parkmore Point		bedrock shore
	Slea Head		rocky sea cliffs
	Beginish & Youngís Island (Blaskets)		lowland dry grassland
	Great Blasket Island		rocky sea cliffs
	Tearaght Island		rocky islands
	Inishnabro (Blaskets)		rocky sea cliffs
	Inishvickillane (Blaskets)		lowland dry grassland
	Inishtooskert (Blaskets)		rocky sea cliffs
	Sybil Point / Carrigbrean		rocky sea cliffs
	Smerwick Harbour Sandhills & Marshes		sand dunes/slacks/salt m.
	Mount Brandon (coastal cliffs) β		rocky sea cliffs
	Tralee Bay & Magharees Peninsula, West to Cloghaneβ		composite site
		Castlegregory and Lough Gill	sand dune system
		Fermoyle to Cloghane	bedrock shores
		Tralee Bay and Derrymore Isl	pebble/shingle spit
		Fahamore	bedrock shore
		Tralee Bay (outer)	mud flats/sand flats
	Gurrig Island (Magharees)		sea stacks and islands
	Inishtooskert & Illaunimmil (Magharees)		sea stacks and islands
	Illauntannig (Magharees)		sea stacks and islands
	Mucklamore		sea stacks and islands

	Island		
	Illaunabarnagh Island		sea stacks and islands
	Akeragh, Banna & Barrow Harbour β		sand dunes/s.m./brackish lake
		Carrahane Strand	sand flats
		Banna Strand Sandhills	sand dune complex
		Barrow Harbour	mud flats/sand flats
	Cashen River Estuary		mud flats/sand flats
		Ballybunnion Dunes	sand dunes
	Beal Point		
	Ballylongford Bay		
	Tarbert Bay		mud flats/sand flats
<i>Limerick</i>			
	Tarbert Bay		mud flats/sand flats
	Sturamus Island		small islet
	Inner Shannon Estuary - South Shore		mud flats/sand flats/salt m
		Aughinish/ Greenish Island	
		Aughinish Island (W)	salt marsh
		Ballinacurra Creek	mud flats/salt marsh
		Maigue Estuary	mud flats
	Fergus Estuary & Inner Shannon - N. Shore		mud flats
		Westfields Marsh	marsh
<i>Clare</i>			
	Fergus Estuary & Inner Shannon - N. Shore		
		Shannon Airport to Limerick City (N-E Shore of Shannon Estuary)	mud flats and sand flats
		River Fergus Estuary	mud flats
		Cratloe Creek	mud flats and sand flats
	Cahiracon Wood		dry broad-lvd. woodland
	Clonderalaw Bay		mud flats and sand flats

	Scattery Island		grassland
	Poulnasherry Bay		mud flats and sand flats
	Loop Head		rocky sea cliffs
	Illaunonearaun		small island
	Farrihy Lough		brackish lake
	Carrowmore Marsh/White Strand β		sand dunes
	Carrowmore Pt. to Spanish Pt. & Islands β		bedrock shores
		Mattle Island	small island
		Mutton Island (Clare)	small island
		Carrickaneelwar Island	small island
		Lough Donnell	lake
	Inagh River Estuary β		tidal river & assoc. habitats
	Cliffs of Moher		rocky sea cliffs
	Black Head - Poulsallagh Complex (coastal section) β		large complex site
		Caher River	composite site
		Poulsallagh	rocky shore/cliffs
		Fanore Dunes	sand dunes
		Fisherstreet Pavement	limestone pavement
		Poulsallagh to Fanore	composite site
	Galway Bay Complex		
		Finavarra ñ Ballyvaughan Coast	composite marine site
		Ballyvaughan Saltmarsh	salt marsh
		Bishopsquarter Sandhills	sand dunes
		Aughinish Bay (Clare & Galway)	
<i>Galway</i>			
	Galway Bay Complex β		large composite site
		Aughinish Bay (Clare & Galway)	
		Gentian Hill & Lough Ruisin	large composite site

		Island Eddy	islet
		Mutton Island	islet
		Tawin Peninsula	grassland
		Deer Island	islet
	Inisheer Island β		limestone pavement
		Inisheer Machair	machair
	Inishmaan Island β		large composite site
		Inishmaan Machair	machair
	Inishmore Island β		limestone pavement
		Eararna	
		Na Muirbhig Machair	machair
		Portmury Dunes	sand dunes
		Inishmore Machair	machair
	Duck Island		small island
	Geabhrog Island		marine islets
	Oilean na nGeabhrog (Illaungurraig)		v.small island/rocky shore
	Eagle Rock		sea stacks
	St. Macdaraís Island		lowland dry grassland
	Inishmuskery		small islet
	Ardmore Point Grassland		lowland dry grassland
	Mason Island Machair		machair
	Mweenish Island Machair		machair
	Finish Island Machair		machair
	Kinvarra Saltmarsh		saltmarsh
	High Island		lowland dry grassland
	Connemara Bog Complex β		
		Murvey Machair β	machair/wetlands
		Salt Lake	landlocked salt lake
	Oilean na nGeabhrog (Glencoh Rock)		sea stack
	Mace Head		sea stacks/islets

	Islands		
	Bertraghboy Bay		sea stacks and islets
	Rosroe Bog		blanket bog
	Cregduff Lough		lake/coastal heath
	Dogís Bay β		lowland dry grassland/machair
	Henís Island		sea stacks/islets
	Ballyconneely Bay		sea stacks/islands
	Dolan Machair		machair
	Horse Island (Galway)		sea stacks/islets
	Slyne Head Islands		sea stacks/islets
	Slyne Head Peninsula β		large composite site
		Mannin Bay Complex	composite/machair
		Aillebrack Dunes	machair
		Ballyconneely Marsh	marshes
		Bunowen Marsh	marshes
	Eeshal Island		sea stacks/islets
	Leagaun Machair		machair
	Omey Island Machair β		machair
	Cruagh Island		sea stacks/islets
	Aughrusbeg Machair and Lake		machair /lakes
	Friar Island		sea stacks/islets
	Ballynakill Bay & Lambís Island		sea stacks/islets
	Tully Mountain (coastal section)		heath
	Inishbofin & Inishark		large composite site
		Inishark	sea cliffs
		Inishgort	
	Rinvyle Lough		lake/shingle beach
	Crump Island Complex		lowland dry grassland
	The Twelve Bens/ Garraun Complex β		
		Gowlaun Dunes	sand dunes

	Dernasliggaun Wood		dry broad lvd. s.n.woodl
<i>Mayo</i>			
	Mweelrea / Sheeffry / Erriff Complex (incl. some coast) β		
		Dooaghtry Machair	machair
	Inishdegil Islands		lowland dry grassland
	Frehill Island		sea stacks/islets
	Inishdalla		sea stacks/islets
	Ballybeg Island		sea stacks/islets
	Inishturk		large composite site
	Caher Island		sea stacks/islets
	Cross Lough (Killadoon) β		brackish lake
	Lough Cahasy, Lough Baun & Roonagh Lough		lowland wet grassland
	Mweelaun Island		sea stacks/islets
	Clare Island β		large composite site
	Clochmoyle Dunes		small composite site
	Oldhead Wood		dry broad lvd. s.n.woodl
	Clew Bay Complex		large composite site
		Dorinish Bar	gravel/shingle bar
		Inish Raheer Islet	small island
		Furnace Lough	sea inlet
		Moynish Beg	islets and rock stacks
		Bartraw Sandhills	sand dunes
		Mallaranny Saltmarsh	salt marsh
		Rossmoney Inlet	sea inlet
		Rosmurrevagh Machair	machair
		Teevmore Channel	sea inlet
	Corraun Plateau (coastal parts)		
		Mallaranny Heath	heath
	Bills Rocks		sea stacks / islets
	Keel Machair / Meenaun Cliffs β		large composite site
	Menaun Cliffs		rocky sea cliffs

	Inishgalloon		sea stacks / islets
	Croaghaun / Slievemore B		(part): sand dune/machair
	Doogort Machair / Lough Doo B		machair/wetland
	Cooraun Point Machair / Dooreel Creek		large composite site
	Lough Gall Bog (coastal bog)		blanket bog/slat marsh
	Bellacragher Saltmarsh		salt marsh
	Tullaghan Bay		sea inlet
		Aughness Bog	blanket bog/salt marsh
		Tullaghan Bog	blanket bog/salt marsh
	Kinrovar Machair B		machair
	Mullet / Blacksod Bay Complex B		large composite site
		Mullet Peninsula	large composite site/machair
		Termoncarragh Lake/ Annagh Machair	machair/wetland
		Aghleam Machair	machair
		Cross Lough (Mullet)	wetland
		Gweesalia Bay	mud flats sand flats
		Leam Lough	wetland
		Cross Lough Machair	machair
		Srah North and South Machair	machair
		Trawmore Bay & Doo Lough	composite site
	Duvillaun Islands		sea stacks / islets
	Inishkea IslandsB		lowland dry grassland
	Inishglora & Inishkeeragh		sea stacks / islets
	Eagle Island		sea stacks / islets
	Erris Head		rocky sea cliffs
	Broadhaven Bay		composite site/open sea
		Inishderry	small island
	Glenamoy Bog Complex (incl. coast) B		

		Benwee Head	rocky sea cliffs
		Gartar Hill to Rinroe Point	dunes/machair
		Illanmaster	sea stacks / islets
		Porturlin - Portacloy	rocky sea cliffs
		Scruwaddacon Bay	sea inlet
	Stags of Broadhaven		sea stacks / islets
	Benaderreen Cliffs		rocky sea cliffs
	Downpatrick Head		rocky sea cliffs/machair
	Creevagh Head		rocky sea cliffs
	Lacken Saltmarsh & Kilcummin Head B		large composite site
	Killala Bay / Moy Estuary B		large composite site
		Bartragh Isle Dunes	sand dunes
		Moy Estuary	tidal estuary
		Ross Dunes	sand dunes
<i>Sligo</i>			
	Killala Bay / Moy Estuary B		large composite site
		Moy Estuary	tidal estuary
		Inishcrone Spit	sand dunes
	Aughris Head		rocky sea cliffs
	Ballysadare Bay B		mud flats and sand flats
		Derinch Island	composite site
		Strandhill Dunes	sand dunes
	Sligo and Drumcliffe Bays B		large composite site
		Ballygilgan, Lissadell, Drumcliff Bay	lowland wet grassland
	Coney Island Dunes		sand dunes
		Cummeen Wood	s.n.broad lvd./salt marsh
		Deadman's Point (Rosses Pt)	lowland dry grassland
		Cummeen Strand	mud flats/sand flats
	Ardboline &		composite site

	Horse Islands, Yellow Strand & Ballintemple		
		Ardtermon Fen	Fen and flushes
		Yellow Strand	lowland dry grassland
	Streedagh Point Dunes β		sand dunes/sand flats
	Inishmurray		flat rocky island
	Bunduff Lough & Machair / Trawalua/ Mullaghmore β		large composite site
		Trawalua Strand Dunes	sand dunes
<i>Leitrim (small coastal section of both sites)</i>			
	Bunduff Lough & Machair / Trawalua/ Mullaghmore β		as above
	Lough Melvin		river estuary/sandy shore
<i>Donegal</i>	Lough Melvin - some coastal parts		as above
	Erne Estuary / Finner Dunes		large composite site
		Finner Dunes	sand dunes
	Durnesh Lough		brackish lake
	Donegal Bay (Murvagh)		large complex site
		Inishpat	small island
		Murvagh lower Dunes (Mullanasole)	sand dunes
	St. John's Point β		dry grassl./cliffs/pavement
	Inishduff		lowland dry grassland
	Slieve League (cliffs) β		rocky sea cliffs
	Rathlin OíBirne Island		sea stacks and islets
	Slieve Tooley / Tormore Island / Loughros Beg Bay β		large composite site

		Tormore Island	grass-topped rock stack
		Bangort Island	
		Glen Bay Dunes	sand dunes/salt marsh
		Maghera Sandhills	sand dunes
	West of Ardara / Maas Road β		large composite site
		Clooney Lake and Machair	machair
		Dooley Point Dunes/ Lettermacaward Machair	machair/sand dunes
		Gweebarra Bay	sea inlet/ mud flats
		Inishkeel	islet
		Sheskinmore Lough Machair & Dunes/Loughros More Bay	small composite site
		Sheskinmore Machair &Dunes	machair
		Sheskinmore Lough	wetland
	Inishbarnog		lowland dry grassland
	Roaninish		sea stacks and islets
	Termon Strand β		brackish lake/dunes/flats
	Illancrone		sea stacks and islets
	Inishkeeragh		lowland dry grassland
	Aran Island (Donegal) Cliffs		rocky sea cliffs
	Gweedore Bay & Islands β		large composite site
		Bunlack Machair (Lunniagh Machair)	machair
		Lough Anniver	wetland
		Carnboy Machair	machair
		Cruit Lower Machair	machair
		Derrybeg Machair	machair
		Gola Island machair	machair
		Inishillintry	sea stacks and islets
		Inishmeana	sea stacks and islets
		Keadew Dunes	sand dunes
		Mullaghderg Lough/ Kincashlough Machair	lake
		Kincashlough Machair	machair

	Ballyness Bay β		mud flats/sand flats
		Ballyness Dunes	sand dunes
	Inishbofin (Donegal)		lowland dry grassland
	Inishbeg		sea stacks and islets
	Inishdooley		lowland dry grassland
	Horn Head Cliffs β		large composite site
		Dunfanaghy Machair	machair
		Dunfanaghy/Rinclevan	composite site
	Tory Island β		rocky sea cliffs/heath
	Sheephaven β		large composite site
		Island Roy	lowland dry grassland
		Ards Dunes	sand dunes
		Ards Woodland	woodland
		Marble Hill Dunes	sand dunes
		Rosapenna Dunes	sand dunes
		Rosapenna Lough	brackish lake
	Tranarossan and Melmore Lough β		machair/sand dunes
	The Point, Mulroy		sea inlet/bays/sea stacks
	Carlan Isles (Mulroy Bay)		sea inlets/sea stacks& islets
	Lough Nagreany Dunes β		machair/sand dunes
		Doaghmore Machair	machair
		Gortnatraw Machair	machair
	Ballyhoorisky Point to Fanad Head β		machair
		North Fanad Coast	
		Magheradrumman Machair/ Kinny Lough	machair/wetland
		Kinny Lough	lake/wetland
	Greerís Island (Massmount) Mulroy Bay		sea stacks and islets
	Ballymastoker Dunes β		sand dunes
	Lough Swilly incl. Big Isle, Blanket Nook & Inch		large composite site

	Lough		
		Big Isle (Lough Swilly)	reclaimed polder
		Blanket Nook	brackish lakes
		Inch Lake and Sloblands	brackish lakes
		Rathmullan Wood	dry broadlvd.s.n. woodland
		Carradoan Wood	brackish lake/woodland
		Fahan Dunes and Saltmarsh	sand dunes
		Leannan Estuary	mud flats/sand flats
		Swilly Estuary	mud flats/sand flats
	North Inishowen Coast β		
		Doagh Isle Machair	sand dunes/machair
		Tremone Bay to Inishowen Hd	rocky sea cliffs
		Malin Head	sea cliffs
		Trawbreaga Bay	mud/sand flats/s.m./dune
		Culdaff Machair	machair
		Dunaff Head to Tullagh Bay	composite site
		Tullagh Point	
		Inishowen Head	sea cliffs
		Lag Machair	machair
		Stookaruddan	sea rock stack
		White Strand Machair	machair
	Glashedy Island		sea stacks and islets
	Inishtrahull		sea stacks and islets
	River Foyle, Mongalvin to Carrigans		mudflats

Appendix II. Coastal Special Protection Areas

Louth

Carlingford Lough

Dundalk Bay

Boyne Estuary

Meath

Boyne Estuary

Dublin

Rockabill

Lambay Island

Broadmeadow/Swords Estuary

Rogerstown

Baldoyle

Bull Island

Sandymount Strand/Tolka Estuary

Wicklow

Kilcoole Marshes

Broad Lough

Wexford

The Raven

Wexford Nature Reserves

Lady's Island Lake

Inish & Sgarbheen

Tacumshin Lake

Saltees

Ballyteigue Burrow

Bannow Bay

Waterford

Tramore Backstrand

Dungarvan Bay

Blackwater Estuary

Cork

Blackwater Estuary

Ballymacoda Bay

Ballycotton Bay

Cork Harbour

Old Head of Kinsale

The Bull and the Cow

Kerry

Skelligs

Puffin

Castlemaine Harbour

Basket Islands

Tralee Bay

Akeragh Lough

Shannon Fergus Estuary

Limerick

Shannon Fergus Estuary

Clare

Shannon Fergus Estuary

Mattle Island

Mutton Island

Cliffs of Moher

Inner Galway Bay

Galway

Inner Galway Bay

High Island

Mayo

Cross Lough

Blacksod Bay/ Broadhaven

Inishkea Islands

Inishglora and Inishkeeragh

Illanmaster

Stags of Broadhaven

Killala Bay / Moy Estuary

Sligo

Killala Bay / Moy Estuary

Drumcliffe Bay

Cummeen Strand

Inishmurry

Donegal

Sheskinmore Lough

Inishbofin Inishdooney & Inishbeg

Horn Head

Dunfanaghy / Rinclevan

Tory Island

Greer's Island

Lough Swilly

Inch Lough

Trawbreaga Bay

Inishtrahull

Lough Foyle

Appendix III. Coastal proposed SACs

(including those "inland" sites which include coastline)

Dublin

Rogerstown Estuary

Malahide Estuary

North Dublin Bay

Wicklow

The Murrough

Magherabeg Dunes*

Buckroney - Brittas Dunes and Fen

Wexford

Kilpatrick Sandhills*

Kilmuckridge - Tinnaberna Sandhills*

Lady's Island Lake

Tacumshin Lake

Ballyteigue Burrow

Waterford

Tramore Dunes and Backstrand

Cork

Ballycotton Bay, Ballynamona and Shanagarry

Courtmacsherry Estuary*

Clonakilty Bay

Kilkeran Lake and Castlefreke Dunes

Barleycove to Ballyrisode Point

Kerry

Castlemaine Harbour

Mount Brandon*

Akeragh, Banna and Barrow Harbour

Tralee Bay & Magharees Peninsula, West to Cloghane

Clare

White Strand/Carrowmore Marsh

Carrowmore Point to Spanish Point and Islands

Inagh River estuary

Black Head/ Poulsallagh Complex

Galway

Galway Bay Complex

Inisheer Island

Inishmaan Island

Inishmore Island

Connemara Bog Complex

Murvey Machair

Dog's Bay

Slyne Head Peninsula

Omey Island Machair

The Twelve Bens /Garraun Complex

Mayo

Mweelrea/Sheeffry/Errif Complex

Cross Lough(Killadoon)

Clare Island

Keel Machair/Meenaun Cliffs

Croaghaun/Slievemore*

Doogort Machair/Lough Doo

Kinrovar Machair

Mullet/Blacksod Complex

Inishkea Islands*

Glenamoy Bog Complex

Lacken Saltmarsh and Kilcummin Head

Killala Bay / Moy Estuary

Sligo

Killala Bay/Moy Estuary

Ballysadare Bay

Cummeen Strand/ Drumcliffe Bay (Sligo Bay)

Streedagh Point Dunes

Bunduff Lough & Machair/Trawalua/ Mullaghmore

Leitrim

Bunduff Lough & Machair/Trawalua/
 Mullaghmore
(a small area along the county boundary with Sligo)
Donegal
 St. John's Point*
 Slieve League*
 Slieve Tooley/Tormore Island/Loughros Bay Beg
 West of Ardara/Maas Road
 Termon Strand
 Gweedore Bay and Islands
 Ballyness Bay
 Horn Head and Rinclevan
 Tory Island
 Sheephaven
 Tranarossan and Melmore Lough
 Lough Nagreany Dunes
 Ballyhoorsiky Point to Fanad Head
 Ballymastoker Dunes
 North Inishowen Coast

* denotes a site which is included on the list of proposed candidate SACs submitted to the EU for approval (1998)

Appendix IV. Designations for coastal areas under the Wildlife Act, 1976.

Nature Reserves		
County	Site	Associated NHA /SAC/SPA (whole or part of)
Dublin		
	Rogerstown Estuary	Rogerstown Estuary
	Baldoyle Estuary	Baldoyle Bay
	North Bull Island	North Dublin Bay
Wexford		

	The Raven	Wexford Slob and Harbour
	Wexford Wildfowl Reserve	Wexford Slob and Harbour
	Ballyteige Burrow	Ballyteige Burrow
Cork		
	Capel Island & Knockadoon Hd.	Capel Island & Knockadoon Hd
	Lough Hyne	Lough Hyne Nature Reserve and Environs
Kerry		
	Little Skellig	Little Skellig
	Great Skellig	Great Skellig
	Puffin Island	Puffin Sound - Horse Island Cliffs
	Castlemaine Harbour	Castlemaine Harbour
	Tearaght Island	Tearaght Island
	Tralee Bay	Tralee Bay & Magharees Peninsula, West to Cloghane
	Derrymore island	Tralee Bay & Magharees Peninsula, West to Cloghane
Mayo		
	Oldhead Wood	Oldhead Wood
Donegal		
	Rathmullan Wood	Lough Swilly

Wildfowl Sanctuaries		
County	Site	Associated NHA /SAC/SPA (whole or part of)
Louth		
	Ballymascanlan Estuary	Dundalk Bay
	Lurgan Green	Dundalk Bay
	Boyne estuary	Boyne Coast and Estuary
Meath		
	Boyne estuary	Boyne Coast and Estuary
Dublin		
	Rogerstown Estuary	Rogerstown Estuary
	North Bull Island	North Dublin Bay
Wicklow		
	Broad Lough	The Murrough
Wexford		
	Tern Island	Wexford Slob and Harbour
	Rosslare Point	Wexford Slob and Harbour
	Tacumshin Lake	Tacumshin Lake
	Bannow Bay	Bannow Bay

Cork		
	Ballynamona - Shanagarry	Ballycotton, Ballynamona & Shanagarry
	Douglas estuary	Douglas River Estuary
Kerry		
	Rossbehy/Caragh Creek	Castlemaine Harbour
	Inch/Castlemaine Harbour	Castlemaine Harbour
	Coon, Ventry	Ventry Dunes and Marsh
Clare		
	Islandavanna	Fergus Estuary and Inner Shannon
	Mutton Island	Carrowmore Point to Spanish Point and Islands
Galway		
	Rusheen Lough	Galway Bay Complex
Mayo		
	Inishkea Islands	Inishkea Islands
Sligo		
	Drumcliffe Bay	Sligo and Drumcliffe Bay
Donegal		
	Sheskinmore Lough	Gweebarra Bay
	Dunfanaghy lake	Horn Head (Dunfanaghy/Rinclevan)
	Ards	Sheephaven
	Blanket Nook	Lough Swilly
	Trawbreaga Bay	North Inishowen Coast

Appendix V. Coastal Survey - Site Record

County:

NHA No:

Complex:

NHA Map No:

Site Name:

OS Map No:

G.R. Rating:

Area:

Rating source:

Corine Code:

Other designations Subsites:

Main Habitat:

Other Habitat Types:

Species of note:

Threats:

Damaging Operations:

Erosion/ Accretion: Vulnerable Active Recent Old / Stabilised

Not vulnerable Accretion - likely source of material?

Landuse:

Agriculture:

Recreation:

Hunting/ Fishing:

Residential:

Roads:

Utilities:

Industrial:

Other:

Access to site?

Easy:

Difficult :

12/96

Appendix VI. Some Coastal County Statistics

	Coast*	hard*	soft*	islands*	NHAs	ss	SACs	BSPAs	Blue Flags
Louth	90	15	75	-	5	4	-	3	2

Meath	21	-	21	-	2	3	-	1	-
Dublin	99	45	54	15	15	5	3	7	3
Wicklow	61	18	43	-	8	3	3	2	3
Wexford	264	53	211	18	22	11	5	8	4
Waterford	170	82	88	-	8	-	1	3	3
Cork	1118	697	422	142	43	7	5	6	8
Kerry	684	306	378	104	43	21	4	7	12
Limerick	95	-	95	15	4	5	-	1	-
Clare	366	182	184	32	14	16	4	5	4
Galway	689	504	185	100	42	21	10	2	7
Mayo	1168	366	802	302	39	32	12	7	13
Sligo	195	63	132	14	8	12	5	4	3
Leitrim	5	-	5	-	2	-	1	-	-
Donegal	650	410	240	104	36	58	15	11	10
Notes:	all coastline distances in kilometres (from EOLAS "Coastal Management - A Case for Action 1992)								
	ss = sub sites and subsite of subsite (sss).								
	Individual NHAs, SACs and SPAs sometimes occur in more than one county.								

Appendix VII. Summary of damaging operations (impacts) on coastal sites

Appendix VII. Summary of damaging operations (impacts) on coastal sites			
Impact	pNHA	SAC	SPA
Infill/Reclamation	31	14	20
Agricult. Improvement	44	25	12
Scrub clearance	7	4	2
Hedge removal	2	-	-
Woodland felling	3	1	1
Drainage	32	20	11
Modific. to watercourse	12	7	5
Grazing	78	47	16
Mowing/Cutting	4	4	-
Burning	15	4	4
Fertiliser applic./drift	29	19	5
Pesticide/ herbicide appl/drift	1	-	-
Bait digging	6	2	6
Hunting	20	7	9
Fishing	18	7	6

Golfing	22	19	8
Camping/Caravanning	28	22	3
Sports pitch	1	1	-
Horse riding (leisure)	5	3	2
Race horse exercising	4	2	2
Coastal walking	4	1	1
Other recreation	28	19	7
Littering	45	23	12
Dumping	68	36	16
Landfill	1	-	-
Building/Civil Engineering	37	24	12
Water abstraction	1	1	-
Coastal protection works	3	-	-
Road development	1	1	-
Holiday home development	2	-	1
Devel. of amenity area	1	-	-
Water polluting activities	49	24	19
Aquaculture	23	9	9
Removal of beach material	27	15	7
Collection of biological material	12	6	4
Quarrying (incl. river gravel)	8	5	2
Introd. of exotic spp.	9	3	4
Nat. spread of unwanted spp.	43	21	19
Scrub encroachment	2	1	-
Disturbance of habitats/birds (by people)	3	2	1
Disturbance of birds (by aircraft)	1	1	1
Afforestation	13	6	6
Peat cutting (manual) hand	11	6	1
Scraw cutting/ turf stripping (eg. for lawns)	3	2	-
Strip fencing on machair	3	1	-
Vehicular damage (driving)	7	4	-
Car parking	1	1	-
Trial bike riding	1	-	1
Extension of cemetery on machair	1	-	-
No observable damaging operations	10	1	-
No information	114	2	17

Appendix VIII. Summary of Land Use

Appendix VIII Summary of Land use			
Activity	NHA	SAC	SPA
Arable farming	26	16	12

Forestry	9	6	2
Meadow (silage/ hay)	42	25	12
Grazing:unspecified	13	5	5
sheep	82	40	18
cattle	116	51	24
horses	20	11	10
goats	6	4	1
rabbits	18	15	2
hare	1	1	1
donkeys	1	1	1
Agricultural buildings	15	9	3
Strip farming	2	2	-
Airports/airstrips	2	2	2
Boating	46	15	27
Marina	1	-	1
Fishing	63	27	24
Bait digging	8	2	8
Hunting/shooting	42	18	20
Diving	5	3	-
Golf	33	21	10
Sports pitch	15	11	5
Caravans/camping	31	22	7
Beach activities	13	3	4
Coastal walking (incl. birdwatching)	17	4	5
Trial bike riding	1	-	1
Horse Riding	23	14	8
Race horse exercising	3	1	1
Horse racing	1	1	-
Sheep dog trials	1	1	-
General recreation	10	5	1
Amenity Management	49	23	13
Conservation management	25	14	16
Water abstraction	8	4	3
Legal dumping	6	3	2
Illegal dumping	2	1	1
Building/Civil engineering	1	-	-
Coastal protection works	6	2	1
Aquaculture	19	7	7
Quarrying/mining β	10	8	4
Drainage works	2	2	2
Industrial	3	-	3
Shipping (channel dredging)	2	-	2

Residential (urban)	2	2	2
Residential (scattered)	16	11	3
Cemetery in current use	1	1	-
Gardens	1	-	-
Lighthouse	5	1	2
Roads	29	21	8
Peat cutting	13	8	3
Reed/ rush cutting	3	-	2
Scraw cutting	2	-	-
Kelp gathering	2	2	-
No information	97	4	10

Appendix IX.Summary of Threats

Appendix IX.Summary of Threats			
Threat	NHA	SAC	SPA
Infill/Reclamation	15	4	11
Agricult. Improvement	16	9	1
Changes in agricultural practice	2	2	-
Drainage	10	4	1
Modific. to watercourse	2	2	1
Grazingpressure	31	19	4
Lack of grazing	1	-	-
Mowing/Cutting	1	1	1
Burning	6	1	1
Agri-chemicals (appl./drift)	16	6	2
Bait digging	2	1	2
Hunting/ shooting	6	2	2
Fishing	7	3	2
Drift netting	2	1	1
Golfing	14	8	1
Continuing horse riding	2	-	-
Camping/Caravanning	15	9	1
Incr. vehicular pressure	1	1	-
Sports pitch (causing erosion)	1	1	1
Recreational development	7	2	1
Dev. of walking routes	2	-	-
Increased visitor pressure	19	10	3
Cont. use of trials bikes	1	-	1
Race horse activiites	3	2	2

Further littering	5	2	3
Further illegal dumping	7	4	4
Landfill		3	3
Building/Civil Engineering	9	4	3
Utilities (sewage, water etc.)		2	1
Housing development	5	1	-
Car park development	3	2	2
Roads - development	4	4	2
Water polluting activities	27	15	11
Water level changes	1	-	-
Increased siltation	3	1	1
Aquaculture	15	7	4
Cont. removal of beach material	9	6	4
Cont. removal of river gravel	1	-	-
Collection of biological material	3	1	1
Spread of exotic spp.	1	-	-
Further spread of unwanted spp.	18	7	12
Scrub encroachment	2	1	-
Habitat disturbance (eg. nesting birds)	3	2	3
Afforestation	5	2	1
Peat cutting	3	2	-
Tourism dev. (Holiday homes)	6	1	3
Amenity improvement (incl. landscaping)	4	1	1
Industrial development	2	1	1
Docks/ Harbour development	2	-	-
Coastal protection works	1	1	1
Oil pollution	1	-	-
Building dev. inland of site	3	-	-
Inland mineral extraction	2	1	-
Increased land dev. for tourism	2	1	-
Airstrip dev. (flight path/ bird disturbance)	2	2	3
Erosion (vulnerable)	33	18	3
No known threats	30	18	3
No information	112	7	17

Appendix X: Planning and Licence Applications - within pNHA or likely to impact on adjacent pNHA

Appendix X: Planning and Licence Applications - within pNHA or likely to impact on adjacent pNHA

(as listed in NPWS/pNHA files to February 1998)														
	Dome stic	Utilit yβ	Industrial /Port etc*	Tourism- related development			Recrea tion	Go lf	Agricult ure	EP A Lic .	Fores try Lic.	Aquacul ture	Airst rip	Applicat ions per county
				HH/C C+	Hot el	Oth er								
Louth	1	-	1	1	1	-	-	1	-	-	-	-	1	6
Meath	-	-	1	-	-	-	-	-	-	-	1	-	-	2
Dublin	4	5	4	-	-	3	1	1	-	2	-	-	-	20
Wicklo w	1	1	-	4	-	-	-	-	-	-	5	-	1	12
Wexfo rd	3	2	-	2	-	1	2	-	5	-	2	-	-	17
Waterf ord	2	1	2	1	-	1	-	-	-	-	-	1	-	8
Cork	5	4	3	1	1	3	-	1	-	-	2	2	-	22
Kerry	4	2	2	-	-	-	2	1	-	-	-	3	-	14
Limeri ck	-	-	1	-	-	-	-	-	-	-	-	1	-	2
Clare	4	-	3	2	-	2	-	1	1	1	3	2	-	19
Galwa y	2	4	1	-	-	-	-	-	1	2	-	1	1	12
Mayo	1	-	-	-	-	-	-	1	1	-	2	2	-	7
Sligo	3	2	1	1	1	1	1	1	-	-	1	1	-	13
Leitrim	1	-	-	-	-	-	-	-	-	-	-	-	-	1
Doneg al	11	4	2	5	-	2	4	2	-	1	7	2	-	40
														National total:
Total no. of sites affecte d	42	25	21	17	3	13	10	9	8	23	15	23	3	195

Footnotes: β Sewage works, water abstraction etc. *Includes harbour, port development, pier construction etc. + Holiday Homes / caravan, camping development.

Appendix XI Press coverage of coastal issues - a selection

Site / issue Date Publication

Proposed Causeway at Choill Saile inlet, Kilkieran Bay, Co.Galway. 14.06.95 Irish Times

EU Blue Flags 05.06.96 Ir. Times/Ir. Indep.

Moves to protect Howth Head from developers 09.96 Irish Times

Marina/apartment development, N. Co.Wicklow 29.10.96 Irish Times

Blasket Islands National Park 20.11.96 Irish Times

Mutton Island Sewage Treatment Plant, Galway Bay 05.02.97 Irish Times

Cape Clear 18.02.97 Irish Times

Port building plans threaten coastal zone:refs. to Cheekpoint, Waterford Harbour & the Lee Tunnel, Cork. 22.02.97 Irish Times

Fianna Fail's proposal to form a coastal zone "body". 24.02.97 Irish Times

Proposed sewage pipeline under Dublin Bay/ threat to wildlife. 02.03.97 Sunday Tribune

Mining in the Inishowen Peninsula 05.03.97 Irish Times

Public Notices and Articles re SACs 08.03.97 Farmers' Journal

Public notices about SACs 12.03.97 Bray People

Detailed article about the coastal zone. 20.03.97 Bray People

Coastal walk from Bray, Co.Wicklow to Wexford 20.03.97 Bray People

Holiday Home dev., Lehinch, Co.Clare 07.04.97 Irish Times

Holiday home dev., Kilkee, Co.Clare 10.04.97 Irish Times

Holiday home dev., Kilkee, Co.Clare 17.04.97 Irish Times

New Clare Island survey/ overgrazing/loss of plant spp. 18.04.97 Irish Times

Waterford Port development 19.04.97 Irish Times

Golf report on coastal course on Dingle Peninsula. 22.04.97 Irish Times Shellfish Collection, Castlemaine Harbour, Co.Kerry 29.04.97 Irish Times

Passage East, Waterford/Wexford and the new, larger ferry. 30.04.97 Irish Times

Aquaculture and the use of chemicals. 06.05.97 Irish Times

Blaskets National Park 08.05.97 Irish Times

Dangers of a concrete coastline / article on various dev. in N. Co. Wicklow 14.05.97 North Wicklow Times Blaskets National Park 15.05.97 Irish Times Appeal against hotel/ apart./leisure dev. at Inchydoney Island, Clonakilty, W.Cork. 30.05.97 Irish Times

Dublin docklands development scheme 31.05.97 Irish Times

Planning development on Howth head, Co. Dublin 06.97 Irish Times

Mutton Island Treatment Plant, Galway Bay 05.06.97 Irish Times

EU Blue Flags 06.06.97 Irish Times

Holiday home development in Connemara 25.06.97 Irish Times

Findings of the report on need to conserve Lady's Island Lake, Wexford 25.06.97 Irish Times

Large photograph - horse being exercised on Laytown Strand, Co.Meath 27.06.97 Irish Times

Tourism pressure on Tory Island , Co.Donegal 21.07.97 Irish Times

Report on marine water quality/ pollution status of the south west coast 25.07.97 Irish Times

Holiday home dev. at Ventry, Co.Kerry 04.08.97 Irish Times

Mutton Island Treatment Plant, Galway Bay 07.08.97 Irish Times

Planning appeal against airstrip at Newcastle/ Kilcoole marshes, The Murrrough, Co.Wicklow 14.08.97 Bray People

Coastal protection works, north Co. Wicklow 02.09.97 Irish Times

Large holiday home development south of Inishcrone, Co. Sligo. 03.09.97 Irish Times

The Murrrough, Co.Wicklow - article condemning the beach "landscaping" north of Wicklow Town. 04.09.97 Bray people

Coastwatch environmental survey 10.09.97 Irish Times

Need for council to curb building on coastal strip - (Dun Laoghaire/Rathdown CC.) 31.10.97 Irish Times

Oil spill in Cork Harbour/ effects on wildlife 05.11.97 Irish Times

The coast from Tramore to Dungarvan, Co. Waterford 12.11.97 Irish Times

New building on the North Dublin coastline (Property Sect.) 13.11.97 Irish Times

Proposed golf links at Doonbeg - "God's Gift to Golf" 21.11.97 Irish Independent

Oil spill from damaged pipeline, Cork Harbour -shoreline effects 21.11.97 Irish Independent

Article on shipping on Shannon Estuary, Loop Head to Limerick Docks 24.11.97 Irish Times

Major dev. at Mosney 28.11.97 Drogheda Indep.

SAC planning stance challenged - refers to complaint to EU re. proposed golf/leisure dev. at Doonbeg, Co.Clare. 04.12.97 Irish Times

Ballealy Dump, Co. Dublin (Rogerstown Est) 10.01.98 Irish Times

Mutton Island Treatment Plant 19.01.98 Irish Times

Proposed coastal hotel and apartment dev. Co. Meath 23.01.98 Drogheda Indep. Proposed Doonbeg Golf Course 26.01.98 Irish Times

Coastal protection, north Wicklow 29.01.98 Bray People

Article on planned sewage and water projects nationwide. 03.02.98 Irish Times

Mutton Island Treatment Plant 23.02.98 Irish Times

Dungarvan Harbour developments 25.02.98 Irish Times

New marina proposals in Co.Wicklow 12.03.98 Bray People

The abuse of coastal habitats 24.03.98 Irish Times

Wind turbines on S. Waterford coast 25.03.98 Irish Times

Mutton Island - Supreme Court Ruling 25.03.98 Irish Times

Article on offshore islands 30.03.98 Irish Times

Letter to editor re: Mutton Island from Minister of State 01.04.98 Irish Times

Ventry, Co. Kerry Oral Hearing 01.04.98 Irish Times

Ditto 02.04.98 Irish Times

Report on court orders to halt work on golf course at Rossapenna, Co. Donegal. 11.04.98 Irish Times

Licence granted for laying of gas pipeline between Booterstown and Poolbeg, Dublin Bay 15.04.98 Irish Times

Reopening of Whiddy Island Terminal, Bantry Bay 16.04.98 Irish Times

Local authority urged to do marine study on local harbour 16.04.98 Bray People

Controversial 330 berth marina at Lough Swilly 25.04.98 Irish Times

EU Bathing Standards 21.05.98 Irish Times

EU Blue Flags 06.06.98 Irish Times

39 SACs submitted to EU for approval. 07.08.98 Irish Times

European Golf Association's commitment to become environmentally friendly / Ireland 14.08.98 Irish Times Planning / development pressure on Bray Head, Co.Wicklow 09.09.98 Irish Times

"Destroying the heritage and countryside that tourists come for..." 20.08.98 Irish Times

"Destroying the heritage and countryside that tourists come for..." Pt.2. 21.08.98 Irish Times

Proposed Golf development at Doonbeg, Co. Clare 25.08.98 Irish Times

Harbour Plans, Co.Wicklow 31.08.98 Irish Times

Appendix XII Bibliography and Sources

Bibliography

- Aaalen, F.H.A., Whelan, K and Stout, M.(Eds.) 1997 Atlas of the Rural Irish Landscape. *Cork University Press*.
- AFF 1981 National Heritage Inventory. Areas of Scientific Interest. *An Foras Forbatha*.
- Akeroyd, J.R. 1984 *Parapholis incurva* (L). C.E. Hubbard - A grass overlooked in Ireland. *Ir.Nat.J.* **21** No.5. 228-230.
- Akeroyd, J.R.1993.The distribution and status of *Rumex pulcher* in Ireland. *Ir.Nat.J.* **24** No.7. 284-285.
- Akeroyd, J.R. and Clarke, K. 1993 Short Notes. *Watsonia* **19** 185-193.
- Akeroyd, J. (Ed.) 1996 The Wild Plants of Sherkin, Cape Clear and adjacent Islands of West Cork. *Sherkin Island Marine Station, Co.Cork*.
- Andrews, D. and Rebane, M.(Eds.) 1994 Farming and Wildlife. A Practical Management Handbook. *National Grid/RSPB. (Case studies)*.

- Atkinson, David and Houston, John (Eds) 1991 The Sand Dunes of the Sefton Coast. [Chapter 1. Human Influences]. *Proceedings of the Sefton Coast Research Seminar May 1991. Nat. Mus. & Galleries, Merseyside.*
- Bakker, Th. W., Jungerius, P.D. and Klijn, J.A. (Eds.) 1990 Dunes of the European Coasts: Geomorphology - Hydrology - Soils. *Catena Suppl. 18. Cremlingen.*
- Barrington, R. M. 1900. Migration of Birds as observed at Irish Lighthouses and Lightships. *Dublin & London.*
- Bassett, J. A. 1983 Report on the Conservation of Irish Coastal Sites. Machair in Ireland. *Unpublished Report . Wildlife Service. Dublin.*
- Bassett, J. A. and Curtis, T.G.F. 1985 The nature and occurrence of sand-dune machair in Ireland. *Proc. R Ir. Acad. 85 B 1 1-20.*
- Beckers, Brock and Klerkx 1976 The Dooaghtry Area (plus vegetation map).
- Bennett, Graham (Ed.) Conserving Europe's Natural Heritage. An International Conference, Maastricht Nov. 1993. *International Law and Policy Series.*
- Berridge, Dominic and Wallace, Eugene. 1995. Lady's Island Tern Report 1995. *IWC. Dublin*
- Berrow, S.D., Mackie, K.L., O'Sullivan, O., Shepherd, K.B., Mellon, C. and Coveney, J.A. 1992. The 2nd. International Chough Survey in Ireland. *A report to the RSPB. IWC/ RSPBNI*
- Bird, E.C.F. 1990 Classification of European Dune Coasts. *Catena Suppl. 18.*
- Birks, H.H., Birks, H.J.B. and Ratcliff, D.A. 1969 *Geocalyx graveolens* (SCHRAD) Nees in Kerry, a hepatic new to Ireland. *Ir. Nat. J. 16 No.7 204 - 205.*
- Birks, H.J.B., Birks, H.H. and Ratcliff, D.A. 1969 Mountain plants on Slieve League, Co. Donegal. *Ir. Nat. J. 16 No.7. 203 -204.*
- Bord Failte 1994 Developing Sustainable Tourism: Tourism Development Plan 1994 -1999.
- Brady Shipman and Martin, and Hyde, Niall. 1972 National Coastline Study Volume 1. A National Strategy for development and conservation. *Bord Fáilte Éireann and Foras Forbatha. Dublin.*
- Brady Shipman and Martin 1997 Coastal Zone Management. A Draft Policy for Ireland. *Gov. Publ.*
- Brazier, H. and Merne, O. 1988 The Blasket Island Expedition. *IWC / WS.*
- Brazier, H. and Merne, O. 1989 Breeding seabirds in the Blasket Islands, Co. Kerry. *Ir. Birds 4: 43-64.*
- Brodie, J. and Sheehy-Skeffington, M. 1990 Inishbofin: A Re-survey of the Flora. *Ir. Nat. J. 23 No.8 293-298.*
- Brunker, J.P. 1950 Flora of County Wicklow. *Dundalgan Press. Dundalk.*
- Cabot, D. 1967 The Birds of Duvillaun More Island, Co. Mayo. *Ir. Nat. J. 15 357 - 359.*
- Cabot, D. 1967 The Birds of Bills Rocks, Co. Mayo. *Ir. Nat. J. 15 359 - 361.*
- Cabot, D. (Ed.) 1985 The State of the Environment: A Report Prepared for the Minister of the Environment. *AFF Dublin.*
- Carroll, M. and Dubsky, K. Coastal Zone Management: from needs to action. *Proceedings of a Conference 3 -6 Sept. 1994. Coastwatch Europe Network.*
- Carson, J. 1981 Report on Inishmurray.
- Carter, R.W.G. 1988 Coastal Environments. An Introduction to the Physical, Ecological and Cultural Systems of Coastlines. *Academic Press.*

- Carter, R.W.G. 1990 The Geomorphology of Coastal Dunes in Ireland. *Catena Suppl. 1. Cremlingen*.
- Cawley, Martin. 1996. Notes on some non-marine Mollusca from Co. Sligo and Co. Leitrim, including a new site for *Vertigo geyeri* Lindholm. Zoological notes. *Ir. Nat. J. 25 No.5. 183-185*.
- CEC, 1979 Council Directive of 2 April 1979 on the conservation of wild birds (79/409/EEC). *Official Journal of the European Communities, No. L103/1, 25 April 1979*.
- CEC, 1992 Council Directive of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (92/43/EEC). *Official Journal of the European Communities No. L 206/35, 22 July 1992*.
- Charlesworth, J.K. 1942. Survey of Inishtrahull: Part 2. Glacial erratics from Inishtrahull. *Ir. Nat. J. 8: 29 -30*.
- Colgan, N. 1904 Flora of County Dublin. *Hodges & Figgis. Dublin*
- Coombes, R. H. 1989. Birds of Dalkey Island, Sorrento Point, Killiney Bay and Shanganagh. *In: Irish East Coast Bird Report 1988 57-68*.
- Cooney, T. 1987. Little Terns on the East Coast 1984-87. *Irish East Coast Bird Report 1987*.
- Cotton, D.C.F. and Cawley, M. 1993. New records of vascular plants from Cos.Sligo (H28) and Leitrim (H29). *Ir. Nat. J. 24 7. 288-295*.
- Crawford, I., Bleasdale, A, and Conaghan, J. 1996 Western Coastal Survey. *NPWS Internal Report*.
- Curtis, T.G.F. 1981 Reports: Kincashlough, Co. Donegal. 16 -17th June. *Watsonia 13 (3): 261*.
- Curtis, T.G.F. and McGough, N. 1988 The Irish Red Data Book 1. Vascular Plants. *The Stationery Office. Dublin*.
- Curtis, T.G.F.C. and Sheehy-Skeffington, M.J. 1998 The Salt Marshes of Ireland: An Inventory and Account of their Geographical Variation. *Biology and Environment: Proc. Roy.Ir.Acad.98B No.2, 87 - 104*.
- D'Arcy, G. 1992 Fauna observed in Clare Island, Co. Mayo June 14 - 18 1990. *Ir.Nat.J. 24 33 - 34*.
- Delaney, Simon. Irish Wetland Bird Survey 1994-1995. Results of the First Winter. *I-WeBS Report*.
- Devlin, T.R.E. and Merne, O.J. 1966. Malin Head Bird Observatory Report 1965.
- Donaldson, F., Donaldson F. and McMillan, N F. 1976 The present status of Tear - Thumb (*Polygonum sagittatum* L.) in Ireland, and notes on some other Kerry plants. *Ir.Nat. J. 18 (II) 331-332*.
- Doogue, D., Nash, D., Parnell, J., Reynolds, S. and Wyse-Jackson, P. (Eds.) 1998 Flora of County Dublin. *Dublin Naturalists Field Club*.
- Doyle, G.J. and Foss, P.J. 1986 A re-survey of the Clare Island Flora. *Ir. Nat. J. 22 85 - 89*.
- Dromie, M. and Turbidity, M. 1992. The Ecology of Rare and Protected Species. In: Baseline Soil, Flora & Fauna Study. *Part of an EIS for the North Dublin Sewage Treatment Works by Eigse Ltd. on behalf of M.C.P.Kruger*.
- Dublin Tourism 1995 Submission for Coastal Zone Management - Strategy Study.
- Dwyer, K. 1997 Ireland - Our Island Home.An aerial tour around Ireland's coastline. *The Collins Press, Cork*.
- Environmentally Friendly Coastal Protection - ECOPRO - Code of Practice August 1996 *Dept. Marine/ D of E. NI. / Forbairt / EU Life Fund*.
- E.S.R.I. 1997 A National Survey of Water -based Leisure Activities. *Marine Institute*
- Fahy, E. and Goodwillie, R. 1974. Observations on proposed developments in Lough Beg, Co.Cork. *CAAS*.

- Fahy, E., Goodwillie, R., Rochford, J. and Kelly, D. 1975. Eutrophication of a partially enclosed estuarine mudflat. *Marine Pollution Bulletin* **6** 29-31.
- Farrell, L. 1982 The distribution of *Leucojum aestivum* L. in Ireland. *Ir.Nat.J.* **20** (II) 483-489
- Farrell, L. and Randall, R.E. 1992. The distribution of *Mertensia maritima* (L) Gray. Oyster Plant in Ireland. *Ir.Nat. J.* **24** (4): 135 - 140.
- Fay, P. 1996 The rare and protected Flora of Coastal Areas in Counties Galway, Mayo. Sligo and Donegal. *NPWS Internal Report*.
- Feehan, J. 1992 Environment and Development in Ireland. The Proceeding of a Conference held at UCD, December 1991. *The Environmental Institute UCD*.
- FWS. November 1974 Report on Wetlands of International and National Importance in the Republic of Ireland. *FWS. Dublin*.
- Garcia Novo, F., Crawford, R.M.M. and Cruz Diaz Barradas, M. (Eds.) 1997 The Ecology and Conservation of European Dunes. *Universidad de Sevilla*.
- Gardiner, C. J. and Reynolds, S.H. 1897 An account of the Portrane Inlier (Co. Dublin) *Quart. Jour. Geol. Sci.* **53**.
- Gibbons, M. 1981 Reproduction, Demography and Feeding of the Natterjack Toad (*Bufo calamita*) in Co.Kerry. (*Dept. Zoology UCG*) *FWS Report*.
- Gilbert, 1978 *Fulgensia* in Britain. *The Lichenologist* **10**.
- Goodwillie, R. 1977. The development of Inch Lough, Co.Donegal, as a contribution to the Council of Europe's Wetlands Year 1976 - 1977. *An Foras Forbatha Report*.
- Goodwillie, R. 1979. Development and Management proposals for Inch Lough wildlife area. A report for Donegal County Council. *An Foras Forbatha*.
- Goodwillie, R. 1981. An evaluation of the ecological Importance of areas of bogland adjacent to Slieve League, Co. Donegal. *AFF Report for Donegal C.C.*
- Goodwillie, R. 1986 Impacts of artificial cutting of the barrier at Lady's Island Lake. *Report for Wexford County Council*.
- Goodwillie, R. 1992 Information on Areas of Scientific Interest in An Foras Forbatha files. A Catalogue prepared for the NPWS (OPW) . *Internal Report NPWS*.
- Goodwillie, R., Buckley, P. and Douglas, C. 1992. Owenmore River. Proposed Arterial Drainage Environmental Impact Assessment. *A report for NPWS/OPW*.
- Gresson, R. A.R. and O'Dubhda, S. 1974 The distribution of the Natterjack Toad, *Bufo calamita* Laur. in County Kerry. *Ir. Nat.J.* **18** (4) 97-103.
- Grimmett, R. F.A. & Jones, T.A. (eds.) 1989 Important Bird Areas in Europe. *ICBP Technical Publication no. 9. Cambridge*.
- Harrington, T.J. 1990 A report on the Golf Course Development at Castlegregory, Co. Kerry. Its impact on the Flora and Fauna.
- Hawkes, Peter T.J. 1993 *Orchis morio* L. at Barley Cove, Co.Cork. *Ir. Nat. J.* **24** No.5.222.
- Healy, B. 1994 Lagoons and other enclosed brackish waters in the Republic of Ireland. *Dept. Zoology. UCD*
- Healy, B. , Bates, R. and McGrath, D. 1982 Marine fauna of County Wexford - 5. Lady's Island Lake. *Ir.Nat. J.* **20** 510 - 526.
- Heuff, H. 1984. The vegetation of Irish lakes. *Internal Report. WS/OPW*

- Heuff, H. 1987 The vegetation of Irish rivers. *Internal report. WS / OPW.*
- Hickey, D. 1996 Evaluation of Environmental Designations in Ireland *The Heritage Council.*
- Horner, A. 1993 Changing Ireland. Dublin's Expanding Golfscape. *Ir. Geog. 26 (2) 151 - 157*
- Horner, A. 1994 Golf Course Development: Dilemmas of Activity Tourism. In: Irish Tourism Development. *Geog. Soc. of Ireland Special Publication No. 9.*
- Hurley, J. 1994 The South Wexford Coast - A Natural Heritage Coastline. *SWC Promotions, Kilmore, Co.Wexford.*
- Hurley, J. 1997 Water Levels at Lady's Island Lake 1984 - 1996. *SWC Promotions, Kilmore, Co.Wexford.*
- Hutchinson, C. 1979 Ireland's Wetlands and their Birds. *IWC, Dublin.*
- Hutchinson, C. D. and Rutledge, R.F. 1978 The Birds of Inishbofin and Inishshark, Co.Galway. *Ir.Birds 1 No.2. 211.*
- Hutchinson, C. D. and O'Halloran, J. 1994. The Ecology of Black-tailed Godwits at an Irish south coast estuary. *Ir.Birds 5 165-172.*
- Jeffrey, D.W. (Ed.) 1977 North Bull Island, Dublin Bay - a modern coastal natural history. *RDS. Dublin 158pp.*
- JNCC Directory of the Celtic Coasts and Seas. *(in preparation).*
- Kavanagh, P. 1989. Assessment of copper, lead and zinc levels in Rogerstown Estuary. *BA(mod.) Thesis TCD.*
- Kelly, F.(Ed.) 1997 Early Irish Farming. Early Irish Law Series. *Dubl. Inst. for Adv. Studies. Dundalgan Press.*
- Klijn, J.A. 1990 Dune forming factors in a geographical context. *Catena Suppl. 18.*
- Lloyd, Clare. 1982 Inventory of Seabird Breeding Colonies in the Republic of Ireland. Part I Donegal - Sligo. January 1982 *FWS Internal Report.*
- Lloyd, Clare. 1982 Inventory of Seabird Breeding Colonies in the Republic of Ireland. Part 2 Mayo - Galway. January 1982 *FWS Internal Report.*
- Lloyd, Clare. 1982. Inventory of Seabird Breeding Colonies in the Republic of Ireland, Part 3. Clare - Cork. *Internal Report FWS /OPW.*
- Lloyd, C. 1982 The Seabirds of the Great Saltee. *Ir. Birds 2 1- 37.*
- Lloyd, C. 1983 The status of land birds breeding on Great Saltee, Co. Wexford. *Ir. Nat. J. 21 97-103.*
- MacDonald, R.A. 1987 The breeding population and distribution of the Cormorant in Ireland. *Ir. Birds 3 405 - 416.*
- McClusky, D.S. 1971 Ecology of estuaries. *Heinemann, London.*
- McMannus, F., McNally, J. and Cooney, T. 1992. The wildfowl and waders of Rogerstown Estuary. *in: Irish East Coast Bird Report, 1991. IWC. Dublin.*
- McMillan, A. 1988. The wintering birds of the Kilcoole/Newcastle Marshes 1987/88. *Irish East Coast Bird Report 1987 61-68,*
- Madden, B. 1992. Barn Owl Distribution in Counties Dublin and Wicklow. *Irish East Coast Bird Report 60- 64.*
- Madden, B. 1992. Baseline Soil, Flora & Fauna Study. Part of an EIS for the North Dublin Sewage Treatment Works by *Eigse Ltd. on behalf of M.C.P.Kruger.*
- Mahoney, M. (Ed.) Agriculture and the Environment. Proc. of a conference on the interpretation of EC environmental objectives with agriculture - *RDS, Dublin March 1994.*

- Merne, O.J. 1974 Birds of Wexford, Ireland. *Bord Failte/SE Tourism. Dublin*
- Merne, O.J. 1980 Ornithological study of Carnsore Point area, Co.Wexford. *FWS Report to the Electricity Supply Board.*
- Merne, O. 1988 *In: Irish East Coast Bird Report 1987. 69 -79*
- Merne, O. 1989. Important Bird Areas in the Republic of Ireland: *see Grimmer & Jones above.*
- Mitchell, F.(Ed.) 1987 The Book of the Irish Countryside. *Blackstaff Press.*
- Mooney, E. 1991 Mountain Blanket Bog Survey. *Internal Draft Report. WS / OPW*
- Moorkens, E. 1995 Mapping of proposed SAC sites for *Vertigo angustior*. *NPWS Report.*
- Myers, A.A., Little, C., Costello, M.J. and Partridge, J.C.(Eds.) 1991 The Ecology of Lough Hyne. Proceedings of a conference 4-7 September, 1990. *Royal Irish Academy, Dublin.*
- Nairn, R.G.W. 1992 Areas of Scientific Interest. Time for a rethink. *Ecos. 13.*
- National Coastal Erosion Committee. 1992 Coastal Management - A case for action. *County & City Engineers Association. EOLAS.*
- Neff, J. A. Report on the ecological implications of the proposed Gorey/ Courtown Forest Park recreational Development at Courtown, Co. Wexford - *for Wexford CC. Unpublished.*
- Neff, J. A. 1994 Ecological implications of proposed holiday home development at Brittas Bay, Co. Wicklow . *Unpublished Report .*
- Neff, J. A. 1994 Report on the likely ecological implications of a proposed windfarm development near Tacumshin, Co. Wexford. *Unpublished report for the Irish Electrical Company Ltd.*
- Neff, J. A. 1996 Study on the ecology of the protected plant species *Hordeum secalinum* in salt marsh vegetation at the Kings Channel, Waterford Harbour and in the Barrow marshes 1995 - 1996. Unpublished report.
- Neff, J. A. 1996 The Conservation of the Natural heritage of North-West Mayo. (Mayo National Park Study): Ecological section : *NPWS and Mayo CC.*
- Nooren, M. J. and Schouten, M.G.C. 1976 Coastal vegetation types and soil features in south east Ireland. *Doctoral Verslag. Cath. Univ. Nijmegen.*
- Norris, A. and Colville, B. 1974 Notes on the occurrence of *Vertigo angustior* Jeffreys. in Great Britain. *J. Conch. 28 No.3 141-154*
- O'Brian, M. and Farrelly, P. 1990. Breeding history of Little Terns at Newcastle, Co.Wicklow and the impact of conservation action 1985 - 1990. *Ir. Birds 4: 149-168*
- O'Connor, P.G. & Jeal, F. 1984 Some notes on the distribution of *Bufo calamita* Laur., the Natterjack Toad, in Ireland deriving from a survey conducted in 1975. *Bull. Ir. biogeog. Soc. No.8.*
- O'Críodáin, C. 1992 Conservation of Grassland Sites of Scientific Interest - A preliminary report. *Internal Report NPWS/ OPW.*
- O'Neill, Michael. 1995 Report to Wexford County Council. Water quality in Lady's Island Lake and its feeder streams, July 1994. *E.P.A.*
- O'Reilly, H. and Pantin, G. 1957 Some observations on the saltmarsh formation in Co.Dublin. *Proc. R. Ir.A. 58 B 89 - 128.*
- Orford, J.D. & Carter, R.W.G. 1982 Geomorphological changes on the barrier coasts of south Wexford. *Irish Geog. 15 70 - 84.*

- Parnell, J.A.N., Wyse-Jackson, P.S. and Akeroyd, J.R. 1983 The Flora of the Magherree Islands, Co. Kerry. *Bull. Ir. biogeog. Soc. No.7* 45-54.
- Polunin, O. 1950 Notes and additions to the flora of the Islands of S.W.Cork. *Watsonia* **1** Part VI 359-363.
- Praeger, R.L. 1913 Phanerogamia, in Notes on the Flora of the Saltees. *Ir. Nat. J.* 1913. 181 - 191.
- Praeger, R.L. 1934 The Botanist in Ireland. *Dublin*.
- Praeger, R. L. 1946 Things left undone, (re: *Scirpus triqueter*). *Ir.Nat.J. Jan.'46* p.323
- Pye, K. & French, P.W. 1993. Targets for coastal habitat re-creation. *English Nature*
- Quigley, M. B. (Ed.) 1991 A Guide to the Sand Dunes of Ireland. *3rd Congress of the European Union for Dune Conservation and Coastal Management, Galway*,
- Ranwell, D.S. 1972 Ecology of Salt Marshes and Sand Dunes. *Chapman and Hall*.
- R.I.A. New Survey of Clare Island 1991 -1995. *Newsletter No.1*.
- Riley, D.H. 1993 Further changes in dune grassland in Co. Londonderry. *Ir. Nat. J.* **24** No.8 310 - 315.
- Roche, R. and Merne,O. 1977 Saltees - Islands of birds and legends. *O'Brien Press, Dublin*.
- Ruttledge, R. F. 1963 Migrant and other birds of Great Saltee, Co.Wexford. *Proc. Roy. Ir. Acad.* **63** B 71 -86
- Ruttledge, R.F. and Ogilvie, M.A. 1979. The past and current status of the Greenland White-fronted Goose in Ireland and Britain. *Ir. Birds* **1** No.3.
- Scannell, M. and Webb, D.A. 1976 The identity of the Renvyle *Hydrilla*. *Ir. Nat.J.* **18** No.11 327-330.
- Sharrock, J.T.R. (Ed.) 1973 The Natural History of Clare Island. *T. & A.D.Poyser Ltd. Berkamstead*.
- Sheehy-Skeffington, M. 1986 *Report on the vegetation surrounding Rusheen Lough Area, Co. Galway*.
- Sheppard, Ralph. 1993 Ireland's Wetlands Wealth. The Report of the Winter Wetlands Survey 1984/85 to 1986/87. *IWC, Dublin*.
- Shorten, M.G.M. 1992 Areas of Scientific Interest for Birds in Cork. (Draft Doc.). *The Co. Dev. Plan Submission to Cork C.C. by the IWC*.
- Smiddy, P. 1992. The waterfowl of Ballymacoda, Co.Cork. *Ir.Birds* **4** 525-548.
- Smith, P. H. 1999 The Sands of Time. An Introduction to the Sand Dunes of the Sefton Coast. *National Museum and Galleries in Merseyside/ EU Life - Nature Fund*
- Speight, M.C.D. & Molle, R.C.J. 1979 *Amauronematus mundus*, *Hemichroa australis* and *Nematus brevis*: sawflies new to Ireland, with notes on some other Irish sawflies (*Hymenoptera: Symphyta*). *Ir.Nat.J.* **19** (12): 443 - 445.
- Speight, M.C.D. 1976 *Sphaerophoria rueppellii* (Dipt., Syrphidae) new to Ireland,with figure of its surstyli. *Ir.Nat. J.* **18** (11) 332 - 334.
- Speight, M.C.D. 1980 *Chiloxanthus pilosus*, *Palloptera modesta* and *Pipizella heringi* confirmed as Irish species. *Ir.Nat.J.* **20** (2) 72 -72.
- Speight, M.C.D. and Williams, M.de C. 1981 *Macrophyta duodecempunctata*, *Nematus frenalis* and *Pamphilius gyllenhalii*: sawflies (Hymenoptera: Symphyta) new to Ireland. *Ir. Nat.J.* **20** (8): 345 - 347.
- Stapleton, L. (Ed.) 1996 *The State of the Environment*. Environmental Protection Agency.

- Stelfox, H. 1922 Bees and Clovers. A Day on the Murrough of Wicklow. *The Irish Naturalist*. Aug.1922. 89-91.
- Stelfox, A.W. 1943 Survey of Inishtrahull: Part 4. A list of the flowering plants, ferns etc. *Ir.Nat. J.* **8** 116 -123.
- Summers, C.F., Warner, P.J., Nairn, R.G.W., Curry, M.G. and Flynn, J. 1980. An assessment of the status of the common seal *Phoca vitulina vitulina* in Ireland. *Biol. Conserv.* **17** 115 -123.
- Ui Chonchubhair, Máirín, and Ó Conchúir, Aodón. 1995 Flóra Chora Dhuibhne. Aspects of the Flora of Corca Dhuibhne.
- Van dem Berghen. 1972 La flora de l'Irlande. Le végétation de l'île Achill et de la presqu'île de Corraun (Comté de Mayo, Irlande) - la végétation des dunes (p.193). *Bruxelles*.
- Wallace, Eugene, F. 1989 Tern management at Lady's Island Lake. *Unpubl. internal report. WS OPW*
- Walshe, A. and Merne, O.J. 1988. *Barnacle Geese in Ireland, Spring 1988*. *Ir. Birds* **3**. 539-550.
- Warner, P. 1983 An assessment of the breeding populations of common seals (*Phoca vitulina vitulina* L.) in the Republic of Ireland during 1979. *Ir. Nat. J.* **21** No.1 24-26
- Way, L.S., Grice, Phil, MacKay, A., Galbraith, C.A., Stroud, David A. and Pienkowski, M.W. 1993 Ireland's Internationally Important Bird Sites - a review for the EC Special Protection Area Network. *NPWS/ OPW & D of E NI. JNCC. Peterborough*.
- Webb, D.A. and Hodgson, J. 1968 The Flora of Inishbofin and Inishshark. *Proc. Bot.Soc. Brit.Isl.* **7** (3) 345-363
- Webb, D.A. & Scannell, M.J.P. 1983 The Flora of Connemara and The Burren. *Cambridge*
- Whilde, A. 1982 Irish Wetlands Survey 1981-82 Pt.2. (*F.A.C.E. & N.A.R.G.C.*)
- Whilde, A. 1983 The winter bird community of Inner Galway Bay . *Ir. Birds* **2** 278-293
- Whilde, A. 1985. The All-Ireland Tern Survey 1984. *IWC/RSPB/FWS/DoE NI*.
- Whilde, A. 1993 Threatened Mammals, Birds, Amphibians and Fish in Ireland. Irish Red Data Book 2: Vertebrates. *DoE NI /OPW. HMSO, Belfast*.
- Wildlife Service 1989 Index to Areas of Scientific Interest. *WS. Dublin*.
- Wilson, H.J. and Norris, D.W. The Greenland White-fronted Goose in Ireland 1982-83 and 1984-85. A report on its status, distribution and the impact of shooting. *FWS Report*.
- Wilson Foster, J.(Ed.) 1997 Nature in Ireland. A Scientific and Cultural History. *Lilliput Press*.
- Wilson, P. 1990 Coastal Dune Chronology in the North of Ireland. *Catena Suppl.* **18**
- Wymer, E. 1984 The phytosociology of Irish saltmarsh vegetation. *MSc.Thesis. NUI (UCD)*.
- Wyse-Jackson, M. and Wyse-Jackson, P. 1994 Plant species recorded at Three Sisters Range. *BSBI News* **65**.
- Wyse-Jackson, M. and Wyse-Jackson, P. 1994 Plant species recorded at Carrahane Strand, Co.Kerry. *BSBI News* **65**. p. 59.
- Wyse -Jackson, P. 1990 A summary assessment of the environmental impact of the development of the Castlegregory Golf Course on the vegetation and ecology of the Castlegregory Dune Complex, Dingle Peninsula, Co.Kerry.
- Wyse-Jackson, P. Comments on the status of *Simethis planifolia* (L). Gren. in Co. Kerry. *Bull.Ir. Biogeog. Soc.* **No.8**
- Young, R. (Ed.) Planning for the Use of Irish Sand Dune Systems. Proceedings of a Conference held in Wexford, April 1977. *An Foras Forbatha*.

Sources

Legislation: Wildlife Act, 1976.

Reports/ Literature etc: An Foras Forbatha County Reports

IWC Irish East Coast Bird Reports, Irish Wildbird Conservancy, Dublin.

Sherkin Comment Issue No.13. Studies of the Flora of Sherkin Island.

Puffin Island - Nature Reserve Management Plan - IWC.

Leaflets (general): Irish Geological Association Field Guide Series:

Regional and local tourism authority leaflets and guides

Local authority leaflets.

NPWS: Internal Databases, Reports etc.

National ASI Survey Guidelines for Ecologists Version 1.0; March 1993

NPWS Internal reports not listed above in the bibliography.

Rare Plant Survey R.FitzGerald. 1992-1993

Protected Plant Data Base

Threatened Plant Data Base

Atlas 2000- Scarce Plant Project . J. Neff 1996 - 1998

Scarce Plant Database

Plant Protection Order 1987.

NHA Data Base

Inventory of Areas of Scientific Interest WS

Salt marsh Inventory.

Sand dune inventory

1997 - List of Provisional Special Areas of Conservation

IWRB Wetland Data Sheets

Greenland White-fronted Goose Inventory 1982-83.

Breeding Census of Grey Seals 1984.

Bog Report, Douglas at al. 1989.

Proposals for Nature Reserve designation.

Statutory Instruments relating to Nature Reserves, Refuges etc. Leaflets: A Guide to Lough Hyne - leaflet.

Guide to Garinish Island - OPW Booklet.

Derrynane Dunes Nature Trail - OPW (no date)

Derrynane National Historic Park - OPW Booklet.

Fauna and Flora of the Skelligs - IWC/FWS leaflet

Addenda

Addendum I - The status of coastal designations at the time of going to press - October 1999

The following is a summary of changes since the preparation of the study report in November 1998. It is understood that maps showing the designations are currently being revised by Dóchas, The Heritage Service. The maps at Figures 1 and 2 are the most recent available at present. Natural Heritage Areas

The Wildlife (Amendment) Bill, 1999 - 'An Act to amend and extend the Wildlife Act, 1976, and to provide for connected matters'- was presented by the Minister for Arts, Heritage, Gaeltacht and the Islands on 29th June 1999. However until this is enacted and passes into law the NHAs remain without legal basis and are thus unprotected. Protected Flora The Flora (Protection) Order, 1999 is now in place and has superceded that of 1987 referred to in Chapter 2. Nine coastal species are included in the new FPO. Special Protection Areas

There is one addition to the list of SPAs at Appendix II. Wexford Harbour was designated under Statutory Instrument SI 154 of 1998.

Special Areas of Conservation

It should be noted that the situation regarding SAC designation is inevitably in a state of flux due to the nature of the whole process of identifying potential sites, creation of new SACs, deletion of part (or all) of some sites and amalgamation of others. An additional twenty two of the sites (or part thereof) listed in Appendix III have now been sent to the EU. These are listed in Addendum II along with the proposed new designations (Addendum III).

Addendum II - Additional SACs sent to the EU

County	Site name	Date sent
Wexford		
	Ballyteigue Burrow	03.08.99
Cork		
	Clonakilty Bay	14.07.99
	Kilkeran Lake and Castlefreke Dunes	03.08.99
Clare		
	Carrowmore Dunes	24.03.99
	Inagh River Estuary	06.10.98
Galway	Inisheer Island	14.07.99
	Inishmaan Island	15.03.99
	Murvey Machair	14.07.99
	Dog's Bay	14.07.99

	Omey Island Machair	03.08.99
Mayo		
	Cross Lough/Killadoon	03.08.99
	Keel Machair/Meenaun Cliffs	16.09.99
	Doogort Machair/Lough Doo	14.07.99
	Mullet/Blacksod Complex	16.07.99
	Glenamoy Bog Complex	16.04.99
	Lacken Saltmarsh and Kilcummin Head	03.08.99
Sligo		
	Streedagh Point Dunes	03.08.99
Donegal		
	Slieve Tooley/Tormore Island/Loughros Beg Bay	27.05.99
	Termon Strand	16.09.99
	Ballyness Bay	03.08.99
	Horn Head and Rinclevan	03.08.99
	Lough Nagreany Dunes	14.07.99

Addendum III - Additional proposed SACs

County	Site name
Louth	Clogher Head
Dublin	Baldoyle Bay
	Ireland's Eye
	Howth Head
	South Dublin Bay
Wicklow	Bray Head
Wexford	Raven Point Nature Reserve
	Bannow Bay
	Ballyhack
	River Barrow/River Nore
Waterford	River Barrow/River Nore
	Lower River Suir
	Ardmore Head
	Blackwater River
Cork	Blackwater River
	Ballymacoda (Clonpriest and Pillmore)
	Great Island Channel
	Three Castle Head to Mizen Head
	Sheep's Head
	Glengariff Harbour and Woodland

	Cleanderry Wood
Kerry/Limerick	Lower River Shannon
Clare	Lower River Shannon
	Carrowmore Dunes*
Galway	Tully Mountain
Mayo	Oldhead Wood
	Clare Island Cliffs
	Newport River
	Bellacragher Saltmarsh
	Duvillaun Islands
Leitrim	Lough Melvin
Donegal	Lough Melvin
	Durnesh Lough