

Ecological Study of the Coastal Habitats in County Fingal

Phase II - Birds

Habitats

Birds



Fingal County Council
November 2004

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Senior Parks Superintendent.

Summary

The bird study of the Fingal coast is part of PHASE II of the Ecological Study of the Coastal Habitats in County Fingal. The bird study aimed to establish which birds can be found along the coast throughout the year, find out how these species use the coastal habitats and identify the most important breeding, feeding and roosting sites along the Fingal coast.

The literature review on wintering birds and breeding birds on the islands showed that the Fingal coast provides important feeding and roosting grounds for thousands of winter migrants and that the islands off the Fingal coast support national and internationally important seabird colonies.

In order to provide information on the breeding birds of the mainland habitats, a breeding bird survey was undertaken by volunteers from the Birdwatch Ireland Fingal branch in 2003. This study found a number of internationally or nationally important species.

The estuaries and the adjacent farmlands & amenity areas are important feeding and roosting areas for wildfowl and waders during the winter. The beaches and the dunes are used for breeding and roosting throughout the year. The rocky shores act as feeding and roosting grounds. The rocky seacliffs at Howth Head are the most important sites for breeding seabirds and the coastal waters along Fingal provide rich feeding grounds for the seabird colonies that breed on Howth and the islands off the Fingal coast. The most important threat to the coastal birds throughout the year is disturbance by recreational activities such as walking, shooting, motorised vehicles and boating. At present the recreational disturbance is particularly a problem in the beach and dune habitats.



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2. Introduction

2.1 Background

Because of the ecological importance of the Fingal coast, Fingal County Council initiated an ecological study of the coastal habitats in the County in 2003. This study is the first large-scale ecological study that is being undertaken as part of the county council's Local Biodiversity Action Plan Program. The study will provide detailed and up-to-date information on the status of the coastal habitats and species. This will allow for the preparation of tailor-made action plans for the coastal habitats and flora & fauna species. It is envisaged that the ecological study will be carried out in four phases over the 2003 – 2005 period. This will allow the action plans for the coastal habitats and associated species to be prepared at the end of 2005.

The bird study of the Fingal coast is part of PHASE II of the ecological study. From an initial assessment it appeared that there was good information on wintering birds and on breeding birds on the islands. The three estuaries in Fingal; Baldoyle, Broadmeadow and Rogerstown are well known for supporting thousands of migratory birds during the winter months and have been surveyed over the last decades as part of the I-WeBs counts.

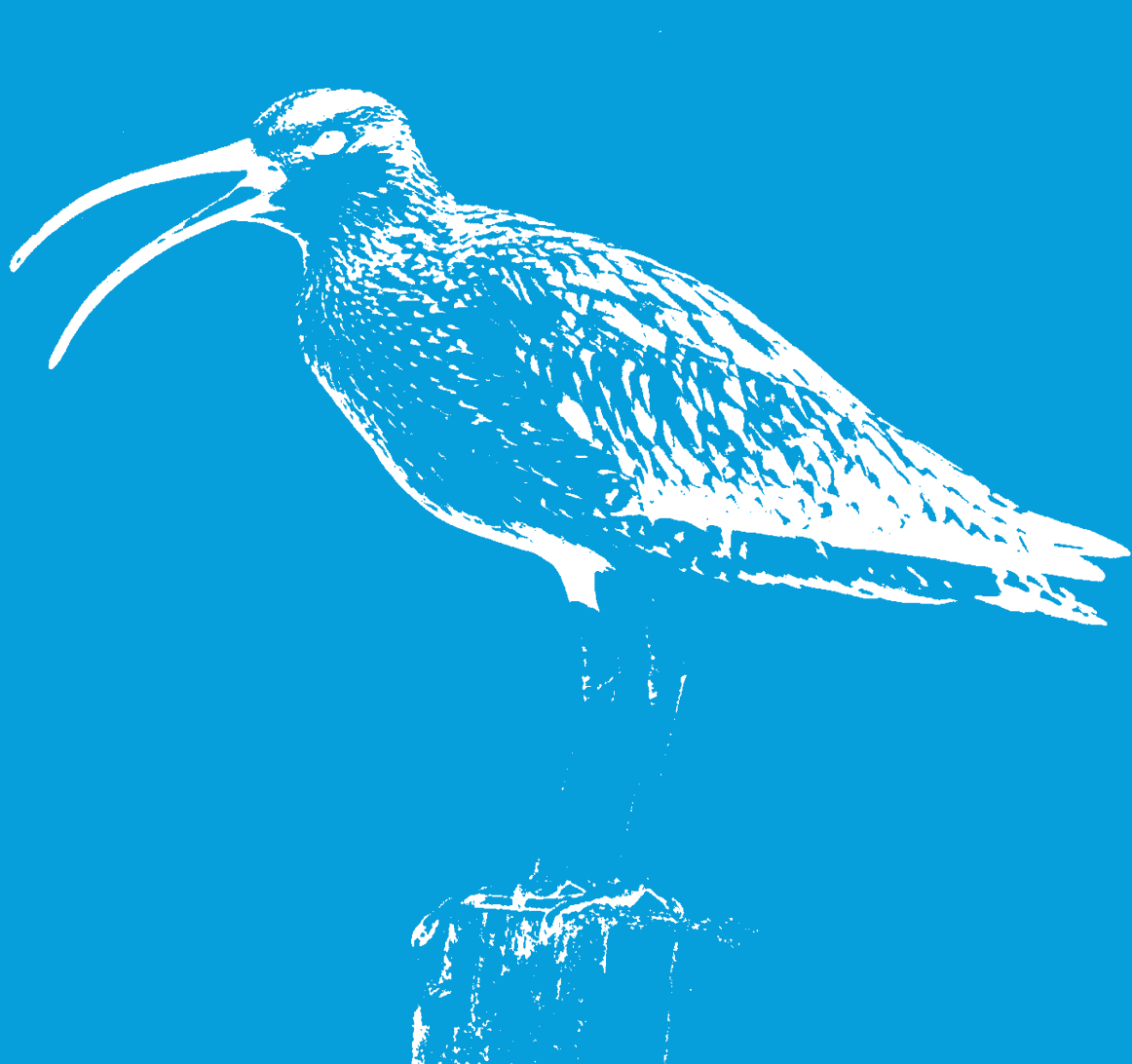
The Fingal coast also has suitable habitats during the summer time for many resident and migratory species, but to date, no specific surveys have been undertaken of the Fingal coast to establish an overview of the summer coastal birds and their feeding and roosting areas.

In order to identify specific actions required for the coastal birds and to provide for adequate protection of the coastal habitats important to these birds more detailed information is needed on the bird species found along the coast and their breeding, feeding and roosting sites. The bird study of the Fingal coast aims to provide a better insight into the bird populations of the Fingal coast and how these species use the various coastal habitats throughout the year.

2.2 Objectives

The objectives of the bird study are as follows:

- Establish which bird species can be found along the Fingal Coast throughout the year.
- Establish the conservation status of the birds present.
- Establish how the different habitats are used by birds throughout the year.
- Identify the most important breeding, feeding and roosting areas along the Fingal Coast, especially less well known sites or poorly documented areas adjoining designated areas.
- Present an overview of the bird species that should be targeted in the Local Biodiversity Action Plan and present potential actions.



2.3 The Fingal Coast Study Area

County Fingal runs north along from Dublin City at Sutton north to the border with Co. Meath north of Balbriggan. The Fingal coastline is approximately 45 km long and covers a wide variety of coastal habitats such as the rocky cliffs at Howth, the sedimentary cliffs between Rush and Balbriggan, the dunes and sandy beaches at Donabate for example, the mudflats, salt marshes & brackish waters of the three estuaries; Baldoyle, Broadmeadow & Rogerstown, the islands off the Fingal coast from Rockabill in the north to Ireland's Eye in the south, and of course the Irish sea. The Study Area is defined as the coast and the islands of Fingal (Figure 1)

2.4 Report Structure

The report is structured in four parts. Following the introduction, there are four parts as follows:-

- Review of existing knowledge of the birds of the Fingal coast.
- Results of the summer survey of coastal birds
- Assessment of status of the coastal birds of Fingal, their use of habitats throughout the year and the threats to these birds and their habitats.
- Conclusions and recommendations conserving bird diversity in Fingal.

Microsoft Word database. This ecological database interacts with the GIS and enables the results of queries to be presented in the form of maps. The maps were colour coded following those advised by the Heritage Council for each habitat type, and were labelled accordingly. Where habitat matrices occurred, for example coastal grassland and heath, a new colour code was created. A complete list of colour codes and their associated habitat classes can be seen in Appendix II. The use of GIS allows the final maps to be printed at any scale. Each of the site maps is printed at a scale so as to visually depict the necessary ecological features of that site. Individual scales are shown on each map.

3. Existing data on birds, habitats and sites on the Fingal coast

3.1 Sources of Information

Existing information from the sources outlined below is combined with results of the summer coastal bird survey in the reference tables on species, sites and habitats in the appendices on page 48. This information on species, habitats and sites is given in the context of their conservation status, national and international populations.

3.1.1 Irish Wetland Bird Survey (I-WeBS)

This is an annual national survey conducted from September to March each winter. The survey covers a variety of wetland habitats across the country. As there are very few inland wetlands in Fingal, the main focus of the I-WeBS survey is on estuarine and coastal habitats.

The counts in the Study Area are mostly organised by the Fingal branch of BirdWatch. Branch members co-ordinate a team of volunteers that record all wintering species from the Delvin Estuary south to Broadmeadow Estuary. The Baldoyle Estuary is counted separately. Counts commence one hour before high tide on the designated day and finish one hour after high tide. The entire coast including the estuaries are divided into sectors. Counters are instructed to count all birds present in the sector within the allotted time. Birds entering or leaving during a count are noted with regard to time and direction of flight. For a more details on I-WeBS methodologies and results see I-WeBS reports published by BirdWatch Ireland (Colhoun 2001).

Of the 15 sites in the Study Area, twelve are already well known as wetlands of international importance or as major seabird colonies. This is reflected by their designation in whole or in part as Special Protection Areas (SPAs) under the EU Birds Directive (79/409/EEC). More details about these sites and their designations are in Table 5 in the appendices.

Seven of the sites can be combined into three groups. The first group includes, Rogerstown Estuary, Rush Beach (south of Rush) and Portrane Beach. These are to the north and south, respectively, of entrance to Rogerstown Estuary. These three sites are for wetland counts and are likely to be included in the Rogerstown Estuary SPA when the SPA designation process is completed. The second group is the Island Peninsula, a sandy spit that largely separates Broadmeadow Estuary from the sea. The two are combined for wetland counts and the southern part of the peninsula is part of the Broadmeadow Estuary SPA. The third group includes Portmarnock Point, which largely separates Baldoyle Bay from the sea. Again these are

combined for wetland counts. The southern part of the Point is a roost site for the birds of Baldoyle Bay but is currently excluded from the SPA. There are two additional I-WeBS sites that will be mentioned in this report. The first is the Skerries Coast. This area runs from Hampton Cove south along the coast to the beach north of Rush. The second is Seagrang Park, an amenity grassland area near Baldoyle.

Although most of these I-WeBS sites are well known, particularly the sections designated as SPAs, waterfowl and passerines from Rogerstown Estuary, Broadmeadow Estuary and Baldoyle Bay also make considerable use of nearby areas that are not designated.

3.1.2 Seabird 2000

The numbers of seabirds breeding in the colonies on Fingal's coasts and islands is from the recently published report on the Seabird 2000 survey in Britain and Ireland (Mitchell et al. 2004). This survey ran from 1999 to 2001 and counts were obtained from all the important sites on the Fingal coast.

3.1.3 Habitats, sites and nature conservation designations

For designated sites, the National Parks and Wildlife Service's (NPWS) information on Natural Heritage Areas (NHAs), Special Protection Areas (SPAs) and Special Areas of Conservation (SACs). These areas are designated or are in the process of being designated by NPWS to protect their nature conservation interest under the 2000 Wildlife Amendment Act, the EU Birds Directive (79/409/EEC) and the EU Habitats Directive (92/43/EEC), respectively. Information on these habitats and sites and their nature conservation designation is summarised in Table 4 and Table 5 in the appendices.

3.2 Overview of Wintering Waterfowl

The winter surveys of the coastal wetlands (I-WeBS) recorded 56 species of waterfowl. Of these, one is a vagrant species (American Wigeon) and one is a feral species (Canada Goose). The mean peak counts of these species at each site over the five winters between 1997/98 to 2001/02 are shown in Table 2 in the appendices in the context of the 1% qualifying thresholds for international and national importance at individual sites.

The total numbers these wetland birds along the coast are also included in the listing of all species that regularly occur in the Study Area (in bold followed by a W in Table 3 in the appendices). These estimates for the whole coast are given in

the context of the species' European and Irish conservation status. Key points of the species' ecology on the Fingal coast.

3.2.1 International Importance

The peak counts identified two wintering species as internationally important - Brent Goose (the Pale-bellied race) and the Icelandic race of Black-tailed Godwit. Brent geese occurred in internationally important numbers at five I-WeBS sites, accounting for eight of the sites in the Study Area. These are the Skerries Islands, Rogerstown Estuary (incl. Rush Beach and Portrane Beach), Broadmeadow (incl. The Island), Baldoyle (incl. Portmarnock). Both species also use Seagrang Park. The numbers involved represent 26% of the international population. Black-tailed Godwit occurred in internationally important numbers at three sites, Broadmeadow Estuary, Rogerstown and at Seagrang Park. In both cases, the numbers at Seagrang Park are probably feeding birds from Baldoyle Bay or Dublin Bay. The Fingal coast holds 4.4% of the international population of Black-tailed Godwits.

Two species of the wetland bird species that winter on the coast are classified by BirdLife International as SPEC 2, i.e. concentrated in Europe and with an unfavourable conservation status. These are Redshank and Black-tailed Godwit. Eight species are SPEC 3, i.e. with an unfavourable conservation status but not concentrated in Europe. Pintail, Scaup, Knot, Dunlin, Jack Snipe, Bar-tailed Godwit, Curlew. One species was in the SPEC 4W category, Whooper Swan

3.2.2 Irish Importance

In winter, 25 wetland species occur in nationally important numbers on Fingal's wetlands and coast. In numerical terms, the most important of these are Cormorant, Greylag geese, Shelduck, Oystercatcher, Ringed plover, Grey plover, Redshank, Greenshank and Turnstone. Of the species recorded, three are 'red-listed' and 29 are 'amber-listed' (Newton et al 1999). The red-listed species recorded were, Common Scoter, Curlew and Lapwing. All of these species are on the red list due to dramatically declining breeding populations elsewhere in the country. Their occurrence on the Fingal coast in the winter months probably has no bearing on their Irish population. Of the 'amber-listed' species, 18 species were listed as important due to their declining or localised wintering populations. These species were: Great-crested Grebe, Whooper Swan, Greylag Goose, Brent Goose, Shelduck, Pintail, Pochard, Tufted Duck, Scaup, Goldeneye, Red-breasted Merganser, Coot, Grey Plover, Knot, Dunlin, Black-tailed Godwit, Bar-tailed Godwit and Redshank. By supporting so many amber-listed species, the Fingal coast can claim to be an important wintering area for wildfowl and wading birds. In percentage terms, the Fingal coasts support 26 % of Irish Brent Geese, 19% of Black-tailed Godwits, 17.% of Grey Plover, 13% of Shelduck, 9% of Redshank and Greylag Goose, 8% of Turnstone, and Oystercatcher, 7% of Cormorants, Ringed Plover and Knot.

3.2.3 Habitats of Wintering Waterfowl

The main habitats of wintering waterfowl on the Fingal coast are the estuaries and their associated intertidal mudflats, sandflats and salt marshes. Several species of wintering waterfowl also use nearby areas of farmland (arable & pasture), amenity

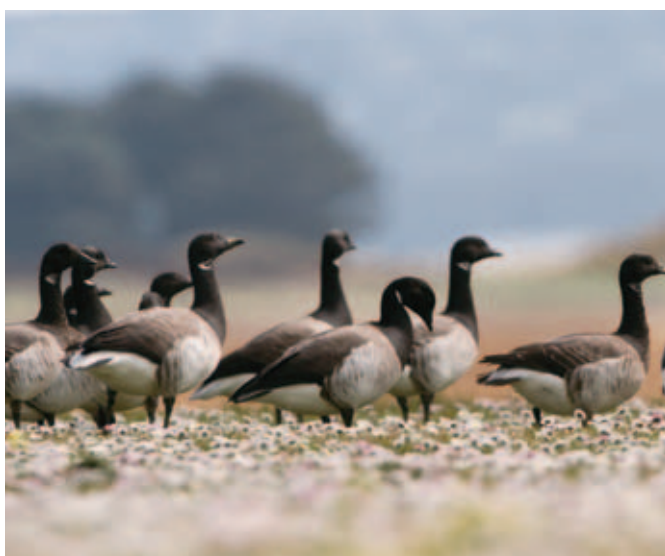


Figure 2.
Adult Brent Goose



Figure 3.
Black-tailed Godwit

grassland, sand dunes and beaches for feeding and roosting at high tide. Rocky shores are also used by several species especially turnstone and purple sandpiper. Finally some species of divers, grebes and ducks, are largely tied to open areas of estuaries and the sea where they dive for their food.

3.3 Overview of Breeding Seabird Species

Sixteen species of seabirds breed on the Fingal coast and island (Table 1). By far the most important sites are Lambay Island, especially for auks and Rockabill for Roseate Terns. The latter is the largest colony of the species in Europe with about 36% of the population. Little Tern is a former breeder which used the tips of sand dune peninsulas such as Portmarnock and Portrane. Nowadays, these areas are too disturbed by walker and dogs for species to breed at these sites.

3.3.1 International Importance

There are internationally important breeding numbers of some seabird species in the Fingal area. Using data from the EBCC survey (Hagemeijer and Blair 1997) as an estimate of the European breeding populations, the important species are Roseate Tern (36.4%), Cormorant (3.9%), Guillemot (1.6%) and Shag (1.5%).

3.3.2 Irish Importance

On the islands in the Fingal hold nationally important breeding numbers of several seabird species, Roseate Tern (88.3% of total Irish population), Herring Gull (35.4%), Shag (31.5%), Cormorant (29.6%), Guillemot (26.6%), Kittiwake (15.0%), Common Tern (14.4%), Great Black-backed Gull (14.0%),



Figure 4.
Aerial view of the inner estuary at Broadmeadow

Razorbill (10.2%), Lesser Black-backed Gull (6.5%), Black Guillemot (3.4%), Arctic Tern (2.5%) and Fulmar (2.0%). (Mitchell et al. 2004)

Table 1. Numbers of breeding seabirds on the Fingal coast and islands

Species	Numbers ¹	Main Sites ²
Arctic Tern	297	Rockabill
Black Guillemot	190	Rockabill, Howth, Ireland's Eye, Skerries, Balbriggan
Common Tern	1,790 ³	Rockabill
Cormorant	4,617	Lambay, Ireland's Eye, Skerries Islands
Fulmar	2,298	Lambay, Ireland's Eye, Howth, Skerries Islands
Gannet	441	Ireland's Eye
Great Black-backed Gull	1,458	Lambay, Ireland's Eye, Skerries Islands, Howth
Guillemot	63,837	Lambay, Ireland's Eye, Howth
Herring Gull	8,715 ⁴	Lambay, Ireland's Eye, Skerries Islands, Howth
Kittiwake	21,147	Lambay, Ireland's Eye, Howth, Skerries Islands, Rockabill
Lesser Black-backed Gull	941	Lambay
Little Tern	0	None
Manx Shearwater	75	Lambay
Puffin	590	Lambay, Ireland's Eye
Razorbill	5,175	Lambay, Ireland's Eye, Howth
Roseate Tern	1,854	Rockabill
Shag	4,077	Lambay, Howth, Skerries Islands, Ireland's Eye

¹ Individuals. ² In approximate order of importance. The most important sites are **bolded**

³ The Co. Dublin total of 2,540 was adjusted downwards to exclude birds breeding Dublin Bay.

⁴ Include about 540 roof-nesting birds, about half nest in Dublin City and half nest in Fingal.



Figure 5.
Roseate Tern

3.3.3 Habitats of Breeding Seabirds

Breeding seabird species need two main kinds of habitats in Fingal – habitats for nesting and for feeding. The nesting areas for many species are almost exclusively rocky cliffs on the mainland or the islands, where they are safe from mammalian predators. Some such as Fulmar may also use soft sedimentary and other such as Puffins and Manx Shearwaters burrow into grassy slopes on islands. Terns tend to use almost flat rocky areas, sometime vegetated. Both of these groups are even more vulnerable to mammalian predators.

Most seabirds feed on the open sea where they dive from the air or the surface to catch fish or invertebrates. Terns tend to use shallower waters along the coast. Fronts where different water

masses come in contact can also be rich feeding areas, such as the Irish Sea Front, which runs from Howth to the Isle of Man. Seabirds such as gulls tend to be more opportunistic and take fisheries discards and scavenge from dumps. However their latter source of food is rapidly disappearing because of new landfill management practices to minimise the access to waste food by scavengers. The amount of fishery discards may also be declining, because of over-fishing.

Seabirds can travel long distances to find food and most seabirds sighted along the coast are likely to be from the colonies on the islands or Howth Head. Many seabirds such as terns, gannets, auks and cormorants feed on small fish in the inshore coastal waters of Fingal. The sand eel (*Ammodytes marinus*) is a vital species for the terns and auks, although they may fish for them in different areas (Wanless et al. 1998). Juvenile herring (*Clupea harengus*) is also an important food source for terns (Becker et al. 1997) and Guillemots (Barrett et al. 1997). Cormorants eat mainly flatfish, saithe (*Pollachius virens*) and viviparous blenny (*Zoarces viviparus*) (Cramp 1998). Gannets tend to feed on fish species that shoal near to the surface, especially herring, capelin (*Malotus villosus*) and mackerel (*Scomber scombrus*) (Cramp 1998).

3.4 Overview of important bird sites on the Fingal coast

3.4.1 Introduction

The importance of the sites on the Fingal coast for breeding seabirds and wintering waterfowl is summarised in Table 1 and Table 2. Brief individual site accounts are presented as follows.



Figure 6.
Cormorant



Figure 7.
Summer plumaged Razorbills



Figure 8.
Guillemots

More details are in the Natural Heritage Area site synopses in the appendices.

3.4.2 Delvin Estuary to Hampton Cove

The estuary offers an important high tide roosting area for Brent Geese and Cormorants during the winter (Crowe and Boland 2004). It also holds nationally important numbers of golden plover.



Figure 9.
Kittiwakes and Guillemots and a Razorbill on sea cliffs

3.4.3 Lowtherstone

This area is a small wide peninsula of arable land on the Skerries Coast. The agricultural hinterland has been recorded supporting large numbers of Yellowhammers, Skylarks and other seed-eating passerines during the winter (Delaney 1995).

3.4.4 Rockabill

Rockabill is home to Ireland's largest Roseate Tern colony as well as colonies of Common Terns, Arctic Terns, Kittiwakes and Black Guillemot (Mitchell et al. 2004).

3.4.5 Skerries Coast

These most rocky shores hold nationally important numbers of Turnstone and Purple sandpipers. Sandy beaches support nationally important numbers of Sanderling.

3.4.6 Skerries Islands

These islands supports an important breeding colony of Cormorants (Mitchell et al. 2004). In the winter, they also hold

internationally important numbers of Brent Geese and nationally important numbers of Cormorants, purple sandpiper and turnstone.

3.4.7 Rush Beach (South Shore)

The sandy beach at Rush allows waders and gulls to roost during high tide over the winter months. Its winter waterfowl are included with Rogerstown Estuary.

3.4.8 Rogerstown Estuary

The estuary is a very important feeding area for waders during the winter months (Crowe and Boland 2004). The flooded grassland areas adjacent to the estuary also offer high tide roost sites for Brent Geese as well as waders and gulls. It supports internationally important numbers of Brent Geese and Black-tailed Godwits and nationally important numbers of Greylag Geese, three duck species and nine wader species.

3.4.9 Portrane Beach

In spring and summer Ringed Plover breed here. In the winter the area offers shelter at high tide for waders to roost (probably from Rogerstown and Broadmeadow Estuaries). Its winter waterfowl are included with Rogerstown Estuary.

3.4.10 Lambay Island

Lambay supports Ireland's largest mixed seabird colony. This included a large colony of breeding Cormorants, as well as large numbers of breeding Shags (Mitchell et al. 2004). It also supports very large numbers of breeding Guillemots and Razorbills. In winter, it supports nationally important flocks of Greylag Geese and Barnacle geese.

3.4.11 Broadmeadow (Malahide) Estuary

The estuary is a very important feeding area for geese, duck and waders during the winter months (Crowe and Boland 2004). As at Rogerstown, there are internationally important numbers of Brent Geese and Black-tailed Godwits. There are also nationally important numbers of great-crested grebe, three duck species and eight wader species.

3.4.12 The Island (near Corballis)

These dune and salt marsh areas are ideal high tide roosting sites for gulls, terns and waders from late summer until early spring, probably from Broadmeadow.

3.4.13 Baldoyle Bay

The estuary is a very important feeding area for geese and waders during the winter months (Crowe and Boland 2004). It supports internationally important numbers of Brent Geese as well as nationally important numbers of Shelduck and six species of waders.

3.4.14 Portmarnock Point

In spring and summer Ringed Plover and Little Terns used to breed at this site. In late summer the area supports large numbers of gulls and terns gathering prior to migration. In the winter the area offers shelter at high tide for waders and gulls to roost, probably from Baldoyle Bay.

3.4.15 Howth Head

These mainland cliffs provide suitable breeding areas for large numbers of Kittiwakes, Guillemots and Shags. Black Guillemots breed along the inaccessible rocky shoreline at the base of the cliffs (Mitchell et al. 2004).

3.4.16 Seagrange Park

This large area of amenity grassland just west of Baldoyle regularly supports internationally important numbers of Brent Geese. Internationally important numbers of Black-tailed Godwits also feed here, mainly in wet weather when the ground is soft.



4. Additional Information on Bird Sites

4.1 Introduction

Some of the non-designated sites along the Fingal coast as well as ancillary areas around the designated wetlands have hold important numbers of birds at various times of the year. However, these areas have not been well documented. Therefore information was sought from experienced members of the Fingal branch. These were Sean Pierce, Jim English, Frank McManus, Brendan Black and David Dillon. These members took part in the summer breeding survey and organise and participate in the I-WeBS counts. They have excellent knowledge of the sections of the coast they observe regularly.

4.2 Delvin Estuary to Hampton Cove

The main importance of this area is for wintering waterfowl was documented on page 17.

4.3 Lowtherstone

This area of arable farmland, adjacent to the coast just south of the Delvin Estuary has a history of use by large numbers of seed-eating passerines in winter. These included up to 3-400 Skylark, 15 to 20 Tree Sparrows, 40-50 Yellowhammers. Rarer species such as Snow Buntings and Lapland Buntings also occurred, occasionally in double figures. However, the use of the area by seed-eating birds has diminished considerably in the last decade, probably due to intensification of the arable agriculture in the area. It is also occasionally used by 300-400 Curlew, over a 1,000 Lapwing and a 1,000 Golden Plover for feeding and roosting. Traditionally, the area has been little disturbed but as with all parts of the coast, increasing human populations means more walkers and dogs.

4.4 The Skerries Coast

This category includes the number of isolated rock islets and sea-sprayed rocks that are completely surrounded by the sea at full tide. These rocky outcrops receive no direct soil input from the mainland and are in effect miniature islands. Rock crevice community species such as *Limonium binervosum*, *Spergularia rupicola* and *Armeria maritima* occur in the areas most heavily influenced by the spray {MC1}, their distribution being affected by factors such as the substrate of the bedding plane and its orientation to the sea. In some instances large plants of *Crithmum maritimum* grow in rock clusters that are occasionally inundated by the tides. These colonies are able to withstand high levels of wave impact. Large clumps of *Inula crithmoides* are also common in this island habitat.

4.5 Baldongan

The boundaries of this area have not been finalised. However, it includes an important field zone for passerines from south of Skerries towards Loughshinny. An adjacent area of arable fields extends inland to Tyrellstown. 200-300 Greylag Geese feed here and flocks of Lapwing and Golden Plover also occur. It is also a good area for Buzzard with a few pairs breeding in the area. A few hen Harriers regularly hunt the area in winter as do a similar number of Short-eared Owls. In exceptional years, over 20 of the latter have been recorded. One or two Peregrine Falcons are also regular in the area.

4.6 Skerries Islands

The main additional importance of these areas apart from their wintering waterfowl and breeding seabirds, is their use a night roost by additional numbers of waterfowl from the mainland. For example, hundreds of Curlew are regularly observed going to roost on Shenick Island.

4.7 Rockabill

Due to difficulties of access, Rockabill is not regularly counted during the winter. However several tens of Purple sandpipers and Turnstones have been recorded there. Occasionally, hundreds of Great Black-backed Gulls have been recorded there in winter.

4.8 North Rush Beach

This beach is outside the designated areas associated with Rogerstown Estuary. However, it is regularly used by 50-100 Brent Geese, 10-20 Turnstone & Redshank, about 60 Sanderling and about 50 Ringed Plover.

4.9 Areas Adjacent to Rogerstown Estuary

The numbers of birds using the wetland and coastal habitats at Rogerstown Estuary are well documented by I-WeBS. Additionally, the estuary's Brent Geese also use the fields on the north shore just east of the railway line and to the north of the BirdWatch Ireland reserve for feeding. They make similar use of the fields on the western edge of the Portrane Peninsula. The south shore from Raheen Point to the Portrane Peninsula is a very important and relatively undisturbed roosting area for many of the estuary's birds. Given the increasing disturbance from people along the Fingal Coast, it would be important to maintain the low disturbance status of this area.

Several areas around Rogerstown Estuary are also important for passerines. A small field north west of Rogerstown Pier may hold several tens of Yellowhammer, Linnets and Greenfinches. However, its importance has been reduced by infill in recent years. Several areas from the BirdWatch Ireland Reserve around to Raheen Point are important for passerines, particularly Fingal County Councils lands at Turvey, and the fields on both sides of the road to Raheen Point. The fields on the western shore of the Portrane Peninsula are similarly used. In good years, hundreds of Linnets, Greenfinches, Chaffinches and Goldfinches use of these areas during the winter along with a few tens of Tree Sparrows, Yellowhammers and Bramblings. Many of the fields in these areas are not intensively managed for agriculture, which makes them more suitable for these species. Wintering Redwings and Fieldfares, perhaps into three figures, feed in the old orchards at Beaverstown Golf Club.

ground around the old racecourse are regularly used by Short-eared Owls, with numbers getting into double figures in exceptional years.

4.10 Areas Adjacent to Broadmeadow Estuary

Most of the fields along the northern edge of the inner estuary and a few of those on the outer estuary are used by up to 1,000 feeding Brent Geese. While Brent Geese are capable of making daily commuting flights of up to 25 or 30km to feed, e.g. from Dublin Bay to the Murrrough in Co. Wicklow, such feeding areas close to Broadmeadow and Rogerstown are more useful because of the short distances the birds have to travel. Along the south shore of the inner estuary, there is an undisturbed roost site near the dinghy clubs at Cave's Marsh. This is used by Redshank, up to 30-40 Snipe and the occasional Jack Snipe. This area is important as the rest of the south shore is increasingly disturbed. Perhaps 20 - 30 Yellowhammers and Tree Sparrows use the fields and bushes at top end of the inner estuary near where people feed the Mute Swans. Numbers have been declining in recent years as nearby hedges and habitats are lost to developments.

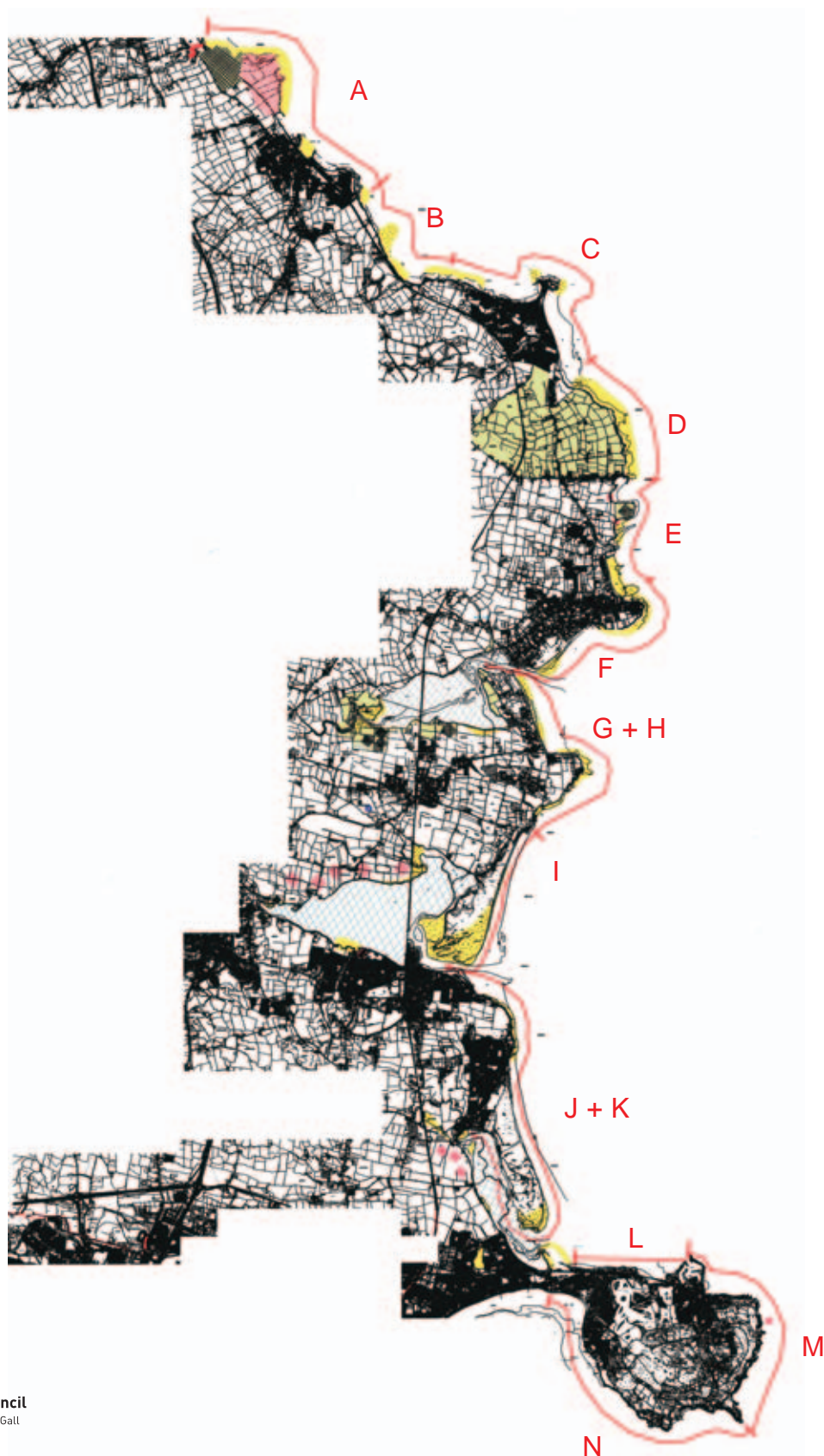
4.11 Areas Adjacent to Baldoyle Estuary

Portmarnock Point is the main roosting area for the waterfowl of the Estuary, although some of it at least appears to be outside the SPA. However, it is within the SAC and the NHA. This area is also used as a late summer roost by up to about 150 Common and Arctic Terns and up to 15-20 Roseate Terns. This area may be subject to increased disturbance by the extension of a golf course in the area.

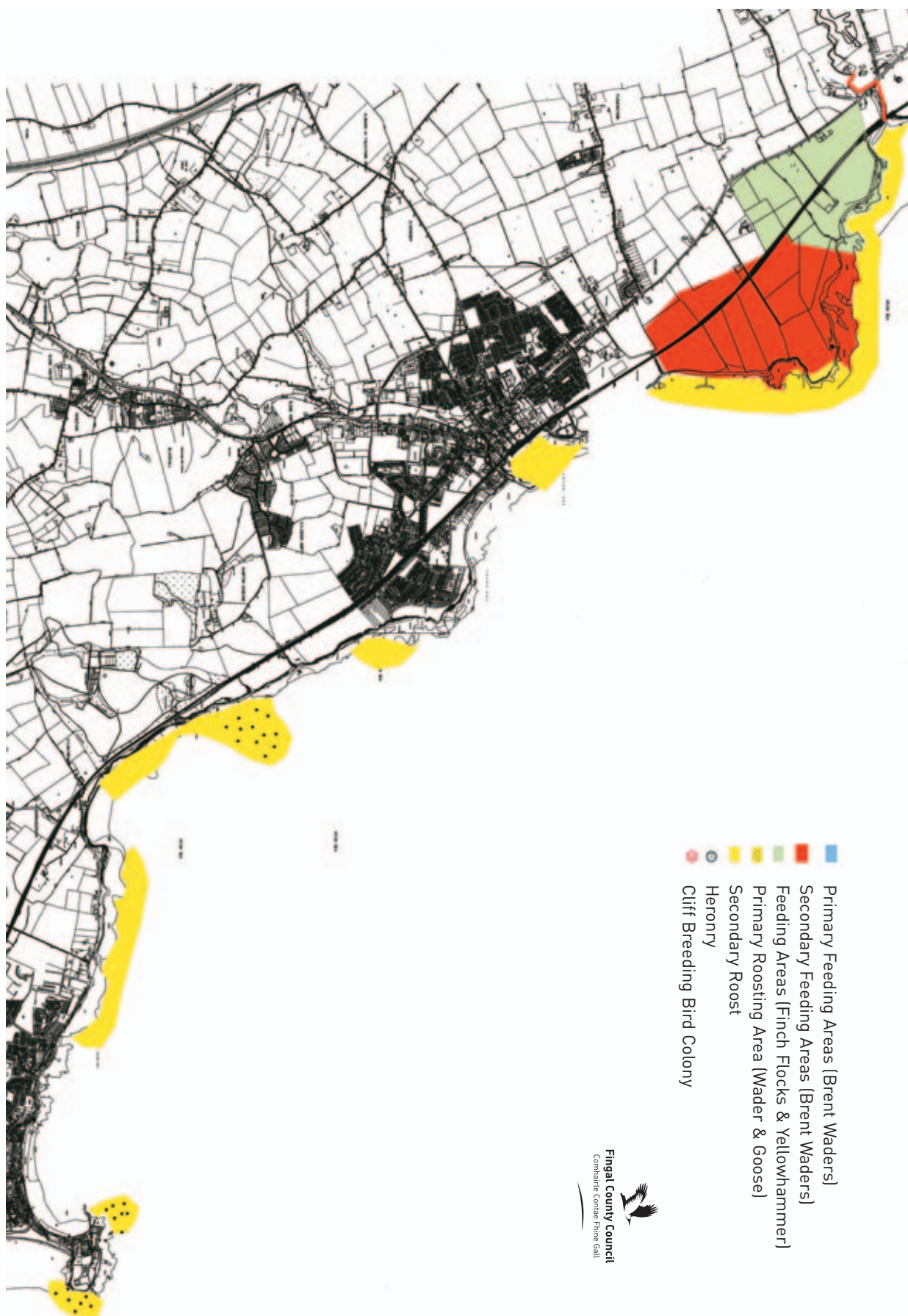
The fields just to the west of the north end of the Estuary were an important feeding area for up to 200 Brent Geese and occasionally up to 1,500 Golden Plover. However, these are now being lost to development. Further south, the fields and rough

Figure 10. Bird survey transects along the Fingal coast

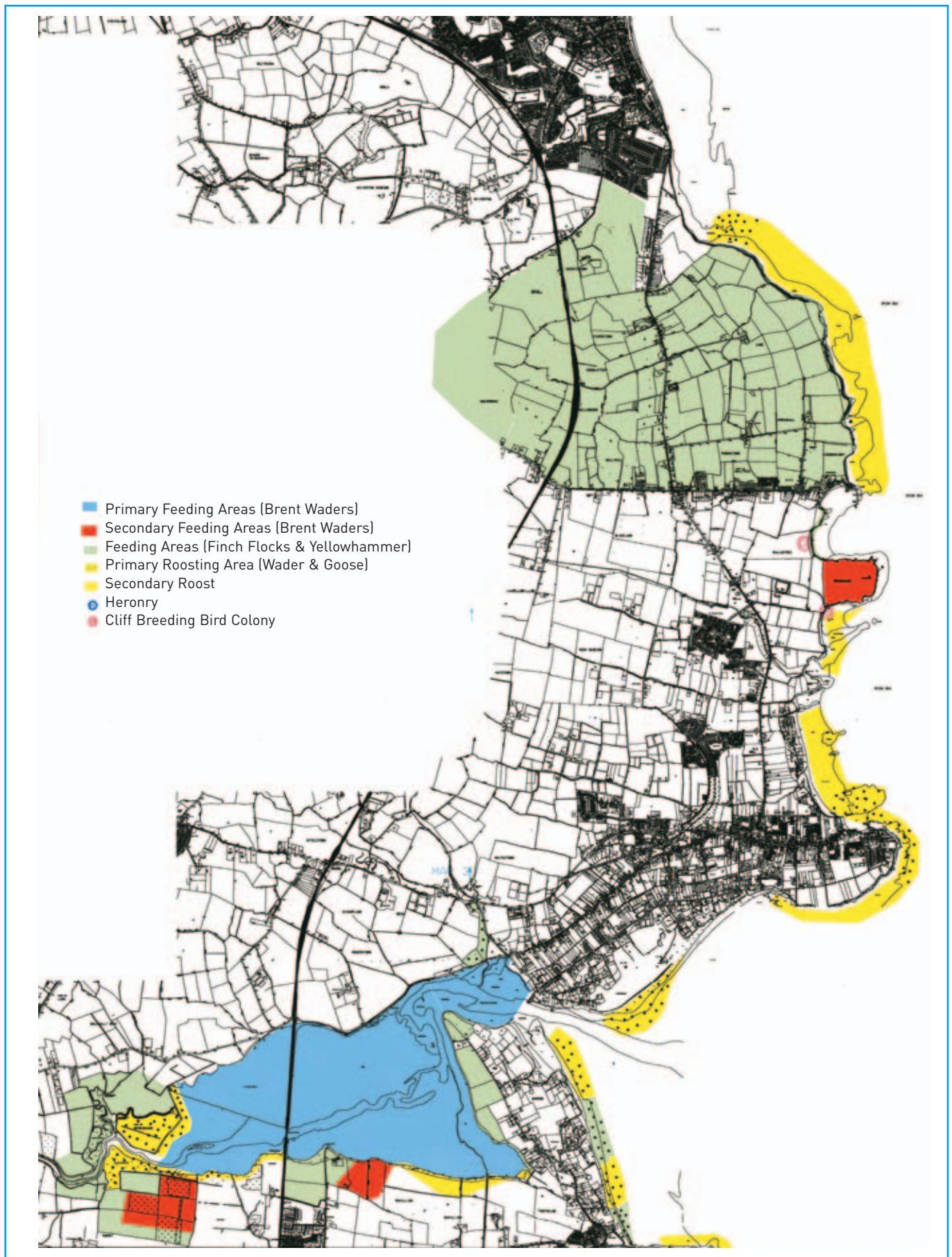
OVERVIEW TRANSECTS
FINGAL COASTAL BIRD SURVEY



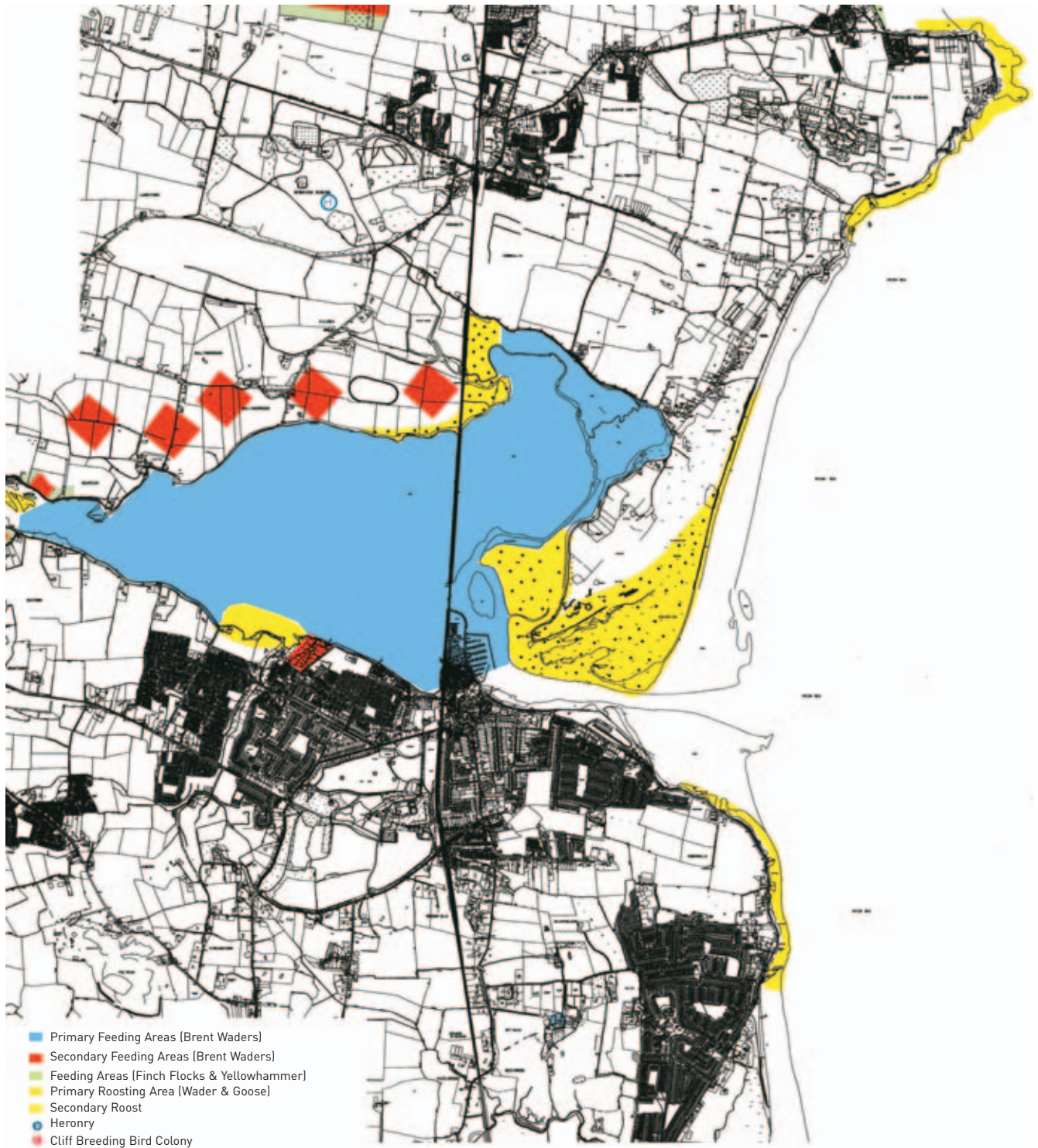
Map 1



Map 2



Map 3



Map 4



5. Summer Breeding Survey of the Fingal Coast

The review of the existing knowledge of the birds and their habitats and sites on the Fingal coast showed that there was a lack of knowledge of the summer breeding birds of the mainland. To fill this gap breeding season survey was done between April and June 2003.

5.1 Methodology

The summer coastal bird survey of the Fingal coast is one of the first surveys to be carried out in Ireland on coastal birds during the summertime. No standard survey methodology was available to undertake this study and it was therefore decided to base the methodology on the principles used in both IWEBS and the Countryside Bird Survey (CBS) with small adjustments to suit the particular survey requirements.

The coast of Fingal was divided into 14 transects A-O of approximately 5km in length, commencing at the Delvin River in the north of the county and stretching to the Howth peninsula in the south (see Appendix 1). The survey team consisted of 12 members of the Fingal branch BirdWatch Ireland.

The counters were instructed to record all birds present during the course of the survey and to record the habitat in which they were observed. Three counts were conducted, one in mid-April, one in mid May and one in mid-June 2003. Counts were carried out in reasonable weather conditions and at early morning. Each survey lasted about three hours. Counting commenced at the northern most end of each sector and proceeded on a southerly basis. General habitat types were recorded across the sectors. The extent of the survey area in each transect were the low watermark to the east and the first field boundary or road to the west.

5.2 Results of the Summer Survey

During the course of the summer surveys 92 species of birds were recorded of which 58 can be considered common. There are four red list species that are of significant conservation interest and another 30 that are of national or international importance. A full list of the birds recorded during this survey is given in Table 3 in the context of their conservation status and ecology in Fingal. The charts in Figure 18 and Figure 19 in the appendices give more details of the numbers of each species recorded in the transects.

5.2.1 Birds of conservation concern

The most important and rarest bird recorded during the summer survey was the Roseate Tern. This species is

internationally important and the focus of intense conservation measures since 1989 on off-shore Rockabill island were 677 pairs bred in 2004. The best places to see the Roseate Tern are the inshore coastal waters off Skerries, Loughshinny and Rush, feeding on sandeel and sprat. During the summer survey, the Roseate Tern was also recorded at Balbriggan, Portrane and Portmarnock where it was observed at sea.

Two other species of conservation interest were Curlew and Lapwing. Both species are on the red list due to dramatically decreasing breeding populations. During this survey Curlew was recorded in 9 out of 12 transects but numbers were relatively small (peak 38) and these were often observed only once in each transect during the three months. The Curlew was found to be feeding in the estuaries, rocky and sandy shorelines. Lapwing was only encountered once in April in the most northern transect A and it is expected that this group were migratory species on their way to their breeding colonies in the north. Although these species were not confirmed to be breeding along the coast, they are known to have bred inland in the Fingal area in the past (*S. Pierce, personal comment*). Both species require lowland wet grassland, a habitat type that is fast disappearing in Fingal.

Another internationally and nationally important species that is dependent on a mixed farmland is the Yellowhammer. Fingal still holds good numbers of this red list species all year round because of the traditionally rich mosaic of farming. Along the coast however, only 7 birds were encountered in at Portmarnock and Lowtherstone during the course of the survey. Another typical farmland species recorded in very low



Figure 11.
Skylark

numbers was the Tree Sparrow which was recorded at Portrane and Howth. The low numbers of these farmland birds show that these birds do not use the Fingal coastal habitats to a great extent in summertime.

5.2.2 Birds of local conservation interest

A number of species were recorded that are become increasingly rare coastal breeders in Fingal these are Skylark, Shelduck, Stonechat and Ringed Plover. The Skylark is a species of conservation concern due to reduction in populations probably as a result of changing farming practices. Skylarks were found in 8 out of the 12 transects with the highest numbers recorded in the dune system at Portmarnock (52 individuals in April) The skylark was also abundant in the other dune systems in Malahide and Rush and in the rank grasslands of Drumanagh. Shelduck were recorded within most Fingal dune systems where they breed in rabbit holes or in low bushes. Feeding Shelduck and small crèches of young Shelduck were observed in the three estuaries. Ringed Plover were observed roosting and feeding on the less disturbed gravel and shingle or sandy beaches at the northern parts of the Fingal coast (up to 75 individuals). Ringed Plovers were recorded as breeding on Portrane beach at the entrance to the Rogerstown estuary. Surprisingly at the Island and Portmarnock peninsulas where the habitat conditions are similar to Portrane, no breeding Ringed Plovers were found. This is likely to result from disturbance and erosion of the beaches in this area. Stonechats were found in low numbers in rough coastal grasslands and hedgerows, where they would feed and breed. Transect M and N held relatively low numbers of Stonechats (max. 8) compared some of the other transects such as transect J + K, given the abundance of bracken, heath and rough grassland on Howth Head.

5.2.3 Seabirds

Some of the most abundant species found during the survey are cliff nesting seabird species: Guillemot, Razorbill, Kittiwake and Fulmar. The cliffs of Howth Head were excluded from the summer survey for logistical and safety reasons, but from the Seabird2000 survey we know that the cliffs support a number of colonies that comprise of hundreds of these seabirds. Guillemots and Razorbills were rarely seen elsewhere along the coast, which suggests that these species may feed further out in sea instead of the inshore coastal waters. Kittiwakes and Fulmars were seen more frequently along the entire Fingal coastline. The presence of high numbers of Fulmars in the northern parts of the coast can be explained by a breeding colony at Loughshinny where up to a



Figure 12.
Male Stonechat

113 individuals were recorded and two other smaller breeding colonies at Barnageeragh and Balbriggan.

Other seabird species observed during the survey were: Gannet, Cormorant, Herring Gull Common Tern and Arctic Tern. These species are known to breed on the islands of the Fingal coast and use the Irish Sea and the inshore coastal waters as their feeding grounds. The highest number of the particular species are usually observed out at sea in the vicinity of the islands where they breed e.g. Gannets from Irelands Eye were mainly found between Howth and Malahide and high numbers of Cormorant were found at Skerries and Howth that are likely to be birds from the colonies on the Shenick Islands, Lambay and Irelands Eye.

5.2.4 Migratory species

During the first month of the survey (April) a small number of winter migrants were recorded such as Brent Goose, Greenshank, Dunlin and Snipe These species are often found near the estuaries and the shorelines where they feed and roost. These species usually leave the Fingal coast around March/April and these birds were probably some of the last remaining. Whimbrel is a passing migrant from their African wintering grounds to their breeding grounds in Iceland. The Turnstone which is usually a winter migrant was recorded from April to June. These birds are likely to be summering birds and did not return to their breeding grounds with the rest of the Turnstone flocks. The flock of 136 Black tailed Godwits that were observed at the end of June in transect G+H are likely to be some of the first birds to return from their breeding grounds in Iceland.



Figure 14.
Summer – plumaged Turnstone

5.2.5 Importance of species recorded

5.2.5.1 Europe

The summer survey identified six species in SPEC 2. These were: Black Guillemot, Black-tailed Godwit, Common Gull, Gannet, Redshank and Sandwich Tern. Of these species, none were confirmed as breeding during the survey. Black Guillemots have been documented as breeding in the Howth area (Madden et al. 1999). All other numbers of birds fluctuate too much to suggest any steady breeding populations. Gannets are known to breed on Ireland's Eye (Cooney et al. 1989). As



Figure 13.
Whimbrel

these birds may travel long distances to find food, some of the sighted along the coast are probably from this colony but other may be from large breeding colonies on Ailsa Craig in south west Scotland and on Grassholm in Pembrokeshire.

Black-tailed Godwits were only recorded on one occasion (in a large flock) just south of Rush. This was clearly a group of migrating birds. Neither Redshank nor Common Gull appears to be breeding along the coast so their continued presence throughout the breeding season may be non-breeding birds.

Ten species were identified in SPEC 3. These were: Red-throated Diver, Brent Goose, Kestrel, Peregrine, Roseate Tern, Skylark, Sand Martin, Swallow, Stonechat and Spotted Flycatcher. Of these species, it is very likely that Kestrel, Skylark, Sand Martin, Swallow, Stonechat and Spotted Flycatcher were breeding along or close to the Fingal coast. A pair of Peregrine Falcons was recorded breeding on the cliffs Howth and successfully raised young. The Red-throated Diver was clearly a passage migrant, and the Brent Geese were lingering wintering birds.

5.2.5.2 Ireland

Of the 92 species recorded, four were 'red-listed' and 30 were 'amber-listed', according to recent BirdWatch Ireland /RSPB criteria. The red-listed species recorded were, Roseate Tern, Curlew, Lapwing and Yellowhammer. All of these species are on the red list due to dramatically declining breeding populations. It is unlikely that Lapwing or Curlew breed in the immediate vicinity of the coast, although they utilise arable and pasture land, so may breed in appropriate sites further away from the coast. During the breeding season these species are more farmland species and the role of the coastal habitats during the summer seems to be rather limited reflected by the low numbers of birds recorded.

There is a major Roseate Tern colony on Rockabill Island and it is likely that individuals recorded throughout the survey were from that colony. The coastal waters along Fingal are certainly important feeding grounds for this species.

Of the amber-listed species recorded, Manx Shearwater (Newton 2002), Gannet, Black Guillemot, Peregrine, Skylark, Sand Martin, Swallow, Stonechat, Razorbill, Stock Dove, Cormorant, Common Tern and Guillemot were all breeding along or near to the Fingal coast. The six most relevant and significant amber listed species for the Fingal coast are Peregrine Falcon, Skylark, Sand Martin, Swallow, Stonechat and Shelduck. The other five species were encountered

regularly and recorded breeding in reasonable numbers along the coast.

5.2.6 Habitats and breeding birds

By considering the species present along the Fingal coast in terms of their ecological needs, we can gain a perspective on the relative importance of the different habitats present. Birds may utilise one habitat for nesting, while feeding in an entirely different one. It is important to consider all of the requirements of any species in order to undertake its protection.

5.2.6.1 Sea

The sea supports the numerous seabirds on the islands and the cliffs throughout the breeding season by providing them with fish. All of the auks and terns feed almost exclusively on fish, as do Cormorants and Shags. Many terns use coastal shallows as preferred hunting areas. The visibility is often better alongside sandy and rocky shores, due to lower turbidity. Other surface feeders (e.g. smaller gulls) feed on various floating animals or

scraps. This habitat undoubtedly yields the greatest biomass of food for breeding species along the Fingal coast.

5.2.6.2 Sandy Shore

Periodic tides are constantly providing detritus for scavengers on the sandy shores. Gulls and crows will readily capitalise on this food source. Pipits, wagtails and some waders will also pick their way along the tide line in search of invertebrates that seek shelter in or infest the flotsam and jetsam. Furthermore, these large flat expanses of open land offer safe havens for roosting birds as they can see any potential predators approaching from a considerable distance. Many gulls, terns and waders take advantage of such areas for this purpose. The sandy shingle shoreline at Portrane and Portmarnock point provide suitable breeding habitat for Ringed Plovers and in the past Little Terns have bred at both locations (Lovatt et al 1985, Cooney 1986, Merne 1987).



Figure 15.
The dunes, saltmarsh and shingle beaches of the Island Peninsula

5.2.6.3 Rocky Shore

Similarly to the sandy shore, these beaches can prove to be useful resting or roosting areas. There are a few rocky shore specialists (e.g. Turnstone and Rock Pipit) that feed preferentially along them. As with all tidal areas, they will also provide periodic detritus for scavengers. The northern part of the county holds the greatest number of such beaches.

5.2.6.4 Estuaries, Mudflats and Salt Marsh

There are three important estuaries within the Fingal region; these are Baldoyle Bay and the Rogerstown and Malahide Estuaries. The mouth of the Delvin River is another important example, as it contains salt marsh and mudflats.

Estuaries are rich in invertebrates for wading birds that frequent these estuaries by the thousands. By probing into the mud to different depths, a variety of bird species specialise on a variety of different prey. Smaller waders such as Dunlin and Knot will feed at a shallower depth than larger birds such as Godwits and Snipe. In summertime, the estuaries are fairly quiet, with Shelduck and their crèches and small numbers of early returning migrants such as Black-tailed Godwits the primary birds to be found. In the small creeks within the mudflats, Herons and Kingfisher can be seen hunting for small fish. The large mudflats also provide safe roosting areas for resting birds.

5.2.6.5 Dunes

Dunes cover a substantial part of the Fingal coast, with extensive dune systems at Rush, Portrane, Donabate and Portmarnock. All these dune systems however are covered by golf courses however. Only a few breeding species were recorded in the dunes, the most abundant was Meadow Pipit, with Skylarks and Linnets in smaller numbers. The habitat seems only suitable for ground nesting birds. The few clumps of brambles and bushes provided suitable habitat for Stonechat, Wren, Dunnock and Reed bunting, while Moorhen could be found in the small ponds in the dunes.

5.2.6.6 Cliffs

These are key breeding sites for a number of seabird species. The rocky cliffs of Howth Head are home to a number of important seabird colonies such as Kittiwakes, Fulmars, Herring gulls, Razorbill and Guillemots. Shags utilise the lower areas of the cliffs and Black Guillemots the boulder beaches at the base of the cliffs. The sedimentary cliffs of North County Dublin particularly around Loughshinny

Harbour, Barnageeragh and Balbriggan hold 3 small colonies of Fulmar. Furthermore a small colony of sand martins was found in a soft sedimentary cliff face near Drumanagh.

5.2.6.7 Heath

Although this habitat is poorly represented in the Fingal region, the small areas support another specialist group of birds. The area alongside the cliff path on Howth Head has a mixture of habitats, including heath. This area supports high numbers of Stonechats and Whitethroats as well as a variety of finches.

5.2.6.8 Farmland

This is a very variable habitat comprising of arable lands and grasslands lined by hedgerows and as a result may support many different species. Field hedges are favoured nesting sites for many small bird species, including thrushes, sparrows, finches, tits and some warblers. The majority of the agricultural land included in this survey was north of Rush. However, the Yellowhammer, an agricultural specialist and a red-listed species, was recorded in the Portmarnock area. Previous surveys have reported unusually high concentrations of Yellowhammers in the Balbriggan area (Delaney 1995). Rough grassland areas, like Drumanagh, support large numbers of Skylarks. Rich in seeds and invertebrates, grasslands provide the full range of dietary requirements for adults and young. Thrushes, sparrows and chats are also common here. Grasslands situated along the coast and the estuaries are also known to provide suitable roosting sites for geese and waders.

6. Discussion

6.1 Wintering Waterfowl

The three major estuaries on the Fingal coast support internationally important numbers of Black-tailed Godwit and Brent Geese as well as about 20 species of wildfowl and waders at the national importance level. The rocky coasts and beaches are nationally important for a further three wader species. Nationally and internationally important numbers of several species of wintering waterfowl also used areas of farmland and amenity grassland adjacent to the estuaries at sites such as Lowtherstone and Baldongan.

6.2 Seabirds

6.2.1 Currently Breeding Species

The islands of the Fingal coast are well known for their breeding colonies of seabirds (Casey *et al.* 1995, Cooney *et al.* 1989, Pierce 1998, Merne and Madden 1999, 2000) many of which are amber listed because of their localised breeding populations. Rockabill Island harbours the largest breeding colony of Roseate Tern in the North-East Atlantic and Europe and is the most significant breeding colony found along the coast of Fingal. Lambay Island holds Ireland's largest 'mixed' seabird colony and is of international importance. Irelands Eye is one of only five colonies of Gannets in Ireland and is the only one on the east coast (Merne and Madden 2000). The three large Cormorant colonies in Dublin - at Lambay, Ireland's Eye and St Patrick's Island (one of the Skerries Island)-collectively form a 'super-colony' that comprises the largest aggregation of the species anywhere in Britain or Ireland.

On the mainland, Howth Head is the most important site in Fingal for breeding seabirds including four amber listed species that are of national importance. These are: Guillemot, Black Guillemot, Razorbill and Puffin (Madden *et al.* 1999). Smaller colonies of fulmars were recorded along the coast in the coastal breeding survey.

6.2.2 A former breeding seabird species - the Little Tern

A seabird that was not encountered during the 2003 summer survey was the Little tern. This species, together with Artic and Common terns, are known to have bred on the sandy and shingle beaches at the end of the peninsulas of Portmarnock, the Island and Portrane (Lovatt *et al.* 1985, Cooney 1986, Merne 1987) and are occasionally seen along the Fingal coast. The last time Little terns bred in Fingal was at Portrane in 1991, after which these breeding grounds eroded away. At the other sites erosion of the breeding grounds has been taking place too



Figure 16.
Little Tern

but to a lesser extent. Disturbance due to recreational activities is considered to be the main cause for the absence of terns and Ringed Plovers the other shoreline breeder. The Little Tern has been subject to increasing conservation efforts in Ireland, most notably in Kilcoole, Co. Wicklow (Veldman 2004). Nesting sites are fenced off, panels have been erected to inform the public about the project and a warden has been appointed during the breeding season. It is suggested that similar measures on the former breeding sites in Fingal may help to bring back the Little Tern. Common and Artic Tern and Ringed Plover would benefit from these measures too.

6.3 Red & amber species on the coastal breeding survey

From the survey results it becomes clear that regarding the three 'red-listed' species Curlew, Lapwing and Yellowhammer none of these species was recorded as a breeding bird in the coastal habitats. These species are more farmland species and the role of the coastal habitats seems to be rather limited reflected by the low numbers of birds recorded.

The six most relevant and significant amber listed species for the Fingal coast are Peregrine Falcon, Skylark, Sand Martin, Swallow, Stonechat and Shelduck. Although these species are not particularly rare or threatened in Ireland, species like Skylark and Swallow have been declining over the last decades in Ireland and all are considered to be of European conservation concern. Given the European conservation status of these birds it is important that the breeding populations along the Fingal coast be protected as much as possible.

Most of the remaining amber listed species encountered are migratory species, either the last remaining winter visitors or passerines to their breeding grounds further north. This shows that the Fingal coast is also important to migratory species by providing the necessary feeding and roosting sites during the spring and summer months. Although these species may not breed in Fingal, their survival is also dependant on the protection of their feeding and roosting grounds situated along their migratory routes.

6.4 Habitat use through the year

Based on the habitat requirements of the most significant species found during the summer survey, it can be concluded that the rocky sea cliffs on the islands and the mainland are the most important habitat found along the Fingal coast because they provide the breeding sites for thousands of seabirds. The coastal waters are linked to the seabirds as well by providing the necessary food supply. The sedimentary sea cliffs are of limited interest to seabirds but do provide a home to a number of small colonies of Fulmar and Sand Martin. Although not particularly rich in bird species, the dunes do provide suitable breeding habitat for the amber listed species Skylarks and Shelduck. The sandy and shingle beaches provide for breeding sites for Ringed Plover and terns used to breed on these in the past. The sandy and rocky shorelines also provide for roosting and feeding grounds.

During the winter the estuaries and their adjacent areas are important feeding & roosting grounds. In this context, "winter" begins in July as waders such as Black tailed Godwits, Redshank and Curlew return early from breeding grounds further north. As the autumn progresses, they are joined by several other wader species, ducks and geese. Furthermore, the estuaries are also used by large numbers of passage migrants which pass through in spring and autumn. However, it is difficult to quantify this because short-stay and long-stay birds often can't be distinguished. The last pulses of waders may still be passing through on their way north in May – leaving June as the only really quiet month on the estuaries. The waders of the rocky shores are more limited to the late mid-autumn to spring period.

6.5 Threats

The most important threat to the summer breeding birds wintering waterfowl is disturbance by recreational activities. Due to the scenic qualities of the Fingal coast and population pressure of the rapidly growing Dublin urban area, the coastline is a popular area for recreational activities such as

walking, fishing, canoeing and sailing. Throughout the year, but particularly during the summer months, the coast is visited by a large number of visitors from Fingal, Dublin and abroad. Due to the large numbers of visitors the coastal habitats are subject to serious pressure of recreational activities.

6.5.1 Wetlands and Estuaries

Disturbance of these areas by walkers and dogs and some shooting may reduce the usefulness of these areas to wintering waterfowl, particularly in cold periods. The duck usage of the inner part of Broadmeadow Estuary is often disturbed by wind surfing and jet skis.

6.5.2 Beaches

The beaches at Portrane, Donabate and Portmarnock are very popular for walking, letting the dog out and fishing year round and particularly during the summer months. At the same time the beaches at the end of the peninsulas also provide or used to provide breeding and roosting sites for coastal bird species such as Ringed Plover and terns including Little Terns.

Because the golf courses on the peninsulas are not accessible to the general public, visitors tend to walk around the peninsula, thereby causing ongoing disturbance to the roosting and feeding grounds at the end. Cars, dune buggies and motorbikes, although less frequently used, further add to the problem.

In order to allow species such as Ringed Plover and Little Tern to breed and to protect important roosting sites throughout the year, it is suggested that pedestrian access to the end of the peninsulas be restricted. Furthermore dog walkers should not be allowed to run loose their pets in these sensitive areas, particularly areas used by wader roosts. Motorised vehicles should also not be allowed on the beaches.

6.5.3 The Fingal Coastal Walkway

A walkway that has the potential of causing severe disturbance to birds throughout the year and all along the coast and is the Fingal coastal walk. Sections of this walkway have already been developed from Howth to Malahide and from Skerries to Balbriggan and informally between Rush and Loughshinny, Donabate and Portrane and between Balbriggan and the Delvin River. The exact route of the walkway will have to be carefully chosen in order to limit the disturbance to breeding and roosting birds.



Figure 17.
Disturbance at the tip of Portrane Peninsula

6.5.4 Dunes and golfcourses

The dunes at Portmarnock, Malahide and Donabate are relatively undisturbed habitats and support large numbers of Skylarks and Meadow pipits. However, golf courses cover most of the dune areas in the Fingal region, including Rush and Baldoyle. Golf courses, although apparently offering a preserved green space, do not generally provide preferred breeding habitat (Dale 2004). Despite the relatively low disturbance offered by these facilities, the effects on the breeding bird populations are still significant (Hill *et al.* 1997, Finney *et al.* 2005). The dune areas near Sutton are far more disturbed by recreational activities and the breeding bird numbers there found to be lower.

Fingal are popular areas for recreational activities such as sailing and jet skiing. The simple physical presence of boats and jet skis may be enough to disturb some waterbird species even if they are not using any engines (Madsen 1998).

An effective technique to minimise disturbance from powered and unpowered watercraft is to create and enforce buffer zones around sensitive areas (Rodgers and Schwikert 2002).

6.5.5 Cliffs and Islands

The breeding areas for the seabirds in Fingal are generally subject to only limited disturbance due to their inaccessibility. Some disturbance is also caused by leisure crafts coming too close to the breeding colonies. The inshore coastal waters of

7. Conclusions & Recommendations

7.1 Conclusions

From the literature study and the summer breeding bird survey we can conclude that the habitats along the Fingal coast provide important breeding, feeding and roosting areas for birds throughout the year. In total 140 bird species can be found along the Fingal coast throughout the year. In winter, 56 species of waterfowl frequent the Fingal coast and during summer 92 bird species were recorded.

During the winter months Brent Goose and Black-tailed Godwit occur in internationally important numbers and another 25 species occur in nationally important numbers, particularly in and around the estuaries and the adjacent farmlands.

The islands off the Fingal coast hold the most important colonies of breeding seabirds. Rockabill Island holds the largest Roseate Tern colony of the North-East Atlantic and Europe and is the most important species found on the islands. Lambay Island holds Ireland's largest 'mixed' seabird colony and is of international importance. Ireland's Eye is one of only five colonies of Gannet in Ireland and is the only one on the east coast.

During the summer bird survey, four species were recorded that are of significant conservation concern and 30 are of medium conservation concern. The 11 most important breeding species for the mainland are Kittiwake, Guillemot, Black Guillemot, Razorbill, Puffin, Peregrine Falcon, Skylark, Sand Martin, Swallow, Stonechat and Shelduck. The most important species that was lost as a breeder from the Fingal coast since 1991 is the Little Tern.

In winter, the Rogerstown, Broadmeadow and Baldoyle estuaries and the adjacent farmland & amenity grasslands provide important feeding grounds for the numerous wildfowl and waders. In winter the rocky and sandy shorelines all along the coast, but particularly at the ends of the three peninsulas, act as roosting sites during high water. The same sites at the tips of the peninsulas provide breeding grounds for Ringed plover and potential breeding sites for Little tern during summertime. The extensive dunes systems of the peninsulas at Portrane, Donabate and Portmarnock provide important breeding grounds for Skylarks and Shelduck. The rocky sea cliffs at Howth Head are the most important sites for breeding seabirds and Howth Head is also the breeding and hunting territory of at least one pair of Peregrine falcons.

In order to protect the rich diversity of birds using the coastal habitats it is important that the different habitats used for breeding, feeding and roosting be protected in and outside the designated areas (SACs, SPAs and NHAs). The most important threat to the summer breeding, migratory and wintering birds is disturbance by recreational activities such as walking, shooting, motor biking and boating. At present the recreational disturbance is particularly a problem at the beaches and the dunes.

7.2 Recommendations

- To limit the impact of the Fingal Coastal Walkway on the coastal bird populations it is recommended that an EIS be carried out on the proposed route.
- Biodiversity action plans should be prepared for Little Tern, Ringed Plover and Yellowhammer. In particular, there should be feasibility study to assess the potential for habitat improvement works for breeding Little Tern and Ringed Plover at the tips of the peninsulas at Portrane, Portmarnock and Donabate. Habitat enhancement works aimed at Yellowhammer and other seed-eating passerine in the agricultural lands within the High Amenity Area along the Fingal coast should also be considered. For example, a mixed farming regime with spring cereals could be encouraged in these areas.
- More detailed information should be collected about the bird use of the areas adjacent to the estuaries with the aim of preparing a plan to enhance their usefulness to wintering waterfowl, particularly Brent Geese and to encourage breeding waders to return such as Redshank, Snipe and Lapwing.
- The most important breeding sites for seabirds are generally subject to minor levels of disturbance, but this may change due to increasing amenity pressure on the Fingal coast. To ensure the protection of these sites it is recommended to consider creating exclusion zones for leisure craft around the Islands and the seabird colonies on Howth Head.
- It is currently difficult to establish whether the populations of breeding amber listed species found on the mainland are stable, increasing or declining due to the lack of information. Accordingly it is recommended that more species specific monitoring be undertaken to assess the coastal populations.

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Appendix 1. Abbreviations Used & Definitions of Terms

CWC	Coveney Wildlife Consulting Ltd. www.ecoveney.ie
ha	Hectare(s), a measure of area. One hectare equals 10,000 m ² or 2.471 acres.
Nature Reserve (NR)	These are designated under Section 15 (state owned) and 16 (privately owned) of the 1976 Wildlife Act to be managed for the "general protection of the natural environment". There are 77 of them spread over the country and they included many types of habitats. They preceded the current system of NHAs and SACs. www.npws.ie/en/NatureReserves/
NHA	Natural Heritage Area, to be protected for nature conservation under the 2000 Wildlife Amendment Act.
NPWS	National Parks and Wildlife Service, which is now part of the Dept. of the Environment & Local Government. It was formerly part of Duchás, the State's heritage service that has now been abolished. www.npws.ie/
Priority & non-priority habitats	Habitats listed on Annex I of the EU Habitats Directive for consideration as SAC's are divided into two categories – priority habitats and non-priority habitats. On the former, only developments of overriding public importance for human health and safety or environmental benefit may take place - and only when there is a lack of alternative solutions. In addition ecological compensatory measures must be taken. On the latter habitats, similar constraints apply but economic and social factors can also be taken into account.
Ramsar site (R)	Wetlands of international importance. Those designated for birds hold 1% of the international population of one or more waterfowl species or 20,000 waterfowl in total. They are named after the Iranian town where the Convention was signed in 1971. In practice, Ramsar sites are protected by SPA designation. www.wetlands.org
Refuge for Fauna (RF).	These are designated under Section 17 of the 1976 Wildlife Act where particular species are to be "specially protected". There are seven of them, all remote sites for breeding seabirds.
SAC	Special Area of Conservation, designated for habitats listed on Annex I of and species listed on Annex II the EU Habitats Directive (92/43/EEC). The Habitats Directive is transposed into Irish law via the 1997 European Communities (Natural Habitats) Regulations, 1997 (94 of 1997).
SPA	Special Protection Area are designated to protect bird species listed on Annex I of the EU Wild Birds Directive (79/409/EEC) and migratory species. The Birds Directive is transposed into Irish law via the European Communities (Conservation of Wild Birds) Regulations (various dates) and the 1997 Natural Habitats Regulations (94 of 1997) under the 1976 Wildlife Act and the 2001 Wildlife Amendment Act.
waders	Small to medium sized birds of the oystercatcher, plover and sandpiper families that mainly feed in intertidal areas
waterfowl	Waders and wildfowl combined
wildfowl	Ducks, geese and swans

Appendix 2. Overview of bird families

8.2.1 Introduction

This appendix has two parts. The first part give briefs notes on the main characteristics of the bird families to which the species that are regularly recorded in Fingal belong.

8.2.2 GAVIIDAE – Divers

These birds feed principally on fish, caught mainly by underwater pursuit. They breed in the Arctic mainly in dispersed pairs, but will gather in small flocks in breeding area, especially in spring. They winter in temperate coastal waters.

8.2.3 PODICIPEDIDAE – Grebes

These diving birds feed mainly on aquatic arthropods and fish, obtained primarily by underwater pursuit. They are opportunists, readily colonizing newly flooded or excavated areas. Basic environmental conditions determine the location of nests, including; vegetation density, depth of water and distance from open water.

8.2.4 PROCELLARIIDAE – Petrels and Shearwaters

These seabirds feed chiefly on fish, cephalopods, and crustaceans, often as plankton as well as offal and carrion. Food obtained at sea, sometimes by scavenging. Some species follow ships and live on offal from fishing vessels or whalers. They nest ashore, on sea cliffs, high on slopes or escarpments. They are clumsy and feeble on land, avoiding open ground as much as possible. Most hole-nesting species are strictly nocturnal when visiting land; open-nesting species are largely diurnal at colonies.

8.2.5 SULIDAE – Gannets

These birds feed mainly on large fish, especially shoaling species (e.g. mackerel). They are strictly marine, inshore and offshore rather than pelagic, but they often make long daily journeys between fishing areas and breeding stations. They nest at colonial sites, usually in the open on inaccessible islands or islets, on cliffs or flat ground.

8.2.6 PHALACROCORACIDAE – Cormorants

Their food is mainly fish, in some species entirely so. These are caught underwater, mainly by surface-diving and pursuit or swimming along the seabed. They are typically colonial breeders, defending small nest-territories vigorously. They generally breed on inshore and offshore islands, and often nest in close proximity to other species of similar ecological requirements, such as herons. The nests are sited on the ground, in the open or in shelter; on cliff ledges and in trees. They are densely or loosely colonial, the size and density of the colonies usually correlating with the distance travelled to obtain food.

8.2.7 ARDEIDAE – Herons, Bitterns and Egrets

Their food is generally fish, amphibians, and insects and their

larvae; also, for some species, reptiles, small mammals, birds and their young, molluscs, and crustaceans. They nest in dense vegetation or in trees; sometimes on the ground in the open. When colonial, they often nest with other Herons, Egrets, Storks, Spoonbills or Ibis. The nests are piles of available vegetation, often interlocked twigs in tree-nesting species.

8.2.8 ANATIDAE – Ducks, Geese and Swans (Wildfowl)

These birds show a wide range in diet, from totally vegetable to totally animal. They also vary in their feeding habits, from terrestrial grazing to bottom diving. They may use fresh, brackish or salt water areas. They are generally solitary breeders, with cryptic nests in concealed sites.

8.2.9 ACCIPITRIDAE – Hawks

These birds feed on a wide variety of live prey, from mammals and birds to reptiles, amphibians, and fish and various invertebrates including termites. In species with a marked sexual size dimorphism (e.g. Accipiter hawks), a wider range of smaller prey may be taken by males. Their nests are placed in a variety of situations in trees or on cliff ledges and similar sites (including buildings). They build their own nests, mainly of branches and sticks. The nests of some species may be small platforms, especially when used only for a single season.

8.2.10 FALCONIDAE – Falcons

Larger falcons may take a wide variety of avian prey, usually the size of a pigeon, duck or grouse, but they are capable of killing much larger birds (or mammals) of greater size than themselves (and are often trained to do so by falconers). The Kestrel is adapted to take non-avian prey, hunting insects and other arthropods, reptiles, and small mammals by hovering while scanning the ground, then seizing them there. Large falcons are solitary breeders, with pairs widely dispersed. Their territories and eyries are often traditional, with a long history of occupation. The Kestrel is typically a solitary breeder, but may form small, loose colonies in some parts of its range. Peregrine falcons most frequently choose cliff sites, while Kestrels commonly use a hole or a fork in a tree, although they also choose holes or ledges on cliffs.

8.2.11 PHASIANIDAE – Pheasants

These birds rely extensively on open areas to forage. They eat roots, bulbs, tubers, grubs, and worms exposed. They also take shoots, seeds, grain, berries, buds, leaves, fallen fruit, snails, insects, etc. They nest on the ground in shelter of vegetation, or in dense cover.

8.2.12 RALLIDAE – Rails, Coots & Moorhen

These birds are usually omnivorous, although several species are largely or exclusively vegetarian. Thin-billed species probe in soft earth and leaf-litter for chiefly invertebrate food; thicker-billed

Appendix 2.

species generally tear off vegetation. They eat a wide variety of insects and their larvae, spiders, millipedes, worms, small molluscs, crustaceans, fish-spawn, and eggs and nestlings of other birds; also small fish and carrion, and occasionally birds; and seeds, shoots, green herbage, and submerged vegetation. Their nests are usually concealed in thick vegetation and often close to or in water. The nests are simply made from available vegetation.

8.2.13 HAEMATOPODIDAE – Oystercatchers

These birds feed predominantly on bivalve molluscs collected at coastal sites, particularly cockles and mussels. When inland they rely mainly on earthworms. They nest on the ground in the open or in short vegetation; in cultivated or uncultivated land; on cliff-tops or outcrops of rock. In recent years they have been recorded nesting on flat shingle roofs.

8.2.14 CHARADRIIDAE – Plovers

On breeding grounds these birds will feed on terrestrial and coastal invertebrates. Outside the breeding season, principally marine polychaete worms, crustaceans, and molluscs. They nest on open ground, normally raised slightly: e.g. on small mound, ridge between furrows, on flattened tussock. The Ringed Plover nests on the ground, usually in the open, and never far from water.

8.2.15 SCOLOPACIDAE – Sandpipers and Snipe

These birds feed chiefly on invertebrates. Food items are generally taken by probing in soft substrates (sand, mud, soil) and much less often from surface or vegetation. They nest on the ground in short vegetation or fairly short vegetation, and the nests are usually concealed.

8.2.16 LARIDAE – Gulls and Terns

Gulls are omnivorous; their diet includes vertebrates and invertebrates of suitable size, plant material, and rubbish. They often feed in flocks of hundreds on rubbish dumps or over shoals of fish at sea. Kittiwakes eat mainly marine fish and invertebrates obtained offshore; they also scavenge at fishing vessels and, in recent years, in estuaries and harbours. Terns feed mainly on marine fish, although some species take crustaceans too. Fish are caught largely by plunge-diving from the air. Gulls tend to nest on the ground in the open, or partly sheltered by vegetation, sometimes more or less concealed in tall growth; also on cliff-ledges and –tops, and in more recent years, on roofs and ledges of buildings. Kittiwakes are generally colonial, and normally nest on cliff-ledges, from a few to hundreds of metres above ground; normally close to the sea. Terns usually nest in the open, but may use the cover of vegetation. Their nests are found on sand, shingle, rock or among sparse dead grass. They often nest in colonies.

8.2.17 ALCIDAE – Auks

These birds feed mainly on marine fish, supplemented by some

invertebrate food, especially crustaceans. The birds dive from the surface to catch fish, and may take them from depths as great as 60m. They generally nest colonially on cliff-ledges or flat rocky surfaces; occasionally in crevices. However, the Puffin inhabits shallow burrows, which may be excavated by the birds themselves, or by Manx Shearwaters or rabbits.

8.2.18 COLUMBIDAE – Doves and Pigeons

These birds feed chiefly on seeds of cereals, legumes, and weeds; occasionally green leaves or buds, and invertebrates. Feral birds will also take a wide variety of artificial foods. Birds mostly feed on the ground, but some will feed in trees or amongst shrubs. The Rock Dove makes a nest on a natural or artificial ledge, or in a hole inside cave or deep crevice of cliff. The other species may use holes in trees or buildings; occasionally in rabbit burrows, in dense clumps of twigs in a tree, or even under bushes.

8.2.19 CUCULIDAE – Cuckoos

These birds feed almost entirely on insects, mostly caterpillars and beetles. These birds are nest parasites; their eggs are laid in nest of other species. Over 100 different host species have been recorded in Europe; in north-west Europe, the commonest are Meadow Pipit, Dunnock, and Reed Warbler.

8.2.20 APODIDAE – Swifts

These birds feed almost exclusively on flying insects and airborne spiders of small to moderate size. Prey are taken in flight. They tend to feed over water in rough weather when aquatic insects more likely to emerge than terrestrial ones. During the breeding season, they usually feed close to their colony, so they are limited to areas of reasonably abundant prey. They are generally colonial, nesting on top of flat surfaces under the eaves of buildings or in holes in walls. Occasionally they will nest in crevices in cliffs or quarries, or in trees.

8.2.21 ALCEDINIDAE – Kingfishers

As their name suggests, Kingfishers feed on fish. The kingfisher familiar to Irish birdwatchers is a member of the subfamily Alcedininae. These birds feed principally on freshwater fish, occasionally adding marine fish and aquatic insects to their diet. They are rarely gregarious and most frequently recorded individually. Nests are classically made at the ends of tunnels cut into vertical stream banks, although opportunistic birds may use holes in walls or even rabbit burrows.

8.2.22 ALAUDIDAE – Larks

These birds feed on plant and animal material at all times of year. Insects are especially important in summer, cereal grain and weed seeds in autumn, leaves and weed seeds in winter, and cereal grain in spring. They nest on the ground in the open or among short vegetation such as dunes, grassland or growing crops.

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8.2.23 HIRUNDINIDAE – Swallows and Martins

These birds feed almost entirely on small airborne invertebrates during the breeding season, especially flies. They migrate into Africa in autumn. There is a great deal of variation in nesting habits. Swallows often use small ledges against vertical surfaces, e.g. beams or window-ledges in building, whereas House Martins most frequently nest on the outer walls of buildings, under eaves or other overhangs (e.g. bridges) Sand Martins use holes in river banks, sand quarries, or sea-cliffs.

8.2.24 MOTACILLIDAE – Wagtails and Pipits

These birds feed mainly on invertebrates, but may eat some seeds during autumn and winter. They nest on or near the ground. Pied Wagtails may exploit a variety of artificial sites, whereas other species tend to rely on natural sites. Rock Pipits always nest near to the seashore.

8.2.25 TROGLODYTIDAE – Wrens

These birds feed mainly on insects, especially beetles; and spiders. Food is generally taken from the surface of leaves, twigs, and bark or from crevices in bark, rocks, walls, and leaf litter. They are very adaptable in their nesting sites, but essentially use a hollow, crevice, or hole in the side of a wall, tree, or steep bank.

8.2.26 PRUNELLIDAE – Accentors

These birds feed largely on insects, with a significant proportion of small seeds in winter. They nest in bushes, hedges, or low trees.

8.2.27 TURDIDAE

These birds feed on a wide variety of invertebrates, especially earthworms (Song Thrushes specialise on snails). They will feed on fruit throughout the year, but capitalise on autumn and winter bounties. They typically nest against the trunks of trees, with the nest supported by horizontal branches. They will also use suitable cavities in man-made structures, e.g. walls or buildings.

8.2.28 SYLVIIDAE – Warblers

These birds are mainly insectivorous during the breeding season, but exploit natural fruit resources at other times. Most species migrate south after breeding. Some wintering species will feed from domestic sources (e.g. bird tables). The nesting locations are specialised to match the breeding ecology of the particular species. Birds may nest on the ground or high in trees. They conceal their nests in thick vegetation, scrub or trees.

8.2.29 REGULIDAE – Goldcrests

These birds are generally insectivorous. They specialise on small bugs (*Hemiptera*), springtails (*Collembola*), caterpillars and spiders. Food is normally gleaned from twigs and branches in the canopy, and occasionally from the ground. Their nests are typically suspended in twigs near the end of a conifer branch.

8.2.30 MUSCICAPIDAE – Chats and Old World Flycatchers

These birds feed mainly on flying insects, especially flies, wasps, bees and ants. They make take berries occasionally during the breeding season, and more regularly in autumn as they prepare for migration. They usually build loosely-constructed nests on natural or artificial ledges which afford the incubating bird a good view. Locations include, living and dead trees and overgrown structures.

8.2.31 PARIDAE – Tits

These birds feed mainly on insects and spiders, plus seeds and fruit in autumn and winter. Their diet reflects seasonal and local changes in food abundance. They nest in holes in trees, tree-stumps, rock crevices, walls, or man-made structures. The smaller species may nest in holes on the ground when in direct competition with larger species.

8.2.32 CORVIDAE – Crows and Jays

These birds feed on both plant and animal material. Larger birds may kill animal food with their powerful bills, although animal food may be scavenged as carrion, refuse, etc. They also rob nests and take invertebrates. Plant material eaten is mainly cereals and fruits. Where carrion is plentiful, birds may take food mostly by scavenging. On the whole these are very opportunistic feeders and their diet will vary considerably according to habitat and local food sources. Nests are usually in a tree, but, where unavailable, they may be in a low bush or even on the ground. As the nests are, by necessity, quite large, they can be highly visible. Ravens often nest on inland or coastal cliffs.

8.2.33 STURNIDAE – Starlings

These birds may feed on both animal and plant material throughout the year, but animal food predominates in spring and is fed almost exclusively to nestlings. Plant material forms a high proportion of their diet in autumn and winter. Soft fruits are taken in summer and autumn, and seeds, including cereals, in autumn and winter. They forage mainly on ground in open areas of short grass or other short or sparse vegetation, e.g. cereal stubbles. They also exploit the intertidal zone, sewage treatment beds, refuse tips, farmyards and feeding areas for domestic stock. They prefer to nest in holes in trees, cliffs, buildings, pylons, et cetera, but will readily use nest-boxes.

8.2.34 PASSERIDAE – Sparrows

These birds feed on plant and animal material, the proportions varying with both season and availability. The plant food is principally seeds. Birds living in urban and suburban areas also take a wide range of household scraps. Nests are usually built in holes. The House Sparrow, as its name suggests, usually chooses man-made structures, whereas the Tree Sparrow uses trees, earth banks, buildings (to a lesser extent) and occasionally the foundations of large nests (e.g. of crows, herons or birds of prey).

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8.2.35 FRINGILLIDAE – Finches

These birds feed mainly on plant material (a large variety of seeds, cereals, fleshy fruits, buds and shoots), although many eat insects in the breeding season (and feed them to their young). They tend to nest in natural sites (e.g. trees, bushes and creepers).

8.2.36 EMBERIZIDAE – Buntings

These birds feed mainly on seeds and other plant material. They will take invertebrates in the breeding season and opportunistically throughout the remainder of the year. They usually nest in protected natural sites near to the ground (e.g. tussocks, thickets, etc).

8.2.37 Compilation of data on Fingal's birds.

This tables summarises information on the numbers of birds recorded on the Fingal coast during the survey, I-WeBS, Seabird 2000 survey and other published sources. These numbers are put the context of their Irish & European conservation status and populations as well as brief notes on their ecology on the Fingal coast.



Appendix 3. Site Synopses for pNHAs in the Study Area

SITE NAME: ROCKABILL ISLAND SITE CODE: 000207

This site is located about 6 km east-north-east of Skerries. It comprises two small granitic islets separated by a 20 m wide channel. One rock has a lighthouse (manned until 1989) with walled areas of soil and vegetation, dominated by Tree Mallow (*Lavatera arborea*). The other islet has very little vegetation apart from lichens.

Rockabill is an internationally important breeding site for Roseate Tern and is the most important colony in Europe.

In 1994, 394 pairs bred, an increase from 366 in 1991. Common Terns also breed with 289 pairs in 1994, and 20 pairs of Arctic Tern bred in the same year. Other breeding seabirds are Black Guillemot (20 pairs in 1994) and Kittiwakes (75 occupied sites in 1994).

Since 1989 the site has been warded by NPWS and IWC during the breeding season, and research and habitat management have been carried out. The site is owned by the Commissioners of Irish Lights and is a Refuge for Fauna and a Special Protection Area under the EU Birds Directive.

SITE NAME: SKERRIES ISLANDS SITE CODE: 001218

The Skerries Islands are a group of three islands situated between 1 km and 2 km east of Skerries. Shenick's Island is connected to the mainland by sandflats at low tide. The other two islands are St. Patrick's and Colt. Shenick's is composed of lower Palaeozoic rocks consisting of Ordovician volcanic, siltstones and shales. On the south-east of the island there is a patch of red breccia which rests unconformably on the Ordovician strata. The underlying strata are not horizontal - which is most frequently the case where an unconformity exists.

The islands are important bird islands. In 1992 15 pairs of Fulmar bred on Shenick's and three pairs on St. Patrick's Island. A recently established Cormorant colony on St. Patrick's Island was discovered in 1992 and had at least 35 pairs. Shags also breed on St. Patrick's, with 112 pairs in 1986. Large gulls breed on all three islands. Between 1984-86 the following were recorded: 89 pairs of Herring and Great Black-backed Gulls, mostly the former on Shenick's; c.250-300 pairs of Herring Gulls, c.200 pairs of Great Black-backed Gulls on St. Patrick's; 232 pairs of Herring and Great Black-backed Gulls, mostly the former on Colt.

In winter, the islands are frequented by geese and some waders. Brent Geese have been regular in recent years, usually in numbers less than 50. Barnacle and Greylag Geese also occur on occasions, seldom more than 50, these birds being from the Lambay populations. In January 1992, 250 Oystercatchers, 500 Golden Plover, 400 Lapwing and 600 Curlew were present. Up to three Short-eared Owls are regular

each winter, though as many as six have been seen. The owls occur most often on Shenick's and St. Patrick's Islands. The Shenick's Island is now a bird reserve managed by the Irish Wildbird Conservancy.

SITE NAME: ROGERSTOWN ESTUARY SITE CODE: 000208

Rogerstown estuary is situated about 2 km north of Donabate. It is a relatively small, narrow estuary separated from the sea by a sand and shingle bar. The estuary is divided by a causeway and narrow bridge, built in the 1840s to carry the Dublin-Belfast railway line. The site contains good examples of a number of habitats listed on Annex I of the EU Habitats Directive.

The estuary drains almost completely at low tide. The intertidal flats of the outer estuary are mainly of sands, with soft muds in the north-west sector and along the southern shore. Associated with these muds are stands of Cordgrass (*Spartina anglica*). Green algae (mainly *Enteromorpha* spp. and *Ulva lactuca*) are widespread and form dense mats in the more sheltered areas. The intertidal angiosperm, Beaked Tasselweed (*Ruppia maritima*), grows profusely in places beneath the algal mats. The Lugworm (*Arenicola marina*) is common in the outer estuary and large Mussel beds (*Mytilus edulis*) occur at the outlet to the sea.

The area of intertidal flats in the inner estuary is reduced as a result of the local authority refuse tip on the north shore. The sediments are mostly muds, which are very soft in places. Cordgrass (*Spartina anglica*) is widespread in parts, and in summer, dense green algal mats grow on the muds. In the extreme inner part, the estuary narrows to a tidal river.

Saltmarsh fringes parts of the estuary, especially the southern shores and parts of the outer sand spit. Common plant species of the saltmarsh include Sea Rush (*Juncus maritimus*), Sea Purslane (*Halimione portulacoides*) and Common Saltmarsh-grass (*Puccinellia maritima*). Salt meadows and wet brackish fields occur along the tidal river. Low sand hills occur on the outer spit, including some small areas of fixed dunes and Ammophila dunes. Fine sandy beaches and intertidal sandflats occur at the outer part of the estuary.

Two plant species, which are legally protected under the Flora (Protection) Order, 1999, occur within the site: Hairy Violet (*Viola hirta*) occurs on the sand spit and Meadow Barley (*Hordeum secalinum*) occurs in the saline fields of the inner estuary. This species has declined apparently due to reclamation and embankment of lands fringing estuaries. Another rare species, Green-veined Orchid (*Orchis morio*), occurs in the sandy areas of the outer estuary.

Rogerstown Estuary is an important waterfowl site, with Brent

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Geese having a population of international importance (1176). A further 16 species have populations of national importance: Greylag Goose (186), Shelduck (785), Teal (584), Pintail (30), Shoveler (69), Oystercatcher (1028), Ringed Plover (152), Golden Plover (1813), Grey Plover (245), Lapwing (4056), Knot (2076), Dunlin (2625), Sanderling (57), Black-tailed Godwit (272), Curlew (1549), Redshank (732) and Greenshank (22) [All counts are average peaks over four winters 1994/95 - 1997/98]. The presence of a significant population of Golden Plover is of note and this species is listed on Annex I of the EU Birds Directive. The estuary is a regular staging post for autumn migrants, especially Green Sandpiper, Ruff, Little Stint, Curlew Sandpiper and Spotted Redshank.

Little Tern has bred at the outer sand spit, but much of the nesting area has now been washed away as a result of erosion. The maximum number of pairs recorded was 17 in 1991. Ringed Plover breed in the same area.

The outer part of the estuary has been designated a statutory Nature Reserve and a Special Protection Area under the EU Birds Directive. The inner estuary has been damaged by the refuse tip which covers 40 hectares of mudflat.

This site is an good example of an estuarine system, with all typical habitats represented, including several listed on Annex I of the EU Habitats Directive. Rogerstown is an internationally important waterfowl site and has been a breeding site for Little Terns. The presence within the site of three rare plant species adds to its importance.

SITE NAME: LAMBAY ISLAND SITE CODE: 000204

Lambay Island is a large (250 ha.) inhabited island lying 4 km off Portrane on the north Co. Dublin coast. It is privately owned and is accessible by boat from Rogerstown Quay.

The island rises to 127 m and is surrounded by steep cliffs on the north, east and south slopes. These cliffs contain good diversity in height, slope and aspect. The west shore is low-lying and the land slopes gently eastwards to the summit in the centre of the island. The underlying geology is very varied, but is dominated by igneous rocks (of andesitic type) and ash. Also present are shales and limestones of Silurian origin, limestone conglomerates, and shales from the Old Red Sandstone era. The bedrock is exposed on the fringing cliffs and in rocky outcrops; elsewhere it is overlain by varying depths of glacial drift.

Most of the western third of the island is intensively farmed (mostly pasture), and there are small areas of parkland, deciduous and coniferous woodland, buildings, walled gardens and the harbour. Much of the rest of the island is a mixture of

less intensively grazed land, rocky outcrops, patches of Bracken (*Pteridium aquilinum*) and Bramble (*Rubus fruticosus agg.*), and cliff slopes with typical maritime vegetation e.g. Thrift (*Armeria maritima*), Sea Campion (*Silene maritima*), Rock Sea-spurrey (*Spergularia rupicola*) and Spring Squill (*Scilla verna*). Some sheltered gullies have small areas of scrub woodland dominated by Elder (*Sambucus nigra*). Vegetated sea cliffs are listed on Annex I of the EU Habitats Directive.

Lambay supports the only colony of Grey Seals on the east coast. Although it is a long established breeding site for this species, it remains relatively small (45-60 individuals) probably because of the restricted area suitable for breeding. Grey Seals are listed on Annex II of the EU Habitats Directive. A herd of Fallow Deer (up to c. 80) roams the higher parts of the island, and a small number of wallabies (c. 10) survive in a feral state. This island may also hold the last Irish population of the Ship Rat, a species listed in the vertebrate Red Data Book.

Lambay Island is internationally important for its breeding seabirds. The most numerous species is the Guillemot, with almost 52,000 individuals on the cliffs. Razorbills (3,646 individuals), Kittiwakes (5,102 individuals), Herring Gulls (2,500 pairs), Cormorants (605 pairs), Shags (1,164 pairs), Puffins (235 pairs), and small numbers of Great and Lesser Black-backed Gulls also breed [all figures from 1995]. Between 1991 and 1995 Fulmar numbers varied between 573-737 pairs. There is a small colony (<100 pairs) of the nocturnal Manx Shearwater on the island and up to 20 pairs of Common Terns have bred in recent years. A few Black Guillemots have been recorded on Lambay, but it is not clear if they breed. A pair of Peregrines are known to breed on the island.

In winter the most notable bird species on Lambay Island is the Greylag Goose with numbers peaking at 1,000, though in recent winters there has been a decline to 400-700 individuals. There is also a small wintering flock of Barnacle Geese (up to 50), and recently Brent Geese (up to 100) have started to occur regularly. Small numbers of Great Northern Diver and Red-throated Diver are also present in winter.

An intensive survey of the natural history of Lambay Island was carried out in 1906 and published in the Irish Naturalist. A similar, comparative survey has been carried out in the early 1990's and it is hoped this will be published soon. With this background, Lambay is an excellent site for studies of marine biology, terrestrial fauna and flora, geology, geomorphology and ecology. The island has been maintained as a wildlife sanctuary by its owners and no threats are envisaged should the present land use continue. Rodents may be causing some damage to the populations of burrow-nesting sea-birds.

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Lambay Island has good examples of vegetated sea cliffs, a habitat listed on Annex I of the EU Habitats Directive, and these cliffs hold internationally important populations of sea-birds. The colony of the Annex II species Grey Seal adds further interest to the site.

SITE NAME: MALAHIDE ESTUARY SITE CODE: 000205

Malahide Estuary is situated immediately north of Malahide and east of Swords. It is the estuary of the River Broadmeadow. The site is divided by a railway viaduct.

The outer part of the estuary is mostly cut off from the sea by a large sand spit, known as "the island". The outer estuary drains almost completely at low tide, exposing sand and mud flats. There is a large bed of Eelgrass (*Zostera noltii* and *Z. angustifolium*) in the north section of the outer estuary, along with Tassel Weed (*Ruppia maritima*) and extensive mats of green algae (*Enteromorpha* spp., *Ulva lactuca*). Cordgrass (*Spartina anglica*) is also widespread in this sheltered part of the estuary.

The dune spit has a well developed outer dune ridge dominated by Marram Grass (*Ammophila arenaria*). The dry areas of the stabilised dunes have a dense covering of Burnet Rose (*Rosa pimpinellifolia*), Red Fescue (*Festuca rubra*) and species such as Yellow Wort (*Blackstonia perfoliata*), Field Gentian (*Gentianella amarella*), Hound's Tongue (*Cynoglossum officinale*), Carline Thistle (*Carlina vulgaris*) and Pyramidal Orchid (*Anacamptis pyramidalis*). Much of the interior of the spit is taken up by a golf course, though there are a number of rough areas and slacks. The inner stony shore has frequent Sea-holly (*Eryngium maritimum*). Well-developed saltmarshes occur at the tip of the spit.

The inner estuary does not drain at low tide apart from the extreme inner part. Here, patches of saltmarsh and salt meadows occur, with Sea Aster (*Aster tripolium*), Sea Plantain (*Plantago maritima*) and Sea Clubrush (*Scirpus maritimus*). Tassel Weed (*Ruppia maritima*) occurs in one of the channels. The site includes a fine area of rocky shore south-east of Malahide.

The estuary is an important wintering bird site. Average maximum counts during the 1984/85-1986/87 period were Brent Geese 851; Great Crested Grebe 73; Mute Swan 106; Shelduck 335; Pochard 327; Goldeneye 268; Red-breasted Merganser 62; Oystercatcher 841; Golden Plover 1,500; Grey Plover 97; Redshank 415; Wigeon 119; Teal 235; Ringed Plover 43; Knot 130; Dunlin 465; Greenshank 16. The Brent population is of international importance. The high numbers of diving birds reflects the lagoon-type nature of the inner estuary.

The estuary also attracts migrant species such as Ruff, Curlew Sandpiper, Spotted Redshank and Little Stint. Breeding birds of the site include Ringed Plover, Shelduck and Mallard. Up to the 1950s there was a major tern colony at the southern end of the island and the habitat remains suitable for these birds.

The inner part of the estuary is heavily used for water sports. A section of the outer estuary has recently been claimed for a marina and housing.

This site is a fine example of an estuarine system with all the main habitats represented. The site is important ornithologically, with a population of Brent Geese of international significance.

SITE NAME: BALDOYLE BAY SITE CODE: 000199

Baldoye Bay extends from just below Portmarnock village to the west pier at Howth, Co. Dublin. It is a tidal estuarine bay protected from the open sea by a large sand-dune system. Two small rivers, the Mayne and the Sluice, flow into the bay. The site contains four habitats listed on Annex I of the EU Habitats directive: *Salicornia* mud, Mediterranean salt meadows, Atlantic salt meadows and Tidal mudflats.

Large areas of intertidal flats are exposed at low tide. These are mostly sands but grade to muds in the inner sheltered parts of the estuary. Extensive areas of Common Cord-grass (*Spartina anglica*) occur in the inner estuary. Both the Narrow-leaved Eelgrass (*Zostera angustifolia*) and the Dwarf Eelgrass (*Z. noltii*) are also found here. During summer, the sandflats of the sheltered areas are covered by mats of green algae (*Enteromorpha* spp. and *Ulva lactuca*).

The sediments have a typical macrofauna, with Lugworm (*Arenicola marina*) dominating the sandy flats. The tubeworm *Janice conchilega* is present in high densities at the low tide mark and the small gastropod *Hydrobia ulvae* occurs in the muddy areas, along with the crustacean *Corophium volutator*.

Areas of saltmarsh occur near Portmarnock Bridge and at Portmarnock Point, with narrow strips along other parts of the estuary. Species such as Glasswort (*Salicornia* spp.), Sea-purslane (*Halimione portulacoides*), Sea Plantain (*Plantago maritima*) and Sea Rush (*Juncus maritimus*) are found here. Portmarnock Spit formerly had a well-developed sand dune system but this has been largely replaced by golf courses and is mostly excluded from the site. A few dune hills are still intact at Portmarnock Point, and there are small dune hills east of Cush Point and below the Claremont Hotel. These are mostly dominated by Marram (*Ammophila arenaria*), though Lyme-grass (*Leymus arenarius*) is also found.

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The site includes a brackish marsh along the Mayne River. Soils here have a high organic content and are poorly drained, and some pools occur. Rushes (*Juncus spp.*) and salt tolerant species such as Common Scurvygrass (*Cochleria officinalis*) and Greater Sea-spurrey (*Spergularia media*) are typical of this area. Knotted Hedge-parsley (*Torilis nodosa*), a scarce plant in eastern Ireland, has been recorded here, along with Brackish Water-crowfoot (*Ranunculus baudotti*), a species of brackish pools and ditches which has declined in most places due to habitat loss.

Two plant species, legally protected under the Flora (Protection) Order, 1999, occur in the Mayne marsh: Borrer's Saltmarsh-grass (*Puccinellia fasciculata*) and Meadow Barley (*Hordeum secalinum*).

Baldoyle Bay is an important bird site for wintering waterfowl and the inner part of the estuary is a Special Protection Area under the EU Birds Directive as well as being a Statutory Nature Reserve. Internationally important numbers of Pale-bellied Brent Geese (418) and nationally important numbers of two Annex I Birds Directive species - Golden Plover (1,900) and Bar-tailed Godwit (283) - have been recorded. Four other species also reached nationally important numbers: Shelduck (147), Pintail (26), Grey Plover (148) and Ringed Plover (218) - all figures are average peaks for four winters 1994/95 to 1997/1998. Breeding wetland birds at the site include Shelduck, Mallard and Ringed Plover. Small numbers of Little Tern, a species listed on Annex I of the EU Birds Directive, have bred on a few occasions at Portmarnock Point but not since 1991.

Because the area surrounding Baldoyle Bay is densely populated, the main threats to the site include visitor pressure, disturbance to wildfowl and dumping. In particular, the dumping of spoil onto the foreshore presents a threat to the value of the site.

Baldoyle Bay is a fine example of an estuarine system. It contains four habitats listed on Annex I of the EU Habitats Directive and has two legally protected plant species. The site is also an important bird area and part of it is a Special Protection Area under the EU Birds Directive, as well as being a Statutory Nature Reserve. It supports internationally important numbers of Brent Geese and nationally important numbers of six other species including two Annex I Birds Directive species.

SITE NAME: IRELAND'S EYE SITE CODE: 000203

Ireland's Eye is located about 1.5 km north of Howth in Co. Dublin. It is a cambrian island with quartzite which forms spectacular cliffs on the north-east side. Elsewhere much of the area is covered by drift. There is a Martello tower at the west

end of the island and an ancient ruined church in the middle.

The drift soils support a plant community of Bracken (*Pteridium aquilinum*) and various grasses, especially Red Fescue (*Festuca rubra*), along with Bluebells (*Hyacinthoides non-scripta*), Common Dog-violet (*Viola riviniana*) and Pennywort (*Umbilicus rupestris*). The thinner soils have some interesting species, including Spring Squill (*Scilla verna*), Knotted Clover (*Trifolium striatum*) and Field Mouse-ear (*Cerastium arvense*). Bloody Cranesbill (*Geranium sanguineum*) has also been recorded from here.

The maritime flora includes Rock Spurrey (*Spergularia rupicola*), Sea Stork's-bill (*Erodium maritimum*), Rock Samphire (*Crithmum maritimum*), Golden Samphire (*Inula crithmoides*), Sea Lavender (*Limonium binervosum*), Meadow Rue (*Thalictrum minor*), Portland Spurge (*Euphorbia portlandica*) and Tree Mallow (*Lavatera arborea*).

A small area of shingle vegetation occurs above the sandy beach at Carrigeen Bay on the western side of the island. This habitat is listed on Annex I of the EU Habitats Directive. Species such as Curled Dock (*Rumex crispus*), Silverweed (*Potentilla anserina*) and Spear-leaved Orache (*Atriplex prostrata*) occur, while the rare Sea Kale (*Crambe maritima*), a very characteristic species of this habitat, has been known from this site since 1894 and was recorded as recently as 1981. Sea Kale is listed as threatened in the Irish Red Data Book. Also occurring on the sandy/shingle beach is the Red Data Book species Henbane (*Hyoscyamus niger*).

Ireland's Eye is of national importance for breeding seabirds. In 1999 the following were counted: Fulmar 70 pairs; Cormorant 306 pairs; Shag 32 pairs; Lesser Black-backed Gull 1 pair; Herring Gull c.250 pairs; Great Black-backed Gull c.100 pairs; Kittiwake 941 pairs; Guillemot 2191 individuals; Razorbill 522 individuals. A Gannet colony was established on the stack at the east end of the island in the late 1980s, and in 1990 142 pairs bred. Puffin was formerly common, but nowadays not more than 20 individuals occur. Black Guillemot also breeds, with 15 individuals recorded in 1998. Several pairs each of Oystercatcher and Ringed Plover breed, while the island is a traditional site for Peregrine Falcon.

In winter small numbers of Greylag and Pale bellied Brent Geese graze on the island.

This uninhabited marine island has a well developed maritime flora and nationally important seabird colonies. Owing to its easy access and proximity to Dublin it has great educational and amenity values.

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SITE NAME: HOWTH HEAD SITE CODE: 000202

Howth Head is a rocky headland situated on the northern side of Dublin Bay. The peninsula is composed of Cambrian slates and quartzites, joined to the mainland by a post glacial raised beach. Limestone occurs on the north-west side while glacial drift is deposited against the cliffs in places. Howth Head contains sea cliffs and dry heaths, two habitats listed on Annex I of the EU Habitats Directive.

A mosaic of heathland vegetation occurs on the slopes above the sea cliffs and in the area of the summit. This is dominated by Western Gorse (*Ulex gallii*), Heather (*Calluna vulgaris*), Bell Heather (*Erica cinerea*) and localised patches of Bracken (*Pteridium aquilinum*). In more open areas species such as English Stonecrop (*Sedum anglicum*), Wood Sage (*Teucrium scorodonia*) and Navelwort (*Umbilicus rupestris*) occur, along with some areas of bare rock.

The heath merges into dry grassland in places, with Bent Grasses (*Agrostis spp.*), Red Fescue (*Festuca rubra*), Cock's-foot (*Dactylis glomerata*), Yorkshire-fog (*Holcus lanatus*), Sweet Vernal-grass (*Anthoxanthum odoratum*), Lady's Bedstraw (*Galium verum*), Ribwort Plantain (*Plantago lanceolata*) and Yellow-wort (*Blackstonia perfoliata*). In the summit area there are a few wet flushes and small bogs, with typical bog species such as Bog Asphodel (*Narthecium ossifragum*) and Sundew (*Drosera spp.*). Patches of scrub, mostly Hawthorn (*Crataegus monogyna*), Blackthorn (*Prunus spinosa*), Willow (*Salix spp.*) and Downy Birch (*Betula pubescens*), occur in places.

The maritime flora is of particular interest as a number of scarce and local plants have been recorded, including Golden-samphire (*Inula crithmoides*), Sea Wormwood (*Artemisia maritima*), Grass-leaved Orache (*Atriplex littoralis*), Frosted Orache (*Atriplex laciniata*), Sea Spleenwort (*Asplenium marinum*), Bloody Crane's-bill (*Geranium sanguineum*), Spring Squill (*Scilla verna*), Sea Stork's-bill (*Erodium maritimum*) and three Clover species: Knotted Clover (*Trifolium striatum*), Bird's-foot Clover (*T. ornithopodioides*) and Western Clover (*T. occidentale*).

Rock outcrops which are important for lichens are distributed widely around Howth Head. The richest area for lichens appears to be around Balscadden quarries. In addition, the Earlscliffe area is of national importance for lichens and is the type locality for the black, yellow and grey lichen zonation.

A number of Red Data Book plant species, which are legally protected under the Flora Protection Order, have been recorded at this site - Green-winged Orchid (*Orchis morio*), Bird's-foot

(*Ornithopus perpusillus*), Hairy Violet (*Viola hirta*), Rough Poppy (*Papaver hybridum*), Pennyroyal (*Mentha pulegium*), Heath Cudweed (*Omalothea sylvatica*) and Betony (*Stachys officinalis*).

Curved Hard-grass (*Parapholis incurva*), a species which had not previously been recognized as occurring in Ireland, was found at Red Rock in 1979.

The site is of national importance for breeding seabirds. A census in 1985-87 recorded the following numbers: Fulmar (105 pairs), Shags (25 pairs), Herring Gulls (70 pairs), Kittiwake (c.1,700 pairs), Guillemot (585 birds), Razorbill (280 birds). In 1990, 21 pairs of Black Guillemot were counted.

A number of rare invertebrates have been recorded from the site: the insect *Phaonia exoleta* (Order Diptera) occurs in the woods at the back of Deerpark and has not been seen anywhere else in Ireland, while the ground beetle *Trechus rubens* (Order Coleoptera) is found on storm beaches on the eastern cliffs. A hoverfly, known from only a few Irish locations, *Sphaerophoria batava* (Order Diptera) is present in the heathland habitat within the site.

The main landuse within the area is recreation, mostly walking and horse-riding, and this has led to some erosion within the site. Fires also pose a danger to the site. There may also be a threat in some areas from further housing development.

Howth Head displays a fine range of natural habitats, including two Annex I habitats, within surprisingly close proximity to Dublin city. The site is also of scientific importance for its seabird colonies, invertebrates and lichens. It also supports populations of at least two legally protected plant species and several other scarce plants.

Appendix 4. Ramsar Site Descriptions

from <http://www.wetlands.org>

Site: Baldoye Bay 7IE011	Designation date: 25/10/1988	
Coordinates: 53°24'N 006°08'W	Elevation: 0 m	Area: 203 ha
Location:	The site is situated about 10 km northeast of Dublin City, in County Dublin, eastern Ireland.	
Criteria:	(Criteria codes were not stipulated by the Contracting Party).	
Importance:	The site is internationally important as a wintering ground for the goose <i>Branta bernicla hrota</i> , and supports a variety of other migratory waterfowl species.	
Wetland Types:	F, E, G, H (listed in descending order of dominance) Baldoye estuary is a tidal bay protected from the sea by a large sand dune system. The bay is the estuary of some small streams. Large areas (95% of the area) dry out when mudflats are exposed at low tide.	
Biological/Ecological notes:	At low tide, extensive beds of <i>Spartina</i> are revealed on the mudflats in the northern part of the site. Other waterbirds include nationally important numbers of <i>Tadorna tadorna</i> , <i>Anas acuta</i> , <i>Pluvialis apricaria</i> , <i>P. squatarola</i> , <i>Limosa l. islandica</i> , <i>L. lapponica</i> and three other species.	
Hydrological/Physical notes:	No information provided.	
Human Uses:	Human activities include low levels of recreational boating and fishing. The site is also used for bait digging and shooting.	
Conservation Measures:	The site was designated as a nature reserve and is a European Union Special Protection Area for wild birds. During the late 1980s a planning application to impound the bay as part of a large-scale suburban development, was rejected. Limited shooting is allowed under licence by the National Parks and Wildlife Service. The development of commercial bait digging is being monitored to see if impacts are significant. Interpretative materials are now being prepared for the Reserve.	
Adverse Factors:	There are some on-going, relatively minor problems of disturbance from traditional uses of the site. A potentially more serious problem has been the recent development of commercial bait digging.	
Site Management:	No information provided.	

Based on the Ramsar site information provided. Please see "Site Description" in the Introduction for more details about the structure and content of Directory descriptions.

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Site: Broadmeadow Estuary 7IE025	Designation date: 11/06/1996	
Coordinates: 53°27'N 006°10'W	Elevation: 0 m	Area: 546 ha
Location:	The site is situated immediately north of Malahide and east of Swords. It is the estuary of the River Broadmeadow.	
Criteria:	[Criteria codes were not stipulated by the Contracting Party].	
Importance:	This site is a fine example of an estuarine system with all the main habitats represented. The site is ornithologically important, with a population of Brent geese (<i>Branta bernicla hrota</i>) of international significance. The average maximum count of Brent geese during the 1984/85 – 1986/87 period was 851.	
Wetland Types:	F, G, (H, D) The estuary is mostly cut off from the sea by a large sand spit, known as "the island." The outer estuary drains almost completely at low tide, exposing sand and mud flats. Well-developed saltmarshes occur at the tip of the spit. Patches of saltmarsh and salt meadows occur in the inner estuary that does not drain at low tide. The site includes a fine area of rocky shore southeast of Malahide.	
Biological/Ecological notes:	There is a large bed of eelgrass <i>Zostera noltii</i> and <i>Z. angustifolium</i> in the north section of the outer estuary, along with <i>Ruppia maritima</i> and extensive mats of the green algae <i>Enteromorpha spp.</i> and <i>Ulva lactuca</i> . Cord grass <i>Spartina anglica</i> is also widespread in this sheltered part of the estuary. The dune spit has a well-developed outer dune ridge dominated by <i>Ammophila arenaria</i> . The dry areas of the stabilised dunes have a dense covering of <i>Rosa spinosissima</i> , <i>Festuca rubra</i> and species such as <i>Blackstonia perfoliata</i> , <i>Gentianella amarella</i> , <i>Cynoglossum officinale</i> , <i>Carlina vulgaris</i> and <i>Anacamptis pyramidalis</i> . The inner stoney shore has frequent <i>Eryngium maritimum</i> . Present in the saltmarsh and salt meadows are <i>Aster tripolium</i> , <i>Plantago maritima</i> and <i>Scirpus maritimus</i> . <i>Ruppia maritima</i> occurs in one of the channels. The estuary is an important wintering bird site for <i>Podiceps cristatus</i> , <i>Cygnus olor</i> , <i>Tadorna tadorna</i> , <i>Aythya ferina</i> , <i>Bucephala clangula</i> , <i>Mergus serrator</i> , <i>Haematopus ostralegus</i> , <i>Pluvialis apricaria</i> , <i>P. squatarola</i> , <i>Tringa totanus</i> , <i>Anas penelope</i> , <i>A. crecca</i> , <i>Charadrius hiaticula</i> , <i>Calidris canutus</i> , <i>C. alpina</i> and <i>Tringa nebularia</i> . The estuary also attracts migrant species such as <i>Philomachus pugnax</i> , <i>Calidris ferruginea</i> , <i>C. minuta</i> and <i>Tringa erythropus</i> . Breeding birds of the site include <i>Charadrius hiaticula</i> , <i>Tadorna tadorna</i> and <i>Anas platyrhynchos</i> . Up to the 1950s, there was a major tern <i>Sterna hirundo</i> colony at the southern end of the island and the habitat remains suitable for these birds.	
Hydrological/Physical notes:	Rough areas and slacks cover most of the interior of the spit. Only the innermost part of the inner estuary drains at low tide.	
Human Uses:	A railway viaduct divides the site. The inner part of the estuary is heavily used for water sports. Much of the interior of the spit is taken up by a golf course. A section of the outer estuary has recently been claimed for a marina and housing.	
Conservation Measures:	The site is a European Union Special Protection Area for wild birds.	
Adverse Factors:	Threats to the site come from recreation and housing development.	
Site Management:	No information provided.	

Appendix 4.

Site: Rogerstown Estuary 7IE010	Designation date: 25/10/1988	
Coordinates: 53°30'N 006°08'W	Elevation: 0 m	Area: 195 ha
Location:	The site is approximately 19 km northeast of Dublin City, in County Dublin, eastern Ireland. The nature reserve and Ramsar Site (covering about 80% of the bay) lie to the east of the railway line (viaduct) bisecting the estuary.	
Criteria:	(Criteria codes were not stipulated by the Contracting Party). Importance: Over 90% of the bay is exposed at low tide, revealing extensive areas of mud, sand and gravel which provide rich feeding grounds for waterfowl. The tidal flats hold large numbers of wintering water birds; in particular, the site is internationally important for the pale-bellied Brent geese <i>Branta bernicla hrota</i> . Increased numbers of this subspecies since the 1970s have been recorded. Up to 5,300 wildfowl (ducks, geese and swans) and up to 7,800 waders visit the area.	
Wetland Types:	F, E, G, H (listed in descending order of dominance) Rogerstown estuary is a small tidal bay that is sheltered from the open sea by a broad sand and shingle spit. The estuary includes several small rivers/streams that flow in at the western and northwestern sides. Saltmarsh and wet meadows adjoin the sand/mudflats.	
Biological/Ecological notes:	The mudflats support beds of green algae (<i>Enteromorpha</i>) and <i>Spartina anglica</i> , although the most extensive areas of the latter occur outside the Ramsar Site. Other wintering waterbirds which visit the site include <i>Tadorna tadorna</i> , <i>Anas penelope</i> , <i>A. platyrhynchos</i> , <i>A. crecca</i> , <i>Haematopus ostralegus</i> , <i>Vanellus vanellus</i> , <i>Pluvialis squatarola</i> , <i>Limosa l. islandica</i> , <i>Numenius arquata</i> , <i>Tringa totanus</i> , <i>Calidris alpina</i> and <i>C. canutus</i> .	
Hydrological/Physical notes:	At low tide, a small area comprising a permanent deep-water channel is exposed. Because of the constriction of tidal flow between the inner and outer portions of the viaduct, drainage from the inner estuary continues for 3.5 hours after low tide. However, high tide coincides in both parts of the estuary.	
Human Uses:	Bait and shellfish collection occurs occasionally within the reserve. A waste dump for domestic and non-toxic industrial waste operates in the area.	
Conservation Measures:	The outer area of the estuary was designated as a nature reserve in April 1988. The whole of Rogerstown Estuary has been designated a European Union Special Protection Area for birds. It is also in the international network of sister reserves for <i>Branta bernicla hrota</i> . The highest numbers of wintering waterbirds were recorded at Rogerstown in the early 1970s, following the introduction of a no-shooting area at the site in 1971. However, numbers have fallen subsequently for most species. Dublin County Council is responsible for monitoring the impact of the waste tip on Rogerstown estuary. The National Parks and Wildlife Service is charged with ensuring the well being of the area. The degree of disturbance from bait and shellfish collection activities is unknown but is thought to be relatively minor; the situation is being monitored.	
Adverse Factors:	Dublin County Council has operated a waste tip for domestic and non-toxic industrial waste on the northern side of the river estuary west of the railway (i.e. outside the Ramsar Site) since 1970. The tip was extended in 1978 and by 1990 covered 40 ha. Dublin County Council is currently seeking permission to further extend the waste dump. The dump is not lined and there is no containment or treatment of leachate, and there are concerns that the leachate may adversely affect the site itself, as well as cause direct losses of feeding areas outside the Ramsar Site. The dump contains toxic heavy metals and silt. Silt deposition favours the spread of the cordgrass <i>Spartina sp.</i> , which has colonised the areas of mudflat previously occupied by <i>Salicornia sp.</i> , and is now the dominant vascular plant in the estuary. <i>Spartina</i> adversely affects the density and diversity of invertebrate species in the areas it covers. It reduces the area available for feeding because some species of waders are reluctant to feed close to the cover. There is also an inverse relationship between <i>Spartina</i> and the species of eelgrass and green algae, which are important food plants for both <i>Branta bernicla hrota</i> and <i>Anas penelope</i> . People gathering cockles and periwinkles in the outer estuary daily disturb birds on the mudflats. Instances of illegal shooting along the foreshore have occurred.	
Site Management:	No address information provided.	

Appendix 5. Scientific Names of Bird Species Mentioned

Arctic Tern	<i>Sterna paradisaea</i>	Green Sandpiper	<i>Tringa ochropus</i>
Barn Owl	<i>Tyto alba</i>	Greenfinch	<i>Carduelis chloris</i>
Bar-tailed Godwit	<i>Limosa lapponica</i>	Greenshank	<i>Tringa nebularia</i>
Black Guillemot	<i>Cepphus grylle</i>	Grey Heron	<i>Ardea cinerea</i>
Blackbird	<i>Turdus merula</i>	Grey Plover	<i>Pluvialis squatarola</i>
Blackcap	<i>Sylvia atricapilla</i>	Grey Wagtail	<i>Motacilla cinerea</i>
Black-headed Gull	<i>Larus ridibundus</i>	Greylag Goose	<i>Anser anser</i>
Black-tailed Godwit	<i>Limosa limosa</i>	Guillemot	<i>Uria aalge</i>
Blue Tit	<i>Parus caeruleus</i>	Hen Harrier	<i>Circus cyaneus</i>
Brambling	<i>Fringilla montifringilla</i>	Herring Gull	<i>Larus argentatus</i>
Brent Goose	<i>Branta bernicla</i>	Hooded Crow	<i>Corvus corone corone</i>
Bullfinch	<i>Pyrrhula pyrrhula</i>	House Martin	<i>Delichon urbica</i>
Buzzard	<i>Buteo buteo</i>	House Sparrow	<i>Passer domesticus</i>
Canada Goose	<i>Branta canadensis</i>	Jack Snipe	<i>Lymnocyptes minimus</i>
Chaffinch	<i>Fringilla coelebs</i>	Jackdaw	<i>Corvus monedula</i>
Chiffchaff	<i>Phylloscopus collybita</i>	Jay	<i>Garrulus glandarius</i>
Coal Tit	<i>Parus ater</i>	Kestrel	<i>Falco tinnunculus</i>
Collared Dove	<i>Streptopelia decaocto</i>	Kingfisher	<i>Alcedo atthis</i>
Common Gull	<i>Larus canus</i>	Kittiwake	<i>Rissa tridactyla</i>
Common Sandpiper	<i>Actitis hypoleucos</i>	Knot	<i>Calidris canutus</i>
Common Scoter	<i>Melanitta nigra</i>	Lapland Bunting	<i>Calcarius lapponicus</i>
Common Tern	<i>Sterna hirundo</i>	Lapwing	<i>Vanellus vanellus</i>
Cormorant	<i>Phalacrocorax carbo</i>	Lesser Black-backed Gull	<i>Larus fuscus</i>
Cuckoo	<i>Cuculus canorus</i>	Linnet	<i>Carduelis cannabina</i>
Curlew	<i>Numenius arquata</i>	Little Egret	<i>Egretta garzetta</i>
Curlew Sandpiper	<i>Calidris ferruginea</i>	Little Grebe	<i>Tachybaptus ruficollis</i>
Dunlin	<i>Calidris alpina</i>	Little Stint	<i>Calidris minuta</i>
Dunnock	<i>Prunella modularis</i>	Little Tern	<i>Sterna albifrons</i>
Fieldfare	<i>Turdus pilaris</i>	Long-eared Owl	<i>Asio otus</i>
Fulmar	<i>Fulmarus glacialis</i>	Long-tailed Duck	<i>Clangula hyemalis</i>
Gannet	<i>Sula bassana</i>	Long-tailed Tit	<i>Aegithalos caudatus</i>
Goldcrest	<i>Regulus regulus</i>	Magpie	<i>Pica pica</i>
Golden Plover	<i>Pluvialis apricaria</i>	Mallard	<i>Anas platyrhynchos</i>
Goldeneye	<i>Bucephala clangula</i>	Manx Shearwater	<i>Puffinus puffinus</i>
Goldfinch	<i>Carduelis carduelis</i>	Meadow Pipit	<i>Anthus pratensis</i>
Grasshopper Warbler	<i>Locustella naevia</i>	Mediterranean Gull	<i>Larus melanocephalus</i>
Great Black-backed Gull	<i>Larus marinus</i>	Merlin	<i>Falco columbarius</i>

Appendix 5.

Great Crested Grebe	Podiceps cristatus	Mistle Thrush	Turdus viscivorus
Great Northern Diver	Gavia immer	Moorhen	Gallinula chloropus
Great Tit	Parus major	Spotted Flycatcher	Muscicapa striata
Mute Swan	Cygnus olor	Starling	Sturnus vulgaris
Oystercatcher	Haematopus ostralegus	Stock Dove	Columba oenas
Peregrine Falcon	Falco peregrinus	Stonechat	Saxicola torquata
Pheasant	Phasianus colchicus	Swallow	Hirundo rustica
Pied Wagtail	Motacilla alba	Swift	Apus apus
Pintail	Anas acuta	Teal	Anas crecca
Pochard	Aythya ferina	Tree Sparrow	Passer montanus
Puffin	Fratercula arctica	Treecreeper	Certhia familiaris
Purple Sandpiper	Calidris maritima	Tufted Duck	Aythya fuligula
Raven	Corvus corax	Turnstone	Arenaria interpres
Razorbill	Alca torda	Water Rail	Rallus aquaticus
Red-breasted Merganser	Mergus serrator	Wheatear	Oenanthe oenanthe
Redpoll	Carduelis flammea	Whimbrel	Numenius phaeopus
Redshank	Tringa totanus	Whitethroat	Sylvia communis
Red-throated Diver	Gavia stellata	Wigeon	Anas penelope
Redwing	Turdus iliacus	Willow Warbler	Phylloscopus trochilus
Reed Bunting	Emberiza schoeniclus	Woodcock	Scolopax rusticola
Ringed Plover	Charadrius hiaticula	Woodpigeon	Columba palumbus
Robin	Erithacus rubecula	Wren	Troglodytes troglodytes
Rock Dove	Columba livia	Yellowhammer	Emberiza citrinella
Rock Pipit	Anthus petrosus	Snipe	Gallinago gallinago
Rook	Corvus frugilegus	Snow Bunting	Plectrophenax nivalis
Roseate Tern	Sterna dougallii	Song Thrush	Turdus philomelos
Sand Martin	Riparia riparia	Sparrowhawk	Accipiter nisus
Sanderling	Calidris alba		
Sandwich Tern	Sterna sandvicensis		
Scaup	Aythya marila		
Sedge Warbler	Acrocephalus schoenobaenus		
Shag	Phalacrocorax aristotelis		
Shelduck	Tadorna tadorna		
Short-eared Owl	Asio flammeus		
Shoveler	Anas clypeata		
Siskin	Carduelis spinus		
Skylark	Alauda arvensis		

1.2.2 List of Tables

Table 2. Mean peaks of wetland bird counts on Fingal coastal wetlands from 1997/98 to 2001/02

Species ¹	1% Intl. ²	1% Nat. ³	Baldoyle Bay	Broad-meadow Est.	Rogers-town Est.	Delvin-Hampton	Skerries Islands	Skerries Coast	Other Sites ³	Total
Bar-tailed Godwit	1,200	175	504	196	86	0	1	0		787
Black-headed Gull	20,000	n/a	164	202			76	366		808
Black-tailed Godwit	350	80	115	405	670	2			358	1,550
Brent Goose	200	200	824	1,180	2,136	52	303	157	565	5,217
Common Gull	17,000	n/a	14	61			8	1		84
Common Sandpiper	17,000	n/a	0	1	0	0				1
Common Scoter	16,000	120	31	18	4	49	0			102
Common Tern	1,900	n/a					5	4		9
Coot	17,500	300			6					6
Cormorant	1,200	105	21	61	75	167	380	32		736
Curlew	4,200	1,000	99	633	1,151	266	373	136		2,658
Curlew Sandpiper	n/a	n/a		1	8			0		9
Dunlin	13,300	1,200	813	1,813	3,061	43	9	35		5,774
Golden Plover	18,000	1,500	2,290	1,381	268	2,870	100	53		6,962
Goldeneye	4,000	100	2	186	8		0			196
Great Black-backed Gull	4,700	n/a	30	1			170	129		330
Great Crested Grebe	4,800	35	22	67	2	2	1	0		94
Great Northern Diver	50	n/a	2	0	1	4	1	1		9
Green Sandpiper	14,500	n/a	1		2					3
Greenshank	3,100	20	9	54	47	4	1	3		118
Grey Heron	2,700	105	17	22	21	9	1	5		75
Grey Plover	2,500	50	223	203	345	26	10	32		839
Greylag Goose	1,000	50			130				309	439
Herring Gull	11,000	n/a	55	7			360	487		909
Jack Snipe	n/a	n/a	0	0	1		0	0		1
Knot	4,500	250	232	850	675	32	6	12		1,807
Lapwing	20,000	2,000	319	1,530	4,466	535	188	322		7,360
Lesser Black-backed Gull	5,300	n/a	1	2				2		5
Little Egret	1,300	n/a	0	0	5					5
Little Grebe	3,400	30	1	5	8					14
Little Stint	2,000	n/a		1						1
Mallard	20,000	500	73		455	14	207	6		755
Mute Swan	100	100	6	45	0	2				53

Species ¹	1% Intl. ²	1% Nat. ³	Baldoyle Bay	Broad-meadow Est.	Rogers-town Est.	Delvin-Hampton	Skerries Islands	Skerries Coast	Other Sites ³	Total
Oystercatcher	10,200	700	619	1,588	2,127	451	512	251		5,548
Pintail	600	20	19	56	6					81
Pochard	3,500	350		14						14
Purple Sandpiper	900	20			2	8	41	29		80
Red-breasted Merganser	1,700	25	14	78	22	2				116
Redshank	2,500	250	251	640	1,262	97	24	48		2,322
Red-throated Diver	10,000	n/a	6	3	1	5	11	0		26
Ringed Plover	730	100	279	69	159	42	84	87		720
Ruff	n/a	n/a		1	3					4
Sanderling	1,200	40	20	11	26	1		77		135
Sandwich Tern	1,700	n/a	12	9	28		15	3		67
Scaup	3,100	50		6						6
Shag	2,400	n/a			2	2		1		5
Shelduck	3,000	125	127	503	1,010	0	6	2		1,648
Shoveler	400	40		6	79		3			88
Snipe	20,000	n/a	5	28	54	1	16	0		104
Teal	4,000	500	153	134	737		2			1,026
Tufted Duck	12,000	300		2						2
Turnstone	1,000	100	46	124	202	76	193	124		765
Whimbrel	6,100	n/a	1		1	0	2	1		5
Whooper Swan	210	100			5	1		0		6
Wigeon	15,000	1,000	147	88	838		119			1,192
No. Intl. important species	n/a	n/a	1	2	2	0	1	0	2	
No Nat Important species	n/a	n/a	7	13	14	2	3	3	3	

¹Scientific names of species mentioned are in Appendix 5.

² Sites that regularly hold more than 1% of a species international population are classified as internationally important and qualify for designation as SPAs. For wetland species, the 1% levels are based to the populations estimates published by Wetlands International (Delany & Scott 2002). Additionally, sites that regularly hold 20,000 or waterfowl are also internationally important. Five year mean peak counts that pass this threshold at individual sites are in red.

³ Sites that regularly hold more than 1% of a species all-Ireland population are classified as nationally important and may qualify for designation as SPAs or NHAs. For wetland species, the 1% levels are based to the populations estimates published by BirdWatch Ireland as part of the I-WeBS scheme (Colhoun 2001). Five year mean peak counts that pass this threshold at individual sites are in blue.

⁴The brent geese and black-tailed godwit counts are from Seagrang Park, an area on amenity grassland near Baldoyle. They may be the same birds as on Baldoyle Bay or Dublin Bay. The greylag geese count is from Lambay Island.

Table 3 Summary details of bird species on the Fingal coast

Species ¹	EU Status ²	Bird-Life Status ³	Bird-Watch Status ⁴	1% Int'l ⁵	1% Nat. ⁶	Fingal Coastal Pop. ⁷	Status on Fingal Coast	Habitat & Ecology on Fingal Coast ⁸	Main Sites on Fingal Coasts ⁹
Arctic Tern	Anx. I	Secure	Amber	18,000	105	297 S (11,1)	Breeding visitor	Coastal & offshore waters & islands (B) Medium plunge dives for fish	Breeding sea bird, Shenick Point, Portmarnock Point
Barn Owl		SPEC 3	Red	4,650	21	Likely to be present but not recorded	Breeding	Non-intensive farmland. Nocturnal predator of small mammals	
Barnacle Goose	Mig.	SPEC 2W	Amber	540	80	c. 100	Winter visitor	Grazes coastal grasslands	Lambay
Bar-tailed Godwit		SPEC 3W	Amber	1,200	175	787 W	Winter visitor	Intertidal sandflats, Probes for invertebrates	Wetland species
Black Guillemot		SPEC 2	Amber	10,050	45	190 S, (10,3)	Breeding resident	Sea adjacent to rocky coasts. Dives for fish	Breeding seabird
Blackbird		SPEC 4	Green	1,560,000	45000	(88,9)	Breeding visitor	Hedges and gardens. Searches for invertebrates on ground	
BlackcapMig.		SPEC 4	Green	885,000	300	(2,1)	Breeding visitor	Hedges and gardens. Searches for insects on trees	
Black-headed Gull		Secure	Amber	20,000 (64,5000)	420	808 W (190,10)	Winter visitor	Intertidal & coastal waters. Dips- to-surface feeder	Wetland species
Black-tailed Godwit	Mig.	SPEC 2	Amber	350	80	1,550 W (136,1)	Winter visitor	Intertidal mudflats, grasslands. Probes for invertebrates	Wetland species
Blue Tit		SPEC 4	Green	600,000	27000	(22,4)	Breeding resident	Hedges and gardens. Searches for insects on trees	
Brambling		Secure	Green	307,500	n/a	Not recorded on summer survey	Winter visitor	Hedges and gardens and fields. Searches for seeds on ground	Rogerstown, Broadmeadow
Brent Goose	Mig.	Secure	Amber	200	n/a	5,217 W (20,2)	Winter visitor	Intertidal & nearby grasslands	Wetland species
Bullfinch		Secure	Green	273,000	2,550	(3,2)	Breeding & winter visitor	Hedges and gardens Searches for seeds & buds on trees	
Buzzard		Secure	Green	25,350	5-6	Not recorded on summer survey	Breeding resident	Farmland and woods. Hunts small mammals	Farmland with trees & hedges
Canada Goose			Green	n/a		2 W (3,1)	Introduced	Wetlands. Grazes.	Introduced in small numbers.
Chaffinch		SPEC 4	Green	4,845,000	51000	(12,5)	Breeding resident & winter visitor	Hedges and gardens and fields. Searches for seeds on ground	Lowtherstone, Baldongan, Rogerstown, Broadmeadow
ChiffchaffMig.		Secure	Green	2,295,000	2,175	(2,2)	Breeding visitor	Hedges and gardens. Searches for insects on trees	
Coal Tit		Secure	Green	660,000	6,600	(11,2)	Breeding resident	Hedges and gardens. Searches for insects on trees	

Species ¹	EU Status ²	Bird-Life Status ³	Bird-Watch Status ⁴	1% Int'l ⁵	1% Nat. ⁶	Fingal Coastal Pop. ⁷	Status on Fingal Coast	Habitat & Ecology on Fingal Coast ⁸	Main Sites on Fingal Coasts ⁹
Collared Dove		Secure	Green	205,500	263	{6,2}	Breeding resident	Hedges and gardens & farmland. Searches for seeds on ground.	
Common Gull	Mig. ?	SPEC 2	Amber	17,000	49	84 W {45,4}	Winter visitor	Intertidal & coastal waters. Dips - to - surface feeder	Wetland species
Common Sandpiper	Mig.	Secure	Green	17,000	n/a	1 W	Autumn passage migrant	Wetlands. Takes invertebrates from near surface	Wetland species
Common Scoter	Mig.	Secure	Amber	16,000	120	106 W	Winter visitor	Coastal waters. Surface dives for molluscs	Wetland species (sea)
Common Tern	Anx. I	Secure	Amber	1,900	126	2,541 S, 9 W {70,5}	Breeding visitor	Coastal & offshore waters & islands (B). Medium plunge dives for fish	Breeding seabird, Shenick Point, Portmarnock
Coot	-	Secure	Green	17,500	87	6 W	Winter visitor	Open wetlands. Aquatic invertebrates & plants	Wetland species
Cormorant	-	Secure	Amber	1,200	105	4,617, 736 W {227,11}	Breeding resident	Coastal waters & islands (B). Surface dives for fish	Breeding seabird & wetlands
Cuckoo	Mig.	Secure	Amber	81,000	113	{1,1}	Breeding visitor	Hedges and farm-lands. Takes insects, lays eggs in other birds' nests	
Curlew		SPEC 3W	Red*	4,200	1000	2,658 W {47,9}	Winter visitor	Intertidal mudflats, Probes for invertebrates	Wetland species, Lowther-stone
Curlew Sandpiper	Mig.		Green	7,400	n/a	9 W	Autumn passage migrant	Intertidal mudflats, grasslands. Probes for invertebrates	Wetland species, Lowther-stone
Dunlin	Mig.	SPEC 3	Amber	13,300	1,200	5,774 W {24,4}	Winter visitor	Intertidal mudflats. Probes for invertebrates	Wetland species
Dunnock		Secure	Green	517,500	22950	{35,10} resident	Breeding	Hedges and gardens. Searches for insects on trees	
Feral Pigeon				n/a	n/a	{106,5}	Breeding resident	Built up area. etc. Searches for seeds on ground	
Fieldfare	Mig.	SPEC 4W	Green	360,000	n/a	{187,7}	Winter visitor	Hedges and farmland. Takes ground invertebrates	Beaverstown (Rogerstown)
Fulmar		Secure	Green	102.0	440	2,298 S {187,7}	Resident most of year	Pelagic & cliffs (B). Low plunge dives for fish, offal etc.	Breeding seabird
Gannet	Mig.?	SPEC 2	Amber	11.7	2,110	441 S {44,8}	Resident -less winter	Pelagic & islands (B). High plunge dives for fish	Breeding seabird
Goldcrest		SPEC 4	Green	2,085,000	7,500	{6,4}	Breeding resident & winter visitor	Hedges and gardens. Searches for insects on trees	

Species ¹	EU Status ²	Bird-Life Status ³	Bird-Watch Status ⁴	1% Int'l ⁵	1% Nat. ⁶	Fingal Coastal Pop. ⁷	Status on Fingal Coast	Habitat & Ecology on Fingal Coast ⁸	Main Sites on Fingal Coasts ⁹
Golden Plover	Anx I	SPEC 4	Amber	18,000	1500	6,962 W	Winter visitor	Wetlands & farmland. Takes invertebrates from just below or at surface Baldongan	Wetland species, Lowther-stone
Goldeneye	Mig.	Secure	Amber	4,000	100	196 W	Winter visitor	Estuaries & sea. Dives for fish.	Wetland species
Goldfinch	.	Secure	Green	483,000	1,500	[43,9]	Breeding resident	Hedges and fields. Searches for seeds on plants	Skerries Coast, Rogerstown, Broad-meadow
Grasshopper Warbler	Mig.	SPEC 4	Amber	29,550	150	[4,3]	Breeding visitor	Damp scrubby areas. Insects	
Great Black-backed Gull	-	Secure	Green	4,700	70	1,458 S, 330 W, (238,10)	Breeding resident	Intertidal to offshore & islands (B). Dives for fish, offal etc	Breeding seabird
Great Crested Grebe	.	Secure	Amber	4,800	35	94 W (11,3)	Winter visitor	Wetlands. Surface dives for fish & invertebrates	Wetland species (sea)
Great Northern Diver	Anx I	Secure	Green	50	n/a	9 W	Winter visitor	Coastal waters, surface dives for fish. Offshore	Wetland species (sea)
Great Tit		Secure	Green	3,315,000	10200 resident	[8,4]	Breeding	Hedges and gardens. Searches for insects on trees	
Green Sandpiper	Mig.	Secure	Green	14,500	n/a	3 W	Winter visitor	Wetlands. Probes for invertebrates	Wetland species
Greenfinch		SPEC 4	Green	450,000	3,900	[60,10] resident	Breeding	Hedges and gardens and fields. Searches for seeds on ground	Rogerstown, Broad-meadow
Greenshank	Mig.	Secure	Green	3,100	20	118 W (6,2)	Winter visitor	Intertidal mudflats, Probes for invertebrates	Wetland species
Grey Heron		Secure	Green	2,700	105	75 W (26,12)	Breeding resident	Wetlands Stalks & spears fish and invertebrates	Wetland species
Grey Plover	Mig.	Secure	Amber	2,500	50	839 W (3,1)	Winter visitor		Wetland species
Grey Wagtail		Secure	Green	40,200	540	Not recorded on summer survey	Breeding resident	Damp areas, takes insects	
Greylag Goose	Mig.	Secure	Amber	1,000	50	439	Winter visitor	Grazes coastal grasslands	Wetland species
Guillemot	-	Secure	Amber	85,500	2370	63,837 S, (313,4)	Breeding resident	Coastal & offshore waters & cliffs (B). Surface dives for fish	Breeding seabird
Hen Harrier	Anx I	SPEC3	Red	795	6	Not recorded	Winter visitor	Ambushes small birds & mammals in open country	Baldongan, Rogserstown
Herring Gull	-	Secure	Green	11,000	187	8,715 S, 909 W, (720,10)	Breeding resident	Intertidal to offshore & mainly islands (B). Follows boats, offal etc.	Breeding seabird
Hooded Crow		Secure	Green	391,500	7,500	[52,9]	Breeding resident	Farmland & gardens. Omnivore	
House Martin	Mig.	Secure	Green	607,500	2,475	[64,8]	Breeding visitor	Aerial insectivore, nests on houses	

Species ¹	EU Status ²	Bird-Life Status ³	Bird-Watch Status ⁴	1% Int'l ⁵	1% Nat. ⁶	Fingal Coastal Pop. ⁷	Status on Fingal Coast	Habitat & Ecology on Fingal Coast ⁸	Main Sites on Fingal Coasts ⁹
House Sparrow	Mig.	Secure	Green	3,510,000	26100	(78,7)	Breeding resident	Seed eater, farmyards & gardens	Wetland species
Jack Snipe		SPEC 3W	Amber	n/a	n/a	1 W	Winter visitor	Probes wetland areas invertebrates	
Jackdaw		Secure	Green	514,500	5,730	(98,8)	Breeding resident & winter visitor	Farmland & gardens. Omnivore	
Jay		Secure	Green	405,000	240	Not recorded	Breeding resident	Woodlands. Seeds & nuts.	
Kestrel	Anx. 1	SPEC3	Green	11,100	90	(24,7) resident	Breeding	Hovers in sky to ambush small animals	Open ground & farmland
Kingfisher		SPEC 3	Amber	3,600	38	6 W	Breeding resident	Catches fish in streams and ponds	
Kittiwake		Secure	Green	84,000	1475	21,147 S, (1058,6)	Breeding resident	Coastal & offshore waters & cliffs (B). Dips- to- surface feeder	
Knot		SPEC 3W	Amber	4,500	250	1,807 W (8,1)	Winter visitor	Probes intertidal areas invertebrates	
Lapland Bunting	Mig.	Secure	Green	231,000	n/a	Not recorded	Winter visitor	Open farmland. Seeds	Lowtherstone - formerly
Lapwing	Mig.	Secure	Red*	20,000 (28,000)	2000	7,360 W (12,1)	Winter visitor	Wetlands & farmland. Takes invertebrates from just below or at surface	Wetland species, Lowtherstone & Baldongan
Lesser Black-backed Gull	Mig.	SPEC 4	Green	5,300	145	1,002 S, 5 W (51,8)	Breeding visitor	Intertidal to offshore & islands (B). Dives for fish, offal etc.	Breeding seabird
Linnet		SPEC 4	Green	426,000	3,300	(175,11)	Breeding resident & winter visitor	Open areas. Searches for seeds on ground	Lowtherstone, Baldongan, Rogerstown, Broadmeadow
Little Egret		Secure	Green	1,300	n/a	5 W	Non-breeding resident colonist?	Wetlands. Stalks & spears fish and invertebrates	
Little Grebe		Secure	Green	3,400	30	14 W	Breeding resident	Wetlands. Surface dives for invertebrates	
Little Stint		Secure	Green	2,000	n/a	1 W	Autumn passage migrant	Probes intertidal areas invertebrates	
Little Tern	Anx. I	SPEC 3	Amber	340	6	Former breeder	Former breeder	Coastal waters & beaches (B) Medium plunge dives for fish	Formerly, The Island & Portrane, Portmarnock
Long-eared Owl	Mig.	Secure	Green	14,550	35	Not recorded	Breeding resident	Nocturnal hunter of small mammals	Wetland species (sea)
Long-tailed Duck		Secure	Green	1,300	20	Not recorded	Winter visitor	Dives for invertebrates	
Long-tailed Tit		Secure	Green	136,500	1,050	Not recorded	Breeding resident	Woodlands and scrub. Insects	
Magpie		Secure	Green	637,500	2,175	(70,9)	Breeding resident	Farmland & gardens. Omnivore	

Species ¹	EU Status ²	Bird-Life Status ³	Bird-Watch Status ⁴	1% Int'l ⁵	1% Nat. ⁶	Fingal Coastal Pop. ⁷	Status on Fingal Coast	Habitat & Ecology on Fingal Coast ⁸	Main Sites on Fingal Coasts ⁹
Mallard	Mig.	Secure	Green	20,000 (45,000)	500	755 W (29,6)	Breeding resident & Breeding	Wetland omnivore	Wetland species
Manx Shearwater		SPEC 2	Amber	11.3	5,240	75 S	Breeding visitor	Pelagic & islands (B). Low plunge dives for fish, squid etc.	Breeding seabird
Meadow Pipit		Secure	Green	456,000	25320	(231,10)	Breeding resident & winter visitor	Open areas, takes insects	Lowtherstone, Rush Beach, Portrane Beach, The Island, Portmarnock
Mediterranean Gull		Secure	Amber	8,400	n/a	Not recorded	Winter visitor		
Merlin	Anx I	Secure	Amber	1,380	8	Not recorded	Winter visitor	Catches small birds in flight in open	Estuaries country
Mistle Thrush		SPEC 4	Green	85,500	2,100	(13,4)	Breeding resident	Farmland & gardens. Searches for invertebrates on ground	
Moorhen		Secure	Green	20,000 (26,000)	1,800	26 W (6,2)	Breeding resident	Open wetlands. Aquatic invertebrates	
Mute Swan		Secure	Green	2,500	100	53 W	Breeding resident	Wetlands. Grazes aquatic weeds	Wetland species
Oystercatcher	Anx I	Secure	Green	10,200	700	5,548 W (330,12)	Winter visitor	Probes intertidal and wet land for invertebrates	Wetland species
Peregrine		SPEC3	Amber	279	11	(5,2)	Breeding resident	Catches medium sized birds in flight	Howth
Pheasant		Secure	Green	139,500	1,050	(11,2)	Breeding resident	Seeds & plants on farmland	
Pied Wagtail		Secure	Green	471,000	3,300	(42,10)	Breeding resident	Damp areas, takes insects	
Pintail	Mig.	SPEC3	Amber	600	20	81 W	Winter visitor	Plants & invertebrates in wetlands	Wetland species
Pochard	Mig.	Secure	Amber	3,500	350	14 W	Winter visitor	Dives for plant and animal matter	Wetland species
Puffin	Mig.	SPEC 2	Amber	181,500	640	590 S	Breeding visitor	Coastal & offshore. waters & cliffs (B) Surface dives for fish	Breeding seabird
Purple Sandpiper		SPEC 4	Green	750	20	80 W	Winter visitor	Probes rocky areas invertebrates	Wetland species
Raven		Secure	Green	25,200	90	(1,2)	Breeding resident	Open areas. Omnivore	Breeding seabird
Razorbill		Secure	Amber	15,900	515	5,175 S (112,3)	Breeding resident	Coastal & offshore waters & cliffs (B). Surface dives for fish	
Red-breasted Merganser	Mig.	Secure	Amber	1,700	25	116 W (4,1)	Winter visitor	Estuaries & sea. Dives for fish.	Wetland species (sea)
Redpoll		Secure	Amber	1,815,000	1,800	Not recorded	Breeding resident & winter visitor	Wet woodlands. Seeds on trees	
Redshank	Mig.	SPEC2	Amber	2,500	250	2,322 W (42,6)	Winter visitor	Intertidal mudflats, Probes for invertebrates	Wetland species
Red-throated Diver	Anx I	SPEC 3	Amber	10,000	n/a	22 W (4,1)	Winter visitor for fish	Coastal waters & banks. Surface dives	Wetland species (sea)

Species ¹	EU Status ²	Bird-Life Status ³	Bird-Watch Status ⁴	1% Int'l ⁵	1% Nat. ⁶	Fingal Coastal Pop. ⁷	Status on Fingal Coast	Habitat & Ecology on Fingal Coast ⁸	Main Sites on Fingal Coasts ⁹
Redwing	Mig.	SPEC 4W	Green	178,500	n/a	Not recorded	Winter visitor	Farmland, Searches for invertebrates on ground	Beaverstown (Rogerstown)
Reed Bunting		Secure	Green	144,000	3,300	[35,6]	Breeding resident & winter visitor	Wetlands and damp areas. Seeds	
Ringed Plover	Mig.	Secure	Green	730	100	720 W (108,7)	Breeding resident & winter visitor	Picks invertebrates from surface of intertidal wetlands	Wetland species
Robin		Secure	Green	3,000,000	54000	(19,7)	Breeding resident	Hedges, woods & gardens, takes insects	
Rock Pipit		Secure	Green	5,085	n/a	(11,4)	Breeding resident	Rocky shores, takes insects	
Rook		Secure	Green	273,000	12900	(87,8)	Breeding resident & winter visitor	Farmland & gardens. Seeds & invertebrates	
Roseate Tern	Anx. I	SPEC 3	Red	50	22	1,854 S (33,4)	Breeding visitor	Coastal & offshore waters & islands (B). Medium plunge dives for fish. Rockabill, offshore & coasts	Breeding seabird. Skerries coast, Portmarnock Point
Ruff	-	Secure	Green	22,280	n/a	4 W		Probes intertidal areas invertebrates	Wetland species
Sand Martin	Mig.	SPEC 3	Amber	252,000	600	(66,7)	Breeding visitor	Aerial insectivore, nests in sand & earth cliffs	Wetland species (beaches)
Sanderling	Mig.	Secure	Green	1,200	40	135 W	Winter visitor	Probes beaches for invertebrates	
Sandwich Tern	Anx. I	SPEC 2	Green	1,700	111	67 W (108,9)	Passage migrant	Intertidal areas and sea	
Scaup	Mig.	SPEC 3W	Amber	3,100	50	6 W	Winter visitor	Dives for invertebrates	
Sedge Warbler	Mig.	SPEC 4	Green	264,000	2,550	(9,4)	Breeding visitor	Vegetated wetland. Insects	Breeding seabird
Shag	-	SPEC 4	Green	2,400	150	4,077, 5 W (63,8)	Breeding resident	Coastal waters & cliffs (B). Surface dives for fish	
Shelduck	Mig.	Secure	Amber	3,000	125	1,648 W (70,10)	Winter visitor & breeder	Intertidal mudflats – probes for invertebrates	Wetland species
Short-eared Owl	Anx. 1	SPEC 3	Amber	2,205	n/a	Not recorded	Winter visitor	Hunts small mammals by day & night	Baldongan, Rogerstown, Baldoyle
Shoveler	Mig.	Secure	Green	400	40	88 W	Winter visitor	Invertebrates & plants in wetlands	Wetland species
Siskin		SPEC 4	Green	267,000	360	Not recorded	Breeding resident & winter visitor	Woodlands & gardens. Searches for seeds on trees	

Species ¹	EU Status ²	Bird-Life Status ³	Bird-Watch Status ⁴	1% Int'l ⁵	1% Nat. ⁶	Fingal Coastal Pop. ⁷	Status on Fingal Coast	Habitat & Ecology on Fingal Coast ⁸	Main Sites on Fingal Coasts ⁹
Skylark		SPEC 3	Amber	1,200,000	14700	(105,9)	Breeding resident & winter visitor	Open land – takes seeds	Lowtherstone, Rush Beach, Portrane Beach, The Island, Portmarnock
Snipe	Mig.	Secure	Amber	20,000 (24,000)	n/a	104 W (4,2)	Winter visitor, breeds?	Probes wetland areas invertebrates	Wetland species
Snow Bunting	Mig.	Secure	Green	475,350	n/a	Not recorded	Winter visitor	Open areas. Seeds	Lowtherstone – formerly
Song Thrush		SPEC 4	Green	555,000	9,600	(48,7)	Breeding resident & winter visitor	Hedges and gardens. Searches for invertebrates on ground	
Sparrowhawk		Secure	Green	9,900	113	(6,3)	Breeding resident	Ambushes small birds in hedges and woods	
Spotted Flycatcher	Mig.	SPEC 3	Amber	375,000	900	(1,1)	Breeding visitor	Gardens & woodlands. Catches insects on the wing	
Starling		Secure	Green	2,310,000	8,400	(315,9)	Breeding resident & winter visitor	Farmland & gardens. Invertebrates	
Stock Dove		Secure	Amber	16,050	180	(15,1)	Breeding resident	Farmland. Takes seeds & plants etc.	Portrane, Portmarnock, Howth
Stonechat		SPEC 3	Amber	63,000	930	(37,7)	Breeding resident	Scrubby areas & heaths, takes insects	
Swallow	Mig.	SPEC 3	Amber	780,000	6,300	(113,10)	Breeding visitor	Aerial insectivore, nests in farm buildings	
Swift	Mig.	Secure	Green	220,500	450	(35,6)	Breeding visitor	Aerial insectivore	
Teal	Mig.	Secure	Amber	4,000	500	1,026 W	Winter visitor	Seeds & plants in salt marshes	Wetland species
Tree Sparrow		Secure	Green	750,000	15	(3,2)	Breeding resident	Hedges & farmland on coast. Seed eater.	Lowtherstone, Skerries Coast, Rogerstown, Broadmeadow
Treecreeper		Secure	Green	120,000	1,050	Not recorded	Breeding resident	Woodlands. Insects	
Tufted Duck	Mig.	Secure	Amber	12,000	300	2 W	Winter visitor	Dives for plant and animal matter	Wetland species
Turnstone	Mig.	Secure	Green	1,000	100	765 W (108,6)	Winter visitor	Intertidal areas. Probes for invertebrates	Wetland species
Water Rail		Secure	Amber	7,800	27	Not recorded	Breeding resident	Vegetated wetlands. Aquatic invertebrates	Wetland species
Wheatear	Mig.	Secure	Green	265,500	330	(24,7)	Breeding visitor	Open rocky areas, takes insects	
Whimbrel	Mig.	SPEC 4		6,100	n/a	(28,7)	Mainly spring passage migrant	Intertidal mudflats. Probes for invertebrates	
Whitethroat	Mig.	SPEC 4	Green	445,500	900	(16,5)	Breeding visitor	Dry scrubby areas & heath. Insects	Howth

Species ¹	EU Status ²	Bird-Life Status ³	Bird-Watch Status ⁴	1% Int'l ⁵	1% Nat. ⁶	Fingal Coastal Pop. ⁷	Status on Fingal Coast	Habitat & Ecology on Fingal Coast ⁸	Main Sites on Fingal Coasts ⁹
Wigeon	Mig.	Secure	Amber	15,000	1000	1,192 W	Winter visitor	Grazes coastal grasslands	Wetland species
Willow Warbler	Mig.	Secure	Green	3,030,000	20100	{6,3}	Breeding visitor	Woodlands & scrub. Insects	
Woodcock		SPEC 3W	Amber	20,000 (150,000)	n/a	Not recorded	Winter visitor	Probes wetland areas invertebrates	
Woodpigeon		Secure	Green	343,500	21900	{73,8}	Breeding resident & winter visitor	Farmland. Takes seeds & plants etc.	
Wren		Secure	Green	1,050,000	69000	{112,10}	Breeding resident	Hedges and woods, takes insects	
Yellowhammer		Secure	Red	2,310,000	4,200	{5,2}	Breeding resident & winter visitor	Mixed farmland. Seeds	
									Lowtherstone, Baldongan, Rogerstown, Broadmeadow

Footnotes to Table

¹ Species are listed alphabetically and the names are from Hutchinson (1989). The scientific names of the species mentioned are in Appendix 5.

² Listing of a species on Annex I of the EU Birds Directive [79/409/EEC] requires member states to take “*special conservation measures concerning their habitat in order to ensure their survival and reproduction in their area of distribution*”. Similar measures must also be taken for migratory species. For Annex I and migratory species, this normally means the designation of “Special Protection Areas” in key areas for the species.

³ BirdLife International have assessed the conservation status of all European bird species (Heath et al 2000). SPEC 2 indicates a species with an unfavourable conservation status whose global distribution is concentrated in Europe. SPEC 3 indicates a species with an unfavourable conservation status whose global distribution is not concentrated in Europe. SPEC4 species have a secure conservation status but are concentrated in Europe. SPEC 1 (not relevant to this report) indicates a globally threatened species. SPEC status is based on the number of breeding birds in the population, unless a W indicate that winter populations were used.

⁴ BirdWatch Ireland have prepared a “red amber green” categorisation of Irish birds. “Red” species are of high conservation concern because they have declined by at least 50% in the last 25 years or 75% since the nineteenth century. An * indicates that the birds wintering on the Fingal coast are unlikely to be linked to the threatened Irish breeding population.. “Amber” species as of medium conservation concern because they have declined by at least 25% in the last 25 years, are rare or local breeders, winter locally or in internationally important numbers or are threatened at a European level (SPEC 1 - 3) “Green” species have a favourable conservation status (Newton et al. 1999).

⁵ Sites that regularly hold more than 1% of a species international population are classified as internationally important and qualify for designation as SPAs. For wetland species, the 1% levels are based to the populations estimates published by Wetlands International (Delany & Scott 2002). Additionally, sites that regularly hold 20,000 or waterfowl are also internationally important. For seabird species not covered by Wetlands International, the 1% levels are based on population estimates in the report on the Seabird 2000 survey (Mitchell et al. 2004). For other species, 1% levels of the European populations are taken from Heath et al (2000). Where these numbers are given in pairs, they are multiplied here by three according to the convention of allowing for two breeding adults and one surviving offspring at the start of each breeding season.

⁶ Sites that regularly hold more than 1% of a species all-Ireland population are classified as nationally important and may qualify for designation as SPAs or NHAs. For wetland species, the 1% levels are based to the populations estimates published by BirdWatch Ireland as part of the I-WeBS scheme (Colhoun 2001). For seabird species not covered by Wetlands International, the 1% levels are based on population estimates in the report on the Seabird 2000 survey (Mitchell et al. 2004). For selected other species, 1% levels for the Republic of Ireland are taken from Heath et al (2000). Where these numbers are given in pairs, they are multiplied here by three according to the convention of allowing for two breeding adults and one surviving offspring at the start of each breeding season.

⁷ Estimated by summing data from I-WeBS for wetland species (W) – in this context, wetland species include seabird species such as black-headed gull that do not breed on the Fingal coast but which winter there in numbers on wetlands. However, I-WeBS counts of gulls should be treated with caution as wintering gull also use non-wetland habitats such as farmland and dumps. Breeding seabird (S) populations are from the Seabird 2000 survey (Mitchell et al 2004), Numbers in brackets are the numbers recorded on the summer survey and the number of transects on which it was recorded. “Not recorded” means the species was not seen on the summer survey.

⁸ “B” following a habitat indicates that it is used for breeding in Fingal.

⁹ These are only given, where relevant, for species other than breeding seabirds and wintering waterfowl. The important sites for these species are listed in Tables 1 and 2.

Table 4. Summary details of the main habitats on the Fingal Coast

Habitat ¹	Habitat Code(s) ¹	Habitat Description ²	EU Status (& EU codes) ³	Mainland Status ⁴	Island Status ⁴	Main Fingal Coastal Sites ⁵	Key Bird Species
Mud shores	LS3, LS4 & LS5	Areas of very fine sediment usually along the most sheltered sections of coastline	Mudflats & sandflats not along the most tide (1140)	Important	None	Delvin Est., Rogerstown, Broadmeadow, Baldoyle	Feeding areas for brent geese, shelduck, dabbling ducks, & waders
Sand shores	LS2	Sandy beaches with <10% gravel or mud	Mudflats & tide sandflats not covered at low (1140)	Important	Limited	Delvin Est., Rush Beach, Rogerstown, Portrane Beach, Broadmeadow incl. The Island, Baldoyle incl. Portmarnock Point	Feeding areas for waders gulls, crows. Roosts for waders & gulls
Sea & estuary	MW1,MW2 & MW4	Including areas of coastal or semi-coastal waters, also narrow channels and estuaries	Large shallow inlets and bays (1160), estuaries (1130) & open sea	Important	Important	Rogerstown (1130) & all other except Lowtherstone & Baldogan	Cormorant, shag, terns, gulls, auks, common scoter, goldeneye, grebes & divers
Shingle & gravel banks	CB1	Sparsely vegetated shingle and gravel banks just above high water	Perennial vegetation of stony banks (1220)	None	Limited	Ireland's Eye	Roosting gulls
Rocky sea cliffs	CS1	Steep or vertical rocky cliffs > 5m high with >50% exposed rock	Vegetated sea cliffs of Atlantic & Baltic coasts (1230)	Important	Important	Rockabill, Lambay Island, Ireland's Eye & Howth	Breeding sites for auks, fulmar, gulls, peregrine, puffin, shag, rock pipit, raven
Salt marshes	CM	Strips of vegetation on sandy or muddy shores in the upper tidal	Salicornia mud (1310), spartina (1320) & salt meadows (1330 & 1410)	Important	V. limited	Delvin Est., Rogerstown, Broadmeadow, Baldoyle	Wader & gull roosts, feeding areas for ducks
Dunes	CD2 & CD3	Unstable mounds of sands with marram grass & more stable dunes covered by vegetation	White dunes (2120) & fixed grey dunes* (2130)	Important	None	Rogerstown incl. Rush Beach*, Portrane Beach, Broadmeadow incl. The Island*, Portmarnock Point	Breeding ringed plover & (formerly) little terns Wader & gull roosts. Feeding pipits, skylark, finches & buntings.
Heath	HH	Open vegetation with at least 25% cover	European dry heaths (4030) of dwarf shrubs	Limited	Limited	Howth Head, Lambay	Stonechat, whitethroat & finches.
Scrub	WS1	Area with >50% cover of shrubs or small trees	None	Limited	Limited	Lowtherstone, , Rockabill, Baldogan The Island, Howth	Stonechat, whitethroat & finches.
Rocky shores	LR1, LR2 & LR3	Rocky areas < 5m high that are exposed, moderately exposed or sheltered	None	Important	Important	Shenick Is., Rockabill, Lambay, Ireland's Eye, Howth	Feeding for purple sandpiper, rock pipit & turnstone. Breeding terns (islands), wader roosts.
Improved grassland	GA1 & GA2	Intensively managed agricultural or amenity grassland	None	Important	Lambay only	Lowtherstone, Rogerstown, Lambay, Broadmeadow, Baldoyle	Feeding brent & greylag geese, wigeon & waders. Wader & gull roosts.
Semi-natural grassland	GS	Semi-improved agricultural grass-land or verges	Probably none on Fingal coast	Limited	V. Limited	Lowtherstone, Baldogan, Shenick Islands, Rogerstown, Lambay Ireland's Eye,	Feeding skylarks, finches, bunting, thrushes, sparrows & chats Portmarnock Point
Agriculture	BC	Arable crops, horticulture & tilled land	None	Important	Only Lambay	Lowtherstone, Baldogan, Rogerstown, Lambay, Baldoyle	Feeding dove, pigeons, gulls, crows, thrushes, sparrows & finches

Footnotes to Table

¹ Habitat names and codes are from the Heritage Council's "A guide to habitats in Ireland" (Fossit, 2000). Habitats listed on Annex 1 of the EU Habitats Directive (92/43/EEC) are listed in **bold**.

² Habitat descriptions summarise key points from those in the Heritage Council's "A guide to habitats in Ireland" (Fossit, 2000).

³ EU status & codes indicate if the habitat corresponds in total or in part with a habitat listed on Annex I of the EU Habitats Directive (92/43/EEC). For such habitats, the Irish Government is required to designate the best examples as Special Areas of Conservation in order to maintain the habitat at a favourable conservation status in the country. Developments that would adversely affect such sites may only proceed if there are no alternative solutions and for overriding reasons of public interest. For priority habitats*, only reasons related to human health or public safety are allowed. Economic and social factors of overriding public interest may be taken into account for developments that would adversely affect sites with non-priority habitats (DG Environment 1999 & 2000)

⁴ Status categories of habitats on the mainland coast and on the islands are defined as follows:- Important – this is a major habitat in the area; limited – there is some of this habitat present but it is not a major element; very limited – there is a small amount of the habitat present. 5 More details of the sites are in Table 5. Habitats that qualified the site for designation by NPWS as an SAC are **bolded**.
www.npws.ie/en/SpecialAreasofConservationSACs/



Table 5. Summary details of important bird sites on the Fingal coastTable reference

No.	Site Name ¹	Size (ha) ²	Main Habitats ³	Main Birds ⁴	IBA ⁵	SAC ⁶	SPA ⁷	NHA ⁸	Other ⁹	Threats ¹⁰
1	Delvin estuary	n/a	Mud shores, sand shores, sea, salt marshes	Wintering waterfowl	No	No	No	No	None	Disturbance
2	Lowtherstone	n/a	Scrub, improved grassland, semi-natural grassland, agriculture		No	No	No	No	None	Disturbance & intensification
3	Skerries Islands	62	Sea, semi-natural grasslands, rocky shores,	Breeding seabirds, wintering geese	116	No	No	1,218	None	Disturbance
4	Rockabill	1	Sea, rocky cliffs, rocky shores & islets, scrub	Breeding roseate & other terns	117	No	13	207	RF	Disturbance
5	Baldogan	n/a	Scrub, improved grassland, semi-natural grassland, agriculture		No	No	No	No	None	Agricultural intensification
6	Rush Beach	n/a	Sand shores, sea, dunes	Wintering waterfowl	No	??	No	208	None	Disturbance
7	Rogerstown Estuary	368	Estuary, mud & sandy shores, salt marsh , improved grassland, dunes , improved & semi-natural grassland, agriculture	Brent geese, wintering waterfowl	115	208	11	208	NR23 R10	Disturbance, pollution
8	Portrane Beach	n/a	Sand shores, sea, dunes	Wintering waterfowl	No	??	No	208	No	Disturbance, erosion, shooting
9	Lambay Island	612	Sea, rocky sea cliffs & shores , improved & semi-natural grassland, muddy & sandy shores, heath, woodland	Breeding seabirds, wintering geese	114	204	69	204	None	Disturbance from boats
10	The Island peninsula	In 11	Sand shores, sand dunes , sea, scrub	Wintering waterfowl	113		No	205	R,	Disturbance, erosion
11	Broadmeadow Estuary	606	Estuary, sea, mud & sandy shores, salt marsh , improved grassland, dunes, improved grassland	Wintering waterfowl	113	205	25	205	R25	Disturbance
12	Portmarnock Point		Sand shores, Dunes , sea, amenity grassland semi-natural grassland	Wintering waterfowl, formerly little terns	112?	199	No	199	R	Disturbance, golf course development
13	Baldoyle Bay	552	Estuary, mud & sandy shores, salt marsh , dunes, amenity grassland, semi-natural grassland, agriculture	Wintering waterfowl, formerly little terns	112	199	12	199	NR20 R11	Disturbance
14	Ireland's Eye	178	Marine, rocky sea cliffs & shores, shingle & gravel banks , semi-natural grassland	Breeding seabirds, wintering geese	111	2193	No	203	None	Disturbance
15	Howth Head	201	Marine, rocky cliffs & shores, scrub, heath	Breeding seabirds	110	202	No	202	None	

Footnotes to Table

¹ Site nos are as in Figure 1. Sites are numbered from north to south.

² If the site has one or more designated areas, the size of the largest designation is given.

³ Main habitats are detailed in Table 4. Habitats which qualified the site for SAC designation by NPWS are **bolded**.

www.npws.ie/en/SpecialAreasofConservationSACs/

⁴ Bird species are listed in Table 3. Species which qualified the site for designation as an SPA and occur in internationally important nos. are **bolded**. www.npws.ie/en/SpecialProtectionAreasSPAs/

⁵ IBAs are Important Birds Areas are classified by the voluntary conservation organisations, BirdLife International and BirdWatch Ireland. IBAs are classified on the basis of scientific and numerical criteria as areas that qualify for SPA designation (Hunt et al 2000). The number is as in Birdlife International's listing.

⁶ SACs are Special Areas of Conservation that qualify for designation because of the presence of the best example of habitats listed on Annex I of the EU Habitats Directive (92/43/EEC). The number is as in NPWS's listing. www.npws.ie/en/SpecialAreasofConservationSACs/

⁷ SPA and occur in internationally important nos. are **bolded**. www.npws.ie/en/SpecialProtectionAreasSPAs/

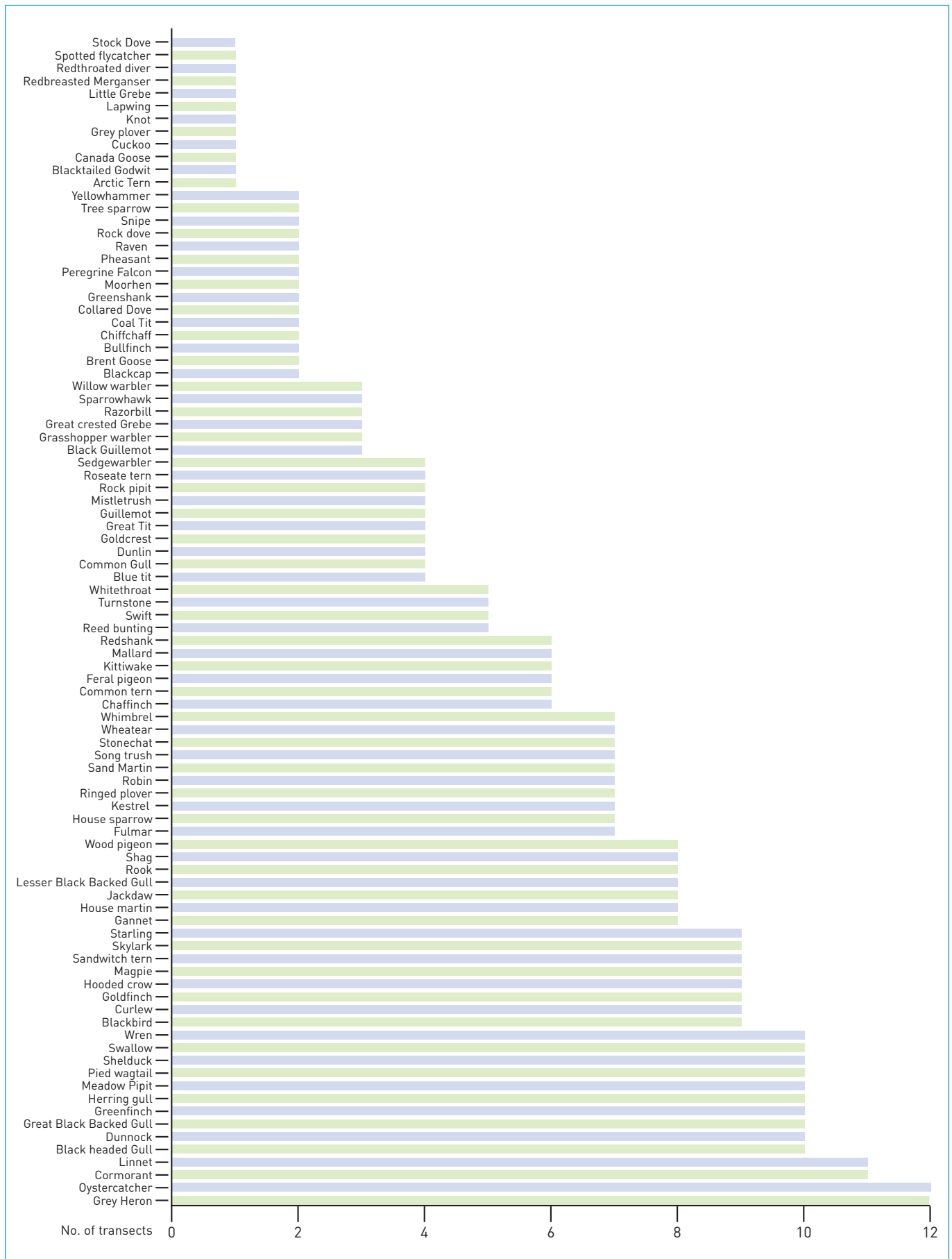
⁸ NHAs are proposed Natural Heritage Areas. Although most have not been formally designated under the 2000 Wildlife Amendment Act – and none of those in the Study Area, they are listed for protection in local authority development plans and there are protected under the 2000 Planning and Development Act. Portrane Beach proposed NHA (No. 1,215) is just south of Portrane Beach but it is listed on geological grounds. An additional proposed NHA, the Loughshinny coast (No. 2000) is not included because it is listed for geological and botanical reasons. www.npws.ie/en/NaturalHeritageAreasNHAs/

⁹ There are 3 other designations – the numbers, where given, are their official numbers. NR = Nature Reserve. These are designated under Section 15 (state owned) and 16 (privately owned) of the 1976 Wildlife Act to be managed for the “general protection of the natural environment”. There are 77 of them in the country including many types of habitats. They preceded the current system of NHAs The one at Rogerstown covers 195 ha and the one at Baldoyle covers 203 ha. RF = Refuge for Fauna. These are designated under Section 17 of the 1976 Wildlife Act where particular species are to be “specially protected”. There are seven of them, all remote sites for breeding seabirds. The only one in the Study Area is Rockabill. R = Ramsar site, which are wetlands of international importance. Those designated for birds hold 1% of the international population of one or more waterfowl species or 20,000 waterfowl in total. They are named after the Iranian town where the Convention was signed in 1971. In practice, Ramsar sites are protected by SPA designation. The three Ramsar sites in the Study Area, Rogerstown, Broadmeadow and Baldoyle cover 193, 546 and 203 ha, respectively.

Figure 18. Numbers of summer bird species in each transect



Figure 19. Numbers of summer bird species in no. of transects





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