

County Wexford

Biodiversity Action Plan

2013-2018

**Endorsed by the Elected Members of Wexford County Council on the 11th
November 2013**



**Protecting County Wexford's Biodiversity Through Actions
and Raising Awareness**

COUNTY WEXFORD

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Council on the 11th November 2013

Birds
Insects
Ocean
Diversity
Invertebrates
Biodiversity
Ecosystem
Rivers
Spiders
Indicators
Trees
You

To Protect County Wexford's Biodiversity
Through Actions and Raising Awareness



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ACRONYMS

BAP – Biodiversity Action Plan

BoCCI - Birds of Conservation Concern in Ireland

BWG – Biodiversity Working Group

cSACs - Candidate Special Areas of Conservation

Flora Protection Order - Flora (Protection) Order, S.I. No. 94 of 1999.

Habitats Directive - 1992 EU Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora

IUCN - International Union for the Conservation of Nature

NBAP – National Biodiversity Action Plan, (. *National Biodiversity Action Plan*, Dúchas. 2002, and ‘Actions for Biodiversity 2011-2016, Ireland’s National Biodiversity Plan’, Department of Arts, Heritage and the Gaeltacht, 2011.

NHA – Natural Heritage Area

SAC – Special Area of Conservation

SPA – Special Protection Area

The Convention – UN Convention on Biological Diversity, signed at Rio Earth Summit 1992

The Guidelines – Guidelines for the Production of Local Biodiversity Action Plans, Heritage Council, 2003.

UNESCO – United Nations Educational, Scientific and Cultural Organisation

Definition of Biodiversity: The 1992 United Nations, Earth Summit defined “biological diversity” as “the variability among living organisms from all sources, including ‘*inter alia*’, terrestrial, marine, and other aquatic ecosystems, and the ecological complexes of which they are part: this includes diversity within species, between species and of ecosystems”.

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EXECUTIVE SUMMARY

‘Biodiversity’ is a shortened version of ‘biological diversity’ and simply means the variety of life on earth. It includes the whole of the natural world from species regarded as common to those critically endangered. The biodiversity of County Wexford contributes enormously to the local economy, particularly in sectors such as agriculture and forestry, but also in less apparent ways such as flood abatement and erosion control. While often taken for granted, the maintenance of good biodiversity in County Wexford is crucial to the protection of our scenic landscapes, and to ensuring the continuation of the benefits it provides for our quality of life, recreation and tourism.

Wexford is a county rich in biodiversity. Habitat biodiversity include marine, coastal, terrestrial, wetland, freshwater and upland habitats. Wexford has an extensive and diverse coastline which supports a wide range of coastal habitats such as lagoons, dune systems, lakes and reefs of international and national conservation interest. Wexford also has inland habitats including woodlands, peatlands, grasslands, rivers, wetlands that support a variety of plant and animal life. County Wexford supports a diverse range of native species associated with terrestrial, freshwater, coastal and marine habitats and is regarded as an internationally important stronghold for breeding seabird colonies as well as breeding wildfowl. Some species have good populations; however there are many species that are in decline and under threat. There are many reasons why some of this diversity of species and habitats is being lost. The most common reasons are loss and degradation of habitat, introduction of non-native species, pollution, and over-exploitation.

While the loss of biodiversity might be regarded as a global issue, action is needed at national and local levels if we are to slow down and stop the rate at which species and habitats are being lost. This is vital to our existence as we rely on nature for so many goods and services such as clean air and water, food and fuel.

This is the first Biodiversity Action Plan for County Wexford and has been prepared to address the way in which wildlife resources of the County, including native plants,

animals and the ecosystems that they combine to produce, will be managed and protected over the next five years. This plan shares the goals of the Convention on Biological Diversity and the National Biodiversity Plan, and translates them into actions at a local level. These actions are set out in Section 4 of the plan 'Action for Biodiversity'.

Overall Aim

The overall aim for this first Biodiversity Action Plan for County Wexford is;

To protect County Wexford's Biodiversity through actions and raising awareness

To achieve this overall aim, the County Wexford Biodiversity Action Plan outlines a series of actions which are listed under each of the 5 key objectives of the plan;

Objective 1 - To identify Biodiversity information and fill data gaps for the County, to prioritise habitats and species for protection and to inform conservation action and decision making

Objective 2 - To make information on biodiversity available

Objective 3 - To raise awareness across all sectors, groups and ages, for the following;

(a) Wexford's Biodiversity,

(b) its value

(c) the issues facing it, and

(d) encourage people through using various media, training, and innovative initiatives to support biodiversity conservation.

Objective 4 - To promote and support best practice in biodiversity conservation, taking into account national and local priorities.

Objective 5 - To incorporate and raise the profile of biodiversity conservation issues in the local authority's actions and policies

The actions proposed focus on the most significant elements of County Wexford's natural environment and currently-known pressures and threats upon them, to achieve the plan's overall objectives. The implementation of the actions contained in this plan, through cooperation, partnership and close communication, will require input from all parties. One of the key principles of the local Biodiversity Action Plan process is to

highlight the fact that everyone has an interest and a stake in their local biodiversity. While this plan highlights and applauds the many organisations, community groups and individuals across the county that are already involved in biodiversity-related projects, the local Biodiversity Action Plan process also aims to encourage new groups, new initiatives and new partnerships to come under the 'umbrella' of the County Wexford's Biodiversity Action Plan and to help drive this plan forward.

This Biodiversity Action Plan is laid out as follows;

Section 1: Introduction to biodiversity

Section 2: What is currently being done for biodiversity, which gives a legislative background to biodiversity and its conservation.

Section 3: County Wexford's biodiversity, which looks at the important habitats and species found in the county

Section 4: Action for Biodiversity, outlines the Objectives and specific actions of the plan.

Section 5: What can you do? Gives some practical advices for the general public on helping protect biodiversity around their home, on the farm, and at school.



Figure 1 Ladybird

SECTION 1: INTRODUCTION TO BIODIVERSITY

Biodiversity is a contraction of the words ‘biological diversity’ and is used to describe the immense diversity of all living things on earth. This includes ecosystem diversity, species diversity and genetic diversity of species. The continuing decline of biodiversity has been of concern for many years and has prompted action at an international level, resulting in the UN Convention on Biological Diversity that was signed at the Rio Earth Summit in 1992. This recognised that biodiversity is about more than plants, animals and their habitats. It is about the interconnectedness and interdependence of all living things, including people and their need for medicines, food, clean water, fresh air and shelter, which highlights the importance of biodiversity for us all. Changes in biodiversity is now considered to be a key test of sustainable development.

The UN Convention on Biological Diversity was ratified by the Irish government in 1996 and, arising from this, Ireland’s first National Biodiversity Action Plan (NBAP) was published in 2002¹. Since biodiversity is best protected at a local level, action no. 10 of the National Biodiversity Action Plan was for each Local Authority to prepare their own Biodiversity Action Plan (BAP) and to-date a number of these plans have been published. A second National Biodiversity Action Plan ‘Actions for Biodiversity 2011-2016, Ireland’s National Biodiversity Plan’, Department of Arts, Heritage and the Gaeltacht, has just been published, which reiterates this objective under Action 1.7.

While the Rio Earth Summit initially set a target to significantly reduce the loss of biodiversity by 2010 it had been acknowledged that this target was not met and the European Union has set a new target to protect biodiversity, and halt biodiversity loss within the EU by 2020.

1.1 What is Biodiversity?

Biodiversity, an abbreviation of ‘biological diversity’, means the total variety of life forms on earth. This includes **species diversity** including people, plants, birds, animals, fungi and micro-organisms such as viruses and bacteria. The term biodiversity also covers

¹ **Dúchas.** 2002. *National Biodiversity Action Plan*. Department of the Arts, Heritage, Gaeltacht and the Islands.

genetic diversity which is the genetic variation between individuals within a species. Furthermore biodiversity includes the **ecosystem diversity**. An ecosystem is a group of living (e.g. fauna and flora) and non-living components (e.g. climate, soil, geology or rock type) which have inter-dependent relationships. Biodiversity therefore not only refers to the variety of life but also the interactions between living things.

1.2 Why Protect Biodiversity?

All living organisms are part of an intricate web of life which has evolved over millions of years. Plants and animals depend on each other for survival and are each uniquely adapted to their own role in their natural environment. When we damage biodiversity we upset the delicate balance of nature, which may have long-lasting and far reaching consequences not just for ourselves, but for the living world around us.

Species, habitats and ecosystems, the planet's whole natural heritage, is under ever increasing threat. Many species and habitats are in decline and in some cases their future is endangered. Biodiversity has important direct and indirect health and economic benefits as well as being intrinsically bound up in the cultural heritage of Wexford. So what are the benefits that biodiversity can offer?

1.2.1 Biodiversity as an Indicator

Biodiversity is a primary indicator of the health of our surroundings. We depend on the ability of nature to replenish and renew itself continually. It is the combination of life forms and their interactions with each other and with the rest of the environment that has made Earth a uniquely habitable place for humans. Because many different species are dependant on each other and the environmental conditions in which they live, many of them can be considered 'indicators' of environmental quality and biodiversity health.

1.2.2 Biodiversity and Ecosystem Services

Biodiversity provides a large number of 'goods and services' that sustain our lives; provision of food, shelter, fuel, medicines, purification of air and water, detoxification and decomposition of wastes, stabilisation of earth's climate, moderation of floods, droughts, wind and extreme temperatures, generation and renewal of soil fertility,

pollination of plants, control of pests and diseases, maintenance of genetic resources as key inputs to crop varieties and livestock, cultural and aesthetic benefits, and ability to adapt to change.

Having regard to the rate of global development in recent years, population growth, climate change, sea level rise and flooding it is necessary, now more than ever, to improve the management of nature to protect our natural heritage, habitats, plants and wildlife. Biodiversity can help reverse the negative impacts of climate change. Good coastal wetlands can improve protection against rising sea levels and healthy floodplain and other wetland ecosystems can limit the effects of river flooding. Forests and peatlands are carbon sinks and plants and animals are used as indicators of climate change.

Ecosystem Goods & Services	
Supporting Services <ul style="list-style-type: none"> • Primary production • Nutrient cycling • Soil formation • Decomposition / recovery 	Regulating services <ul style="list-style-type: none"> • Climate regulation • Disease regulation • Water purification • Flood mitigation
Provisioning services <ul style="list-style-type: none"> • Food • Fresh water • Wood and fibre • Therapeutic compound 	Cultural services <ul style="list-style-type: none"> • Aesthetic • Spiritual • Educational • Recreational

1.2.3 Economic Value of Biodiversity

A recent report² presents an assessment of the benefits of selected ecosystem services in the principal social and economic sectors. Although only a preliminary estimate is proffered, the current marginal value of ecosystems services in Ireland in terms of their contribution to productive output and human utility is estimated at over €2.6 billion per annum. While biodiversity is a ‘public good’, it commonly has the characteristic of an open access resource such that many of the benefits are realised as private benefits, whereas the associated costs are shared social or public costs. The polluter pays

² Bullock, C *et al*, (2008), The Economic and Social Aspects of Biodiversity, Benefits and Costs of Biodiversity in Ireland. The Stationery Office, Government Ireland

principle, e.g. waste charges, is an example of putting a price on the environment as a public good.

1.2.4 Biodiversity and Human Wellbeing

People depend on biodiversity in their daily lives, in ways that are not always apparent or appreciated. Human health ultimately depends upon ecosystem products and services (such as water, fuel and food) which are necessary for good human health and productive livelihoods. Biodiversity loss can have a significant direct human health



impact. Indirectly, changes in ecosystem services affect livelihoods and income.

Plants have formed the basis of traditional medicines for thousands of years. Even in modern times, plant-based systems continue to play an essential role in health care. It has been estimated by the World Health Organisation that approximately 80% of the world's population from developing countries rely mainly on traditional plant based medicines for their primary health care. There are also the psychological benefits biodiversity provides such as visually pleasing landscapes and habitats which can be enjoyed through recreation and leisure pursuits.

1.3 Why Produce a Wexford Biodiversity Action Plan?

The preparation of a Local Biodiversity Action Plan is part of an overall process that the government has initiated to address heritage concerns and to fulfil international obligations under the Convention on Biological Diversity. Local Biodiversity Action Plans are required under the National Biodiversity Plan which was adopted by the government in November 2011. Local Action 1.7 states 'Each local authority to publish a Local Biodiversity Action Plan or review existing plans'.

The County Biodiversity Action Plan is to be Wexford County Council's response to meeting the requirements of the National Biodiversity Plan and the South East Regional Authority Regional Planning Guidelines 2010, which states under Planning Policy Objective No. 8.6 'Adopt and implement Biodiversity Action Plans at Local level'.

The local authority is the lead player in the Local Biodiversity Action Plan process. It is responsible for the preparation of the Local Biodiversity Action Plan and coordinating and monitoring implementation of the Plan. The Local Authority also plays a critical role, as the work of the local authority itself is a major influence on biodiversity at the local level. This Action plan, which has been informed by the guidance set out in '*Guidelines for the Production of Local Biodiversity Action Plans*' drafted by the Heritage Council and published by the Department of Environment, Heritage and Local Government, will take into account the overall goal, objectives and principles of the National Biodiversity Action Plan, and translate them into a local County Wexford context.

This Biodiversity Action Plan is intended to provide a focused approach for the county, identifying priorities habitats and species in need of attention and the action required to secure their future. The Biodiversity Action Plan will be a key document in guiding the work of everyone involved in the conservation of the natural environment in County Wexford by providing a framework for biodiversity action for the next 5 years and setting a template of action.

1.4 Local Biodiversity Action Plan Process

Wexford County Council commenced the preparation of a County Biodiversity Action Plan in November 2010 with the establishment of the Steering Committee, which included representatives from the Planning and Environment sections of the Council, the Heritage Council and National Parks and Wildlife Service (NPWS). The first phase of this process involved, consultation with the relevant bodies (government organisations, non-government organisations and interest groups) and the general public, (see Appendix 1 – Consultees and Consultation Process). The Council also commissioned an ecologist to carry out the preliminary data gathering and review of the County's biological resource. A Working Group was also established by Wexford County Council which included representatives from sectoral agencies, environmental

non-government organisations and local environmental experts (see Appendix 1 – Consultees and Consultation Process). This group reviewed the data collected by the ecologist as well as identifying the aim, objectives and actions for the Plan through a number of facilitated workshops. The Working group gave a local focus on developing the actions and specifically helped in identifying the local biodiversity features of the county. The steering committee also met intermittently. A second ecologist was commissioned in May 2011 to audit and add to the already gathered data on the County's biological resource. The County Wexford Biodiversity Action Plan 2013-2018 was prepared in accordance with the '*Guidelines for the production of Local Biodiversity Action Plans*', Heritage Council, 2003³.

1.5 Consultation and Education Programme

The consultation process commenced with a press release in the local papers on the 1st of December 2010 inviting submissions. Posters to raise awareness were placed in public buildings and sent by post to nearly 200 community groups included on the Keep Wexford Beautiful mailing list along with being sent out to all the primary and secondary schools. In total ninety-nine submissions were received, (see Appendix 1 – Consultees and Consultation Process).

Art Competition Entries



A biodiversity art competition was organised with the primary and secondary schools with over 400 entries received, which was judged by Don Conroy and an awards ceremony held on 27th June 2011. A photography competition was also organised with

³ **Heritage Council**, 2003. *Guidelines for the production of Local Biodiversity Action Plans*

the theme of biodiversity with a junior and senior category. The photography competition was also very popular with 165 entries, with an awards ceremony held on 27th July 2011.



Photography Exhibition and Awards Ceremony, 27th July 2011



1.6 Role of the Local Authority in the Conservation of Biodiversity

A County Wexford Biodiversity Action Plan can be seen as an opportunity to target and coordinate an approach to biodiversity conservation in the county, while assisting sustainable planning and development and meeting monitoring obligations set out under the County Plan and Strategic Environmental Assessment.

The Biodiversity Action Plan is a plan of action for the implementation of our role in the protection of Biodiversity at a local level. Wexford County Council has various responsibilities under environmental protection in the areas of control (licensing, permits, land-use plans and permissions), and works (roads and housing)

1.7 Implementation of the Plan

The County Wexford Biodiversity Action Plan represents an ambitious body of work to be achieved over the coming five years. While led by Wexford County Council successful implementation of the plan will depend on the full participation of a number of key partners that have been identified alongside each action.

SECTION 2: BIODIVERSITY AND THE LAW

Current legislation allows for important biodiversity sites to be designated on two different levels – European Importance and National Importance. Protection can also be afforded to sites through the County Development Plan process and policies.

2.1 Sites of European Importance – SPAs and SACs

Sites of European Importance includes Special Protection Areas (SPAs) and Special Area's of Conservation (SACs).

SPAs are areas that are of European importance specifically for bird species established under the EU Birds Directive (79/409/EEC). As a member of the EU, it is required that Ireland designates any site that meets the ecological criteria laid out. The network of SPAs in Ireland includes important wintering waterfowl sites and sites supporting rare species.

SACs are areas that are of European importance for habitats and plants and animals other than birds. These are designated under the 1992 EU Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora, otherwise known as the Habitats Directive. Again, they are selected on a specific set of criteria that relates to habitats and species that are considered to be particularly important, rare or vulnerable in Europe. Animals listed for protection by the designation of SAC includes otter, salmon, marsh fritillary butterfly, freshwater pearl mussel, and whorl snails. Candidate SACs (cSACs) are given the same level of protection as fully designated SACs.

Together, SPAs and SACs make up a European network of sites known as Natura 2000 Network. They are protected in Irish legislation through the European Communities (Natural Habitats) Regulations 1997 - 2005, and the European Communities (Birds and Natural Habitats) Regulations 2011, and the Planning & Development Act (2000 - 2010). These regulations lay out rigorous tests that are designed to ensure that SACs and SPAs are not impacted on by any proposals, excepting those with the highest level of justification. Even if such a proposal is allowed, it is necessary to ensure that

compensation is required to maintain the coherence of the Natura 2000 Network. This would usually require habitat creation and or designation.

Ireland is required to take appropriate steps to maintain and restore a favourable conservation status of these areas and Management Plans are being drawn up for them by National Parks and Wildlife Service (NPWS). Some have already been completed. So far there is only one available for the Blackstairs Mountain cSAC.

Nature Conservation Designations in Wexford (see also Appendix 3)

Special Areas of Conservation (SACs) - are the prime conservation areas in Ireland, and are designated under the EU Habitats Directive, as they contain species and/or habitats that are considered in need of protection on a European level. There are 15 candidate SACs and one SAC in County Wexford

Special Protection Areas (SPAs) - the EU Birds Directive requires the designation of SPAs for certain bird species, including those that are rare and vulnerable, those that occur regularly as migrants, and to cover wetlands which attract large numbers of migratory birds. There are 9 SPAs in County Wexford.

Natura 2000 – Collectively SACs and SPAs are known as Natura 2000 sites

Natural Heritage Areas (NHAs) – this is the basic national designation for wildlife in Ireland. Statutory designation of NHAs was enabled by the Wildlife (Amendment) Act 2000. There are 27 proposed NHAs in County Wexford and one NHA.

Nature Reserves – these are areas of importance for wildlife, which are protected under Ministerial Order. There are 3 Nature reserves in County Wexford; The Raven, Wexford Wildfowl Reserve, and Ballyteige Burrow.

Ramsar Sites – The Ramsar Convention on Wetlands came into force for Ireland on 15 March 1985. Ireland presently has 45 sites designated as Wetlands of International Importance, three are located in County Wexford with total area of 1741Ha; The Raven, Bannow Bay and Wexford Wildfowl Reserve.

Refuge for Fauna – Lady's Island Lake. Areas where the specific protection of one or more species of animal is required, established under the Wildlife Acts.

2.2 Sites of National Importance and the Wildlife Acts 1976 & 2000

The Wildlife Act is Ireland's primary national legislation for the protection of wildlife. It covers a broad range of issues, from the designation of nature reserves, the protection of species, regulation of hunting and controls in wildlife trading. The Act is implemented by a series of regulations.

Natural Heritage Areas

Apart from the Natura 2000 sites, there are a range of other sites of importance for nature conservation. The most important of these are identified as Natural Heritage Areas. The Wildlife (Amendment) Act 2000 provides a statutory basis for these.

National Parks

The designation of National Parks is based on the recommendation of the International Union for the Conservation of Nature (IUCN). There are 6 National parks in Ireland managed by the State and most of the land area is also designated SAC.

Nature Reserves

Nature Reserves are protected under ministerial order as areas important to wildlife. There are over 70 Nature Reserves in Ireland, 3 of which are located in County Wexford, The Raven, Ballyteige Burrow, and Wexford Wildfowl Reserve.



Figure 2 The Raven Wood

2.3 Protection Outside of Designated Sites

The vast majority of biodiversity does not exist conveniently within the borders of these protected areas. Many species which occur in the wider countryside are protected under the provisions of the Wildlife Acts, 1976-2000. Species listed under this act are native to Ireland but may not be under immediate threat, the badger for instance, while others are locally endangered, such as the red squirrel. Complementing this Act is the Flora Protection Order (1999), which prohibits the disturbance of listed plant species.

Protection of Birds

All wild birds, their nests and eggs are protected by law under the EU Birds Directive and Wildlife Act. It is illegal to remove the nests of swifts, swallows and house martins, for example, when there are eggs or chicks in the nest. Section 40 of the Wildlife Act 1976 as amended by Section 46 of the Wildlife (Amendment Act) 2000 restricts the cutting, burning or destruction of hedges during nesting and breeding season between 1st March and 31st August, in order to protect nesting birds except for certain exemptions. The Birds of Conservation Concern in Ireland are published in a list known as the BoCCI List. In this List, birds are classified into three separate categories, red, amber and green, based on the conservation status of the bird.

Protection of Wild Animals

Figure 3 Hare



The Wildlife Acts contain a list of species which cannot be wilfully killed or injured without a special licence, and subject to similar exemptions to those covering wild birds. The legislation protects their breeding places from wilful interference or destruction, and the Wildlife (Amendment) Act 2000 extends this protection to include resting places also. It should be noted that resting

places (e.g. badger sets) are protected even if there are no animals present. The species on the protected lists include all bat species, marine mammals, otter, badger, hare, Freshwater Pearl Mussel, Kerry Slug, Natterjack Toad and Red Squirrel.

Protection of Wild Plants

It is an offence to cut, pick, uproot or take the flowers of any species protected by a Flora Protection Order. The 1999 Flora Protection Order lists 68 vascular plant species which are protected along with mosses, liverworts and lichens. Protection was strengthened by the Wildlife (Amendment) Act 2000, which extended the offence to injuring, damaging or destroying any specimen, which also applies to the seeds and spores of the plants.

Irish Red Data Book

The Irish Red Data Book is a list of plant and animal species that are considered rare, threatened or internationally important. The species are categorised as critically endangered, endangered, vulnerable, and near threatened. The lists of these species are available from NPWS. Creating the Red Data Book was inspired by the International Union for Conservation of Nature's (IUCN) global Red list of Threatened Species.

Trees and Hedgerows

Apart from the cutting date restrictions for hedgerows in the Wildlife Acts, there are two main tree protection measures;

- Tree Preservation Orders (TPOs)
- Tree Felling licences

TPOs are a planning mechanism whereby individual trees or groups of trees can be identified as important and protected by a TPO. Felling licences are obtained through the Department of Agriculture, Fisheries & Food – Forestry Section. Licences must be obtained for felling trees greater than 10 years old outside urban areas. Under Section 37 of the Forestry Act, 1946, it is illegal to uproot any tree over 10 years old, or to cut down any tree of any age (including trees which form part of a hedgerow), unless a Felling Notice has been lodged at the Garda Station nearest to the trees at least 21 days before felling commences. The requirements for a felling licence don't apply where;

- (a) the tree is a hazel, plum, damson, pear, or cherry tree grown for the value of its fruit or any ozier (willows grown for their rods);
- (b) the tree is less than 100 feet from a dwelling other than a wall or temporary structure;

- (c) the tree is standing in a County or other Borough or an urban district (that is within the boundaries of a town council, or city council area);
- (d) other exceptions apply in the case of local authority road construction, road safety and electricity supply operations.

CHECKLIST OF PROTECTED & RARE SPECIES IN IRELAND	
The European Directives contain lists of plants and animals that are rare or declining on a European scale, listed separately in a range of 'Annexes'	
EU Habitats Directive [Council Directive 92/43/EEC]	
Annex I Habitat types (*Priority habitats)	59 Habitat types in Ireland requiring the designation of SAC. Priority habitats indicated by an asterix * are those which the EU considers require particular protection because their global distribution largely falls within the EU and they are in danger of disappearance
Annex II animal & plant species	26 species in Ireland must designate SAC for, Annex II(b) species protected wherever they occur
Annex IV animal & plant species	43 species in Ireland requiring strict protection (plant species listed on Annex II are also listed on Annex IV) Strictly protected wherever they occur (protected from injury, accidental harm or disturbance / damage to their breeding or resting places)
Annex V animal & plant species	Over 43 species in Ireland requiring a high level of protection and need to be safeguarded against exploitation
EU Birds Directive [Council Directive 79/409/EEC]	
Annex I bird species	Birds species that require protection of their habitats
Annex II, section I bird species Annex II, section II bird species Annex III, section I bird species Annex III, section II bird species Annex III, section III bird species	Regulates the hunting of these bird species

SECTION 3: COUNTY WEXFORD'S BIODIVERSITY

This section provides an overview of the wealth of biodiversity found within County Wexford. Habitats and species of special conservation importance are found across the county, many being afforded legal protection as described below. However, the Convention on Biological Biodiversity highlights the need to protect and enhance biodiversity across the wider countryside, not just in protected areas, and hence this report highlights the major habitats and species found across County Wexford, with which we all interact on a day-to-day basis.

3.1 The Landscape of Wexford

County Wexford is known as the 'Model County' with largely low-lying fertile land being the characteristic landscape of the county. The Blackstairs Mountains form part of the boundary to the northwest, and the southern edges of the Wicklow Mountains form the northern boundary. The major rivers are the Slaney and the Barrow. The Barrow is 192 km (119.5 miles) in length, making it the second longest river on the island of Ireland. Small seaside lakes or lagoons exist at two locations, Lady's Island and Tacumshin Lake. Most, but not all, of the county was covered with an ice-sheet during the last Ice age. As the ice retreated, Co. Wexford would have been one of the first areas to be covered with glacial drift (a mixture of boulders, clay, sand and gravel) that blanketed the existing bedrock. This has led to high quality soils, suitable for a wide range of agriculture.

3.2 Geological Diversity in County Wexford

Geodiversity may be defined as "the natural range (diversity) of geological (rocks, minerals, fossils), geomorphological (landforms, processes) and soil features. It includes their assemblages, relationships, properties, interpretations and systems" (Gray 2004). Rocks, sediments and soils form the land on which we live and on which plants and animals thrive. Without rocks, no soil or nutrients can be created; without soil and nutrients, there is no starting point for plants and animals. Geomorphological processes, for example the effects of erosion and weathering, shape the landscape. Fluvial processes have created a diversity of river habitats and coastal processes are

vital to the well-being of coastal biodiversity. Geodiversity underpins biodiversity since habitats have a geological foundation. If the geological foundation is not taken care of, biodiversity will suffer from it as it will be deprived from a vital supporting element (Pers.comm. S. Préteseille).

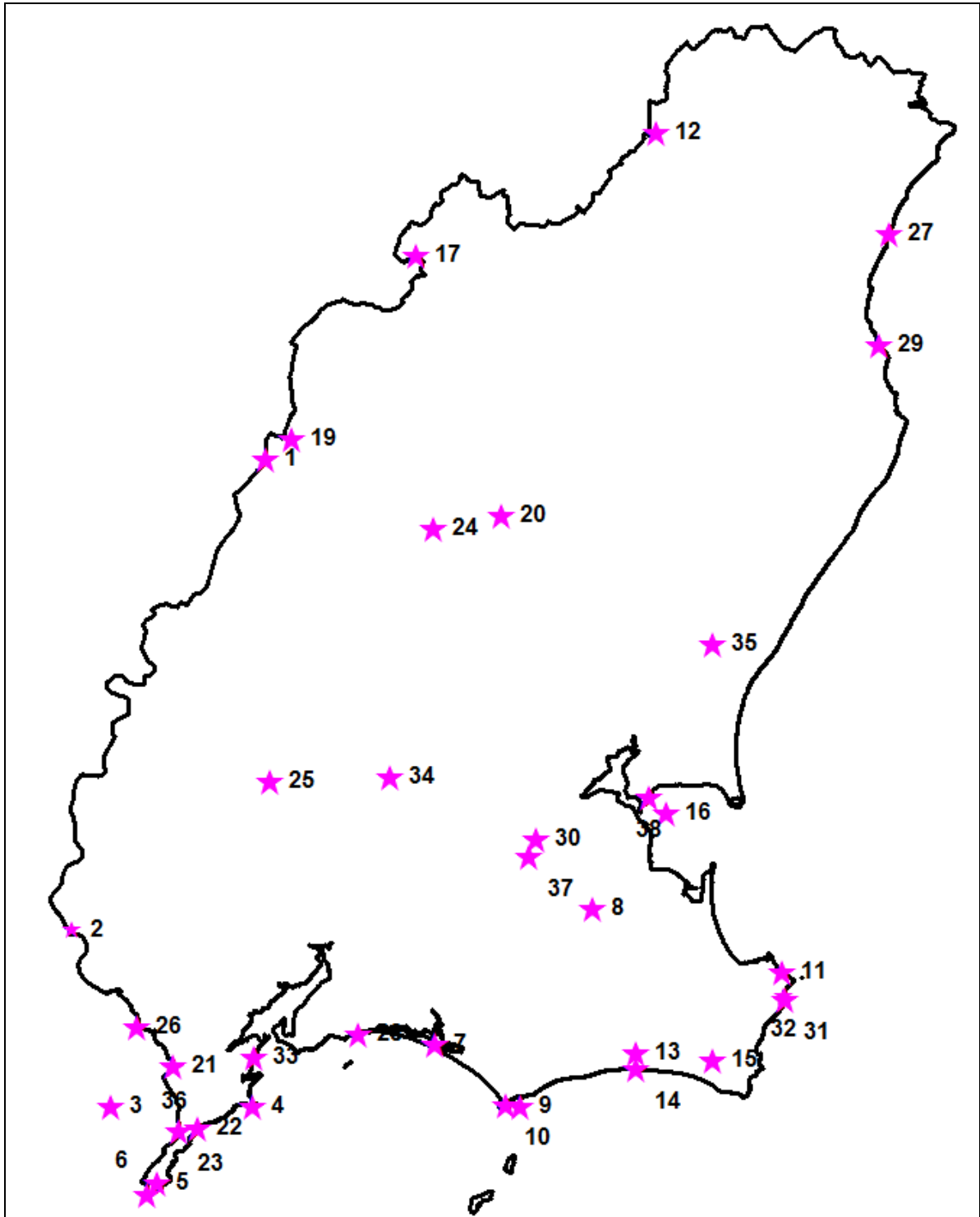


Figure 4 County Geological Sites

The Geological Survey of Ireland in partnership with the National Parks and Wildlife Service of the Department of Environment, Heritage and Local Government is currently identifying important geological and geomorphological sites throughout the country for designation as Natural Heritage Areas (NHAs). The Irish Geological Heritage (IGH) Programme is identifying and selecting the very best national sites for NHA designation, to represent the country's geology. It is also identifying many sites of national or local geological heritage importance, which are classed as County Geological Sites (CGS), although these will not receive the statutory protection of NHA sites. Some of these sites overlap with Special Areas of Conservation (SACs) and some are already pNHAs.

County Wexford has a unique geodiversity: from rocks as old as 620million years to exceptionally preserved fossils recording a teeming tropical sea life to volcanic rocks, glacial features and present coastal processes. The provisional list (the project is ongoing) of 38 geological heritage sites for Wexford is contained in Appendix 5 along with a glossary of geological terms.

Some of the geological highlights of the county along with their description in layman's terms, are as follows (Pers. comm. S. Préteseille):

Site	Description
Site 20. Greenville/Enniscorthy	This site is important for the biostratigraphy of the Duncannon Group (Ordovician period) of Leinster. It has yielded fossils of trilobites and brachiopods including type specimens for three species. This site is undesignated but recommended for NHA status.
Site 22. Sandeel Bay	This site is a coastal cliff section through the Old Red Sandstone and has yielded important fossil plants. It is the type locality for the arborescent lycopod <i>Wexfordia hookense</i> Matten, 1989, where the plant fossil was first described. This site is part of the Hook Head NHA and SAC and is recommended for NHA status.
Site 24. Kiltrea	This site is of critical importance in the biostratigraphy of the Ordovician period of South East Ireland. Fossils (graptolites) have been used to precisely date the age of the rocks, helping

	to better understand the regional geology. This site is recommended for County Geological Site status.
Site 27. Ballymoney strand	This rocky shoreline exposes a major unconformity in the Ordovician geology of Leinster (an erosion surface separating two strata of different ages, indicating that sediment deposition was not continuous). This site is part of Ballymoney strand NHA and is recommended for NHA status.
Site 34. Camaross Crossroads	The site comprises over two hundred well-preserved fossil pingos. A pingo is an ice-cored, dome-shaped hill, oval in plan, usually standing 2-50m high and 30-600m in diameter, which developed in an area of permafrost. At Camaross Crossroads, the pingos stand at 1-2m high and are 30-75m in diameter. These provide evidence of seasonal freezing and thawing during the Ice Age, similar to conditions now found near the Arctic Circle. This site is recommended for NHA status.
Sites 5 & 6. Hook Head	A continuous section of rocks of Devonian to Carboniferous age outcrops on the Hook Peninsula along the coast. Well preserved fossils can be seen around the lighthouse in the Carboniferous limestone: corals, crinoids (sea lilies), brachiopods, bryozoans and echinoids (sea urchins), remnants of a teeming sea life, 350 Million years ago. The coastal section is part of the Hook Head NHA and SAC and is recommended for NHA status.
Site 35. Screen Hills	The Screen Hills covers most of Wexford between Kilmuckridge to Curracloe. The area represents the largest raised ice contact delta in Ireland and possibly in Europe; illustrating depositional environments and associated sediments linked to the withdrawal of the Irish Sea Glacier from the Celtic Sea at the end of the Ice Age. The sediments have been interpreted as glaciomarine, glaciofluvial (meltwater streams) and glaciolacustrine (meltwater lakes). They are made of muds and sands and gravels in excess of 30m thick, forming one of the largest sand and gravel aquifers in Ireland. This site is part of the Screen Hills, Ballyconnigar Upper, Ballyconnigar sand pits, Wexford Slobbs and Harbour NHAs. It is also part of the Screen Hills, Kilmuckridge Tinnaberna Sandhills SACs. It is recommended for NHA status.

3.3 Overview of Habitats

Habitats are basic building blocks of the environment that are inhabited by animals and plants, and are important units for site description and conservation management. A habitat is described as the area in which an organism or group of organisms live, and is defined by the living (biotic) and non-living (abiotic) components of the environment. The later includes physical, chemical and geographical factors in addition to human impact or management (Fossitt 2000⁴)

Wexford is a county rich in biodiversity. Habitat diversity includes reefs, sea caves, coastal dune systems, lagoons, lakes, rivers, grasslands, marshes, woodlands, and peatlands. Some of these areas are protected within the 16 cSACs, 9SPAs, 27pNHAs and 1 NHA.

Natural heritage hotspots within the county include coastal systems of Bannow Bay and Ballyteige, The Raven Nature Reserve, the lagoons at Lady's island Lake and Tackumshin Lake and woodlands at Killoughrim, uplands of the Blackstairs mountains and river valleys of the Barrow and Slaney Rivers.

The wealth of habitats, however, is not confined to protected sites only. Many habitats throughout Wexford are rich in species diversity; they provide important roosting or feeding sites as well as being valuable wildlife corridors. These habitats however, do not have the statutory protection afforded to them as in designated sites. As a consequence, these habitats are under threat from a wide range of sources.

The following text describes the key habitat types in County Wexford. The Annex I habitat names and codes are given as well as the habitat types according to Fossitt (2000)⁴. The habitats broadly follow the sequence of (NPWS 2008⁵) as well as the

⁴ Fossitt, J.A. (2000). *A guide to the Habitats of Ireland*. The Heritage Council.

⁵ NPWS (2008). The status of EU protected habitats in Ireland. Conservation status in Ireland of Habitats and Species listed in the European Council Directive in the Conservation of Habitats, Flora and Fauna 92/43/EEC. National Parks and Wildlife Service. Department of the Environment Heritage and Local Government

sequence of Fossitt (2000)⁴. Vascular plant names in this report follow those of Stace (1997)⁶; Bryophytes follow Smith (2004)⁷.

3.3.1 Marine Habitats

Sandbanks (1110) / SS1 Infralittoral gravels and sands

The shallow sandy sediments are typically colonised by a burrowing fauna of worms, crustaceans, clams and echinoderms. Life at the surface of a sandbank may include mysid shrimps, snails, crabs and fish. Where coarse stable material such as shells or stones are present on the sediment surface, species such as hydroids, seamats and sea squirts are present. The sandbanks are very important feeding areas for sea birds. Sandbanks in Wexford occur at Long Bank and Holdens Bed cSAC which are situated several kilometres to the east of Rosslare and Wexford Harbour. They are situated at the southern end of a series of offshore sandbanks that run from Arklow to the south of Rosslare (NPWS site synopsis)

Estuaries (1130)

Estuaries are downstream parts of a river valley, subject to the tide and extending from the limit of brackish waters. River estuaries are coastal inlets where there is a substantial influence of freshwater. The mixing of freshwater and sea water and the reduced current flows in the shelter of the estuary lead to the deposition of fine sediments, often forming extensive intertidal sand and mud flats. Estuarine sediments are typically soft muds but stones or shells occur can also occur. Saltmarshes are also characteristic of estuaries. Estuaries are of major international importance for wintering birds. Mammal species occurring include harbour seal, grey seal and otter. Best examples of estuaries in County Wexford include Bannow Bay (cSAC Bannow Bay), The Cull (cSAC Ballyteige Burrow), Ferrycarrig and Wexford Harbour (cSAC Slaney River Valley). Wexford Harbour is an extensive shallow estuary which dries out considerably at low tide exposing large expanses of mudflats and sandflats.

⁶ Stace, C. (1997). *New Flora of the British Isles* (2nd Ed.). Cambridge University Press, Cambridge.

⁷ Smith, A.J.E. (2004). *The Moss Flora of Britain and Ireland*. Cambridge University Press, Cambridge.

Tidal and mudflats and sandflats (1140) / LS2 Sand shores/ LS3 Muddy sand shores

Intertidal mudflats and sandflats are submerged at high tide and exposed at low tide and are normally associated with inlets, estuaries or shallow bays. The physical structure of these intertidal flats range from mobile, coarse sand beaches on wave exposed coasts to stable, fine-sediment mudflats in estuaries and other inlets. They support diverse communities of invertebrate species. Mudflats are usually located in the most sheltered areas of the coast where large quantities of silt from rivers are deposited in estuaries. The high biomass of invertebrates in tidal sediments often provides an important food source for waders and wild fowl. Examples of this habitat occurs in the following cSACs: Ballyteige Burrow, Bannow Bay SAC, Saltee Islands, Raven Point Nature Reserve, Slaney River Valley, River Barrow and River Nore, Carnsore Point

Large Shallow Inlets and Bays (1160) / MW2 Sea inlets and bays

Shallow inlets and bays are indentations of the coastline that have no fresh water input or only a low level, such as small streams and/or local rainfall runoff. They experience coastal salinities (30‰) continuously. Average water depth is about 30m with at least half of the inlet/bay shallower than 30m. Their linear lengths exceed 2km and the length to width ratio is generally greater than 2:1. They are large areas that encompass many other habitat types, including a number which are listed in the Habitats Directive. Examples of large shallow inlets and bays are found at Saltee Islands cSAC and Hook Head cSAC.

Reefs (1170) / LR1 Exposed rocky shore/ LR2 Moderately exposed rock shore/ LR3 Sheltered rocky shores/ LR 4 Mixed substrata shores

Reefs may be made of rock or constructed by animals (such reefs are called biogenic reefs). In Ireland rocky reefs are found both intertidally and subtidally, from sheltered waters to areas moderately exposed to swell and wave action, to waters exposed to the full forces of the Atlantic waves. The structure of reefs varies from bedrock to boulders or cobbles. In County Wexford the best examples of reefs can be found at Lady's Island Lake cSAC, Saltee Islands cSAC, Hook Head cSAC, and Carnsore Point cSAC.

Sea caves (8330)/ LR5 Sea caves/ SR1 Exposed infralittoral rock / SR2 Moderately exposed infralittoral rock / SR3 Sheltered infralittoral rock/ SR4 Exposed circalittoral rock / SR5 Moderately exposed circalittoral rock/ SR6 Sheltered circalittoral rock.

Sea caves are situated under the sea or opened to it, at least at high tide. The habitat includes partially submerged sea caves. Their bottom and side support communities of marine invertebrates and algae. In Wexford, good examples of sea caves occur at the Saltee Islands cSAC, particularly at the base of the cliffs on Great Saltee. Some of these caves are sub-littoral and some have boulder beaches at the back.

3.3.2 Coastal Habitats

Coastal Lagoons (1150)* / CW1 Lagoons and saline lakes

Coastal Lagoons are an Annex I priority habitat as listed in the EU Habitats Directive, 1992. Coastal Lagoons are lakes and ponds fully or partially separated from the sea by sandbanks or shingle, or less frequently by rocks. The salinity of the water varies depending on rainfall, evaporation and through the addition of seawater from storms, temporary flooding by the sea in winter or tidal exchange. In County Wexford Lagoons occur at Ballyteige Burrow cSAC, Lady's Island Lake cSAC, and Tacumshin Lake cSAC. At Lady's Island Lake the lagoon habitat is an excellent example of a sedimentary lagoon with a sand/shingle barrier. The flora is typically brackish and the fauna of the lagoon is rich and at least 13 lagoonal specialists have been recorded here and at least four species appear to be rare.

The lagoon also supports an internationally important tern colony. At Tacumshin Lake, the lagoon was formerly a shallow sea bay which over time has been separated from the sea by a gravel/sand spit that has extended across the mouth of the bay from east to west, due to longshore drift. This site is of particular conservation significance for its lagoon habitat, which is an excellent example of a sedimentary lagoon with a gravel/sand barrier that supports a wide variety of plants and animals, including many lagoonal specialist species. It is one of the largest examples of lagoon in the country.

Annual vegetation of drift lines (1210) / LS1 Shingle and gravel shores

Annual vegetation of drift lines is found on beaches along the high tide mark, where tidal litter accumulates. It is dominated by a small number of annual species. Tidal litter contains the remains of marine algal and faunal material as well as a quantity of seeds. Decaying detritus in the tidal litter releases nutrients into what would otherwise be a nutrient-poor environment. The habitat is often represented as patchy fragmented stands of vegetation that are very short-lived and subject to frequent reworking by the tide. County Wexford has the highest number of habitat records along the east coast. The vegetation is limited to a small number of highly specialised species that are capable of coping with salinity, wind exposure, an unstable surface and lack of soil moisture. In County Wexford, cSAC sites that have been designated for this habitat are: Ballyteige Burrow cSAC, Bannow Bay SAC, Cahore Polders and Dunes cSAC, Tacumshin Lake cSAC, Raven Point Nature Reserve cSAC, Kilpatrick Sandhills cSAC, Kilmuckridge-Tinnaberna Sandhills cSAC.



Figure 5 The Raven

Perennial vegetation of stony banks (1220) / CB1 Perennial vegetation of stony banks

Perennial vegetation of stony banks is vegetation that is found above the high tide mark on beaches comprised of shingle (cobbles and pebbles). It is dominated by perennial species. The degree of exposure as well as the coarseness and stability of the surface determine the species diversity. Shingle beaches are constantly changing and shingle

features are rarely stable in the long-term. The removal of gravel is still one of the most damaging activities affecting the habitat. Shingle vegetation is fragile and damage caused by trampling, horse riding and vehicles can be significant. In Wexford, the following cSAC sites have been selected for this Annex I habitat: Ballyteige Burrow cSAC, Bannow Bay SAC, Lady's Island Lake cSAC, Tacumshin Lake cSAC.

Vegetated Sea Cliffs (1230) / CS1 Rocky sea cliffs/ CS2 Sea stacks and islets/ CS3 Sedimentary sea cliffs

Vegetated sea cliffs can be divided into two categories: hard (or rocky) cliffs and soft (or sedimentary) cliffs. Hard cliffs are composed of rocks that are resistant to weathering and can be vertical or steeply sloping. Vegetation tends to occur on ledges and in crevices or where a break in slope allows soil to accumulate. Soft cliffs tend to be less steep and more vegetated than hard cliffs, however, they are prone to slumping and landslides. Coastal cliffs provide important resting, roosting and nesting areas for sea birds. The faeces produced by the birds are rich in phosphorus and nitrogen which can influence the composition of the vegetation present. Vegetated sea cliffs display a widespread geographical distribution in Ireland, with a greater frequency of soft cliffs along the eastern seaboard. The best examples of sea cliffs in Wexford occur at Hook Head cSAC and the Saltee Islands cSAC. At Hook Head the sea cliffs extend for a distance of c.15km and are mostly low, usually not more than 10m although they extend up to 30m near Baginbun Head. Both clay and rock cliffs are represented. The cliffs are also of ornithological interest for breeding Choughs, Ravens and Peregrine Falcons, and there is a small sea bird colony, mainly of Guillemots, near Baginbun. The headland



is also a noted landfall point for migrants.

Figure 6 The Saltees

The two Saltee islands, Great Saltee and Little Saltee, support exposed rocky sea cliffs on the south and east sides. On the great Saltee

these are mostly c.30m high and about half this on Little Saltee. The cliffs have a typical sea-cliff flora with excellent displays of lichens. The Saltee Islands are internationally important for their colonies of breeding sea birds. Notable are Gannets on the Great Saltee and Cormorants on Little Saltee. Populations of national importance of Shags, Fulmars, Kittiwakes, and auks - Guillemots, Razorbills and Puffins are also found.

At Kilpatrick Sandhills, at the northern end there is a rocky headland known as Kilmichael Point where the rock outcrops occur and the overlying clay drift has eroded, exposing cliffs which rise in steps to about 10m. The headland supports a species-rich coastal grassland and cliff-vegetation, including the scarce species, rock-sea lavender. At Ballymoney strand pNHA, several interesting rock types are exposed and support typical sea cliff communities of restricted occurrence in Ireland. The NPWS recently conducted a National Survey of Sea Cliffs (Barron *et al.* 2011⁸) and the findings from this survey should be in the public domain shortly.

3.3.3 Salt Marsh Habitats

Annex I salt marsh habitats found in County Wexford include the following:

- Salicornia and other annuals colonising mud and sand (1310);
- Atlantic salt meadows (1330);
- Mediterranean salt meadows (1410);
- Halophilous scrub (1420).

Good examples of salt marsh habitats occur at: Ballyteige Burrow cSAC, Bannow Bay SAC, Raven Point Nature Reserve cSAC, River Barrow and River Nore cSAC. Salt marshes of exceptional diversity and rarity are found at Bannow Bay cSAC 697. For further detailed information on saltmarshes in the county see McCorry, M. & Ryle, T. (2009)⁹.

Salicornia and other annuals colonising mud and sand (1310)

Swards of glasswort *Salicornia* species are pioneer saltmarsh communities and may occur on muddy sediment seaward of established saltmarsh. They may also form

⁸ Barron *et al.* 2011 (in press). *The National Survey of Sea Cliffs*. A report submitted to the national Parks and Wildlife Service.

⁹ McCorry, M. & Ryle, T. (2009)⁹. *Saltmarsh Monitoring Project 2007-2008*. Unpublished report to the National Parks and Wildlife Service, Dublin.

patches isolated from other saltmarsh on mudflats within a suitable elevation range. The best examples of *Salicornia* mud flats in County Wexford occur at: Ballyteige Burrow cSAC, Bannow Bay SAC, River Barrow and River Nore cSAC.

Atlantic salt meadows (1330)

Atlantic salt meadows generally occupy the widest part of the saltmarsh gradient. They also contain a distinctive topography with an intricate network of creeks and salt pans occurring on medium to large sized saltmarshes. Atlantic salt meadows contain several distinctive zones that are related to elevation and frequency of submergence. The lowest part along the tidal zone is generally dominated by the most halophytic (salt-tolerant) species including common saltmarsh-grass and species more usually associated with *Salicornia* muds. This type of habitat is also important for wintering waders and wildfowl. Although small, a good example of Atlantic salt meadow occurs below the fixed dunes at the more sheltered western side of the point, at The Raven Point Nature Reserve.

Mediterranean salt meadows (1410)

Mediterranean salt meadows generally occupy the upper zone of saltmarshes and usually occur adjacent to the boundary with terrestrial habitats. They are widespread on the Irish coastline although they are not as common as Atlantic salt meadows. Mediterranean salt meadows are distinguished from Atlantic salt meadows by the presence of tall rushes such as sea rush *Juncus maritimus* and/or sharp rush *Juncus acutus* along with a range of species typically found in Atlantic salt meadows. At Grange (at the mouth of Bannow Bay) there is almost complete loss of saltmarsh habitat and considerable reduction in sand-dune habitat due to natural erosion in recent past.

Halophilous scrub (1420)

Halophilous scrub is characterised by the presence of a single species, perennial glasswort *Sarcocornia perennis*, on salt marsh. This fleshy, slightly woody perennial can grow up to 30cm tall and often extends to form tussocks up to 1m in diameter. The species is very rare in Ireland and is protected under The Flora Protection Order, S.I. No. 94 of 1999. It is known from only five saltmarsh sites, all located in the south-east coast. The habitat was only recorded at four sites during the 2007-2008 survey (McCorry

& Ryle 2009), whilst a fifth site, Grange at the mouth of Bannow Bay, has in the past number of years been largely destroyed due to coastal erosion. The estimated national total area for this habitat is 1.1 ha (McCorry & Ryle 2009), hence, this habitat is the rarest Annex I saltmarsh Habitat found in Ireland. Halophilous Scrubs are distributed in a small area along the south-east coastline of Ireland in Co. Wexford. Six different saltmarsh sites are thought to contain this habitat and are found in two protected sites, Bannow Bay SAC and the adjacent cSAC Ballyteige Burrow.

3.3.4 Sand Dune Habitats

Sand dunes are hills of wind blown sand that have become progressively stabilised by a cover of vegetation. In general most sites display a progression through strandline, foredunes, mobile marram dunes and fixed dunes. Dune systems are in a constant state of change and maintaining this natural dynamism is essential to ensure that all of the habitats achieve favourable conservation status. In County Wexford six out of the eight sand dune habitats listed under Annex I of the Habitats Directive occur.

The sand dune habitats that occur in Co. Wexford are: Embryonic shifting dunes (2110), Marram dunes (white dunes) (2120), Fixed dunes (grey dunes) (*priority habitat) (2130), Atlantic decalcified fixed dunes (2150), Dunes with creeping willow (2170), Humid dune slacks (2190).



Figure 7 The Raven Sand Dunes

Embryonic Shifting dunes (2110)

Embryonic dunes are low accumulations of sand that form above the strandline, at the foot of the taller marram dunes. They are also referred to as foredunes, pioneer dunes or embryo dunes as they represent the primary stage of dune formation. Embryonic dunes are very dynamic systems that are often short lived. Many sites are subject to natural erosion processes and susceptible to removal by storms and high tides. Human activities such as recreation and sand extraction can also exacerbate this problem.

Construction of coastal protection works can also cut off the supply of sand that is vital for the natural functioning of this habitat. In County Wexford Embryonic Shifting Dunes occur at Ballyteige Burrow cSAC, Bannow Bay SAC, Cahore Polders and Dunes cSAC, Tacumshin Lake cSAC, Raven Point Nature Reserve cSAC, Kilpatrick Sandhills cSAC.

Marram dunes (white dunes) (2120)

Marram dunes are taller and located further inland than fore dunes. They are actively created and dominated by marram grass and are one of the few species that can withstand burial by blown sand. In fact marram growth is actively stimulated by sand accumulation. Special Areas of Conservation that have been designated for Marram dunes in County Wexford are: Ballyteige Burrow cSAC, Bannow Bay SAC, Cahore Polders and Dunes cSAC, Tacumshin Lake cSAC, Raven Point Nature Reserve cSAC, Kilmuckridge-Tinnaberna Sandhills cSAC, Kilpatrick Sandhills cSAC.



Fixed Dunes (Grey Dunes) 2130

Fixed dunes refer to the more stabilised area of dune systems, located in the shelter of the mobile marram dunes, where the wind speed is reduced and the vegetation is removed from the influence of tidal inundation and salt spray. This leads to the development of a more or less closed or 'fixed' carpet of vegetation dominated by a range of sand-binding species. In County Wexford, fixed dune habitat occurs at: Ballyteige Burrow cSAC, Bannow Bay SAC, Cahore Polders and Dunes cSAC, Raven

Point Nature Reserve cSAC, Kilmuckridge-Tinnaberna Sandhills cSAC, Kilpatrick Sandhills cSAC.

Dunes with *Salix repens* ssp *argentea* (*Salicion arenariae*) (2170)

Dunes with creeping willow (*Salix repens*) are found in close association with dune slacks and there is some overlap between the two habitats. Although the term ‘dunes with creeping willow’ is generally applied to areas in slacks that are above the ground water table level so that it no longer has a controlling influence on the vegetation. In Wexford, ‘Dunes with *Salix repens* ssp *argentea*’ have been recorded at The Raven Point Nature Reserve. Round-leaved Wintergreen *Pyrola rotundifolia* ssp. *maritima* is found in this habitat and is a red data book species and listed in the Flora (Protection) Order, S.I. No. 94 of 1999).

Humid dune slacks (2190)

Humid dune slacks are wet or moist depressions between dune ridges. They are characterised by the occurrence of a water-table that is maintained by a combination of groundwater (which may or may not be slightly saline), precipitation and an impermeable layer in the soil. Proximity of the water table is evidenced in the vegetation. A feature of The Raven Point Nature Reserve’s Dune system is the presence of dune slacks. Some of the current slack communities are associated with artificial ponds that were originally created as forest fire control reservoirs.

3.3.5 Waterbodies

Lowland Oligotrophic lakes (3110)

This category includes lakes and ponds that are low in nutrients, base-poor and acidic (Fossitt 2000). Lowland oligotrophic lakes are shallow lakes with low levels of nutrients, minerals or calcium. The lakes at Screen Hills cSAC are referable to this habitat category. This cSAC site is characterised by the glacial landscape known as “kettle and kame”. This term refers to kettle hole lakes between hills. The many lake basins mark the positions of former ice blocks in an acidic, sandy moraine. The lakes in the site are of two types: those which are more low-lying and in contact with ground water are influenced by what is occurring over a wide area. Other lakes are suspended at a height

above the regional water-table and are influenced by the area immediately surrounding them. The lakes are oligotrophic (nutrient poor) although nutrient input from the adjacent land may change this. The lakes vary in size, most being pond sized and have widely different plant and animal communities. This includes bog formation in all stages, from open sandy shores with only a narrow band of emergent vegetation, to wide rafts of floating type fen vegetation, to small bogs.



Figure 8 Carrigfoyle

Hard water lakes (3140)

Hard water lakes are lakes and pools with waters fairly rich in dissolved bases such as calcium and with low to moderate nutrients. The bottom of these unpolluted water bodies are covered with carpets of algae such as stoneworts *Chara* species. Hard water lakes are often shallow and have a high capacity to buffer the effects of enrichment from phosphorous, however a build up of phosphorus can lead to a rapid shift in ecosystem quality. Hard water lakes occur within the county at Ballyteige Burrow, Cahore and west of Wexford Town but are not listed as a qualifying interest.

Dystrophic lakes (3160)

Dystrophic lakes are natural lakes and ponds with brown tinted water due to the presence of peat and humic acids. They generally occur on peaty soils in bogs or in heaths with natural evolution toward bogs.

3.3.6 Freshwater

Floating River Vegetation (3260) / FW1 Eroding/upland rivers / FW2

Depositing/lowland Rivers

Floating river vegetation occurs in virtually every Irish river and watercourse. Floating river vegetation is well represented in the River Barrow cSAC as well as its tributaries. The River Slaney cSAC supports floating river vegetation along much of the freshwater stretches. Two rare aquatic plants have been recorded here: short-leaved water-starwort *Callitriche truncata* which is a very rare small aquatic herb found nowhere else in Ireland; and opposite-leaved pondweed *Groenlandia densa* which is legally protected under the Flora Protection Order (Flora (Protection) Order, S.I. No. 94 of 1999).



Figure 9 Slaney River Valley cSAC

Petrifying springs (7220)

Petrifying springs occur in lowland and upland areas and may be associated with a variety of different habitats such as alkaline fen, woodland, heathland, grassland, limestone-rich boulder clay, gravel deposits or exposed rock. Petrifying springs are permanently irrigated and kept moist by water that is calcareous (lime-rich) and oligotrophic (nutrient-poor). A key requirement is a steady flow of water, though this may dry up periodically. Petrifying springs occur on shallow peaty or skeletal mineral soils. On contact with the atmosphere at the spring head, carbon dioxide is lost from the

water. This results in the precipitation of a calcium bicarbonate marl or tufa. The vegetation in such areas and especially mosses may be coated in a thick crust of lime. Petrifying springs have been recorded in the Saltee Island cSAC.

3.3.7 Heath

Wet heath (4010)

Wet heath is widespread in the uplands and in western Ireland. It occurs on areas of relatively shallow peat, generally where the peat is between 30cm and 80cm in depth, and where there is a fluctuating water table rather than permanently waterlogged peats. Wet heath vegetation in Ireland is dominated by a varying mixtures of ling heather *Calluna vulgaris*, cross-leaved heather *Erica tetralix*, deer grass *Trichophorum cespitosum* and purple moorgrass *Molinia caerulea*. In Blackstairs mountains cSAC, wet heath occurs in mosaic with dry heaths towards the base of some of the steeper slopes. Wet heath also occurs in small patches in the foothills of the Blackstairs Mountains associated with the Aughnabrisk, Aughavaud and Mountain rivers, River Barrow and River Nore cSAC.

Dry Heath (4030)

Dry Heath is widespread and occurs in a variety of forms throughout the country. The most common variant is found on freely draining, nutrient poor acidic soils associated with uplands or lowland slopes with an angle between 5 and 20 degrees. Dry Heaths usually have a history of burning and/or grazing and it is such low intensity management that has maintained them over hundreds of years. In Wexford, Dry Heath is found at Screen Hills cSAC, Blackstairs Mountains cSAC, River Barrow and River Nore cSAC. At Screen Hills cSAC the Dry Heath is particularly extensive and species-rich. At Blackstairs Mountain cSAC, extensive areas of Dry Heath occur. In Barrow/Nore cSAC, Dry Heath occurs in pockets along the steep valley sides of the rivers especially in the Barrow valley and along the Barrow tributaries where they occur in the foothills of the Blackstairs Mountains. The Dry Heath vegetation along the slopes of the river bank consists of bracken and gorse along with patches of acidic grassland. Dry Heath also occurs at Bunclody Slate Quarries pNHA and Wet heath grades in to Dry Heath on Forth Mountain pNHA.

Alpine and sub-Alpine Heath (4060)

Alpine heath is relatively widespread in Ireland. It is mostly confined to the summits and slopes of mountains above 350m, often in small pockets as part of a larger mosaic of upland habitats. In Wexford Mount Leinster (795m) is the highest mountain of the Blackstairs range. On the east side of the summit a few plants with arctic or alpine affinities occur such as the scarce Starry Saxifrage and the Stag's-horn clubmoss.

3.3.8 Grassland and Marsh

Orchid- Rich grassland/Clacareous grassland (6210) / GS1 Dry Calcareous and neutral grassland

Both of these habitats are described together as the orchid-rich variant occurs within calcareous grassland. Species-rich calcareous grassland is found on dry, shallow, base-rich nutrient-poor soils. The best examples are found in the Burren in Co. Clare, however pockets of orchid-rich grassland are also found elsewhere. An Orchid-rich site was identified by the Biodiversity Working group at Killinick Railway Station. This is a disused station that is also a good site for butterflies such as Essex Skipper.

Species-rich *Nardus* Upland Grassland (6230)/ GS3 Dry humid acid grassland

Species-rich *Nardus* grassland is an upland habitat found on free-draining acid soils that may be dry or humid but not waterlogged. The best examples are found in association with calcareous bands through the mainly siliceous bedrock. The habitat is most extensive near the upper limit of enclosed farmland on hills and mountains. Swards of *Nardus* grassland with mat-grass *Nardus stricta* are maintained by grazing and consist of a complex mosaic of grasses and small herbs including heath. Patches of species-rich *Nardus* grassland occur in mosaic with dry heath in the Blackstairs Mountain cSAC on upper slopes that have been heavily grazed.

Molinia meadows (6410) / GS4 Wet grassland

Molinia meadow is a widespread but localised grassland habitat which is often associated with fluctuating water tables. It occurs on heavy acidic soils and rushes are abundant and may be found in mosaic with fen meadow. Species-rich grassland occurs at Ballyteige Marsh pNHA. This site is heavily grazed by cattle.

Hydrophilous tall herb (6430) / GM1 Marsh

Hydrophilous tall herb is found along unmanaged edges of large, slow-flowing rivers where nutrient levels may be naturally high and where flooding or water logging in summer is unusual. Reed beds or tall sedge community may be present further in to the river. This habitat may also be found along watercourses at woodland edges. In Wexford this habitat is found along the River Barrow and its tributaries and along the River Slaney. At Kilgorman River Marsh pNHA, near Castletown, there is a good example of the transition from freshwater marsh to saltmarsh. As the brackish influence declines saltmarsh is replaced by wet grassland followed by freshwater marsh which is fed by the Kilgorman River.

3.3.9 Peatlands

Wexford is the county with the greatest representation of its original peatland remaining in a conservation worthy state, estimated at 76% (Foss *et al.* 2001). The majority of this is fen habitat. In comparison with other counties, however, Wexford has relatively little in terms of overall peatland habitat, highlighting the need for proper conservation measures to be put in place to protect this endangered habitat (pers. Comm. IPCC).

Blanket Bog (active) (7130) / PB2 Upland blanket bog

Blanket bog occurs on flat or sloping land with poor surface drainage in cool wet, oceanic climates. It occurs on lowlands and uplands on Ireland's Atlantic coast, but elsewhere in the country it is restricted to uplands. Active (i.e.growing) blanket bog occurs throughout the entire blanket bog range. It typically includes moss, liverwort and lichen species and other vascular species. A series of lowland bogs occur north of Mount Leinster and around Black Rock Mountain and have considerable local importance. These occur around Ballycrystal, south-west of Blackrock Mountain, where the highest feeders of the Urrin River rise, and around Crann on the north of the Black Rock ridge, where feeders of the Clody River rise just south of the Wexford/Carlow border. In these bogs considerable populations of Cranberry *Vaccinium oxycoccus* have been found. The Crann bogs north of the Black Rock ridge also have abundant bog

myrtle *Myrica gale* which is uncommon in the county. The bogs are reduced to fragments bordering improved grassland or forestry.

Transition mires (7140) / PF3 Transition mire and quaking bog

Transition mires are peat-forming communities developed at the surface of waters with little or moderate amounts of nutrients with characteristics intermediate between rich (alkaline) and poor (acidic) fen types. They present a large and diverse range of plant communities. In large peaty systems, the most prominent communities are swaying swards, floating carpets or quaking mires formed by medium-sized or small sedges, associated with *Sphagnum* or brown mosses. The vegetation typically comprises species that are characteristic of bog, fen and open water habitats. Transition mires occur in cSAC Screen Hills (NPWS 2007c).

Cladium Fen (7210) / PF1 Rich fen and flush

Fens are usually peat-forming wetlands that receive mineral nutrients from sources other than precipitation. *Cladium* fens are characteristic of flat ground and are often dominated by the saw sedge *Cladium mariscus*. Threats to Cladium fen include drainage, land reclamation, peat cutting and forestry. *Cladium* Fen has been recorded in the Slaney River cSAC.

Alkaline fens (7230)

Alkaline fens are peat-forming wetlands that receive mineral nutrients from sources other than precipitation. In Ireland alkaline fens are fed by calcium-rich ground water. They occur in a variety of topographical locations and in mosaic with other wetland habitats such as transition mire, reed beds, oligotrophic lakes, raised and blanket bogs. Alkaline fen sites in County Wexford occur in the following designated areas;

Wexford slob and harbour pNHA

Ballykelly marsh pNHA

Ballyroe fen and lake pNHA

Slaney River cSAC

Boley fen pNHA

Screen Hills cSAC

3.3.10 Woodland, Forestry and Hedgerows

Semi-natural woodlands occur throughout the county, often in mosaic with other habitats such as scrub, grasslands, lakes and bogs. The Annex I woodland habitats that occur in the county are as follows:

Old Oak woodlands (91A0)

Sessile oak *Quercus petraea* woodlands occur on acidic soils mostly in upland area throughout the country. A diversity of bryophytes is also a feature of this habitat. In the National Woodland Survey (Perrin *et al.* 2008)¹⁰, County Wexford had the highest proportion of relevés (quadrats) allocated to this Annex I habitat. In County Wexford, Old Oak Woods occur in the Slaney River cSAC and River Barrow and Nore cSAC. Examples of Old Oak Wood sites include Strokestown and Mountgarrett, New Ross. At Mount Garrett, the rare orchid ivy broomrape *Orobanche hederæ* was recorded (Browne *et al.* 2000)¹¹



Figure 10 Tintern Woodlands

Alluvial forests (91E0)

Alluvial forests are typically woodlands of alder and ash, often with willow species and sometimes oak. This habitat occurs in areas subject to periodic flooding along rivers

¹⁰ Perrin, P., Martin J. Barron, S., O'Neill, F., McNutt, K. Delaney, A. (2008). National Survey of Native Woodlands. Vol. 1. Main Report. A report submitted to National Parks & Wildlife Service.

¹¹ Browne, A., Dunne, F. and Roche, N. (2000). A survey of broadleaf woodlands in three SACs, Barrow-Nore, River Unshin and Lough Forbes. A report submitted to the national Parks and Wildlife Service

and on lake shores. A species rich luxuriant flora is associated with these woodlands. Alluvial woodland was recorded at Fisherstown Wood, New Ross. (Browne *et al.* 2000)

Other semi-natural woodlands

There is a wide diversity of woodland types within County Wexford. In addition to the Annex I woodlands, other woodland types of conservation interest include

WN2 Oak-ash-hazel

WD1 (Mixed) Broadleaved woodland

WD2 Mixed Broadleaved/Conifer woodland

WN2 Oak-ash-hazel woodland

Oak-ash-hazel woodland (WN2) occurs in Dunganstown, New Ross on the River Barrow. The rare tree species *Sorbus devoniensis* was also recorded at this site (Browne *et al.* 2000). Oak-ash-hazel wood also occurs at Buttermilk point, Ballyhack and Mountgarrett, New Ross.

One of the top 50 woodlands (Perrin *et al.* 2008)¹² in the country occurs in Wexford, Killoughrim Forest, which is located in the Urrin River Valley. This woodland consists of old oak wood and alluvial woodland that occurs along a stream that runs through the site. Killoughrim Forest is also a Potential Ancient Woodland (Perrin & Daly 2010)¹³ as according to historical documents, its structure was described in the 16th century and the woodland was mapped in the 19th century.

In County Wexford, two cSAC sites Slaney River cSAC and River Barrow and River Nore cSAC are designated for woodland. The 'National Woodland Survey' (BEC 2003-2008) identified 4200ha (1.78%) of native woodland within the county. The results of this survey highlighted woodlands of conservation importance within the County, including those that are not within pNHAs or cSACs. Within Wexford, woodlands were found to be regularly associated with valleys and coastal woodlands were also recorded

¹² Perrin, P., Martin J. Barron, S., O'Neill, F., McNutt, K. Delaney, A. (2008). National Survey of Native Woodlands. Vol. 1. Main Report. A report submitted to National Parks & Wildlife Service.

¹³ Perrin, P. and Daly, O. (2010). A provisional inventory of ancient and long-established woodland in Ireland. Irish Wildlife Manual No. 46. National Parks & Wildlife Service. Department of Environment, Heritage & Local Government

(Perrin et al. 2008) Courtown dunes and Glen pNHA consist of mixed woodland along the Owenavarragh River. This site is particularly interesting as the woodlands grade in to coastal habitats. Ballynabarney Wood pNHA occurs in a valley of a tributary of the River Slaney and supports a mosaic of Old Oak woodland and Oak-Ash-Hazel woodland.

Coillte are a major landowner nationally, and many woodland sites throughout the county have been identified as 'Biodiversity Areas' as part of Coillte's project to identify 15 % of the Coillte estate in each District to be managed for nature conservation. Within County Wexford, the Coillte estate also supports mixed woodlands with both native and non-native species that support a range of species and are important local biodiversity areas, see table 1 below. Old Oak woodlands were recorded at Ringwood and Oak-ash-hazel woodland was recorded at Oaklands, Courtown and Tintern.

Table 1: Important biodiversity areas in Coillte Property include the following sites	
Coillte property	Designation
Ballyhighland hill	none
Oaklands	pNHA
Carrigbyrne	none
Courtown	pNHA
Ringwood	Partly in Slaney River cSAC
Tintern Abbey	pNHA and partly within Bannow Bay cSAC

At John F Kennedy Arboretum, the 630 acre park supports a variety of habitats such as grasslands and wetlands as well as significant areas of mixed woodland that provide habitat for a wide range of mammals and it is a stronghold for red squirrel in the region. Edenvale wood, located in the Sow River Valley, is a mixed woodland with significant recreational importance as well as being an important local biodiversity area. Johnstown Castle demesne consists of ponds, gardens and mixed woodland and supports a range of birdlife and is an important amenity area as well as a local biodiversity area.

WL Linear Woodland and scrub

WL1 Hedgerows

Linear features such as hedgerows, as well as being wildlife habitats in themselves, provide links between other habitats which are sometimes of higher ecological value. Though they may not be designated sites, the significance of such features is recognised by the EU Habitats Directive (92/43/EEC), which obliges member states to maintain them in order to improve the ecological coherence of the Natura 2000 network. In addition, hedgerows are specifically mentioned in 'Actions for Biodiversity 2011-2016, Ireland's National Biodiversity Plan', (Department of the Arts, Heritage and the Gaeltacht, 2011) as habitats for wildlife, which need to be appropriately managed for biodiversity. Action 9.3 of the National Biodiversity Action Plan requires 'Hedgerow Surveys' to be continued by local authorities. Remnant hedgerows can support a good woodland-type flora, provide habitat for birds and foraging areas for bats. 'Heritage hedges' should also be identified. These hedges have a notable historical, structural or species composition characteristics as well as forming important links between larger blocks of semi-natural habitats. There is an information gap in the knowledge of location and composition of 'heritage' hedges in the County. Appropriate management of hedges is vital for their maintenance as wildlife corridors as well as their functions as stock proof barriers.



Figure 11 Bluebell Hedgerow

3.3.11 Urban Biodiversity

From the grassy areas, gardens, graveyards, parks and woods, the railway lines, the urban streams, the rivers, the allotments and numerous other green networks, or 'corridors' make up the rest of what is sometimes called the 'green infrastructure' of our settlements. All these areas and many more make up a vast area of urban 'habitats', which is just another name for places where a plant or animal can live. Much can be done to improve the protection of biodiversity in our urban areas such as developing specific areas of biodiversity by creating new wetlands or woodlands in parks and ensuring their management is less intensive. Biodiversity needs to be at the forefront of local authority development plans and urban spatial planning. This could be accomplished through partnerships with a wide range of groups.



Figure 12 Wexford Town

Towns and villages can support a wide range of wildlife habitats and species of local or even national conservation interest. Birds nest in trees, shrubs or under the eaves of buildings. Hedgerows support mammals, insects and wild flowering plants. Bats roost in buildings, trees and underneath old bridges. Fungi, lichens and mosses grow on both wood and stone, while waterways support otters, frogs, newts, insects, waterfowl and fish. A wide range of plants and animals can be found in public green spaces, parks, old stone walls, hedgerows, graveyards, bridges, rivers, canals, gardens and waste ground.

The wildlife in built up area may be well hidden or may inhabit areas at the edge of a town or village. The importance of ecologically friendly management of areas in or around towns and villages is recognised in a number of competitions, awards and grants, including the Heritage Council Wildlife and Local Heritage Grants and the Tidy Towns Competition, organised by the Department of Environment, Community & Local Government.

3.4 Overview of Important and Protected Species

A number of species have been referred to in the habitat descriptions above. However this is only scratching the surface of Wexford's important species. County Wexford supports a diverse range of native species associated with terrestrial, freshwater, coastal and marine habitats. Protected species are those which are afforded legal protection and include mammals, reptiles, amphibians, crustaceans, insects, molluscs, fish, birds and plants. Lists of protected and important species can be found in Appendix 4.

3.4.1 Flora

At Lady's Island Lake the rare Cottonweed *Otanthus maritimum* occurs. This species is extremely rare and has its main Irish population at this site. Ballyteige Burrow cSAC is the only known Irish location for Scrambled Egg Lichen *Fulgensia fulgens*, which is listed on the Flora (Protection) Order 1999. The scarce Ivy-leaved Bellflower *Wahlenbergia hederacea* and Mountain Fern *Thelypteris limbosperma* occur along the Urrin River within the Blackstairs Mountains cSAC. Moore's Horsetail *Equisetum x moorei*, a rare hybrid, has been recorded at Kilmuckridge-Tinnaberna Sandhills cSAC, Cahore Polders and Dunes cSAC and Raven Point Nature Reserve, and is confined to the coasts of Wicklow and Wexford. A nationally rare species, Summer Snowflake *Leucojum aestivum*, occurs within the Slaney River cSAC. The rare species Perennial Glasswort *Sarcocornia perennis* listed on the Flora Protection Order and also in the Red Data Book is found in only four 10km grid squares in Ireland confined to Bannow Bay, Ballyteige and Fethard Bay in Wexford.

3.4.2 Invertebrates

Molluscs

There are currently thirteen molluscs of conservation concern in County Wexford. A further 16 species were recorded in Wexford prior to 1980, but these have not been re-recorded since. Reasons for this loss of species include the following: Loss of habitat due to intensification of agricultural practises such as drainage, destruction of woodland habitat, eutrophication and the spread of the invasive species, *Dreissena polymorpha*.

The **Freshwater Pearl Mussel** *Margaritifera margaritifera* is an Annex II and V species. It lives in nutrient-poor, acid to neutral waters of rivers flowing over granite or sandstone rock, mainly in the west but also in the south and south-east where geological conditions allow. Freshwater pearl mussel is listed as 'critically endangered' in the Republic of Ireland, in the most recent review of local IUCN threat status of Irish Molluscs (NPWS 2008). The Swan Mussel *Anodonta cygnea* has also been recorded in a fresh water canal on the North Slob (Pers. comm C.Wilson). *Margaritifera durrovensis* is a unique hard water form of *Margaritifera margaritifera* which is only known from the Nore River. This population is under threat due to declining river bed and water quality in its habitat.

Of particular importance also is the Mud Pond Snail, which is one of Ireland's rarest molluscs. It was recorded in Wexford before 1980 but is now thought to be regionally extinct, it was recently re-recorded in County Waterford so there is a possibility that this species may reappear in Wexford if the appropriate habitat conditions exist.

Butterflies

Butterflies are important indicators of biodiversity and they can be used to monitor the health of ecosystems and the impact of land management. Being insects with mostly short generation times, their populations react quickly (positively or negatively) in response to alterations in their environment and so they have great potential for monitoring change. Thirty-two butterfly species have been recorded in County

Wexford¹⁴. The most recent additions to the country, the Comma *Polygonia c-album* and the Essex Skipper *Thymelicus lineola*, were first recorded in County Wexford and their populations are continuing to expand. Other important species in the county, include Small blue *Cupido minimus*, Gatekeeper *Pyronia tithonus* and Dark-green Fritillary *Argynnis aglaja*. The Marsh Fritillary *Euphydryas aurinia*, is an Annex II species in The EU Habitats Directive. There are three 10km records for Marsh Fritillary in the County, although they have declined by 67%.



Figure 13 Red Admiral Butterfly

Moths

Three or four sites in County Wexford are monitored regularly for moths. In 'The Lepidoptera of County Wexford' (O'Donnell and Wilson 2009), there are 362 macro-moth species and 312 micro-moth species listed.

Dragonflies and damselflies

Dragonflies and damselflies are among the largest and most colourful insects seen in the wetlands of Ireland. They are carnivorous and can hunt prey while flying about. They breed in water. The eggs hatch into a brown nymph which spends up to four years

¹⁴ O'Donnell, M.& Wilson, C.J. (2009). The Lepidoptera of County Wexford. The Wexford Naturalist Field Club.

in the water before emerging as the colourful adult. Adult Dragonflies and Damselflies are insects of summer, living for only a few weeks. There are 28 species of dragonfly and damselfly in Ireland which includes both resident and migrant species. There are 16 species of Damsel and Dragonflies that are listed in The Red Data Book for Dragonflies and Damselflies that are likely to be recorded in Wexford.

Waterbeetles

There are 19 species of waterbeetles that are listed in the Red Data that occur in County Wexford. The habitats and micro-habitats that these waterbeetles are associated with include the following; brackish ponds and ditches, fens, man-made muddy ponds, lowland base-rich rivers and streams, clean rivers and lake edges in gravel or silt with fast water or wave washed, flush-fed pools, crumbly mud surfaces above running water, reed beds. The waterbeetle species most threatened in Ireland is the salt marsh crawler beetle *Haliphus apicalis*. This species is found in coastal lagoons and ditches. The main threats to waterbeetles are loss of wetland habitat, diffuse pollution and development.

Bees

There are 102 species listed in the Irish checklist of Irish bees, of which 25 occur in County Wexford. These species are under recorded and little is known on the habitat or ecological requirements of the majority of bee species in Ireland. The bumble bees, *Bombus distinguendus* and *B. sylvarum* have been recorded from Ballyteige Burrow cSAC.



Figure 14 Bumble Bee

Other invertebrates

Ballyteige Burrow cSAC supports a number of scarce invertebrates such as the jewel wasp *Hedychridium ardens* and the ant *Tetramorium caespitum*. At Boley Fen pNHA 699 a number of nationally important rare species of Diptera occur: *Anasimyia lunulata*,

Psacadina zernyi, *Parhelophilus consimilis*, *Pteromicra angustipennis* and *Tetanocera punctiformis*.

3.4.3 Fish

Six fish species of conservation concern occur in the county including the following;

Sea lamprey *Petromyzon marinus* is an Annex II species in the EU Habitats Directive.

Sea lampreys spend their adult life in marine and estuarine waters, living as external parasites on other fish species. They migrate up river to spawn in areas of clean gravels. Once they have spawned they die. After hatching, the young larvae settle in areas of fine sediment in still water, where they burrow. They live as filter feeders and may remain in fine sediments for several years before transforming into adult fish.

Threats include, weirs which block passage upstream and restricting access to spawning beds; channel maintenance which removes silt deposits and gravel shoals used by lampreys.

River lamprey *Lampetra fluviatilis* is listed in Annex II and V of the EU Habitats Directive. River lamprey grows to 30cm and has a similar life history to the sea lamprey.

The **Brook lamprey *Lampetra planeri*** is listed in Annex II of the EU Habitats Directive and is the smallest of the three lamprey species ranging from 15cm to 20cm. It is the only one of the three which is non-parasitic and spends all of its life in freshwater.

Juvenile river/brook lampreys are widespread in the Slaney cSAC.

Allis Shad *Alosa alosa* is listed in Annex II and V of the EU Habitats Directive and can be found in the Slaney and Barrow river systems. They spend their adult life at sea or in the lower reaches of estuaries, ascending to freshwater to spawn in early summer. The spawning females shed their eggs into the water where they either drop into gravelled bed or begin to drift downstream. The eggs that fall into gravels, hatch after several days and then drift downstream. The young fish may remain in estuarine waters during their second year before finally going to sea where they mature. Spawning of this species has yet to be confirmed from any Irish river.

Twaiite shad *Alosa fallax fallax* is listed in Annex II and V of the EU Habitats Directive. Adult shad spend their life at sea or in the lower reaches of estuaries and normally spawn near the tidal limits. Unimpeded access from the sea through the estuarine and

tidal areas to the spawning ground is essential. Spawning grounds comprise deep pool areas and backwaters for adults to rest and gravelled areas where eggs are laid. Spawning activity has only been observed in five large rivers in the south-east of the country, of which the Barrow and the Slaney are two. Population levels are low and no spawning has been recorded in recent years in the River Slaney. Restricted access to spawning grounds due to weirs is thought to be the main threat to twaite. The status of both shad species is considered to be very particularly vulnerable in the Slaney River Valley cSAC.

The **Atlantic salmon *Salmo salar***, is listed in Annex II and V of the EU Habitats Directive. The salmon breeds in freshwater but spends much of its life at sea. Factors which impact negatively on salmon include reduced marine survival, poor river quality, forestry related pressures and over-fishing. Positive developments include the closing of the drift net fishery for salmon in 2007.

Sea Bass - Irish Sea Bass are protected under the Sea Fisheries Maritime Jurisdiction Act 2006, covered under the following statutory instruments; SI 367 of 2007, SI 368 of 2007, SI 230 of 2006. There is a complete ban on commercial fishing for bass and anglers are only allowed to keep 2 in any 24 hour period which must be over 40 cm and cannot sell their catch, with a ban on angling during spawning season (15th May to 15th June).

3.4.4 Amphibians

The **Natterjack Toad *Bufo calamita*** is listed in Annex IV of the EU Habitats Directive. It is found in a small number of coastal sites around Dingle and the Iveragh peninsulas in Kerry. A small translocated population also exists in the Raven Dunes. The toad breeds in shallow ponds and lakes. The toad is adapted to breeding in temporary water bodies and while dry years lead to mass mortalities of tadpoles, good years can see thousands of juveniles emerging successfully. Threats include loss of breeding ponds due to land drainage. The Natterjack toad was translocated to The Raven Nature Reserve in the 1990s. This translocation site in Wexford has some 14 ponds, six of which are used for breeding by Natterjacks.

Figure 15 The Common Frog

The **Common Frog** *Rana temporaria* is listed in Annex V of the EU Habitats Directive and is the most frequently encountered amphibian in Ireland. Threats include wetland drainage, intensive urban and suburban development (NPWS 2008).



The **Common Lizard** *Zootoca vivipara* occurs at Forth Mountain pNHA 761 (NPWS site synopsis) as well as The Raven Nature Reserve. The **Smooth Newt** *Lissotriton vulgaris* has also been recorded from The Raven Nature Reserve (www.wildside.ie).

3.4.5 Birds

There are up to 168¹⁵ species of bird that occur regularly in Ireland, either as breeding or wintering species, or as passage migrants. All birds, their nests and eggs are protected under the Wildlife Act, and it is prohibited to remove, or disturb, ‘uncultivated’ vegetation in which they may be nesting during the period from March to August. Some species are important on a European level and these are listed in Annex I of the Birds Directive and 25 of these are recorded in Wexford. Bird Watch Ireland has produced a red (high conservation concern) and an amber (medium conservation concern) list of birds in Ireland (BoCCI)¹⁶. (See Appendix 4 for full list of species)

County Wexford is an important stronghold for breeding seabird colonies as well as breeding wildfowl. Lady’s Island is a stronghold for tern species particularly Common terns, Roseate terns, and Sandwich terns and is the largest tern colony in Ireland. The

¹⁵ EPA. 2001. Biodiversity in Ireland, A Review of habitats and Species.

¹⁶ Lynas P., Newton S.F., & Robinson J.A. 2007. *The Status of birds in Ireland: an analysis of conservation concern 2008 – 2013*. Irish Birds: Volume 8; Number 2

site has the highest diversity of breeding wildfowl species in the county. The Raven and the Wildfowl Nature Reserve is of critical significance as it is the principal night roost for the internationally important Wexford Harbour population of Greenland White-fronted Geese. Internationally important populations of the Whooper Swan and Bewick's Swan, which are both Annex 1 species of the EU Birds Directive, roost during winter in the Tacumshin Lake SPA, which has an exceptionally diverse waterfowl population.



The Saltee Islands SPA is of special conservation interest for the following species: Fulmar, Manx shearwater, Gannet, Shag, Lesser Black-backed Gull, Herring Gull, Kittiwake, Guillemot, Razorbill and Puffin. The Saltee Islands are internationally important for holding and assemblage of over 20,000 breeding seabirds.

Figure 16 Puffin

Lady's Island Lake SPA is of ornithological interest for both breeding and wintering birds and is also an important stop-over point for passage migrants. The site has one of the highest diversity of breeding wildfowl species in the country. Gadwall is resident with at least 10 pairs breeding. It is one of the few sites where Garganey have been known to breed, with probably 1 to 2 pairs in most years. Shoveler another scarce nesting duck also breeds (1 to 3 pairs). The Annex I species on the EU Birds Directive, Marsh Harrier, is a regular visitor to Lady's Island in Spring and Summer.

Lady's Island formerly supported internationally important numbers of wintering waterfowl, but in recent years numbers have declined drastically possibly partly due to a decline in abundance of their main food source, *Ruppia* species. Numbers are now only of regional or local importance. The main species are; Whooper Swan, Wigeon, Teal, Pochard, Tufted duck, Scaup, Coot, Lapwing, Blacktailed Godwit and Curlew. In winter

resident Gadwall populations are supplemented by immigrant Gadwalls and in winter 1998/99 an exceptional total of 330 birds were recorded, one of the highest totals ever recorded in Ireland for this scarce species. Lady's Island is also a strong hold for tern species particularly, common, arctic, roseate and sandwich terns and is the largest tern colony in Ireland. It also supports significant numbers of Black-headed and Mediterranean Gulls. Lady's Island is a regular stop-off point, mainly in autumn, for several un-common wader species such as Ringed Plover, Little stint, Curlew sandpiper, Ruff, Spotted redshank, Green sandpiper and Wood sandpiper.

Threats to Lady's Island SPA include breaching of the gravel barrier for flood relief, which leads to increased salinity of the lagoon, which could be detrimental to the flora and fauna including the bird species. The lagoon is also prone to eutrophication from agricultural and domestic effluents. Increased recreational activities in the area can cause disturbance to breeding and wintering birds. A population of feral greylag geese could have negative implications for some of the bird species (NPWS site synopsis).

The Raven is a statutory Nature Reserve and a Ramsar site. The Raven SPA has important bird interests and is of critical significance as it is the principal night roost for the internationally important Wexford Harbour population of Greenland White-fronted Geese. In addition, the occurrence of Red-throated Diver, Great Northern Diver, Slavonian Grebe, Golden Plover and Bar-tailed Godwit is of special conservation interest as these are listed on Annex I of the EU Birds Directive. The Raven SPA is also an important breeding site for the Little Tern, also an Annex II species. The shallow waters within the site are particularly suitable for divers, grebes and sea duck. Nationally important numbers of the following species have been recorded over the years (figures are annual average maxima over 5 years): Cormorant (218), Common Scoter (3,234), Red breasted Merganser (84), Grey Plover (448) and Sanderling (81) (NPWS site synopsis).

The principal ornithological importance of Ballyteige Burrow SPA is wintering wildfowl with an internationally important population of Brent Goose (290, annual average over

maximum of 5 years). It also supports nationally important numbers of Shelduck, Ringed Plover, Golden Plover and Black-tailed Godwit and Bar-tailed Godwit. A number of species occur in numbers of regional importance including, Wigeon, Grey Plover, Dunlin and Redshank. Cullenstown Strand has a small colony of breeding Little Tern, though nesting may not occur every year. Ballyteige Burrow is also a statutory Nature Reserve (NPWS site synopsis).

Bannow Bay SPA supports an excellent diversity of wintering wildfowl and is one of the most important sites in the south-east. It supports internationally important numbers of Brent Goose, as well as nationally important numbers of the following species: Shelduck, Pintail, Oystercatcher, Golden Plover, Lapwing, Knot, Dunlin, Black-tailed Godwit, Bar-tailed Godwit, Curlew and Red Shank (NPWS site synopsis).



Figure 17 Dunlin (*Calidris alpina*)

The Wexford Harbour and Slobbs SPA has special conservation interest for the following species: Little Grebe, Great Crested Grebe, Cormorant, Bewick's Swan, Whooper Swan, Greenland White-fronted Goose, Light Bellied Brent Goose, Shelduck, Wigeon, Teal, Mallard, Pintail, Scaup, Goldeneye, Red-breasted Merganser, Hen Harrier, Coot, Oystercatcher, Golden Plover, Grey Plover, Lapwing, Knot, Sanderling, Dunlin, Black-tailed Godwit, Bar-tailed Godwit, Curlew, Redshank, Black-headed gull, Lesser Black-

backed Gull and Little Tern. Wexford Harbour and Slob is one of the top three sites in the country for numbers and diversity of wintering birds. The slob is one of the few sites in the country which supports a regular flock of Bewick's Swan (NPWS site synopsis).

The site is important for Little Tern and holds a nationally important breeding colony. The slob also support a nesting colony of Tree Sparrow, which is a very localised species in Ireland and listed in the Red Data Book. Another very localised breeding species, Reed Warbler, is well established within the swamp vegetation along the Slaney and on the South Slob. Short-eared owl and Hen Harrier are regular visitors in small numbers to the Slob during winter. Of particular note is the presence of the Hen Harrier communal roost site. Part of the North Slob is a Nature Reserve and much of the slob is managed for the benefit of wintering geese.

There are no imminent significant threats to the wintering bird populations. In the long-term, however, projected increases in sea level could cause problems in maintaining the slob as farmland. In recent times, the south Slob has become less suitable due to changes in land use and forestry operations. An increase in the amount of new housing in the vicinity of the North Slob has led to increased levels of disturbance in recent times. Localised reclamation has occurred in Wexford Harbour and any further reclamation of estuarine habitat is undesirable. Aquaculture occurs in Wexford Harbour though it is not known what effects if any this has on the bird populations.

Wexford is one of, if not the most important places in all of Ireland for Hen Harriers during the non-breeding season (July/August to March), effectively 8 months of the year and is home to a significant proportion of young Hen Harriers born on the breeding Special Protection Areas designated for example in Kerry, Cork, Limerick, Clare and Galway. As such, it is clearly a crucial area in the population dynamics of Hen Harriers in Ireland. Wexford also sees an influx of Hen Harriers from Britain each Autumn and Winter and as such is a key player in the metapopulation of Britain and Ireland, the

western extreme of the species entire global range. There are also recent breeding records of Hen Harriers in Wexford.¹⁷

Tacumshin Lake SPA has an exceptionally diverse waterfowl population, and the area supports large numbers of birds through the whole year, which is unusual in Irish wetlands. In winter, the site is a principal roost for internationally important populations of both Whooper Swan and Bewick's Swan, which are both Annex I species of the EU Bird's Directive. A further 13 waterfowl species occur in numbers of national importance: Little Grebe, Mute Swan, Wigeon, Gadwall, Teal, Pintail, Shoveler, Tufted Duck, Coot, Golden Plover, Lapwing and Black-tailed Godwit. Other species using the site in winter include Greenland White-fronted Goose, Dunlin, Curlew, Brent Goose, Shelduck, Pochard, Mallard, Redshank, Greenshank, Black-headed Gull and Lesser Black-backed Gull. This site is one of the top sites in the country for species such as Pintail and Gadwall. It is also of importance for summer visitors, including rare and localised species such as Marsh Harrier (Annex I species), Garganey and Reed Warbler. Tacumshin is an important site for other Annex I species such as Golden Plover, Ruff and Wood Sandpiper.

The Keeragh Islands SPA is of ornithological importance as it has nationally important population of breeding Cormorant that is considered one of the largest in the country. In the winter, the islands are a refuge and night roost for flocks of Brent Goose and for ducks, notably wigeon with smaller numbers of Teal and Shoveler (NPWS site synopsis).

Rats are a significant threat to nesting seabird colonies. Annual control is required at Lady's Island Lake tern and gull colony each year. Great Saltee Island has a rat problem that may affect Manx shearwaters, Puffins and others. This may be an

¹⁷ O'Donoghue, B.G. (2010). The Ecology and Conservation of Hen Harriers (*Circus cyaneus*) in Ireland. National University of Ireland, Cork.

explanation as to why Storm Petrels are absent. Mink are also a potential threat to seabird colonies on the islands (Pers. comm. D.Berridge).

The only breeding site for Black Guillemot in the County occurs in Rosslare Harbour.

A national survey carried out between 2006 and 2008 determined the baseline population of Red Grouse *Lagopus lagopus* in Ireland. It was added onto the Irish Red List of Birds of Conservation Concern in 1999 due to a supposed 70% decline in the species range over the past 40 years. The subsequent targeted action of a national survey showed that Red Grouse will remain on the Irish Red List as they have lost 50% of their former historical breeding range. The Blackstairs Mountains cSAC is one of the key areas for Red Grouse in the South-East of the country.

3.4.6 Mammals

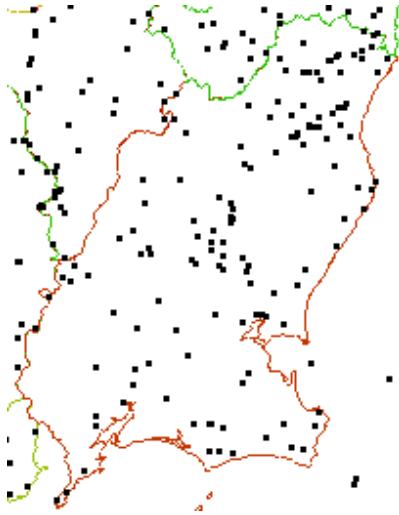
Mammals of conservation interest occur widely throughout County Wexford. The Raven Nature Reserve is a stronghold for the Red Squirrel and is currently free from Grey Squirrel. Other mammals of conservation interest such as the Irish Hare, the Otter, and Pine Martin.

Bats

There are nine species of bat resident in Ireland, Eight of which occur in Wexford and all are listed in Annex IV of the EU Habitats Directive. Most bat species are widespread in County Wexford. The Lesser Horseshoe bat, Ireland's only Annex II-listed bat species, is confined in Ireland to counties along the western seaboard and is not found in County Wexford.

The **Common Pipistrelle** *Pipistrellus pipistrellus* forages in both rural and urban settings. Maternity roosts are often in buildings, typically in the attics of houses and churches. Bats normally disperse in autumn and hibernate over winter (NPWS 2008).

The **Soprano Pipistrelle** *Pipistrellus pygmaeus* is widespread and common throughout Ireland. It forages along hedgerows and tree lines and in woods and wetlands. Studies have shown that maternity roosts of the soprano pipistrelle most



typically occur within 2km of water highlighting the importance of aquatic insects to this species' diet.

Maternity roosts can consist of over 1000 individuals and are usually in buildings.

Nathusius' Pipistrelle *Pipistrellus nathusii* is a recent addition to the Irish fauna. Little is known of its ecology in Ireland, but on the European continent, this species uses hollow trees, bat and bird boxes, churches and buildings during the summer and crevices in cliffs, hollow trees and buildings in winter.

Bat Distribution Map –Source www.batconservation.org

Natterer's Bat *Myotis nattereri* is one of four *Myotis* bats found in Ireland. Although widely distributed, it is one of the least recorded bats in Ireland. Natterer's bat is found in buildings, in trees and under bridges during the summer. Cold hibernation sites such as caves, ruined buildings, mines and bridges are used in the winter. A colony of Natterer's bat occurs in Leskinfere Church pNHA in Clough, Gorey.

Daubenton's Bat *Myotis daubentoni* is one of the most widespread and common bat species in Ireland. It forages low over rivers, canals, lakes and ponds and is known as the "water bat". Stone bridges and old stone buildings near water are favoured roosting sites, but they will also use caves and trees as roosts.

Whiskered Bat *Myotis mystacinus* and **Brandt's Bat** *Myotis brandtii* are very difficult to tell apart and it was only recently recognised that the latter occurs in Ireland. A nursery colony of whiskered bats was recorded in the roof of a building in the grounds of Tintern Abbey pNHA 711. The building has since collapsed. There are no records for Brandt's bat currently in Wexford. Whiskered Bat has the third most restricted range in Ireland but in Wexford this species has a large area included in its core range – 85% of the county. This is a particularly significant area for whiskered bats, only Clare and

Galway have higher proportions of the species' national range, and it is the largest area of its core range included in any single county on the east of the island.

Brown Long-eared bat *Plecotus auritus* is widespread throughout Ireland. It roosts in large open attics where bats cluster together and in tree holes, farm buildings and bat boxes.

Leisler's Bat *Nyctalus leisleri* is relatively widespread and common throughout Ireland. Nursery colonies are usually in buildings although roosts in tree holes are not uncommon. Little is known about where Leisler's hibernate. They forage over a wide range of habitats including over water, hedgerows, street lamps, orchards, mature trees, pasture, farmland, railway embankments and streams.

Other Terrestrial Mammals

The **Irish Hare *Lepus timidus hibernicus*** is a distinct, endemic subspecies of the mountain hare. It is widespread in both upland and lowland habitats throughout Ireland. Factors likely to reduce hare numbers locally include loss of refuge areas such as hedgerows and rushy fields, the conversion of semi-natural grassland to silage, increased urbanisation and hunting. Irish hare is common throughout the county, particularly on the Wexford Slob. It is an Annex V and Red Data Book Species (NPWS site synopsis). Agricultural intensification is widely accepted to be the cause of the decline in many European farmland wildlife populations including hares. The Wexford Wildfowl Reserve is a Reserve for hares and the hunting of hares is prohibited on the townlands of North East Slob, North West Slob, Big Island, Beggerin Island and the Raven.

The **Otter *Lutra lutra*** is listed in Annex II and IV of the EU Habitats Directive and is widespread in Irish freshwater and coastal habitats. Its main prey includes sticklebacks, salmonids, frogs, crayfish and eels. Localised reduction in quality of otter habitat has been attributed to water pollution and the removal of riparian vegetation (NPWS 2008). The otter occurs within the River Barrow and River Nore cSAC and the Slaney River Valley cSAC. While the otter is still widespread in all wetland habitat types throughout

Ireland, results from national surveys show that there has been a clear and significant decline in the percentage occurrence at sites over the past 25 years.

Pine Marten *Martes martes* lives in woodland, forest and scrub in Ireland. It is listed in Annex V of the EU Habitats Directive. It eats a wide variety of small animal prey such as mice, frogs and birds, but also fruit and carrion. Its range is increasing throughout the country.



Figure 18 Red Squirrel

The **Red Squirrel *Sciurus vulgaris*** is protected under the Wildlife Act 1976, and the Wildlife (Amendment) Act 2000 and its status in Ireland is 'Near threatened' (Marnell *et al.* 2009¹⁸). The Irish Squirrel Survey (Carey *et al.* 2007¹⁹) highlighted that although red squirrels are

widespread in Ireland, they have largely disappeared from a number of counties in the Leinster region, namely Meath, Westmeath, Carlow and Kilkenny. Given these findings there is a clear threat to the continued existence of Red Squirrels in the Leinster region and any strongholds should be identified and protected from invasion by Grey Squirrels. The Mammal Research Group at UCD has conducted research on the Red Squirrel population at The Raven Nature Reserve, which indicates that it is home to an extensive healthy Red Squirrel population that ranges between 300 to 500 individuals. The woodland is currently free from Grey Squirrels and given its geographic location surrounded on two sides by the sea and on another by the Wexford slob, the site is

¹⁸ Marnell, F., Kingston, N. & Looney, D. (2009). *Ireland Red List No. 3. Terrestrial Mammals*, National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.

¹⁹ Carey, M., Hamilton, G., Poole, A. and Lawton, C. 2007. *The Irish squirrel survey 2007*. COFORD, Dublin

potentially highly defensible against grey squirrel invasion. In 2010, Grey Squirrels were recorded within a kilometre of The Raven. This Red Squirrel population at The Raven represents a key biodiversity element in Wexford and should be safeguarded into the future. In addition to The Raven, other Red Squirrel sites include John F Kennedy Arboretum where Grey Squirrel control measures are being implemented.

Figure 19 Overhanging reef

3.4.7 Marine Species

Marine algae

The rare red algae *Schizymenia dubyi* occurs within the Hook Head cSAC.

Marine Reptiles

Leatherback Turtle *Dermochelys coriacea* is listed in Annex IV of The EU Habitats Directive. This species nest in the tropics and subtropics but migrate in to the North Atlantic and Irish waters during the summer months where they feed on Jellyfish. Roughly 2% to 5% of the Atlantic population (about 2,500 animals) pass through Irish waters annually. Essentially, sightings of leatherbacks can occur anywhere in Irish coastal waters, but are more likely to occur in higher numbers off the south and west coasts of Ireland because of their facing aspects. There is a greater probability of occurrence in areas where jellyfish regularly occur in high concentrations e.g. Rosslare Harbour.



Sea squirts

The Orange Sea Squirt *Stolonica socialis* is recorded in the Saltee Islands cSAC and Carnsore Point cSAC and is only known from the south-east and north-west of Ireland. The Sea Squirts *Sidnyum elegans* and *Distoms variolosus* are also recorded in this

cSAC site as well as Carnsore Point cSAC, both of which have a very limited national distribution.

Sponges

The sponge *Tethyspira spinosa* has a limited distribution in Ireland but occurs at two or more sites at Carnsore Point cSAC. This species is only known from the Saltees, Hook Head and Roaring Water Bay.



Figure 20 Sea anemone

Sea anemones

The Sea Anemone *Cataphellia brodrickii* occurs in shallow water around the Saltee Islands and Carnsore Point cSAC as well other areas in the south-east. The only other records for this species are from Roaringwater Bay, Cork.

Sea Bass

Sea Bass is an important recreational angling species that is of significant importance to the local economy. Threats include illegal fishing and netting.

Seals

The **Grey Seal *Halichoerus grypus*** is found widely on Irish coastlines in the breeding season but its range throughout the rest of the year is largely unknown. It is listed in Annex II and V of the EU Habitats Directive. Breeding in Ireland takes place on offshore islands and isolated mainland sites, predominantly between the months of September and November. Among the largest populations of grey seal on the Irish Coast are found on the Saltees and the Raven in County Wexford.

The **Common (harbour) Seal *Phoca vitulina*** is found widely on Irish coastlines and mainly uses inter-tidal rocky shores, sand and mud bars within sheltered bays, coves and estuaries. It is listed in Annex II and V of the EU Habitats Directive. It is most abundant on the west coast.



Figure 21 Hook Lighthouse

Whales and Dolphins

The Irish Whale and Dolphin Group (www.iwdg.ie) monitor sightings of whales and dolphins around the coast. In 2010 there were reports of a number of Fin whales and a

Humpback whale sighted off the coast at Hook head. The whales made a welcome return to Hook head in 2011.

3.5 Overview of Threats to Wexford's Biodiversity


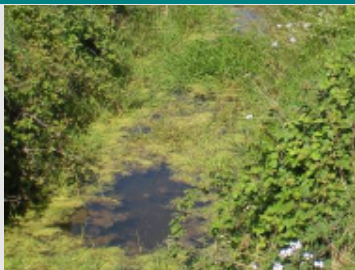






Species, habitats and ecosystems, are under an ever-increasing threat. Many species and habitats are in decline and in some cases their future is endangered. Undoubtedly human behaviour now causes, directly and indirectly, considerable loss of biological diversity. In Ireland today, habitat degradation and loss is the main factor eroding biodiversity. However the influence of climatic change is becoming increasingly important. The principal threats to biodiversity in County Wexford have been listed in the previous sections and Appendices and include the following:












- impacts arising from aquaculture
- damage from inappropriate fishing
- dumping of wastes and water pollution.
- drainage of wetlands
- silting of lagoons
- excessive nutrient enrichment from agricultural sources and domestic effluents
- increased urbanisation and commercial and industrial activities.
- recreational pressure in sensitive habitats
- mechanised removal of tidal litter.
- grazing, both over and under grazing
- sand and gravel extraction
- sea defence or coastal protection works
- erosion
- removal of hedgerows
- recreational pressures,
- development and land-use change
- clearing of riparian zone vegetation
- invasive species

County Wexford has a rich and varied biodiversity and we must ensure that we plan and act in a way that minimizes or negates these threats

3.6 Invasive Species

Invasive Species are a significant threat to biodiversity at both a national and an international level. There are a number of non-native invasive species found within County Wexford (see table below). An invasive species survey should be carried out within the county to ascertain the threat to the county's biodiversity resource (see Section 4, Action 1.15)

Invasive species in County Wexford that pose a threat to the county's biodiversity resource (see www.invasivespeciesireland.com for further information)			
COMMON NAME LATIN NAME		COMMON NAME LATIN NAME	
Japanese knotweed <i>Fallopia japonica</i> Terrestrial Habitat		Waterfern <i>Azolla filiculoides</i> Freshwater Habitat	
Giant hogweed <i>Heracleum mantegazzianum</i> Terrestrial Habitat		Canadian waterweed <i>Elodea Canadensis</i> Freshwater Habitat	
Sea buckthorn <i>Hippophae rhamnoides</i> Terrestrial Habitat		Nuttall's waterweed <i>Elodea nuttallii</i> Freshwater Habitat	
Himalayan balsam <i>Impatiens glandulifera</i> Terrestrial Habitat		Curly waterweed <i>Lagrosiphon major</i> Freshwater Habitat	

Cherry laurel <i>Prunus laurocerasus</i> Terrestrial Habitat		American mink <i>Mustela vison</i> Freshwater Habitat	
Rhododendron <i>Rhododendron ponticum</i> Terrestrial Habitat		Grey squirrel <i>Sciurus carolinensis</i> Terrestrial Habitat	
Cord grass <i>Spartina anglica</i> Terrestrial Habitat		Asian Clam <i>Corbicula Fluminea</i> Freshwater Habitat	
Least Duckweed <i>Lemna minuta</i> Freshwater Habitat		Ruddy Duck <i>Oxyura jamaicensis</i> Freshwater Habitat	
Hottentot Fig <i>Carpobrotus edulis</i> Terrestrial Habitat		Wire Weed <i>Sargassum muticum</i> Marine Habitat	
Dace <i>Leuciscus leuciscus</i> Freshwater habitat		Photo credits: Lorcan Scott: Japanese Knotweed, Waterfern, Asian Clam, Sea Buckthorn, Giant Hogweed. Chris Wilson: Himalayan balsam, American Mink, Grey Squirrel.	

The three-cornered leek *Allium triquetrum* is another non-native species that is a fairly common garden escape which establishes mainly on roadsides, grassy banks and in hedges and woodland. This species has taken over large parts of roadside verges in south-east of the county, and has been eradicated from Wexford Wildfowl Reserve.

3.7 Local Biodiversity

Most of County Wexford's land cover lies outside areas designated for nature conservation but this area provides an essential resource in maintaining a diversity of species and habitats throughout the county by linking local biodiversity features. Linear features such as hedgerows and streams, provide 'ecological corridors' along which species can move, for example badgers commute along hedgerows to forage and seeds of aquatic plants spread along streams and wet ditches. There are no national guidelines for prioritising species or habitats of special local conservation importance. The following species and sites were identified as being locally distinctive within the county through the workshops with the Biodiversity Working Group (BWG) and following consultation with the general public. This list is not exhaustive and will evolve through further consultation with the public and during the life of the plan.



Figure 22 Killinick railway

Local Biodiversity Sites
Edenvale Wood
Enniscorthy Still Pond
Wellingtonbridge Reedbeds
Johnstown Castle, Pond and Woods
JFK Arboretum
Killurin Quarries
Cahore
Sinnottstown lane
Killinck Railway
Carrickbawn Hill
Bree Hill
Courtown Woods
Ballinesker
Blackwater River Corridor
Sow River Corridor
Glasslacken Quarry Bunclody

Locally Important Species
Red Grouse
Red Squirrels
Sea Bass
Wexford Well Shrimp <i>Niphargus wexfordensis</i>
Perennial Glasswort <i>Sarcocornia perennis</i>
Cottonweed <i>Otanthus maritimus</i> ,
Scrambled-egg Lichen <i>Fulgensia fulgens</i>
Ground beetle <i>Calathus ambiguus</i>
Wild Asparagus <i>Asparagus officinalis</i> ssp. <i>prostratus</i>
<i>Maro minutus</i> , a tiny money spider

3.8 Current Work for Biodiversity in Wexford

There are many agencies, organisations, groups and individuals that already do a great deal to help biodiversity in the county and across Ireland. It would not be possible to list all of these and what work they do, however the following is a starting point for those who are looking for further information.

Who	What	Contact
An Taisce	Run environmental enhancement programmes such as Green Schools, Spring Clean, Green Communities	www.antaisce.ie
Bat Conservation Ireland	They promote conservation of bats by disseminating educational materials, giving talks and leading bat walks, carrying out nationwide surveys and monitoring of bats, acting as an umbrella group for the local bat groups and providing a central repository for bat records.	www.batconservationireland.org
Biochange Project	Research into landscape conservation, impacts of non-native species and pollution as a driver of biodiversity change. Maintain a website with information on non-native species	www.biochange.ie
Bird Watch Ireland	Wide range of conservation work, including a number of survey and research projects, applied conservation projects, and the development and advocacy of policies in relation to issues of importance for the conservation of birds and their habitats in Ireland	www.birdwatchireland.ie
Coastwatch Ireland	Biodiversity surveys, Biodiversity Summer schools, Training/Workshops and Seminars.	www.coastwatch.org
COFORD Biodiversity Research Programme	PLANFORBIO: Managing biodiversity in a range of forest types; hen harrier conservation; rhododendron control FUNCTIONALBIO: Functional biodiversity in forests; studying diversity of soil decomposers and arthropods (predatory and parasitic).	www.coford.ie
Coillte	<ul style="list-style-type: none"> - Set aside part of their land to be managed for biodiversity - Implement action plans for species affected by forestry operations - Implement Forest Service regulations for sustainable forestry - Provide access to nature via open forest policy - Promote and support best practice in developing forest amenities 	www.coillte.ie www.coillteoutdoors.ie
ENFO	Nature conservation and biodiversity awareness-raising initiatives, many of which are aimed at schools.	www.enfo.ie
EPA	Biodiversity research funding programmes Environmental education initiatives including resource packs for schools, awareness-raising events etc.	www.epa.ie
Farming	Facilitate training and best practice initiatives	www.ifa.ie

organisations		www.organic-trust.org www.icmsa.ie www.icsaireland.org www.iofga.org
Geological Survey Ireland	Provide geological advice and information, and the acquisition of data for this purpose. GSI produces a range of products including maps, reports and databases and acts as a knowledge centre and project partner in all aspects of Irish geology.	www.gsi.ie
Heritage Council	Develop biodiversity policy Fund biodiversity and natural heritage projects Biodiversity awareness-raising publications	www.heritagecouncil.ie
Inland Fisheries	Research Topics include invasive fish species (Chub), invasive aquatic plants (<i>Lagarosiphon major</i> , <i>Elodea nuttallii</i>), peat siltation and fish conservation.	www.fisheriesireland.ie
Irish Peatland Council	Education and publicity, promoting environmental awareness, providing information and encouraging the protection and conservation of our national heritage	www.ipcc.ie
Irish Seal Sanctuary	Raise awareness, operate seal sanctuary, partner in research and training.	info@irishsealsanctuary.ie www.irishsealsanctuary.ie
Irish Seed Savers	Research into the preservation traditional varieties of fruit and crops. Developing a national educational programme for first- and second-level schools	www.irishseedsavers.ie
Irish Whale & Dolphin Group	Monitoring, sightings and recordings	www.iwdg.ie enquiries@iwdg.ie
Irish Wildlife Trust	Education, awareness and campaigning for Ireland's wildlife and nature	www.iwt.ie education@iwt.ie
National Biodiversity Centre	The national centre dedicated to the collation, management, analysis and dissemination of data and information on Ireland's biological diversity. It serves as a hub for the exchange of data between governmental organisations, NGOs, research institutions and volunteer recorders	www.biodiversityireland.ie
National Botanic Gardens	National Plant Conservation Strategy (e.g. Target 10 invasive species)	www.botanicgardens.ie
Notice Nature	Biodiversity awareness-raising initiatives Guidelines produced for tourism, business and construction	www.noticenature.ie

	sectors	
NPWS	<ul style="list-style-type: none"> • National Species Action Plans: • National Marsh Fritillary survey • Red Squirrel survey (completed). • Red Data Books for bryophytes and vascular plants in preparation. • Lichen Ireland project in conjunction with CEDaR and the Environment and Heritage Service, Northern Ireland (ongoing). • Countryside Bird Survey (ongoing). • Surveys of Red Grouse, Hen Harrier, Chough and Red-throated Diver (2005- 2007). • National Hare Survey (2005- 2007). • Grey Seal survey, Grey Seal pupping and moulting surveys (ongoing). • Bats: woodland monitoring, surveys of common and soprano pipistrelles and Leisler's bats (ongoing). • Lampreys: surveys to map the distribution and abundance of lampreys in the main SACs designated for their protection (completed). • Freshwater Pearl Mussel: species action plan in preparation; monitoring ongoing. • Water beetles: Red list in preparation. • <i>Vertigo moulinsiana</i>: monitoring (ongoing). • Bees: Draft all-Ireland red list of Irish bees has been produced. • National Woodland Survey: The data collection stage of this survey is complete and the results should prove useful for identifying non-designated woodlands of ecological importance. Detailed floristic and structural data has been collected for each woodland surveyed. • National Grassland Survey: Started in 2007. • Fens: Desk study to estimate the extent of known fen habitats completed (2007). Field survey underway (starting 2008). • Turloughs: Multidisciplinary project underway that will integrate hydrological, biological and chemical nutrient data from selected turloughs. 	www.npws.ie

	<ul style="list-style-type: none"> • Road-kill survey 	
JFK Arboretum	<ol style="list-style-type: none"> 1. Red Squirrel Conservation – <ol style="list-style-type: none"> a. Ongoing monitoring – Daily records since 2006 b. Supplementary feeding c. Grey Squirrel Control d. School Programme to highlight the plight of the red Squirrel 2. In house recording of birds, mammals, butterflies, frogs, <ol style="list-style-type: none"> a. Bat Box provision b. Bird Box Provision on a large scale (as part of a wildlife friendly forestry plan) c. Barn Owl Box provision 3. Invasive mammal species controlled and recorded 4. Guided Nature walks for schools 5. Guided Forest walks 6. Guided Bat walks and talks as a guide to general bat conservation 7. Annual Symposium on a Biodiversity theme 8. Provision of information to the Invasive Species Database at the National Biodiversity Data Centre at WIT. 9. Maintain links with forestry Commission (Forest Research Team) 10. Participation in the Trap Loan Scheme for Grey Squirrel control 11. Provision of advice and public lectures for grey Squirrel control in forestry situations and as an aid to broad leaf tree protection in general and also for the red Squirrel conservation 12. Maintaining a Grey Squirrel Free Zone in the environs of the JFK working with local landowners 13. Monitoring of raptor breeding within the Arboretum and Sliabh Coillte 	www.heritageireland.ie
Tidy Towns	<p>The Tidy Towns Biodiversity 'Notice Nature' Award is a special competition sponsored by The National Parks and Wildlife Service as part of their Notice Nature campaign to reward communities who have undertaken initiatives to protect the biodiversity in their local environment.</p>	www.tidytowns.ie

Water Framework Districts	(River Basin District Management Plans)	www.wfdireland.ie www.serbd.com
Wexford Naturalist Field Club	<ul style="list-style-type: none"> - Active promotion and enjoyment of all aspects of the natural history of County Wexford among members; including plants, dragonflies, Lepidoptera, birds, fungi, mammals, lichens etc. - The organisation of lectures and field trips. - Routine collection and recording of information regarding the natural history of County Wexford. 	info@wexfordnaturalists.com

SECTION 4: ACTION FOR BIODIVERSITY

This section includes Objectives and Actions recommended by the Working Group. The actions have been developed following consultation with a number of organisations and people in the county (See Appendix 1 for full list). Many actions were suggested during the consultations but not all can be undertaken in this first Biodiversity Action Plan. In devising the actions for this first County Biodiversity Action Plan for Wexford regard was had to the following;

- The Overall Aim of the Plan –
To protect County Wexford's Biodiversity through actions and raising awareness
- The lead role of the Local Authority in taking the plan forward
- The need to devise actions that will increase awareness and understanding of biodiversity
- The need for actions that are realistic, achievable and cost-effective, both in number and in scope, within the 5 year life of the plan.

Objectives and actions were identified by the Working Group under three strategic themes; (1) Review data and identify gaps, (2) Education & awareness, (3) Maintain & enhance biodiversity.

Abbreviations:

WCC – Wexford County Council	EPA – Environmental Protection Agency
HC – Heritage Council	CW – Coastwatch
BWI – Bird Watch Ireland	IWT –Irish Wildlife Trust
NPWS – National Parks and Wildlife	BSBI – Botanical Society of the British Isles
GSI – Geological Survey Ireland	IFA – Irish Farmers Association
NBDC – National Biodiversity Data Centre	SRT – Slaney River Trust
WNFC – Wexford Naturalist Field Club	

4.1 Objectives and Actions

These objectives and actions were drawn up by the Biodiversity Working Group.

Review Data and Identify Gaps		
Objective 1 - To identify Biodiversity information and fill data gaps for the County, to prioritise habitats and species for protection and to inform conservation action and decision making		
	Actions	Partners/Funding
1.1	To establish the post of Biodiversity Officer within Wexford County Council, to drive the data gathering and monitoring actions.	WCC, HC
1.2	Continue to review the biological diversity data through monitoring; <ul style="list-style-type: none"> • Identify information sources not on core list • Identify sites of local biodiversity importance within the county not designated and support habitat mapping which can be incorporated into land-use plans • Identify gaps in species distribution range and habitat use • Identify gaps in habitat and species management 	WCC, HC, NPWS, NBDC, WNFC, BWI, Coillte Teo, GSI
1.3	Identify links or green corridors between designated sites	WCC, NPWS, An Taisce, Coast Watch
1.4	To develop practical ways to help conserve and protect undesignated woodland sites throughout the county.	WCC, NPWS, Coillte, Forest Service, IFA,

		Teagasc
1.5	To address the lack of information on hedges in the county by production of a county wide hedgerow survey.	WCC, NPWS, HC, WNFC, BSBI, IWT
1.6	To provide hedgerow conservation management training to Wexford Local Authorities personnel.	WCC, Teagasc
1.7	Provide a level of protection to sites that support high levels of biodiversity. The development of objectives and policies towards important, non-protected, biodiversity sites is vital for the conservation of biodiversity areas outside the designated area network. These areas should be included in future County Development Plans and Local Area Plans. A map and database of biodiversity areas could supplement these policies and could be used for consultation.	WCC, NPWS, WNFC, Public involvement, GSI
1.8	To address the information gap regarding the Marsh Fritillary in the county by: (a) Identifying breeding sites within the county for the Marsh Fritillary butterfly, (b) Investigating practical ways to protect breeding sites that are not designated, and (c) Raising awareness of the importance of the species and other butterfly species.	WCC, WNFC, NPWS
1.9	To protect and conserve the wetlands in the county, by conducting a wetland survey of the county, incorporating mapping and an education and awareness programme.	WCC, NPWS, Coastwatch
1.10	To continue to monitor the status of fish of conservation concern in Wexford Rivers.	NPWS, EPA, Inland Fisheries,

		SRT
1.11	To continue monitoring Red Grouse populations in the county in conjunction with a national monitoring plan.	NPWS, BWI, WCC
1.12	To adopt the actions listed in the All-Ireland Red Squirrel Action Plan (NPWS 2008) to extend and protect the areas supporting Red Squirrels, to continue squirrel monitoring, and develop an education program with a view to implementing grey squirrel control measures.	NPWS, WCC, Dept of Agriculture, Forestry Service, Coillte
1.13	To facilitate the development of conservation management plans for biodiversity areas in the principal towns in County Wexford	WCC, NPWS, HC, WNFC, GSI
1.14	To promote swift breeding within towns in County Wexford by erecting swift nest boxes on County Council buildings. This initiative could be used to promote biodiversity within an urban setting and incorporate an education program.	WCC, BWI, WNFC
1.15	Conduct data gathering project on invasive alien species in Co.Wexford.	WCC, HC, NPWS, NBDC, WNFC, BWI, Coillte Teo, GSI
Objective 2 - To make information on biodiversity available		
2.1	Develop and promote a County Wexford Biodiversity Webpage to increase accessibility to information for general public.	WCC, HC, NPWS, NBDC, input from all groups
2.2	Support the National Biodiversity Data Centre as the	WCC, HC,

	national centre dedicated to the collation, management, analysis and dissemination of data and information on Ireland's biological diversity.	NPWS, NBDC
2.3	To encourage and involve the public as data providers, to fill data gaps regarding flora and fauna and their associated habitats.	WCC, HC, NPWS, NBDC, WNFC
Education & Awareness		
Objective 3 - To raise awareness across all sectors, groups and ages of (a)Wexford's Biodiversity, (b)its value and (c)the issues facing it, and (d) encourage people through using various media, training, and innovative initiatives to support biodiversity conservation.		
	Actions	Partners/Funding
3.1	Develop a targeted biodiversity awareness campaign and produce interpretive material on various topics and themes including; <ul style="list-style-type: none"> • Selected Flagship species – change yearly • Biodiversity of habitats • Native species • Genetic diversity • Invasive species • Biodiversity and planning and development • Urban Biodiversity • Biodiversity and recreation/tourism • Biodiversity and farming • Biodiversity in the garden/school • Biodiversity and Tidy Towns 	DoEHLG, NPWS, EPA, GSI, Marine Inst., Inland Fisheries, Dept. Agri., Coilte, Teagasc, Commercial Companies.

	<ul style="list-style-type: none"> • Economic value of biodiversity • Green infrastructure 	
3.2	Work with local media to develop and expand their biodiversity content focusing on the biodiversity of County Wexford.	WCC, NPWS, Chris Wilson (Wildside), Irish Seal Sanctuary, Jim Hurley (SWC Promotions)
3.3	Investigate the development of a commercial biodiversity scheme aimed at getting private commercial enterprises to improve the biodiversity value on their premises. WCC could provide guidance and carry out audits.	WCC, EPA, LANPAG funding.
Maintain & Enhance Biodiversity		
Objective 4 - To promote and support best practice in biodiversity conservation taking into account national and local priorities.		
	Actions	Partners/Funding
4.1	Support the protection of biodiversity inside and outside protected sites.	NPWS, WCC, EPA, GSI
4.2	Conserve for people by the people – Aim projects at getting groups, individuals businesses to look at how they can help the conservation of biodiversity	WCC
4.3	Monitor the Biodiversity Action Plan annually and feed results into development plans and strategic environmental assessment.	WCC, NBDC,
4.4	Support the implementation of SAC management plans developed by NPWS.	WCC, NPWS
4.5	Promote best practice in the control of invasive species.	WCC, NPWS

4.6	Support the actions of the 'Action Plan For Upland Birds in Ireland 2011 2020' Bird Watch Ireland	WCC, NPWS, BWI
Objective 5 - To incorporate and raise profile of biodiversity conservation issues in the local authority's actions and policies		
5.1	Ensure high level of biodiversity protection policies are contained in development plans and local area plans.	WCC
5.2	To increase understanding of biodiversity conservation among local authority staff through training and improve performance in relation to biodiversity protection.	WCC
5.3	Local Authority to be proactive in statutory obligations in protecting environment through policing and enforcement.	WCC
5.4	To protect and enhance biodiversity value of council owned/managed land.	WCC
5.5	Carry out a hedgerow survey and devise and implement a policy for Local Authority hedge cutting practices which will enhance biodiversity.	WCC
5.6	Conduct an analysis of the role and impact of the Local Authority in the conservation of biodiversity	WCC
5.7	To fully assess the level of use of herbicides in the day to day county council operations and develop a new policy aimed at limiting their use to ensure the protection and restoration of biodiversity within the county.	WCC

4.2 Proposed Monitoring & Review

The first Wexford Biodiversity Action Plan sets out a series of ambitious and challenging actions to be undertaken across the county over a five year period. It is essential that the progress of the plan and its outputs are monitored and evaluated. While it will remain in the same format from the point of adoption, it must be acknowledged that priorities and issues will continually be changing. In order to be successful, therefore the Wexford Biodiversity Action Plan will need to be reviewed in a systematic way. We must also be aware that the publication of the County Wexford Biodiversity Action Plan is the start of the process and not the completion of it. It is suggested that the following approach is taken for monitoring and review of the Biodiversity Action Plan.

4.3 Indicators to be used for ongoing monitoring of plan

Overall Administration of Plan

1. Number of actions implemented
2. Number of Biodiversity Working Group meetings held

Collecting Information

1. Number of other ecological datasets incorporated into county biodiversity database
2. Number of habitat maps completed

Local Authority Action & Policy

1. Number of training events held
2. Number of staff in attendance
3. Number of good practice guidelines/information leaflets produced

Promoting Best Practice

1. Number of guidance notes produced

Raising Awareness

1. Number of awareness raising events held

4.4 Review Periods

Issue	Action Needed	Review Period
Monitoring of actions	Annual meeting with Biodiversity Working group and Summary report from partners	Annual
Review of actions	Audit of achievement of objectives and current issues	Annual
Review of Species and Habitats	Full review of lists ensuring compliance with national guidance and National Biodiversity Action Plan	5 years
	Update of lists in response to known issues	Annual
Review of Action Plan	Full audit of plan, actions achieved and formulation of new plan	5 years

While many actions can be carried out within the Local Authorities existing resources, many other actions will rely upon the availability of external funding either through the Department of Environment, Communities and Local Government or other sources.

SECTION 5: WHAT CAN YOU DO?

Here's how you can promote biodiversity conservation around your home, community and on the farm.

Become an active citizen for biodiversity! Find out more about biodiversity and ecosystem services, in your own area.

Get to know some special natural places in your area, and find out as much as you can about them. Talk to neighbours, see what plants and animals live there, and find out the history of the area. Often older neighbours have a good sense of what ecosystems services are, even if the term is new!

Find out what is being done to manage ecosystems wisely in the county.

Avoid using chemical cleaning products – these are often very toxic and cause a lot of damage to wildlife once they pass from your drain into nearby streams or rivers.

Avoid peat based gardening products – which mostly come from industrially harvested Irish bogs. Use peat free composts instead.

Reduce your energy consumption - turn down the heating, drive less and all the rest, climate change and biodiversity loss are inextricably linked.

5.1 When Building a House

When designing your home and making a planning application incorporate features of your site into the design.

Landscaping – position and design the house around the natural contours of the site. Avoid cutting into or building on hills or infilling large quantities of material.



Maintain existing wildlife corridors – wildlife corridors include linear features such as hedgerows, ditches and stone walls, which offer shelter and protection to wildlife moving from one area to another. Vegetation should not be cleared from watercourse as they are important habitats and wildlife corridors.

Preserve Trees and Hedgerows – mature trees add character to a site and provide shade, and shelter, and are an excellent wildlife habitat.

During Construction – Fence off and avoid trees and hedges and any other habitat that should be protected e.g. nearby rivers or streams.

5.2 Wildlife Gardening and Conservation Tips

Choose berry, fruit, nut & seed plants - Berries, nuts, fruit & seeds provide important autumn and winter foods for birds & small mammals. They look great in the garden too.

Nectar all year - Plant native nectar-rich plants to provide food for butterflies, moths, bees, bumble bees and hoverflies. Have something in flower throughout the year.

Don't be too tidy - Leave some areas of the lawn and garden to grow “wild” – good for amphibians & over-wintering insects as well as mammals & bird species.

Feed the birds - Different bird feeds & feeders suit different species. Clean regularly to prevent disease.

Build a log or stone pile - Leaving log piles in undisturbed shady spots or laying flat stones around the garden helps pest predators such as centipedes, ground beetles, frogs & even hedgehogs.

Water features - Even the smallest water feature can benefit wildlife. Carefully positioned away from ambushing cats in a sunny position, with gently sloping edges, a water feature can provide a safe place for birds to drink, bathe and even breed. Don't add any ornamental fish as they will eat all the wildlife!



Peat free compost - Using home-made compost instead of peat saves important peat bog habitats, home to many of Ireland's rarest and most spectacular wildlife.

Hedges & walls - Hedgerows are important highways, shelter belts & sources of food for animals throughout the year. Bees prefer to nest in south facing old walls so take care when re-pointing.

Nest boxes - Make or buy nesting boxes for birds, bats, insects, hedgehogs and even toads they will all eat your garden pests. But keep them safe from cats and dogs.

- Put bird boxes on east-facing, sheltered spots
- Place bat boxes in groups of 3, facing different directions, high up on large trees
- Sheltered, warm spots are good for insect boxes
- Toads and hedgehogs prefer undisturbed dark, quiet corners.

Garden organically - Herbicides, fungicides and insecticides (including slug pellets) kill beneficial species as well as harmful ones. Hand weeding, mulching, weed suppressant fabric and planting good ground cover reduce the need for sprays.

5.3 Community Biodiversity Conservation

Most communities have an area of land which may be available for development as a wildlife area. Although it is usually best to work with an existing habitat, new habitats can also be created. Even if no specific area is available, the community could consider changing the management of public areas to encourage more wildlife. Such areas include verges, public plantings, or even local church grounds and graveyards.

5.4 Wildlife at School

Why not have a wildlife garden as a school project. Not much room is required as it could be easily made using tubs where space is limited. A pond or flower meadow could be considered where there is enough room. Other things like bird boxes or feeders could be used to encourage more birds into the schoolyard.



5.5 Wildlife on the Farm

Farmers can play an important role as guardians of the natural landscape. Through the implementation of appropriate management they can promote biodiversity and wildlife conservation. If you live on a farm, the easiest thing to do is to leave strips of long grass at the edges of fields and plant up hedges. These act as hiding places for Irish

hares and also as hunting grounds for barn owls.

Management of Field Boundaries – Natural hedges don't need replacing (compared to wire or timber fencing) and are an ideal livestock proof boundary. Hedgerows provide shelter for livestock, windbreaks for crops, and prevent soil erosion and screen large agricultural buildings. The traditional method of hedgerow management is hedge-laying and hedges need to be trimmed to prevent them from becoming gappy and stock proof. To protect nesting birds no hedges should be cut between the 1st March and the 31st August.

5.6 Bats, Birds, Buildings and You

We have 10 species of bats in Ireland. Bats are very beneficial to us as they eat thousands of the biting insects that are 'nuisances' to humans and livestock. We have almost 200 regularly occurring bird



species in Ireland. Birds help to control garden and farmland pests such as rodents and weeds and spread seeds. All bats and their roosts are strictly protected in Ireland and all birds, nests eggs and nestlings are fully protected under law in Ireland.

Trees, caves, old buildings and cellars were once the traditional roosting sites for bats but since these are less available, bats are now being forced to use any kind of building. All buildings are potential roosting sites and they like clean, draught free buildings without dust or cobwebs. Birds can use all types of structures for nesting from stone ruins to modern concrete buildings and from large industrial complexes to small garden sheds. Most birds prefer quiet undisturbed buildings for nesting such as old ruins.

In addition to buildings, sympathetic management of the local countryside or garden is crucial for birds, bats and other wildlife. Both bats and birds need trees and hedges for the insects and shelter they provide. Encourage bats into your garden by planting native stock night-scented plants, creating a wet area, avoiding the use of pesticides and making a compost heap. In the farmland landscape, hedgerows, woodlands, and wetlands sustain bird and bat populations as they provide them with food and water.

5.7 What you can do for the birds in winter!

Food - Particularly in cold weather when there is snow and ice it is important to feed the birds. The menu is easy; wild bird seed, peanuts and sunflower seed, put in a special wire or plastic feeders which can then be suspended from tree branches or a bird table. Apples whether cut in half and speared on branches or just left out whole on the lawn, are also a great source of food, particularly for Blackbirds and other members of the thrush family.

Water - It is equally as important to ensure that your garden birds have a constant supply of fresh drinking water, something that can be very hard for them to find when ponds and puddles are frozen over

5.8 The Biodiversity Bugs!

Bugs and beasties come in all different shapes and sizes. The worm moves along the ground on its belly, while the butterfly spends its day fluttering from flower to flower in search of nectar. There are many more interesting little bugs to be found in Ireland. The next time you're outside, look closely along the grass and in the flowerbeds and you're sure to find some fascinating bugs and beasties.

5.9 More Bees Please!

Albert Einstein is supposed to have said: "If the bee disappeared off the surface of the globe then man would only have four years of life left. No more bees, no more pollination, no more plants, no more animals, no more man."



Bees are extremely valuable as crop pollinators. Bees pollinate most fruits and vegetables, including apples, strawberries, onions and carrots, and help maintain nitrogen-fixing clover flowers in grassland. Bees nest in undisturbed soil in hedge banks or hay meadows, and depend on a range of wild flowers and plants which in turn, often depend on other insects, birds or mammals to reproduce and disperse. In Ireland we are losing many of our bees through agricultural intensification and development of land.

5.10 Native Trees and Shrubs of Ireland

Why not plant a native tree in your back garden? Some trees such as oak and ash may grow too big for suburban back gardens. Smaller trees such as rowan, silver birch, wild cherry and crab apple are more appropriate for smaller gardens and will provide a source of food for birds during the winter.

Native Trees and Shrubs of Ireland

Tree Stock should be checked to ensure that seed is of Irish and where possible local provenance, thus helping to preserve genetic biodiversity.

Native Trees and Shrubs of Ireland

Alder	<i>Alnus glutinosa</i>
Arbutus, the Strawberry Tree	<i>Arbutus unedo</i>
Silver Birch	<i>Betula pendula</i>
Downy Birch	<i>Betula pubescens</i>
Hazel	<i>Corylus avellana</i>
Hawthorn	<i>Crataegus monogyna</i>
Broom	<i>Cytisus scoparius</i>
Spindle	<i>Euonymus europaeus</i>
Alder Buckthorn	<i>Frangula alnus</i>
Ash	<i>Fraxinus excelsior</i>
Ivy	<i>Hedera helix</i>
Holly	<i>Ilex aquifolium</i>
Juniper	<i>Juniperus communis</i>
Privet	<i>Ligustrum vulgare</i>
Honeysuckle	<i>Lonicera periclymenum</i>
Crab Apple	<i>Malus sylvestris</i>
Sessile Oak	<i>Quercus petraea</i>
Pedunculate Oak	<i>Quercus robur</i>
Scots Pine	<i>Pinus sylvestris</i>
Aspen	<i>Populus tremula</i>
Bird Cherry	<i>Prunus padus</i>
Wild Cherry	<i>Prunus avium</i>
Sloe, Blackthorn	<i>Prunus spinosa</i>
Purging Buckthorn	<i>Rhamnus cathartica</i>
Dog Rose	<i>Rosa canina</i>
Burnet rose	<i>Rosa pimpinellifolia</i>
Bramble	<i>Rubus fruticosus</i>
Willow spp.	<i>Salix</i> spp.
Elder	<i>Sambucus nigra</i>
Rowan or Mountain Ash	<i>Sorbus aucuparia</i>
Whitebeam spp.	<i>Sorbus aria</i>
	<i>S. rupicola</i>
	<i>S. devoniensis</i>
	<i>S. latifolia</i> ,
	<i>S. anglica</i>
	<i>S. hibernica</i> .
Yew	<i>Taxus baccata</i>
Common (or European) Gorse	<i>Ulex europaeus</i>
Western (or Mountain) Gorse	<i>Ulex gallii</i>
Wych Elm	<i>Ulmus glabra</i>
Guelder Rose	<i>Viburnum opulus</i>

Source: *Guidelines for the Production of Local Biodiversity Action Plans*, Heritage Council, 2003.

APPENDIX 1 - CONSULTEES AND CONSULTATION PROCESS

Consultation Methodology

An initial press release and advert was placed in the location papers 1st of December 2010 to invite submissions from members of the public and also to raise awareness on the topic of biodiversity and the issues facing it. The pre draft submission period ended 28th January 2011 and a total of 99 submissions were received. Consultation letters (62) were also sent to a wider consultee list, with detailed submissions received from Waterford County Council, the Environmental Protection Agency and The Irish Peatland Conservation Council. Posters to raise awareness and inviting submissions were placed in public buildings and sent by post to nearly 200 groups included on the Keep Wexford Beautiful mailing list, along with being sent out to all the primary and secondary schools.

The actions identified in this plan arose directly from the extensive consultation with the public and the working group.

Biodiversity Working Group

The Wexford Biodiversity Working Group is a partnership of 16 individuals and representatives consisting of a core steering committee of 8 members. The members represent a variety of experts, academics, and governmental and nongovernmental organisations, all bringing a vast wealth of expertise to the group.

Wexford Biodiversity Working Group	
Organisation	Name
Geological Survey Ireland	Sophie Preteseille / Sarah Gatley
Teagasc	Fergus Hemmingway
Coillte	Declan Doyle
Local expert	David Daly

OPW	Kenneth Foley/ Mairead Cairbre
Local expert	Jim Hurley
An Taisce	William Warham
Coastwatch Ireland	Karin Dubsky
Irish Farmers Association	Alan Poole
Construction Industry Federation	Brian Byrne
WNFC Wexford Naturalist Field Club	Chris Wilson
Local expert	Don Conroy
Angling Council Ireland	Martin Howlin
Wexford Naturalist Field Club	Harm Deenen
Steering Committee	
Wexford County Council	Eamonn Hore (Director of Services)
Wexford County Council	Diarmuid Houston (Senior Planner)
Wexford County Council	Deirdre Kearns (Senior Executive Planner)
Wexford County Council	Niamh Lennon (Executive Planner)
Wexford County Council	Brendan Cooney (Senior Executive Scientist)
Wexford County Council	Cliona Connolly (Environmental Education Officer)
National Parks and Wildlife	Lorcan Scott (District Conservation Officer)
Heritage Council	Cliona O'Brien (Wildlife Officer)

Consultees		
National Parks and Wildlife Service	Tourism Ireland	County Librarian, WCC
South-East Regional Authority	Geological Survey of Ireland	Energy Officer, WCC
EPA Headquarters	Forest Service	Community & Enterprise, WCC

South East River Basin District	Teagasc	Wexford County Enterprise Board
Inland Fisheries Ireland	Wexford Wildfowl Reserve	Environment and Planning Strategic Policy Committees
National Roads Authority	Coillte	Wicklow County Council
Department of Agriculture, Fisheries and Food	Office of Public Works	Carlow County Council
County Archivist	Enniscorthy Town Council	Kilkenny County Council
Department of Communications, Energy and Natural Resources	New Ross Town Council	Waterford County Council
Comhar	Wexford Borough Council	Gorey Town Council

Educational	CRANN	Sectoral Agencies
National Biodiversity Data Centre	Irish Environmental Network	Wexford Chamber
Conservation and Environmental NGO's	Coastwatch Ireland	New Ross Chamber
Bird Watch Ireland	Butterfly Conservation	Enniscorthy Chamber
Wexford Naturalist Field Club	Bat Conservation Ireland	County Wexford Community Forum
An Taisce	INFF Irish Natural Forestry Foundation	Irish Farmer Association
Botanical Society of the	Landscape Alliance Ireland	Construction Industry Federation

British Isles		
National Botanic Gardens	Sectoral Agencies	Irish Concrete Federation
Irish Peatland Conservation Council	National Association of Regional Game Councils	Irish Landscape Institute
Irish Wildlife Trust	Irish Fishermans Organisation	Angling Council Ireland
Tree Council of Ireland.	South and East Shellfish Organisation.	Offices of South and East Coast Fishermans Co-operative Society Ltd
	Kilmore Quay Angling Centre, c/o Kilmore Quay Harbour Master.	Kilmore Quay Fishermens Co-Op Society
		BIM, Regional Office, Kilmore Quay

Submissions received at pre draft stage

Number	Name	Summary
1	Brian Rickwood	<ul style="list-style-type: none"> included Section 1.2 of Wicklow Biodiversity Action Plan retain wildlife corridors, enforcement action should be taken against illegal dumping, quarrying, pollution etc restore REPS change policy on cutting roadside verges changes to rural housing policy
2	Stiofan Creavan	<ul style="list-style-type: none"> Impact of motor vehicles on dune system in Courtown harbour
3	Breda Tunney	<ul style="list-style-type: none"> Protection of ditches and hedgerows Increase protection of Curracloe sand dunes Curracloe beaches and surrounding lands should be preserved Halt ribbon development Safe cycle paths needed
4	Jim Owens	<ul style="list-style-type: none"> assess impact of wind turbines on birds no end user for energy crops opportunity for miscanthus grass to provide increased cover for wildlife opportunity to develop wetland waste water treatment systems benefits of renewable energy
5	Bernadette Guest, Waterford CoCo	<p>Useful comments and advice on the following topics</p> <ul style="list-style-type: none"> consultation process, challenge is engaging general public plan should be accessible to all age groups and level of interest a review of data gaps is essential to guide actions, baseline habitat mapping using GIS and collation of existing datasets example given. Actions in plan, examples given Encouraging participation Informing policy and work programmes,
6	Jim Hurley (3 separate submissions)	<ul style="list-style-type: none"> need to develop ecological corridors linking cluster sites of importance consideration of the need to identify and recognise buffer zones fringing wetlands of international importance items of natural heritage unique to Wexford

7	EPA	<ul style="list-style-type: none"> • Various points relating to SEA
8	IPCC	<ul style="list-style-type: none"> • Wexford has the greatest representation of its original peatland remaining in a conservation worthy status, majority being fen habitat. • Need detailed management plans • Identify 9 peatland sites of conservation concern in the county
9	Camilla Gunzl	<ul style="list-style-type: none"> • Leave roadside verges uncut to allow wildflowers or at least only cut them from Autumn to march to allow dropping of seeds. • Educational signage for birds and wildlife should be placed at ferryport, road junctions, parks etc.
10	Ivan Donoghue Wexford Sub Aqua Club	<ul style="list-style-type: none"> • They carry out underwater beach clean ups • Help clubs who contribute to env protection • Set up a databse where people can input what they find/see • Set up facebook page on the nature of Co.Wexford • Set up artificial reefs • Seal Sanctuary in Courtown
11	Dr.Favel Naulty UCD	<ul style="list-style-type: none"> • Red Squirrel population in the Raven • Protect from invasion of the grey squirrels, seen within 1km of the Raven • Squirrel monitoring and education programme • Action needs to be taken soon
12	Terri Talbot	<ul style="list-style-type: none"> • There should be an environmental hotline for members of the public to report things • Hedges and trees should be protected • Holiday chalets in Courtown are expanding with concrete driveways and its inappropriate development cutting away dune vegetation • Cliff walks have become overgrown • Inappropriate ribbon development • Quads impacting on dunes and mountain areas • River walk in Borodale should be restored • Development of marked walks and cycle paths is important
13	William Carr	<ul style="list-style-type: none"> • Importance of monitoring the Natterjack Toad population in the Raven which was translocated in 1990's.

14	Catherine O'Connor	<ul style="list-style-type: none"> • RE: Duncannon wetlands and the biodiversity it supports are of importance and should be protected, seeking inclusion as an SAC or NHA. • The biodiversity of the dune habitat is very important with a variety of species. Requesting dezoning of the lands from residential to nature conservation.
15	An Taisce	<ul style="list-style-type: none"> • designate a Biodiversity Officer • establish a Biodiversity Forum • stakeholder involvement is critical • address the issue of resource use (green procurement etc) • actions to achieve good water status in accordance with WFD • native species planting • Invasive species management • planning in Natura 2000 sites – ensure biodiversity conservation is incorporated into planning decisions, and appropriate assessment be fully implemented • good management and monitoring of protected species and habitats • maintaining and restoring biodiversity – actions directed at protecting vulnerable species • zoning for windfarm development • sustainable forestry • climate change mitigation – adaptation strategy for climate change • adopt an ecological network approach • improved management of hedgerows • Improved protection of NHAs and pNHAs • Robust actions and targets should be set
16	AJ Carser	<ul style="list-style-type: none"> • sustainable, human scale, mixed organic farming needs to be encouraged • small rural food-producing enterprises should also be encouraged • non-destructive tourism and small scale green energy projects should be encouraged <p>Urban biodiversity</p> <ul style="list-style-type: none"> • More open spaces, public parks, low maintenance open areas • Encourage urban dwellers to plant flowers ad

		<ul style="list-style-type: none"> trees to attract birds and insects Allotments should be provided to grow food
17	Yvonne O'Boyle	<ul style="list-style-type: none"> Support Organic Agriculture and animal husbandry use of chemicals, fertilisers is bad for all of us and the use of slurry is detrimental to overall water table and Slaney estuary plant trees , emphasise the need for tree planting in planning practices Gardens, encourage people to grow trees and shrubs and make ponds to encourage wildlife in the garden. Co. Council should set the example Sewage, look at reed beds and oyster beds along the coast again. Working with local communities,
18	Wexford Regional Game Council	<ul style="list-style-type: none"> members involved in feeding, protection of game birds. Red Grouse Project on Mount Leinster which they fund involved in reintroduction of Grey Partridge wish to be involved in any working group.
19	Diarmuid O'Sullivan, Clonroche Development Association	<ul style="list-style-type: none"> tidy towns has brought the topic of biodiversity to Clonroche and there are a number of ideas they have in relation to wildlife Importance of tree planting has become apparent with thousands of starlings visible as dusk over a small forested area of Sitka and Norway Spruce.
20	Sophie Preteseille GSI	<ul style="list-style-type: none"> List of Geological Heritage Sites for the county X & Y Coordinates for GIS inputting
21	Diane O'Hara	<ul style="list-style-type: none"> Discontinue the removal of sand from Duncannon Beach.
22-78 individual submissions	various	<p>Re: conservation of Sea Bass stocks</p> <ul style="list-style-type: none"> Maintain Legislation to Protect the SEA Bass from Commercial fishing. Importance of Recreational Angling to the Local Economy/Tourism Illegal Fishing/Netting
99	total submissions	

APPENDIX 2 - LEGISLATION RELATING TO BIODIVERSITY

National Legislation

- Wildlife Act, 1976 and Wildlife (Amendment) Act, 2000.
- Whale Fisheries Act, 1937.
- Fisheries Acts, 1956 - 2001.
- The Forestry Acts, 1946 -1988.
- Planning and Development Acts, 2000 - 2011
- The Roads Act 1993 - 2007.
- Protection of the Environment Act 2003.
- Flora (Protection) Order 1999 (SI No 94 of 1999).
- European Communities (Natural habitats) Regulations, 1997 – 2005 (SI No 94/1997)
- European Communities (Conservation of Wild Birds) Regulations, SI No291/1985.
- European Communities (Water policy) Regulations, (SI No 722/2003)
- European Communities (Environmental Impact Assessment) (Amendment) Regulations, 1989 - 2006.
- European Communities (Environmental Assessment of Certain plans and Programmes) Regulations 2004 (SI No 435 of 2004).
- European Communities (Strategic Environmental Assessment) Regulations 2004 -2011
- European Communities (Birds and Natural Habitats Regulations 2011.
- Planning and Development Regulations, 2001 - 2011.
- European Communities (Quality of Salmonid Waters) Regulations, 1988 (S.I. No. 293/1988)
- Environment (Misc Provisions) Act 2011 (No. 20 of 2011)
- European Union (Environmental Impact Assessment and Habitats) Regulations 2011
- Foreshore Acts, 1933 - 1998

European Directives

- EU Habitats Directive (Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora), as amended.
- Birds Directive (Council Directive 79/409/EEC on the Conservation of Wild Birds), as amended.
- Water Framework Directive (Council Directive 2000/60/EC).
- Freshwater Fish Directive (Council Directive 78/659/EC).
- EC Directive 97/11/EC (amending Council Directive 85/337/EEC) on the Assessment of the Effects of Certain Public and Private Projects on the Environment

- Quality of Shellfish Waters Directive, 79/923/EEC
- Environmental Impact Assessment Directive, 97/11/EC
- Nitrates Directive, 91/676/EEC
- Strategic Environmental Assessment Directive, 2001/42/EC

European Plans and Strategies

- European Biodiversity Strategy to 2020
- Biodiversity Action Plans in the areas of Conservation of Natural Resources, Agriculture, Fisheries, and Development and Economic Co-operation, 2001 (COM(2001)162 final).
- The European Union Strategy for Sustainable Development, 2001 (COM(2001)264 final).
- The Sixth EU Environmental Action Programme, Our Future, Our choice, 2001 (COM (2001)31).

International Conventions

- UNESCO Convention for the protection of the World Cultural and Natural Heritage.
- Convention on the Conservation of European Wildlife and Natural Habitats (Berne Convention, 1979).
- Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention), 1979.
- Agreement on Conservation of Bats in Europe (Bonn Convention), 1993.
- Convention of Wetlands of International Importance (Ramsar Convention, 1971).
- International Convention for the Regulation of Whaling, 1946.
- Convention on Biological Diversity, 1992.
- Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES) 1974.
- Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA) (Bonn Convention), 1996.
- International Tropical Timber Agreement 1994, (1996).
- Pan-European Biological and Landscape Diversity Strategy, 1995.
- United Nations Framework Convention on Climate Change, 1992.
- Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR), 1992 (including Annex V on marine biodiversity) Pan-European Biological and Landscape Diversity Strategy (endorsed 1995).
- The European Network of Biogenetic Reserves, 1976.
- European Landscape Convention, 2000

APPENDIX 3 – IMPORTANT HABITATS AND SITES IN COUNTY WEXFORD

Habitats listed for special conservation measures under the EU Birds and Habitats Directives

Priority Habitats in Ireland

- Coastal Lagoons (Code 1150)
- Fixed Coastal Dunes with Herbaceous Vegetation (Grey Dunes) (Code 2130)
- Decalcified Fixed Dunes with *Empetrum nigrum* (Code 2140)
- Atlantic Decalcified Fixed Dunes (Code 2150)
- Machair (Code 21ao)
- Turloughs (Code 3180)
- Semi-Natural Dry Grassland and Scrubland Facies on Calcareous Substrates (Code 6210)
- Species-Rich Nardus Grasslands, on Siliceous Substrates in Mountain Areas (Code 6230)
- Active Raised Bogs (Code 7110)
- Blanket Bog (Active) (Code 7130)
- Calcareous Fens with *Cladium mariscus* (Code 7210)
- Petrifying Springs with Tufa Formation (Code 7220)
- Limestone Pavements (Code 8240)
- Bog Woodland (Code 91d0)
- Alluvial Forest (Code 91e0)
- *Taxus baccata* Woods of the British Isles (Code 9580)

Special Areas of Conservation (SACs) in County Wexford

Name of SAC	Qualifying interests
Ballyteige Burrow 000696 Candidate SAC	<ul style="list-style-type: none"> • Estuaries [1130] • Mudflats and sandflats not covered by seawater at low tide [1140] • Coastal lagoons [1150] • Annual vegetation of drift lines [1210] • Perennial vegetation of stony banks [1220] • <i>Salicornia</i> and other annuals colonising mud and sand [1310] • Spartina swards (<i>Spartinion maritimae</i>) [1320]

	<ul style="list-style-type: none"> • Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) [1330] • Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410] • Mediterranean and thermo-Atlantic halophilous scrubs (<i>Sarcocornetea fruticosi</i>) [1420] • Embryonic shifting dunes [2110] • Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] • Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] • Atlantic decalcified fixed dunes *(<i>Calluno-Ulicetea</i>) [2150]
<p>Bannow Bay 000697</p> <p>Designated SAC</p>	<ul style="list-style-type: none"> • Estuaries [1130] • Mudflats and sandflats not covered by seawater at low tide [1140] • Annual vegetation of drift lines [1210] • Perennial vegetation of stony banks [1220] • <i>Salicornia</i> and other annuals colonising mud and sand [1310] • Spartina swards (<i>Spartinion maritimae</i>) [1320] • Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) [1330] • Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410] • Mediterranean and thermo-Atlantic halophilous scrubs (<i>Sarcocornetea fruticosi</i>) [1420] • Embryonic shifting dunes [2110] • Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] • Fixed coastal dunes with herbaceous vegetation (grey

	dunes) [2130]
Cahore Polders and Dunes 000700 Candidate SAC	<ul style="list-style-type: none"> • Annual vegetation of drift lines [1210] • Embryonic shifting dunes [2110] • Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] • Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]
Lady's Island Lake 000704 Candidate SAC	<ul style="list-style-type: none"> • Coastal lagoons [1150] • Reefs [1170] • Perennial vegetation of stony banks [1220]
Saltee Islands 000707 Candidate SAC	<ul style="list-style-type: none"> • Mudflats and sandflats not covered by seawater at low tide [1140] • Large shallow inlets and bays [1160] • Reefs [1170] • Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] • Grey seal (<i>Halichoerus grypus</i>) [1364] • Submerged or partly submerged sea caves [8330]
Screen Hills 000708 Candidate SAC	<ul style="list-style-type: none"> • Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) [3110] • European dry heaths [4030]
Tacumshin lake 000709 Candidate SAC	<ul style="list-style-type: none"> • Coastal lagoons [1150] • Annual vegetation of drift lines [1210] • Perennial vegetation of stony banks [1220] • Embryonic shifting dunes [2110] • Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120]

<p>Raven Point nature Reserve 000710</p> <p>Candidate SAC</p>	<ul style="list-style-type: none"> • Mudflats and sandflats not covered by seawater at low tide [1140] • Annual vegetation of drift lines [1210] • Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) [1330] • Embryonic shifting dunes [2110] • Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] • Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] • Dunes with <i>Salix repens ssp. argentea</i> (<i>Salix arenariae</i>) [2170] • Humid dune slacks [2190]
<p>Hook Head 000764</p> <p>Candidate SAC</p>	<ul style="list-style-type: none"> • Large shallow inlets and bays [1160] • Reefs [1170] • Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]
<p>Blackstairs Mountains 000770</p> <p>Candidate SAC</p>	<ul style="list-style-type: none"> • Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010] • European dry heaths [4030]
<p>Slaney River Valley 000781</p> <p>Candidate SAC</p>	<ul style="list-style-type: none"> • Freshwater pearl mussel (<i>Margaritifera margaritifera</i>) [1029] • Sea lamprey (<i>Petromyzon marinus</i>) [1095] • Brook lamprey (<i>Lampetra planeri</i>) [1096] • River lamprey (<i>Lampetra fluviatilis</i>) [1099] • Allis shad (<i>Alosa alosa</i>) [1102] • Twaite shad (<i>Alosa fallax fallax</i>) [1103] • Salmon (<i>Salmo salar</i>) [1106] • Estuaries [1130] • Mudflats and sandflats not covered by seawater at low tide

	<ul style="list-style-type: none"> [1140] • Otter (<i>Lutra lutra</i>) [1355] • Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation [3260] • Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in British Isles [91A0] • Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae) [91E0]
Kilmuckridge – Tinnaberna Sandhills 001741 Candidate SAC	<ul style="list-style-type: none"> • Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] • Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]
Kilpatrick Sandhills 001742 Candidate SAC	<ul style="list-style-type: none"> • Annual vegetation of drift lines [1210] • Embryonic shifting dunes [2110] • Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] • Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] • Atlantic decalcified fixed dunes (<i>Calluno-Ulicetea</i>) [2150]
Long Bank 002161 Candidate SAC	<ul style="list-style-type: none"> • Sandbanks which are slightly covered by sea water all the time [1110]
River Barrow and River Nore 002162 Candidate SAC	<ul style="list-style-type: none"> • <i>Vertigo moulinsiana</i> [1016] • Freshwater pearl mussel (<i>Margaritifera margaritifera</i>) [1029] • White-clawed crayfish (<i>Austropotamobius pallipes</i>)

	<p>[1092]</p> <ul style="list-style-type: none"> • Sea lamprey (<i>Petromyzon marinus</i>) [1095] • Brook lamprey (<i>Lampetra planeri</i>) [1096] • River lamprey (<i>Lampetra fluviatilis</i>) [1099] • Allis shad (<i>Alosa alosa</i>) [1102] • Twaite shad (<i>Alosa fallax fallax</i>) [1103] • Salmon (<i>Salmo salar</i>) [1106] • Estuaries [1130] • Mudflats and sandflats not covered by seawater at low tide [1140] • <i>Salicornia</i> and other annuals colonising mud and sand [1310] • Spartina swards (<i>Spartinion maritimae</i>) [1320] • Atlantic salt meadows (<i>Glaucopuccinellietalia maritimae</i>) [1330] • Otter (<i>Lutra lutra</i>) [1355] • Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410] • Killarney fern (<i>Trichomanes speciosum</i>) [1421] • Pearl mussel (<i>Margaritifera durrovensis</i>) [1990] • Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation [3260] • European dry heaths [4030] • Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430] • Petrifying springs with tufa formation (<i>Cratoneurion</i>) [7220] • Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in British Isles [91A0] • Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus</i>
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	<i>excelsior (Alno-Padion, Alnion incanae, Salicion albae)</i> [91E0]
Carnsore Point 002269 Candidate SAC	<ul style="list-style-type: none"> • Mudflats and sandflats not covered by seawater at low tide [1140] • Reefs [1170]
Blackwater Bank 002953 Candidate SAC	<ul style="list-style-type: none"> • Sandbanks which are slightly covered by sea water all the time

Special Protection Areas (SPA's)

SPA Name & Site Code	Qualifying interests
Saltee Islands 004002	<ul style="list-style-type: none"> • Fulmar (<i>Fulmarus glacialis</i>) [A009] • Gannet (<i>Morus bassanus</i>) [A016] • Cormorant (<i>Phalacrocorax carbo</i>) [A017] • Shag (<i>Phalacrocorax aristotelis</i>) [A018] • Lesser Black-backed Gull (<i>Larus fuscus</i>) [A183] • Herring Gull (<i>Larus argentatus</i>) [A184] • Kittiwake (<i>Rissa tridactyla</i>) [A188] • Guillemot (<i>Uria aalge</i>) [A199] • Razorbill (<i>Alca torda</i>) [A200] • Puffin (<i>Fratercula arctica</i>) [A204]
Lady's Island 004009	<ul style="list-style-type: none"> • Gadwall (<i>Anas strepera</i>) [A051] • Black-headed Gull (<i>Larus ridibundus</i>) [A179] • Sandwich Tern (<i>Sterna sandvicensis</i>) [A191] • Roseate Tern (<i>Sterna dougallii</i>) [A192] • Common Tern (<i>Sterna hirundo</i>) [A193] • Arctic Tern (<i>Sterna paradisaea</i>)

	<p>[A194]</p> <ul style="list-style-type: none"> Wetlands & Waterbirds [A999]
Bannow Bay 004003	<ul style="list-style-type: none"> Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046] Shelduck (<i>Tadorna tadorna</i>) [A048] Pintail (<i>Anas acuta</i>) [A054] Oystercatcher (<i>Haematopus ostralegus</i>) [A130] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Grey Plover (<i>Pluvialis squatarola</i>) [A141] Lapwing (<i>Vanellus vanellus</i>) [A142] Knot (<i>Calidris canutus</i>) [A143] Dunlin (<i>Calidris alpina</i>) [A149] Black-tailed Godwit (<i>Limosa limosa</i>) [A156] Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157] Curlew (<i>Numenius arquata</i>) [A160] Redshank (<i>Tringa totanus</i>) [A162] Wetlands & Waterbirds [A999]
The Raven 004019	<ul style="list-style-type: none"> Red-throated Diver (<i>Gavia stellata</i>) [A001] Cormorant (<i>Phalacrocorax carbo</i>) [A017] Common Scoter (<i>Melanitta nigra</i>) [A065] Grey Plover (<i>Pluvialis squatarola</i>) [A141] Sanderling (<i>Calidris alba</i>) [A144] Greenland White-fronted goose (<i>Anser albifrons flavirostris</i>) [A395] Wetlands & Waterbirds [A999]
Ballyteigue Burrow 004020	<ul style="list-style-type: none"> Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046] Shelduck (<i>Tadorna tadorna</i>) [A048] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Grey Plover (<i>Pluvialis squatarola</i>) [A141]

	<ul style="list-style-type: none"> • Lapwing (<i>Vanellus vanellus</i>) [A142] • Black-tailed Godwit (<i>Limosa limosa</i>) [A156] • Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157] • Wetlands & Waterbirds [A999]
Wexford Harbour and Slobs 004076	<ul style="list-style-type: none"> • Little Grebe (<i>Tachybaptus ruficollis</i>) [A004] • Great Crested Grebe (<i>Podiceps cristatus</i>) [A005] • Cormorant (<i>Phalacrocorax carbo</i>) [A017] • Grey Heron (<i>Ardea cinerea</i>) [A028] • Bewick's Swan (<i>Cygnus columbianus</i>) [A037] • Whooper Swan (<i>Cygnus cygnus</i>) [A038] • Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046] • Shelduck (<i>Tadorna tadorna</i>) [A048] • Wigeon (<i>Anas penelope</i>) [A050] • Teal (<i>Anas crecca</i>) [A052] • Mallard (<i>Anas platyrhynchos</i>) [A053] • Pintail (<i>Anas acuta</i>) [A054] • Scaup (<i>Aythya marila</i>) [A062] • Goldeneye (<i>Bucephala clangula</i>) [A067] • Red-breasted Merganser (<i>Mergus serrator</i>) [A069] • Hen Harrier (<i>Circus cyaneus</i>) [A082] • Coot (<i>Fulica atra</i>) [A125] • Oystercatcher (<i>Haematopus ostralegus</i>) [A130] • Golden Plover (<i>Pluvialis apricaria</i>) [A140] • Grey Plover (<i>Pluvialis squatarola</i>) [A141] • Lapwing (<i>Vanellus vanellus</i>) [A142] • Knot (<i>Calidris canutus</i>) [A143] • Sanderling (<i>Calidris alba</i>) [A144] • Dunlin (<i>Calidris alpina</i>) [A149] • Black-tailed Godwit (<i>Limosa limosa</i>)

	<ul style="list-style-type: none"> [A156] • Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157] • Curlew (<i>Numenius arquata</i>) [A160] • Redshank (<i>Tringa totanus</i>) [A162] • Black-headed Gull (<i>Larus ridibundus</i>) [A179] • Lesser Black-backed Gull (<i>Larus fuscus</i>) [A183] • Little Tern (<i>Sterna albifrons</i>) [A195] • Greenland White-fronted goose (<i>Anser albifrons flavirostris</i>) [A395] • Wetlands & Waterbirds [A999]
Tacumshin Lake 004092	<ul style="list-style-type: none"> • Little Grebe (<i>Tachybaptus ruficollis</i>) [A004] • Bewick's Swan (<i>Cygnus columbianus</i>) [A037] • Whooper Swan (<i>Cygnus cygnus</i>) [A038] • Wigeon (<i>Anas penelope</i>) [A050] • Gadwall (<i>Anas strepera</i>) [A051] • Teal (<i>Anas crecca</i>) [A052] • Pintail (<i>Anas acuta</i>) [A054] • Shoveler (<i>Anas clypeata</i>) [A056] • Tufted Duck (<i>Aythya fuligula</i>) [A061] • Coot (<i>Fulica atra</i>) [A125] • Golden Plover (<i>Pluvialis apricaria</i>) [A140] • Grey Plover (<i>Pluvialis squatarola</i>) [A141] • Lapwing (<i>Vanellus vanellus</i>) [A142] • Black-tailed Godwit (<i>Limosa limosa</i>) [A156] • Wetlands & Waterbirds [A999]
Keeragh Islands 004118	<ul style="list-style-type: none"> • Cormorant (<i>Phalacrocorax carbo</i>) [A017]
Cahore Marshes 004143	<ul style="list-style-type: none"> • Wigeon (<i>Anas penelope</i>) [A050] • Golden Plover (<i>Pluvialis apricaria</i>) [A140] • Lapwing (<i>Vanellus vanellus</i>) [A142]

	<ul style="list-style-type: none"> Greenland White-fronted goose (<i>Anser albifrons flavirostris</i>) [A395] Wetlands & Waterbirds [A999]
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Natural Heritage Area's (NHA's)

There is one designated NHA Keeragh Islands and 27 proposed NHA's.

NHA	
000703	Keeragh Islands
pNHA	
000698	Barrow River Estuary
000699	Boley Fen
000702	Leskinfere Church, Clogh
000706	Mountgarrett Riverbank
000711	Tintern Abbey
000712	Wexford Slobs and Harbour
000741	Ballyconnigar Sandpits
000742	Ballyconnigar Upper
000744	Ballykelly Marsh
000745	Ballymoney Strand
000746	Ballynabarney Wood
000747	Ballyroe Fen and Lake
000750	Bunclody Slate Quarries

000754	Carrhill Wood
000755	Clone Fox Covert
000757	Courtown Dunes and Glen
000761	Forth Mountain
000765	Killoughrim Forest
000774	Oaklands Wood
000782	St Helen's Burrow
000812	Pollmounty River Valley
001733	Ardamine Woods
001736	Cahore Point North Sandhills
001737	Donaghmore Sandhills
001738	Duncannon Sandhills
001834	Kilgorman River Marsh
001930	Ballyteige Marsh

Nature Reserves

Ballyteige Burrow: (227 ha.) is a 9 km long shingle spit running north west from the coastal village of Kilmore Quay in south Co. Wexford and adjoining foreshore. The flora of Ballyteige Burrow includes a number of rare plants such as *Asparagus officinalis* and is especially rich in dune plants and those which prosper in coastal habitats. Established on 28 September, 1987. State owned.

The Raven: comprising 589 ha., situated 8 km north-east of Wexford town is a large, well developed sand dune ecosystem, foreshore and seabed. The area supports a full range of duneland animals, several of which are of particular interest and has a rich flora including some rare species. It is one of the best-developed sand dune systems on the east coast. Important also as a roosting area for geese and waders. Established on 31 July, 1983. State owned.

The Wexford Wildfowl Reserve: 194 ha. situated on the sloblands north of Wexford Harbour. It is owned jointly by the National Parks & Wildlife Service and the Irish Wildbird Conservancy and it forms a wintering ground of international importance for a number of migratory waterfowl species including in particular the Greenland White-fronted Goose. This reserve was extended by 84 ha. in 1989 to 194 ha. Established on 3 June, 1981.

Refuges for Fauna

Under the Wildlife Acts, the Minister may designate Refuges for wild birds or wild animals or flora and impose protective measures to conserve both the species and their habitats. Seven such refuges already exist; they are mainly islands or cliff faces, one located in County Wexford.

Refuge for Fauna (Lady's Island) Designation Order, 1988 – designated for Artic tern, common tern, roseate tern, sandwich tern and little tern.

Bogs & Fens

Below is a list of known Bogs & Fens in County Wexford.

Site name	Type	Area Ha	Qualifying Interest	Other Designations
Boley fen	Fen	22	Valley fen	pNHA (site code: 699)
Curraclloe	Fen	50	Transition/Reedbeds	pNHA (stie code: 712)
Macmine Marshes	Fen	120	Flood plain fen /Callows	pNHA (site code: 781)
Screen Hills/Doo lough	Fen	148	Basin fen	SAC (site code: 708)

Tacumshin lake	Fen	48	Transition/Reedbeds	SAC (site code: 709)
Urrin headwater	Fen	18	Flush	SAC (site code: 770)
Mount Leinster & Blackstairs Mountains	Mountain Blanket Bog	60		SAC (site code: 770)
Slilve Bawn	Mountain Blanket Bog	185		SAC (site code: 770)
Forth Mountain	Wet heath			pNHA (site code: 761)
Kilnaseer Fen	Fen			Undesignated site
Kilcoraal Fen	Fen			Undesignated site

Ramsar Sites – Wetlands

The Convention on Wetlands came into force for Ireland on 15 March 1985.

Ireland presently has 45 sites designated as Wetlands of International Importance, three being located in County Wexford with a total area of 1741Ha covered by the 3 sites.

Ramsar Site No. 291: The Wexford Wildfowl Reserve

This site was designated on the 15th November 1984. The Wexford Wildfowl Reserve has a total area of 194 ha. The site also has the following designation; Special Protection Area (EC Directive) and Nature Reserve. The site is described as a low-lying areas of empoldered farmland dissected by numerous drainage ditches created by draining an estuarine embayment. Water levels are controlled for irrigation and flood prevention. The site forms part of the world's most important wintering site for the vulnerable Greenland White fronted Goose (*Anser albifrons flavirostris*) (world population about 30,000), which nests in Greenland, stages in Iceland and winters in Ireland and the UK. The average count of *A. a. flavirostris* wintering at the site is 32% of the world population. Several other passage and wintering waterbirds use the site.

Ramsar Site No. 840 : Bannow Bay.

The site was designated on the 11th November 1996. The site has an area of 958Ha, and is also a designated Special Protection Area (EC Directive). The site is described as a sea bay with extensive mud and sand flats, saltmarsh, and sand dunes. The site supports an important range of wintering waterbird species, including Northern Pintail duck (*Anas acuta*), Red Knot (*Calidris canutus*), Grey Plover (*Pluvialis squatarola*). It is a habitat for internationally important numbers (938) of Brent geese (*Branta bernicla hrota*).

Ramsar Site No. 333 : The Raven.

The site was designated on the 31st July 1986. The site has a total area of 589 ha and also has the following designations; Special Protection Area (EC Directive) and Nature Reserve. The site is described as a sand-dune spit protecting Wexford Harbour from the sea. The tip is highly mobile, with constantly changing patterns of recurves, lagoons and sand bars. The unforested foredunes support a well-developed native vegetation, including various nationally rare species. The site provides important roosting sites for passage terns and supports a small nesting colony of the Little Tern (*Sterna albifrons*). Internationally important numbers of the globally vulnerable goose Greenland White fronted Goose (*Anser albifrons flavirostris*) winter at the site and large numbers of waders roost at high tide. The site is managed for timber.

Habitats in County Wexford

HABITATS IN COUNTY WEXFORD		
Habitat Classification *indicates priority habitat	Threat	Location
Marine		
Sandbanks (1110) / SS1 Infralittoral gravels and sands	Potential for aggregate extraction, coal extraction and wind farm development	Long Bank and Holdens Bed (cSAC 002161)
Estuaries (1130)	Aquaculture, fishing, coastal development and water pollution	Bannow Bay (SAC 697 Bannow Bay) The Cull (cSAC 696 Ballyteige Burrow) Ferry carrig and Wexford Harbour (cSAC 781 Slaney)

HABITATS IN COUNTY WEXFORD		
Habitat Classification *indicates priority habitat	Threat	Location
		River Valley)
Tidal and mudflats and sandflats (1140) / LS2 Sand shores/ LS3 Muddy sand shores	Aquaculture, fishing, bait digging, removal of fauna, reclamation of land, coastal protection works and invasive species particularly cord grass <i>Spartina</i> spp. Also concern at the potential impact of hard coastal defence structures may have in combination with sea-level rise.	696 Ballyteige Burrow 697 Bannow Bay 707 Saltee Islands 710 Raven Point Nature Reserve 781 Slaney River Valley 2162 River Barrow and River Nore 2269 Carnsore Point
Large Shallow Inlets and Bays (1160) / MW2 Sea inlets and bays	Aquaculture, fishing, dumping of wastes and water pollution	Saltee Islands (cSAC 707) Hook Head (cSAC 764
Reefs (1170) / LR1 Exposed rocky shore/ LR2 Moderately exposed rock shore/ LR3 Sheltered rocky shores/ LR 4 Mixed substrata shores	Potential impact of fisheries	Lady's Island Lake (cSAC 704), Saltee Islands (cSAC 707), Hook Head (cSAC 764) and Carnsore Point (cSAC 2269).
Sea caves (8330)/ LR5 Sea caves/ SR1 Exposed infralittoral rock / SR2 Moderately exposed infralittoral rock / SR3 Sheltered infralittoral rock/ SR4 Exposed circalittoral rock / SR5 Moderately exposed circalittoral rock/ SR6 Sheltered circalittoral rock.		Saltee Islands cSAC 707,
Coastal habitats		
Coastal Lagoons (1150)* CW1 Lagoons and saline lakes	Drainage of lagoon for agricultural or safety reasons, silting up, water pollution	Ballyteige Burrow (cSAC 696), Lady's Island Lake (cSAC 704), and Tacumshin Lake (cSAC 709
Annual vegetation of drift lines (1210) / LS1 Shingle and gravel shores	Recreational uses such as trampling, horse riding, vehicle use and mechanised removal of tidal litter. Other impacts are over grazing, sand and gravel extraction, removal of beach materials, coastal erosion and sea defence or coastal protection works	Ballyteige Burrow (cSAC 696), Bannow Bay (SAC 697), Cahore Polders and Dunes (cSAC 700), Tacumshin Lake (cSAC 709), Raven Point Nature Reserve (cSAC 710), Kilpatrick sandhills (cSAC 1742), Kilmuckridge-Tinnaberna Sandhills(cSAC 1741).
Perennial vegetation of stony banks (1220) / CB1 Perennial vegetation of stony banks	Disruption of the sediment supply, owing to the interruption of coastal	Ballyteige Burrow (cSAC 696), Bannow Bay (SAC 697), Lady's Island Lake (cSAC

HABITATS IN COUNTY WEXFORD		
Habitat Classification *indicates priority habitat	Threat	Location
	processes, caused by developments such as car parks and coastal defence structures. The removal of gravel. Recreational uses such as trampling, horse riding and vehicles.	704), Tacumshin Lake (cSAC 709)
Vegetated Sea Cliffs (1230) / CS1 Rocky sea cliffs/ CS2 Sea stacks and islets/ CS3 Sedimentary sea cliffs	Erosion, grazing, recreational pressures, development of golf courses and housing, dumping and cutting of peat	Hook Head (cSAC 764) and the Saltee Islands (cSAC 707) Kilpatrick Sandhills Ballymoney strand pNHA 745
Salt Marsh Habitats		
<i>Salicornia</i> and other annuals colonising mud and sand (1310);	infilling, reclamation and embankment of some former saltmarsh and intertidal areas for agricultural purposes, spread of the invasive species <i>Spartina anglica</i> . Vulnerable to natural erosion and storms.	Ballyteige burrow (cSAC 696), Bannow Bay (SAC 697), River Barrow and River Nore (cSAC 2162).
Atlantic salt meadows (1330) & Mediterranean salt meadows (1410)	Over-grazing by sheep or cattle or erosion, infilling and reclamation. Invasive species common cordgrass <i>Spartina anglica</i> Eutrophication promoting the spread of Common Cordgrass	Ballyteige Burrow cSAC 696, Bannow Bay SAC 697, Raven Point Nature Reserve cSAC 710, River Barrow and River Nore cSAC 2162.
Halophilous scrub (1420). perennial glasswort <i>Sarcocornia perennis</i> , Rarest Annex I saltmarsh Habitat found in Ireland	Poaching by cattle and tracks created by off-road vehicles, site damage by horse riding activities.	Ballyteige Burrow cSAC 696, Bannow Bay cSAC 697,
Sand Dune Habitats		
Embryonic Shifting dunes (2110)	Natural erosion processes and can be susceptible to removal by storms and high tides; human activities such as recreation and sand extraction can exacerbate this problem. Construction of coastal protection works can also cut off the supply of sand.	Ballyteige burrow cSAC 696 Bannow Bay SAC 697 Cahore Polders and dunes cSAC 700 Tacumshin Lake cSAC 709 Raven Point Nature Reserve cSAC 710 Kilpatrick sandhills c1742
Marram dunes (white dunes) (2120)	Removal of beach materials, construction of coastal protection works or by sand compaction caused by motorised vehicles on the beach. High visitor pressure which causes trampling and	Ballyteige Burrow cSAC 696 Bannow Bay SAC 697 Cahore Polders and Dunes cSAC 700 Tacumshin Lake cSAC 709 Raven Point Nature Reserve cSAC 710 Kilmuckridge-

HABITATS IN COUNTY WEXFORD		
Habitat Classification *indicates priority habitat	Threat	Location
	damages the plant cover. Horse riding.	Tinnaberna Sandhills cSAC 1741 Kilpatrick sandhills cSAC 1742
Fixed Dunes (Grey Dunes) 2130	Impacts from developments such as sports pitches, golf courses etc. Impacts of recreation. Pedestrian traffic and vehicle use can lead to the destruction of the vegetation cover, both overgrazing and undergrazing are also significant threats. Non-native species such as sea buckthorn is also a threat	Ballyteige burrow cSAC 696 Bannow Bay SAC 697 Cahore Polders and Dunes cSAC 700 Raven Point Nature Reserve cSAC 710 Kilmuckeridge-Tinnaberna sandhills cSAC 1741 Kilpatrick Sand hills cSAC 1742.
Dunes with <i>Salix repens</i> ssp <i>argentea</i> (<i>Salicion arenariae</i>) (2170)	Recreation, overgrazing, undergrazing and agricultural improvement, horse riding.	The Raven Point Nature Reserve
Humid dune slacks (2190)	overgrazing, undergrazing, over-stabilisation of dunes, water abstraction and drainage, golf course developments, forestry and coastal protection works	The Raven Point Nature Reserve'
Waterbodies		
Lowland Oligotrophic lakes (3110)	Nutrient enrichment from agricultural sources, including overgrazing, excessive fertilisation, afforestation and waste water from housing developments	Screen Hills cSAC (708)
Hard water lakes (3140)	Nutrient enrichment from intensification of agriculture and urban developments	
Dystrophic lakes (3160)	Peat cutting, overgrazing and afforestation of peatland habitats	
Freshwater		
Floating River Vegetation (3260) / FW1 Eroding/upland rivers / FW2 Depositing/lowland Rivers	eutrophication, overgrazing, excessive fertilisation, afforestation and the introduction of invasive alien species	River Barrow (cSAC 2162) The River Slaney (cSAC 781)
Petrifying springs (7220)*	include land reclamation, turf cutting and drainage	Saltee Island cSAC 707
Heath		
Wet heath (4010)	Reclamation, afforestation and burning, over grazing	Blackstairs mountains cSAC 770
Dry Heath (4030)	Afforestation, over-burning, over-grazing, under-grazing	Screen Hills cSAC 708 Blackstairs Mountains cSAC

HABITATS IN COUNTY WEXFORD		
Habitat Classification *indicates priority habitat	Threat	Location
	and bracken invasion	770 River Barrow and River Nore cSAC 2162
Alpine and sub-Alpine Heath (4060)	Afforestation, over-burning, sheep grazing and leisure activities including hill walking	Wexford Mount Leinster in the Blackstairs range
Grassland & Marsh		
Orchid-rich grassland/Calcareous grassland (6210)* GS1 Dry Calcareous and neutral grassland	Reclamation and abandonment of traditional farming practises on marginal lands	Killinick Railway Station
Species-rich <i>Nardus</i> Upland Grassland (6230) * GS3 Dry humid acid grassland	Over grazing and succession over time to dry heath due to the abandonment of traditional agricultural practises	Blackstairs Mountain cSAC 770
Molinia meadows (6410) / GS4 Wet grassland	Agricultural intensification, drainage and the abandonment of pastoral systems which encourages rank vegetation and scrub encroachment	Ballyteigh Marsh pNHA 1930
Hydrophilous tall herb (6430) / GM1 Marsh	Invasive species, arterial drainage and agricultural intensification at the rivers edge	At Kilgorman River Marsh pNHA 1834 River Barrow and its tributaries and along the River Slaney.
Peatlands		
Blanket Bog (active) (7130)* PB2 Upland blanket bog	Reclamation, peat extraction, afforestation and erosion and even landslides triggered by human activity. Other threats include overstocking, drainage, burning and infrastructural developments	north of Mount Leinster and around Black Mountain
Transition mires (7140) / PF3 Transition mire and quaking bog	Drainage, infilling, reclamation and pollution	cSAC 708 Screen Hills
Cladium Fen (7210) * PF1 Rich fen and flush	Drainage, land reclamation, peat cutting and forestry	Slaney River cSAC 781
Alkaline fens (7230)	Peat extraction, drainage, reclamation, infilling and eutrophication	Wexford slob and harbour pNHA 712 Ballykelly marsh pNHA 744 Ballyroe fen and lake pNHA 747

HABITATS IN COUNTY WEXFORD		
Habitat Classification *indicates priority habitat	Threat	Location
		Slaney River cSAC 781 Boley fen pNHA 699 Screen Hills cSAC 708
Woodlands		
Old Oak woodlands (91A0)	Woodland clearance, under-grazing and invasive species	Slaney River cSAC 781 River Barrow and Nore cSAC 2162 Strokestown, and Mountgarrett. Killoughrum Forest,
Alluvial forests (91E0)*	Alien invasive species, sub-optimal grazing regimes and drainage	Fisherstown Wood Killoughrum Forest,
WN2 Oak-ash-hazel woodland WD1 (Mixed) Broadleaved woodland WD2 Mixed Broadleaved/Conifer woodland		Oaklands, Courtown and Tintern Dunganstown on the River Barrow Buttermilk point and Mountgarrett Many other locations within the county

APPENDIX 4 – IMPORTANT BIODIVERSITY SPECIES

Common Name	Scientific Name	Location	Notes
FLORA			
Lichens			
Cladonia Species	<i>Usnea articulata</i> occurs at.	Ballyteige Burrow cSAC 696	
Scrambled Egg Lichen	<i>Fulgensia fulgens</i>	Ballyteige Burrow cSAC 696	only known location listed on the Flora (Protection) Order 1999
Bryophytes			
White Cushion Moss	<i>Leucobryum glaucum</i>	grows commonly on rocks, tree stumps and on the ground in woods, forest plantations, heaths and bogs	Annex V species
Higher Plants			
Heath Cudweed	<i>Omalotheca sylvatica</i>	Screen Hills cSAC	Red Data Book Species
Hairy Bird's-foot Trefoil	<i>Lotus subbiflorus</i>	Screen Hills cSAC Ballyconnigar sand pits pNHA	Red Data Book Species
Bird's-Foot	<i>Ornithopus perpusillus</i>	Screen Hills cSAC Blackstairs Mountains cSAC Ballyconnigar sand pits pNHA	Red Data Book Species
Slender Cudweed	<i>Filago minima</i>	Blackstairs Mountains cSAC Ballyconnigar sand pits pNHA	
Lesser Snapdragon	<i>Misopates orontium</i>	Ballyconnigar sand pits pNHA	Red Data Book Species
Musk Thistle	<i>Carduus nutans</i>	Screen Hills SAC	Red Data Book Species
Ivy-leaved Bellflower	<i>Wahlenbergia hederacea</i>	Urrin River Blackstairs Mountains cSAC	Scarce
Mountain Fern	<i>Thelypteris limbosperma</i>	Urrin River Blackstairs Mountains cSAC	
Moore's Horsetail	<i>Equisetum x moorei</i>	Kilmuckridge – Tinnaberna Sandhills cSAC Cahore Polders and Dunes cSAC Raven Point Nature Reserve cSAC	Rare Hybrid, confined to the coasts of Wexford and Wicklow
Round-leaved	<i>Pyrola rotundifolia</i>	Raven Point	

Wintergreen	<i>subsp. maritima</i>	Nature Reserve cSAC	
Wild Asparagus	<i>Asparagus officinalis sub sp. prostratus</i>	Raven Point Nature Reserve cSAC Ballyteige Burrow cSAC	listed on the Flora (Protection) Order 1999
Yellow Archangel	<i>Lamiastrum galeobdolon</i>	Slaney River cSAC	Red Data Book Species
Basil Thyme	<i>Clinopodium acinos</i>	Slaney River cSAC	Red Data Book Species
Blue Fleabane	<i>Erigeron acer</i>	Slaney River cSAC	Red Data Book Species
Small Cudweed	<i>Filago minima</i>	Slaney River cSAC	Red Data Book Species
Summer Snowflake	<i>Leucojum aestivum</i>	Slaney River cSAC	Nationally rare species
Cottonweed	<i>Otanthus maritimus</i>	Lady's Island Lake cSAC Tacumshin Lake cSAC Ballyteige Burrow cSAC	Extremely rare and Lady's Island Lake holds Ireland's main population
Lesser Century	<i>Centaureum pulchellum</i>	Lady's Island Lake cSAC dune slacks at Ballyteige Burrow cSAC Raven Point Nature Reserve cSAC	Red Data Book Species listed on the Flora (Protection) Order 1999
Penny Royal	<i>Mentha pulegium</i>	Lady's Island Lake cSAC	Red Data Book Species
Golden Dock	<i>Rumex maritimus</i>	Lady's Island Lake cSAC	Red Data Book Species
Meadow Barley	<i>Hordeum secalinum</i>	River Barrow and River Nore cSAC Dunbrody Abbey	listed on the Flora (Protection) Order 1999
Divided Sedge	<i>Carex divisa</i>	River Barrow and River Nore cSAC	
Borrer's Saltmarsh- grass	<i>Puccinellia fasciculata</i>	River Barrow and River Nore cSAC Ballyteige Burrow cSAC Castlebridge, Slaney River Valley cSAC, Grange, Bannow cSAC and Rosslare, Wexford Slobs and Harbour pNHA	listed on the Flora (Protection) Order 1999 Red Data Book Species Only found in Barrow estuary, Wexford and Dublin.
Clustered Clover	<i>Trifolium glomeratum</i>	River Barrow and River Nore cSAC	listed on the Flora (Protection) Order 1999

Autumn Crocus	<i>Colchicum autumnale</i>	River Barrow and River Nore cSAC	listed on the Flora (Protection) Order 1999
Wild Sage	<i>Salvia verbenaca</i>	River Barrow and River Nore cSAC	
Nettle-leaved Bell flower	<i>Campanula trachelium</i>	River Barrow and River Nore cSAC	
Greater Broomrape	<i>Orobancha rapum-genistae</i>	River Barrow and River Nore cSAC Killoughrim Forest pNHA	
Perennial Glasswort	<i>Sarcocornia perennis</i>	Bannow Bay, Ballyteige and Fethard Bay	listed on the Flora (Protection) Order 1999 Red Data Book Species Rare species confined to 4 10km grids in Ireland
Sea Pea	<i>Lathyrus japonicus</i>	Ballyteige Burrow cSAC	listed on the Flora (Protection) Order 1999
Sharp-leaved Fluellen	<i>Kickxia elatine</i>	Ballykelly Marsh pNHA	rare arable weed species
Aquatic Higher plants			
Opposite-leaved Pondweed	<i>Groenlandia densa</i>	Slaney River Valley cSAC	listed on the Flora (Protection) Order 1999
Short-leaved Water-starwort	<i>Callitriche truncata</i>	Slaney River Valley cSAC	A rare aquatic herb found nowhere else in Ireland.
Soft Hornwort	<i>Ceratophyllum submersum</i>	Cahore polders and dunes cSAC	
Charophytes			
Charophyte species	<i>Lamprothamnium papulosum</i>	Lady's Island Lake cSAC	Red Data Book Species
Charophyte species	<i>Chara canescens</i>	Lady's Island Lake cSAC also in ponds within Ballyteige Burrow	Red Data Book Species
INVERTEBRATES			
Molluscs (all Red Data Book Species) all recorded in Wexford post 1980			IUCN conservation status
Swollen Spire Snail	<i>Mercuria cf similis</i>		endangered
Moss Chrysallis Snail	<i>Pupilla muscorum</i>		endangered
Moss Bladder Snail	<i>Aplexa hypnorum</i>		vulnerable
Heath Snail	<i>Helicella itala</i>		vulnerable
English Chrysallis Snail	<i>Leiostyla anglica</i>		vulnerable
Spire Snail	<i>Ventrosia ventrosa</i>	Lady's Island lake cSAC	
Marsh Whorl Snail	<i>Vertigo antivertigo</i>	Tacumshin	vulnerable
Prickly Snail	<i>Acanthinula aculeate</i>		vulnerable
Common Whorl Snail	<i>Vertigo pygmaea</i>		near threatened
Striated Whorl Snail	<i>Vertigo substriata</i>		near threatened
Freshwater Pearl Mussel	<i>Margaritifera margaritifera</i>		critically endangered

Duck Mussel	<i>Anodonta anatina</i>		vulnerable
Swan Mussel	<i>Anodonta cygnea</i>	North Slob	vulnerable
Butterflies - recorded in Wexford between 2000 and 2009			IUCN conservation status
Small Blue	<i>Cupido minimus</i>		Endangered
Wall Brown	<i>Lasiommata megera</i>		Endangered
Marsh Fritillary	<i>Euphydryas aurinia</i>	Three 10km records in county	Vulnerable
Dark Green Fritillary	<i>Argynnis aglaja</i>		Vulnerable
Grayling	<i>Hipparchia semele</i>		Near threatened
Gatekeeper	<i>Pyronia tithonus</i>		Near threatened
Small Heath	<i>Coenonympha pamphilus</i>		Near threatened
Dingy Skipper	<i>Erynnis tages</i>		Near threatened
Real's Woodwhite	<i>Lepididea reali</i>		Least concern
Small White	<i>Pieris rapae</i>		Least concern
Large White	<i>Pieris brassicae</i>		Least concern
Green Veined White	<i>Pieris napi</i>		Least concern
Clouded Yellow	<i>Colias croceus</i>		Least concern
Orange Tip	<i>Anthocaris cardamines</i>		Least concern
Green Hairstreak	<i>Callophrys rubi</i>		Least concern
Purple Hairstreak	<i>Neozephyrus quercus</i>		Least concern
Small Copper	<i>Lycaena phlaeas</i>		Least concern
Common Blue	<i>Polyommatus icarus</i>		Least concern
Holly Blue	<i>Celastrina argiolus</i>		Least concern
Red Admiral	<i>Vanessa atlanta</i>		Least concern
Painted Lady	<i>Vanessa cardui</i>		Least concern
Small Tortoiseshell	<i>Aglais urticae</i>		Least concern
Peacock	<i>Inachis io</i>		Least concern
Silver Washed Fritillary	<i>Argynnis paphia</i>		Least concern
Speckled Wood	<i>Parage aegeria</i>		Least concern
Meadow Brown	<i>Maniola jurtina</i>		Least concern
Ringlet	<i>Aphantopus hyperantus</i>		Least concern
Essex Skipper	<i>Thymelicus lineola</i>		
Comma	<i>Polygonum c-</i>		

	<i>album</i>		
Damselflies - likely to occur in Co. Wexford (Red List Species)			IUCN status
Banded Demoiselle	<i>Calopteryx splendens</i>		Least Concern
Beautiful Demoiselle	<i>Calopteryx virgo</i>		Least Concern
Common Spreadwing	<i>Lestes sponsa</i>		Least Concern
Azure Bluet	<i>Coenagrion puella</i>		Least Concern
Common Bluet	<i>Enallagma cyathigerum</i>		Least Concern
Common Bluetail	<i>Ischnura elegans</i>		Least Concern
Small Bluetail	<i>Ischnura pumilo</i>		Vulnerable
Large Red Damsel	<i>Pyrhosoma nymphula</i>		
Dragonflies - likely to occur in Co. Wexford (Red List Species)			IUCN status
Moorland Hawker	<i>Aeshna juncea</i>		Least Concern
Migrant Hawker	<i>Aeshna mixta</i>		Least Concern
Blue Emperor	<i>Anax imperator</i>		Least Concern
Hairy Hawker	<i>Brachyton pratense</i>		Least Concern
Four Spotted Chaser	<i>Libellula quadrimaculata</i>		Least Concern
Black-tailed Skimmer	<i>Orthetrum cancellatum</i>		Least Concern
Ruddy Darter	<i>Sympetrum sanguineum</i>		Least Concern
Common Darter	<i>Sympetrum striolatum</i>		Least Concern
Waterbeetles - that occur in County Wexford			IUCN status
The Narrow Scavenger Beetle	<i>Hydrochus angustatus</i>		Regionally extinct
The Waterplantain Sloth Weevil	<i>Bagous alismatis</i>		Critically endangered
The Horsetail Sloth Weevil	<i>Bagous lutulentus</i>		Critically endangered
The Breached Waterbeetle	<i>Plateumaris brachata</i>		Critically endangered
The Spattered Diver	<i>Agabus conspersus</i>		Endangered
The Saltmarsh Crawler Waterbeetle	<i>Halipplus apicalis</i>	Species most threatened, found in coastal lagoons and ditches	Endangered
The Red-legged Moss	<i>Hydraena rufipes</i>		Endangered

Beetle			
The Salty Scavenger Beetle	<i>Enochrus halophilus</i>		Vulnerable
The Orangeman	<i>Helophorus fulgidicollis</i>		Vulnerable
The Copper Diver	<i>Ilybius chalconatus</i>		Vulnerable
The Moss Beetle	<i>Ochthebius bicolon</i>		Vulnerable
The Blackheaded Scavenger beetle	<i>Enochrus melanocephalus</i>		Near threatened
The Artist	<i>Gyrinus urinator</i>		Near threatened
The Hydravore	<i>Halipus lineolatus</i>		Near threatened
The Marine Moss Beetle	<i>Ochthebius marinus</i>		Near threatened
The Green Moss Beetle	<i>Ochthebius viridis fallaciosus</i>		Near threatened
The Hairy Marsh Beetle	<i>Cyphon pubescens</i>		Least concern
A Diving Beetle	<i>Rhantus suturalis</i>		Least concern
The Buckler Diver	<i>Hydrovatus clypealis</i>		Data deficient
Bees- conservation interest for which there are Wexford records post-1980			Red Data Book assessment
	<i>Andrena barbilabris</i>	Ballyteige The Raven	Near threatened
	<i>Andrena coitana</i>	Ballyvaloo Scullogue Gap	Vulnerable
	<i>Andrena denticulata</i>	Mount leinster Scullogue Gap The Raven	Vulnerable
	<i>Andrena fucata</i>	The Raven Mount Leinster	Near threatened
	<i>Andrena nigroaenea</i>	Askintinny	Vulnerable
	<i>Andrena semilaevis</i>	Lady's Island Grange Woods	Vulnerable
	<i>Andrena wilkella</i>	Hook Head	Data deficient
Bumble bee	<i>Bombus bohemicus</i>	Kilmore Quay/Ballteigue Mount leinster	Near threatened
Bumble bee	<i>Bombus lapidarius</i>	Gorey Ballyteige New Ross	Near threatened
Bumble bee	<i>Bombus magnus</i>	Mount leinster Great Saltee	Data deficient
Bumble bee	<i>Bombus muscorum</i>	Askintinny Lady's Island Ballyteige	Near threatened

	<i>Coelioxys elongata</i>	The Raven	Data deficient
	<i>Coelioxys inermis</i>	The Raven	Data deficient
	<i>Colletes floralis</i>	Ballyteigue Burrow Lady's Island Cahore Carnsore The Raven	Vulnerable
	<i>Colletes similis</i>	Ballyteigue Burrow Grange Wood Lady's Island	Near threatened
	<i>Hylaeus hyalinatus</i>	Ballyteigue	Vulnerable
	<i>Lasioglossum nitidiusculum</i>	Grange wood	Vulnerable
	<i>Megachile centuncularis</i>	Grange wood	Near threatened
	<i>Megachile circumcincta</i>	Askintinny	Data deficient
	<i>Megachile maritima</i>	Ballyteigue Lady's Island The Raven	Near threatened
	<i>Megachile willughbiella</i>	The Cull, Ballyteigue Askintinny	Near threatened
	<i>Nomada panzeri</i>	Sculloge gap Mount Leinster	Near threatened
	<i>Nomada striata</i>	The Cull, Ballyteigue	Endangered
	<i>Osmia aurulenta</i>	The Cull, Ballyteigue Lady's Island, Curracloe Dunes Askintinny	Near threatened
Bumble bee	<i>Bombus distinguendus</i>	Ballyteigue Burrow cSAC.	
Bumble bee	<i>B. sylvarum</i>	New Ross Ballyteigue Burrow cSAC.	Endangered
Other invertebrates			
Jewel Wasp	<i>Hedychridium ardens</i>	Ballyteigue Burrow cSAC	
Ant	<i>Tetramorium caespitum</i>	Ballyteigue Burrow cSAC	
Diptera (Fly) species	<i>Anasimyia lunulata</i>	Boley Fen pNHA	nationally important rare species of Diptera
	<i>Psacadina zernyi</i>	Boley Fen pNHA	nationally important rare species of Diptera
	<i>Parhelophilus consimilis</i>	Boley Fen pNHA	nationally important rare species of Diptera
	<i>Pteromicra angustipennis</i>	Boley Fen pNHA	nationally important rare species of Diptera
	<i>Tetanocera punctiformis</i>	Boley Fen pNHA	nationally important rare species of Diptera
Fish			
Sea lamprey	<i>Petromyzon</i>	Barrow River	Annex II species in the EU

	<i>marinus</i>	limited distribution and small population size & Slaney river system	Habitats Directive
River lamprey	<i>Lampetra fluviatilis</i>	Barrow & Slaney River systems	Listed in Annex II and V of the EU Habitats
Brook lamprey	<i>Lampetra planeri</i>	Barrow & Slaney River systems	listed in Annex II of the EU Habitats Directive
Allis Shad	<i>Alosa alosa</i>	Barrow & Slaney River systems	listed in Annex II and V of the EU Habitats Directive
Twaite shad	<i>Alosa fallax fallax</i>	Barrow & Slaney River systems	listed in Annex II and V of the EU Habitats Directive
Atlantic salmon	<i>Salmo salar</i>	Barrow & Slaney River systems	listed in Annex II and V of the EU Habitats Directive
Amphibian			
Natterjack Toad	<i>Bufo calamita</i>	Translocated population in the Raven	listed in Annex IV of the EU Habitats Directive
Common Frog	<i>Rana temporaria</i>	Widespread in county wetland habitats	listed in Annex V of the EU Habitats Directive
Common Lizard	<i>Zootoca vivipara</i>	Forth Mountain pNHA The Raven Nature Reserve	
Smooth Newt	<i>Lissotriton vulgaris</i>	The Raven Nature Reserve	
Birds		Birds Directive Annex I	BoCCI
Reed warbler	<i>Acrocephalus scirpaceus</i>		Amber
Common sandpiper	<i>Actitis hypoleucos</i>		Amber
Skylark	<i>Alauda arvensis</i>		Amber
Razorbill	<i>Alca torda</i>		Amber
Kingfisher	<i>Alcedo atthis</i>	X	Amber
Pintail	<i>Anas acuta</i>		Red (W)
Shoveler	<i>Anas clypeata</i>		Red (W)
Teal	<i>Anas crecca</i>		Amber
Wigeon	<i>Anas penelope</i>		Amber
Garganey	<i>Anas querquedula</i>		Amber
Gadwall	<i>Anas strepera</i>		Amber
Greenland white-fronted goose	<i>Anser albifrons flavirostris</i>	X	Amber
Greylag goose	<i>Anser anser</i>		Amber
Swift	<i>Apus apus</i>		Amber
Short-eared owl	<i>Asio flammeus</i>	X	Amber
Pochard	<i>Aythya ferina</i>		Amber
Tufted duck	<i>Aythya fuligula</i>		Amber
Scaup	<i>Aythya marila</i>		Amber
Light-bellied brent goose	<i>Branta bernicula hrota</i>		Amber
Barnacle goose	<i>Branta leucopsis</i>	X	Amber
Cattle egret	<i>Bubulcus ibis</i>		

Goldeneye	<i>Bucephala clangula</i>		Amber
Dunlin	<i>Calidris alpina</i>		Amber
Knot	<i>Calidris canutus</i>		Red (W)
Linnet	<i>Carduelis cannabina</i>		Amber
Black guillemot	<i>Cepphus grylle</i>		Amber
Ringed plover	<i>Charadrius hiaticula</i>		Amber
Marsh harrier	<i>Circus aeruginosus</i>	X	
Hen harrier	<i>Circus cyaneus</i>	X	Amber
Mantagu's harrier	<i>Circus pygargus</i>	X	
Stock dove	<i>Columba oenas</i>		Amber
Quail	<i>Coturnix coturnix</i>		Red
Corncrake	<i>Crex crex</i>	X	Red
Bewick's swan	<i>Cygnus columbianus</i>	X	Red (W)
Whooper swan	<i>Cygnus cygnus</i>	X	Amber
Mute swan	<i>Cygnus olor</i>		Amber
House martin	<i>Delichon urbica</i>		Amber
Little egret	<i>Egretta garzetta</i>	X	Green
Yellowhammer	<i>Emberiza citrinella</i>		Red
Merlin	<i>Falco columbarius</i>	X	Amber
Peregrine	<i>Falco peregrinnus</i>	X	Green
Hobby	<i>Falco subbuteo</i>		
Kestrel	<i>Falco tinnunculus</i>		Amber
Puffin	<i>Fratercula arctica</i>		Amber
Coot	<i>Fulica atra</i>		Amber
Snipe	<i>Gallinago gallinago</i>		Amber
Red-throated diver	<i>Gavia stellata</i>	X	Amber
Oystercatcher	<i>Haematopus ostralegus</i>		Amber
Swallow	<i>Hirundo rustica</i>		Amber
Red grouse	<i>Lagopus lagopus hibernicus</i>	X	Red
Herring gull	<i>Larus argentatus</i>		Red
Common gull	<i>Larus canus</i>		Amber
Lesser black-backed gull	<i>Larus fuscus</i>		Amber
Mediterranean gull	<i>Larus malanocephalus</i>		Amber
Black-headed gull	<i>Larus ridibundus</i>		Red
Black-tailed godwit	<i>Limosa limosa</i>		Red
Grasshopper warbler	<i>Locustella naevia</i>		Amber
Common scoter	<i>Melanitta nigra</i>		Red
Red-breasted merganser	<i>Mergus serrator</i>		Green
Gannet	<i>Morus bassanus</i>		Amber
Yellow wagtail	<i>Motacilla flava</i>		Amber
Spotted flycatcher	<i>Muscicapa striata</i>		Amber
Curlew	<i>Numenius arquata</i>		Red
Northern wheatear	<i>Oenanthe</i>		Amber

	<i>oenanthe</i>		
Ruddy duck	<i>Oxyura jamaicensis</i>		
Osprey	<i>Pandion haliaetus</i>	X	
House sparrow	<i>Passer domesticus</i>		Amber
Tree sparrow	<i>Passer montanus</i>		Amber
Grey partridge	<i>Perdix perdix</i>		Red
Shag	<i>Phalacrocorax aristotelis</i>		Amber
Cormorant	<i>Phalacrocorax carbo</i>		Amber
Ruff	<i>Philomachus pugnax</i>	X	Green
Golden plover	<i>Pluvialis apricaria</i>	X	Red
Grey plover	<i>Pluvialis squatarola</i>		Amber
Slavonian grebe	<i>Podiceps auritus</i>		Amber
Great crested grebe	<i>Podiceps cristatus</i>		Amber
Black-necked grebe	<i>Podiceps nigricollis</i>		Red
Chough	<i>Pyrhocorax pyrrhocorax</i>	X	Amber
Manx shearwater	<i>Puffinus puffinus</i>		Amber
Water rail	<i>Rallus aquaticus</i>		Amber
Sand martin	<i>Riparia riparia</i>		Amber
Kittiwake	<i>Rissa tridactyla</i>		Amber
Whinchat	<i>Saxicola rubetra</i>		Amber
Woodcock	<i>Scolopax rusticola</i>		Amber
Eider	<i>Somateria mollissima</i>		Amber
Little tern	<i>Sterna albifrons</i>	X	Amber
Roseate tern	<i>Sterna dougallii</i>	X	Amber
Common tern	<i>Sterna hirundo</i>	X	Amber
Arctic tern	<i>Sterna paradisaea</i>	X	Amber
Sandwich tern	<i>Sterna sandvicensis</i>	X	Amber
Turtle dove	<i>Streptopelia turtur</i>		Amber
Starling	<i>Sturnus vulgaris</i>		Amber
Lesser whitethroat	<i>Sylvia curruca</i>		Amber
Little grebe	<i>Tachybaptus ruficollis</i>		Amber
Shelduck	<i>Tadorna tadorna</i>		Amber
Greenshank	<i>Tringa nebularia</i>		Amber
Redshank	<i>Tringa totanus</i>		Red
Barn owl	<i>Tyto alba</i>		Red
Guillemot	<i>Uria aalge</i>		Amber
Lapwing	<i>Vanellus vanellus</i>		Red
Mammals			
Otter	<i>Lutra lutra</i>	Rivers and wetlands	Annex II & IV Habitats Directive; Wildlife (Amendment) Act, 2000
Grey seal	<i>Halichoerus grypus</i>	Coastal habitats	Annex II & V Habitats Directive;

			Wildlife (Amendment) Act, 2000
Common seal	<i>Phocaena phocaena</i>	Coastal habitats	Annex II & V Habitats Directive; Wildlife (Amendment) Act, 2000
Whiskered bat	<i>Myotis mystacinus</i>	Gardens, parks and riparian habitats	Annex IV Habitats Directive; Wildlife (Amendment) Act, 2000
Natterer's bat	<i>Myotis nattereri</i>	Woodland	Annex IV Habitats Directive; Wildlife (Amendment) Act, 2000
Leisler's bat	<i>Nyctalus leisleri</i>	Woodlands and buildings Open areas roosting in attics	Annex IV Habitats Directive; Wildlife (Amendment) Act, 2000
Brown long-eared bat	<i>Plecotus auritus</i>	Woodland	Annex IV Habitats Directive; Wildlife (Amendment) Act, 2000
Common pipistrelle	<i>Pipistrellus pipistrellus</i>	Farmland, woodland and urban areas	Annex IV Habitats Directive; Wildlife (Amendment) Act, 2000
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>	Rivers, lakes & riparian woodland	Annex IV Habitats Directive; Wildlife (Amendment) Act, 2000
Daubenton's bat	<i>Myotis daubentonii</i>	Woodlands and bridges associated with open water	Annex IV Habitats Directive; Wildlife (Amendment) Act, 2000
Nathusius' pipistrelle	<i>Pipistrellus nathusii</i>	Parkland, mixed and pine forests, riparian habitats	Annex IV Habitats Directive; Wildlife (Amendment) Act, 2000
Irish hare	<i>Lepus timidus hibernicus</i>	Wide range of habitats	Annex V Habitats Directive; Wildlife (Amendment) Act, 2000
Hedgehog	<i>Erinaceus europaeus</i>	Woodlands and hedgerows	Wildlife (Amendment) Act, 2000
Pygmy shrew	<i>Sorex minutus</i>	Woodlands, heathland, and wetlands	Wildlife (Amendment) Act, 2000
Red squirrel	<i>Sciurus vulgaris</i>	Woodlands	Wildlife (Amendment) Act, 2000
Irish stoat	<i>Mustela erminea hibernica</i>	Wide range of habitats	Wildlife (Amendment) Act, 2000
Badger	<i>Meles meles</i>	Farmland, woodland and urban areas	Wildlife (Amendment) Act, 2000
Red deer	<i>Cervus elaphus</i>	Woodland and open moorland	Wildlife (Amendment) Act, 2000

Sika deer	<i>Cervus nippon</i>	Coniferous woodland and adjacent heaths	Wildlife (Amendment) Act, 2000
Whales and dolphins recorded off the Wexford coast			
Humpback Whale	<i>Megaptera novaeanglia</i>		Annex IV
Bottle-nosed Dolphin	<i>Tursiops truncatus</i>		Annex II, IV
Common Dolphin	<i>Delphinus delphis</i>		Annex IV
Harbour Porpoise	<i>Phocoena phocoena</i>		Annex II, IV
Killer Whale	<i>Orcinus orca</i>		Annex IV
Long-finned Pilot Whale	<i>Globicephala melas</i>		Annex IV
Risso's Dolphin	<i>Grampus griseus</i>		Annex IV
White Beaked Dolphin	<i>Lagenorhynchus albirostris</i>		Annex IV
Striped Dolphin	<i>Stenella coeruleoalba</i>		Annex IV
Minke Whale	<i>Balaenoptera acutorostrata</i>		Annex IV
Fin Whale	<i>Balaenoptera physalus</i>		Annex IV

APPENDIX 5 – GEOLOGICAL SITES

Site Name	Summary description	Designation recommendation
Blackstairs	Tors. Protalus ramparts.	NHA
River Barrow, Lower and River Suir, Lower	The offshore discharges indicated by meanders underfit the present landscape	NHA
Dunmore East (coastal section)	Coastal section from Brownstown Head to Templetown	NHA
Baginbun Head	Cambrian Stratigraphy	CGS
Hook Head to Templetown to contact with Baginbun Head	Devonian stratigraphy	NHA
Hook Head	IGH8: Coastal exposures of L Carb succession from Devonian up. IGH 3: Extensive and almost continual coastal outcrop of the Hook Head peninsula together with the rich and abundant fauna. IGH 10&13: A low limestone peninsula at Hook Head, with cliffs of Ordovician rock dissected into clefts and stacks, then sandy beaches on either side of the mouth of Bannan Bay, a large estuarine inlet with wide mudflats exposed at low tide in the estuary of Cadock River.	International
Ballyteige Bay	In Ballyteige Bay a long dune-capped barrier spit encloses a lagoon, which is backed by a lowland of Carboniferous Limestone.	NHA
Milltown	Duncormack Formation. Conglomerate outcrops around Wexford town.	NHA
Kilmore Quay - St Patrick's Bridge	East of Forlorn Point, Kilmore Quay is sheltered by an unusual spit, St Patrick's Bridge, which projects southward.	NHA
Kilmore Quay	gneisses, cross-cutting dykes. Rosslare complex. Proterozoic migmatites and dolerites. Threat from the Marina	NHA
Greenore Point	Proterozoic amphibolitic gneisses, gabbros, dolerites	NHA
Cummer	Cummer Serpentine, as yet not fully understood. Chromite and talc in serpentinite along major shear zone: important indicator of the tectonic assemblage of Leinster. Significant evidence lies in 1980s GSI Borehole.	NHA & CGS
Tacumshin Lake	coastal lake	NHA
Tacumshin Lake - Lady's Island Lake	On the coast of South Wexford are low cliffs in Cambrian rocks which decline to a sand and gravel beach fringing the long gently-curving south-facing coast, becoming a barrier in front of Tacumshin Lake and Lady's Island Lake. There is evidence of landward migration of the barrier.	NHA
Lady's Island Lake	Large, shallow lake with interesting communities- aquatic, marsh and maritime. Long shingle spit which encloses the lake.	NHA
Wexford Harbour	Rosslare Bay is backed by a low coast, and north of Rosslare a spit of sand and gravel extends to Rosslare Point. Wexford Harbour is a bay narrowing to the estuary	NHA

	of the River Slaney, with wide intertidal sand and mud banks, running S-N offshore. There are marshes, cliffs in glacial drift, beaches with foreshore ridge and runnel, and occasional dunes. On the northern side the coast runs east to The Raven Point, a recurved spit that has been widened by the addition of sandy beach ridges and dunes along its eastern shore. It implies southward drift, but Rosslare Point has grown northward.	
River Slaney, Bunclody	discordant river pattern	NHA
River Slaney, Enniscorthy		NHA
Cullentragh [Qtz-pitchblende veins]	Radiocative quartz-pitchblende veins noted here (Maugh Ltd report). Veins strike northeast in aureole schists close to contact with the Blackstairs Granite.	CGS
Greenville farmyard	A diverse mid Caradoc (Burrellian Stage) fauna of trilobites and brachiopods includes type specimens for three species and is an important site in the biostratigraphy of the Duncannon Group of Leinster.	NHA
Booley Bay	IGH 2: Occurrence of Ediacaran biota. IGH 4: Turbidite structures and Ediacaran-type faunas in the Upper Cambrian Booley Bay Formation of the Ribband Group. Excellent for Cambrian sedimentary structures. Some well-developed conglomerates at Bagaden Head.	International
Sandeel Bay	This site is a coastal cliff section through the upper part of the Old Red Sandstone Harrylock Formation, and has yielded an important petrified Late Devonian macroflora. This site is the type locality for the arborescent lycopod <i>Wexfordia hookense</i> Matten, 1989	NHA
Oldtown to Harrylock Bay	<i>Beaconites</i> locality, plants. 6 localities	NHA
Kiltrea	This site is of critical importance in the biostratigraphy of the Ordovician of southeast Ireland, as it is in the Oaklands Formation at the top of the lower Ordovician Ribband Group. Formerly, it was considered to be of Llanvirn age, but recent revision of the graptolites has shown it is actually of early Arenig age. This is of considerable importance for constraints on the development of the regional, Caledonide geology.	CGS
Carrigadaggan	Mid Caradoc, diverse shelly fauna in volcaniclastics	NHA
Duncannon	Type section of the Duncannon Group; sequences of tuffs, volcaniclastic breccias, lahars, lavas and intrusives emplaced in fossil – bearing Caradocian mudrocks. Also graptolitic shales	CGS
Ballymoney Strand	Section includes unconformity between Lower Ordovician Ribband Group and Upper Ordovician Duncannon Group (include Courtown Limestone), major contact in geology of Leinster. Rocky shoreline.	NHA
Cullenstown	Stratigraphy and structure of a well-exposed coastal section of the Cambrian- Ordovician of South County Wexford.	NHA
Pollshone - Cahore	Stratigraphy and structure of the Cahore and Ribband Groups (Cambrian - Arenig) of a well exposed coastal section in NE Co.Wexford.	NHA

Shelmaliere Commons Quarry	The floor of the disused quarry is now flooded and the east side has been landscaped, though the red and green slates which formed its former east face (tightly folded with the quartzite on a large scale) may still be seen as float. The west face of the quarry stands as a thick wall, excavated on both sides. The west side of this wall is formed by the base of the lowest quartzite of the Shelmaliere Formation, which is steeply overturned here, and displays large-scale loaded flute casts. A quarry pool run-off channel at the southern end of the west wall shows loaded base of the quartzite passing down through a purple phyllite (as the base of the Shelmaliere Fm) into penetratively cleaved metagreywackes of the Cullentra Fm.	CGS
St. Helen's Harbour	gabbro; hornfels, only pre-camb. Intrusion in SE; pre-Caledonian basement section?	CGS
St. Helens Glaciomarine Mud	Coastal section showing massive to laminated muds with sandy beds. Contains a well-preserved marine microfauna.	CGS
Wood Village	A coastal section of a raised beach; unusual because it can be dated relative to the till above it.	CGS
Camaross Crossroads	Well-preserved fossil pingos, giving evidence of seasonal freezing and thawing during the Ice Age, similar to conditions now found near the Arctic Circle. The site comprises over two hundred pingo remnants.	NHA
Screen Hills	The largest raised ice contact delta in Ireland if not Europe. Covers most of Wexford between Kilmuckridge to Curraclloe and is in excess of 30m thick. Shows a clear structural geometry with prodelta muds, wave-influenced sands, gravelly foresets dipping southeastwards and a laminated to massive diamict infilling hollows on the delta surface. It progrades southwards and coarsens upwards. It contains a wide range of derived mollusc fragments (McMillan 1964) and derived balls of peat rich in temperate pollen. Borings of marine organisms occur in the sands. Overall depositional environment is glaciomarine as the Irish Sea Glacier withdrew from the Celtic sea during the last termination. Important Late Glacial site with deep kettle holes	NHA
Broomhill Point	Tundra frost polygons (Ice wedge casts are exposed at the top of the sequence just below the land surface)	CGS
Forth Mountain	Forth Mountain is a Cambrian Quartzite block which rises to 239m from a broad coastal plain, just west of Wexford Town. The site hosts a suite of periglacial features for which a chronological sequence for their formation has been proposed (Culleton, 1984). The summit of the mountain hosts well defined involutions, fossil frost cracks, tors and blockfields, and silt cappings on stones. As well as this, evidence for movement of non-glacial material downslope (head deposits) are also seen.	CGS
Ely Lodge/ Tincone	Coarse-grained laminated diamict containing numerous dropstones with deformation of underlying bedding. Records concurrent debris flow, ice berg melt and bottom currents a few kilometers in front of the ice limit at Screen Hills and a glaciomarine environment. Section faces the open sea. Glacial drop stones.	NHA

Glossary of Geological Terms

Geological term	Definition
Biostratigraphy	Branch of stratigraphy that involves the use of fossil plants and animals in the dating and correlation of the stratigraphic sequences of rocks in which they are discovered
Brachiopod	A marine invertebrate of the phylum Brachiopoda characterised by a lophophore and by two bilaterally symmetrical valves. Ranging from Lower Cambrian to present.
Bryozoa	Invertebrates belonging to the phylum Bryozoa, ranging from Ordovician to present, often found as frond-like fossils.
Crinoid	A variety of sea-urchin, with a long flexible stem, usually anchored to the sea-floor and a body cup with arms which may be branching (a sea lily).
Delta	A low, nearly flat alluvial tract of land at or near the mouth of a river, commonly forming a fan or triangular shaped plain of considerable area, which is crossed by many smaller channels of the main river.
Fossil	Any remains, trace or imprint of a plant or animal that has been preserved in the Earth's crust since some past geological or prehistorical time
Glaciofluvial	Pertaining to the meltwater streams flowing from wasting glacier ice and especially to the deposits and landforms produced by such streams.
Graptolite	Extinct deep-sea organism of the phylum Hemichordata with colonies consisting of one or more fine branches with cups. Ranging from Middle Cambrian to Carboniferous.
Sandstone	A fine to coarse sedimentary rock, deposited by water or wind, and composed of fragments of sand (quartz grains), cemented together by quartz or other minerals.
Stratigraphy	The study of stratified (layered) sedimentary and volcanic rocks, especially their sequence in time and correlation between localities.
Trilobite	Extinct marine organism of the phylum Arthropoda. Ranging from Early Cambrian to Permian.
Unconformity	A buried erosion surface separating two rock masses or strata of different ages, indicating that sediment deposition was not continuous.

Glossary

Abiotic	Not associated or derived from living organisms. Abiotic factors in an environment include sunlight, temperature and precipitation.
Aquaculture	The cultivation of aquatic animals and plants, esp. fish, shellfish, and seaweed, in natural or controlled marine or freshwater environments; underwater agriculture
Biodiversity	This term comprises of two separate words – Biological and Diversity and refers to the number, size and health of flora and fauna life
Biodiversity Hotspot	A region that is a significant reservoir of biodiversity and is threatened with destruction
Biological Reproduction	The biological process through which a new and individual organism is produced. There are two methods of biological reproduction – sexual and asexual reproduction
Biotic	Characterised by the presence of life
Biotope	This is an area of uniform environmental conditions suitable for sustaining certain habitats for a specific group of plants and animals
Birds Directive	EU Directive 79/409 EEC, which provides a framework for the conservation and management of, and human interactions with, wild birds in Europe
Brackish	Water that has more salinity than fresh water, but not as much as seawater
Buffer Zones	A natural or undisturbed strip or 'green belt' surrounding a development or land disturbance activity or bordering a stream or permanent water body
Cetaceans	The group of marine animals with teeth including dolphins, whales and porpoises
Climate	The prevailing weather conditions of a region over a year, averaged over several years
Climate Change	Climate change refers to the build up of man made gases in the atmosphere that trap the sun's heat causing changes in the weather pattern on a global scale

Coniferous	Trees and shrubs that do not shed their leaves
Conservation	The protection and management of a predetermined cause, such as biodiversity
Convention on Biological Diversity	This is an International Treaty that was adopted at the Earth Summit in Rio de Janeiro in 1992. The Convention has three main goals: 1. Conservation of biological diversity (or biodiversity); 2. Sustainable use of its components; and 3. Fair and equitable sharing of benefits arising from genetic resources.
Deciduous	Trees and shrubs that shed their leaves annually
Diversity	Diversity is the presence of a wide range of variation in the qualities or attributes under discussion
Ecology	Ecology, or ecological science, is the scientific study of the distribution and abundance of living organisms and how the distribution and abundance are affected by interactions between the organisms and their environment
Ecosystem	This term comprises of two separate words – ecological and system and refers to all biotic and abiotic components, their interactions with each other; in some defined area, with no conceptual restrictions on how large or small that area can be
Ecosystem Diversity	The variability within an ecosystem and the varying ecosystems on Earth
Endangered Species	A population of an organism (usually a species) which because it is either (a) few in number or (b) threatened by changing environmental or predation parameters, is at risk of becoming extinct
Environment	Land, air, climate, water, minerals, organisms and any other external factor surrounding and affecting an organism at any given time
Eutrophication	Over-enrichment of a water body with nutrients, resulting in excessive growth of organisms and depletion of oxygen concentration
Evolution	The change in the gene pool of a population from generation to generation by such processes as mutation, natural selection, and genetic drift

Extinction	The end of existence of a species
Fauna	Animals
Fertilisation	Creation by the physical union of male and female gametes
Flora	Plants
Fungi	They lack the photosynthetic pigment chlorophyll which characterises plants, and thus are able to make their own food, eg: mushrooms.
Genetic Diversity	The variability of genes within a species
Habitat	The place where a particular species lives and grows
Habitats Directive	A European Directive that aims to provide for conservation of natural habitats and wild fauna and flora in Europe
Higher plants	Distinguished by the presence of green pigment chlorophyll, eg: trees, shrubs, wildflowers
Invasive Species	An invasive species is one that is introduced to an area where it does not naturally occur and is able to establish a population without human, or other, intervention
Invertebrate	An animal without a backbone composed of vertebrae
Landscape	An expanse of scenery that can be seen in a single view
Lichens	Unusual organisms that exist as a symbiotic relationship between fungi and algae. Usually form encrustations on rock or bark
Liverworts	Primitive land plants, which are usually broad and flattened, anchored to the substrate by root like structures
Lower Plants	These lack the complex reproductive structures of higher plants, generally smaller and less robust eg: algae, mosses, liverworts, lichens, ferns.
Marine	Of the ocean/sea
Micro-organisms	Organisms so small (eg, bacteria, viruses, protozoans and yeast) that they can be seen only with a microscope.

Migration	Migration is the movement of an organism or species from one area to another (often a biotope) to seek food, shelter, changes in weather patterns or for reproduction
Monoculture	Where one species is in abundance in an area
National Heritage Area (NHA)	Under the Wildlife (Amendment) Act 2000, this is an area which is worthy of conservation for one or more species, communities, habitats, landforms or geological or geomorphological features, or for its diversity of natural attributes
Natura 2000	NATURA 2000 is a project by the European Union and each of its member states to protect the environment
Nature Reserve	A nature reserve is an area of importance for wildlife, flora, fauna or features of geological or other special interest, which is reserved and managed for conservation and to provide special opportunities for study or research
Organism	This is a system of complex and interacting organs functioning as a stable whole
Over exploitation	The overharvest or overuse of a resource. The result is a depletion of or exhaustion of that resource
Overpopulation	Excessive population of an area to the point of overcrowding, depletion of natural resources, or environmental deterioration
Pollution	The contamination of air, water, or soil by substances that are harmful to living organisms
Predators	This is an organism that exists by preying on other organisms for food
Ramsar Site	Wetland site listed under the Convention of Wetlands adopted following an International Conference in Ramsar, Iran, 1971. A Ramsar site is a statutory nature conservation designation
Rare Species	An organism that is very uncommon or scarce
Red Data Book	This book is a document listing all rare and endangered species of animals, plants and fungi, as well as some local subspecies
Refuges for Fauna	Under the Wildlife Act 1976 the Minister for the Environment, Heritage and Local Government may

	designate areas as refuges for certain species of wild birds or wild animals and impose restrictive measures in order to protect the species and their habitat.
Riparian zone	An area adjoining a body of water, such as a lake or stream. These areas have special value and warrant careful management to protect their function as a buffer zone for controlling flooding and the input of nutrients, sediment, and other pollutants.
Salmonid	A member of the family Salmonidae, which includes salmon, trout and whitefish.
Soil	Part of the earth's surface that consists of disintegrated rock, mineral particles and humus
Special Area for Conservation (SAC)	These are conservation sites strictly protected under the EU Habitats Directive
Special Protection Area (SPA)	These sites are primarily of importance for birds and are protected under the EU Birds Directive
Species	This term refers to all the individual organisms of a natural population which are able to interbreed, generally sharing similar appearance, characteristics and genetics due to having relatively recent common ancestors
Species Diversity	The variability amongst species in an ecosystem
Subspecies	A species can again be further divided into a subspecies. Following the example set out in 'species', <i>Canis lupus familiaris</i> can be found. This is the taxonomical name given to the domestic dog
Sustainable Development	The most famous definition of this is from the Brundtland Report and defines it as: "Development that meets the needs of the present without compromising the ability of future generations to meet their own needs"
Taxa	This is the plural for taxon, which is a taxonomic category such as a genus or species
Terrestrial	Of land
Threatened Species	Plants and animals that are vulnerable to extinction
Topography	The surface features of a geographical area, including

	landforms, water bodies and other natural and manmade features
Vertebrate	Animals with backbones
Watercourses	A stream of water, as a river or brook.
Wetland	Natural or artificial areas where biogeochemical functions depend notably on constant or periodic shallow inundation, or saturation, by standing or flowing fresh, brackish or saline water
