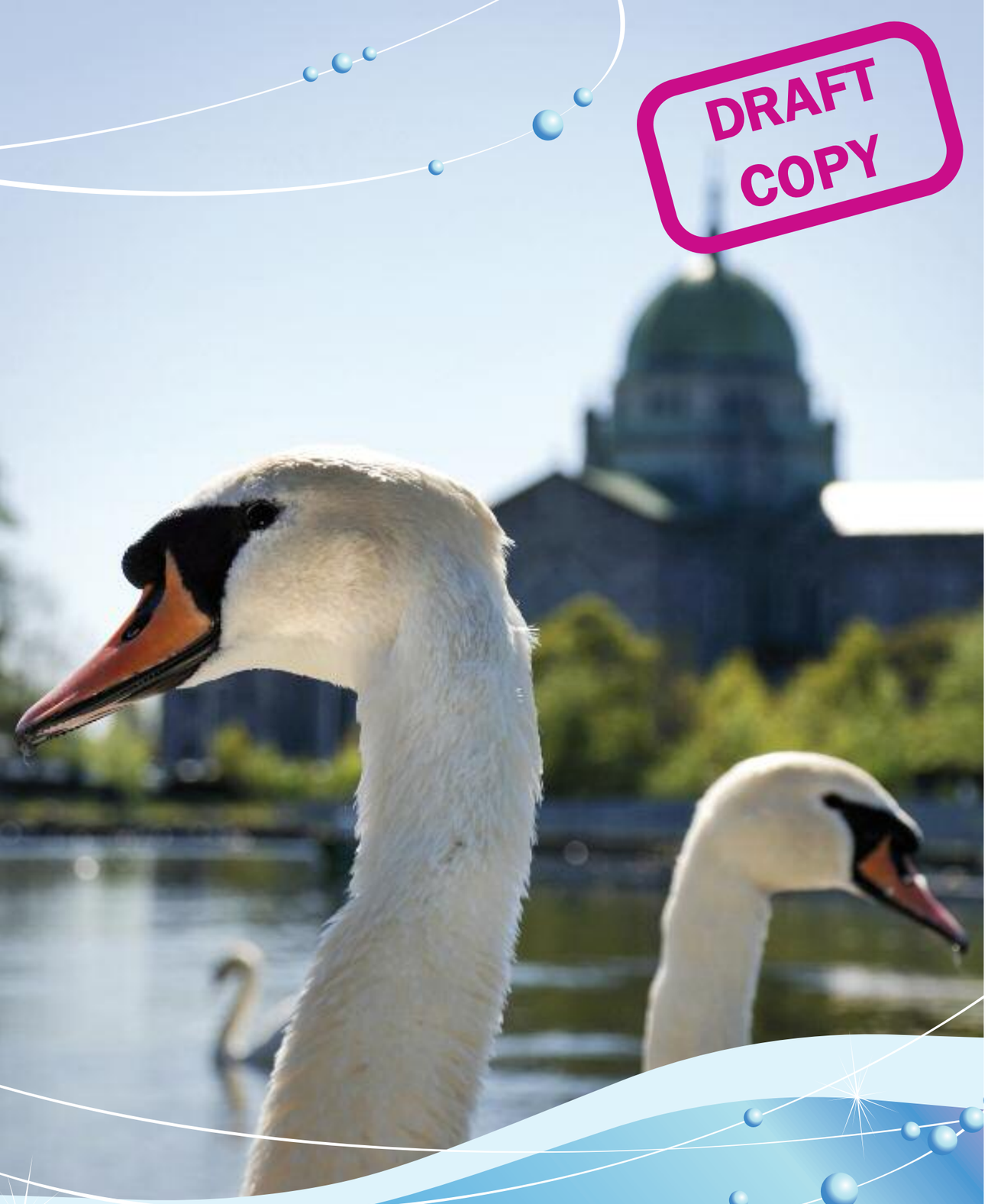

Recreation & Amenity
Department

Galway City
Biodiversity Action Plan
2014 – 2024

Galway City Biodiversity Action Plan 2014 – 2024

Biodiversity, or Biological Diversity is "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", as defined by the Convention on Biological Diversity. The CBD was part of the United Nations Conference on Environment and Development, or 'Earth Summit', held in Rio de Janeiro in 1992. Ireland's National Biodiversity Action Plan is a key provision of the CBD and the development of a Local Biodiversity Action Plan by the Local Authority is an action of the National Biodiversity Action Plan. Protecting biodiversity, both locally and globally, is a major concern for society and the survival of the human race, as it provides all the resources on which we depend. Galway City has a large and diverse range of habitats and wildlife in relation to its size, due to its varying geology, the extent of urban woodland and its proximity to the river Corrib, Galway Bay and Lough Corrib. These habitats and wildlife are under constant pressure from Human activity and the development and implementation of a Local Biodiversity Action Plan aims to provide a framework for their protection.

The Beach - Saibh Egan

Common blue (*Polyommatus icarus*) tom Cuffe

Acknowledgements

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Thanks also to Helen McGuinness for the development of the current draft and for initiating the implementation of many of the actions listed.

The importance of Biodiversity

What is Biodiversity?

Biodiversity or biological diversity simply refers to the variety of all living things on earth - including people, plants, animals, fungi and micro-organisms. The term biodiversity, however, refers to more than individual species and includes the genes they contain, the ecosystems and habitats of which they form part, and also highlights the interdependence and interconnectedness of all living things.

The Convention on Biological Diversity defines 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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Close proximity to nature provides excellent hands-on learning opportunities, especially for children

Why is Biodiversity Important?

Biodiversity supports life on earth and is part of all our daily lives. We depend on biodiversity for clean air and water, healthy soils, food, building materials, and medicines.

The Role Of Biodiversity

- Provides the raw material of food, clothing, building materials and medicines
- Contributes to the livelihoods of many people
- Enhances our quality of life
- Helps shape our culture
- Provides environmental services such as pollution control, flood attenuation and erosion prevention

Nature around us improves our quality of life. Many studies have shown that close proximity to nature has direct health benefits, especially for those recuperating from illness. Access to nature is particularly important in an urban environment where even a stand of trees or patch of tall grass with wildlife flowers or waterways can offset the impact of the 'concrete jungle'. Natural areas can be a source of relaxation and relief from the stress and tension of urban living. Biodiversity adds an extra dimension to urban life.

There are also ethical and spiritual reasons for protecting biodiversity and nature. Many people have a deep appreciation of nature which is demonstrated by the huge interest in gardening, owning pets, nature photography, bird-watching, hill-walking, boating and fishing. Close proximity to nature also provides excellent hands-on learning opportunities, especially for children.

There are enormous cost-savings to be made by protecting biodiversity; costs associated with healthcare, environmental protection, tourism infrastructure, and fines for failing to meet our European Union obligations in relation to biodiversity. These costs could all be reduced by recognising the importance of biodiversity for so many sectors and facets of life, and by making the relatively small investment required to protect our natural heritage.

The attractiveness of Galway City as a tourist destination is due in part to the city's rich natural heritage. The tourism industry is, therefore, a direct beneficiary of Galway City's abundant biodiversity. Because the city is an attractive place to work, do business and live, other businesses also benefit. Multinationals and other companies select sites for setting up businesses based on the whole package a location has to offer. Quality of life issues have come increasingly to the fore when selecting areas that will attract a top-class workforce. Access to recreation, amenity and natural areas contribute significantly to quality of life.

Galway City's Unique Natural Heritage

Galway City is located at the mouth of the River Corrib and lies at the junction between the blanket bogs of Connemara to the west and the low-lying farmland of east Galway. Despite the rapid rate of urbanisation within the city in the last twenty years, there is a significant extent and diversity of natural habitats and wildlife within the city boundaries.

The Galway City Habitat Inventory (Natura 2005; available on Galway City Council website) identified fifty eight different wildlife habitats within the city boundaries, which is a huge range when compared with other urban areas of comparable size. Twenty two of the habitats identified are considered to be nationally or internationally rare and are of high ecological or biodiversity value (Table 2; Natura 2005).

The distribution and diversity of habitats in the city reflects to a large extent the underlying geology and soils, as well as climate and land-use history. In the west of the city there is acid peat-land and heath, which overlies granite rocks. The northern and eastern parts of the city are underlain by limestone which outcrops in places. The water bodies and wetlands associated with the Corrib system dominate the centre and northern fringe of the city. Several areas of woodland occur in the city, as well as patches of scrub and there are extensive networks of hedgerows and stone walls within the city's agricultural zone. The coastal zone of Galway City consists of a diverse range of habitats including sea cliffs, salt marsh, shingle banks, and sandy, muddy and rocky shores.

Great Cormorant (*Phalacrocorax carbo*) at Spanish Arch. Colin Stanley

Legislative Background

The local authority is tasked with the preparation of a Local Biodiversity Action Plan as an action under Ireland's first National Biodiversity Action Plan, which was adopted in 2002. The purpose of any Biodiversity Action Plan is to identify sources and compile information on the biodiversity of the area, to set out a framework with a series of actions to protect these sources, and to raise awareness of what biodiversity is and why it is so important on a local and global level, and to encourage involvement in its protection and enhancement. Preparation and implementation of The National Biodiversity Action Plan is a key provision of the Convention on Biological Diversity (CBD). The CBD was part of the United Nations Conference on Environment and Development, or 'Earth Summit', held in Rio de Janeiro in Brazil in 1992. It is a global, binding treaty and the first of its kind in the world. The Convention's three main goals are: The conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of benefits arising from genetic resources. The Convention is legally binding, so once ratified, there is a legal obligation to implement its stipulations.

The objectives of the Convention are as follows:

i) The conservation of biological diversity,
ii) The sustainable use of its components, and
iii) The fair and equitable sharing of benefits arising from the use of genetic resources.

Ireland ratified the Convention in 1996. Under the convention, each country agrees to undertake a number of actions to halt the loss of biodiversity, including the development of a National Biodiversity Plan or Strategy. Ireland's first National Biodiversity Plan was published in 2002.

The European Union and Ireland are committed to halting the loss of biodiversity by 2010. For more information on the Convention see: **www.cbd.int**

The key aim of the National Biodiversity Action Plan is to protect species and sites designated under national and international legislation.

Fern - Clodagh Kidd

Local, National and International Legislation

Galway City Development Plan 2011- 2017
The Galway City Development Plan 2011- 2017 embraces the findings of the Habitats Inventory (2005) , the Heritage Plan (2006) and the Draft Biodiversity Plan 2008 – 2013. The Plan sets out to Holistically manage a diverse ecological environment by adopting a 'Green Network Approach' to support the linkage and connection of natural heritage areas, creating wildlife corridors, preventing habitat fragmentation and increasing biodiversity.

Wildlife Act 1976 (Amended 2000)
The Wildlife Amendment Act is the principal national legislation providing for the protection of wildlife. Its aims are to provide for the protection and conservation of wild fauna and flora, to conserve a representative sample of important ecosystems, to provide for the development and protection of game resources and to regulate their exploitation, and to provide the services necessary to accomplish such aims.
The Wildlife Act was amended in 2000 to strengthen the existing protection to wildlife, such as providing a mechanism to give statutory protection to NHAs, to broaden the scope of the Wildlife Acts to include most species, including the majority of fish and aquatic invertebrate species which were excluded from the 1976 Act, and to give specific statutory recognition to the Minister's responsibilities in regard to promoting the conservation of biological diversity, in light of Ireland's commitment to the UN Convention on Biological Diversity.

European Union Habitats (1992) and Birds (1979) Directives
These two directives form the cornerstone of Europe's nature conservation policy. The Habitats Directive is built around two pillars: the Natura 2000 network of protected sites and the strict system of species protection. All in all the directive protects over 1,000 animal and plant species and over 200 so called "habitat types" of international importance. The Birds Directive is the EU's oldest piece of nature legislation and one of the most important, creating a comprehensive scheme of protection for all wild bird species naturally occurring in the Union. It was adopted unanimously by the Members States in 1979 as a response to increasing concern about the declines in Europe's wild bird populations resulting from pollution, loss of habitats as well as unsustainable use. It was also in recognition that wild birds, many of which are migratory, are a shared heritage of the Member States and that their effective conservation required international co-operation.

Ireland has breached this and other environmental legislation on many occasions, which has resulted in fines of millions of Euro.
www.npws.ie

Why Does Galway City Need a Local Biodiversity Action Plan?

The main threats to biodiversity within Galway City are associated with development and water pollution.

he biological diversity resource, upon which we depend, has been coming under increasing pressure, particularly in recent decades. At a global scale, urbanisation, intensification of agriculture, mining, pollution and climate change are resulting in a devastating and non-sustainable loss of species and habitats. Rising temperatures, changing rainfall patterns and other aspects of climate change are already having an impact on biodiversity globally and locally and the evidence suggests that these impacts are likely to become increasingly apparent.

The main threats to biodiversity within Galway City are associated with development and water pollution. The rapid rate of urbanisation the city experienced during the economic boom has put considerable pressure on natural habitats within the city. Drainage of wetland areas, fragmentation of habitat mosaics by housing and associated infrastructure, water pollution, illegal dumping, abandonment of agriculture, and inappropriate coastal works can all lead to habitat destruction, serious loss of wildlife value, and the interruption of corridors for wildlife to move across the landscape. A lack of funding, reduction in resources available to local Government, and a deficit in communication within and between Government sectors, NGOs and voluntary organisations have become obstacles to effective management of biodiversity conservation.

Sand dunes aid in the prevention of flooding and erosion of beaches. They also provide a necessary habitat for many species, and enhance and maintain coastal water quality.
Beach wrack provides foraging opportunities for shorebirds and benefits native coastal strand plants that trap sand and create sand dunes. Approximately 40% of animal species living on sandy beaches depend on wrack.

Another significant threat to conservation efforts is the lack of knowledge and misguided attitudes of the majority of the general public, for example: complaints about trees and requests for their removal; insistence on manicured, monoculture lawn on public land; Reluctance to leave wild areas in their natural state, perceiving them to be 'wasteland' or untidy; insistence on the removal of beach wrack (lines of seaweed) and sand dunes from beaches.

The Benefits of Trees
- Absorb harmful greenhouse gases
- Produce oxygen
- Shelter houses against cold winds and precipitation
- Protects gardens from frost
- Provide privacy for homes
- Reduce stress and contribute to well-being
- Remove air and water pollution
- Reduce flooding and soil erosion
- Provide habitat for birds and other species
- Provide food
- Reduce noise pollution
- Fallen leaves provide natural compost for gardens

A local Biodiversity Action Plan (LBAP) provides a framework for the conservation of biodiversity or natural heritage at a local level. It is designed to ensure that national and international targets for the conservation of biodiversity can be achieved while at the same time addressing local priorities.

The main functions of a Local Biodiversity Action Plan are to translate international, European and national policies and obligations into effective action on the ground; to assist sustainable planning and development; to raise public awareness of and involvement in the conservation of biodiversity; and to collect and collate information on the biodiversity of the area.

The Galway City Biodiversity Action Plan provides an invaluable opportunity for people and organisations to work together to halt the loss of biodiversity in the city.

One of the actions of the National Biodiversity Plan 2011-2016 is for each Local Authority to prepare a Local Area Biodiversity Plan in consultation with relevant stakeholders. The production of a Galway City Biodiversity Action Plan is also an action of the adopted Galway City Heritage Plan 2006- 2011.

Beech (*Fagus sylvatica*) Barna Woods

Many studies have shown that close proximity to nature has direct health benefits, especially for those recuperating from illness.

Aims and Objectives of the Galway City Biodiversity Action Plan

Objectives

1. To raise awareness and appreciation of biodiversity
   Seeks to raise awareness and appreciation of the many benefits of biodiversity among all sectors of society by providing information, education and training opportunities. A change in attitudes is key to protecting the great variety of life contained in the natural world around us and to protect our environment.

2. To maintain and enhance biodiversity within the city
   Recognises the responsibility of the Local Authority and other state agencies to protect habitats and species of national and international conservation importance, and the potential to enhance biodiversity within the city. Aims to increase public participation in biodiversity initiatives and promotes a partnership approach to conserving biodiversity.

3. To increase our knowledge and understanding of biodiversity
   Recognises the need for a solid knowledge-base in order to protect biodiversity effectively and the importance of making this information available and accessible to the public and decision makers.

The plan aims to initiate an ongoing process that protects biodiversity in the City. The timescale for this plan is 10 years, with annual reviews a mid-term update and a new plan at the end of the 10 year cycle.

Peacock (Inachis io) - Tommy Tyrrell

Galway City's Biodiversity – An Overview

Designated Sites for Nature Conservation in Galway City
Parts of Galway City fall within, and contain, several nationally and internationally designated sites.

Site name, designation and site code	Description
Galway Bay Complex SAC Site code 268 EU Habitats Directive	Includes Galway Bay, River Corrib up to Wolfe Tone Bridge, Barna Woods, Lough Rusheen, Silver Strand, Knocknagoneen, Gentian Hill, seafront along Salthill, Lough Atalia, Roscam Point, Hare, Rabbit and Mutton Islands. Designated for the presence of several habitats and species of international and national conservation importance.
Inner Galway Bay SPA Site code 4031 Eu Birds Directive	Includes Galway Bay, Lough Atalia and Lough Rusheen (to the high tide water mark). Designated for 20 bird species listed in Annex I of the EU Birds Directive, but also important for many other bird species
Lough Corrib SAC Site code 297 EU Habitats Directive	Includes Lough Corrib, River Corrib and islands. Designated for the presence of several habitats of international conservation importance and species, including the following which occur within the city boundaries: otter, lesser horseshoe bat, salmon and sea lamprey.
Lough Corrib SPA Site code 4042 EU Birds Directive	A small part of the south-east of Lough Corrib SPA lies within the City boundary. Designated for 11 bird species of international conservation value but also important for many other birds. Lough Corrib regularly supports over 20,000 waterfowl and is one of the top ten ornithological sites in the country.
Moycullen Bogs NHA Site Code 2364 Wildlife (Amendment) Act 2000	Extensive lowland blanket bog, a small part of which exists within the City boundary to the north west at Thonabrucky.
Corrib system Designated Salmonid Water EU Water Framework Directive 2000	Lough Corrib and the River Corrib are designated for their importance for freshwater salmonid species such as salmon and several species of trout.
Lough Rusheen Wildfowl Sanctuary Wildlife (Amendment) Act 2000	Designated to protect geese, waders, ducks and other birds from shooting.

Table 1:
SAC = Special Area of Conservation, SPA = Special Protection Area, NHA = Natural Heritage Area

A change in attitudes is key to protecting the great variety of life contained in the natural world around us and to protect our environment.

Galway Bay Complex SAC

This site comprises the inner, shallow part of a large bay which is partially sheltered by the Aran Islands. A diverse range of marine, coastal and terrestrial habitats, including several listed on Annex I of the EU Habitats Directive, occur within the site, making the area of high scientificimportance. Galway Bay South holds a very high number of littoral communities, including rare examples found nowhere else in the country. Sublittorally, the area has a number of distinctive and important communities. Salt marshes are frequent within this extensive coastal site, with both Atlantic and Mediterranean marshes well represented. Shingle and stony beaches can be found throughout the site with two rare plant species which grow on shingle beach to the south of Lough Atalia. An excellent range of lagoons of different types, sizes and salinities occurs within the site. This habitat is given priority status on Annex I of the Habitats Directive. One unusual type of lagoon, karstic rock lagoon, is particularly well represented.
Inner Galway Bay provides extensive good quality habitat for common seals and otters, both species listed on Annex II of the EU Habitats Directive and has four Red Data Book plant species.

This large coastal site is of immense conservation importance, with many habitats listed on Annex I of the EU Habitats Directive, four of which have priority status (lagoon, Cladium fen, turlough and orchid-rich calcareous grassland). The examples of shallow bays, reefs, lagoons and salt marshes are amongst the best in the country.
http://www.npws.ie/protectedsites/specialareasofconservationsac/galwaybaycomplexsac/

Inner Galway Bay SPA

Galway Bay, including Lough Rusheen and Lough Atália, is designated as a Special Protection Area under the EU Birds Directive. This site covers much of the same area as the Galway Bay Complex SAC. Galway Bay is one of the most important ornithological sites in the western region, as it supports an excellent diversity of wintering wetland birds, with populations of divers, grebes, cormorants, dabbling duck, sea duck and waders. The shallow waters provide excellent habitat for species of national importance and the intertidal areas and shoreline provide feeding and roosting habitat for wintering waterfowl. The site hosts 16 species with populations of national importance, including the brent goose. Four of the wintering species are listed on Annex I of the EU Birds Directive and the site supports seven regular Annex I EU Birds Directive species.
http://www.npws.ie/protectedsites/specialprotectionareasspa/innergalwaybayspa/

Lough Corrib SAC

Lough Corrib is situated to the north of Galway city and is the second largest lake in Ireland with an area of approximately 18,240 ha (the entire site is 20,556 ha). Rivers, mainly to the east of the site are included within the SAC as they are important for Atlantic Salmon. In addition to the rivers and lake basin, adjoining areas of conservation interest, including raised bog, woodland, grassland and limestone pavement, have been incorporated into the site.

This site is of major conservation importance and includes 14 habitats listed on Annex I of the E.U. Habitats Directive. Six of these are priority habitats: petrifying springs, Cladium fen, active raised bog, limestone pavement, bog woodland and orchid-rich calcareous grassland. The other annexed habitats present include hard water lakes, lowland oligotrophic lakes, floating river vegetation, alkaline fens, degraded raised bogs, Rhynchosporion vegetation, Molinia meadows and old Oak woodlands. Species present on the site that are listed on Annex II of this directive are sea lamprey, brook lamprey, Atlantic salmon, white-clawed crayfish, freshwater pearl mussel, otter, lesser horseshoe bat, slender naiad and the moss Drepanocladus vernicosus.
http://www.npws.ie/protectedsites/specialareasofconservationsac/loughcorribsac/

Lough Corrib SPA

Lough Corrib SPA includes all of Lough Corrib up to the low tide mark. It excludes the river Corrib and some of the terrestrial areas included in the Lough Corrib SAC. It is one of the top five sites in the country for wintering waterfowl and also qualifies for international importance because it regularly supports well in excess of 20,000 waterfowl. It is the most important site in the country for pochard, tufted duck and coot. It also has nationally important populations of mute swan, gadwall, shoveler, golden plover and lapwing. Lough Corrib now supports approximately half of the national population of the common scoter, a Red Data Book species. Lough Corrib is one of the top ornithological sites in the country and easily qualifies for international importance on the basis of numbers of wintering birds using it. There are eight species of wintering waterfowl that have populations of national importance. Its populations of breeding gulls and terns are also notable, with nationally important numbers of Common Tern, Arctic Tern, Common Gull and Black-headed Gull. Several regularly occurring species are listed on Annex I of the E.U. Birds Directive.
http://www.npws.ie/protectedsites/specialprotectionareasspa/loughcorribspa/

Moycullen Bogs NHA

Moycullen Bogs NHA is an extensive area of lowland blanket bog in an area of high landscape beauty, which supports a diversity of habitats including large areas of intact blanket bog, wet heath, dry heath, alkaline fen and revegetating cutaway. Blanket bog habitat is a globally scarce resource. It is largely confined to coastal regions with cool, wet, oceanic climates at temperate latitudes. North-west Europe contains some of the best-developed areas of blanket bog in the world. Lowland blanket bog comprises less than 3% of the world's peatlands. In Europe this type of blanket bog is restricted to Ireland, Britain, Norway and Iceland. The lowland blanket bog that occurs in Ireland is considered to be an extreme hyperoceanic variant of the habitat type, found nowhere else in the world except on the coastal fringes of northwest Scotland. The site supports Irish Red Data Book species Red Grouse and several additional notable species of fauna including Irish Hare, Common Frog, Snipe, Curlew, Fox, Kestrel and Lapwing. The rare and protected Slender Cottongrass (Eriophorum gracile) is found within the site at Thonabrocky, located just within the City boundary.
http://www.npws.ie/protectedsites/naturalheritageareasnha/moycullenbogsnha/

Other City Habitats and Species

Habitats of high biodiversity value

The Galway City Habitats Inventory (Natura 2005) identified a wide range of habitats of high biodiversity value. In order to maintain the rich natural heritage in Galway City, it is necessary to protect local areas of high biodiversity value and wildlife corridors that allow movement of birds and other animals between natural areas. These local sites (Local Biodiversity Areas) contribute to quality of life in the city, as well as providing opportunities for research and education. Twelve Local Biodiversity Areas have already been identified in the Galway City Habitats Inventory (appendix 2). Potential wildlife corridors have been identified by Kindermann (2004). The main corridor is the River Corrib which provides a link between the coastal habitats and the rich mosaic of habitats in the city's hinterland. The European Union Habitat's Directive (Article 10) requires member states to protect, through planning and development policies, those features of the landscape which provide linear features or stepping stones for wildlife.

Galway City is fortunate to contain a number of urban woodlands, including Merlin Woods and the recently planted Terryland Forest Park. These areas have wonderful wildlife value and recreational potential as well as greatly enhancing the cityscape. Most of these areas require some level of management to ensure successful tree regeneration (e.g. not occurring in Barna Woods) and to control the spread of invasive alien plants such as sycamore and Japanese knotweed. The city also has a high number of trees, which greatly enhance it's visual appearance.

Habitats (Classification, Fossitt 2000)	Corresponding Annex I habitat in EU Habitats Directive
Rich fen and flush (PF1)	Alkaline fen
Dry siliceous heath (HH1)	European dry heaths
Limestone/ marl lakes (FL3)	Hard oligo-mesotrophic waters
Muddy sand shores (LS3)	Mudflats and sandflats not covered by water at low tide
Dystrophic lakes (FL1)	Natural dystrophic lakes and ponds
Wet heath (HH3)	Northern Atlantic wet heaths with Erica tetralix
Shingle and gravel banks (CB1)	Perennial vegetation of stoney banks
Transition mire (PF3)	Transition mires and quaking bogs
Turloughs (FL6)	*Turloughs
Exposed calcareous rock (ER2)	Limestone pavement
Saltmarsh (CM1, CM2)	Corresponds with several saltmarsh habitats
Wet willow-alder-ash woodland (WN6)	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (common alder and ash)
Depositing/ lowland rivers (FW2)	
Reed and large sedge swamps (FS1)	
Dry calcareous and neutral grasslands (GS1)	
Wet grassland (GS4)	
Marsh (GM1)	
Lowland blanket bog (PB3)	
Poor fen and flush (PF2)	
Oak-ash-hazel woodland (WN2)	
(Mixed) broadleaved woodland (WD1)	
Sand shores (LS2)	

Table 2: Natural habitats within the city and corresponding Annex I habitat (European Union Habitats Directive), if any. Habitats on Annex I of this directive are considered to be of high international conservation importance; priority habitats have also been identified (marked with asterisk*).

Wetlands and watercourses

The River Corrib and associated waterways dissect the city and provide the main focal points. A section of the southern shore of Lough Corrib also lies within the city boundaries. Other fresh waterbodies include the Terryland River, three small lakes near the western boundary of the city, three turloughs to the north of the city and a large lake that occurs in the limestone area of Illaunacorra, which drains to the River Corrib. The Corrib is recognised as important for salmon and trout, and has been designated as such. It is also important for sea and brook lamprey. Waterbodies in the city are under threat from pollution and disturbance.

Grey Heron (*Ardea cinerea*) at the long walk - Ronan Bree

There is a wealth of wetlands associated with the Corrib system. Lough Corrib is one of the top ornithological sites in the country and this is largely due to the diversity and quality of wetland habitats present. Reed and large sedge swamps are commonly found along the Corrib and other freshwater bodies, as well as a few coastal sites such as Lough Atalia, Renmore and Lough Rusheen. These reed-dominated swamps are rich in insects and bird species (especially migratory warblers). Marsh, fen and wet willow-alder woodland are also often found near rivers and lakes. All can be relatively species-rich and excellent for wildlife. Wet grassland dominated by rushes is common in the patchwork of small fields in the western and northern margins of the city, and along the Corrib. The wetlands in the city are under threat from development, infrastructure, drainage, infilling and water pollution.

Blanket bog and wet heath
Extensive areas of lowland blanket bog and wet heath occur on the western edge of Galway City. These internationally rare habitats occur together in mosaics in the townlands of Cappagh and Ballagh where they are increasingly under threat from development and infrastructure. The blanket bog landscape is part of the cultural heritage of the west of Ireland, particularly Galway. The rare plant, slender bog cotton, occurs in particularly wet, quaking bogs and peaty lake edges.

Woodland
Galway City is fortunate to have several urban woodlands at Barna, Dangan, Merlin Park and Menlo, as well as the newly planted Terryland Forest Park. While these woodlands are not all dominated by native species, woodlands are incredibly important for wildlife, particularly birds, bats and other small mammals. The oak-ash-hazel woodland at Menlo is a type of natural woodland that is very limited in extent in Ireland and of particularly high conservation value. Woodlands are also highly valued for recreation and greatly enhance the cityscape. They are under threat from infrastructural projects, recreational pressure and lack of appropriate management.

Coastal zone
The coastal zone in Galway City contains a range of coastal habitats of high biodiversity value, including saltmarsh, shingle and sand banks, sandy and muddy shores. These habitats are important for birds and all occur within the Inner Galway Bay SPA. Galway Bay is thought to be one of the best ornithological areas in the western region. It supports a huge diversity of wintering wetland birds with divers, grebes, cormorants, ducks, swans, geese and waders all represented. Shoreline habitats in Galway City are under pressure from development and recreational activities.

Exposed limestone rock and pavement
Areas with outcropping limestone rock occur mainly in the northern and south-eastern fringes of the city, often in association with scrub and calcareous grassland. The flora of these areas is comparable to parts of the Burren and some of the areas correspond with 'limestone pavement', a priority Annex I habitat of the EU Habitats Directive. Some of these areas are under serious pressure from infrastructure and development.

Menlo Mallards - Peter Cunnane

Important Species

Galway City has a relatively rich small mammal fauna for an urban area of its size, which reflects the extent and nature of the wild or semi-natural areas that occur in the city. Studies based in the Zoology Department of NUI, Galway (Haigh and Lawton 2007) have shown that at least twelve species of mammals occur in Terryland Forest Park including the fox and the Irish hare. Other mammals that occur in the city include the otter, common seal, stoat, badger, pine marten, wood mouse, bank vole, pygmy shrew, hedgehog and at least seven species of bats (lesser horseshoe, whiskered, Daubenton's, brown long-eared, Natterer's, Leisler's, and soprano and common pipistrelle). A healthy small mammal population is essential for the maintenance of a dynamic food web.

All bat species are protected under the Wildlife Acts and Annex IV of the EU Habitats Directive. The lesser horseshoe bat is an Annex II species of the Habitats Directive and therefore of particularly high conservation significance. Ireland has the largest population of this species of bat in Europe and therefore has an international responsibility to protect it. Lesser horseshoe bats are particularly sensitive to disturbance, especially during hibernation.

The otter is also listed in Annex II of the Habitats Directive and is also protected under the Wildlife Acts. This species is also more common in Ireland than in any other part of Europe and therefore our population of otters is of international importance. Otters can be found along the River Corrib and along the coast.
Inner Galway Bay, including the Galway City coast line, provides extensive good quality habitat for Common Seals, also listed on Annex II of the EU Habitats Directive. The Irish hare is protected under the Wildlife Acts and is listed in Annex V(a) of the Habitats Directive. It is listed as an internationally important species in the Irish Red Data Book (Whilde, 1993). The presence of the Irish hare in an urban setting is significant and reflects the quality and the interconnectedness of the natural areas within the city. A national Species Action Plan for the Irish hare has been developed and should be supported as part of this local biodiversity action plan.

County Galway contains several areas of international ornithological importance and parts of a couple of these areas (i.e. the two designated Special Protection Areas described above) lie within Galway City. There are, however, many other important sites and habitats for birds in and around the city. These include woodland, scrub, hedgerows, wetlands (including the canals), bridges, farmland and gardens. Important bird species such as the barn owl (on BirdWatch Ireland's red list) have been recorded within the city, outside the designated areas.

There are old records of the red data book plant, sea kale, and the protected species, small white orchid (Pseudorchis albida), within the city boundaries, and recent records of another rare plant, slender bog cotton. The uncommon whitebeam (Sorbus aria) has been recorded in Merlin Woods.

The River Corrib and Lough Corrib have been designated as important for salmon and trout. This reflects the high water quality of the Corrib because these fish are very demanding in terms of their requirement for clear waters. The Corrib system also has a population of sea lamprey, a scarce species which is probably under-recorded, and brook lamprey. Salmon, Sea and Brook Lamprey are listed on Annex II of the EU Habitats Directive.

We depend on biodiversity for clean air and water, healthy soils, food, building materials, and medicines.

Invasive Species

The problem of invasive alien species has come to the public attention with the spread of zebra mussels into the Corrib system and the increasing abundance of Japanese knotweed at many locations. These species and other invasive plants and animals pose a serious threat to natural ecosystems. Their impact may be exacerbated by climate change and therefore their eradication is a high priority.

What is Currently Being Done to Support Local Biodiversity

Voluntary Sector

- Conservation Volunteers Galway, Terryland Forest Park volunteers and Friends of Merlin Woods undertake practical conservation projects in the City's urban woodlands and beyond.
- Galway Bat Group host bat walks in the City and advise on local bat conservation.
- BirdWatch Ireland and the Irish Wildlife Trust have Galway branches, which are active in the City and County.
- Various residents associations work to protect their local biodiversity.
- Dúchas na Gaillimhe (Galway Civic Tust) are involved in environmental projects, notably the Rusheen wildfowl reserve in conjunction with BirdWatch Ireland

Education Sector

- The National Aquarium of Ireland at the Galway Atlantaquaria runs biodiversity awareness events and educational activities for children.
- The Ryan Institute (NUIG) conducts valuable research in the areas of Marine Ecology and Environment.
- The Ecology and the Zoology Departments of the National University of Ireland, Galway (NUIG) continue to conduct research in Galway City and the surrounding areas, such as the recent mammal surveys in Terryland Forest Park.
- A group of botany graduates from NUIG are developing the new Galway Botanic Garden, with a 10 acre site showcasing all the native plants found in Ireland, to be opened in the near future.

Government Agencies

- The National Parks and Wildlife Service implement the Habitats and Birds Directives and the Wildlife Acts in the designated areas (NHAs, SPAs, SACs) and other national and international environmental and wildlife legislation.
- The Office of Public Works is responsible for the maintenance of channels in the local river systems.
- The Heritage Council works with the local authority and volunteers to support initiatives such as Galway City Tidy Towns.
- Inland Fisheries Ireland currently runs a Lagarosiphon major (curly waterweed) control programme, which has successfully prevented the spread of this alien invasive from the upper Corrib catchment to the lower. They also conduct research, run awareness projects and implement biosecurity measures.
- Galway City Council manages and maintains the woodland parks, public green spaces and beaches, supports local voluntary organisations, runs biodiversity awareness initiatives, including www.galwaybiodiveristy.com and associated social media, and supports invasive species eradication programmes.

Ways we can help our local biodiversity

Individuals

- Get involved with local organisations and ENGOs such as BirdWatch Ireland, Galway Bat Group, An Taisce, Crann, Irish Wildlife Trust, Conservation Volunteers Ireland, Terryland Forest Park Volunteers and Friends of Merlin Woods.
- Put up a bird table.
- Plant a few native trees and shrubs (e.g. rowan, birch, holly and guelder rose are good for small gardens).
- Avoid using chemical herbicides and pesticides and artificial fertilisers.
- Introduce some plants into your garden that are good for wildlife.
- Record wildlife sightings with www.biodiversityireland.ie, www.biology.ie and birds with www.birdwatchireland.ie

Community groups

- Adopt a local natural area and develop a local biodiversity action plan.
- Plant native trees and shrubs.
- Put up bird and bat boxes in your local area.
- Organise a clean-up of any hedgerows, streams and other local wild areas.
- Avoid using herbicides, pesticides and artificial fertilisers when managing green spaces.
- Leave some areas to 'go wild' and minimise management such as mowing or strimming.

Schools

- Develop a wildlife garden project in the school grounds.
- Put up bird tables and study usage.
- Run poster and photography competitions to promote pride in Galway City.
- Facilitate student-led projects to identify threats to Galway's natural heritage and possible remedies.

Local businesses

- Support local community groups and schools working to improve the natural environment.
- Ensure that business practices do not have a negative impact on biodiversity or the environment.
- Follow the biodiversity guidelines developed by Fáilte Ireland and Notice Nature if your business is directly or indirectly associated with tourism industry.

for information and resources go to: www.galwaybiodiversity.com/downloads

urban heron - Emilia Chorazyczewska

Galway City's Biodiversity Action Plan

Preparation of the Galway City Biodiversity Action Plan

The Heritage Council commissioned a consultant ecologist in 2008 to prepare the first draft Local Biodiversity Action Plan in partnership with Galway City Council and the relevant stakeholders. The plan was prepared in accordance with Heritage Council guidelines (see www.heritagecouncil.com).

Consultation is an essential part of the process to prepare a local biodiversity action plan in order to achieve local ownership of the plan and to maximise participation from a wide range of sectors and stakeholders. The objectives and actions proposed in the plan are, therefore, the result of an extensive consultation process: The consultation process for the initial draft commenced in July 2007. The Natural Environment and Waterways Working Group met a number of times over the year and a questionnaire was sent out to various organisations and individuals seeking their views on the priorities for nature conservation within the city. It was also published in the City Council's Heritage Newsletter. The consultation for the new draft of the Plan was undertaken at the end of 2012 and the beginning of 2013. In November 2012 the Galway City Biodiversity website www.galwaybiodiversity.com was taken out of dormancy and corresponding Facebook and Twitter pages were created. These were used together to publicise the consultation process for the Plan and to spark public interest in its preparation, as well as to promote awareness of and action for biodiversity in the City. Citizens were also encouraged to make their own submissions to the Plan through the website and social media pages. In December letters were sent out to a wide variety of potential stakeholders, including businesses, community groups, educational organisations and national NGOs. The received submissions were compiled and assessed and the original draft was reviewed and edited with these submissions in mind.

While Galway City Council may be the lead agency implementing many of the actions in the plan, a partnership approach is essential in order to achieve the objectives of the plan. The key to addressing the problems facing biodiversity in Galway City lies in local action. Many actions were proposed and they had to be prioritised in order to ensure all the actions in the plan could be implemented within a ten year timescale.

Actions

Objectives

1. **To raise awareness and appreciation of biodiversity**
   Seeks to raise awareness and appreciation of the many benefits of biodiversity among all sectors of society by providing information, education and training opportunities. A change in attitudes is key to protecting the great variety of life contained in the natural world around us and to protect our environment.

2. **To maintain and enhance biodiversity within the city**
   Recognises the responsibility of the Local Authority and other state agencies to protect habitats and species of national and international conservation importance, and the potential to enhance biodiversity within the city. Aims to increase public participation in biodiversity initiatives and promotes a partnership approach to conserving biodiversity.

3. **To increase our knowledge and understanding of biodiversity**
   Recognises the need for a solid knowledge-base in order to protect biodiversity effectively and the importance of making this information available and accessible to the public and decision makers.

A partnership approach is essential in order to achieve the objectives of the plan

Silverstrand - Kenneth McSharry.tif

Galway City Biodiversity Action Plan – Actions

No	Action	Objectives 1 2 3	Potential partners*	Timeframe **	Measuring success
1	**Designate Role of Biodiversity Officer by Formal Managers' Order** • To immediatley facilitate and co-ordinate the implementation of the BAP. • To advise the City Council on biodiversity-related issues and the council's obligations in relation to protecting biodiversity • To facilitate the implementation of national species and habitat action plans, as appropriate. • To apply for funding to implement the action plan. • Examine Shared Service element with Galway County Council	✓ ✓ ✓	Heritage Council, NPWS, Galway County Council, NUIG	Short-term	Set PI's on Action Plan.
2	**Seek Long-term appointment of Full Time Biodiversity Officer** • Actions as above on an ongoing long-term basis		DoECLG	Short-term	Departmental Approval for Full/Contract Appointment.
3	**Establish a Biodiversity Forum** • The role of this group would be to promote a partnership approach to conserving natural heritage and biodiversity within the city, and to assist the work of the Designated Biodiversity Officer.	✓ ✓ ✓	NUIG, GMIT, NPWS, WRBD, IFI, GCCF, ENGOs	Short-term	Group established and regular meetings held.
4	**Conduct a biological audit for Galway City.** • Collate all available information on biodiversity in Galway City and store in a database. • Identify gaps in biodiversity information by reviewing and analysing existing data. • Develop linkages with the National Biological Records Centre. • Ensure that copies of all Environmental Impact	✓	NUIG, GMIT, IFI, NPWS, ENGOs	Ongoing	Biological diversity database established.
	Statements received by Galway City Council are stored (preferably electronically) in a central location.				
5	**Survey attitudes of the people of the Galway to nature and biodiversity** • Use results to inform awareness-raising initiatives and community-led natural heritage projects		Community Forum	Short-term	Results of survey published.
6	**Develop a biodiversity awareness, education and training programme Target audience 1: General public** • Run public awareness-raising events and activities, especially during Heritage Week and Biodiversity Week e.g. tree planting events, talks and guided walks. • Produce a series of information leaflets e.g. Wildlife Gardening, Nature in Galway City, Invasive Aliens. • Work with schools in the city to promote a pride in our city's wildlife habitats (e.g. poster and photo competitions). • Develop & promote a dedicated biodiversity section on the Galway City Council website with information, event listings and useful links. • Install interpretive panel at entrances to Terryland Forest Park & other parks with information about flora & fauna found in the Park including bats. • Erect signage at key viewing points with information about birds e.g. the Claddagh, Salthill, Barna Woods, Mutton Island and Rusheen Bay. • Encourage people to log wildlife sightings with the National Biodiversity Data Centre and Birdwatch Ireland • Offer residents associations advice and training on enhancing biodiversity in their localities • Install dispensers with appropriate swan feed at Claddagh Pier to raise awareness of the dangers of bread to swans.	✓	ENGOs, NPWS, IFI, WRBD, NUIG, GMIT, GCCF, VEC, DES, NPWS, NBDC, BWI GCSR, Residents Associations	Short-term	At least two high profile events run per year, leaflets produced, website updated regularly, signage erected.

No	Action	Objectives 1	2	3	Potential partners*	Timeframe **	Measuring success
7	**Develop a biodiversity awareness, education and training programme. Target audience 2: Galway City Council staff and officials** • Develop best practice biodiversity guidelines for all departments • Provide targeted biodiversity training for all existing and new staff. • Quarterly meetings between the R&A dept. and other relative departments to promote biodiversity in proposed schemes. • Promote the use of organic pesticides and herbicides in place of damaging synthetic chemicals.	✓	✓	✓	NPWS, IFI, WRBD, NUIG, ENGOs, GCCF, VEC	Ongoing	Guidelines produced; biodiversity training ongoing.
8	**Develop a biodiversity awareness, education and training programme. Target audience 3: Developers, architects, engineers and landowners** • Develop best practice guidelines in relation to protecting and enhancing natural heritage value of development sites • Produce clear and informative leaflets on a number of relevant topics: E.g. how to assess the natural heritage value of sites, how to manage natural areas or features (e.g. wetlands, ponds, woodland), how to retain trees and hedgerows in developments, natural landscaping, how to create wildlife habitats in new developments (e.g. ponds, native hedgerows, install bird and bat boxes etc.)	✓	✓		NPWS, IFI, WRBD, ENGOs, EI, RIAI, ILI, NUIG, GMIT	Ongoing	Guidelines and leaflets produced.

Early bumblebee (Bombus pratorum) - Bernadette Higgins

No	Action	Objectives 1	2	3	Potential partners*	Timeframe **	Measuring success
9	**Promote creation of new wildlife habitats in developments including housing estates, industrials sites and golf courses** • Examine the feasibility of developing a reward system for developers who make an effort to protect and/ or enhance biodiversity in developments. • Raise awareness of the economic, social and environmental benefits of having local biodiversity areas within new developments; provide examples from other jurisdictions.	✓	✓		NPWS, NUIG, GMIT, ENGOs, GCCF, OPW	Ongoing	Biodiversity element evident in new landscaping projects

No	Action	Objectives 1	2	3	Potential partners*	Timeframe **	Measuring success
10	**Promote community participation in nature conservation** • Advise and assist local community groups, including ENGOs, embarking on biodiversity-related projects including identifying potential funding sources. • Encourage local groups to adopt a local biodiversity area. Local working groups could be established to collect litter, plant trees, develop walks and/or develop local biodiversity plans.	✓	✓		GCCF, ENGOs, NPWS	Ongoing	Community-led projects initiated.
11	**Establish a network of Local Biodiversity Areas and associated wildlife corridors** *(based on the twelve areas already identified in the Galway City Habitats Inventory 2005). See Appendix 2.* • Resurvey proposed Local Biodiversity Areas; map and list these areas in the Galway City Development Plan. • Resurvey wildlife corridors proposed by Kindermann (2004), map and list in the Galway City Development. • Seek to identify additional wildlife corridors. • Develop and publish management plans for each of the Local Biodiversity Areas. • Monitor and report on the condition of the Local Biodiversity Areas on an annual basis. • Recommend Development Plan policy to ensure that any new developments that may impact on the Local Biodiversity Areas, and associated wildlife corridors, must complete an appropriate environmental assessment. • Investigate further mechanisms for protecting these areas. • Develop criteria for the inclusion of any additional Local Biodiversity Areas. • Adjust grass cutting schemes in public areas to encourage the establishment and survival of wildflowers.		✓	✓	NUIG, GMIT, GCCF, ENGOs, NPWS, IFI,	Medium-term	LBAs surveyed and mapped; listed in next City Development Plan; annual monitoring programme established; policy developed to afford these areas some level of protection.
12	**Tree survey and preservation** • Seek to appoint a Tree Officer to conduct survey of trees within city, propose Tree Protection Orders, promote the protection and retention of trees, and to offer advice to those working with or near trees. • Mapping and tagging of all trees in urban areas for creation of tree database.	✓	✓	✓	Arboricultural Association, TCI	Short-term	Tree survey completed; TPOs proposed.
13	**Key habitat: Urban woodlands and hedgerows** • Develop management plans for all the urban woodlands in Galway City. • Develop woodland recreation-use policies. • Promote participation in any future Forest Service Neighbourwood Schemes. • Promote the retention of hedgerows, recognising their importance as wildlife corridors. • Engage with tree/forest organisations to promote tree planting and management • Promote the retention of dry stone walls		✓	✓	NUIG, NPWS, GCCF, Forest Service, Crann, HLAI, NWT	Short-term	Management plans and policies developed.

No	Action	Objectives 1	2	3	Potential partners*	Timeframe **	Measuring success
14	**Key habitat: Wetlands and watercourses** • Develop management plans for wetland areas along the Corrib system and the Terryland River. • Promote the adoption of a policy that aims for no net loss of wetlands within the city. • Conduct a survey of wetland invertebrates e.g. groups that are indicative of water quality such as water beetles and marsh flies. • Develop guidelines to promote best practice in relation to works that may impact on freshwater lakes, turloughs, rivers and waterways. • Initiate preparation of river conservation management plan for the Corrib system in consultation with stakeholders. • Survey fish in streams that may be impacted upon by urbanisation. • Investigate means to improve access to Lough Corrib for Sea Lamprey.		✓	✓	NUIG, NPWS, BWI,IFI, CNT, Galway County Council, WRBD, GCT, OPW	Medium - term	Management plans developed; policy adopted; invertebrate study completed and results published, guidelines produced; fish surveys initiated.
15	**Key habitat: Exposed limestone habitats** • Map remaining area of exposed limestone rock. • Develop management plans for these areas. • Protect remaining area from quarrying.		✓	✓	NUIG, Teagasc, IFA	Long-term	Map and management plans produced.
16	**Key Habitat: Peatlands** • Develop habitat management plan for peatlands in the city, including survey and educational information for landowners. • Survey especially for the protected Marsh Fritillary.	✓	✓	✓	IPCC, NPWS, NUIG, NBDC	Long-term	Management plan produced, survey ongoing.
16	**Key zone: Coastal zone** • Promote sustainable use of the marine environment. • Ensure appropriate assessment conducted for any proposed works within the coastal zone. • Biodiversity survey and habitat mapping of coastal zone, including public awareness campaign. • Habitat enhancement on Mutton Island causeway and proposed new docks.	✓	✓		RI, NUIG, GMIT MI, IFI, WRBD	Medium-term	Promotional material produced.
17	**Key species group: Bats** • Ensure foraging grounds of bats are protected e.g. urban woodlands, wetlands and hedgerows. • Ensure a bat survey is carried out before old structures are developed or restored in order to consider possible mitigation measures. • Ensure public buildings have one aspect unlit to allow bats to roost. • Bridge repair work preceded by bat survey and bat access points conserved. • Bat box schemes including workshops • Develop species action plan for Rhinolophus hipposideros (lesser horseshoe bat)	✓	✓		VWT, BCI, NPWS	Medium-term	No net loss of bat roosts and foraging grounds.

Common tern (*Sterna hirundo*) Tom Cuffe

No	Action	Objectives 1	2	3	Potential partners*	Timeframe **	Measuring success
18	**Key species group: Birds** • Ensure adequate protection of important bird habitats in and around the city waterways, urban woodlands and hedgerows. • Develop guidelines in relation to works in or adjacent to waterways, woodlands and hedgerows in relation to bird conservation. • Ensure a bird survey is carried out before old structures are developed or restored in order to consider possible mitigation measures.	✓	✓		BWI	Medium-term	No net loss of bird habitats, guidelines produced.
	Key species group: Small mammals • Continue monitoring small mammal populations in Terryland Forest Park and adjacent wildlife corridors.		✓	✓	NUIG, VWT	Short-term	Monitoring study ongoing and results published.
	Key Species: Common swift (Apus apus) • Identify and protect existing nesting sites, identify suitable new nesting sites and install swift nest boxes with simulated calls. • Encourage developers to install 'swift bricks' into new developments		✓	✓	BWI, NISG, RIAI	Short-term	
	Key Species: Common seal (Phoca vitulina) • Develop local species action plan	✓	✓	✓	NPWS	Medium-term	Species action plan produced.
	Key Species: Red squirrel (Sciurus vulgaris) • Survey areas with reported sightings, such as Merlin Woods			✓	NPWS, NUIG	Medium-term	Survey ongoing.
20	**Develop appropriate strategies for preventing the introduction and spread of invasive alien species** • Continue to raise awareness of the threat of invasive alien species to biodiversity and the environment. Examples of problem species include the zebra mussel, Japanese knotweed and African waterweed. • Develop a programme for eradicating invasive aliens in co-operation with other relevant agencies. • Encourage members of the public to record sightings of alien invasives to http://www.invasivespeciesireland.com/alien-watch/ • Support the IFI Lagarosiphon and Dreissena control programmes	✓	✓		IFI, Galway County Council, NUIG, WRBD, ISI	Ongoing	Eradication programme underway.
	Graveyards and Historic sites • Incorporate biodiversity in the management aims of graveyards, monuments and archaeological sites.		✓		Heritage Officer, Private Graveyards	Long-term	Biodiversity aims incorporated.
21	**Support implementation of national Species and Habitat Action Plans within Galway City, as appropriate, and current National Biodiversity Action Plan**	✓	✓	✓	NPWS, ENGOs, NUIG, GMIT, IFI, NBDC	Ongoing	National plans implemented locally.

Abbreviations

BCI	Bat Conservation Ireland
BSBI	Botanical Society of the British Isles
BWI	BirdWatch Ireland
CNT	Corrib Navigation Trust
DES	Department of Education and Skills
DoECLG	Department of Environment, Community and Local Government
ENGO	Environmental Non-Governmental Organisation
EI	Engineers Ireland
EU	European Union
GBG	Galway Botanic Garden
GCCF	Galway City Community Forum
GCDB	Galway City Development Board
GCSR	Galway & Claddagh Swan Rescue
GCT	Galway Civic Trust
GMIT	Galway Mayo Institute of Technology
HLAI	Hedge Laying Association of Ireland
IFA	Irish Farmers' Association
IPCC	Irish Peatland Conservation Council
ISI	Invasive Species Ireland
LBA	Local Biodiversity Area
MI	Marine Institute
NHA	Natural Heritage Area
NISG	Northern Ireland Swift Group
NPWS	National Parks and Wildlife Service
NUIG	National University of Ireland, Galway
NWT	Native Woodland Trust
OPW	Office of Public Works
RI	Ryan Institute
RIAI	Royal Institute of the Architects of Ireland
SAC	Special Area of Conservation
SPA	Special Protection Area
TCI	Tree Council of Ireland
VWT	Vincent Wildlife Trust
WRBD	Western River Basin District
IFI	Inland Fisheries Ireland

Mute swan with cygnets (*Cygnus olor*) - Brendan Lawlor

Rationale

As stated above, all of the actions listed in the Galway City Biodiversity Action Plan have arisen as a result of extensive consultation with the relevant stakeholders. The rationale for some of the actions in this plan is described below:

A full-time Biodiversity Officer will facilitate the implementation of the action plan and help fulfill the City Council's responsibilities and obligations in relation to protecting biodiversity by providing advice and training Council staff and departments. This officer would be best placed in the Recreation & Amenity Department where they could work with a multidisciplinary team. Several other local authorities, including three Dublin authorities, Co Clare and Co Galway have appointed Biodiversity Officers.

Banded demoiselle (*Calyopteryx splendens*) - Thomas Cuffe

A Biodiversity Forum should be established to assist the work of the Biodiversity Officer and to promote a partnership approach to conserving natural heritage in the city. This group should comprise representatives from the City Council (Planning, Parks and Environment Departments), relevant state agencies (NPWS, WRFB, OPW, MI), local active environmental groups, academic institutions, the community forum and other active community groups.

By providing Biodiversity training to members of City Council staff, awareness is promoted across the various departments and projects therein.
In order to maintain the rich natural heritage in Galway City, it is necessary to protect local areas of high biodiversity value and wildlife corridors that allow movement of birds and other animals between natural areas. These local sites (Local Biodiversity Areas) contribute to quality of life in the city, as well as providing opportunities for research and education. Twelve Local Biodiversity Areas have already been identified in the Galway City Habitats Inventory. Potential wildlife corridors have been identified by Kindermann (2004); they should be resurveyed and others identified where possible. The European Union Habitat's Directive (Article 10) requires member states to protect through planning and development policies those features of the landscape which provide linear features or stepping stones for wildlife.

Several actions were proposed for specific habitats and groups of animals such as bats, other small mammals and birds. These actions reflect the presence of habitats and species considered by the consultees to be of high nature conservation importance (e.g. woodland and wetlands, lesser horseshoe bats and sea lamprey), the importance of certain habitats for environmental protection (e.g. wetlands and water quality, trees and air quality), and the opportunity to build on existing knowledge within the city. The actions also attempt to address some of the information gaps in relation to biodiversity knowledge for Galway City.

Small tortoiseshell (*Aglais urticae*) - Clodagh Kidd

What Has Been Achieved in the Last Year

- An active online awareness programme is ongoing and engaging local people.
- A Japanese knotweed eradication programme was launched and is entering its second stage.
- Numerous conservation projects have been run by local volunteer groups and supported by the City Council.
- Biodiversity training has been provided to a selection of City Council staff.
- The first stage of a new management regime for Terryland Forest Park was completed.
- Scientists from the Ryan Institute conducted a coastal biodiversity survey of the City and set up a long term biodiversity enhancement project at the Mutton Island Causeway.
- National Biodiversity Week in association with Friends of Merlin Woods was a huge success, with more engagement from the community than ever.
- Galway City's first swift conservation project was launched.
- Galway City's first Wildlife Photography competition was launched and entries exhibited in the City Library and the City Museum, with a selection of images incorporated in the design of the Biodiversity Action Plan.

Implementation, Monitoring and Review

In order to progress implementation of the Biodiversity Action Plan, and following its adoption by the City Council, an implementation plan must be developed. Work packages based on the actions within the plan should be identified, as well as resources required, funding sources and potential partners. The timescale for completing the various work packages and the markers for measuring success should be clearly indicated.

Progress in relation to implementing the Galway City Biodiversity Action Plan should be monitored and reviewed regularly during the life time of the plan (10 years). The targets set in the plan should be reviewed on an annual basis by the Biodiversity Officer. Where targets have not been met, the causes should be identified and remedial action should be taken in partnership with the Biodiversity Forum and other partners in the process.

Development of the subsequent local biodiversity action plan for the city should be initiated after a mid-term review and should take cognisance of future National Biodiversity Plans and any new Species or Habitat Action Plans that have been developed in the interim.

The attractiveness of Galway City as a tourist destination is due in part to the city's rich natural heritage.

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pigeons (*Columba livia*) at Claddagh - Anna Talbot (Runner-up GCB photo comp)

Appendix 1: Galway City Habitat Inventory Action Plan Recommendations

Based on the Galway City Habitats Inventory Report (Natura 2005) and voted on by Galway City Council May 2006.

1. Designate any nationally or internationally important habitats as SACs or NHAs.
2. Establish a network of Local Biodiversity Areas and list these in the Galway City Development Plan.
3. Prepare a management plan for each of the designated areas and Local Biodiversity Areas in Galway City.
4. Freshwater wetlands and watercourses should be protected and conserved with infilling, culverting, dredging, diversion or pollution prevented where possible.
5. Protect the best areas of grassland, heath and peatland by controlled grazing and avoidance of development.
6. Broadleaved woodland should be protected from overgrazing and invasive species such as rhododendron should be controlled.
7. Hedgerows and stone walls should be retained where possible within agricultural and developed land as part of ecological networks and corridors.
8. Areas of exposed limestone should be protected from quarrying or other development and should be maintained in an open condition by extensive grazing.
9. Rocky coastlines should not be modified by armouring or discharge of pollutants.
10. Soft coastlines should be left free of armouring and other engineered defences. Seaweed debris should be left to decay naturally on beaches as this is an essential process of strandline regeneration. Dumping of refuse in saltmarsh and muddy areas should be prevented using notices and enforcement.

red fox (Vulpes vulpes) - Noel Barbour

Appendix 2: Local Biodiversity Areas proposed and as described in Galway City Habitats Inventory (Natura 2005)

Available on www.galwaycity.ie (with maps showing location of LBAs and potential wildlife corridors)

1. Rusheen Bay - Barna Woods - Illaunafamona
This mosaic of habitats is located around the intertidal area of Rusheen Bay. It incorporates several types of shoreline including glacial cliffs, gravel banks, rocky shore, sandy shore, muddy sand and saltmarsh. It also has several types of woodland in Barna Woods together with various semi-natural grassland types between Silver Strand and Gentian Hill. The coast is very indented with a number of sheltered feeding and roosting areas for significant numbers of wintering birds. The dynamic complex of shingle bars and saltmarsh at Illaunafamona is included in this area. The entire area is covered by either SAC or SPA designations. It is linked to Area 2 by the Barna Stream and to Area 4 by the coastline.

2. Cappagh-Ballymoneen
An extensive area of undeveloped land exists between Cappagh and Ballymoneen and the western boundary of the City. This includes blanket bog, fen, wet grassland and scrub and several smaller areas of other valuable habitats. It is one of the easternmost examples of the typical peatland complex of south Connemara and is directly linked with Area 1 via the Barna Stream which discharges into Rusheen Bay. This area is unprotected at present.

3. Ballagh-Barnacranny Hill
This is another example of the Connemara peatlands which includes blanket bog, fen, wet grassland, heathland and scrub. This is a smaller complex than Area 2 but has links with it through peatlands outside the City boundaries at Tonabrocky. This area is covered by NHA designation.

4. Mutton Island and nearby shoreline
The intertidal area around Mutton Island and the shoreline between the Grattan Road strand and Nimmo's pier hold the highest densities of wintering birds in the immediate vicinity of Galway City. The habitats are a mixture of rocky shore, sandy shore and shingle banks with some fine mud accumulating on the eastern side of the new causeway. Mutton Island itself holds a very important high tide roost of birds in winter and was the site of a breeding tern colony in 2001. The entire area is covered by SPA designation. It is linked to Area 1 by the coastline and to Area 5 by the mouth of the River Corrib.

5. Lough Atalia and Renmore Lagoon
This land-locked inlet holds tidal water at low tide and has the largest area of saltmarsh within the City boundaries. The lagoon, which was a former outlet of Lough Atalia, is now brackish and is surrounded by wet grassland, reedswamp and shingle banks. The western shore of Lough Atalia is partly modified and the expansion of the port at Renmore in an easterly direction has involved some infilling of wet grassland around Renmore lagoon. Lough Atalia and the intertidal area at Renmore are covered by SPA designation but the Renmore lagoon is not. It is linked to Areas 4 and 6 across the mouth of the River Corrib at the Claddagh.

6. River Corrib and adjoining wetlands
The River Corrib and the associated wetlands at Illaunacorra, including Jordan's Island, contain an important complex of habitats such as lowland river, limestone/marl lake, reedswamp, wet grassland and wet woodland.
The area also includes the reedswamp and meadows on either side of the Dyke Road between the Quincentennial Bridge and the Salmon Weir. There is also a case for including the entire freshwater section of the River Corrib to Wolfe Tone Bridge as this lower area contains spawning lamprey and the entire river is a vital corridor for aquatic species moving between Galway Bay (including Areas 4 and 5) and Lough Corrib. The wet woodland at Dangan on the west bank of the river and the peatland areas north of Bushy Park are also included in this complex. This area directly adjoins Area 7. The vegetation of the Lower Corrib basin has been studied in detail by Mooney (1990).

7. Menlo to Coolough Hill
There is an extensive area of high value habitats centred on the Menlo area to the north of the City. This area has thin calcareous soils overlying limestone, which is exposed on the surface in many places. The area includes a fine stand of oak-ash-hazel woodland at Menlo Woods. It also includes an extensive mosaic of exposed limestone rock, calcareous grassland and hazel scrub. A small turlough also occurs in the centre of the area. This area directly adjoins Area 6. The flora and fauna of the Menlo area has been the subject of detailed study (Allison 2002).

8. Ballindooley-Castlegar
This area is centred on Ballindooley Lough but also holds rich fen, poor fen, reedswamp, wet grassland, scrub and exposed limestone rock. The Castlegar area holds smaller areas of wet grassland, scrub and exposed limestone but this area is close to the upper reaches of the Terryland River which forms a natural corridor connecting with the River Corrib and Area 6.

9. Ballybrit Racecourse
This is a large open area of species-rich calcareous grassland, which has survived in the centre of the racecourse. It is now somewhat isolated from any surrounding areas of natural habitat by the N17 and N6 roads and associated housing development. There are no clear links with other areas.

10. Merlin Park Woods
This area is the largest surviving stand of woodland within the City boundaries. It is now partly fragmented into four separate blocks by roads, railway and by the hospital complex. It contains mixed broadleaved woodland, with broadleaved/conifer woodland and scrub. There are direct links between this area and Area 12 at Roscam and with Area 11 to the east.

11 Doughiska
This area, on the eastern boundary of the City, is centred on an area of exposed limestone rock with calcareous grassland and scrub. The grassland is rich in orchid species. It has already been fragmented by major road development. It will be important to maintain the tenuous link with Area 10.

12. Roscam
The peninsula of Roscam lies between Oranmore Bay to the east and the townland of Murroogh to the west, with the railway line dividing it from lands to the north. It contains some small but relatively undisturbed examples of saltmarsh, shingle banks, brackish lagoon, sandy shore and muddy sand shore, with calcareous grassland and scrub. There are several blocks of seminatural grassland and it is linked by woodland and scrub to Area 10 (Merlin Park Woods) to the north.

Appendix 3: Consultation Contributors

Direct consultation with and/or submissions from:

Name	Organisation
BirdWatch	Head Office
Bosbeer, Sasha	Forestry Dept., GMIT
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Morning Time - Bernadette Higgins

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Smith, Brendan	Terryland Forest Park Volunteers
Stanley, Caroline and Colin	Friends of Merlin Woods
Synnott, Kay	Living Gardens
ten Cate, Marianne	BirdWatch Galway
Quinn, Michael	Dúchas na Gaillimhe - Galway Civic Trust
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Common Darter dragonfly (*Sympetrum striolatum*) in Merlin Woods Colin Stanley