

*Draft*

County Mayo

Biodiversity Action Plan

**2010 - 2015**



An Chomhairle Oidhreachta  
The Heritage Council



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## **Vision statement**

That Mayo becomes a place even richer in wildlife and wild places that is cherished and respected by all, and for the benefit of all.

## **Introduction**

### **Mayo**

County Mayo has a particularly rich and diverse natural heritage. Mountains and upland areas are concentrated in the north and west of the county, which is characterised by a mosaic of peatland, heath and forestry plantations. More fertile farmland is found in the low-lying and undulating landscapes of east Mayo. There are several large lakes in the county and numerous medium to small lakes. The long and varied Mayo coastline contains a wide range of coastal habitats from cliffs to estuaries, mudflats, machair, sandy beaches and offshore islands.

### **What is biodiversity?**

Biodiversity or biological diversity simply refers to the variety of all living things on earth and includes people, plants, animals, fungi and micro-organisms.

*Biodiversity is just another term for nature, flora and fauna, natural heritage, wildlife and the living environment.*

The term biodiversity, however, refers to more than individual species and includes the genes they contain, the habitats and ecosystems of which they form part, and also highlights the interdependence and interconnectedness of all living things.

Biodiversity is everywhere and all around us in Mayo, from gardens to farmland, peatlands to woodlands, rivers to coastlines. We all interact with biodiversity and the living environment every day as we go about our daily lives. There are many ways to enjoy the rich natural heritage and biodiversity of the county; gardening, playing on the beach, fishing, boating, hill walking or walking in the woods.

### **Biodiversity**

The Convention on Biological Diversity formally 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'. Therefore biodiversity refers not only to the variety of life but also to the interactions between living things, and it can be considered at three levels: ecosystem diversity, species diversity and genetic diversity within species.

[www.cbd.int](http://www.cbd.int)

### **Why biodiversity is important**

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

Recently there has been much interest and concern about drinking water quality in the country. This problem demonstrates the importance of biodiversity and how the protection of natural habitats can help protect essential resources such as water. The protection of natural habitats along watercourses helps mitigate against the impact of pollution and helps maintain good water quality. Careful environmental management is more cost-effective than treating the problem once serious pollution occurs. The conservation of biodiversity and natural heritage is an integral part of good environmental management and sustainability. Tourism and fisheries are particularly important for Mayo's economy and the protection of the rich natural heritage of Mayo is key for maintaining these sectors in a healthy state.

### **Did you know?**

It is estimated that the cost benefit of biodiversity to the Irish economy is over €2.6 billion per year! *'The Economic and Social Aspects of Biodiversity: the benefits and costs of biodiversity in Ireland' (2008) a Report to the Department of the Environment, Heritage and Local Government.*

A healthy environment is important for human health and well-being. Many people consider that nature provides us with spiritual, emotional and physical benefits, and thus improves our quality of life. It is also important to conserve our biodiversity for future generations. Our children should be able to enjoy the sight of an Atlantic salmon jumping in the River Moy or a Barnacle goose grazing on a coastal marsh.

### **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

### **What is a biodiversity action plan?**

A biodiversity action plan provides a framework for the conservation of biodiversity and natural heritage at a local level. These plans are 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 production of biodiversity plans by local authorities is an action in the first National Biodiversity Plan published in 2002, which recognised the key role of local authorities in protecting our natural heritage.

This is the first County Mayo Biodiversity Action Plan. The production of a Biodiversity Action Plan is an action of the County Mayo Heritage Plan 2006- 2011 and an objective the County Mayo Development Plan 2008- 2014.

### **The process of preparing the Biodiversity Action Plan**

Mayo County Council, in partnership with the Heritage Council commissioned an ecologist to commence the preparation of the County Mayo Biodiversity Action Plan in 2007. This first phase of the process involved consultation with the relevant bodies and individuals, an information review and the production of a draft plan. In 2008, another ecologist finalised the draft County Mayo Biodiversity Action Plan based on the previous year's consultation results, literature review and draft document.

The work of the ecologists was overseen by the Biodiversity Working Group of the County Mayo Heritage Forum and the Heritage Officer.

The County Mayo Biodiversity Action Plan was prepared following the guidelines produced by the Heritage Council and with regard to the National Biodiversity Plan, the County Mayo Heritage Plan 2006- 2011 and the County Mayo Development Plan 2008-2014. Further details on the process of preparing the plan can be found in Appendix 1.

### **Implementing the plan**

Each year the County Mayo Heritage Officer will, in consultation with the Biodiversity Working Group of the County Mayo Heritage Forum, draw up an annual work plan of projects from the

County Mayo Biodiversity Action Plan to be undertaken in that year. A detailed implementation plan for each project will then be drawn up. Each project/ action will be costed and a timeframe set for completion. A partnership approach is essential for the successful implementation of the plan. Potential partners have been identified for each action.

## County Mayo's Biodiversity

County Mayo's landscape has been shaped by climate, geological processes and landuse. Mountains, peatlands, rivers, lakes, coastal zones, woodland and farmland form a network of habitats that support a rich variety of wildlife. Mayo is the third largest county in the country. Croagh Patrick (765m) is Mayo's most famous mountain but Mweelrea (819m) is the highest mountain in Connacht and is situated just north of Killary Harbour (a natural fjord). Achill Island is the largest Irish island and boasts some of the country's highest sea cliffs. The main rivers of the county include the Moy, Deel, Owenmore, Owenduff, Newport, Bunowen, and the Erriff. Lough Conn and Mask are among the largest lakes in the country.

Over a quarter of County Mayo's land area is designated for nature conservation. This high percentage reflects the international and national significance of Mayo's wealth of natural heritage.

Along with sites designated for nature conservation, Mayo has many other areas of local ecological importance including broadleaved woodlands, scrub, hedgerows, tree lines, cutover bog and wet grassland. Many of these areas are important helping to form wildlife corridors and ecological networks across the landscape. These corridors and networks allow animals to move freely from one habitat to another.

<b>Guide to the main designations for nature conservation in Ireland</b>		
<b>Conservation Designation</b>	<b>Legislation</b>	<b>Objectives</b>
Special Area of Conservation (SAC)	European Union Habitats Directive 92/43/ECC European Union (Natural Habitats) Regulations, S.I. No. 94 of 1997	SACs are the prime wildlife areas in Ireland that are also considered extremely important in a European context. The EU Habitats Directive lists certain habitats (listed in Annex I of the Directive) and species (Annex II) for which Ireland must designate SACs for their protection.
Special Protection Area (SPA)	European Union Birds Directive 79/409/EU	SPAs are sites that are important for birds in an Irish and European context. The EU Birds Directive provides for listed rare and vulnerable species (Annex I of the Directive), and for regularly occurring migratory species, as well as,

		wetlands of international importance for migratory birds.
Natural Heritage Area (NHA)	Wildlife Act 1976  Wildlife (Amendment) Act 2000	Areas that are important nationally from a nature conservation perspective have been proposed as Natural Heritage Areas.  Some NHAs are also designated as Special Areas of Conservation (SACs) or as Special Protection Areas (SPAs).

The main species and habitats of nature conservation interest found in Mayo are described below.

### **Protected species**

County Mayo is home to several rare, protected and/or threatened plants and animals (for lists see Appendices 4 and 5). Protected plants are those that are legally protected under the Flora Protection Order within the Wildlife (Amendment) Act 2000 (e.g. drooping lady's tresses, bog orchid or yellow marsh saxifrage). Various animals are also afforded protection within the Wildlife Acts (e.g. all native mammals). Species listed on Annex II of the European Union Habitats Directive (e.g. otters, salmon and freshwater pearl mussels) or Annex I of the EU Birds Directive (e.g. golden plover and kingfishers) are also protected.

#### **Drooping lady's tresses**

This beautiful and extremely rare orchid is found at a few sites in Mayo, mainly close to lake shores in wet meadows. Recording and studying the distribution and abundance of rare plants (as well as animals), is important for monitoring the state of the environment and the impact of climate change.

Rare invertebrates found in the county include the coast dart moth, Portland moth and the belted beauty. Mayo also supports a number of endangered and vulnerable bee species including the endangered great yellow bumblebee, and dragonflies such as black-tailed skimmers and keeled skimmers.

#### **Bumblebees**

Bumblebees are important pollinators for many plants. Several species of native bumblebees in Ireland are undergoing a decline, which may have implications for our native flora and crops in

terms of pollination and setting seed. Bumblebees are incredibly important ecologically and economically. A rare native bumblebee that occurs in Mayo is the **great yellow bumblebee**. This species is in decline across Europe mainly due to habitat loss and isolation. The great yellow bumblebee is found in coastal areas on machair and unimproved grassland. Red clover and knapweed appear to be important food plants for this bumblebee. Intensification of grazing, especially summer grazing, appears to be damaging for the great yellow bumblebee.

A wide range of birds are found in Mayo and the high proportion of land designated for bird conservation in the county reflects its importance nationally and internationally for bird populations. Choughs are typically coastal birds found in areas of coastal heath, machair and undisturbed maritime pastures. Corncrakes are summer visitors to Ireland that have declined dramatically in abundance in recent years, largely due to changes in agricultural practice. In Mayo, corncrakes occur in western coastal areas and coastal islands. The 2007 singing male corncrake population was recorded as only 17 individuals.

County Mayo supports a number of over-wintering geese species such as the pale-bellied brent geese and barnacle geese, and many breeding and wintering waders including golden plover, lapwing and redshank. Inishglora and Illanmaster off the west coast of Mayo hold internationally important storm petrel colonies.

### **Twite**

The twite is a small brown bird and a member of the finch family, which once bred throughout Ireland. Today it is found only in coastal areas and in very low numbers. Mayo provides nesting habitat for up to 50% of the total national population. Twite require good quality heather (c. 300mm in height) for nesting within 2km of extensively farmed land. They feed on the seeds of various agricultural weeds such as dandelion, hawks-weed, cats-ear, maritime plantain and sheep sorrel. The use of herbicides to kill weeds has contributed to the decline in twite populations. In Mayo, twite breed in remote rural areas of the north coast of the county, often on sea-cliffs which are inaccessible to sheep grazing where good quality heather can be found.

Mayo also contains several protected mammals including the lesser horseshoe bat, red squirrel, pine marten, the Irish hare and otter. Many species of marine mammals occur off the Mayo coast including the Risso's dolphin, bottle-nosed dolphin and the fin whale.

The Atlantic salmon occurs in several rivers in Mayo, particularly the Moy, Deel, Delphi and Erriff. Despite the decline in salmon populations nationally, populations in Mayo have not declined to the same extent as in other counties. The River Moy is world-famous for its salmon fishery which is managed by the North Western Regional Fisheries Board.

## **Overview of Mayo's habitats and species**

### *Peatland and heath*

County Mayo boasts the largest land area of peatland in the country (c. 212,000 hectares). The county contains a diverse range of peatland and heath habitats including upland and lowland blanket bog, western raised bog, cutover bog, montane, wet and dry heath, fen and iron flushes. These habitats often occur in intricate mosaics.

Some of the best examples of blanket bog and heath in Ireland are found in Mayo. Prime upland sites include the Nephin Beg range, Mweelrea and the Sheefry Hills. Lowland peatland dominates much of the north and north-west of the county and includes some notable sites, including Mayo National Park at Ballycroy.

Bogs and heath support a wealth of wildlife. Several birds of conservation importance such as Greenland white-fronted geese, golden plover, dunlin, curlew, merlin and red grouse use the bogs and occur in Mayo. The Irish hare is widespread on many of the county's peatlands. Butterflies such as the very rare marsh fritillary and numerous species of moths can also be found on Mayo's bogs. Bogs also have an unusual flora due to the acidic nature of the peat and the wet conditions. The rare bog orchid has been recorded at one site in the county.

Fens are generally more nutrient-rich than blanket bogs because they are fed by groundwater and have a higher pH. Fens tend to contain a mosaic of different microhabitats ranging from open-water to reed-beds, small sedge vegetation, to semi-terrestrial birch and alder woodland. The complex of habitats contributes to the rich diversity of plants and animals. Mayo contains a few fens, mainly in the east of the county. Many species of wildfowl use fen areas. These include whooper swan, wigeon, lapwing and golden plover.

Peatlands in Mayo are under threat from drainage, over grazing, peat extraction, afforestation, the spread of invasive plant species and development.

### **Blanket bog restoration**

Coillte have been restoring a number of the blanket bog sites they own and that are designated for nature conservation as Special Areas of Conservation, as part of a nature conservation project jointly funded by EU DG-Environment and Coillte Teoranta (The Irish Forestry Board) under the EU LIFE- Nature Programme. This project aims to restore sites to near pristine condition with many benefits for wildlife and the environment. Several sites in Mayo were selected for restoration.

In most cases the bog restoration simply involved felling conifers (and usually leaving them in situ in order to minimise damage to the bog) and/or blocking drains in order to raise the water table.

There is a bog restoration demonstration site at Eskeragh, with interpretive signage and a boardwalk.

For more information see: [www.irishbogrestorationproject.ie](http://www.irishbogrestorationproject.ie)

### *Marine and coastal habitats*

Mayo has the longest coastline of any county in Ireland. It has 802 km of soft coastline with habitats such as sand dunes, machair and sandy beaches. A further 366 km is hard coastline (e.g. rocky shore and sea cliffs). Mayo's offshore islands have a coastline of 302 km in total. Some of Mayo's important marine and coastal habitats are described below.

#### Sand dunes and machair

Sand dunes come in a range of shapes and forms, and with a range of habitats, including fore-dunes, fixed dunes, dune slacks and dune heath and scrub. Prime examples of sand dune systems in Mayo can be found on the Mullet peninsula and at Kilcummin Head.

Sand dunes support a range of flora and fauna that are adapted to the windswept, droughty conditions that can occur, and the low fertility of the substrate. The Portland Moth is a rare species that can be found in dunes in Mayo.

### **Rosmurrevagh Dunes Conservation Project**

Tidy Towns Committees and community groups throughout the county are playing an active role in biodiversity conservation and management. In 2007 Mulranny Tidy Towns won the first National Notice Nature Award in 2007 for their work on the conservation and management of Rosmurrevagh machair. The Rosmurrevagh dunes conservation project started in 1998, when local farmers created two parks, Purtalahee and Benwee, to curtail severe erosion and

promote the natural dune building cycle at Rosmurrevagh. Transplantation of the dune building Marram grass (*Amnophila Arenaria*) was also undertaken. Subsequent habitat surveys established Rosmurrevagh Machair as an internationally important grassland fungi site and one of fourteen sites (confined to Mayo and Galway) where the rare dune specialist Belted Beauty moth (*Lycia zonaria*) exists. The initial conservation works were complimented by the development of the Mulranny Causeway Loop walk. The walk features bespoke information boards and guide maps which interpret the ecology of the site. The project, built on partnership between the local community, the local authority and government agencies.

Machair is a unique type of sand dune habitat found only on the west coast of Ireland and Scotland. Machair is the term for coastal grassy plains that are formed on wind-blown calcareous sands. Machair occurs where gales and high winds are frequent. The grassy plains are more or less flat and close to the water table so that small undulations in the surface produces mosaics of wet and dry patches. Machair is usually grazed, often heavily, producing a short turf grassland which can be quite specie- rich. Some of the best examples of machair in Mayo are on the Mullet peninsula and on Achill Island.

Machair supports a variety of birds including dunlin, redshank and snipe in the summer. Machair is also important for invertebrate species including an Irish click beetle (*Selatosomus melancholicus*), some rare land snails and moths including the belted beauty.

Threats to sand dunes systems include overgrazing, undergrazing (not common), trampling by livestock, agricultural improvement, sand extraction, recreational use and development.

### Estuaries and bays

The principle features that distinguish estuaries are a free connection to the open sea and a significant input of freshwater. The constant ebb and flow of the tides ensure a mixing of sea and fresh water, which in turn leads to variable salinity and depth. Estuaries are important nursery areas for fish, as well as providing a habitat for many shellfish and marine invertebrates. Marine invertebrates in turn provide a food source for breeding, wintering and migrating waders and wildfowl (e.g. golden plover, bar-tailed godwit, lapwing, curlew and redshank). Estuaries are also important for mammals such as seals and otter.

The Killala Bay/Moy Estuary is designated as both a SAC and SPA, reflecting its international importance for nature conservation, in particular for birds, rare molluscs (*Vertigo* species) and plants (opposite-leaved pondweed and hoary whitlowgrass).

Mayo's coastline is indented with small and large bays. Clew bay is perhaps Mayo's best-known bay. The geomorphology of the bay has resulted in a complex series of interlocking bays and islands creating a wide variety of marine and terrestrial habitats.

Blacksod Bay is unique in Ireland because it contains all four species of marine mammal on Annex II of EU Habitats Directive (common and grey seals, bottle nosed dolphin and harbour porpoise), and otters (also an Annex II species).

A wide range of sea birds also use the bays and their adjoining habitats, including dunlin, red-breasted merganser, ringed plover, great northern diver, bar-tailed godwit, geese and tern species.

Threats to estuaries and bays include pollution, coastal developments and disturbance of the sea shore.

#### Rocky shore and sea cliffs

Rocky shores include those formed of solid rock (bedrock) or loose rock (boulders and cobbles). Some of Ireland's highest rocky sea cliffs are found on Mayo's west coast, on Achill Island and Clare Island. The cliffs on Achill Head (650m high) drop vertically into the sea forming steep sublittoral reefs. Other spectacular sea cliffs can be found at Erris Head, Menaun Cliffs and Clare Island Cliffs. Nesting sea birds including fulmar, kittiwake, puffins, razorbills, choughs, peregrine falcons and guillemots use sea cliffs. The rare Scotch annulet moth occurs on the Clare Island sea cliffs.

Rocky shores are also important for marine invertebrates particularly the inter-tidal zones. These areas provide food for many of our smaller water birds such as turnstones, oystercatchers and ringed plover. Shorelines are also important for breeding terns and ringed plovers.

The north facing cliffs on Clare Island are particularly rich botanically and include alpine and rare species such as moss campion, purple saxifrage, Irish saxifrage and St. Patrick's cabbage.

#### Offshore islands

Mayo has many offshore Islands, from the large inhabited islands such as Clare Island, to the rocky outpost of the Stags of Broadhaven. Some smaller islands such as the Inishkeas have not had human inhabitants for over 50 years but are still grazed and are important for wildlife. Undisturbed offshore islands are becoming increasingly important for breeding waders (especially dunlin, lapwing and redshank) and birds such as corncrake or storm petrels. Several offshore islands are designated as Special Protection Areas, reflecting their importance for birds. These include the Inishkeas, Illanmaster, Inishglora & Inishkeeragh, Clare Island and Duvillaun Islands.

Storm petrels, Leach's petrel, puffins, tern species, barnacle geese and nesting seabirds, breeding waders, peregrine falcon and corncrakes use the islands to breed. There is also a breeding colony of grey seals on the Inishkeas islands.

Hoary rock-rose (protected under the Flora Protection Order) has been recorded on Inishturk and the rare liverwort, *Petalophyllum ralfsii*, (an Annex II species) has been recorded on Inishkea North.

Threats to offshore islands include disturbance, overgrazing, undergrazing, development and invasive species.

#### *Rivers, lakes and riparian habitats*

Mayo contains a number of rivers and lakes of high water quality and nature conservation interest. Rivers and lakes in Mayo support a huge array of wildlife, many of which are protected, including salmon, trout, lamprey, otters, kingfishers, and wildfowl species such as common scoter and wintering populations of geese and ducks.

Freshwater pearl mussels, which rely on water of the highest quality, also occur in some of the county's rivers. Populations of freshwater pearl mussels in Europe have already declined dramatically and in some countries it has become extinct. Populations in Ireland have also declined sharply, mainly due to inputs of silt and nutrients into the waterbodies in which it occurs. Ireland remains a stronghold for this species however.

Mayo contains several rivers and lakes that have been designated for nature conservation as SACs or SPAs, reflecting their nature conservation significance in a European context, including the River Moy, Newport River, Lough Conn, Lough Carra, Carrowmore Lake and Lough Cullin. Many of the county's smaller lakes are also designated, e.g. Urlaur Lakes and Termoncarragh Lake.

Riparian habitats associated with rivers and lakes are important for maintaining water quality and aquatic biodiversity, and for flood control. Riparian habitats such as wet woodland, reed swamp, marsh and wet grassland help prevent inwash of soil, nutrients and contaminants into waterbodies. Certain landscape activities that lead to soil erosion in river and lake catchments can lead to a serious deterioration in water quality as nutrients and silt are washed into waterbodies. The presence of healthy riparian vegetation can help mitigate against the impact of these activities.

### **European Union Water Framework Directive**

This Directive provides a framework for the protection and improvement of all of our waters - rivers, lakes, marine and groundwaters – and water-dependent habitats. All of our waterbodies and water-dependant habitats are managed in natural, geographical areas called River Basin Districts. Mayo is in the Western River Basin District.

The aim of the Water Framework Directive is to prevent any deterioration in the existing status of our waters, including the protection of good and high status where it exists, and to ensure that all waters are restored to at least good status by 2015. This Directive should have a positive impact on biodiversity in aquatic habitats by improving water quality in areas where it had deteriorated.

Turloughs are seasonal lakes that occupy depressions in limestone areas, and where water levels fluctuate markedly during the year. Turloughs are a priority habitat under the EU Habitats Directive because they are more or less only found in the west of Ireland. They are generally wet in winter and dry in summer. Several turloughs are found in Mayo, mainly in the south-east of the county. Turloughs tend to contain a range of interesting plants communities that comprise a mixture of aquatic and terrestrial species reflecting the changing water levels. Turloughs are often important for bird populations, including Annex I species such as whooper swan and golden plover.

The main threats to rivers, lakes and turloughs in Mayo include nutrient enrichment, siltation, drainage of surrounding wetlands and aquatic invasive species.

### *Woodlands and hedgerows*

Mayo has little native woodland although two fine examples of old native woodland can be found at Brackloon Wood, south of Westport, and Old Head Wood, near Louisburgh. Both are designated as SACs and Old Head Wood is also a nature reserve. Part of the Moy Valley SAC is composed of alluvial wet woods. Native woodlands and hedgerows generally have particularly high biodiversity value because of the wide range of wildlife they support.

Large tracts of land in Mayo have been planted with conifers. Coillte have identified biodiversity areas within all their properties and these are to be managed primarily for nature conservation. Most of these biodiversity areas are areas of high quality blanket bog or heath but some include areas of old woodland, broadleaved woodland or riparian woodland.

Threats to native woodland include invasion by species such as rhododendron and cherry laurel, lack of management and overgrazing.

### *Farmland*

Much of the land area of Mayo is devoted to agriculture and much of the county's biodiversity is associated with farmland. Hedgerows, wet grassland, unimproved grassland, ponds, scrub and stands of trees on farmland are important habitats for wildlife.

Mammals including the Irish hare, badger, stoat and fox all occur on farmland. Farmland is also important for the wide range of birds, including protected species such as whooper swans, twite and corncrakes, who take advantage of the range of habitats

### *Limestone pavement*

Limestone is a soft rock susceptible to water erosion. Exposed limestone rock or pavement forms characteristic gullies, hollows, and channels. Areas with exposed limestone are often surrounded by areas with thin calcium-rich soils. These limestone habitats often have an interesting flora of high nature conservation value e.g. species-rich grassland with orchids and areas of pavement on lake edges with the rare shrub, alder buckthorn.

Lough Carra and Lough Mask contain areas of limestone pavement around their lake shores. The rare transparent burnet moth is recorded at Lough Carra.

Threats to limestone pavement include removal or destruction of pavement and scrub encroachment.

### **Threats to Mayo's biodiversity**

While Mayo has a rich and diverse natural heritage, many of our habitats and species are under threat. The main threats to nature and biodiversity in the county are habitat destruction and fragmentation, development pressure, drainage, pollution, invasive species and climate change.

### **Climate change and biodiversity**

There is strong scientific evidence to suggest that the Earth's climate is changing. There is increasing concern that climate change poses a significant threat to the world's biodiversity. Rising temperatures and changes in rainfall patterns are likely to impact on global, regional and local biodiversity. Some of the impacts that have been predicted include changes in species distribution. In addition, there may be changes in phenology. In other words plants may flower or fruit earlier or later. This in turn may affect the animals that rely on these plants for food. Rising sea levels will impact on coastal areas, altering many sensitive habitats through flooding, erosion and eventually inundation.

Protecting biodiversity and natural ecosystems in a healthy state can help reduce the impact of climate change. For example, coastal wetlands in good condition protect inland areas against rising sea levels. Floodplains that have not been altered significantly and associated wetland ecosystems can limit the effects of river flooding. Intact freshwater wetlands maintain clean water for drinking supplies.

### **Invasive species**

Alien species are plants or animals that have been introduced, usually by people, outside their natural range. Alien species can sometimes become 'invasive' when they spread rapidly and outcompete the native flora and fauna, pushing out native species and/or leading to environmental degradation. Invasive species present one of the greatest threats to biodiversity world-wide.

Problematic invasive plants found in Mayo include Giant rhubarb (*Gunnera tinctoria*), Japanese knotweed, and Rhododendron. The highly invasive zebra mussel was found in Lough Conn in 2006. For more information and advice see: [www.invasivespeciesireland.com](http://www.invasivespeciesireland.com)

### ***Gunnera* eradication project**

In 2006, Mayo County Council, supported by The Heritage Council initiated a research project, to investigate the most effective means of controlling the growth and spread of *Gunnera tinctoria*. Plot experiments were established on a range of site types on Achill Island, to assess the efficacy of chemical treatment and mechanical removal of *Gunnera* and to monitor its growth. Monitoring seedling germination is particularly important because of the large and long-lived seed bank produced by this species. Herbicide applications were carefully controlled and considerable care taken to ensure that there are no significant direct or indirect environmental side effects. A mapping

project to accurately describe the distribution, impact and habitats invaded by *Gunnera* on Achill and Clare Island was also undertaken. This enables us to identify the areas where *Gunnera* has the greatest impact and poses the greatest threat to biodiversity to be prioritised for immediate attention. Information obtained from this project provides a basis for establishing the most effective approach to control the growth and spread of *Gunnera*. This information was also used to initiate an awareness campaign, produce guidelines and an information leaflet for farmers and landowners on how best to control and eradicate *Gunnera*.

## Policies and legislation

### Local policies and plans

Local authorities have a central role in protecting the environment and nature through forward planning and development control to ensure sustainable development. Local authorities fulfil their responsibilities in relation to nature conservation primarily through the objectives and policies in County Development Plans, and through the planning process.

The County Mayo Development Plan 2008–2014 includes several policies that relate to the conservation of natural heritage including the following (for more see Appendix 2):

- **Action O/H-G 2** It is an objective of the Council to prepare a Biodiversity Plan for the County and to support its implementation.
- **P/H-G 1** It is the policy of the Council to conserve, protect and enhance the special character of the County as defined by its natural heritage and biodiversity, its built environment, landscape and culture in co-operation with the Department of the Environment, Heritage and Local Government, the Heritage Council and all relevant agencies, bodies etc.
- **P/H-G 3** It is the policy of the Council to support the implementation of the National Biodiversity Plan.

The mission statement of the Mayo Corporate Plan is to improve the quality of life for people living in Mayo and enhance the attractiveness of the county as a place to live in, work, enjoy, visit and invest. One of the goals of the plan is as follows:

*‘Protect the natural environment of the County and encourage appropriate renewal and development, while retaining the visual attractiveness of Mayo in accordance with the principles of sustainable and balanced development.’*

The Mayo County Development Board Strategy (2002–2012) is a 10-year Integrated Strategy for the Economic, Social & Cultural Development of County Mayo. The Vision Statement of the strategy is to make Mayo “A Great Place in which to Work, Invest & Visit”, “A Great Place to Live”, and “A Model of Sustainable Development.” A number of themes contribute to realising this vision. For example, under the Strategic Theme 1: A Spatial Perspective, one of the objectives of the strategy is:- *‘To value, manage, protect and enhance the natural environment and landscape, and to promote sound environmental practice’.*

The County Mayo Heritage Plan 2006–2011 represents a vision for the management and conservation of Mayo’s heritage. The plan includes objectives in relation to raising awareness, collecting information and promoting best practice in heritage management and a number of actions to achieve these objectives. The production of a Biodiversity Action Plan for Mayo is one of the actions in the Heritage Plan.

### **National, European and international legislation**

The principal pieces of National and European legislation that afford protection to Ireland’s natural heritage are the Wildlife Act 1976, the Wildlife (Amendment) Act 2000, the European Union Habitats and Birds Directives, the European Union Water Framework Directive and the Planning and Development Act 2000.

The main mechanism for protecting important habitats, species and sites in Ireland is nature conservation designation. The main designations in Mayo include Natural Heritage Areas (NHA), Special Areas of Conservation (SAC) and Special Protection Areas (SPA). Appendix 3 lists the sites designated and proposed for designation in the county. Mayo also contains a National Park and three nature reserves.

Another designation is that of Salmonid Waters, under the European Communities (Quality of Salmonid Waters) Regulations 1988. Ireland is also a signatory to the international treaty, the Convention on Biological Diversity (1992).

The conservation of biodiversity is also an integral component of some other important pieces of European legislation that have broader goals. The Water Framework Directive seeks to establish ‘good ecological status’ of all waters in Ireland by 2015; the Environmental Impact Assessment (EIA) Directive includes ‘flora and fauna’ as a separate chapter when assessing the impacts of a proposed development; and the recent Environmental Liability Directive will allow for the repair and restoration of protected habitats where damage has occurred.

#### **Convention on Biological Diversity (CBD)**

This international treaty was drawn up in response to the increasing loss of our most precious living resource, biological diversity, due to globalization and environmental degradation. It recognises that the world is impoverished by this loss, and even threatened by it.

*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](http://www.cbd.int)**

## **County Mayo Biodiversity Action Plan**

### **Objectives**

The actions below are arranged under three objectives similar to those adopted by the County Mayo Heritage Forum in the County Mayo Heritage Plan 2006- 2011. The only difference is that the focus of the County Mayo Biodiversity Action Plan is solely on natural heritage.

**Objective 1: Increase awareness, understanding and appreciation of Mayo's biodiversity and natural heritage.**

**Objective 2: Collect and make accessible biodiversity/ natural heritage information**

**Objective 3: Promote best practice in natural heritage management and conservation**

### **Rationale for selecting actions**

Actions selected for the County Mayo Biodiversity Action Plan were based on the results of extensive consultation with a wide range of organisations, groups and individuals. Submissions to the plan were sought from all the relevant stakeholders including state bodies, academic institutions, environmental non-governmental organisations, natural heritage experts, community groups and the general public. A full list of those consulted with is provided in Appendix 1.

One of the main issues that arose in the consultation process was that many people don't know what biodiversity is and why it is important. In order to conserve and manage biodiversity and nature in the county for the benefit of all, it is essential to raise awareness and understanding of the importance and role of biodiversity. Several actions focus on awareness-raising and educational activities, as well as increasing participation in nature conservation.

The collection and dissemination of data on the biological diversity resources in the county was also identified as a priority. Habitat mapping projects identify local areas of ecological interest. Surveys of key habitats such as wetlands and other habitats to be prioritised by the Biodiversity Working Group will add to the biodiversity knowledge base in the county, which is important for helping to make decisions in relation to nature conservation and sustainable development. It is also recognised that it is important to promote and support best practice in relation to the conservation and management of biodiversity and natural heritage. Several actions relate to natural heritage conservation and management, including actions targeted at the local authority in this regard.

The Biodiversity Working Group will play an important role in implementing the plan and establishing criteria for prioritising habitats and species for future action. They will also monitor and review progress of the actions on the plan, with a view to developing the subsequent plan.

## The actions

### Objective 1: Increase awareness, understanding and appreciation of Mayo's biodiversity and natural heritage.

	Action	Potential partners	Link to Heritage Plan
1.1	<p><b>Develop a biodiversity awareness-raising campaign. Produce interpretive material as part of the campaign.</b></p> <p>Focus on the following:</p> <ul style="list-style-type: none"> <li>• General awareness of biodiversity and Mayo's rich natural heritage.</li> <li>• The importance of riparian and aquatic habitats for wildlife, water quality and flood control.</li> <li>• The impact of climate change on biodiversity.</li> </ul>	<p>MCC, Biodiversity Working Group, NPWS, NWRFB, WRFB, Teagasc, Forest Service, WRBD, BnM, ENGOs</p>	1.6

	<b>Action</b>	<b>Potential partners</b>	<b><i>Link to Heritage Plan</i></b>
<b>1.2</b>	<b>Produce a series of information leaflets on the main invasive species in Mayo, promoting best practice in relation to their control.</b> E.g. Japanese knotweed, Rhododendron and Gunnera.	MCC, Biodiversity Working Group, Coillte, Forest Service, Conservation Volunteers of Ireland, Invasive Species Ireland campaign, NPWS, NWRFB, WRFB	<i>1.13</i>
<b>1.3</b>	<b>Promote and support the development of natural heritage walking trails.</b>	MCC, Biodiversity Working Group, Leader, Community Groups, NPWS	<i>3.5</i>
<b>1.4</b>	<b>Organise biodiversity/ wildlife walks and talks for the public.</b>	MCC, Biodiversity Working Group, NPWS, ENGOS.	<i>1.3</i>

	<b>Action</b>	<b>Potential partners</b>	<b><i>Link to Heritage Plan</i></b>
<b>1.5</b>	<p><b>Promote and support increased participation in nature and biodiversity conservation.</b></p> <ul style="list-style-type: none"> <li>• Select species for flagship projects that encourage public participation in recording important and easily identifiable species.</li> <li>• Support community-led nature conservation projects such as those run by Tidy Towns Groups or schools.</li> <li>• Run a wildlife poster photo competition</li> </ul>	MCC, Biodiversity Working Group, Leader, Tidy Towns and Community Groups, NPWS	<i>1.12</i>
<b>1.6</b>	<b>Develop a schools competition to promote the importance of nature and biodiversity.</b>	MCC, Biodiversity Working Group	
<b>1.7</b>	<b>Organise a course in natural heritage conservation.</b>	Mayo County Council, Biodiversity Working Group, Leader, ENGOS	<i>3.3</i>
<b>1.8</b>	<b>Develop and promote a County Mayo Biodiversity Website.</b>	MCC, Biodiversity Working Group	
<b>1.9</b>	<b>Produce interpretive signage for key natural heritage sites in the county.</b>	Mayo County Council, Biodiversity Working Group, Leader	

	<b>Action</b>	<b>Potential partners</b>	<b><i>Link to Heritage Plan</i></b>
<b>1.10</b>	<b>Raise awareness of the importance of hedgerows for wildlife, landscapes and the environment, and promote their conservation and management.</b>	Mayo County Council, Biodiversity Working Group, Teagasc, Crann, NPWS	

**Objective 2: Collect and make accessible biodiversity / natural heritage information**

	<b>Action</b>	<b>Potential partners</b>	<b><i>Link to Heritage Plan action</i></b>
<b>2.1</b>	<b>Continue to conduct habitat mapping projects.</b>	MCC, Biodiversity Working Group	2.4
<b>2.2</b>	<b>Identify areas of local nature conservation importance in the county.</b> <ul style="list-style-type: none"> <li>• Include sites identified in Local Area Plans and habitat mapping projects.</li> <li>• Explore options for protecting these areas.</li> </ul>	MCC, Biodiversity Working Group, NPWS, Forest Service, Coillte, Teagasc, ENGOs, NWRFB, WRFB	
<b>2.3</b>	<b>Continue to update the County Mayo Biological Database established in 2007.</b>	MCC, Biodiversity	2.2, 2.5 and 2.6

	<b>Action</b>	<b>Potential partners</b>	<i>Link to Heritage Plan action</i>
		Working Group, GMIT, NPWS	
<b>2.4</b>	<b>Establish criteria for prioritising habitats and species in the county for future action</b> e.g. Marsh fritillary butterfly, coastal habitats. Prioritise projects that address the information gaps identified in the 2007 Audit of Natural Heritage Datasets for County Mayo.	MCC, Biodiversity Working Group	
<b>2.5</b>	<b>Conduct a survey of cutover and cutaway peatlands to identify their potential for creating natural reserves.</b>	MCC, Biodiversity Working Group, Coillte, IPCC, BnM, Forest Service	
<b>2.6</b>	<b>Ensure that all Environmental Impact Statements are lodged with ENFO.</b>	MCC, Biodiversity Working Group	
<b>2.7</b>	<b>Support the collection of biological data and the lodging of these data in the National Biodiversity Data Centre.</b>	MCC, Biodiversity Working Group	
<b>2.8</b>	<b>Promote and support participation in national biodiversity events and surveys</b> e.g. Dawn Chorus, National Bat Surveys and IWDG cetacean surveys.	MCC, Biodiversity Working Group,	

	<b>Action</b>	<b>Potential partners</b>	<i>Link to Heritage Plan action</i>
		IWDG, NPWS, Coillte, Forest Service, BirdWatch, Bat Conservation Ireland.	
<b>2.9</b>	<b>Conduct a pilot survey of representative wetland habitat types in the county</b>	MCC, Biodiversity Working Group, NPWS	

**Objective 3: Promote best practice in natural heritage management and conservation.**

	<b>Action</b>	<b>Potential partners</b>	<i>Link to Heritage Plan action</i>
<b>3.1</b>	<b>Pilot a local nature conservation project with a community group and a school.</b>	MCC, Biodiversity Working Group, Leader, Community Groups	

	<b>Action</b>	<b>Potential partners</b>	<b><i>Link to Heritage Plan action</i></b>
3.2	<p><b>Conduct an audit of the nature conservation value and potential of Local Authority owned and managed land.</b></p> <ul style="list-style-type: none"> <li>Identify opportunities for protecting and enhancing biodiversity at these sites.</li> </ul>	MCC, Biodiversity Working Group, Community Groups, Town Councils	
3.3	<p><b>Develop a biodiversity training programme and biodiversity guidelines for Local Authority staff.</b></p>	MCC, Biodiversity Working Group, GMIT, NPWS,	3.7, 3.12
3.4	<p><b>Develop a Hedgerow Conservation Policy based on the results from the 2007 County Mayo Hedgerow Survey.</b></p> <ul style="list-style-type: none"> <li>Promote best practice maintenance of roadside hedgerows and verges.</li> </ul>	MCC, Biodiversity Working Group, Crann, Teagasc	
3.5	<p><b>Promote and support the retention of existing natural habitats and creation of new natural habitats in new developments.</b></p>	MCC, Biodiversity Working Group, NPWS, BirdWatch	
3.6	<p><b>Support the implementation of the relevant national Habitat and Species Action Plans, and the National Biodiversity Plan.</b></p>	MCC, Biodiversity Working Group, NPWS	
3.7	<p><b>Continue efforts to eradicate <i>Gunnera</i>.</b></p>	MCC, Biodiversity Working Group, NPWS	

	<b>Action</b>	<b>Potential partners</b>	<i>Link to Heritage Plan action</i>
<b>3.8</b>	<b>Monitor the implementation of the Biodiversity Action Plan and publish an annual review with a view to developing the subsequent 5-year plan.</b>	MCC, Biodiversity Working Group.	

BnM – Bord na Mona

ENGOS – Environmental Non-Governmental Organisations (e.g. Crann, IPCC, BirdWatch etc.)

GMIT – Galway Mayo Institute of Technology

IPCC – Irish Peatland Conservation Council

MCC – Mayo County Council

NPWS – National Parks and Wildlife Service

NWRFB – North Western Regional Fisheries Board

WRBD – Western River Basin District

WRFB – Western Regional Fisheries Board

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## Useful websites

[www.batconservationireland.org](http://www.batconservationireland.org)

[www.birdwatchireland.ie](http://www.birdwatchireland.ie)

[www.botanicgardens.ie](http://www.botanicgardens.ie)

[www.bsbi.org.uk](http://www.bsbi.org.uk)

[www.cfb.ie](http://www.cfb.ie)

[www.ciel.org/biodiversity/whatisbiodiversity.html](http://www.ciel.org/biodiversity/whatisbiodiversity.html)

[www.coford.ie](http://www.coford.ie)

[www.coillte.ie](http://www.coillte.ie)

[www.epa.ie](http://www.epa.ie)

[www.heritagecouncil.ie](http://www.heritagecouncil.ie)

[www.ipcc.ie](http://www.ipcc.ie)

[www.mothsireland.ie](http://www.mothsireland.ie)

[www.nbdc.ie](http://www.nbdc.ie)

[www.npws.ie](http://www.npws.ie)

[www.teagasc.ie](http://www.teagasc.ie)

[www.wetlands.org](http://www.wetlands.org)

## Appendix 1: Consultees and consultation process

### Consultation methodology

The consultant ecologists worked closely with the Biodiversity Working Group and Heritage Officer to formulate the draft plan. During October and November 2007 three meetings of the Biodiversity Working Group were held.

The actions identified in this plan arose directly from extensive consultation that took place with stakeholders (including the relevant statutory bodies), as well as, a review of the existing data on biodiversity in the county. A consultation questionnaire was circulated widely and many submissions received.

### Submissions were received from the following:

Contact		Organisation
Simon	Berrow	IWDG
Michael	Biggins	IFA
Ken	Bond	Moths Ireland and University College Cork
David	Breen	Mayo County Development Board
Sue	Callaghan	NPWS
Mary	Callaghan	Mulranny Tidy Towns
Sean	Carolan	Mulranny Tidy Towns
Dympna	Clarke	Mayo Branch BirdWatch Ireland
Declan	Cooke	NWRFB
Anne	Coyne	Clare Island
Ruaidhri	de Barra	WRFB
Orla	Fahy	Forest Service
Julie	Fossit	NPWS
Geoff	Hamilton	Red Squirrel Survey 2007
Chris	Huxley	Ecological Consultant
Tom	Kavanagh	Forest Service
Heather	Kelly	Local resident
Sean	Lysaght	GMIT
Sarah	Malone	Irish Peatland Conservation Council
Kate	McAney	Vincent Wildlife Trust
Bernie	McGreal	Local resident
Neville	McKee	Copeland Bird Observatory
Derek	McLoughlin	BirdWatch Ireland
John	Meeghan	Irish Wildlife Trust
Brian	Nelson	Dragonfly Ireland, Ulster Museum
Padraic	O'Grady	Clare Island
John	O'Donnell	Mayo County Council Newport
Seamus	O'Monghain	Teagasc
Jo	Ortelli	Leader
Sean	Quealy	Coillte
Wendy	Stringer	Mayo Branch BirdWatch Ireland
Dennis	Strong	NPWS
Dave	Suddaby	BirdWatch Ireland
Michael	Viney	Journalist/ Author
Aisling	Walsh	Ecologist
Mike	Williams	NUIG

### Members of the Biodiversity Working Group

Cllr. Johnny Mee (Chair)	Elected Representative	Mayo County Council
John Mc Myler	Senior Executiver Planner	Mayo County Council
Michael Lyons	Senioe Executive Engineer	Mayo County Council
Deirdre Cunningham	Heritage Officer	Mayo County Council
Declan Cooke	Manager Moy Fishery	NWRFB
Ruairdhi de Barra		WRFB
Jo Ortelli	Development Offficer	SW Mayo Development Company
Michael Williams	Professor of Geology	NUIG
Sue Callaghan	District Conservation Officer	NPWS
Sean Lysaght	Lecturer	GMIT
Seamus O Monghain		Teagasc
Tom Kavanagh	Forestry Inspector	Forest Service
Derek McLoughlin		BirdWatch Ireland Mayo Branch
Michael Biggins	Chairman	Mayo IFA

## **Appendix 2: County Mayo Development Plan 2008- 2014**

### *Natural heritage policies and objectives*

**P/EH-NH 1** It is the policy of the Council to protect, enhance and conserve:

a) Candidate Special Areas of Conservation, Special Protection Areas and proposed National Heritage Areas listed in Appendix V or any additional such areas that may be so designated during the lifetime of the plan.

b) Natural habitats and plant and animal species identified under the Habitats Directive, Birds Directive, Wildlife Act and the Flora Protection Order or any other relevant legislation that may be implemented during the lifetime of the plan including bogs, fens and turloughs listed in Appendix V.

c) Features of natural interest and amenity which provide a unique habitat corridor for wildlife including hedgerows, stone walls, shelterbelts, woodlands, individual or groups of trees and forest amenity areas.

d) Features of geological interest, bogs, fens and turloughs listed in Appendix V

e) The conservation value of disused railway lines, waterways, walkways etc notwithstanding that some of these items (e.g. disused rail lines) may be developed at some future date as part of the County's infrastructure.

f) Surface waters, aquatic and wetland habitats and freshwater species through the implementation of the EU Water Framework Directive.

**P/EH-NH 2** It is the policy of the Council to ensure that the unique ecological, scenic, recreational and environmental character of the National Park is protected and enhanced and to prohibit any development that would impair its character.

**P/EH-NH 3** It is the policy of the Council to establish a buffer, free of development, at least 30m wide in width around designated ecological sites which may be larger depending on local ecological and drainage conditions and other factors as appropriate.

### **OBJECTIVES**

**O/EH-NH 1** It is an objective of the Council to make Tree Preservation Orders, Special Amenity Area Orders and Landscape Conservation Orders where necessary.

**O/EH-NH 2** It is an objective of the Council to strictly control unauthorized removal of beach material and make prohibition orders where necessary.

**O/H-G 2** It is an objective of the Council to prepare a Biodiversity Plan for the County and to support its implementation.

### **Appendix 3: List of designated sites in Mayo**

#### **Natural Heritage Areas (NHAs)**

<b>Site Code</b>	<b>Site Name</b>
000548	Tawnymackan Bog
001473	Bangor Erris Bog
001548	Pollatomish Bog
001566	Tristia Bog
001567	Tullaghan Bay and Bog
001570	Ummerantarry Bog
002381	Doogort East Bog
002383	Croaghmoyle Mountain
002391	Inagh Bog
002403	Sraheens Bog
002419	Glenturk More Bog
002420	Cunnagher More Bog
002432	Forrew Bog
002446	Ederglen Bog
002455	Lough Greney Bog

#### **Proposed Natural Heritage Areas (pNHAs)**

<b>Site Code</b>	<b>Site Name</b>
000215	Rathbaun Turlough
000385	Rostaff Turlough
000459	Altaconey Bog
000467	Benaderreen Cliffs
000469	Bills Rocks
000477	Clare Island
000481	Coolbarreen Lough
000482	Creevagh Head
000483	Croagh Patrick
000494	Downpatrick Head
000502	Gowlaun Bog
000506	Inishglora and Inishkeeragh
000509	Inishturk
000510	Kilgarriff Bog
000511	Killaturly Turlough
000512	Kinrovar Machair
000519	Lough Conn and Lough Cullin
000523	Lough Gower
000546	Stags of Broadhaven
000550	Towerhill Lake
000735	Maumtrasna Mountain Complex
001278	Burren Rock
001470	Ardogommon Wood
001472	Mountpleasant School Turlough
001483	Cloghmoyle Dunes
001485	Cloonagh Lough (Mayo)
001486	Cloonboorhy Lough
001488	Cooraun Point Machair/Dooreel Creek

001491	Dambaduff Lough
001492	Carrowmore Lough Shore
001499	Drumleen Lough
001500	Eagle Island
001504	Frehill Island
001511	Inishdegil Islands
001517	Killala Esker
001518	Kinlooney Lough
001520	Knappagh Woods
001527	Lough Alick
001528	Lough Beg, Carrowmore
001533	Lough Manan
001559	Slisheen Turlough
001910	Mannin and Island Lakes
001967	Inishgalloon
001968	Mweelaun Island
001969	Caher Island
001970	Ballybeg Island
001971	Inishdalla
002078	Moy Valley

#### **Candidate Special Areas of Conservation ( cSACs)**

<b>Site Code</b>	<b>Site Name</b>
000297	Lough Corrib
000458	Killala Bay/Moy Estuary
000461	Ardkill Turlough
000463	Balla Turlough
000466	Bellacorick Iron Flush
000470	Mullet/ Blacksod Bay Complex
000471	Brackloon Woods
000472	Broadhaven Bay
000475	Carrowkeel Turlough
000476	Carrowmore Lake Complex
000479	Cloughmoyne
000480	Clyard Kettle-Holes
000484	Cross Lough (Killadoon)
000485	Corraun Plateau (Extension To Corraun)
000492	Doocastle Turlough
000495	Duvillaun Islands
000497	Flughany Bog
000500	Glenamoy Bog Complex
000503	Greaghans Turlough
000504	Kilglassan/Caheravoostia Turlough Complex
000507	Inishkea Islands
000516	Lacken Saltmarsh And Kilcummin Head
000522	Lough Gall Bog
000525	Shrule Turlough
000527	Moore Hall (Lough Carra)
000532	Oldhead Wood
000534	Owenduff/Nephin Complex

000541	Skealaghan Turlough
000542	Slieve Fyagh Bog
000633	Lough Hoe Bog
001482	Clew Bay Complex
001497	Doogort Machair/Lough Doo
001501	Erris Head
001513	Keel Machair/Menaun Cliffs
001529	Lough Cahasy, Lough Baun and Roonah Lough
001536	Mocorha Lough
001571	Urlaur Lakes
001774	Lough Carra / Mask Complex
001899	Cloonakillina Lough
001922	Bellacorick Bog Complex
001932	Mweelrea/ Sheefry/ Erriff Complex
001955	Croaghaun/Slievemore
002005	Bellacragher Saltmarsh
002006	Ox Mountains Bogs
002081	Ballinafad
002144	Newport River
002177	Lough Dahybaun
002179	Towerhill House
002243	Clare Island Cliffs
002268	Achill Head
002298	River Moy
002320	Kildun Souterrain

#### **Special Protection Areas ( SPAs)**

<b>Site Code</b>	<b>Site Name</b>
004004	Iniskea Islands
004036	Killala Bay/Moy Estuary
004037	Blacksod/ Broadhaven
004042	Lough Corrib
004051	Lough Carra
004052	Carrowmore Lake
004053	Lough Conn
004054	Lough Cullin
004055	Cross Lough (Mullet)
004062	Lough Mask
004072	Stags Of Broadhaven
004074	Illanmaster
004084	Inishglora And Inishkeeragh
004093	Termoncarragh Lake & Annagh Machair
004098	Owenduff/Nephin Complex
004111	Duvillaun Islands SPA
004177	Bills Rock SPA

## Appendix 4: Important plant species found in County Mayo

Red data book species - List of species of conservation concern

Flora Protection Order – Plant species protected by section 21 of the Wildlife Act under the Flora Protection Order 1999

Name	Latin name	Protection / designation	Current Status	Present threats / issues	Current Work
	<i>Petalophyllum ralfsii</i>	Annex II	Rare – occurs on Machair on Mullet		
	<i>Camptothecium nitens</i>	Red data	Occurring on Iron flushes		
Alpine saw-wort	<i>Saussurea alpina</i>	Red Data Book Vulnerable	Recorded in four sites in Mayo		
Bearberry	<i>Arctostaphylos uva-ursi</i>		Number of coast heath sites		
Black bog rush	<i>Schoenus nigricans</i>		Common in acidic lowland blanket bogs that is unusual as it's a common fen species. This is because of the influence of air borne salt from the Atlantic ocean		
Bog orchid	<i>Hammarbya paludosa</i>	Protected under the Flora Protection Order Red Data Book species	Recorded in one site in Mayo		
Chives	<i>Allium schoenoprasum</i>	Protected under the Flora Protection Order Red data book species	Occurs on open limestone pavement on the karstic margin of Lough Mask in east Mayo		

Name	Latin name	Protection / designation	Current Status	Present threats / issues	Current Work
Dense-flowered orchid	<i>Neotinea maculata</i>	Red data book species	Occurs in limestone areas of Lough Carra and Mask		
Great burnet	<i>Sanguisorba officinalis</i>	Red Data Book species Protected under the Flora Protection Order	Records from Lough Conn and Lough Cullin		
Heath cudweed	<i>Omalotheca sylvaticia</i>	Red Data Book species Protected under the Flora Protection Order	Number of sites including Clare island		
Intermediate wintergreen	<i>Pyrola media</i>	Red Data Book species Vulnerable	Number of records for Mayo		
Irish lady's tresses	<i>Spiranthes romanzoffianna</i>	Protected under the Flora Protection Order	Sites around Lough Conn	Lake shore development	
Irish St John's-wort	<i>Hypericum canadense</i>	Protected under the Flora Protection Order Red Data Book species	5 sites recorded around Lough Mask		
Juniper	<i>Juniperus communis</i>		Number of sites		
Limestone fern	<i>Gymnocarpium robertianum</i>	Protected under the Flora Protection Order	May be extinct – known only to one site in mayo		
Marsh clubmoss	<i>Lycopodiella inundata</i>	Protected under the Flora Protection Order Red Data Book species	Recorded in one site in west Mayo		

Name	Latin name	Protection / designation	Current Status	Present threats / issues	Current Work
Marsh fern	<i>Thelypteris palustris</i>		Recorded at Creagh	Becoming increasingly rare owing to the drainage of wetlands and fens	
Marsh saxifrage	<i>Saxifraga hirculus</i>	Red Data Book species Critical endangered Protected under the Flora Protection Order	7 sites in Mayo documented.	Rare and threatened. Only occurs in Mayo	A research project in Trinity College Dublin
Moss campion	<i>Silene acaulis</i>	Red Data Book species  Vulnerable	Number of sites in Mayo		
Mountain sorrel	<i>Oxyria dityna</i>		Number of sites including		
Narrow leaved helleborine	<i>Cephalanthera longifolia</i>	Protected under the Flora Protection Order Red Data Book species	Number of sites	Closing canopy	
Petalwort (A liverwort)	<i>Petallophyllum ralfsii</i>	Protected under the Flora Protection Order Annex II	Records from western coastal dune slacks and machairs		
Pillwort	<i>Pilularia globulifera</i>	Protected under the Flora Protection Order Red data book species	Number of Mayo sites	Threats from drainage, pollution and reclamation	
Rock sea-lavender	<i>Limonium binervosum</i> agg.	Red Data Book species but may not be endemic	Couple of sites		
Sea pea	<i>Lathyrus japonicus</i> subsp. <i>maritimus</i>	Protected under the Flora Protection Order  Red Data Book species	Only known in four locations in Ireland – species did occur on Achil but may now be gone		
Shrubby	<i>Potentilla</i>	Red data book species	One site in Mayo known		

Name	Latin name	Protection / designation	Current Status	Present threats / issues	Current Work
cinquefoil	<i>fruticosa</i>				
Slender naiad	<i>Najas flexilis</i>	Protected under the Flora Protection Order  Red Data Book species	Number of sites in west Mayo		
Spotted rock-rose	<i>Tuberaria guttata</i>	Red Data Book species  Vulnerable	Number of records		
St Dabeoc's heath	<i>Daboecia cantabrica</i>	Irish speciality	Recorded at number of sites	Occasionally recorded in south west Mayo though frequent in West Galway, but is unknown elsewhere	
Mackay's heath	<i>Erica mackaiana</i>	Red Data Book species Vulnerable Irish speciality	Recorded at number of sites		
Irish heath	<i>Erica erigena</i>	Red Data Book species	Recorded at number of sites		
Wood bitter-vetch	<i>Vicia orobus</i>	Protected under the Flora Protection Order	Known at one site near Headford		
Wood small-reed	<i>Calamagrostis epigejos</i>	Protected under the Flora Protection Order  Red data book species	One site in Mayo maybe extinct		

## Appendix 5: Important animal species found in County Mayo

**Red data book species** – List of species of conservation concern

**Annex I** lists the bird species for which conservation requires the designation of Special Protection Areas under the EU Birds Directive.

**Annex II** lists the plants and animals for which conservation requires Special Areas of Conservation designation under the EU Habitats Directive.

Name	Latin name	Red Data Book Species	Annex I or II species	Current Status	Present threats / issues	Current Work / Comments
Barnacle geese	<i>Branta leucopsis</i>	Amber List	Annex I	Mayo supports large population (Circa 3000) of this internationally important species	Disturbance Conflicts with farmers	
Black-headed gull	<i>Larus ridibundus</i>	Amber List	Annex II	Numbers declining	Predation by mink	
Chough	<i>Pyrhocorax pyrrhocorax</i>	Red list	Annex I	2002-3 survey show little change in breeding population – circa 65 pairs	Low population	
Common scoter	<i>Melanitta nigra</i>	Red list	Annex II	Loughs Conn and Cullin are one of the few breeding sites in Ireland - 1999 recorded 30 birds but only 5 breeding pairs	Mink - may have cause recent decline in breeding pairs. Also possible changes in food supply and/or redistribution to other sites. Disturbance may also be a factor	Survey of wintering populations required and research of breeding declines
Common tern	<i>Sterna hirundo</i>	Amber list	Annex I	Last survey in 1995 – circa 120 pairs	Increased beach use may be pushing	Need for breeding tern

Name	Latin name	Red Data Book Species	Annex I or II species	Current Status	Present threats / issues	Current Work / Comments
					species to breed on off-shore islands	survey
Corncrake	<i>Crex crex</i>	Red list	Annex I	17 singing males 2007 survey	Farm management techniques, drainage, habitat loss	BirdWatch annual corncrake project
Curlew	<i>Numenius arquata</i>	Red list	Annex II	Unknown	Predation Disturbance Agricultural improvements	Need for breeding and wintering survey
Dunlin	<i>Calidris alpina</i>	Amber list	Annex I	Unknown - Appear to be mainly confined to Inishkea North (circa 40 pairs in 2007). Unknown population size on peatland / upland sites	Predation Disturbance Agricultural improvements	Need for breeding survey for all habitats
Fulmar	<i>Fulmarus glacialis</i>			One of the largest national breeding colonies is on Clare Island. In 1987 - (2,555 pairs), recorded		Seabird 2000 survey
Golden plover	<i>Pluvialis apricaria</i>	Amber list	Annex I	Winter and upland breeding populations (about 30 pairs 2004)		Breeding and wintering surveys required
Great northern diver	<i>Gavia immer</i>	Amber list	Annex I	Wintering species	Survey required, unknown impacts of aquaculture	
Greenland	<i>Anser albifrons</i>	Amber List	Annex I	Small flocks over-winter	Habitat loss	NPWS annual

Name	Latin name	Red Data Book Species	Annex I or II species	Current Status	Present threats / issues	Current Work / Comments
white-fronted geese					Disturbance	survey
Lapwing	<i>Vanellus vanellus</i>	Red List	Annex II	Small breeding population Overwintering		
Leach's petrel	<i>Oceanodroma leucorhoa</i>	Amber list	Annex I	Only breeding site in Ireland is Stags of Broadhaven		Seabird 2000 survey
Little tern	<i>Sterna albifrons</i>	Amber list	Annex I	Circa 30 pairs on Inishkeas	Increased beach use may be pushing species to breed on off-shore islands	NPWS annual survey
Merlin	<i>Falco columbarius</i>	Amber list	Annex I	Population unknown		Survey required
Pale-bellied brent geese	<i>Branta bernicla hrota</i>	Amber list	Annex II	Small flocks over-winter		
Puffin	<i>Fratercula arctica</i>	Amber list		Breeding colony north Mayo islands		
Red grouse	<i>Lagopus lagopus scoticus</i>	Red list	Annex II	Unknown	Lack of information Overgrazing	Survey 2007/8
Red-Neck phalarope	<i>Phalaropus lobatus</i>	Red List	Annex I	Low numbers sporadic breeder in Ireland		LIFE Project finished 2005. Birdwatch Ireland manage Annagh marsh
Redshank	<i>Tringa totanus</i>	Amber list	Annex II	Unknown		
Ringed plover	<i>Charadrius hiaticula</i>			Breeding population in Mayo unknown		Breeding survey required

Name	Latin name	Red Data Book Species	Annex I or II species	Current Status	Present threats / issues	Current Work / Comments
Sandwich tern	<i>Sterna sandvicensis</i>	Amber list	Annex I	Last survey 1995 (circa 150 pairs)	Increased beach use may be pushing species to breed on off-shore islands	Breeding Survey required
Skylark	<i>Alauda arvensis</i>	Amber List		Population unknown	Survey required	
Snipe	<i>Gallinago gallinago</i>	Amber list	Annex II	Breeding population unknown	Survey required Drainage	
Storm petrel	<i>Hydrobates pelagicus</i>	Amber list	Annex I	Important breeding populations on coastal islands		Inishglora survey. Seabird 2000 Survey
Twite	<i>Carduelis flavirostris</i>	Red list Endangered		Low numbers – breeding north coast. Mayo has about half breeding population and may have largest wintering pop - 170 (2006)	PhD been written by D. McLoughklin Sligo IT / NPWS	
Whooper swan	<i>Cygnus cygnus</i>	Amber List	Annex I	Fluctuating but stable population, some site specific declines	Disturbance	
Yellowhammer	<i>Emberiza citrinella</i>	Red list		Population thought to be in serious decline	Lack of tillage and lack of survey information	
Common frog	<i>Rana temporaria</i>			137 records from Hop-to-it from survey run by IPCC		

Name	Latin name	Red Data Book Species	Annex I or II species	Current Status	Present threats / issues	Current Work / Comments
Common lizard	<i>Lacerta vivipara</i>			9 sightings in 2007 IWT Lizard survey		
Brown long-eared bat	<i>Plecotus auritus</i>	Red list Internationally important	Annex IV Appendix II Bern Convention	Number of records for Mayo	Renovation of old building and attic conversion.	
Common pipistrelle	<i>Pipistrellus Pipistrellus</i>	Red list Internationally important	Annex IV Appendix II Bern Convention	Relatively widespread	Attic conversion or roof work	
Daubenton's bat	<i>Myotis daubentonii</i>	Red list Internationally important	Annex IV Appendix II Bern Convention	Survey being conducted, probably relatively widespread	Renovation of old bridges resulting in loss of roosting site.	Survey 2007
Leisler's bat	<i>Nyctalus leisleri</i>	Red list Internationally important	Annex IV Appendix II Bern Convention	Number of records for Mayo		
Lesser horseshoe bat	<i>Rhinolophus hipposideros</i>	Red list	Annex II Annex IV Appendix II Bern Convention	Number of important roost sites	Renovation of old unoccupied buildings and bridges resulting in loss of roosting site.	
Natterer's bat	<i>Myotis nattereri</i>	Red list Indeterminate	Annex IV Appendix II	Small number of records for Mayo	Renovation of old unoccupied buildings	

Name	Latin name	Red Data Book Species	Annex I or II species	Current Status	Present threats / issues	Current Work / Comments
		status	Bern Convention		and bridges resulting in loss of roosting site  Loss of hedgerows	
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>	Red list Internationally important	Annex IV Appendix II Bern Convention	Relatively widespread	Attic conversion or roof work	
Badger	<i>Meles meles</i>		Appendix III Bern Convention	Widespread		
Fallow deer	<i>Dama dama</i>			Local feral populations around Crossmolina and Partry		
Hedgehog	<i>Erinaceus europaeus</i>		Appendix III Bern Convention	Unknown – probably widespread		
Irish hare	<i>Lepus timidus hibernicus</i>		Annex V	Widely distribute		Hare survey of Ireland 2007
Otter	<i>Lutra lutra</i>	y	Annex II and IV Appendix II Bern Convention	Widely distributed		Otter Survey 2006
Pine marten	<i>Martes martes</i>	y	Annex II and IV	9 records from 2007 squirrel survey		

Name	Latin name	Red Data Book Species	Annex I or II species	Current Status	Present threats / issues	Current Work / Comments
			Appendix III Bern Convention			
Pygmy shrew	<i>Sorex minutus</i>		Appendix III Bern Convention	Unknown – probably widespread		
Red deer				Mainly released feral populations in North Mayo		
Red squirrel	<i>Sciurus vulgaris</i>			6 sightings recorded in 2007 squirrel survey – most on Mayo-Galway border	Nationally spread of grey squirrel is concern– no records for Mayo	Pilot trial release programme Belleek Woods, Ballina
Stoat	<i>Mustela erminea</i>		Appendix III Bern Convention	Unknown – probably widespread		
Wild (feral) goat	<i>Capra hircus</i>			Number of small local populations		
Harbour porpoise:	<i>Phocoena phocoena</i>		Annex II	Inshore along western and north-west coast	Fisheries by-catch especially gillnets both Static and drifting. Competition with commercial fishing for depleted fish stocks	
Bottlenose	<i>Tursiops truncatus</i>		Annex II	Coastal	Potential disturbance	

Name	Latin name	Red Data Book Species	Annex I or II species	Current Status	Present threats / issues	Current Work / Comments
dolphin					from recreational craft and commercial marine wildlife tourism vessels	
Common dolphin:	<i>Delphinus delphis</i>			Occurs seasonally along the coast	Fisheries by-catch especially gillnets and pelagic trawls. Potential disturbance from recreational craft and commercial marine wildlife tourism vessels.	
Risso's dolphin	<i>Grampus griseus</i>			Occurs especially North Mayo		
Fin whale	<i>Balaenoptera physalus</i>			Occurs off Achill		
Humpback whale	<i>Megaptera novaeangliae</i>			Migratory route of west coast		
Killer whale	<i>Orcinus orca</i>			Small number of coast		
Minke whale	<i>Balaenoptera acutorostrata</i>			Occurs seasonally along the coast	Potential disturbance from recreational craft and commercial marine wildlife tourism vessels	
Common seal	<i>Phoca vitulina</i>		Annex II	Number of coastal haul out and breeding sites		

Name	Latin name	Red Data Book Species	Annex I or II species	Current Status	Present threats / issues	Current Work / Comments
Grey seal	<i>Halichoerus grypus</i>		Annex II	Number of coastal haul out and breeding sites including Inishkeas		
Arctic charr	<i>Salvelinus alpinus</i>			Thought that population in Lough Conn has disappeared		
Atlantic salmon	<i>Salmo salar</i>		Annex II	Declining stocks		
Brook/River lamprey	<i>Lampetra planeri,</i>		Annex II	Unknown	Drainage maintenance, physical impacts of farm animals, and pollution	
Sea lamprey	<i>Petromyzon marinus.</i>		Annex II	Moderate numbers in Moy Catchment	Drainage maintenance, physical impacts of farm animals, and pollution	
Eel	<i>Anquilla anquilla</i>			Unknown	Water pollution	
Fresh water pearl mussel	<i>Margaritifera margaritifera</i>		Annex II	Deel, Newport and Bunduorragh Rivers	Water quality Siltation	.
White claw cray-fish	<i>Austropotamobius pallipes</i>		Annex II	Common in the Castlebar, Manulla, Toormore, Deel and Knock (Yellow) Rivers. Recorded in Lough Carra	Water Quality	

Name	Latin name	Red Data Book Species	Annex I or II species	Current Status	Present threats / issues	Current Work / Comments
Ampipod crustacean	<i>Gammarus duebeni</i>			Only found in Ireland and Brittany – present in Moy Catchment		
Geyer's whorl snail	<i>Vertigo geyeri</i>		Annex II	Recorded at a number of sites		
Aquatic snail	<i>Vertigo substriata</i>		Annex II	Recorded at a number of sites		
Green hairstreak butterfly	<i>Callophrys rubi</i>			Small number of records for Mayo	Probably widely overlooked	
Marsh fritillary butterfly	<i>Euphydryas aurinia</i>		Annex II	Lough Carra area and north Mayo - possibly overlooked elsewhere	Loss of habitat	Hope for survey in 2008 dependant on funding
Purple hairstreak butterfly	<i>Neozephyrus quercus</i>			Small number of Irish records – 2 in Mayo	Difficult to detect	
Small blue butterfly	<i>Cupido minimus</i>			Isolated reported colony in Bartragh area in 2005, needs investigation	Lack of survey data Developments	
Scotch annulet moth	<i>Gnophos obfuscata</i>	Status - rare		Small number of Irish records including Clare Island sea cliffs possibly occurs on other cliff sites	Lack of survey data	

Name	Latin name	Red Data Book Species	Annex I or II species	Current Status	Present threats / issues	Current Work / Comments
Belted beauty moth	<i>Lycia zonaria</i>	Status – locally common		Only records for Ireland are from west Mayo coast and Galway		
Coastal dart moth	<i>Euxoa cursoria</i>	Status - Rare		Only recent Irish record is on Mullet peninsula		
Portland moth	<i>Actebia praecox</i>	Status - Rare		Only recent Irish record is the Mullet peninsula		
Transparent burnet	<i>Zygaena purpuralis</i>	Status: Very local		Calcicole species, reaches northern Irish limit at Lough Carra		
Black-tailed skimmer	<i>Orthetrum cancellatum</i>			Records from Lough Mask and Conn		
Keeled (or Heathland) skimmer	<i>Orthetrum coerulescens</i>			Records from mountain ranges in west Mayo and Lough Conn		
Scarce emerald damselfly	<i>Lestes dryas</i>	Rare, but can be abundant in suitable sites		Wetlands in north Mayo		
Irish damselfly (or Irish Bluet)	<i>Coenagrion lunulatum</i>	Uncommon		Mesotrophic lakes and large pools on cutover bogs around Lough Mask		
Large marsh grasshopper	<i>Stethophyma grossum</i>			The northernmost localities in Ireland species occurs are around Nephin		
A predatory	<i>Ammophila sabulosa</i>	Isolated		Occurs on the Mullet		

Name	Latin name	Red Data Book Species	Annex I or II species	Current Status	Present threats / issues	Current Work / Comments
wasp		population		and Wexford coast only		
Mason wasp	<i>Ancistrocerus scoticus</i>			A scarce, coastal species. Found in Mulranny in 2007 associated with soft rock cliff and boulder beach		
A click beetle	<i>Selatosomus melancholicus</i>	Status- very rare		In Ireland it's confined to the Mullet. It appears common in the short machair grassland.		
A water beetle	<i>Berosus luridus</i>	Critically endangered		1 record for Mayo post 1980	Species needs rich ponds without fish	
A water beetle	<i>Helophorus granularis</i>	Critically endangered		2 records for Mayo post 1980	Species requires Exposed grassy pools flooded in spring	
A water beetle	<i>Hydroporus longicornis</i>	Endangered		One post 1980 record	Requires flushes in upland areas	
A woodlouse	<i>Porcellionides cinguendus</i>			Found at Mulranny in 2007 associated with soft rock cliff and boulder beach		

