IRELAND

5TH NATIONAL REPORT TO THE CONVENTION ON BIOLOGICAL DIVERSITY

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An Roinn
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Executive Summary

At the 1992 Earth Summit in Rio de Janeiro, world leaders agreed on a comprehensive strategy for "sustainable development" - meeting our needs while ensuring that we leave a healthy and viable world for future generations. One of the key agreements adopted at Rio was the Convention on Biological Diversity (CBD). Ireland is a signatory to the CBD and undertook to promote the conservation and sustainable use of biological diversity. The Convention establishes three main goals: the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of the benefits from the use of genetic resources.

This is Ireland's fifth national report to the CBD, providing information for the fourth edition of the Global Biodiversity Outlook, as well as for the mid-term review of progress towards the implementation of the Strategic Plan for Biodiversity 2011-2020, and progress towards the Aichi Biodiversity Targets. This review will be undertaken by the Conference of the Parties at its twelfth meeting in October 2014.

The guidelines for the 5th National Report were based on a series of 12 questions divided into three parts. The following provides a summary of each question.

Part I: An update on biodiversity status and trends, and implications for human well-being

Question 1: Why is biodiversity important for Ireland?

For its relatively small size Ireland has a rich biological diversity. Its marine area, which extends westward for over 200 nautical miles and comprises 90% of Ireland's territory, is of high biodiversity value, much of which has yet to be fully explored. Ireland hosts a number of important national, European and globally threatened species.

Biodiversity has an intrinsic value and it is essential to the economic and social fabric of Ireland. Over 90% of 1000 people surveyed in 2013 stated that halting biodiversity loss was a moral obligation, and that our well-being and quality of life is based on nature and biodiversity. The first attempt to quantify the marginal value of ecosystems services in Ireland in terms of their contribution to productive output and human utility was estimated to be in the region of €2.6 billion per annum (Table A).

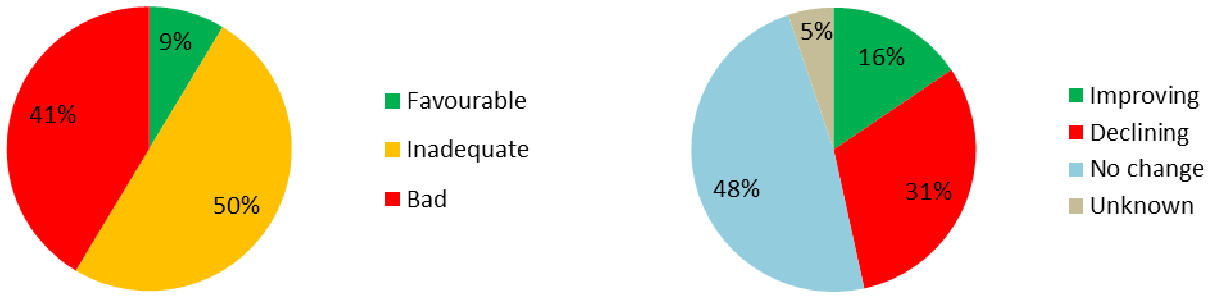
Table A: Preliminary estimates of the current marginal value of ecosystems services in Ireland in terms of their contribution to productive output and human utility.

	Marginal annual value of status-quo	Threats / comments
Agriculture	>€1200 million pa	Potentially significantly greater benefits from more sustainable agriculture
Forestry	€55 million pa.	Non-market benefits increasingly being recognized
Marine	€230 million pa.	Potentially significantly greater benefits from more sustainable resource management. Waste mitigation services not included.
Water quality	>€260 million pa.	Waste mitigation services not included.
Human welfare	>€920 million pa.	Selected benefits only
Health	Tens of millions.	unknown

Question 2: What major changes have taken place in the status and trends of biodiversity in Ireland?

Since 2007 there has been some increase in Ireland in the area of forested land, and artificial areas, and a small decrease in the total area of peatlands. The primary sources of information on the major changes that have taken place in the status and trends in biodiversity in Ireland is that provided by Ireland's reports to the EU under the Habitats and Birds Directives and Marine Strategy Framework Directive. There are limitations to the Habitats Directive status reporting, which relates only to habitats and species listed in the EU Habitats Directive and therefore excludes the most widespread agricultural and forested habitats, covering approximately 70% of the land. The first step in the implementation of the Marine Strategy Framework Directive, an Initial Assessment of Ireland's marine waters, was completed in 2013, with the development of systematic monitoring for many species and habitats still ongoing.

The Habitats Directive report was completed in 2013 and covered the period 2006-2012. Of the 58 habitats assessed, five habitats were assessed as Favourable, 29 as Inadequate and 24 as Bad. With respect to the trends in status, 15 habitats were considered to be declining, eight were improving, 32 were stable and three were unknown. (Figure A). In summary, these assessments found that the conservation of many of Ireland's marine and woodland habitats are improving somewhat, whereas problems still exist with grassland, freshwater, heath and peatland habitats.



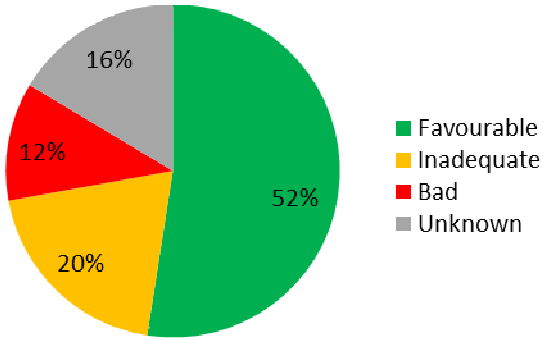
Overall Assessment for Habitats

Trends in Assessment Results for Habitats

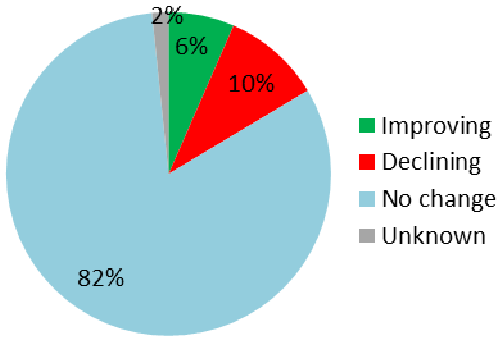
Figure A: Overall assessment results for the status and trends in habitats protected under the EU Habitats Directive in Ireland 2007-2013.

At present, there is insufficient data and no established methodology to allow a comprehensive assessment of the current status and condition of seabed habitats. Ireland is currently developing an approach for the establishment of Good Environmental Status and the targets and indicators that will support its achievement. Overall, the Initial Assessment concluded that seabed habitats in Ireland's Assessment Area are generally considered to be in a healthy condition, although some require improvement measures.

The conservation status of 61 species afforded protection under the EU Habitats Directive was also assessed (Figure B). Of these, it found that 32 species were assessed as Favourable, 12 as Inadequate, six as Bad, 11 as Unknown and 8 were considered to be vagrants. With respect to the trends, it concluded that the conservation status of six species had declined and three had improved.



Overall Assessment for Species



Trends in Assessment Results for Species

Figure B: Overall assessment results for the status and trends in species protected under the EU Habitats Directive in Ireland 2007-2013.

The 2014 Birds Directive Report, on the status of bird species under Article 12 of the EU Birds Directive, provides a detailed perspective of the population trends of the 196 species assessed, including species which live in Ireland all year round, and others which migrate to Ireland for summer or winter. Where sufficient data are available, both short-term and long-term population trends can be estimated (Table B), and trends in breeding range quantified. However, long-term data is currently lacking for over half of the species assessed.

Table B: The number of species reported as having decreasing, stable, fluctuating, increasing or unknown population trends.

Population trend	Breeding taxa		Wintering taxa	
	Short-term	Long-term	Short-term	Long-term
Decreasing	36	24	14	9
Stable	33	9	7	2
Fluctuating			9	
Increasing	51	26	14	11
Unknown	15	76	13	35

Over both short and long-term, more species populations are increasing (short-term, 36%; long-term, 19%) than decreasing (short-term, 26%; long-term, 17%). In addition, some species that have undergone marked population declines have responded positively to targeted conservation action e.g. Corncrake, Grey Partridge and Grouse. However, there remains a significant number of species in decline requiring management actions.

Finally, the Initial Assessment of the Marine Strategy Framework Directive summarises the current state of knowledge regarding the status of fish in Irish waters caught as part of on-going monitoring programs include annual assessments of commercial catches and landings made by national and international fishing fleets, together with fishery-independent surveys undertaken by research vessels. Currently, there is tentative evidence to suggest an improving picture for marine commercial fish species (Figure C).

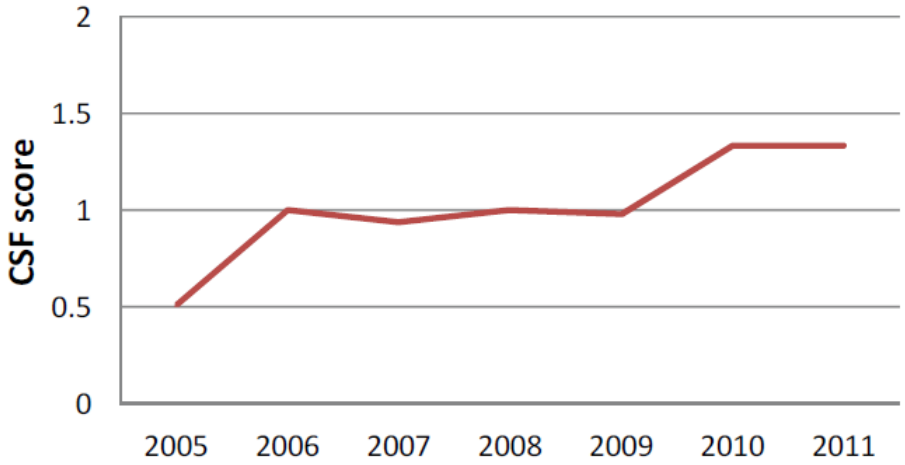


Figure C: The Conservation of Fish (CSF) Indicator based on the relative population abundance of the 20 largest species of fish caught in the Irish Groundfish Surveys. The line indicates that relative abundance of these selected vulnerable species has increased since 2010.

Question 3: What are the main pressures on biodiversity?

The principal pressures identified in Ireland's Habitats Directive report as impacting upon Ireland's biodiversity include unsuitable grazing regimes, natural system modifications, pollution and climate Change.

On terrestrial habitats, ecologically unsuitable grazing regimes have been identified as the main pressure from agriculture. The grazing pressures noted were both intensive and non-intensive grazing; the latter identified as a pressure where a habitat has not recovered from the impacts of overgrazing and even a small amount of grazing is still considered to negatively impact the habitat. Land abandonment is an additional agricultural pressure on the conservation of Ireland's biodiversity, primarily in upland regions and areas of ongoing rural depopulation. Similarly, the recent Article 12 reporting under the EU Birds Directive identified pressures from agriculture as the leading driver of population decline of bird species.

There are also other pressures resulting from what are termed 'natural system modifications'. The primary pressure is land drainage which significantly impacts peatland and other wetland habitats. Mechanical peat extraction is another very significant pressure on peatlands. Other pressures reported include burning, reclamation, dredging, sea defences, invasive species and pollution. Invasive species are a pressure on freshwater and marine habitats in particular.

Over the reporting period, it was also noted that the impact of some pressures has reduced. There has been some reduction of invasive species in woodlands, primarily driven by improved forestry management. Improvements in aquaculture management are likely to result in a reduction of pressures impacting estuaries and mudflats, while an ongoing reduction in household waste, sewage discharge and pollution arising from agricultural and forestry practices should lessen pollution pressures across habitats.

The Initial Assessment of the EU Marine Strategy Framework Directive indicates that human activities are affecting marine habitats and species, either through the discharge and runoff of nutrients and chemicals or through direct physical contact or disturbance. The actual level of impact is, however, difficult to quantify, but the range and potential severity of human pressures acting upon seabed habitats in Irish marine waters broadly decreases with increasing water depth and distance from shore.

Fishing remains the most widespread of the activities that have the potential to physically damage seabed communities. There is concern for some areas of seabed that are experiencing particularly high levels of fishing activity. Bottom fishing in areas associated with deep cold-water coral reefs is at a moderate level, but such reefs are not resilient to disturbance and have poor recoverability and it is thought that fishing pressure is likely to have adversely affected the condition of many reef complexes.

Climate change is reported as a pressure on 10% of habitats protected under the EU Habitats Directive, and there is evidence that it is already negatively impacting coastal habitats. Predictions indicate that degraded upland habitats, in particular, will become less resilient to the impacts of climate change in the immediate future. These predictions relate mainly to drier summers and higher levels of more intense rainfall which are likely to result in bog bursts and landslides which may indirectly impact other habitats such as lakes. A recent study suggests that that the current protected area network may not adequately conserve many montane species.

Question 4: What are the impacts of the changes in biodiversity for ecosystem services and the socio-economic and cultural implications of these impacts?

There is as yet insufficient knowledge of ecosystem services in Ireland to provide a comprehensive and well-founded answer to this question. Ecosystem services underpin the primary production sectors which are of great importance both economically and culturally in Ireland. A significant portion of Ireland's workforce is employed in the fishing, agriculture and forestry sectors, sectors that are wholly dependent on biodiversity. The precise impacts of changes in biodiversity on ecosystem services are currently difficult to determine. Nonetheless it may be said that ecosystem services support the following:

- 117,000 people engaged in agriculture and the agri-food sector, contributing €24 billion each year to the Irish economy.
- The €100 million per annum forestry industry, and related amenity, woodland-related domestic and international tourism and carbon sequestration benefits of the woodland estate.
- The most productive fishing grounds in the EU that generate over 900,000 tonnes of fish with an estimated landed value of €1.04 billion
- 600,000 ha of wetlands in Ireland, and a freshwater angling sector that involves 406,000 anglers generating annual expenditure of €555 million per annum.
- Human physical and mental health benefits to the population of a properly functioning biodiversity resource.

Part II: The national biodiversity strategy and action plan, its implementation, and the mainstreaming of biodiversity.

Question 5: What are the biodiversity targets set by your country?

"Actions for Biodiversity 2011-2016", Ireland's 2nd National Biodiversity Action Plan, was launched in November 2011. It identifies seven Strategic Objectives and 21 Targets to protect Irish biodiversity (Table C).

Table C: Strategic Objectives and Targets identified in Actions for Biodiversity 2011-2016, Ireland National Biodiversity Plan.

Strategic Objectives and TARGETS for 'Actions for Biodiversity 2011-2016'
1 To mainstream biodiversity in the decision making process across all sectors TARGET 1: Shared responsibility for the conservation of biodiversity and the sustainable use of its components is fully recognised, and acted upon, by all sectors TARGET 2: Legislation in support of tackling biodiversity loss in Ireland strengthened.
2 To substantially strengthen the knowledge base for conservation, management and sustainable use of biodiversity TARGET 3: Knowledge on biodiversity and ecosystem services has substantially advanced our ability to ensure conservation, effective management and sustainable use by 2016.
3 To increase awareness and appreciation of biodiversity and ecosystems services TARGET 4: Enhanced appreciation of the value of biodiversity and ecosystem services amongst policy makers, stakeholders and the general public.
4 To conserve and restore biodiversity and ecosystem services in the wider countryside TARGET 5: Optimise use of opportunities under agricultural, rural development and forest policy to benefit biodiversity. TARGET 6: Principal pollutant pressures on terrestrial and freshwater biodiversity substantially reduced by 201 TARGET 7: Optimised Benefits for biodiversity in Flood Risk Management Planning. TARGET 8: Harmful invasive alien species are controlled and there is reduced risk of spread of new species TARGET 9: Effective hedgerow and scrub management ensured by 2016 TARGET 10: Continued rehabilitation or restoration of biodiversity elements TARGET 11: Improved enforcement of Wildlife Law TARGET 12: Monitoring to provide adequate data flow for reporting on biodiversity by 2016.
5 To conserve and restore biodiversity and ecosystem services in the marine environment TARGET 13: Substantial progress made towards "good ecological status" of marine waters over the lifetime of this Plan TARGET 14: Fish stock levels maintained or restored to levels that can produce maximum sustainable yield, where possible no later than 2015
6 To expand and improve on the management of protected areas and legally protected species TARGET 15: Natura 2000 network established, safeguarded, designated by 2012 (2014 for marine SPAs) and under effective conservation management by 2016 TARGET 16: Sufficiency, coherence, connectivity and resilience of the protected areas network substantially enhanced by 2016 and further enhanced by 2020 TARGET 17: No protected habitats or species in worsening conservation status by 2016; majority of habitats or species in, or moving towards, favourable conservation status by 2020
7 To substantially strengthen the effectiveness of international governance for biodiversity and ecosystem services TARGET 18: Substantially strengthened support for biodiversity and ecosystem services in external assistance. TARGET 19: Enhanced contribution to international governance for biodiversity and ecosystem services TARGET 20: Enhanced co-operation with Northern Ireland on common issues TARGET 21: Substantial reduction in the impact of Irish trade on global biodiversity and ecosystem services

Question 6: How has your national biodiversity strategy and action plan been updated to incorporate these targets and to serve as an effective instrument to mainstream biodiversity?

Actions for Biodiversity 2011-2016 was developed in line with the CBD Strategic Plan for Biodiversity 2020 and the EU Biodiversity Strategy to 2020, that the "biodiversity loss and degradation of ecosystems are reduced by 2016 and progress is made towards substantial recovery by 2020". Government Departments and State Agencies representing all the relevant sectors were consulted on a series of draft action points in advance of the preparation of this Plan, in parallel with a public consultation process. *Actions for Biodiversity 2011-2016* focuses on actions that were not fully completed in the first National Biodiversity Plan and addresses emerging issues, such as the increased mainstreaming of biodiversity in the decision making process across public and private sectors, and strengthening the effectiveness of international governance for biodiversity and ecosystem services.

Question 7: What actions has Ireland taken to implement the Convention since the fourth report and what have been the outcomes of these actions?

Actions for Biodiversity 2011-2016 is currently the principle guidance tool for the implementation of the CBD Strategic Plan for Biodiversity 2020 in Ireland. An inter-agency Steering Group was established in 2011 to oversee and drive progress with implementation of the National Biodiversity Action Plan across Government Departments and State Agencies. Significant progress has been made in achieving the delivery of actions for biodiversity. These include:

Relevant legislation enacted or drafted:

- The revised and improved transposition of the EU Habitats Directive and the EU Birds Directive into national legislation as the European Communities (Birds and Natural Habitats) Regulations 2011.
- The implementation of *Planning and Development Act 2010* Part XAB ensures that both plans and individual projects are compliant with the EU Habitat and Birds Directives.
- The European Union (Birds and Natural Habitats) (Seafisheries) Regulations 2013 provide for the responsibilities of the Minister for Agriculture, Food and the Marine in relation to sea-fisheries in Natura 2000 sites.
- A new *Forestry Bill* was presented to Dáil Éireann in October 2013. The primary purpose of the Bill is to reform and update the legislative framework relating to forestry and to support the development of a modern forest sector, which operates in accordance with good forest practice and with a view to the protection of the environment.
- The *European Communities (Environmental Impact Assessment)(Agriculture) Regulation* (S.I.456/11) was introduced in 2011 to give effect to the new provisions and procedures compliant with the Environmental Impact Assessment Directive.

Government Policies implemented:

- The steps required to provide legal protection to Ireland's terrestrial network of Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) were largely completed during this reporting period. A final formal designation of sites is underway, although legal protection is already in place.
- Considerable progress has been achieved in protecting the best remaining examples of raised bogs in Ireland. In May 2010, the Government prohibited turf cutting on 31 raised bog SACs, and decided that turf-cutting would cease on a further 24 raised bog SACs at the end of 2011.

- A draft National Peatlands Strategy, Raised Bog SAC Management Plan and Review of the Raised Bog NHAs were published in early 2014. The objective of the Peatlands Strategy is to set down clear principles which will guide Government policy in relation to all Irish peatlands. These principles will be applied through their incorporation into the more detailed sectoral plans, policies and actions adopted and undertaken for each policy area.
- The *National Strategic Environmental (SEA) Assessment Forum* has been established with all five environmental authorities represented, with regional Fora established in association with the regional authorities.
- The implementation of the "*Green Tenders – An Action Plan for Green Public Procurement*" is ongoing through the Green Tenders Implementation Group (GTIG) established in 2012
- In May 2013, Ireland launched a new policy for International Development " *One World One Future: Summary of Ireland's Policy for International Development*" which places importance on Biodiversity as part of the priority area for action on Climate Change and Development.
- In 2012, a framework for advancing sustainable development and the green economy in Ireland was published, entitled "*Our Sustainable Future*". The framework aims to integrate sustainable development into key areas of policy, to put in place effective implementation mechanisms and to progress sustainable development.
- Ireland's "*National Climate Change Adaptation Framework"* was published in 2012. Sectoral adaptation plans, including one for biodiversity, are being drafted in 2014.
- The EU Water Framework Directive National Monitoring Program is now in place.

Relevant funding programmes:

Despite the economic recession significant financial and human resources continue to be placed in order to fulfil the actions outlined in the NBAP. These include:

- The State employs approximately 170 people directly engaged in biodiversity protection, management and awareness and, in addition Ministries and Agencies employ staff whose work includes at least elements of conservation and/or sustainable use of biodiversity and ecosystem services.
- Under Ireland's last Rural Development Programme (2007-2013), some €95 million was spent on payments to farmers in the Natura Protected Area Network of SACs and SPAs. In addition, farmers in the Burren Farming for Conservation Programme were paid a total of €1 million per annum in 2011-2013. Ireland's draft new Rural Development Programme up to 2020, valued at over €4bn, includes a substantial commitment for a new agri-environment scheme with many biodiversity actions, including specific actions for vulnerable habitats and threatened species, as well as some general actions which would have wider biodiversity benefits. The scheme is expected to attract some 50,000 participant farmers.
- In 2014, Ireland's Prioritised Action Framework for Financing Natura 2000, identifying conservation priorities for the next financial cycle (2014-2020), has been approved by Government and submitted to the EU.
- In 2013 Irish Aid allocated grants totalling €30,682,000 in respect of activities that were biodiversity relevant or had biodiversity elements. Of this funding approx. €15,591,000 was substantively biodiversity relevant. In addition, grants totalling €300,000 where allocated for biodiversity specific projects.
- Since 2010, funding totalling €20,508,000 has been secured through the EU LIFE+ programme for six projects relating to environmental protection and biodiversity conservation.

Strengthened Knowledge Base:

Recent achievements include

- A National Vegetation Database has been developed

- The status, trends and distribution of all habitats and species of EU Community interest were completed by early 2014.
- The Integrated Mapping for the Sustainable Development of Ireland's Marine Resource (INFOMAR) programme is creating a range of integrated mapping products of the physical, chemical and biological features of the seabed in the near-shore area.
- A national working group of public bodies was established in 2012 to progress the development of a national landcover and habitat map.

Increased awareness:

- A range of initiatives are outlined in this report. They are carried out by national agencies, Government Ministries and NGOs and include schools programmes, events aimed at a wide audience and more targeted advocacy by NGOs.

Conservation and restoration:

- There is very considerable work ongoing in the protection of aquatic ecosystems from pollution and other damage by relevant State agencies and local authorities. This in part fulfils Ireland's obligations under the EU Water Framework Directive.
- The steps required to provide legal protection to Ireland's network of Special Areas of Conservation (Habitats Directive sites) and Special Protection Areas (Birds Directive sites) covering freshwaters are now largely complete.
- 6 substantial new marine SACs were afforded protection in late 2011. Detailed site-specific conservation objectives are being published.
- Many species protection/restoration projects are underway, mainly but not entirely for bird species.
- The EU LIFE+ Project CAISIE (Control of Aquatic Invasive Species and Restoration of Natural Communities in Ireland) concluded in January 2013.
- Conservation Limits for 139 salmon rivers have been developed and advice on status of stocks and appropriate catch levels provided.
- Under the Marine Strategy Framework Directive, work on the Initial Assessment has been completed and the determination of Good Environmental Status and the establishment of Environmental Targets is ongoing.
- Common Fisheries Policy Spatial fisheries management measures are in place in the Irish Exclusive Economic Zone to protect vulnerable marine habitats in offshore NATURA 2000 sites (e.g. corals), spawning aggregations, juvenile fish and depleted stocks.

Obstacles to implementation:

Progress in the implementation of the NBAP in the first three years of the six year programme has been significant, with 89% of actions having been implemented or implementation is in progress. This implementation has been despite the following obstacles:

- Since 2007, Ireland has experienced its worst economic recession in modern history. Despite the dramatic downturn in Ireland's economy, sectors based on natural resources were seen to be more resilient.
- The recession has had a significant impact on human and financial resources available in the public sector for biodiversity-related work. This increased the need for prioritization of key objectives of the NBAP and increased interdepartmental co-operation of resources.
- Limited economic capacity has resulted in delays to the implementation of certain objectives due to insufficient funds.

Question 8: How effectively has biodiversity been mainstreamed into relevant sectoral and cross-sectoral strategies, plans and programmes?

Mainstreaming biodiversity across national policy

Recent government actions which help mainstream biodiversity include:

- The transposition of the EU Habitats Directive and the EU Birds Directive into national legislation under the Habitats Directive into the Planning and Development Act 2010 and the EC (Birds and Natural Habitats) Regulations 2011. This clarifies the roles of certain Ministries and Agencies.
- Publication of guidance for planning authorities in conducting Appropriate Assessments for plans and projects to address issues of mitigation and avoidance of impacts on sites protected by the EU Habitats and Birds Directives.
- Government began the implementation of a national action plan for green procurement: "Green Tenders – An Action Plan for Green Public Procurement".
- Implementation of the EU Environmental Liability Directive supports both regulatory authorities and the public in preventing and remediating water damage, land damage and damage to natural habitats and protected species.
- A National Strategic Environmental Assessment Forum has been established and published a SEA Effectiveness Review and Action Plan. The Environmental Protection Agency also published a SEA Environmental Integration Guidance Document to assist national and local planning authorities in the preparation and implementation of SEA.
- In 2012 the Department of Environment, Community and Local Government developed a medium to long-term framework for advancing sustainable development and the green economy in Ireland entitled "Our Sustainable Future".

Mainstreaming Biodiversity across sectors

Agriculture:

- Ireland has secured €2.2 billion in EU funding for the new Rural Development Programme up to 2020 and a substantial number of biodiversity actions are to be included within the new agri-environment scheme, including specific actions for vulnerable habitats and threatened species.
- Implementation of the new 'greening' measures under Pillar I of the CAP will contribute to the maintenance and enhancement of biodiversity on tillage farms in particular.
- The Department of Agriculture, Food and the Marine operates a grant aid scheme on the conservation of genetic resources to identify, inventory, and conserve threatened genetic resources in Ireland. The Department of Agriculture, Food and the Marine also published a National Genetic Conservation Strategy document for animal genetic resources.

Forestry:

- A new Forestry Bill was presented to the Irish Government in October 2013 aims to enshrine principles of sustainable forestry management.
- Funding through the Forest Service Native Woodland Scheme promotes management and planting of native woodland.
- Measures are in place to ensure that at a national level, 30% of afforestation comprises broadleaf species.
- The EU Timber Regulation came into effect in March 2013 to control imports of illegally harvested timber in Ireland.
- A report produced by Woodlands of Ireland entitled "The Natural Capital Values of Ireland's Native Woodland" promotes the benefits of native woodlands in Ireland.

Fisheries:

- The legislation on fisheries, and the work under the Marine Strategy Framework Directive noted above contribute to mainstreaming.
- Measures are in place in the Irish Exclusive Economic Zone under the EU Common Fisheries Policy to protect vulnerable marine habitats in offshore EU Habitats Directive sites, spawning aggregations, juvenile fish and depleted stocks.
- Ireland will draw down €148 million from the European Maritime and Fisheries Fund to finance projects to implement the new reformed Common Fisheries Policy.

Local Authorities:

- The establishment of Heritage Officers and Biodiversity Officers across local authorities has greatly facilitated and accelerated the implementation of the National Biodiversity Action Plan within local planning processes and actions for biodiversity protection.

Question 9: How fully has the Irish national biodiversity strategy and action plan been implemented?

Ireland's second national biodiversity action plan is currently at a mid-point in its execution, and progress towards full implementation for many of the actions is still ongoing. Of the 102 actions listed within Actions for Biodiversity 2011-2016, 24 are fully implemented, 67 are still in progress and 11 require further action (Figure D).

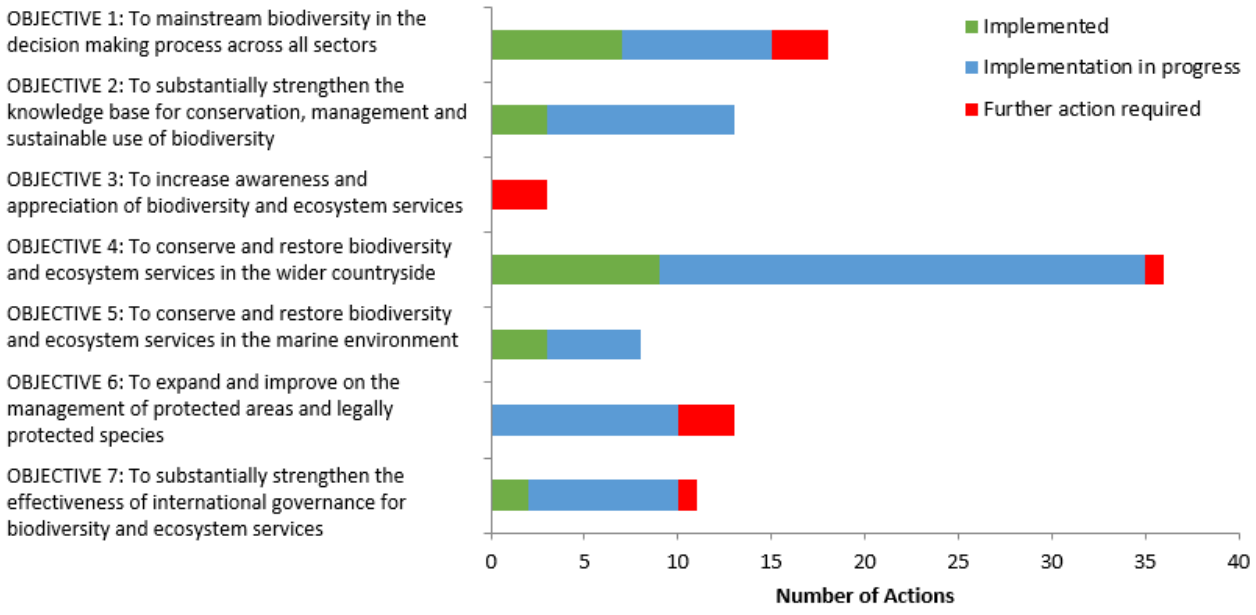


Figure D: Qualitative assessment of progress on the implementation across objectives within Ireland's Actions for Biodiversity 2011-2016.

Part III: Progress towards the 2020 Aichi Biodiversity Targets and contributions to the relevant 2015 Targets of the Millennium Development Goals.

Question 10: What progress has been made in Ireland towards the implementation of the Strategic Plan for Biodiversity 2011-2020 and its Aichi Biodiversity Targets?

Figure E summarises the indicative levels of implementation across the 21 targets and 102 actions within the current national biodiversity action plan, which have been mapped against the relevant Strategic Goals and Aichi targets.

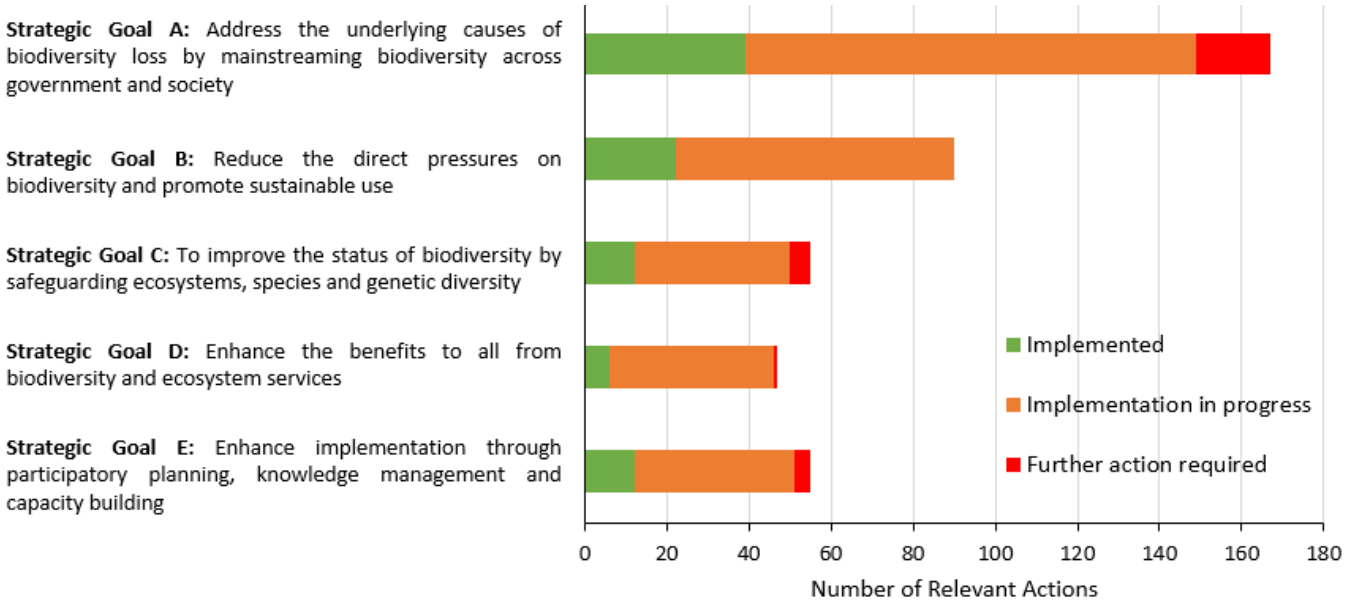


Figure E. Ireland's implementation of the relevant actions within the national biodiversity action plan mapped against the Aichi Biodiversity Targets of the Strategic Plan for Biodiversity 2011-2020.

Question 11: What has been the contribution of actions to implement the Convention towards the achievement of the relevant 2015 targets of the Millennium Development Goals in Ireland?

Irish Aid, on behalf of the Irish Government, is responsible for Ireland's overseas development aid programme, and The Millennium Development Goals (MDGs) have underpinned Ireland's programme for international development and the achievement of the MDGs is a central objective of the programme. Of particular relevance to biodiversity is MDG 7: "Ensure environmental sustainability". Ireland's aid programme support to environmental sustainability has been set out in the 'One World, One Future: Ireland's Policy for International Development'. Working with Ireland's Department of Environment, Community and Local Government, Irish Aid is actively engaged with the UNFCCC process. Irish Aid is also actively engaged with the development of the UN Sustainable Development Goals process including inputting to the development of proposals on 'ecosystems and biodiversity'. In 2013 Irish Aid allocated grants totalling €30,682,000 in respect of activities that were biodiversity relevant or had biodiversity elements. Of this funding approx. €15,591,000 was substantively biodiversity relevant. In addition, grants totalling €300,000 where allocated for biodiversity specific projects

Question 12: What lessons have been learned from the implementation of the Convention in Ireland?

Lessons Learned

- The implementation of the EU Nature Directives is the main driver of conservation for biodiversity in Ireland. However the Directives cover only a small proportion of species present in the State, and do not fully embrace the range of important habitats. The publication of a national Biodiversity Plan affords a useful policy driver for Government to set out a more complete set of objectives and actions for the protection of biodiversity.
- Open ended actions within plans, i.e. actions without a clearly defined targets and timeframe for implementation, are more challenging to assess and implement. Future actions should be clearly defined, with specific tasks to be completed and appropriate indicators adopted to assess progress within a specific timeframe, facilitating both evaluation and implementation. This approach in Ireland's 2nd Biodiversity Plan has been useful.
- Consultation and collaboration with all stakeholders inside and outside Government, along with awareness raising and education, are critical elements in the protection of biodiversity
- It is important to recognise possible opportunities that may arise for local stakeholders through conservation of biodiversity, and to work to develop the potential wider societal benefits, including economic benefits, that biodiversity protection can offer when developing management arrangements. For example, a major project being initiated in Ireland in conjunction with the EU LIFE Programme to develop sustainable management of agriculture to protect freshwater pearl mussels will also investigate opportunities to increase farm incomes by value-added marketing and local eco-tourism initiatives.
- The collection of comprehensive baseline data is not only important in terms of protecting biodiversity but also supports an informed and refined regulatory system that can proactively support sustainable development which in turn generates confidence for inward sectoral investment.

Remaining Challenges

- Despite the considerable progress made in implementing the first and second NBAP, the resulting positive impacts on biodiversity have yet to fully realised. This time-lag between action and outcome is a reality of restoration, where ecosystems, animal and plant population regenerate at decadal timescales or where action has been ineffective in sufficiently reducing pressures. Consequently, evaluating progress in short timescales will continue to be problematic.
- Following the publication of the NBAP Interim Report, actions requiring further progress will be prioritised in the current NBAP, and will inform the development of the third Biodiversity Action Plan for Ireland 2017-2022.

Part I: Update on biodiversity status and trends, and implications for human well-being.

Question 1: Why is biodiversity important for Ireland?

Biodiversity has an intrinsic value and it is essential to the economic and social fabric of Ireland. As an island on the northwest periphery of Europe, with its complex geology, temperate oceanic climate and predominately pastoral farming systems, Ireland has a heterogeneous landscape with a diversity of habitat types and assemblages of species. Its marine area, which extends westward for more than 200 nautical miles and covers 490,000 km^2, is of high biodiversity value, much of which requires further exploration and research.

In addition to the ethical and legal obligations to protect biodiversity for future generations, it is recognised that the sustainable management of biodiversity is essential to the socio-economic fabric of Ireland. Many of Ireland's key economic sectors, in particular, agriculture, forestry, marine fisheries and aquaculture are either directly or indirectly dependent on biological resources (NPBR, 2006).

Awareness of biodiversity in Ireland

Eurobarometer results from an Irish study of 1000 individuals, on attitudes to biodiversity among the public (Heritage Council, 2010), indicate that knowledge of biodiversity in Ireland was well below the EU average and more needs to be done to communicate issues relating to biodiversity to a wider audience. Only two in ten Irish people felt they were well informed about the loss of biodiversity, which was unchanged since 2007 (Heritage Council, 2010). This was well below the EU average of just under four in ten. In contrast, when data derived from the Flash Eurobarometer Reports between 2007 and 2013 are compared they indicate an increased awareness of biodiversity in Ireland since 2007 (Figure 1.1). Over 90 per cent of those surveyed in 2013 stated that halting biodiversity loss was a moral obligation, and that our well-being and quality of life is based on nature and biodiversity.

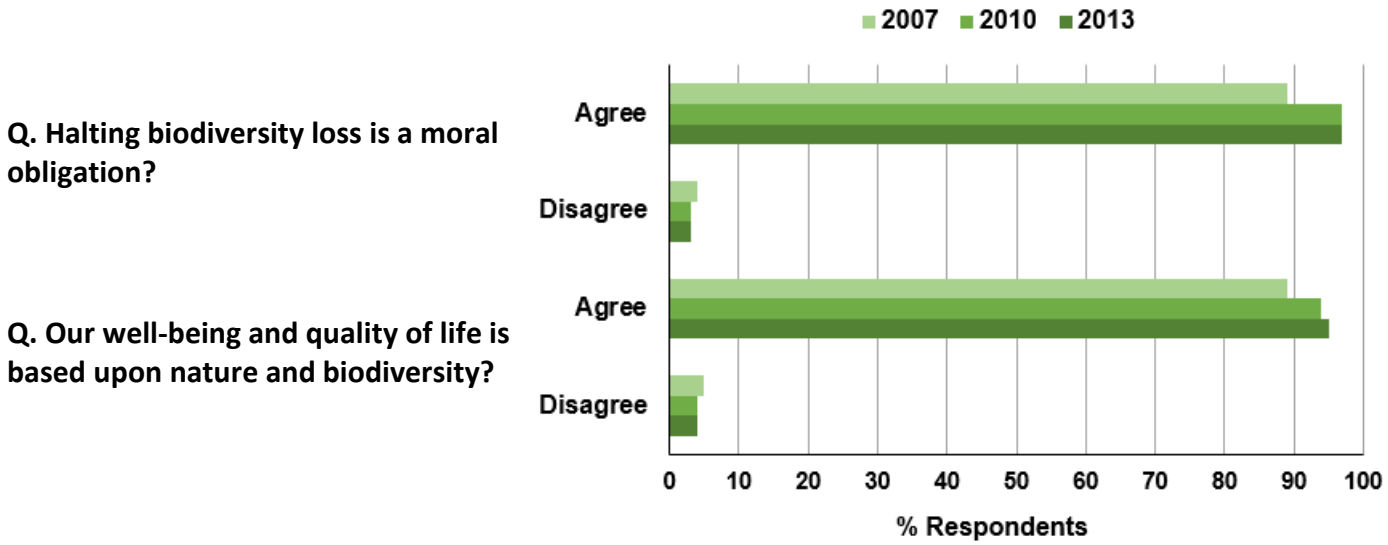


Figure 1.1. Awareness of biodiversity issues in Ireland (2007-2013; Flash Eurobarometer Reports)

The increasing awareness of biodiversity in Ireland is also seen in a number of national indicators;

- The number of entries into the Biological and Ecological Category of the BT Young Scientist & Technology Exhibition has increased from 400 in 2007, to almost 600 in 2014.
- The number of school and community attendees at National Parks and Wildlife Service Education Centres has risen from almost 25,000 in 2007, to nearly 40,000 in 2013.
- Atlases of both historic and current species distributions are central in informing effective conservation decision making and are typically the first step in producing an International Union for

the Conservation of Nature (IUCN) Red List Assessment of conservation status for a group. Since 2007, in Ireland, 18 National level species atlases have been produced.

- The amount of research being undertaken in a biodiversity-related discipline in Ireland has increased significantly. Three major academic literature databases were queried for biodiversity-related peer-reviewed publications. Between 2007 and 2013, 572 papers were published. This is 65 more than the number of papers published in the previous 17 years combined.
- Over 3,700 primary, secondary and special schools in Ireland (>92% of all Irish schools) are currently participating in the Green Schools environmental programme and over 2,785 schools have been awarded the Green Flag. In 2013 alone, An Taisce awarded 1,092 schools with Green Flags in recognition of their environmental achievements. This programme includes specific actions under the biodiversity theme, which was launched in 2010.

Economic valuation of biodiversity

In 2008, a report was commissioned (Bullock *et al.,* 2008) to identify the nature and scale of benefits that we, as a society, derive from biodiversity in Ireland. As outlined in Table 1.1, the current marginal value of biodiversity and ecosystems services in Ireland in terms of their contribution to productive output and human utility was estimated at €2.6 billion per annum. This is considered to be an underestimate, as it does not include significant services such as waste assimilation by aquatic biodiversity and the benefits to human health.

Table 1.1: Preliminary estimate of the current marginal value of ecosystems services in Ireland in terms of their contribution to productive output and human utility (Bullock *et al.,* 2008)

	Marginal annual value of status-quo	Threats / comments
Agriculture	>€1200 million pa	Potentially significantly greater benefits from more sustainable agriculture
Forestry	€55 million pa.	Non-market benefits increasingly being recognized
Marine	€230 million pa.	Potentially significantly greater benefits from more sustainable resource management. Waste mitigation services not included.
Water quality	>€260 million pa.	Waste mitigation services not included.
Human welfare	>€920 million pa.	Selected benefits only
Health	Tens of millions.	unknown

Agriculture

Bullock *et al. (*2008) estimated that in agriculture, the value of soil biota for nutrient assimilation and recycling is placed at €1 billion per year, but greater reliance on pollination could give an additional value of €220m per year. Baseline pest control is worth €20m per year before savings on pesticides of an estimated €2m per year. The public utility benefits of sustainable farming have been put at a minimum of €150m per year.

Forestry

Under Ireland's commercial forestry operations around 2.8 million cubic metres of timber is produced each year which, once processed, has a gross value added of €555 million (IFFPA, 2013). Typical rotations last for 40-50 years and, given that more than half the forest estate is less than 25 years old, this implies that production will increase in the future. In terms of jobs, the sector employs, directly or indirectly, 12,000 people (IFFPA 2013). The potential economic contribution of Native woodlands has also been assessed, and this is estimated at between €100 and €140 million per year (Bullock & Hawe, 2013).

Marine Fisheries and Aquaculture

The annual value of the catch within Ireland has remained steady at around €251 million and the fish catching sector alone provides at least 2,200 direct jobs. An additional 10,000 jobs onshore are dependent on catches from Irish vessels. Aquaculture and the seaweed industry are worth over €357 million (Bullock *et al.,* 2008; Morrissey *et al*., 2010).

Freshwater and wetlands

As outlined by Bullock *et al.* (2008) rivers, lakes and wetlands provide us with a variety of economic benefits. These include a contribution to the regulation of the water cycle, nutrient cycling and sediment capture, fertilisation of flood plains, transport, drinking water, water for agriculture and industry, waste assimilation, fishing and recreation, with a current estimate for water quality alone exceeding €260 million per annum.

Human Welfare

As outlined by Bullock *et al.* (2008) there is a direct benefit where human activity responds and benefits from biodiversity as, for instance, with recreational angling, bird-watching, dolphin watching or similar activities. The authors estimated that the Human Welfare aspect of Biodiversity contributes more than €920 million to the Irish economy. In 2013, 84% of visitors to Ireland surveyed said they were attracted by the natural, unspoilt environment (Fáilte Ireland, 2013).

Health

The connection between biodiversity and health is only beginning to be understood. Clearly, a functioning ecosystem contributes to a supply of nutritious food and water of a quality essential to human health. While the linkages between health and biodiversity have been clearly demonstrated in many parts of the world, here in Ireland there is not enough baseline information on biodiversity and ecosystem services to allow direct parallels to be drawn (Bullock *et al.*, 2008). There is mounting evidence demonstrating the contribution green spaces have to mental and physical health and wellbeing, including lower all-cause and circulatory mortality rates (Mitchell and Popham, 2008).

Ireland's natural capital

Ireland's location on the north western edge of Europe influences the range of habitats and species that occur within its territory. Ireland has a temperate oceanic climate with mild summers and winters. It has warmer winters than other areas on its latitude, including mainland Europe, because it lies in the influence of the North Atlantic Current. Rainfall is high with approximately 1,000mm per year, but in some mountainous areas exceeds 3,000mm. The west coast of Ireland is exposed to the full fetch of the North Atlantic Ocean, while the more sheltered east coast is in the lee of the prevailing south westerly winds. The Atlantic marine area reaches a depth of 5,500 metres while the Irish Sea is shallower and has some extensive areas of sandbanks. Because of its location and climate, Ireland is frequently used as a stopover for migrating species, or as a refuge when weather in mainland Europe is unfavourable.

Habitat diversity

For its relatively small size, Ireland has a rich biological diversity. More than 30,000 species and 117 distinct habitats have been described for the terrestrial environment. Similarly, Ireland's marine territory has a rich biodiversity and a wide range of habitats.

A standard scheme for identifying, describing and classifying the habitats in Ireland was developed by Fossitt (2000). The guide covers natural, semi-natural and artificial habitats of, terrestrial and freshwater environments, inshore marine waters, and urban and rural areas. Ireland's dominant land use is grassland (Figure 1.2 illustrates land use categories). Habitats of particular significance because of their scarcity in both Ireland and/or the rest of Europe include limestone pavements, turloughs, active peatlands, species rich grasslands and intact dune and machair systems.

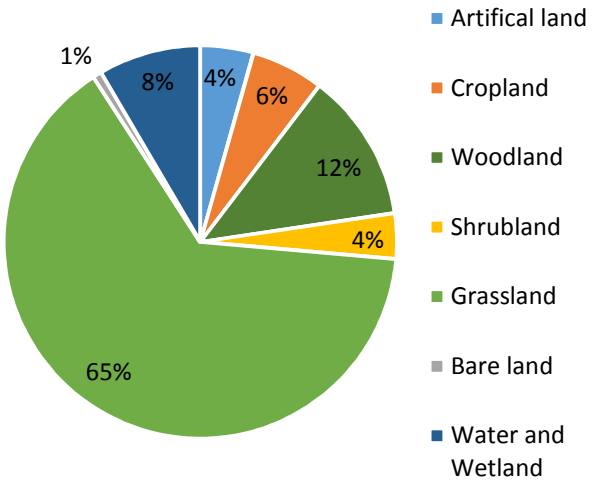


Figure 1.2. Ireland's land use (Eurostat, 2012)

Ireland's wet climate is one of the main factors that has resulted in the widespread formation of peatlands of different types. The species supported vary considerably between the different peatland types and occur in combinations not found elsewhere in Europe or the world. Intact bogs, which are actively forming peat, play an important role in combating climate change by removing excess carbon dioxide from the air and placing it into long term storage. Peatlands purify water and reduce flooding by their capacity to absorb, hold and slowly release water.

Native woodlands are an important reservoir of biodiversity, containing a host of specialist woodland flora and fauna. However only 2% of the land area supports native woodlands, and these often contain exotic and naturalised tree and shrub species. The woodlands are highly fragmented, often isolated and most stands are small. Only 3% exceed 50 ha (Perrin *et al.*, 2008). These woodlands are of four main types; oak on acidic substrates, ash/hazel on calcareous/nutrient- rich substrates, alder on wet soils and birch mostly on peats. Minor woodland types include willow on wet soils, and yew on limestone outcrops. The presence of bryophyte/lichen-rich oak woods and ash woods in Ireland are important, due to their restricted distribution elsewhere in Europe. The ash woods are threatened by the recent arrival of "ash dieback disease", caused by the *Chalara* fungus.

Recent planting projects have increased the amount of native woodland in Ireland. These include the Native Woodland Scheme (>5,000ha), Millennium Project (607ha) and the CoillteLIFE Project (550ha). The Native Woodland Scheme was funded by the Irish Government provided support for landowners in Ireland to protect and enhance existing native woodlands and continues to fund the establishment of new native woodlands.

Limestone pavements are areas of calcareous rock exposed by the scouring action of ice sheets during the last glaciation (Williams, 1966). The habitat is found mainly in the west of Ireland with counties Clare, Galway and Mayo containing the largest extent. Smaller areas are found in Sligo, Leitrim, Donegal, Offaly, Kerry, Cavan, Limerick, Longford, Tipperary, Roscommon and Westmeath. Limestone pavement is also found in Fermanagh in Northern Ireland (Pender (Ed.), 2008). Ireland has the largest area of limestone pavement in the EU, over 32,000ha compared to less than 3,000 ha in the UK. The most extensive limestone pavement occurs in the Burren/East Galway area. More than 700 different flowering plants and ferns, ranging from tiny annuals to shrubs and trees, have been recorded in the Burren. This represents about

three-quarters of the Irish native flora. The area is also a refuge for many rare species of lichens and mosses, which thrive in the mild damp climate the region experiences (IWT, 2009). A national survey of Limestone Pavement and associated habitats was undertaken during the period 2009-2011, following a pilot survey undertaken in 2008 (Wilson & Fernández, 2013).

As outlined by Sheehy Skeffington *et al.* (2006), turloughs are karst wetland ecosystems that are virtually unique to Ireland. Annual flooding through springs and fissures in the underlying limestone, and subsequent draining, produce unique 'temporal ecotones'. Over 400 have been documented in Ireland. They are priority habitats in the EU Habitats Directive and support a variety of wet grassland and fen type vegetation. Though the vegetation has been recorded and mapped for over 80 turloughs, records for invertebrates are more sporadic. The temporal nature of a turlough supports unique communities that include some aquatic species, often benefiting from the absence of predatory fish, and many wetland terrestrial species, as well as carabid beetles that are rare on a European scale. Due to their shallow nature and the full vegetation cover of the basin, turloughs can host internationally significant numbers of visiting winter wildfowl, particularly whooper swans. The diversity of plant and invertebrate communities is primarily due to different hydrogeomorphological characteristics and the range of grazing practices on turloughs.

Species diversity

Ireland is relatively poor in terms of animal species diversity, as it is a comparatively small landmass and became isolated from mainland Europe relatively soon after the ice retreated following the last period of glaciation. For example, of the 204 terrestrial mammals found in Europe, only 27 (13%) are found in Ireland (Marnell et al., 2009). Nonetheless, more than 31,000 species occur in Ireland. Only 10% of these are "familiar" species such as plants, birds and mammals; 62% are invertebrates (Figure 1.3; Fitzpatrick et al., 2010). It is estimated that a further 8,500 species of algae and fungi have yet to be discovered in Ireland.

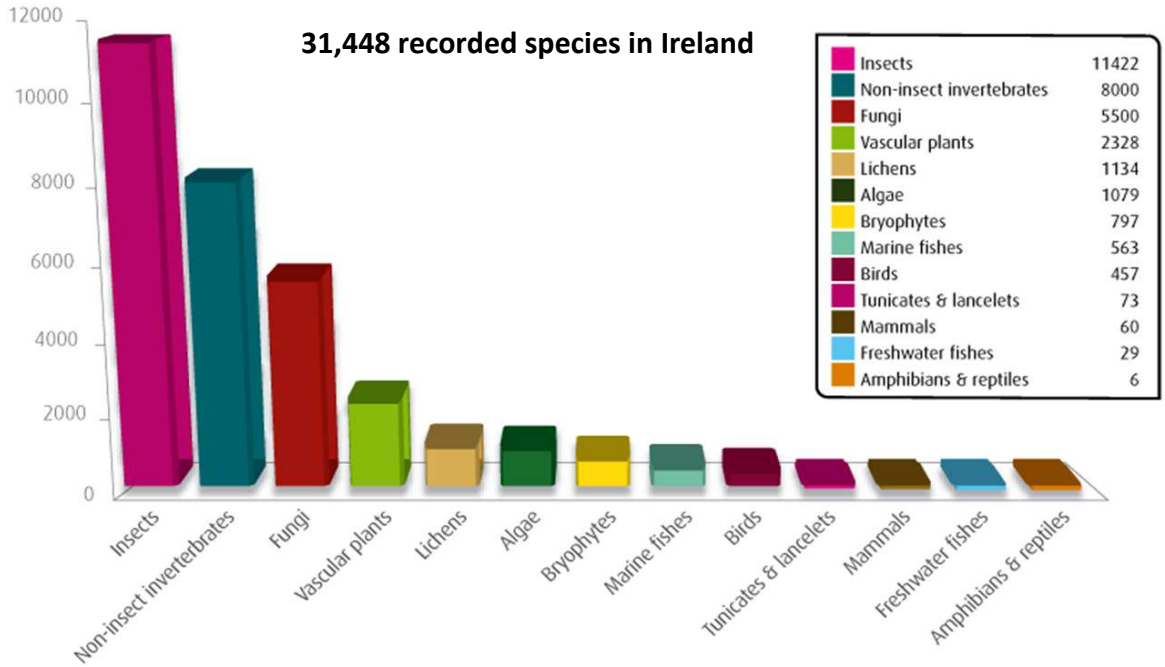


Figure 1.3. Proportion of species known in Ireland divided into major groups.

Because of climate and topography, wetland habitats are well represented in Ireland. As a consequence Ireland supports internationally significant populations of several aquatic species such as the otter *Lutra lutra*, Atlantic salmon *Salmo salar*, freshwater pearl mussel *Margaritifera margaritifera*, white-clawed crayfish *Austropotamobius pallipes* and the some endemics including *Niphargus wexfordensis* (an amphipod), Killarney Shad *Alosa fallax killarnensis* and Pollan *Coregonus autumnalis pollan*. Gastropods are also well represented with notable species including the Kerry slug *Geomalacus maculosus* (elsewhere found only in northern Iberia), *Pomatias elegans*, *Oxychilus helveticus*, *Cochlodina laminata*, *Arion lusitanicus*, *Ashfordia granulate*, *Catinella arenaria*, and three species of *Vertigo* which are listed in the EU Habitats Directive.

Although the mammal fauna is depauperate, two endemic subspecies have been recognised: the Irish hare *Lepus timidus hibernicus* and the Irish stoat *Mustela erminea hibernica*. Notable populations of the lesser horseshoe bat *Rhinolophus hipposideros* and Leisler's bat *Nyctalus leisleri* also occur.

In general, marine fish populations of shallow and shelf water bony fish are stable in terms of their numbers, distribution and size ranges. Some commercially important demersal species such as haddock, whiting and plaice have increased their distribution, while others, such as megrim, have seen a marked improvement in the population condition. Similarly, non-commercial demersal species, including dragonet, dab and grey gurnard, have shown significant increases in population size while the condition of populations of lemon sole and dab has improved. Ireland's marine waters contain a wide variety of sharks (39 species), skates and rays (32 species), and chimaeras (seven species), representing an important part of our marine biodiversity (Varian, 2011). These cartilaginous fish are particularly vulnerable to fishing pressures because they are slow-growing, take longer to become reproductively mature and produce fewer young (MSFD, 2013).

The Irish butterfly fauna exhibits some interesting features and holds important populations of certain species for example the Wood White *Leptidea* spp. and the Marsh Fritillary *Euphydryas aurinia* which is protected under the EU Habitats Directive. The only Irish species on the European Red List of Butterflies is the Large Heath *Coenonympha tullia* (van Swaay *et al.,* 2010). Among the notable moths are sub-species of the sandhill rustic *Luperina nickerlii knilli*, the Burren green moth *Calamis tridens occidentialis*, poplar lutestring *Tethea or hibernica*, the muslin moth *Cycina mendica rustica*, grey moth *Hadena caesia mananii*, the marbled green moth *Cryphia muralis westroppi*, and the transparent burnet *Zygaena purpuralis hibernica.*

Ireland's vascular plant flora includes 1,253 native species and 1,075 alien species (of which 964 are considered neophyte [introduced since 1500] and 111 archaeophyte [introduced pre-1500]; Fitzpatrick *et al*., 2010). A small suite of endemic taxa (mainly apomictic microspecies) occur such as *Hieracium scullyi*, *Saxifraga rosacea* subsp. *hartii*, *Sorbus scannelliana*, and *Taraxacum webbii*.

Ireland has interesting examples of uncommon ecological communities, for example, there is an association of Atlantic-Mediterranean and Arctic-Alpine communities across the Burren, Co. Clare. Ireland is also particularly rich in bog and wetland habitats, with many wetland species remaining common in Ireland where they have been designated as being rare or threatened in continental Europe.
Ireland is also particularly rich in bryophytes, lichens and algae.

Rare and Threatened Bryophytes of Ireland

Collaborative research during 1999–2010 in the Republic of Ireland and Northern Ireland was published as a Red List that contains a bryophyte checklist for rare and threatened Bryophytes of Ireland (Lockhart *et al.* (2012). The Red List includes 835 taxa (including species, subspecies and varieties). Threat assessments, using IUCN categories and criteria (IUCN 2001), are applied to the checklist. In summary, 195 taxa (24% of the flora) are Red Listed: 40 Regionally Extinct, 23 Critically Endangered, 43 Endangered, 89 Vulnerable; 97 taxa (12%) are Near Threatened; 37 taxa (4%) are Data Deficient and 495 taxa (59%) are Least Concern. Eleven taxa (1%), thought to be introductions of alien origin, are Not Evaluated against IUCN threat criteria.

A high proportion of Red List taxa are saxicolous, growing directly on rocks, but species characteristic of peatlands, heath (including Northern Hepatic mat communities) and coastal systems are also well represented, reflecting threats to these habitats. Metallophytes, an overlooked group found mostly on disused mine sites, are also prominent on the Red List. There appears to be little correlation between bryophyte life strategy (perennial, colonist, shortlived shuttle, etc.) and threat status. A relatively higher proportion of monoecious taxa are represented on the Red List than would otherwise be expected in the flora as a whole.

Evidence of extensive recent losses of Northern Atlantic hepatic mat habitat had suggested by 2005 that some other species which had more than 12 modern (post-1950) hectad records in 1998 may have become seriously threatened, especially *Bazzania pearsonii*, *Mastigophora woodsii*, *Paraleptodontium recurvifolium* and *Scapania ornithopodioides*.

An inventory of elasmobranch databases for Irish waters

Globally threatened elasmobranch species in Ireland include the common skate *Dipturus batis*, white skate *Rostroraja alba*, spurdog *Squalus acanthias*, angel shark *Squatina squatina*, porbeagle shark, *Lamna nasus*, (all classified as critically endangered by the IUCN), gulper shark *Centrophorus granulosus*, leafscale gulper shark *Centrophorus squamosus* and basking shark *Cetorhinus maximus* (classified as vulnerable). At a global level, 23 out of Ireland's 78 species are in an IUCN Red List threat category: six are critically endangered, five endangered and 12 vulnerable. At a European level, nine species are in an IUCN threat category: three are critically endangered, two endangered and four vulnerable. Two notable species are the angel shark *Squatina squatina* and the porbeagle shark *Lamna nasus*, where the former was common in coastal waters in the 19th to mid-20th century but has now been extirpated throughout much of its range, and the latter commercially important species whose total landings across the Northeast Atlantic declined by 88% since 1990. To date, 10 out of the 11 Condrichthyan species listed by The Convention for the Protection of the Marine Environment of the Northeast Atlantic (OSPAR) will receive greater protection and conservation action occur in Irish waters.

An inventory of 29 data sources for Ireland's sharks and rays has been compiled by Varian (2011). It included data from standardised scientific surveys, commercial fishing catch returns, public sightings schemes and unpublished records of recreational captures.

The review carried out by Varian (2011) represents an important first step in the programme of compilation and digitisation work needed to establish an All-Ireland Elasmobranch Database. A considerable amount of data has been identified as suitable for inclusion in the database and there is no doubt that future conservation assessments and scientific analyses will benefit from an integrated approach to data management.

Question 2: What major changes have taken place in the status and trends of biodiversity in Ireland?

This section provides an overview of major changes that have taken place in the status and trends of biodiversity in Ireland since the 4th National Report to the Convention on Biological Diversity (2010). The information on the status and trends of habitats and species is primarily based on Ireland's reports to the EU under Article 17 of the Habitats Directive, and Article 12 of the Birds Directive, which are required every six years (NPWS, 2013). In addition, information is included on marine habitats and commercially exploited species, from the Initial Assessment under the Marine Strategy Framework Directive (Marine Institute 2013a). Information on species not covered under the Birds Directive, Habitats Directive or Marine Strategy Framework Directive, where monitoring is in place, is also provided.

Habitats: Trends and status

Summary Assessments of Habitats Directive Annex I Habitats

In 2013, five habitats were assessed as favourable, 29 as inadequate and 24 as bad (Figure 2.1a). With respect to the trends in the 2013 conservation status, 15 habitats are declining, eight are improving, 32 are stable and three are unknown (figure 2.1b). These trends reflect changes within (figure 2.1c) and between assessment categories.

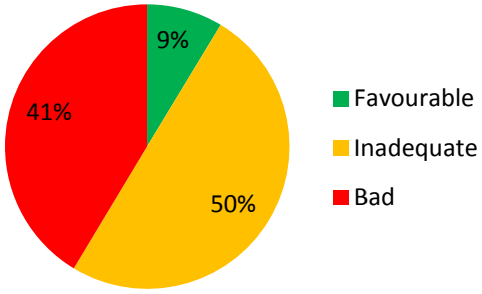


Figure 2.1a. The Overall assessment results for habitats

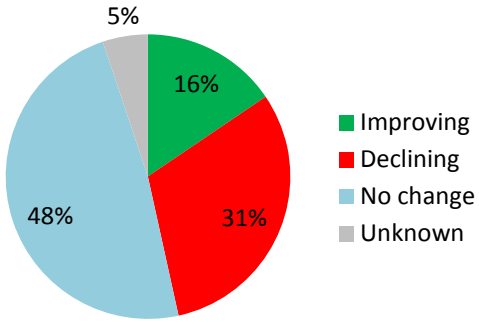


Figure 2.1b. Trends in assessment results for habitats

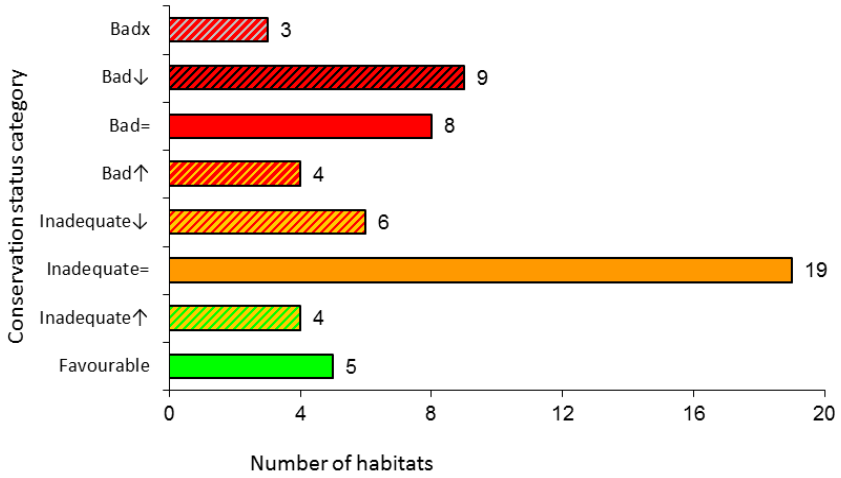
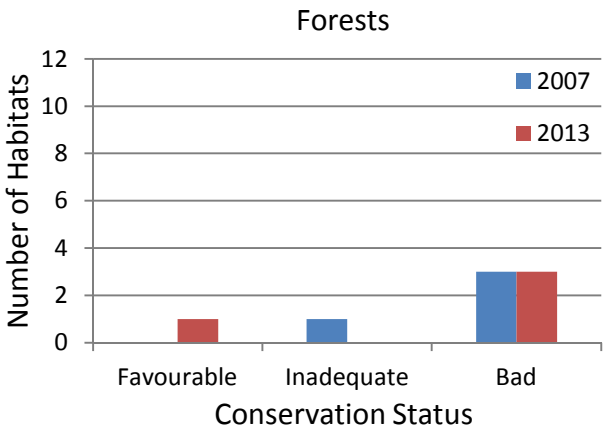


Figure 2.1c. The overall assessment results for habitats subdivided by qualifiers for unfavourable categories. (↑=improving, ==stable, ↓ = declining, x=unknown)

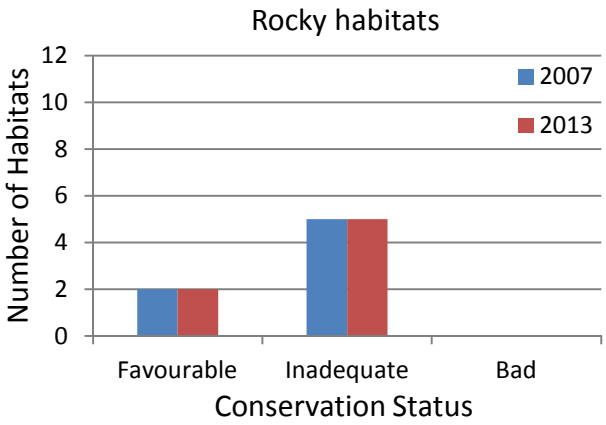
Trends and status by habitat category

Between 2009 and 2012 the main habitat changes were a decrease in shrubland from 6% to 4%, and an increase in cropland from 5% to 6% (Eurostat, 2012). Habitats in Ireland, listed on



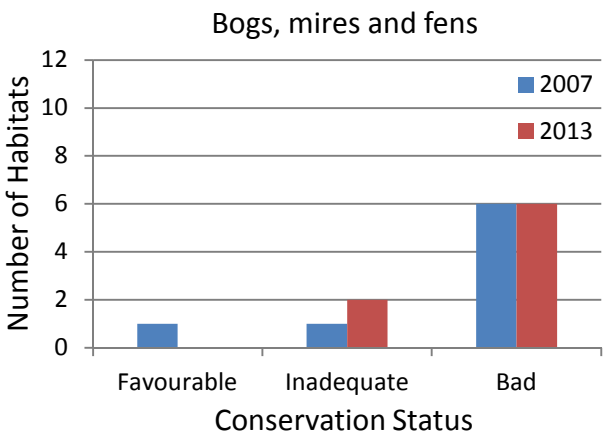
Forests

Although three forest habitats have not improved in conservation status since 2007 there has been an improving trend due to positive forestry management. Bog woodlands are expanding and the quality of most sites is Favourable.



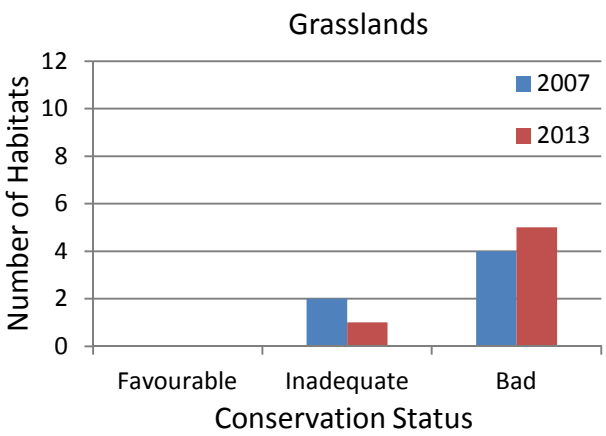
Rocky habitats

The conservation status of rocky habitats has remained unchanged since 2007, with caves retaining Favourable status and the six other habitats remaining Inadequate.



Bogs, mires and fens

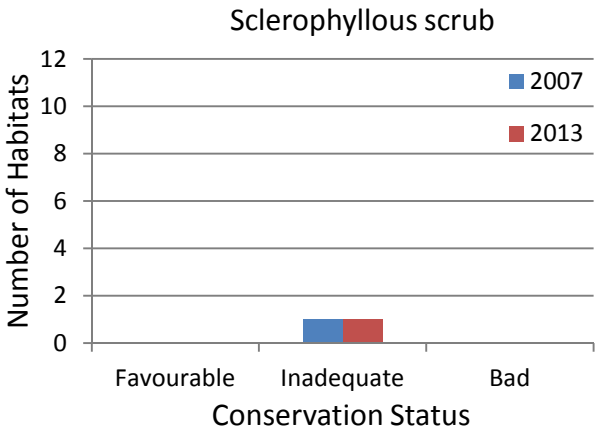
Seven of the eight habitats, are suffering an ongoing decline with six of these in Bad conservation status. Changes in the remaining habitats is due to improved knowledge of the ecology.



Grasslands

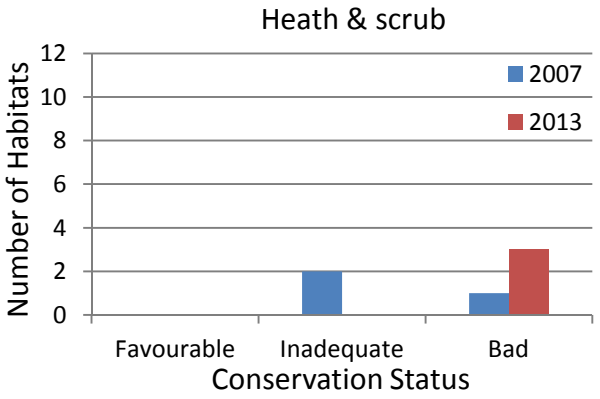
The overall status of almost all grasslands is Bad. The exception Calaminarian grassland has maintained its Inadequate status. Four grassland habitats are currently stable and two are experiencing ongoing decline.

Figure 2.2. Conservation Status trends for Habitats Directive habitat groups in Ireland (2007-2013).



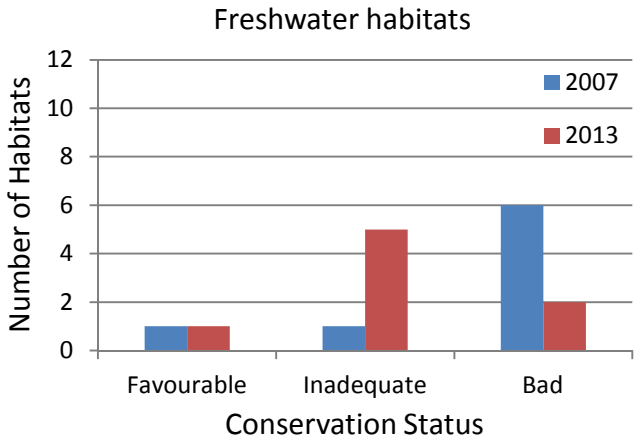
Sclerophyllous scrub

The overall status of Juniper *Juniper communis* formations (where at least 50 inidividual shrubs are present) has remained Inadequate as there is no evidence of ongoing decline in condition. Further research is required on the pressures affecting this habitat and the interventions required to attain Favourable status.



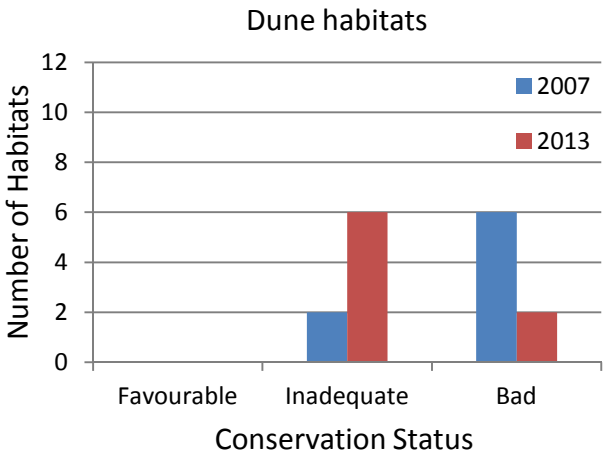
Heath & scrub

Heath and scrub habitats have continued to decline and are in Bad conservation status in 2013. The rate of decline has not accelerated, rather with increased surveys and improved knowledge of the ecology, the 2007 status for two habitats should have also been Bad.



Freshwater habitats

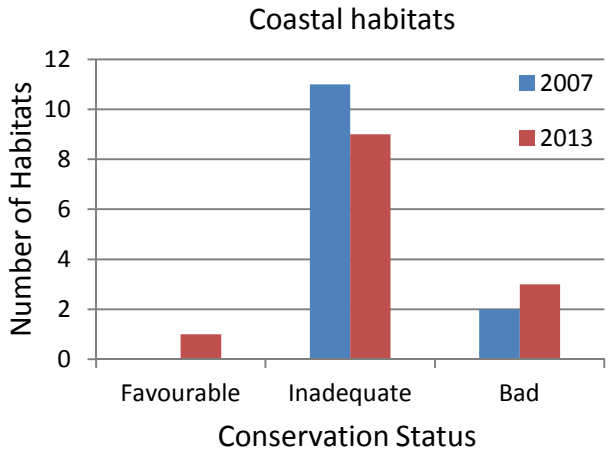
An ongoing improvement in the status of freshwater habitats between 2007 and 2013 was primarily due to an improved understanding of the ecology which resulted in three habitats being placed in Bad staus in 2007, which should have been classed as Inadequate. Muddy bank habitats with *Chenopodium rubri* remains at Favourable status.



Dune habitats

The change in status of dune habitats from largely Bad to Inadequate in 2013 is primarily due to alterations in the methods of assessment, rather than genuine changes in conservation status. However, Dune slack habitats have experienced a decline in status due to ongoing habitat loss and pressures.

Figure2.2 (contd.). Conservation Status trends for Habitats Directive habitat groups in Ireland (2007-2013).



Coastal habitats

The conservation status of nine out of the 13 coastal habitats assessed remain as Inadequte and two reamain as Bad. Sandbank habitats now have a Favourable status due to declining threats and pressures. Reef habitats, which have a low resilience or recoverability to even small levels of pressure, particularly from fishing, have declined and are now in Bad conservation status.

Figure2.2 (contd.). Conservation Status trends for Habitats Directive habitat groups in Ireland (2007-2013).

Annex I of the Habitats Directive, are the primary focus of the habitats assessed in NPWS (2013). The summary of status and trends of habitats outlined in NPWS (2013) are presented in the figures below (Figure 2.2). Increased survey and conservation efforts has expanded our knowledge of the distribution, pressures and condition of Annex I habitats in Ireland. However, despite this many habitats remain in "Bad" conservation status.

Cultivated and built land

Eurostat (2012) figures (Figure 1.2) estimate that cultivated and built land represent 10% of Ireland's land use. The area under artificial surfaces increased by approximately 15% since 2000 to 4% of national land. This mainly occurred on former agricultural lands on the periphery of existing urban areas, including the suburbanisation of villages close to larger towns and cities. There was also widespread construction of single rural dwellings in the countryside. Between 1990 and 2010, approximately 140,000 bungalows were built. This represents 32% of the estimated 440,000 dwellings with independent waste water treatment systems (EPA, 2012).

A comparison of the Central Statistics Office (CSO) Farm Structure Survey 2007 (CSO, 2008) and the CSO Census of Agriculture 2010 (CSO, 2012) indicates that the average farm size has increased slightly from 32.3 (ha) to 32.7 (ha) between 2007 and 2010. The total utilisable agricultural area (UAA) (excluding commonage land) was found to be 4,568,900 ha in 2010. The total acreage of farms involved in specialist beef production and mixed grazing livestock has increased by 14% and 11%, respectively (Figure 2.3). However, the total acreage of farms involved in specialist dairying and mixed crops and livestock have both decreased by 8% between 2007 and 2010.

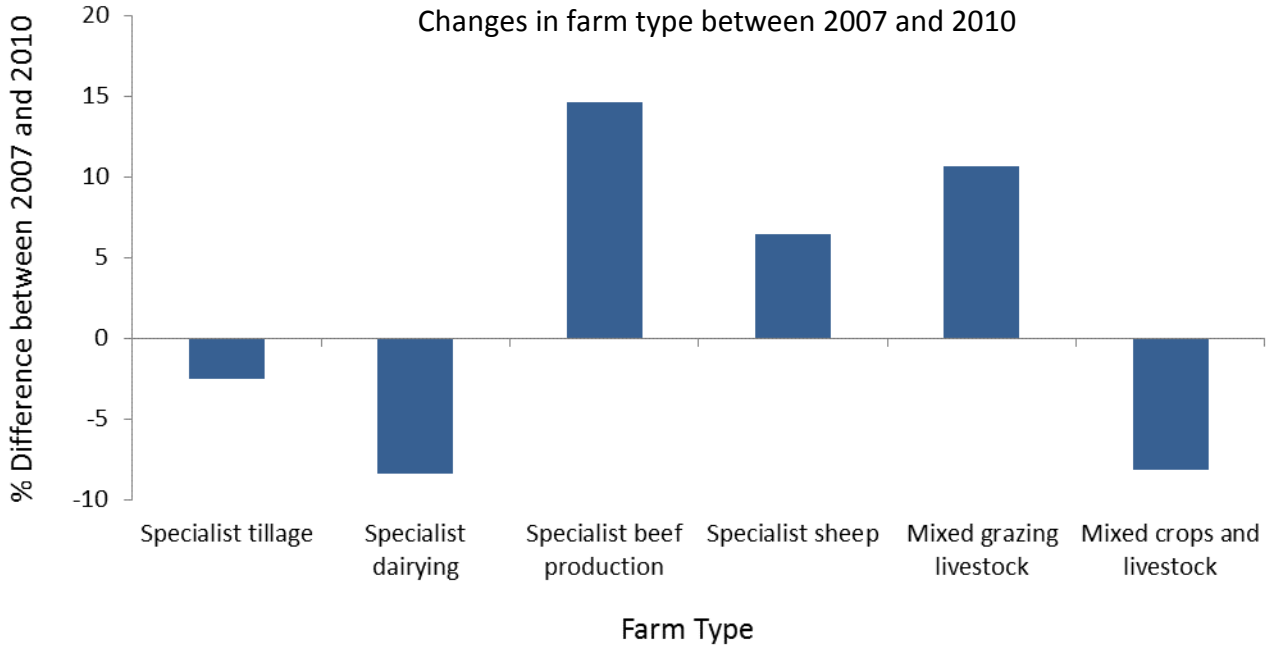


Figure 2.3. *Comparison of Central Statistics Office (CSO) Farm Structure Survey 2007 (CSO, 2008) and the CSO Census of Agriculture 2010 (CSO, 2012a) total acreage per farm use between 2007 and 2010.*

The agricultural landscape in Ireland is dominated by hedgerows, which form important areas and routes for biodiversity and have an estimated total length of around 300,000 km. In 2010, farm use accounted for over 66% of the acreage in Ireland (Figure 2.4; CSO 2012a). Specialist beef production alone accounted for 32% (2,153,000 hectares). In total, livestock (beef, dairying, sheep and mixed grazing livestock, excluding mixed crops and livestock) accounted for 59% of the land cover of Ireland. Within agriculture in Ireland in 2010 the land use attributed to agriculture was almost 50% permanent pasture (Figure 2.5; 2008, 2012a), with additional 17% permanent grass silage.

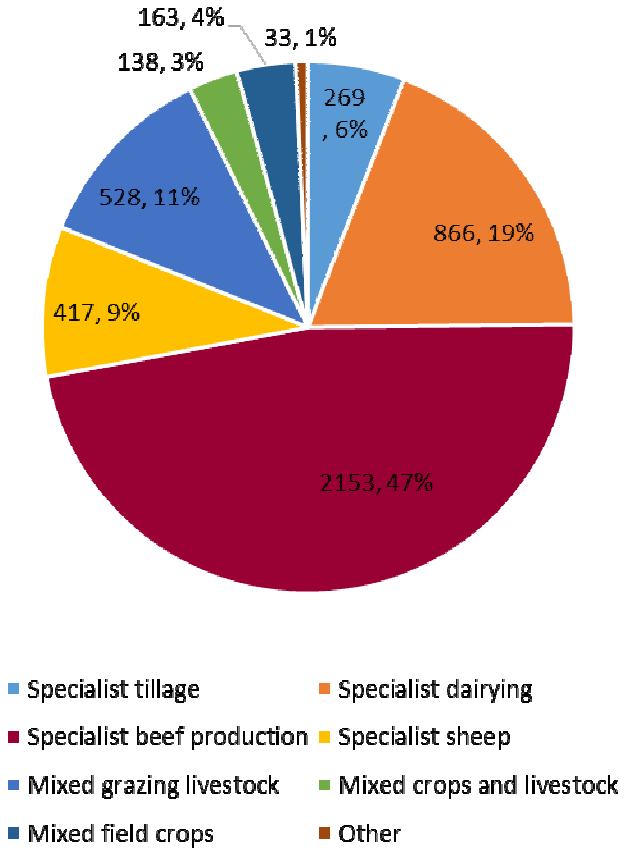


Figure 2.4. Farm type 2010 (,000s ha)

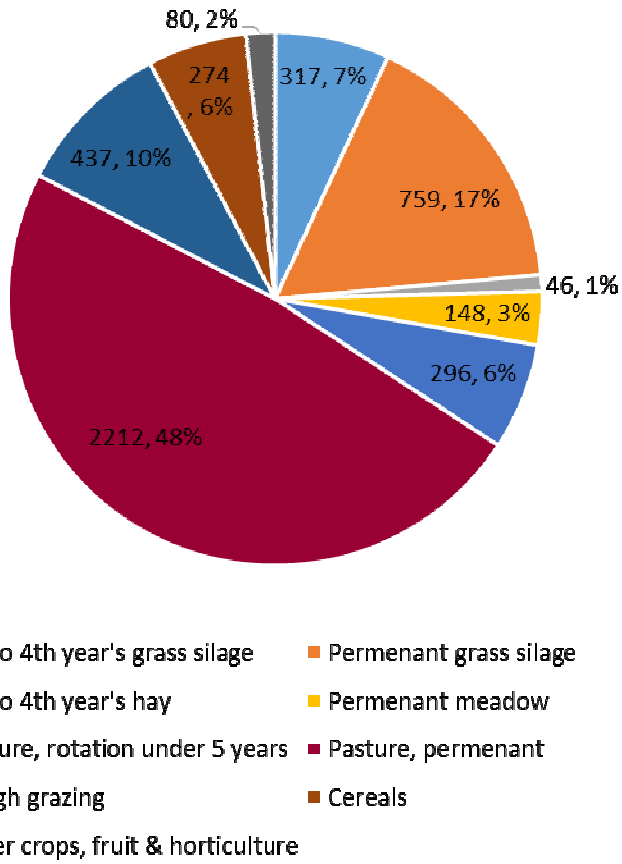


Figure 2.5. Agricultural land use 2010 (,000 ha)

Seabed habitats

The rich variety of Ireland's marine plants and animals and the huge range of habitats that they live in (and sometimes create themselves) are largely a result of geographical location, with Ireland lying within the influence of both cool northern waters and warmer southern current flows. This, coupled with the natural physical processes and features described above, creates the conditions to support biologically diverse communities found at all depths and encompassing all substrate types, from rock and biogenic reef to sand and soft muds.

At present, there is insufficient data and no established methodology to allow a comprehensive assessment of the current status and condition of intertidal habitats, benthic communities in shallow (<50 m) and (50-199 m) shelf subtidal areas, or deep-water habitats (>200 m). Ireland is currently developing an approach for the establishment of GES and the targets and indicators that will support its achievement. Overall, the Initial Assessment concluded that seabed habitats in Ireland's Assessment Area are generally considered to be in a healthy condition, although some require improvement measures (Marine Institute, 2013a).

OSPAR Habitats

The OSPAR Convention is the current legal instrument guiding international cooperation on the protection of the marine environment of the North-East Atlantic. Work under the Convention is managed by the OSPAR Commission, made up of representatives of the Governments of 15 Contracting Parties and the European Commission, representing the European Union. Specific habitats present in Irish waters are protected under the OSPAR convention, e.g. *Zostera* Beds, *Ostrea* Beds and Carbonate Mounds.

The Irish Semi-natural Grasslands Survey 2007-2012

The Irish Semi-natural Grasslands Survey (ISGS) took place between May 2007 and September 2012. The six years of the ISGS, funded by the NPWS, resulted in the botanical survey and mapping of 1,192 grassland sites covering 23,188 ha of Ireland. A total of 4,544 grassland relevés was recorded. The survey found that wet grassland was the most extensive semi-natural habitat, covering 55% of the surveyed area, with highest frequencies seen in western counties.

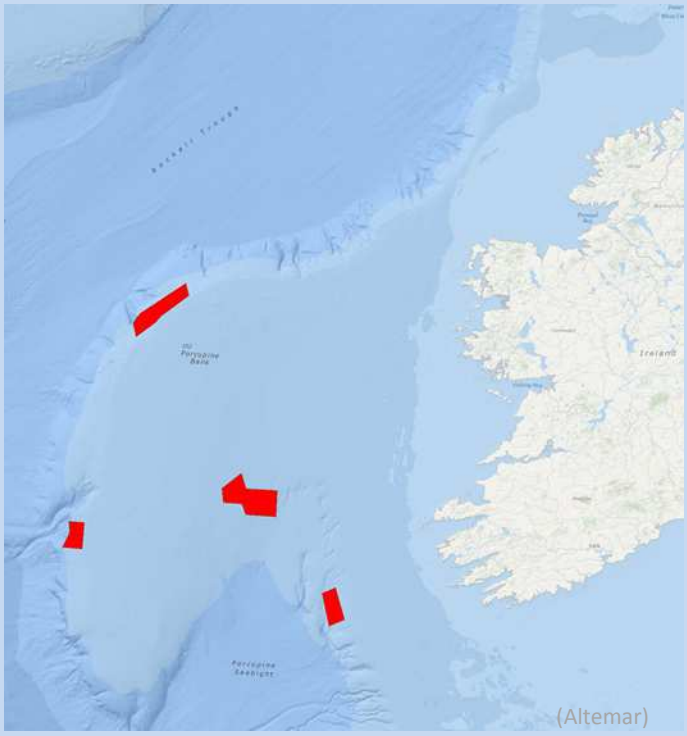
Five grassland habitats listed in Annex I of the Habitats Directive are described, mapped and assessed: [*6210] *Festuco-Brometalia* calcareous grassland (including the priority *orchid-rich variant), [*6230] Species-rich *Nardus* grasslands of upland areas, [6410] *Molinia* meadows, [6430] *Hydrophilous* tall herb swamp communities, and [6510] Lowland hay meadows.

A total of 1,255 ha of Annex I grassland was surveyed across 324 sites, comprising 5% of the total area of grassland surveyed during the ISGS. [*6210] *Festuco-Brometalia* calcareous grasslands were the most extensive Annex I grassland habitat encountered, covering 548 ha; this was followed by [6410] *Molinia* meadows (472 ha). The largest areas of Annex I habitat were recorded in Clare, Donegal and Offaly, with 455 ha of Annex I grassland recorded in these counties.

The condition of the Annex I habitats were assessed following a rules-based approach using three parameters: area, structure and functions, and future prospects. Overall, a low proportion (7%) of the Annex I habitats had decreased in area since 2000, with area gains recorded in some cases. For the structure and functions assessments, 36% of areas received a Favourable result. The future prospects assessment involved examining threats and pressures operating on the Annex I habitats. A total of 64% of sites assessed for their future prospects were in Favourable condition. The most frequent pressures recorded were all related to under-management or abandonment (e.g., undergrazing, succession to scrub or heath, bracken encroachment), although issues related to intensification (e.g., fertiliser application, overgrazing, drainage) were also recorded. The overall condition assessment for all five of the Annex I grassland habitats is Unfavourable – Bad.

Cold Water Corals

Cold-water corals (*Lophelia pertusa and other species)* are located in deep waters (400m - 1300m) off the west coast of Ireland. *Lophelia pertusa* forms biodiverse and functionally important deep-water reef habitats (Davies *et al.,* 2009). Over 1,300 species of fauna have been found in Ireland's *Lophelia* reefs. They are slow growing, fragile and vulnerable to the impacts of deep-water fisheries and the development activities of the offshore industries. In Ireland there is now evidence of some major damage to deep-water corals linked to a recent expansion of the Irish deep-water fishery (Wattage *et al.,* 2011).



According to Bullock *et al.* (2008) the value of *Lophelia* reefs to fisheries has not been determined. It is likely to be significant for some commercially important species.

In 2006, the Irish Government announced the conservation of four areas of reef under the Habitats Directive. These sites, illustrated above, are the Belgica Mound Province SAC (002327), Hovland Mound Province SAC (002328), South-West Porcupine Bank SAC (002329) and the North-West Porcupine Bank SAC (002330).

Strict enforcement of these areas is now in place under EC regulation 227/2013. Under Article 34d "Measures for the protection of vulnerable deep-sea habitats in the NEAFC Regulatory Area"

1. In these areas it is now prohibited to conduct bottom trawling and fishing with static gear, including bottom set gillnets and bottom set long lines.
2. All pelagic vessels fishing in the areas need to be on a list of authorised vessels and to be issued with a fishing authorisation and carry on board exclusively pelagic gear.
3. Pelagic vessels need to give four hours advance notification of their intention to enter an area to the Irish Fisheries Monitoring Centre (FMC). They shall at the same time notify quantities of fish retained on board.
4. Pelagic vessels fishing in an area need to have an operational, fully functioning secure Vessel Monitoring System (VMS) and these VMS reports have to be made every hour.

Acidification, due to climate change, will trigger significant changes in oceanic carbonate chemistry with major adverse effects on calcifying organisms, including deep sea species such as *Lophelia pertusa* (Hughes *et al.* 2013). As outlined in NPWS (2013) the resilience or recoverability of some of the reef resource, particularly offshore rocky and coral reefs, is low and even small levels of pressure, particularly from fishing, have the potential to affect ecological quality. Given the low tolerance of this habitat, the overall status is assessed as Bad with an ongoing decline.

Species: Status and trends

International Union for the Conservation of Nature

Since 2006, Ireland has assessed 4.5% of the total known species to occur on the island of Ireland using IUCN red list criteria. Of those assessed, 3.8% are now regionally extinct, 20.3% fall into a threat category (critically endangered, endangered or vulnerable), with a further 10.4% being considered 'near threatened'. Of the nine taxa assessed thus far, three currently have 30% of their species within an IUCN threat category: amphibia, reptiles and freshwater fish (6 out of 20 species evaluated), bees (30 out of 99 species evaluated) and non-marine molluscs (45 out of 151 species evaluated).

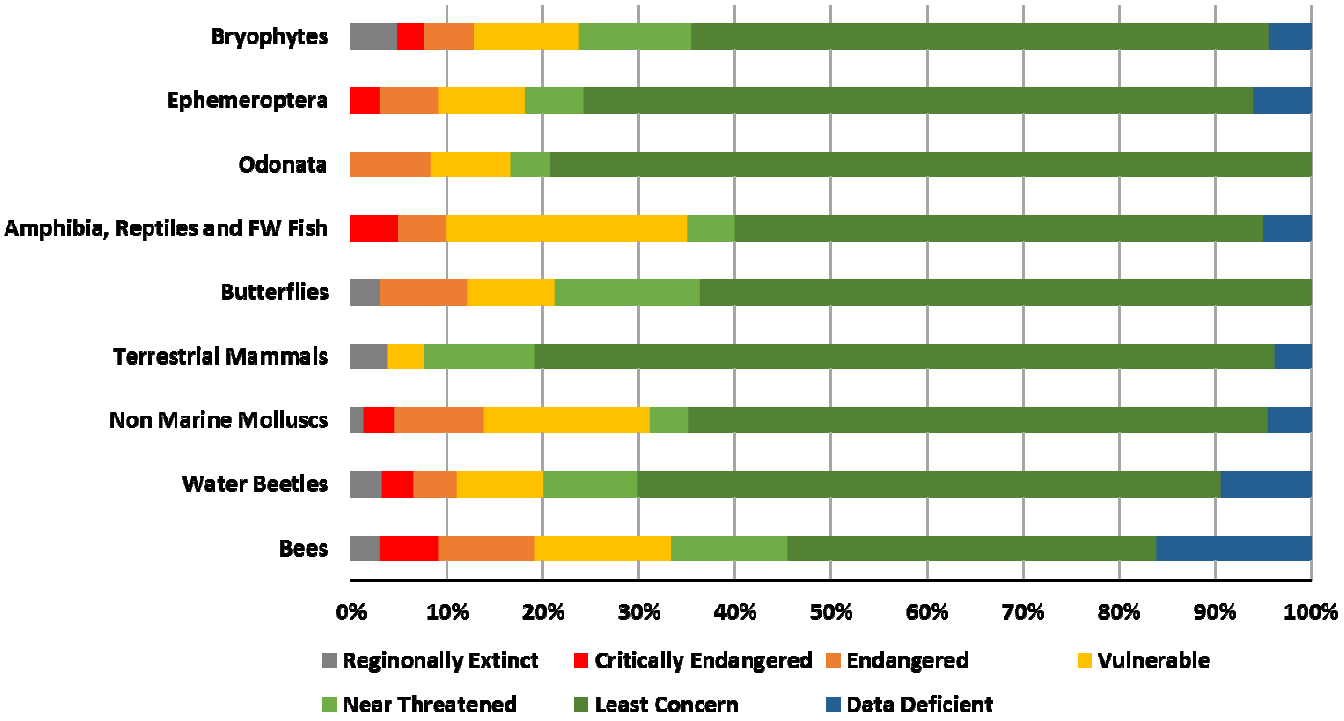


Figure 2.6. The proportion of total species evaluated under the IUCN Red List conservation status categories.

Habitats Directive Annex II Species

In 2013, 32 species were assessed as favourable, 12 as inadequate, six as bad, 11 without sufficient data and eight were considered vagrants i.e. present, but not breeding in Ireland (Figure 2.7a). With respect to the trends in the 2013 conservation status, six species are declining, three are improving, 40 are stable and 20 are unknown (Figure 2.7b). These trends reflect within (figure 2.7c) and between assessment categories.

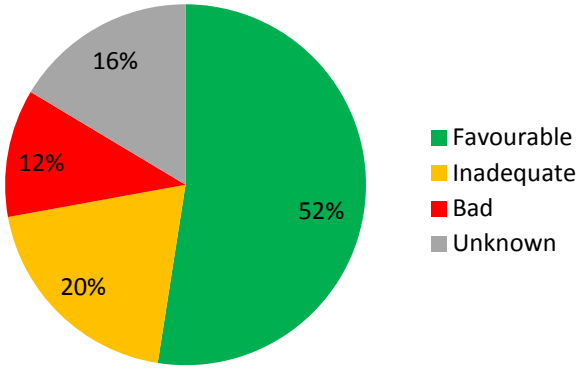


Figure 2.7a. The overall assessment results for species

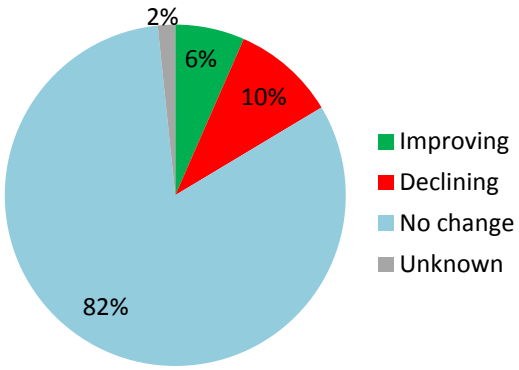


Figure 2.7b. Trends in assessment results for species

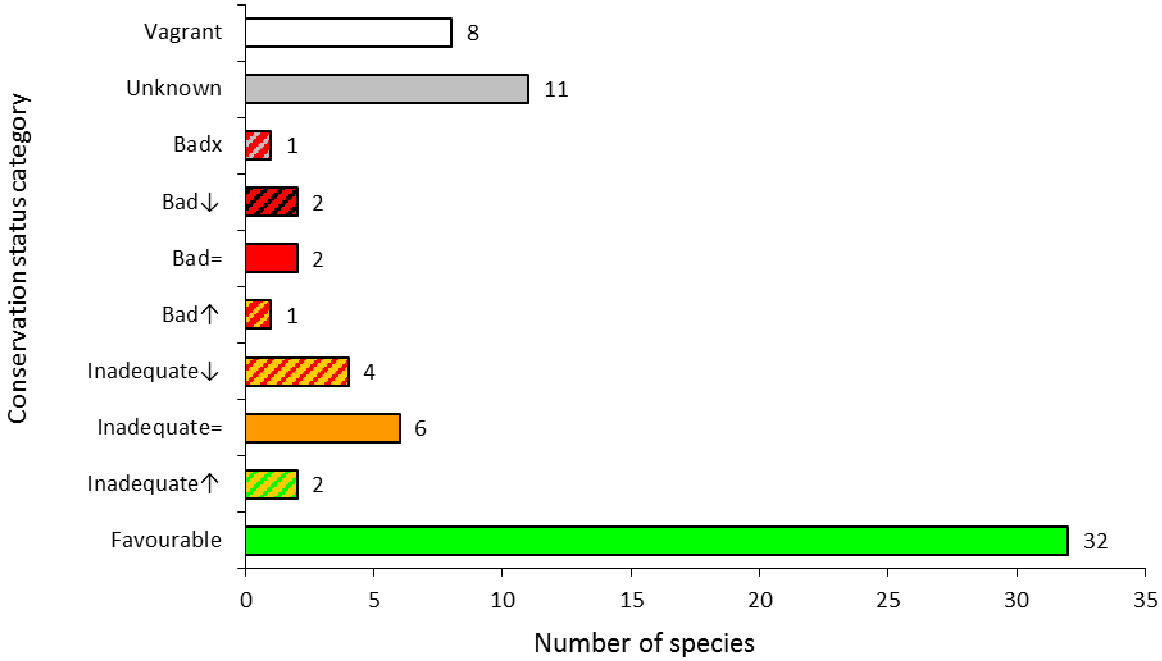
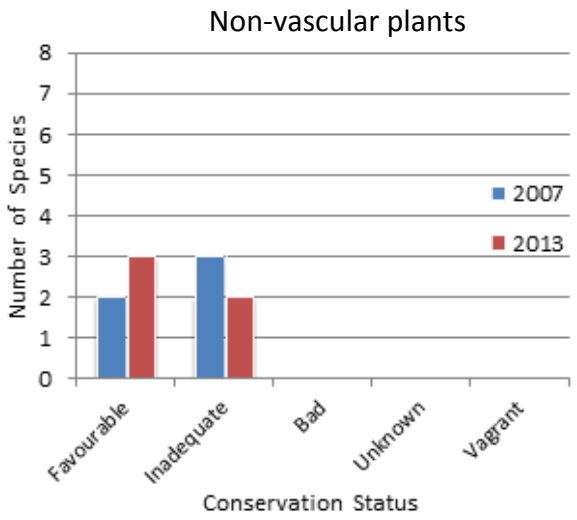
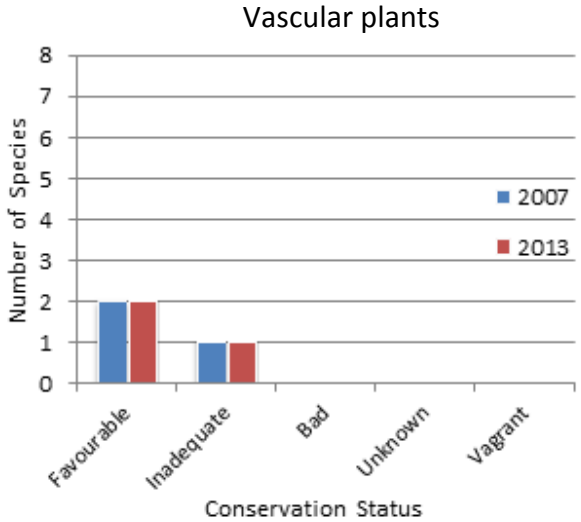


Figure 2.7c. The overall assessment results for species subdivided by qualifiers for Unfavourable categories. (↑=improving, ==stable, ↓ = declining, x=unknown)



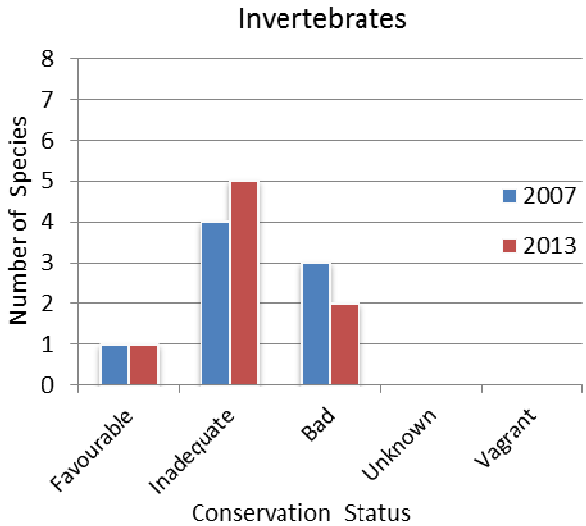
Non-vascular plants

The conservation status of two Annex V species Maërl (*Lithothamnion corralloides*) and Maërl (*Phymatolithon calcareum*) have remained inadequate Fishing and aquaculture related activities are likely to affect this species in Ireland. However, future prospects are deemed favourable as these pressures are not considered to be a threat in the future. All bryophyte species were assessed as favourable in 2013.



Vascular plants

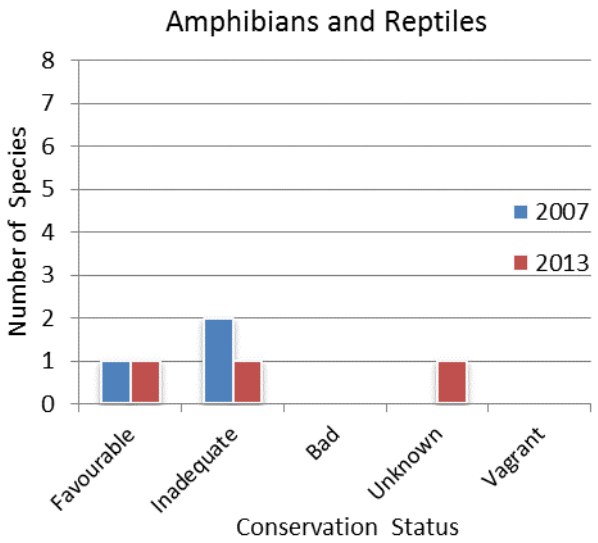
Slender Naiad (*Najas flexilis)* remains as inadequate due to water quality issues. Killarney fern (*Trichomanes speciosum*) and Marsh saxifrage (*Saxifraga hirculus*) continue to maintain healthy populations.



Invertebrates

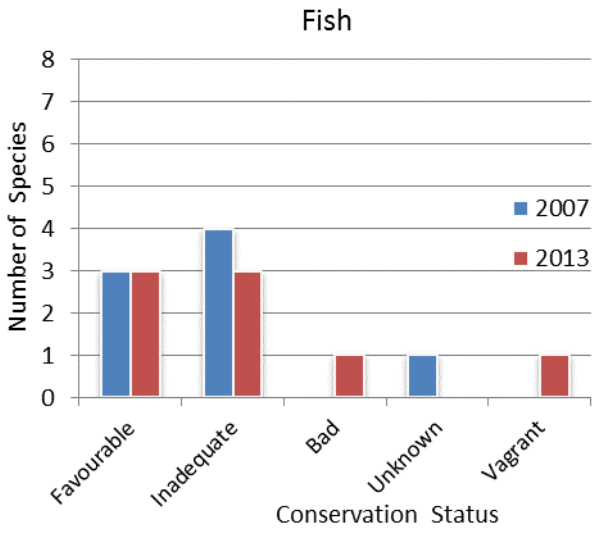
Of eight invertebrate species that are assessed under Article 17 reporting, only the Kerry Slug (*Geomalacus maculosus*) is at Favourable conservation status. All three whorl snail species (*Vertigo* sp.) are classed as Inadequate with declining status. The Freshwater Pearl Mussel (*Margaritifera margaritifera*) and the Irish Freshwater Pearl Mussel (*Margaritifera durrovensis*) are both in Bad conservation status.

Figure 2.9. Conservation Status trends for species groups in Ireland (2007-2013).



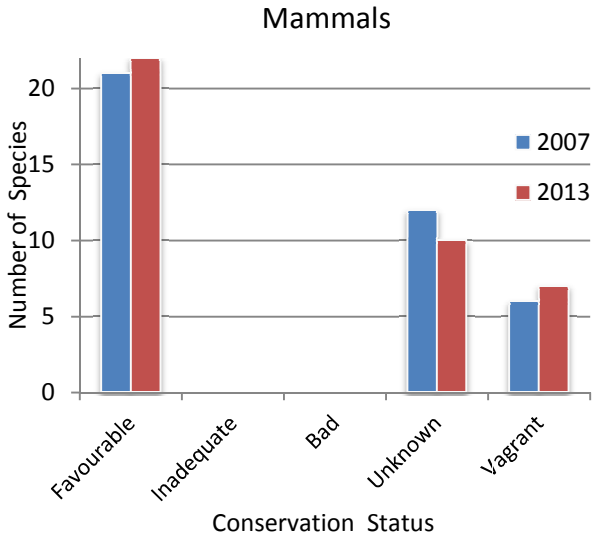
Amphibians and Reptiles

Of the three Amphibians and Reptiles species that occur in Ireland the status of the Natterjack Toad (*Bufo calamita*) is assessed as Bad but improving, the Common Frog (*Rana temporaria*) is of Favourable status and the Leatherback Turtle (*Dermochelys coriacea*) is of Unknown status. The trend in leatherback turtles is difficut to determine, as they are only encountered in small numbers in Irish waters and it is not possible to judge whether numbers are increasing, decreasing or stable.



Fish

Of the seven fish species, three are of favourable conservation status River Lamprey (*Lampetra fluviatilis*), Brook Lamprey (*Lampetra planeri*) and Killarney Shad (*Alosa fallax killarnensis*). The Twaite Shad (*Alosa fallax fallax*), Pollan (*Coregonus autumnalis*) and Atlantic Salmon (*Salmo salar*) are of inadequate, but stable status and the Sea Lamprey (*Petromyzon marinus*) has deteriorated to bad conservation status, however this species should have been assessed as Bad in 2007. For sea lamprey barriers to upstream migration, which limit access to spawning beds and juvenile habitat, are considered to be the major impediment to good conservation status.



Mammals

Of the 39 species of mammal 24 species are Cetaceans. Nine cetacean species have a Favourable conservation status, nine are of Unknown Status and six species are considered Vagrant. All nine bat species are of Favourable conservation status with the exception of Nathusius' Pipistrelle (*Pipistrellus nathusii*) in 2013, which is Unknown. All other mammal species including Mountain Hare (*Lepus timidus*), Otter (*Lutra lutra*), Pine Marten (*Martes martes*), Grey Seal (*Halichoerus grypus*), Common Seal (*Phoca vitulina vitulina*) are of Favourable conservation status in 2013.

Figure 2.9 (contd.). Conservation Status trends for species groups in Ireland (2007-2013).

Fungi

Ireland possesses fungal habitats including, old Atlantic oakwood, machair and sand dunes, raised and blanket bog and the Burren limestone region. However, Ireland has no Red Data List for Fungi. In addition, Fungi are not considered in the Checklist of Protected and Rare Species in Ireland (Kingston, 2012). Data from Senn-Irlet *et al*. (2007) presented in Table (2.1) show the fungal conservation ratings of Ireland and five other European countries. Overall, Ireland was ranked 33rd out of 44 countries.

Table 2.1. Fungal conservation ratings of Ireland (1=best rating, 2= middle rating and 3= worst possible rating.)

Country	Checklist	Professional mycologists	Amateur mycologists	Red list	Conservation consideration
Ireland	**1**	**3**	**-**	**3**	**3**
UK	1	3	2	2	2
France	2	2	1	2	3
Switzerland	1	3	1	1	2
Poland	1	1	3	2	2
Finland	2	1	1	1	2

Vertebrates: Birds

Under Article 12 of the EU Birds Directive, there is a new requirement to report on the size and trends of the populations of birds in each Member State, and provide information on changes in distribution. The Birds Directive report for Ireland was submitted in February 2014. The report covers 196 species, which includes species which live in Ireland all year round, and others which migrate here for summer or winter. Data is collated from a number of sources and surveys. Where sufficient data is available, both short-term and long-term population trends can be estimated (Figure 2.10), and trends in breeding range quantified. However, long-term data is lacking for over half of the species assessed. The report provides information on trends rather than a conclusive assessment of conservation status.

Some species have experienced significant increases in population over the long term, including Raven, Collared Dove, Buzzard and Blackcap. In addition, species that did not breed in Ireland in the 1970s and 1980s are now regular breeders and continue to increase their ranges (e.g. Little Egret, Great Spotted Woodpecker). However, other species have undergone significant declines in their long-term breeding distribution: Corncrake (92%), Curlew (89%), Whinchat (77%), Grey Partridge (74%), Woodcock (68%), Lapwing (56%), Red Grouse (52%) and Redshank (50%). The Hen Harrier, which had been increasing in numbers, shows an overall short-term decrease of 11%.

Some of these species have responded positively to targeted conservation action. For example, the severe long-term Corncrake decline has substantially slowed in recent years with the short-term population still in decline but at a much reduced rate of 16%. The Grey Partridge was nearing extinction at the turn of the century but has enjoyed a short-term population increase to approximately 1,000 birds due exclusively to the targeted conservation work at Boora Co. Offaly. In addition, improved management of grazing in western hills has brought about the resurgence of the Grouse population there. However, there is an immediate need for measures to halt the declines noted above, most of which are driven by changes in farming practices and intensity, and also the increase in afforestation and wind farm construction in upland areas.

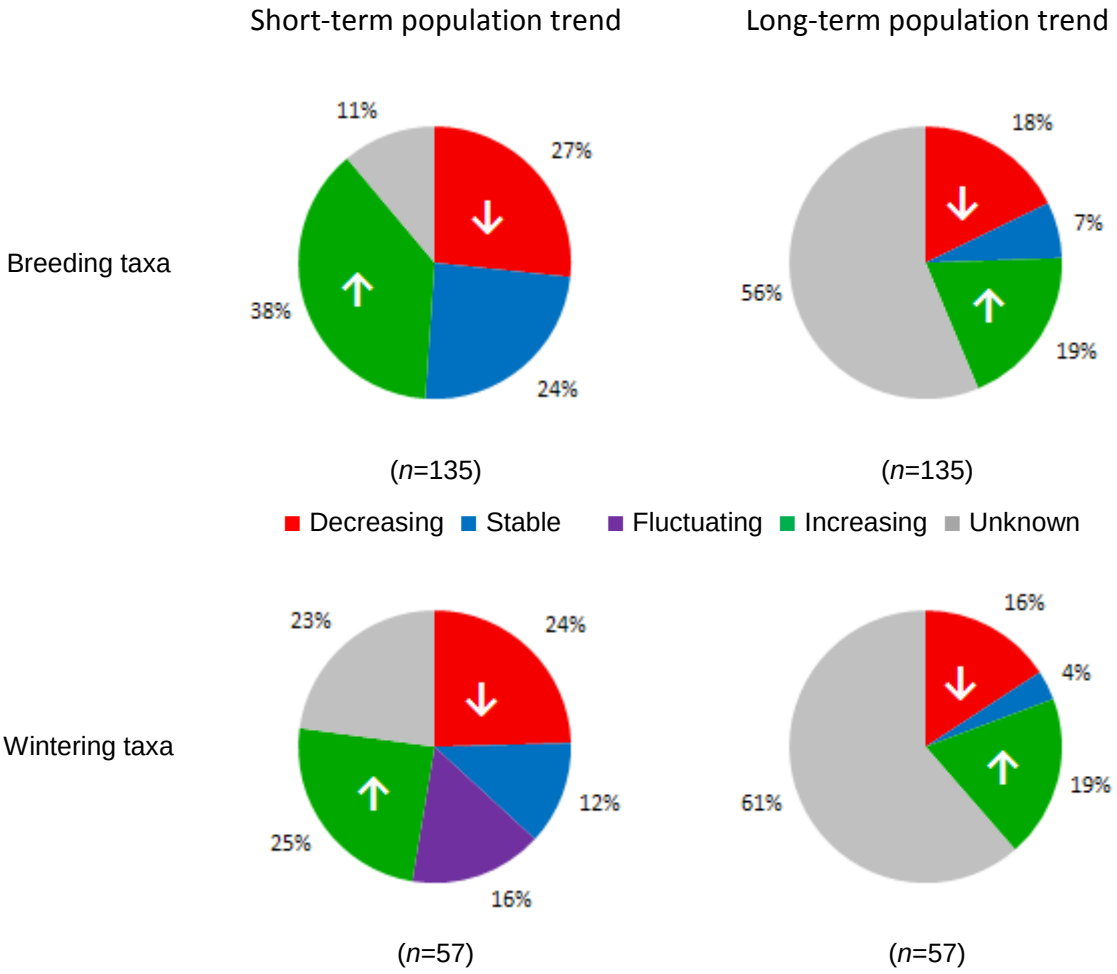


Figure 2.10. The proportion of taxa reported as having decreasing, stable, fluctuating, increasing or unknown for short- and long-term population trends, and both breeding and wintering taxa.

Vertebrates: Fish

The Initial Assessment of the Marine Strategy Framework Directive (Marine Institute, 2013a) summarises the current state of knowledge regarding the status of fish in Irish waters caught as part of on-going monitoring programs include annual assessments of commercial catches and landings made by national and international fishing fleets, together with fishery-independent surveys undertaken by research vessels.

The Irish Groundfish Survey (IGFS), which is part of the international bottom trawl survey, monitors both commercially and non-commercially exploited species. The IGFS in its current form commenced in 2005 and covers two survey areas (Figure 2.11). In the northwest, the IGFS extends from the Donegal coast out to the shelf edge and also east to the coast of Scotland (Area VI). Off the Irish west coast it extends to the shelf edge and thereafter south into the Celtic Sea (Area VII). The reporting period used here corresponds to the time series of current monitoring (2005-2012). The Irish Deep-water Survey (IDS) was conducted between 2006 and 2009 and monitored shelf edge, slope and deep-water fish off the northwest and west coasts (Figure 2.11).

Overall, the Initial Assessment indicates that there is tentative evidence to suggest an improving picture for marine commercial fish species (Marine Institute, 2013a), although the Stock Book 2013 notes that 24% of stocks are still overfished and require catch reductions (Marine Institute, 2013b). Data from the IGFS indicates that diversity (Shannon-Wiener index) at a haul level has decreased slightly in recent years, meaning that numerically particular species are becoming to dominate per haul. However, there has been

an increase in the total number of species (species richness) from an average of ca. 23 species per haul to around 25 species in 2010 (Marine Institute, 2012; Figure 2.12).

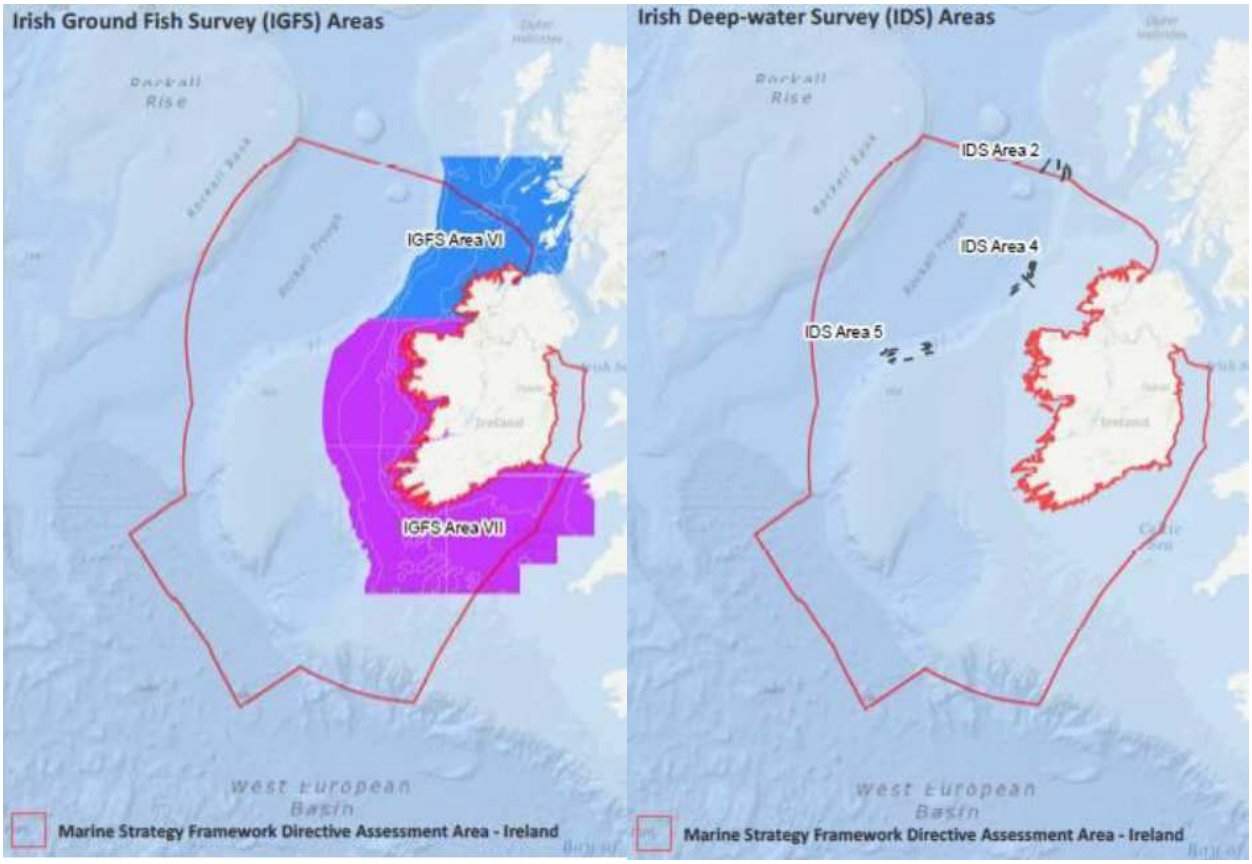


Figure 2.11 Map of the Irish Groundfish survey areas on the left and the three study areas during the Irish Deepwater Survey.

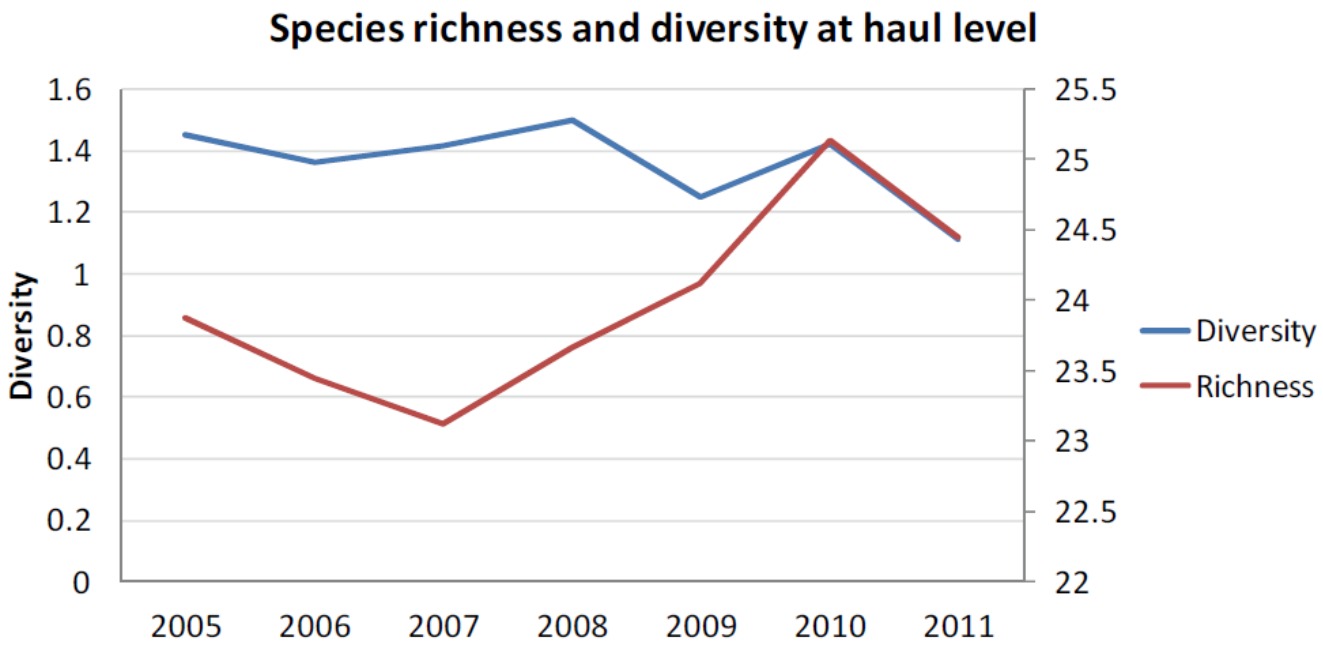
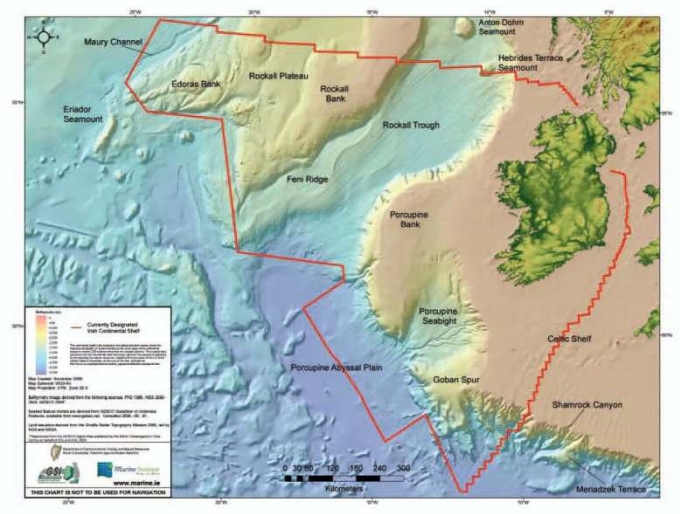


Figure 2.12 Species richness (number of species in a given haul) and Shannon-Wiener diversity (community evenness) at a haul level of the IGFS fish community over time (Marine Institute, 2012).

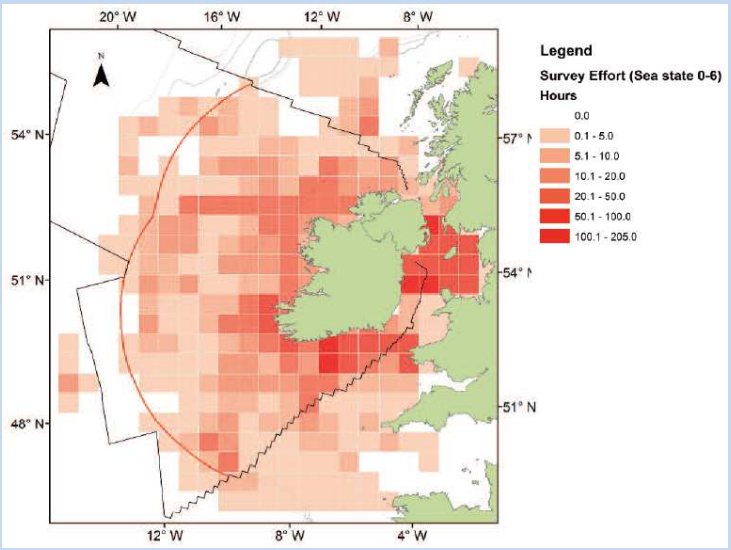
Atlas of the Distribution and Relative Abundance of Marine Mammals in Irish Offshore Waters: 2005 – 2011.



Ireland is situated in the north east Atlantic and has one of the largest maritime Exclusive Economic Zones (EEZ) in Europe. An atlas of the distribution and relative abundance of marine mammals in Irish offshore waters was published recently (Wall *et al.,* 2013). This publication shows the value that can be obtained from interdisciplinary marine surveys and collaboration between NGOs, third level institutes, State and EU Partner agencies and the commercial sector, in providing meaningful temporal and spatial coverage for monitoring Ireland's marine mammal biodiversity. It is a culmination of six years of survey effort involving 1,078 days at sea and over 5,000 hours of survey effort. It contains the most comprehensive and up-to-date maps available of the distribution and abundance of cetaceans in Irish and Northern Irish waters and is one of the most comprehensive cetacean mapping projects conducted to date by any EU country.

Under Article 17 of the Habitats Directive Ireland has an obligation to report to the European Union on the conservation status of listed species and habitats every six years. This requires comprehensive species and habitat monitoring networks at a national level. As outlined by Wall *et al.* (2013) much of the previous distribution and abundance data on cetaceans in Irish waters were gathered as secondary data during seabird surveys. Although estimates of absolute cetacean abundance were conducted during the SCANS I, SCANS II and CODA surveys in 1994, 2005 and 2007, these surveys were highly seasonal in nature, being conducted during a single summer month, and provided a snapshot in space and time of cetacean distribution and relative abundance within all or part of the Irish EEZ.

Wall *et al.* (2013) present data collected during the IWDG ISCOPE I and II projects, the IWDG/GMIT Marine Mammals and Megafauna in Irish waters project, the IWDG Ferry Surveys Programme and the IWDG casual and effort-based sightings scheme between January 2005 and January 2011.



Ship surveys involved a single marine mammal observer (or up to three observers, in the case of IWDG ferry surveys) conducting visual survey effort from research vessels, naval service vessels and commercial ro-ro ferries. Casual sightings were also included in the data for distribution mapping. Records submitted to the IWDG went through a validation process and approximately 15% of casual sighting records were accompanied by images.

Survey effort was conducted within the Irish EEZ and the wider Irish Designated Area. Due to the multinational nature of many European marine surveys, effort was also conducted within the EEZ of adjacent EU countries, from 2005 to January 2011. In total, 2,557 effort-related sightings and 7,454 non-effort related sightings, of 16 cetacean species and two seal species were used in the analysis and presented in the report.

Question 3: What are the main pressures on biodiversity?

The habitats and species pressures data presented in this section are largely derived from the 2013 EU Habitats Directive Article 17 reporting (NPWS, 2013) and the Initial Assessment of the Marine Strategy Framework Directive (Marine Institute, 2013a).

Habitats: Pressures

Figure 3.1 represents the proportion of Habitats Directive habitats impacted across pressure categories at High, Medium and Low intensity; while Figure 3.2 shows the proportion of Article 17 habitats impacted solely by High intensity pressure categories. The former figure highlights the breadth of pressures acting across habitats, whilst the latter figure identifies the primary pressures across habitats.

Ecologically unsuitable grazing regimes represent approximately 50% of the pressures recorded in the "Agriculture" category (Figures 3.1 and 3.2). The grazing pressures noted were both intensive and non-intensive grazing. Non-intensive grazing is assigned as a pressure where a habitat has not recovered from the impacts of overgrazing and even a small amount of grazing is still considered to negatively impact the habitat. One-third of the pressures in the "Agriculture" category relate to abandonment, which in parallel with the "Natural and Abiotic processes" category relating to succession, highlight how the ongoing depopulation in rural Ireland is having a direct impact on the management of semi-natural habitats in those regions (CSO, 2012a).

Approximately one-third of "Natural system modifications" relate to drainage while the remainder comprise of burning, reclamation, dredging and sea defences. Over half of the High intensity pressures relate to drainage, which significantly impacts peatland habitats. The most prevalent pollution sources are from agricultural or forestry related activities and household sewage systems. Air pollution was reported to impact upland habitats but at a Low intensity. Mechanical peat extraction is considered a High intensity pressure for Blanket bog and also indirectly impacts lake and river habitats.

Climate change was considered a high intensity pressure, currently impacting 10% of habitats. Evidence is accumulating that climate change is already negatively impacting coastal habitats and predictions suggest that, in particular, degraded upland habitats will become less resilient to the impacts of climate change in the immediate future. Furthermore, current models predict that drier summers and higher levels of more intense rainfall which are likely to result in bog bursts and landslides may indirectly impact other habitats e.g. lakes (Kiely et al., 2010). A recent study of oceanic montane plant communities in Ireland suggests that the current protected area network "…may not adequately conserve many montane species, under future climate change, particularly the artic-montane and boreo-arctic montane species, which are likely to be the most vulnerable species to climate change.", (Hodd et al., 2014).

Based on the NPWS (2013) Article 17 reporting there is no evidence that there will be any major decline in pressures over the next 12 years. Some potential improvements however have been noted since 2007 reporting for the following:

- A decline in invasive infestation of woodlands due to improved forestry management.
- Management of aquaculture related pressures impacting estuaries and mudflats
- A reduction in pollution from household waste, sewage systems and pollution arising from agricultural or forestry related activities. These improvements are likely to be observed in future assessment of inland aquatic habitats.

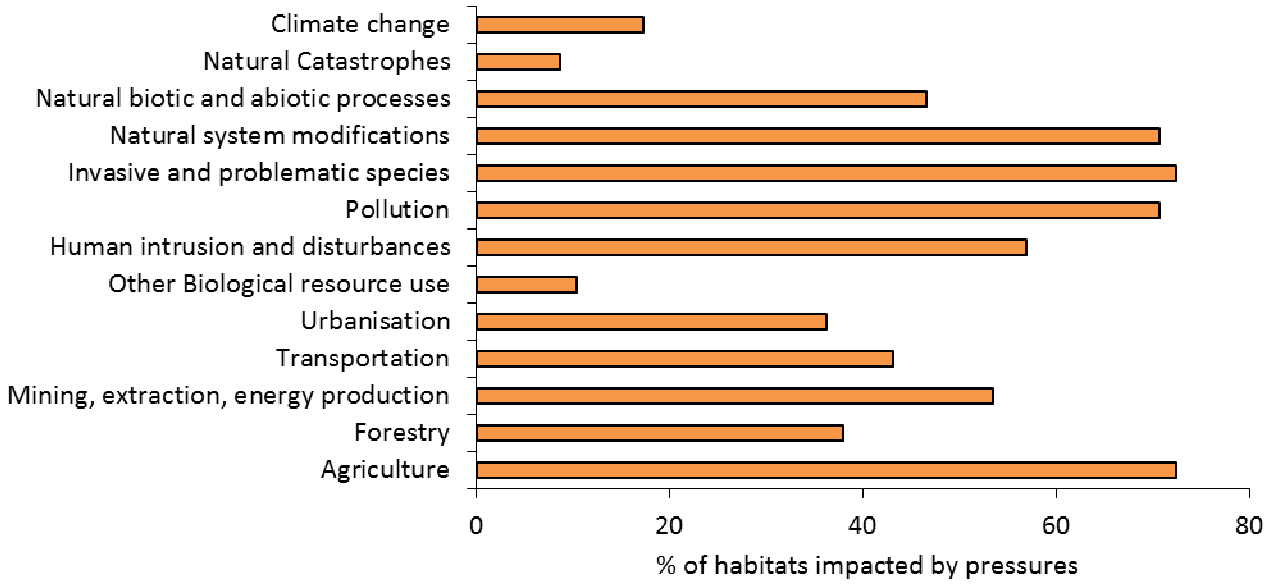


Figure 3.1. The proportion of habitats impacted by Pressure category at High, Medium and Low intensity.

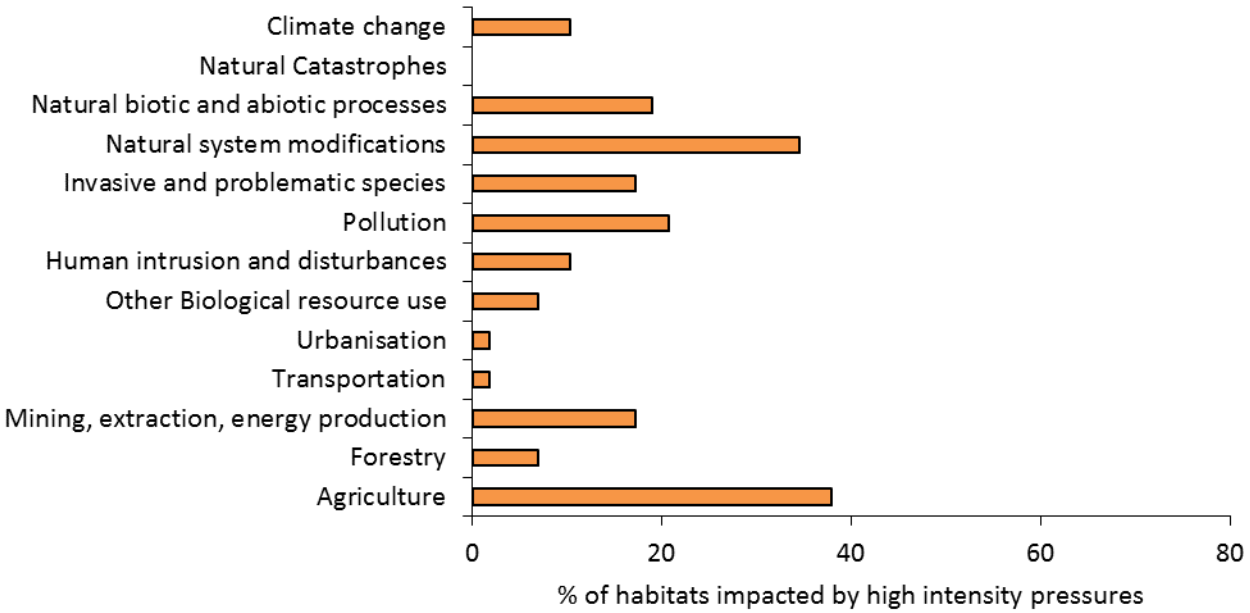
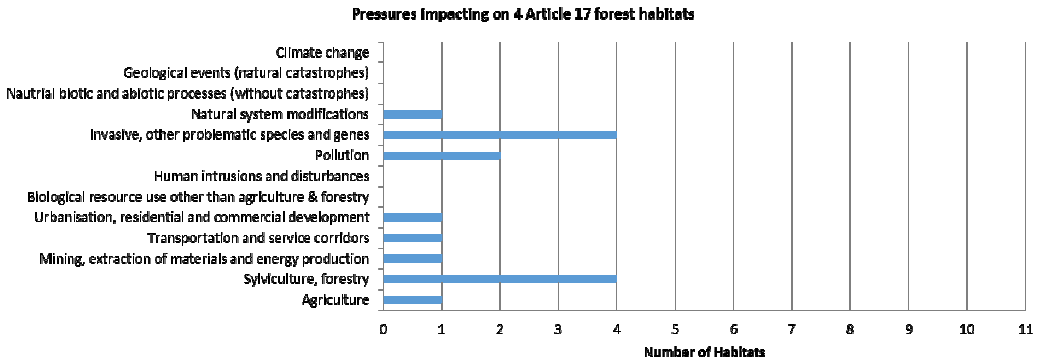


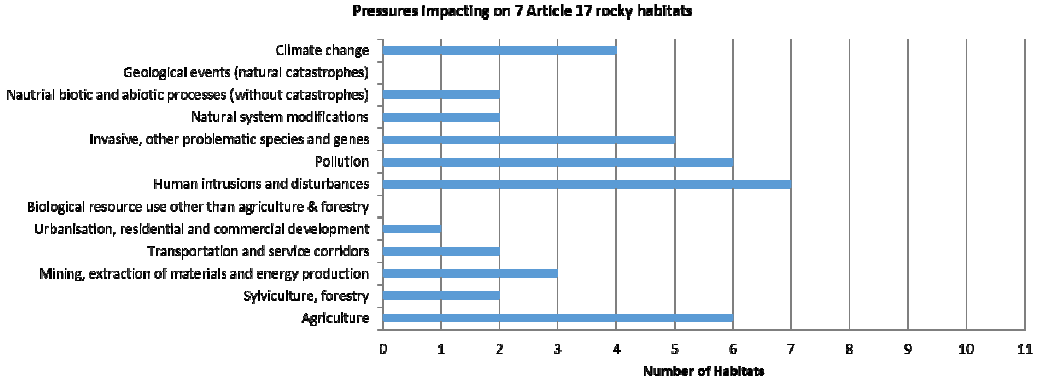
Figure 3.2. The proportion of habitats impacted by Pressure category at High intensity.

A more detailed summary of the habitats and corresponding pressures is provided on the European Commission website (EIONET, 2014).



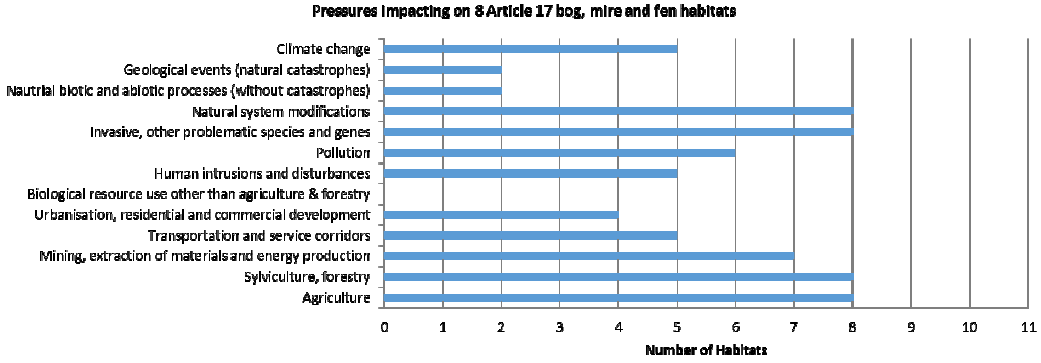
Forest habitats

Of the four woodland habitats assessed, invasive species and forestry are identified as the primary pressures. Other pressures of varying importance include peat extraction which impacts on hydraulic conditions, overgrazing and a lack of regeneration of woodland species.



Rocky habitats

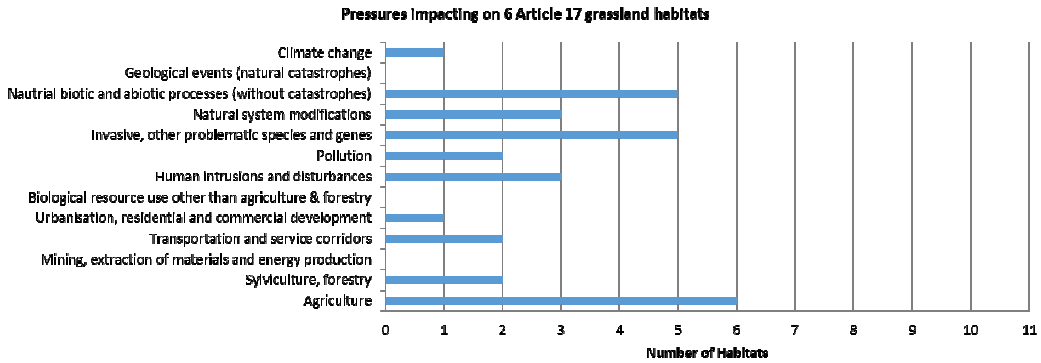
Outdoor recreational activities, such as rock climbing or trampling of vegetation by walkers, and ecologically unsuitable grazing regimes are the key pressures impacting rocky habitats. Air-borne pollutants, such as acid and nitrogen deposition, are a secondary driver of decline in theses habitats.



Bog, mire and fen habitats

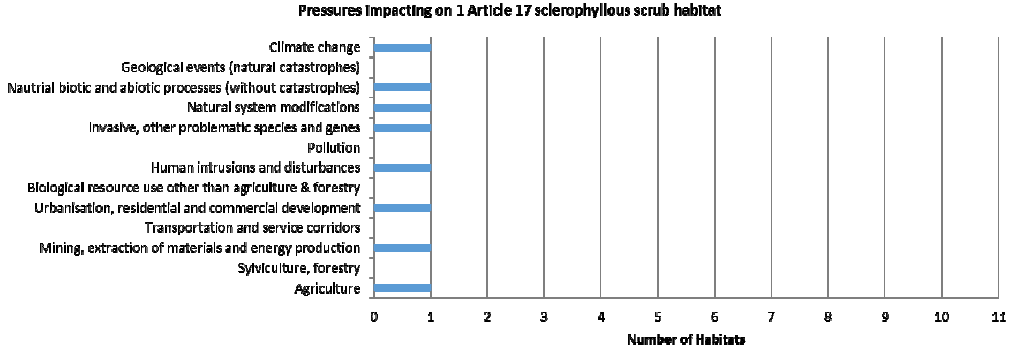
All eight habitats are impacted by forestry, agriculture, natural system modifications and invasive species. Furthermore, peat extraction is a key pressure observed in seven of the habitats. Continued drying and reduced structural stability of the bog structure, afforestation and wind farm development are also seen as major pressures to Irish peatlands.

Figure 3.3. Grouped Habitats Directive habitats and their corresponding pressures.



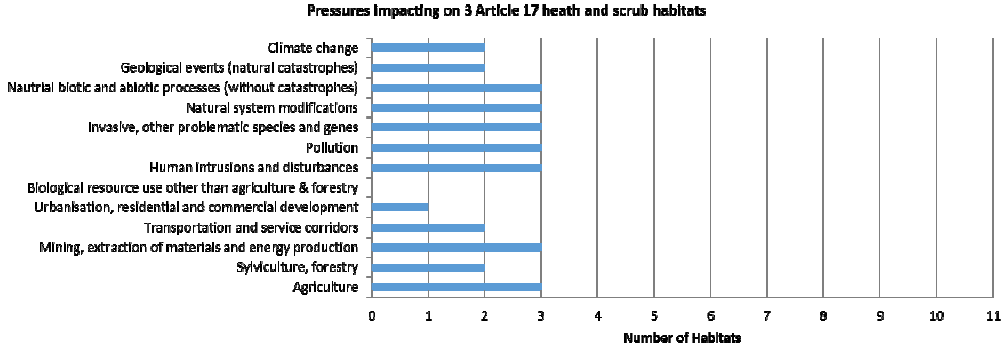
Grassland habitats

Grassland habitats are being impacted by wide range of pressures. In general, pressures on grassland habitats include agricultural improvement, lack of mowing, scrub encroachment, land abandonment, overgrazing, erosion and in certain circumstances agricultural and industrial pollution.



Sclerophyllous habitat

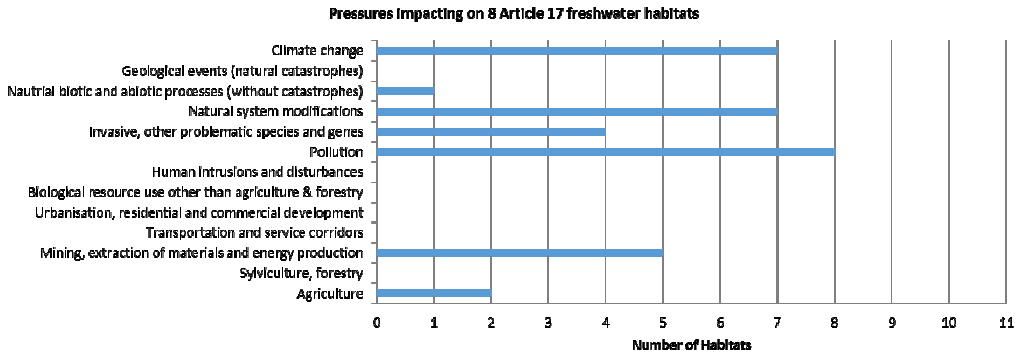
Low recruitment of new shrubs and ecologically unsuitable grazing are the main issues affecting the quality of Juniper scrub formations.



Heath and scrub habitats

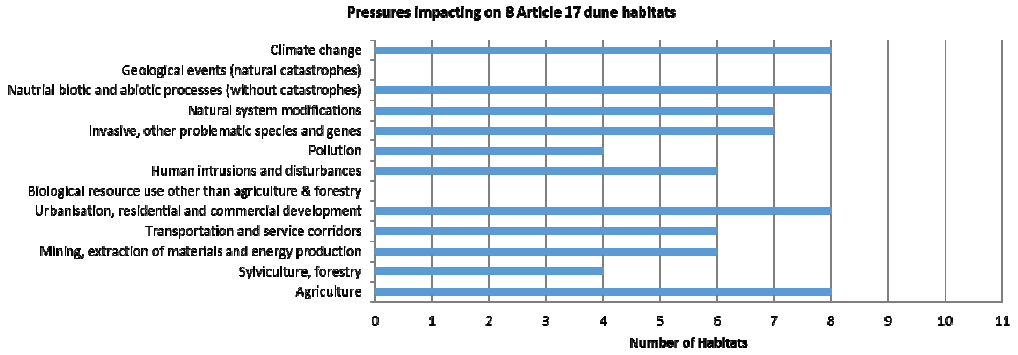
All three heath habitats are being influenced by a wide range of pressures. These include afforestation, agricultural improvement, overgrazing, trampling, burning, invasive non-native species, drainage, abandonment, scrub encroachment and erosion. Climate Change is also identified as a pressure in two of these habitats.

Figure 3.3 (contd.) Grouped Habitats Directive habitats and their corresponding pressures.



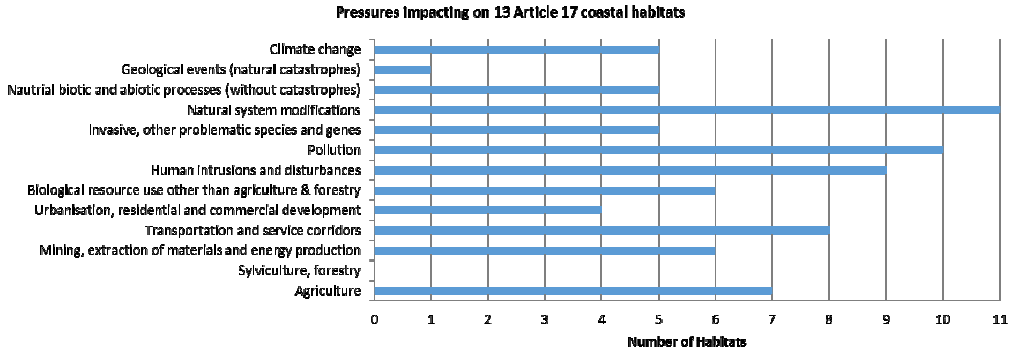
Freshwater habitats

Freshwater habitats are under significant pressure in Ireland. In all of the eight habitats, pollution is identified as a pressure, followed by climate change and natural system modification. In general, pressures are in the form of pollution from agriculture, industry and domestic wastewater systems, as well as eutrophication, drainage, indirect impacts resulting from peatland damage.



Dune habitats

Of the eight habitats assessed, significant pressures are seen across all habitats. As these habitats vary in distance from the land sea interface, in parallel the type of pressure impacting these habitats varies depending on the distance from the sea. Recreation, coastal defences, pollution, climate change and invasive species are seen as a pressure in many coastal habitats, while ecologically unstable grazing and agricultural intensification impacts the more terrestrial habitats.



Coastal habitats

Of the 13 coastal habitats that are assessed in Ireland, pressures in 11 of the habitats highlight natural system modifications such as sea defence or coast protection works. A secondary key pressure is pollution of surface waters, both direct and diffuse, as well as garbage and solid waste. Fishing and aquaculture related activities continue to affect habitat quality, particularly for highly sensitive species such as maërl and eel grass in several of the marine habitats.

Figure 3.3 (contd.) Grouped Habitats Directive habitats and their corresponding pressures.

Seabed Habitats

Human activities affect marine habitats and species, either through the discharge and runoff of nutrients and chemicals or through direct physical contact or disturbance. The actual level of impact is, difficult to quantify, but the range and potential severity of human pressures acting upon seabed habitats in Irish marine waters broadly decreases with increasing water depth and distance from shore.

Intertidal Habitats

Intertidal habitats are subjected to a wide range of pressures from human activities, such as commercial harvesting of shellfish, the removal of seaweed from the shore and shellfish aquaculture activities. The Infaunal Quality Index (IQI), a monitoring tool commonly used to assess ecological status under the EU Water Framework Directive, indicates that sedimentary habitats are in relatively good condition with 74% of assessed locations classified as having good or high ecological status. Of the remainder, 12% were classified as moderate, 8% as poor and 6% as bad.

Shallow (<50 m) and Shelf (50-199 m) Habitats

Many man-made hazardous substances (including synthetic and non-synthetic contaminants) originating from a variety of land, marine and air-based sources have a tendency for binding to organic material which is subsequently co-deposited with fine sediments in shallow or shelf habitats. Dredging activity and spoil dumping may expose and reintroduce the contaminants back into the water column, but relatively small quantities of dredge materials are disposed of in Irish waters and activity is continuously monitored for compliance with OSPAR guidelines and EPA licences for dumping at sea.

Fishing activity in the shallow and shelf sedimentary habitats is likely to have significant impacts on the benthos. Spatial analysis indicates that bottom fishing extended over at least 21% and 20% of shallow and shelf mud habitats respectively in 2011. For the same period, bottom trawling potentially extended across 11% and 8% of shallow and shelf sand habitats respectively. Similarly, bottom trawl fishing activity extended across at least 9% of the shallow coarse sediments. The impact of bottom fishing on habitats is difficult to determine because the muddy seabed communities are themselves naturally highly variable.

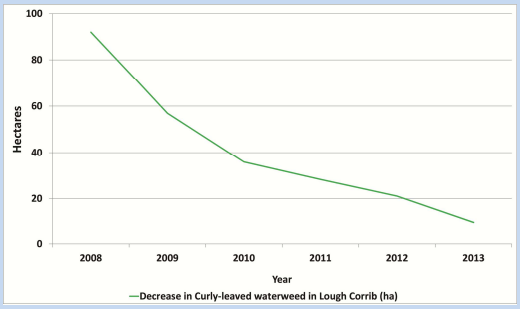
Deep-water Habitats (>200 m)

Deep-water habitats extend over large latitudinal ranges in Ireland's territorial waters. The distribution and composition of these habitats are not well characterised because of their depth, remoteness and considerable extent. The potential impacts of hydrocarbon exploration on deep-water habitats are similar in nature to those indicated for shelf habitats. Up to 2013, a total of 32 and 16 exploratory wells have been drilled in the upper slope and bathyal zone, respectively. At current levels of activity it is unlikely that hydrocarbon exploration is causing significant negative effects on deep-water seabed habitats. A small number of submarine cables traverse Ireland's deep-water habitats but studies indicate that there has been no detectable impacts on the benthos. Trawling can modify the physical properties of seafloor muds and alter natural sediment translocation, but the negative impacts of trawling on fish populations and benthic communities in Irish deep-water habitats are not well documented.

CAISIE LIFE+ Project

Aquatic invasive species are internationally recognised as a principal threat to the biodiversity of native inland water ecosystems. Ireland has been susceptible to historical and modern introductions of non-native species through both deliberate and inadvertent means.

The aim of the EU LIFE+ Nature and Biodiversity project 'Control of Aquatic Invasive Species and Restoration of Natural Communities in Ireland' (CAISIE), was to "contribute to the halting of biodiversity loss in Ireland by preventing further impacts on native biodiversity from high impact aquatic invasive species, through the development and demonstration of effective control methods, a programme of stakeholder engagement and awareness raising, and policy development and dissemination".



The project was managed by Inland Fisheries Ireland and co-funded by the EU Life Programme and National Parks and Wildlife Service. The four-year project commenced on the 1st January 2009 and focused on two main geographical areas: (1) Lough Corrib and (2) the Grand Canal and Barrow Navigation.

By the end of the project over 90 % of the original 92 hectare infestation of *Lagarosiphon major* (Curly-leaved waterweed) in Lough Corrib had been successfully treated and native aquatic species re-established in treated areas after weed control. Previously infested areas were re-opened for angling, boating and other recreational activities. A 'rapid reaction' capability to quickly respond to new aquatic invasive species (AIS) threats in Lough Corrib was implemented and continues to manage the remainder of the infestation. New control methods were developed to successfully treat *Lagarosiphon major* in Lough Corrib and these included the pioneering use of jute matting and the development of trailing knives (V-blades) for the control of submerged aquatic weeds. This has resulted in the expansion of these interventions to other weed infested waters in Ireland and internationally.

The distribution and abundance of AIS throughout the Grand Canal and Barrow Navigation were assessed and new control methods were successfully developed or adapted to treat the range of AIS in these systems. All sites with *Heracleum mantegazzianum* (Giant hogweed), *Fallopia japonica* and *Fallopia japonica* x *bohemica* (Japanese and hybrid knotweeds), *Crassula helmsii* (New Zealand pigmyweed) and *Elodea nuttallii* (Nuttall's pondweed) have now been successfully treated. The upstream spread of *Impatiens glandulifera* (Himalayan balsam) has been contained in the Barrow Navigation to a location *circa* 8 km downstream of Athy. *Leuciscus leuciscus* (Dace) have been removed from the lower reaches of the Grand Canal Barrow Line and prevented from spreading through the main Grand Canal channel (and into connected water bodies such as the River Shannon) and native aquatic plant and insect species have re-established in treated areas.

The CAISIE Project has been integral to the development of AIS biosecurity initiatives in Ireland and in engaging with a wide diversity of stakeholders. As a result of the CAISIE Project, substantial resources are now in place to build upon its success and to continue to meet the challenge of tackling invasive species in Ireland. These include specialist field equipment (e.g. weed cutting and harvesting boats, specialist weed cutting equipment, appropriate 4 x 4 vehicles and diving equipment), novel and enhanced invasive species control and management techniques, a wide range of invasive species information resources for stakeholders and increased invasive species management expertise among IFI scientific and field personnel.

Figure 3.4 represents the proportion of Habitats Directive species impacted by a pressure category at High, Medium and Low intensity, while Figure 3.5 represents the proportion of Habitats Directive species impacted by High intensity Pressure categories. In comparison to the habitat assessments, there is a lower incidence of pressures on species, particularly in the High intensity category. From the data in the 2013 Article 17 report, there is no evidence that there will be any major decline in the incidence of pressures over the next 12 years. Legislative changes should see regulatory related improvements in the conservation condition of sites inside the Natura 2000 network. For the significantly large area of the national habitat resource outside the Natura 2000 network and corresponding protection regimes, it is envisaged that sustainable practices will be delivered through the Marine Strategy Framework Directive. The impact of aquaculture related pressures on Maërl species (both listed under "Other biological resource use") should therefore reduce. It should be noted that the direct extraction of dead maërl in Ireland is no longer allowed. Furthermore, invasive species are also considered likely to increase as a pressure across a number of species. Finally, bat species are predicted to be increasingly impacted by wind energy and forestry management (e.g. clearance) and systematic monitoring schemes covering 1,269 km of transects and 355 waterways by Bat Conservation Ireland are in place, to detect changes in their abundance and distribution (Carden *et al.,* 2010; Aughney *et al*., 2012; Roche *et al*., 2012).

Overall, pollution is considered the primary pressure impacting the conservation status of species. Human intrusion and disturbances was reported frequently, but never at a High intensity. Agricultural practices also have a High impact on species that occur within agricultural systems, e.g. *Vertigo* species and Marsh Fritillary.

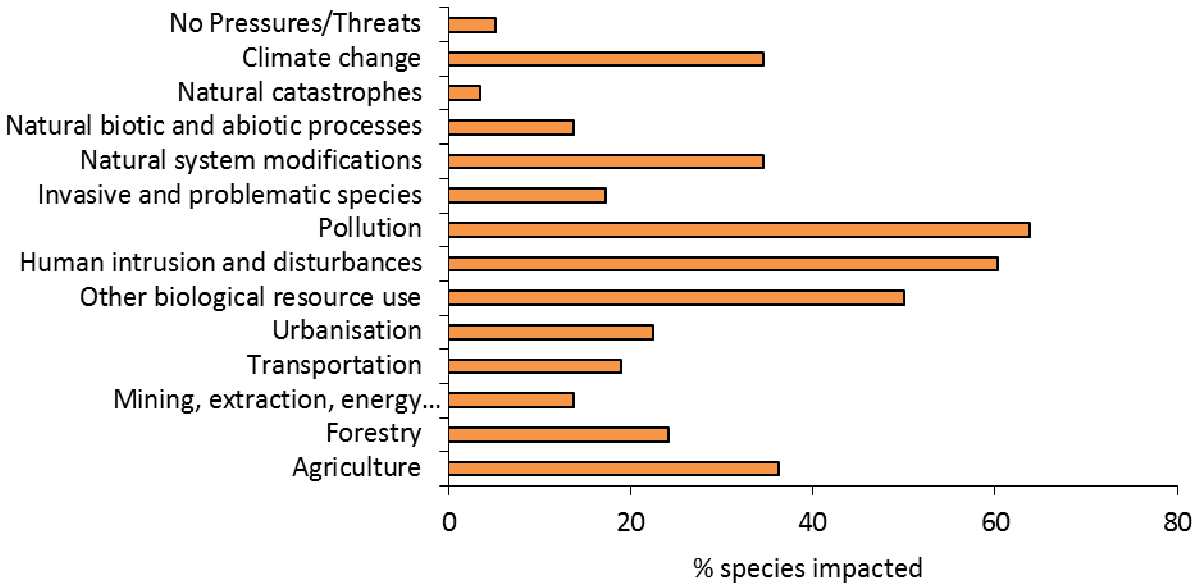


Figure 3.4. The proportion of species impacted by Pressure category at High, Medium and Low intensity.

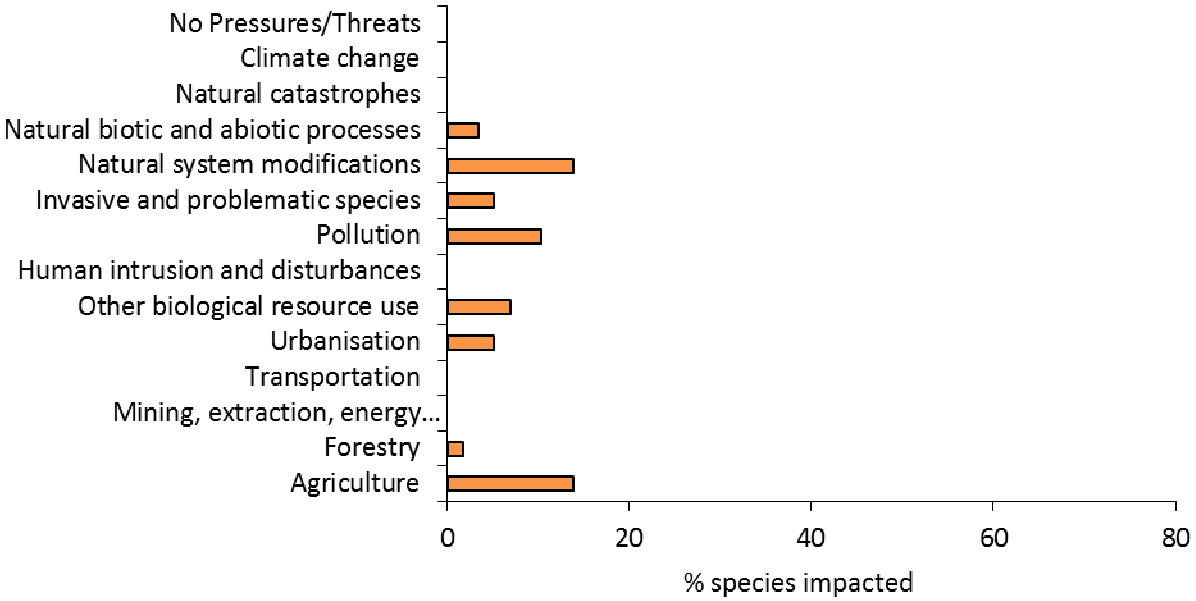


Figure 3.5. The proportion of species impacted by Pressure category at High intensity.

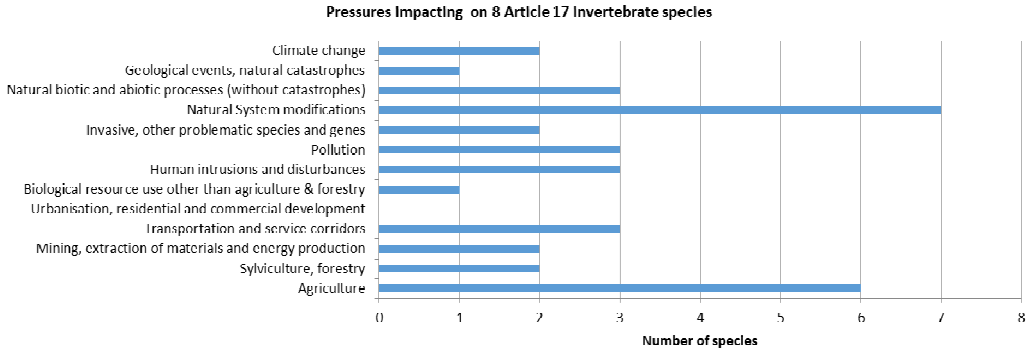
Habitats Directive species, classified by species group and their corresponding pressure categories are summarised in Figure 3.6. A more detailed summary of the species and corresponding pressures is provided on the European Commission website (EIONET, 2014).

Vertebrates: Birds

Based on draft national summaries of reporting under Article 12 of EU Birds Directive, prepared by the European Topic Centre on Biological Diversity and European Environment Agency, the pressures impacting 80 taxa triggering Special Protected Areas classification nationally were assessed. Of those species affected, changes in agricultural practice and intensification was the leading driver of population decline.

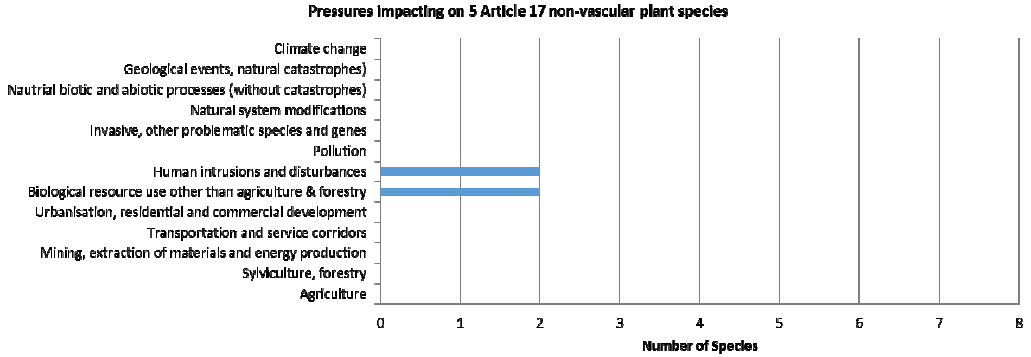
Table 3.1. Number of taxa for which this threat/pressure was reported as having a 'high' impact.

Pressure and threat categories	Number of taxa
Agriculture	5
Sylviculture, forestry	3
Mining, extraction of materials and energy production	2
Pollution	1
Invasive, other problematic species and genes	3
Natural System modifications	1
Natural biotic and abiotic processes (without catastrophes)	4
Climate Change	3



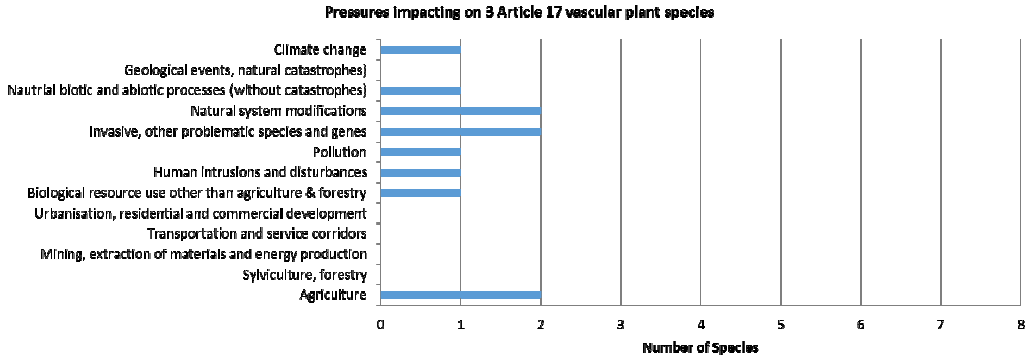
Invertebrate Species

There are eight invertebrate species, three freshwater and five terrestrial, assessed under Article 17 reporting. Freshwater species pressures include increased sedimentation, eutrophication and pollution, while terrestrial species are under pressure from wetland drainage and a reduction in habitat quality.



Non-Vascular Plants

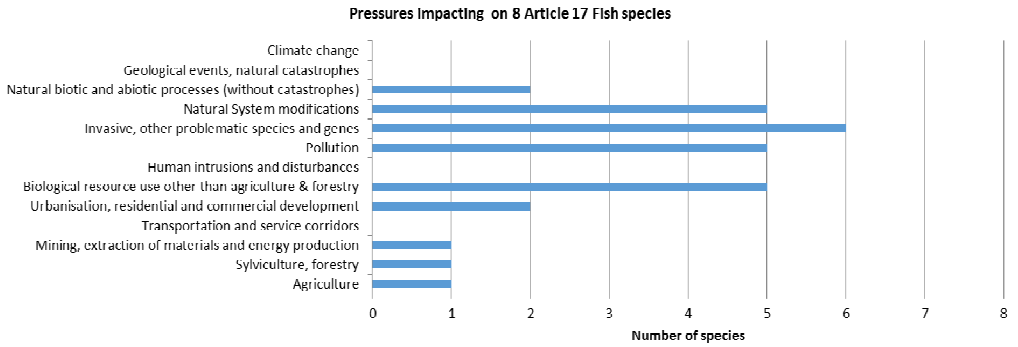
There are six Bryophyte and two algal species listed, of which the pressures were assessed for five species. No pressures were identified for the Slender Green Feather Moss (*Hamatocaulis vernicosus*), White Cushion Moss (*Leucobryum glaucum*) and Peralwort (*Petalophyllum ralfsii*). For both Maërl species (*Lithothamnion corralloides* and *Phymatolithon calcareum*), fishing and aquaculture related activities are the leading pressures impacting these species.

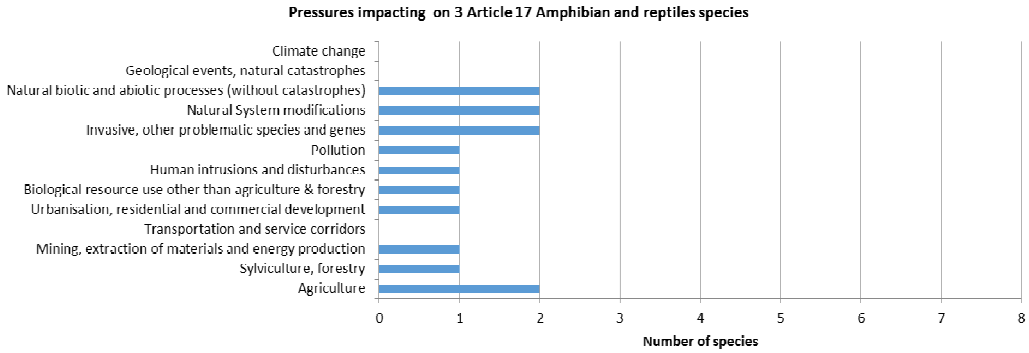


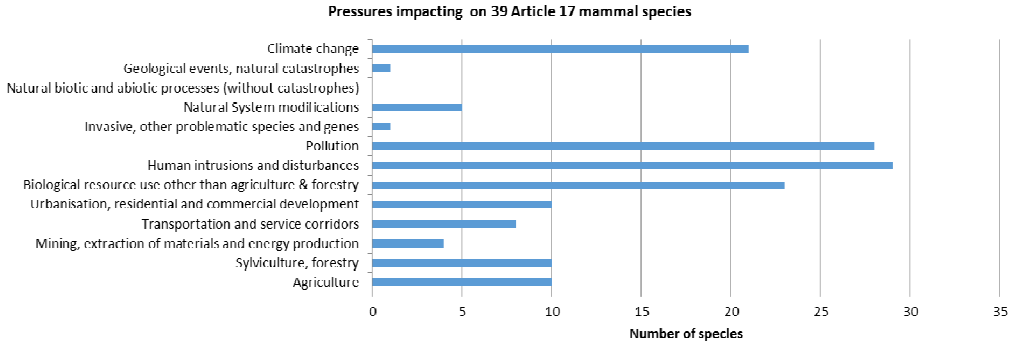
Vascular Plants

Three vascular plant species (Marsh saxifrage, Slender naiad and the Killarney fern) are assessed under Article 17 reporting. Habitat quality indicators were assessed at 13 populations of the Marsh saxifrage, seven populations were given a 'poor' rating and one a 'bad' rating due to issues relating to vegetation height linked with grazing level. In Ireland eutrophication and acidification are considered to have a significant negative impact on the other vascular plant species the Slender Naiad. The Killarney fern is potentially threatened by a variety of activities from the direct loss of habitat, deliberate collection, and encroachment of invasive or vigorous species, or indirect pressures such as water pollution and alteration of watercourses.

Figure 3.6. Habitats Directive species grouped according to broad taxonomic groups and their corresponding pressures.







Fish Species

There are eight fish species covered under Article 17 reporting. Pressures on migrating species include barriers to upstream migration, which limit access to spawning beds and juvenile habitat. Nutrient enrichment, pollution, forestry and modifications to rivers including spawning beds are also identified as pressures. Marine survival of Atlantic salmon is a particular concern with only 5% of the population returning to spawn. Pressures to Atlantic salmon include poaching, intensive fish farming, agricultural intensification, pollution and forestry replanting.

Amphibian and Reptile Species

There are only three Amphibian/Reptile species in Ireland covered under Article 17 reporting. Pressures on the Natterjack Toad (*Bufo calamita*) include the loss of wetland habitat, and on the Common Frog (*Rana temporaria*) include water abstractions from groundwater, abandonment of pastoral systems, lack of grazing and infilling of ditches, dykes, ponds, pools, marshes or pits. Very little is known about the number of Leatherback Turtle (*Dermochelys coriacea*) in Irish marine waters but pressures include fishing, especially long lining.

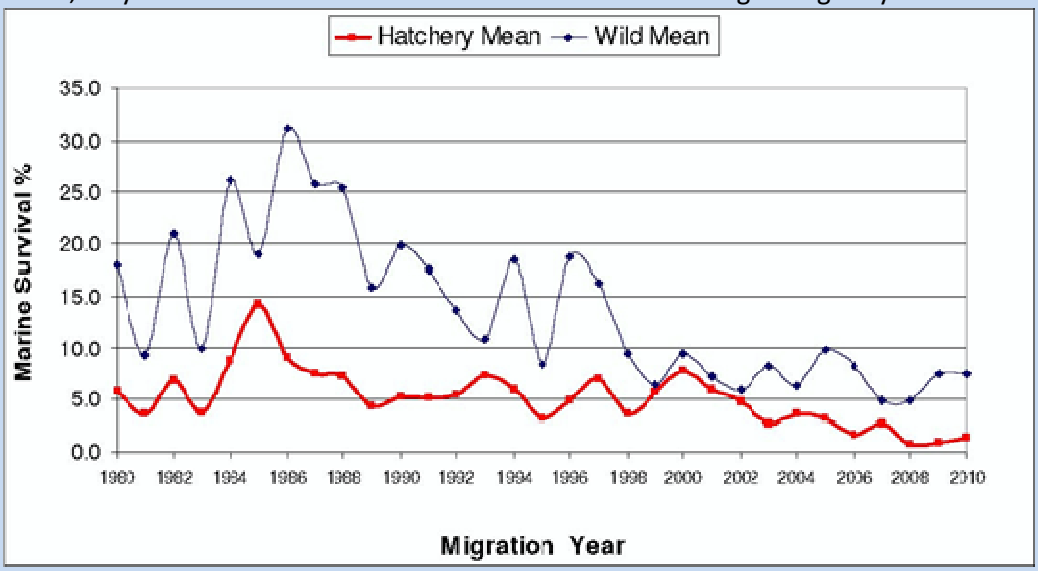
Mammals

Pressures on the 25 Article 17 species of Cetacean and two seal species in Irish waters include entanglement in fishing gear, competition for prey resources, pollution and other habitat degradation, disturbance by human activities and ship strikes. The nine bat species are impacted by agricultural intensification, forest and plantation management, demolishment of buildings and human structures, diffuse pollution to surface waters due to agricultural and forestry activities and other human intrusions and disturbances. The remaining three terrestrial Article 17 mammal species are impacted by habitat destruction (including river drainage and clearance of bank-side vegetation), pollution, loss of refuge areas for daytime shelter and changes in farm practices.

Figure 3.6 (contd.). Habitats Directive species grouped according to broad taxonomic groups and their corresponding pressures.

Atlantic Salmon (*Salmo salar*) pressures and conservation

Marine survival values for Atlantic salmon in the past five years are amongst the lowest recorded since the coded wire tagging commenced in 1980 (see figure below). Changes in oceanic conditions leading to poor recruitment of salmon have been implicated by the North Atlantic Salmon Conservation Organisation (NASCO). Factors leading to the overall decline in Atlantic salmon numbers include the reduced marine survival, poor river water quality (as a result of inadequate sewage treatment, agricultural enrichment, acidification, erosion and siltation), forestry related pressures and over-fishing. Concerns related to factors causing mortality at sea, such as diseases, parasites and marine pollution were also noted (Standing Scientific Committee on Salmon, 2013). Despite the considerable reductions in catches, and increased runs to many rivers following the closure of the mixed stock fishery at sea in 2006, only 40% of Ireland's rivers are estimated to be meeting biologically-based Conservation Limits.



Since the establishment of the Standing Scientific Committee on Salmon (SSC) in 2007, changes in the way that salmon are managed in Ireland has led to many salmon rivers being closed to commercial fishing and angling. The purpose of the SSC is to carry out annual assessments of salmon stocks using internationally accepted best scientific practice and demonstrate whether conservation limits are being, or likely to be, attained in each of the 143 rivers. There are 30 rivers in 26 SACs with salmon and of these 25 rivers are above their Conservation Limits. In cases where stocks are determined to be below the Conservation Limits, the Committee provides scientific advice on measures to be considered, including closure of a fishery. For the period 2000 to 2006 there was a decline in the estimated number of spawners from 394,975 to 151,870, this was followed by a recovery to 265,751 in 2007. For the last six years the figure has remained stable between 228,929 and 275,291 spawners annually (SSC, 2013).

In 2007, the Salmon Conservation Fund was established. The funds raised from the sale of angling and commercial salmon fishing licences are ring fenced and distributed to salmon conservation projects across the 17 fishery districts through the Fund. Projects include river restoration, fish passage improvement, spawning enhancement, river bank protection, fencing riparian zone improvement, removal and control of exotic invasives. In addition to these projects, catchment wide electro-fishing was completed in 24 catchments (530 sites) in 2012 to assess abundance and distribution of salmon fry, additional fish counters have gone in to rivers, satellite tagging of adults (kelts) to assess marine migration pathways, genetics of salmon to examine stock structuring**.** Since 1970, a unique trapping facility has been in place on the Burrishoole system, in Co. Mayo, managed by the Marine Institute, and has allowed a complete census of all descending smolts and ascending adults.

Water quality changes documented in the State of Environment report (EPA, 2012b) show that while there has been virtual elimination of seriously polluted river sites, and that approximately 71% of river channel is classified as good or better, there has been a decline in the number of high status waters in recent decades. A range of programmes to improve the physical and chemical habitat for salmon have taken place; these include rehabilitation of rivers, work by angling clubs and fisheries owners under the Salmon Conservation Fund and Inland Fisheries Ireland led local initiatives.

In the 2013 Article 17 report for the Habitats Directive (NPWS, 2013) the range and habitat where salmon were to be found were classified as Favourable. Different units were used to measure the population size between 2007 and 2013 and there is "no genuine change in the overall population estimate". The salmon population is still low in comparison to previous decades and so, in the absence of recovery, the Overall Status is assessed as Inadequate. However, "there has been a recent stabilisation of the numbers of salmon spawning in Ireland and an increasing number of salmon rivers meeting their conservation limits, however low rates of marine survival are a concern."

Invasive Species

Existing native biodiversity is a first line of defence against many invasive species and non-native species will only thrive in areas where they can out-compete native species. Invasive species are increasingly impacting native species, habitats and the economy in Ireland. In Ireland, two risk assessments for invasive species have been carried out, firstly in 2007 and an expanded risk assessment in 2012, by Invasive Species Ireland, a cross-border invasive species initiative (Kelly et al, 2013b). Figure 3.7 illustrates the cumulative number of invasive species of High or Medium risk in Ireland. These data are derived from risk assessments conducted for 377 non-native species recorded in Ireland up to 2012 from the Invasive Species in Ireland 2013 prioritisation risk assessment database. The risk assessment process is detailed is Kelly *et al.* (2013) and broad trends summarised in O' Flynn *et al.* (2014), where species were categorised as being of High (48 species), Medium (79 species) or Low risk (250 species) to Irish ecosystems. Analyses on these data indicate that in future, freshwater and marine environments are likely to receive more invasive species relative to terrestrial environments, and a greater percentage of those arriving into freshwater environments are likely to be High impact species. However, without the existence of existing biodiversity and with arrival of more high impact non-native species to Ireland predicted, the value of €203 million per annum calculated by Kelly *et al.* (2013) will undoubtedly increase.

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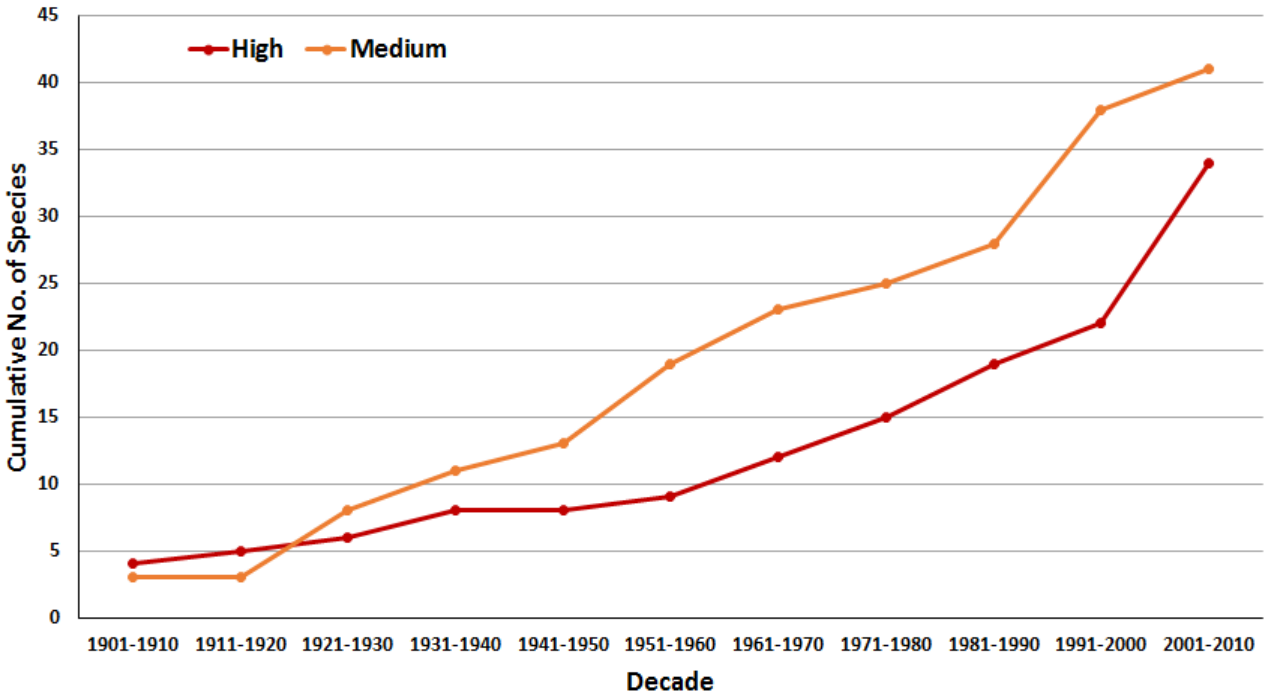


Figure 3.7. Cumulative number of Invasive species in Ireland.

Question 4: What are the impacts of the changes in biodiversity for ecosystem services and the socio-economic and cultural implications of these impacts?

There is as yet insufficient data and understanding on ecosystem services in Ireland to provide a well-founded answer to this question. As summarised in Question 2, there are many EU–protected habitats in bad status, but relatively little change in the period 2000-2012.

Impacts on Agriculture

The implementation of controls on levels of stocking of uplands through "Commonage Framework Plans" resulted in re-vegetation of overgrazed areas which has improved the long-term prospects for sustainable low intensity agriculture in many western uplands. However, as outlined in Question 2, data is lacking regarding the consequences for ecosystem services in agriculture.

Impacts on Forestry

In total, 10.7% of Ireland's land is covered by forestry, which is the second lowest proportion of forest cover in the EU (CSO, 2012b). In the period 2004 to 2010, 56,800 hectares of trees on public forest land were felled. In the same period, just over 49,000 hectares were reforested (CSO, 2012b). Forestry policies now encourage the planting of broadleaf species and incorporate guidelines for biodiversity protection (OECD, 2009). Native woodlands occupy 100,000 hectares, equal to approximately 1.2% of land area of Ireland, and form 14% of our total forest cover (Bullock & Hawe, 2014). In their report it is stated that Ireland's existing area of native woodland has an economic value of at least €100 million and possibly €143 million/yr. Some key values include amenity use, which is worth at least €35 million/yr, while woodland-related domestic and international tourism expenditure brings in €50 million/yr, and carbon sequestration is worth up to €8 million/yr.

Impacts on Marine Fisheries and Aquaculture

Bullock *et al.* (2008) stated that of all economic and social sectors addressed, it is the marine sector which has the most direct relationship with biodiversity in that fish species are harvested without any artificial inputs that contribute to productivity. Fundamentally, the availability of commercial fish populations depends on the biodiversity of the marine ecosystem.

Taking into account the extent of our seabed area, Ireland is the third largest EU State in the North Atlantic, with a seabed territory of approximately 490,000 km^2, over 10 times greater than our landmass. Our ocean wealth plays a pivotal role in regional and rural development, and our marine resources support livelihoods in rural coastal and Gaeltacht areas where relative to urban areas, employment or income sources are limited. Traditionally, this has included commercial activities associated with, for example, fishing, aquaculture and seaweed harvesting (Department of Agriculture Food and the Marine, 2012). The waters around Ireland contain some of the most productive fishing grounds in the EU and it is estimated that in 2004 the total catch by all fleets within the Irish Exclusive Economic Zone was 900,000 tonnes of fish valued at €1.04 billion, the greater proportion of which was taken by non-Irish vessels (Seafood development operational programme, 2007-2013). In 2009, Ireland's sea fishery landings were the fourth highest per capita in the EU, with 55.3 kg of fish caught per head of population (CSO, 2012c).

However, as outlined in the Seafood development operational programme 2007-2013, the Marine Institute has estimated that only 34% of Ireland's stocks are now within safe biological limits, 24% are fished over safe biological limits and the status of the remaining 42% is unknown (Marine Institute, 2013b). Irish demersal quotas (whitefish and prawns) have fallen by 37% since 1995; the mackerel quota declined by 40% over the same period; herring quotas fell by 35%; and horse-mackerel has declined 55% since 1998. In 2010, the value of the finfish and shellfish aquaculture production accounted for €40.7

million and €81.1 respectively to Irish economy (Seafood development operational programme 2007-2013).

Impacts on Freshwater and Wetlands

It is estimated that there are over 1.5 million ha of wetlands, 411,400 ha of estuarine and coastal water systems, 98,100 ha of lakes and over 13,000 km of rivers in Ireland. The rich biodiversity in these systems provides a crucial regulating service by ensuring the good standard of water quality on which all other economic benefits depend. This allows water to be used for drinking, as well as an indirect provisioning value in terms of fish production and cultural services in terms of recreation and amenity (Bullock *et al.,* 2008). Wetlands provide valuable services in regard to flood risk management. The particular issue of bogs and peat cutting, a traditional and much-valued activity, are dealt with more fully under Question 7 below. Furthermore, the aquatic ecosystem is capable of mopping up nitrates and phosphates, but has evolved in conditions where nutrients were scarce and is vulnerable to being overwhelmed by excessive quantities. Once this occurs, artificial water treatment is required for human needs, the cost of which increases as the level of pollution rises. According to Bullock, 2008, based on information from Department of Environment, Community and Local Government (DECLG) 2005 "by 2022, it is anticipated that 85% of Ireland's rivers could require protection through treatment of effluent as their assimilative capacity will be at risk of being exceeded."

The Marine Institute estimates that 190,000 people undertake active water-based recreation each year. However, the numbers visiting lakes for more casual purposes, such as for walks, is certainly many times this number. For each of these users, wildlife sightings and other evidence of high biodiversity would be one of the attractions (Bullock *et al.,* 2008). Inland Fisheries Ireland (2013) estimate that up to 406,000 individuals participated in recreational angling (freshwater and sea angling) in Ireland in 2012 with a total direct expenditure estimated to be of the order of €555 million, of which €121 million was generated by out-of-state anglers. When indirect and induced impacts are taken into account, the overall economic impact of recreational angling in Ireland is estimated to be approximately €755 million (Inland Fisheries Ireland, 2013). Based on the analysis of Indecon (2003), the overall salmon angling resource in Ireland is valued at €91.6million. Despite the considerable reductions in catches of wild salmon, and increased numbers in many rivers following the closure of the mixed stock fishery at sea, only 40% of Ireland's rivers are estimated to be meeting biologically based Conservation Limits. Marine survival values for Atlantic salmon in the past five years are amongst the lowest recorded. The current estimates suggest that based on recent years just over 5% of the wild smolts that go to sea from Irish rivers are surviving to return back to rivers (Standing Scientific Committee on Salmon, 2013). Within the aquatic environment, biodiversity performs a significant service both in terms of recycling nutrients and ensuring desirable water quality for agricultural use, fisheries and human consumption. Likewise, this same biodiversity assimilates human or animal waste and industrial pollutants. Without full consideration of this service, the value of biodiversity in these systems is estimated at up to €385 million per year (Bullock *et al*., 2008).

Conclusion

Ecosystem services in Ireland are important financially and socially, because of our remote location and climate. As a result a significant portion of Ireland's workforce depends upon our natural capital and ecosystem services. Already sectors such as the fishing industry that is wholly dependent on biodiversity, are seeing the negative effects of unsustainable national and international management of the resource. The impacts of changes in biodiversity on ecosystem services are currently difficult to determine. However, as the effects of climate change and invasive species increase, the importance of robust and stable natural habitats and species in mediating the potential detrimental effects of these pressures is becoming increasingly important.

Part II: The national biodiversity strategy and action plan, its implementation, and the mainstreaming of biodiversity

Question 5: What are the biodiversity targets set by your country?
And
Question 6: How has your national biodiversity strategy and action plan been updated to incorporate these targets and to serve as an effective instrument to mainstream biodiversity?

Ireland's current National Biodiversity Action Plan

'Actions for Biodiversity 2011-2016', Ireland's 2nd National Biodiversity Action Plan (NBAP), was launched on 9th November 2011 (DAHG, 2011).The measures Ireland is currently taking in relation to biodiversity are outlined in this plan.

'Actions for Biodiversity 2011-2016' focuses on actions in the first National Biodiversity Plan that were ongoing or not fully completed and addresses emerging issues. The 4th National Report to the Convention on Biological Biodiversity included a detailed assessment of the NBP; actions where good progress had been made, actions where some progress, but where further work is needed, and actions where little progress has been made and where substantial further work is needed.

Good Progress	Further Work Needed
• the designation of sites of community importance	• habitat and species conservation
• the development of biodiversity databases	• deterioration in water quality
• the monitoring and research	• conservation of marine fisheries
• the establishment of a site inspection reporting programme to record impacts to designated sites	• Red Data Books and Red Lists
• terrestrial and freshwater research and monitoring	• cross-cutting issues where biodiversity is properly integrated into national and sectoral plans
• coastal and marine research and monitoring	• best practice in aquaculture
• the assessment of protected sites	• enforcement of the Convention on Trade in Endangered Species (CITES)
• conservation management planning	• designation of Natural Heritage Areas other than bog
• the management of arterial drainage including flood risk management and flood relief	• designation of new Nature Reserves
• legislation and public awareness of biodiversity	• increasing taxonomic capacity
	• the development of a strategy on access to genetic resources

The measures Ireland is taking in the overall strategy of Actions for Biodiversity 2011-2016 are based on a series of seven Strategic Objectives and Targets (Table 5.1). The 21 Targets are met through a set of 102 Actions, which are listed under the appropriate Target. Indicators and Outcomes are used to identify and monitor progress on individual Targets. Some of the actions within the plan are continuing elements of existing work and many are requirements under existing EU Directives.

The Strategic Objectives cover the conservation of biodiversity in the wider countryside and in the marine environment, both within and outside protected areas; the mainstreaming of biodiversity across the decision making process in the State; the strengthening of the knowledge base on biodiversity; increasing public awareness and participation; and Ireland's contribution to international biodiversity issues, including North South co-ordination on issues of common interest.

Table 5.1. Strategic Objectives **and TARGETS for 'Actions for Biodiversity 2011-2016'**

1	**To mainstream biodiversity in the decision making process across all sectors** TARGET 1: Shared responsibility for the conservation of biodiversity and the sustainable use of its components is fully recognised, and acted upon, by all sectors TARGET 2: Legislation in support of tackling biodiversity loss in Ireland strengthened.
2	**To substantially strengthen the knowledge base for conservation, management and sustainable use of biodiversity** TARGET 3: Knowledge on biodiversity and ecosystem services has substantially advanced our ability to ensure conservation, effective management and sustainable use by 2016.
3	**To increase awareness and appreciation of biodiversity and ecosystems services** TARGET 4: Enhanced appreciation of the value of biodiversity and ecosystem services amongst policy makers, stakeholders and the general public.
4	**To conserve and restore biodiversity and ecosystem services in the wider countryside** TARGET 5: Optimise use of opportunities under agricultural, rural development and forest policy to benefit biodiversity. TARGET 6: Principal pollutant pressures on terrestrial and freshwater biodiversity substantially reduced by 2015 TARGET 7: Optimised Benefits for biodiversity in Flood Risk Management Planning. TARGET 8: Harmful invasive alien species are controlled and there is reduced risk of spread of new species TARGET 9: Effective hedgerow and scrub management ensured by 2016 TARGET 10: Continued rehabilitation or restoration of biodiversity elements TARGET 11: Improved enforcement of Wildlife Law TARGET 12: Monitoring to provide adequate data flow for reporting on biodiversity by 2016.
5	**To conserve and restore biodiversity and ecosystem services in the marine environment** TARGET 13: Substantial progress made towards "good ecological status" of marine waters over the lifetime of this Plan TARGET 14: Fish stock levels maintained or restored to levels that can produce maximum sustainable yield, where possible no later than 2015
6	**To expand and improve on the management of protected areas and legally protected species** TARGET 15: Natura 2000 network established, safeguarded, designated by 2012 (2014 for marine SPAs) and under effective conservation management by 2016 TARGET 16: Sufficiency, coherence, connectivity and resilience of the protected areas network substantially enhanced by 2016 and further enhanced by 2020 TARGET 17: No protected habitats or species in worsening conservation status by 2016; majority of habitats or species in, or moving towards, favourable conservation status by 2020
7	**To substantially strengthen the effectiveness of international governance for biodiversity and ecosystem services** TARGET 18: Substantially strengthened support for biodiversity and ecosystem services in external assistance. TARGET 19: Enhanced contribution to international governance for biodiversity and ecosystem services TARGET 20: Enhanced co-operation with Northern Ireland on common issues TARGET 21: Substantial reduction in the impact of Irish trade on global biodiversity and ecosystem services

Relevance to Aichi Biodiversity Targets and EU Strategic Plan for Biodiversity 2011-2020

The 10th meeting of the Conference of the Parties in 2010 adopted a revised and updated Strategic Plan for Biodiversity, including the Aichi Biodiversity Targets, for the 2011-2020 period. In 2011, the EU adopted a new vision and headline target for biodiversity. The vision and mission of these, in addition to those of Ireland's National Biodiversity Action Plan are summarised in Table 5.2. Ireland's current National Biodiversity Action Plan is in line with that of the CBD Strategic Plan for Biodiversity 2011-2020 and the EU Biodiversity Strategy to 2020, in that "biodiversity loss and degradation of ecosystems are reduced by 2016 and progress is made towards substantial recovery by 2020". Government Departments and State agencies representing all the relevant sectors were consulted on a series of draft action points in advance of the preparation of this Plan, in parallel with a comprehensive public consultation process. The plan has been developed along the lines of other plans referenced, in particular the EU Biodiversity Action Plan and the CBD Strategic Plan, and takes account of their aims, objectives and targets.

Table 5.2. Comparison of vision and target/mission of Ireland's National Biodiversity Action Plan, CBD Strategic Plan and the EU Action on Biodiversity.

	Vision	Target/Mission
Ireland's National Biodiversity Action Plan	"That biodiversity and ecosystems in Ireland are conserved and restored, delivering benefits essential for all sectors of society and that Ireland contributes to efforts to halt the loss of biodiversity and the degradation of ecosystems in the EU and globally."	"That biodiversity loss and degradation of ecosystems are reduced by 2016 and progress is made towards substantial recovery by 2020."
CBD Strategic Plan for Biodiversity 2011-2020	"By 2050, biodiversity is valued, conserved and restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people"	The Mission of the CBD Strategic Plan is to ensure a coherent implementation of the Convention on Biological Diversity and achievement of its three objectives by taking "effective and urgent action to halt the loss of biodiversity to ensure that, by 2020, ecosystems are resilient and continue to provide essential services, thereby securing the planet's variety of life and contributing to human well-being and poverty eradication".
EU Biodiversity Strategy to 2020	The EU has articulated its long-term vision as "by 2050 EU Biodiversity and the ecosystem services it provides – its natural capital – are protected, valued and appropriately restored for biodiversity's intrinsic value and for their essential contribution to human well-being and economic prosperity, and so that catastrophic changes caused by the loss of biodiversity are avoided".	The EU has also published its Headline Target for progress by 2020 as 'to halt the loss of biodiversity and the degradation of ecosystems in the EU by 2020, restore them in so far as feasible, while stepping up the EU contribution to averting global biodiversity loss'.

Actions in NBAP relevant to high impact threats

Under Objective 4, "to conserve and restore biodiversity and ecosystem services in the wider countryside", actions on pressures impacting on habitats and species are prioritised. These include specific actions to be carried out for agriculture, rural development, forestry, water pollution, flood risk management, invasive species and scrub management. This objective also identifies specific targets and supporting actions to deal with biodiversity threats, which include continued rehabilitation or restoration of biodiversity elements, improved enforcement of Wildlife Law, and monitoring to provide adequate data flow for reporting on biodiversity by 2016. In total, 36 Actions identified in Objective 4 of the NBAP deal directly with threats to both aquatic and terrestrial habitats and species in Ireland. These actions are supported by relevant indicators and outcomes which are used to identify and monitor progress of the NBAP. For example, specific actions have been developed to mediate the threat of invasive species. These actions deal with stakeholder awareness, risk assessment, identification of pathways for potential invasive species, use of native species within public bodies and the development of rapid response options for new invasive species.

Objective 2 of the NBAP is to "substantially strengthen the knowledge base for conservation, management and sustainable use of biodiversity" which is essential to understand the causes of biodiversity loss in order to develop the means to halt or reverse losses.

Relevance to the three objectives of COP (ref. decision IX/8.)

The Biodiversity Working Group, which developed Ireland's National Biodiversity Action Plan, consists of representatives from the relevant Government Departments and other agencies. This group incorporated the relevant guidance from the CBD, including decision IX/8, which outlined how the national biodiversity strategies and action plans should be developed, in order to satisfy the three objectives of the CBD[1]. Under point 8 of decision IX/8in implementing the three objectives of the Convention specific guidance is provided. Ireland's NBAP complies with this guidance under the following headings as outlined in the guidance and points raised in decision IX/8 point 8: , in particular 8(a),(g),(h),(j),(k),(m),(o),(q),(s),(t),(u) and (v),

Meeting the three objectives of the Convention

The Irish NBAP is objective, target and action driven, and well aligned with the three objectives of the Convention. The 21 Targets will be met through a set of 102 Actions that will be taken and which are listed under the appropriate Target. Indicators and Outcomes will be used to identify and monitor progress on individual Targets. For example, a review of the first National Biodiversity Plan stated that little progress has been made in sectoral action plans and substantial further work was needed. This is a key element of the CBD. Objective 1 of the NBAP is to "To mainstream biodiversity in the decision making process across all sectors" As outlined in Table 4.2, specific targets of this objective include, "shared responsibility for the conservation of biodiversity and the sustainable use of its components is fully recognised, and acted upon, by all sectors "and that "Legislation in support of tackling biodiversity loss in Ireland strengthened".

Dedicated funding for biodiversity is provided under the annual exchequer allocation and national operational programmes co-funded by the EU. Most funding is distributed by Government ministries or appointed Agencies. The Irish Government regards partnership and participatory planning as essential for the successful completion of a number of actions in the new National Biodiversity Plan. In most cases, partnerships will be between Government Ministries and State agencies with liaison as appropriate with the European Commission. Other partnerships will be between State agencies and farming organisations,

[1] 1. To conserve biological diversity
2. To use biological diversity in a sustainable way
3. To share the benefits of biological diversity fairly and equitably.

local authorities, third level research institutions, non-government organisations and local community groups. However national exchequer funding has been substantially reduced since the financial crisis began in 2008, and this situation is likely to continue for some years.

Components of biodiversity strategies and action plans

An Ecosystem Approach is an integral part of Ireland's NBAP. The Ecosystem Approach has at its core the concept of local decision-making on management of biodiversity. Under the first National Biodiversity Plan (NBP), local action was highlighted as being very important in tackling biodiversity loss and it put forward the idea of local authorities drafting specific action plans. In alignment with Objective 1 of NBAP, the National Strategic Environmental Assessment Forum has been established with all five environmental authorities (DAHG, DECLG, DAFM, DCENR, EPA) represented, with regional SEA/AA Fora established in association with the regional authorities. Fora meet annually with the full participation of local authorities in each region. With regard to specific public bodies, Fáilte Ireland is undertaking a SEA of the development of Discovery Points along the Wild Atlantic Way, and DAFM is undertaking SEAs in relation to the Rural Development Plan 2014-2020, the Seafood Operational Programme 2014 - 2020 and the National Strategic Plan for Aquaculture 2014 – 2020.

Noteworthy emphasis has been placed on the importance of ecosystem services in Irelands NBAP: Objective 4 aims "to conserve and restore biodiversity and ecosystem services in the wider countryside" while Objectives 5 and 7 of the NBAP aim to "to conserve and restore biodiversity and ecosystem services in the marine environment "and "to substantially strengthen the effectiveness of international governance for biodiversity and ecosystem services". Between these three Objectives, 54 of the 102 actions of the entire NBAP have been directed towards Ecosystem Services. By placing the conservation of ecosystem services at the centre of Ireland's NBAP, the plan also places human well-being as the central focus for assessment. This approach is in line with the methodologies and conceptual framework of the Millennium Ecosystem Assessment.

As an example of action on Objective 5, the Marine Coordination Group, which includes senior representatives from the departments and agencies with marine responsibilities, have developed and published an Integrated Maritime Plan (IMP) entitled Harnessing Our Ocean Wealth in 2012 as part of Ireland's engagement with the Integrated Maritime Policy for the EU (2007) and the EU strategy for the Atlantic (2011). The IMP provides a framework for cross-sectoral planning and actions regarding the management of the marine environment. One of the three high-level goals of the IMP is the protection and conservation of marine biodiversity and ecosystem services.

The Nature Directives are the foundation for the EU Biodiversity Strategy to 2020. The Birds Directive and the Habitats Directive require Member States to conserve valuable or threatened habitats and species, in particular by establishing the Natura 2000 network of sites. The full implementation of these Directives, along with others, such as the Water Framework Directive and Marine Strategy Framework Directive, SEA Directive, Environmental Liability Directive, OSPAR Convention, is Government policy, and they are specifically dealt with in actions within NBAP (Appendix III) and will contribute enormously to biodiversity conservation.

Climate Change and biodiversity are inextricably linked. While climate change is likely to become one of the most significant drivers of biodiversity loss, biodiversity itself can support efforts to reduce the negative effects of climate change. Under the Kyoto Protocol Ireland agreed to a target of limiting its greenhouse gas emissions to 13% above 1990 levels by the first commitment period 2008-2012 as part of its contribution to the overall EU target. As outlined in Part I Climate Change is a pressure that is already impacting on habitat and species in Ireland and as a result it is an interwoven thread within many of the objectives, targets and actions of the NBAP.

Support processes

The Biodiversity Working Group represents a wide range of sectors, and meets regularly to monitor progress on the actions set out in the Plan and to further discuss and develop details of the implementation of actions. A mid-term review of implementation of this plan is currently underway and is coordinated by the Department of Arts, Heritage and the Gaeltacht. This process will inform the development of the next National Biodiversity Plan, which will be finalised and adopted in 2016. An additional function of the interdepartmental Biodiversity Working Group is to promote policy integration and cross-sectoral participatory planning between departments to ensure coherence of biodiversity issues across Government on a local, regional and national level.

In Ireland, biodiversity-related monitoring and research conducted by State Agencies is delivered via a number of organisations such as the Environmental Protection Agency, the Marine Institute, Teagasc and the National Parks and Wildlife Service, with funding provided through various channels, in particular through the framework of the National Development Plan. Similarly, EU funded scientific research in State Agencies is currently through the Horizon 2020and LIFE programmes.
Information on the various monitoring programmes for habitats and species listed on the EU Habitats Directive are synopsised as part of the audit/notes report accompanying each species and habitat conservation status assessment for the 2007-2012 Article 17 report available at http://www.npws.ie/publications/article17assessments/article172013assessmentdocuments/.

A number of agencies provide funding for biodiversity research, such as Science Foundation Ireland, the Irish Research Council, the Higher Education Authority and Teagasc. The expansion of Irish biodiversity research is enshrined in Objective 2 of the NBAP which aims “to substantially strengthen the knowledge base for conservation, management and sustainable use of biodiversity”. This includes increased involvement in the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES) as an interface between the scientific community and policy makers that will build capacity for, and strengthen the use of, science in policy making.

Question 7: What actions has Ireland taken to implement the Convention since the fourth report and what have been the outcomes of these actions?

Implementation of the NBAP in Ireland

The second National Biodiversity Action Plan, Actions for Biodiversity 2011-2016 (DAHG, 2011), is currently the principle guidance tool for the implementation of the CBD in Ireland. While responsibility for biodiversity protection lies within the Minister for Arts, Heritage and the Gaeltacht, there are significant cross sectorial implications across other Government departments and agencies. A High Level Steering Group and a more technical Working Group were convened in 2011 to oversee overall progress of the NBAP, to drive the NBAP actions and ensure their implementation, across Government Departments and agencies. Governmental Departments and State Agencies are also involved in ongoing implementation of the NBAP, as well as the interim review, which is now being drafted.

The technical working group represents 30 key Governmental areas include members from the:

- An Garda Síochána, Ireland's police service
- Dept. of Agriculture, Food and the Marine
- Dept. of Arts, Heritage and the Gaeltacht
- Dept. of Children and Youth Affairs
- Dept. of Defence
- Dept. of Education and Skills
- Dept. of the Environment, Community and Local Government
- Dept. of Foreign Affairs and Trade
- Dept. of Health
- Dept. of Jobs, Enterprise and Innovation
- Dept. of Justice and Equality
- Dept. of Public Expenditure and Reform
- Dept. of Transport, Tourism and Sport
- The Heritage Council
- Environmental Protection Agency
- Inland Fisheries Ireland
- Marine Institute
- National Biodiversity Data Centre
- National Botanic Gardens
- Office of Public Works
- Office of the Attorney General
- Revenue Commissioners
- Teagasc (The agriculture and food development authority in Ireland)
- Uisce Eireann (Irish Water)

Areas of Significant Progress to date since the introduction of the NBAP

Relevant policy, legislation

Under Chapter 2 of the 4th National Report to the Convention of Biological Diversity "Current status of Ireland's national biodiversity strategies and action plans" details of the legislative background to biodiversity conservation were detailed. This included details of:

- The Wildlife Act, 1976
- Under the Wildlife (Amendment) Act, 2000,
- the Convention on International Trade in Endangered Species (CITES)

- African-Eurasian Migratory Waterbirds Agreement (AEWA).
- Ramsar Convention on Wetlands;
- Convention on Migratory Species (CMS or Bonn Convention);
- Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention);
- Convention for the Protection of the Marine Environment of the North-East Atlantic.
- The EU Habitats Directive and Birds Directive
- Planning Act, 2000
- The EU Water Framework Directive
- The European Communities Environmental Objectives (Surface Waters) Regulations 2009
- European Communities Environmental Objectives (Freshwater Pearl Mussel) Regulations 2009 (S.I. 296/2009)

Since the 4th Report to the Convention on Biological Diversity additional legislation and Government policies relevant to biodiversity conservation have been implemented in Ireland.

Legislation introduced in Ireland since the 4th Report to the Convention on Biological Diversity

- The transposition of the EU Habitats Directive and the EU Birds Directive into national legislation was strengthened in the *EC (Birds and Natural Habitats) Regulations 2011,* which are a revision and strengthening of previous Regulations.

- The *Planning and Development Act 2010* Part XAB ensures that both plans and individual projects are compliant with the EU Habitats and Birds Directives. The Department of Environment Communications and Local Government is the competent authority in executing the Planning and Development Act and the Department of Arts Heritage and Gaeltacht is the statutory consultee in relation to plans or projects that may impact on Natura 2000 sites and species.

- The European Union (Birds and Natural Habitats) (Seafisheries) Regulations 2013 provide for the responsibilities of the Minister for Agriculture, Food and the Marine in relation to sea-fisheries in Natura 2000 sites.

- A new *Forestry Bill* was presented to Dáil Éireann by the Minister of State at the Department of Agriculture, Food and the Marine in October 2013. The primary purpose of the Bill is to reform and update the legislative framework relating to forestry and to support the development of a modern forest sector, which operates in accordance with good forest practice and with a view to the protection of the environment.

- The *European Communities (Environmental Impact Assessment)(Agriculture) Regulation* (S.I.456/11) was introduced by DAFM in September 2011 to give effect to the new provisions and procedures compliant with the EIA Directive. Under these Regulations, DAFM operates a screening process for farmers, by examining the effects of certain proposed activities namely: restructuring of holdings, commencing to use uncultivated/semi-natural land for intensive agriculture and land drainage works (other than wetlands), and determining whether the proposed activities can proceed without an Environmental Impact Assessment.

Government Policies implemented since the 4th Report to the Convention on Biological Diversity

- The *National Strategic Environmental Assessment Forum* has been established with all five environmental authorities (DAHG, DECLG, DAFM, DCENR, EPA) represented, with regional SEA/AA Fora established in association with the regional authorities. Fora meet annually with the full participation of local authorities in each region. With regard to specific public bodies, Fáilte

Ireland is undertaking a SEA of the development of Discovery Points along the Wild Atlantic Way, and DAFM is undertaking SEAs in relation to the preparation of the Seafood Operational Programme 2014 - 2020 and the National Strategic Plan for Aquaculture 2014 – 2020. Furthermore, the Minister for Agriculture Food and the Marine announced the start of SEA for the national Rural Development Plan in May 2014.

- The implementation of the "*Green Tenders – An Action Plan for Green Public Procurement*" is ongoing through the Green Tenders Implementation Group (GTIG) established in 2012 and co-chaired by the Department of Public Expenditure and Reform (DPER) and the DECLG. The National Procurement Service was a member of the GTIG, however, it has now been replaced by the newly established Office of Government Procurement (OGP). The OGP has assumed a greatly expanded role in public procurement and the DECLG has met with the OGP to discuss the role of the OGP in the GTIG and the impact the new organisation might have on the Action Plan.

- In May 2013, Ireland launched a new policy for International Development " *One World One Future: Summary of Ireland's Policy for International Development* "which places importance on Biodiversity as part of the priority area for action on Climate Change and Development. Of the six priority areas for action, the action relating to 'Climate change and development', specifically states that Ireland will "support developing countries to conserve and sustainably use their biodiversity, securing local ecosystems that are vital to their development efforts".

- In 2012, the DECLG developed a medium to long-term framework for advancing sustainable development and the green economy in Ireland entitled "*Our Sustainable Future*". The framework aims to integrate sustainable development into key areas of policy, to put in place effective implementation mechanisms and to progress sustainable development. The framework prioritises action on the development of an integrated approach to green infrastructure into sectorial polices and the creation of green corridors to enhance biodiversity.

- In 2012, the DECLG published Ireland's "National Climate Change Adaptation Framework". Sectoral adaptation plans, including one for biodiversity, are being drafted in 2014.

- The Water Framework Directive National Monitoring Program is now in place. Water Framework Directive Programs of Measures project is ongoing. This is aimed at standardising WFD data and getting it into a common information system for management. New governance arrangements are almost finalised.

Relevant funding programmes

Despite the economic recession significant financial and human resources continue to be placed in order to fulfil the actions outlined in the NBAP. These include:

- The State's National Parks and Wildlife Service, in the Department of Arts, Heritage and the Gaeltacht, employs approximately 170 people directly engaged in biodiversity protection, management and awareness. Other Government Ministries and Agencies employ staff whose work includes at least elements of conservation and/or sustainable use of biodiversity and ecosystem services, including Inland Fisheries Ireland, the Environmental Protection Agency, the Department of Agriculture Food and the Marine, the Marine Institute, and the Department of Environment, Community and Local Government.

- Under Ireland's last Rural Development Programme (2007-2013), some €95 million was spent on payments to farmers in the Natura network of SACs and SPAs. In addition, farmers in the Burren Farming for Conservation Programme were paid a total of €1million per annum in 2011-2013.
- Ireland has secured €2.2bn in EU funding for the new rural development programme up to 2020 and DAFM has committed substantial national funding, giving an overall total of over €4 bn, thus demonstrating a strong commitment for rural development including the environment as it includes a substantial commitment for a new agri-environment scheme (building up approx. 50,000 participant farmers). It is envisaged that the programme will be agreed by the end of 2014, with implementation of measures commencing in 2015. A number of biodiversity actions are being considered for inclusion within the new agri-environment scheme, including specific actions targeted at vulnerable habitats and threatened species, as well as some general actions which will have wider biodiversity benefits.

- Currently in Ireland it is not possible to determine the exact budget that is spent on biodiversity by State Departments and Government Bodies. This is primarily due to the cross cutting nature of biodiversity themes across government and the way budgets are presented. Several Departments and bodies have duties largely related to biodiversity. These include Inland Fisheries Ireland, the Sea Fisheries Protection Authority and the National Parks and Wildlife Service. Other Departments/Bodies with a portion of their funding going towards biodiversity include, in 2013, the Environmental Protection Agency , the Marine Institute , Teagasc and The Heritage Council .

- In 2014, Ireland's Prioritised Action Framework for Financing Natura 2000, identifying conservation priorities for the next financial cycle (2014-2020) and has been approved by Government and submitted to the EU.

- Funding from external sources such as the EU LIFE+ programme is also sought. Since 2010, funding totalling €20,508,000 has been successfully secured for six EU LIFE projects relating to environmental protection and biodiversity conservation.

- In 2013 Irish Aid allocated grants totalling €30,682,000 in respect of activities that were biodiversity relevant or had biodiversity elements. Of this funding approx. €15,591,000 was substantively biodiversity relevant. In addition, grants totalling €300,000 where allocated for biodiversity specific projects. Activities include developing sustainable seed systems, agroforestry using indigenous trees, promoting the growing local woodlots, watershed management and protection of natural resources, protection of habitats, support for sustainable food and energy systems particularly for indigenous and pastoralist groups, community involvement in protecting forests and ecotourism.

Strengthened knowledge base

Strengthening the knowledge base for conservation, management and sustainable use of biodiversity in Ireland is seen as a crucial element of the NBAP and realising the goals of the CBD. Since the introduction of the NBAP the following has been achieved in this area:

- A National Vegetation Database (NVD) has been developed by the National Biodiversity Data Centre in collaboration with the NPWS. It contains more than 30,000 relevés, or vegetation sampling units, stored in TURBOVEG software. It brings together data from academics, environmental consultants and state bodies. The NVD continues to be updated, and additional relevés provided by NPWS in 2014 are due to be incorporated. The database provides a core building block for a future Irish vegetation classification system.

- Between 2009 and 2012, an intensive national programme of work to carry out benthic surveys of approximately 100 marine Natura 2000 sites was carried out. These surveys mapped the distribution and extent of intertidal and subtidal, benthic communities based on analysis of physical and biological data and feed into the assessment of license applications for aquaculture and the regulation of fisheries. In 2012, a survey of the Codling Bank was carried out to investigate the biodiversity composition of this area of the Irish Sea.

National survey and assessment of the conservation status of Irish sea cliffs

Under Article 11 of the Habitats Directive, the Irish State is required to monitor the conservation status of Annex I habitats occurring within the state. All of the sea cliffs on the Irish coast can be considered to correspond to the EU Annex I habitat Vegetated sea cliffs of the Atlantic and Baltic coasts (1230). The first systematic national survey of sea cliff vegetation and conservation status in Ireland funded by the National Parks and Wildlife Service, was published in 2011 (Barron *et al*., 2011).

Following the approach devised by MERC/EirEco (2009), identified cliff sites were assessed using georeferenced oblique helicopter images of the Irish coastline taken by the Office of Public Works for coastal erosion interpretation. The geology of the cliffs was determined using Geological Survey of Ireland data and the cliffs subdivided into sections reflecting the variation within each site.

As part of Barron et al., (2011) a desk study was completed on 196 sea cliff sites. Factors such as structure, vegetation and anthropogenic influences were investigated using aerial photographs, oblique photographs of the coast and a range of GIS data. Subsequently, fieldwork and detailed assessments were carried out on an additional 32 sites, many of which involved rope access.

Overall, the study identified that sea cliff habitat covers 22% of the coastline of Ireland and is primarily distributed along the southern, western and north-western seaboards. A total of 177 (90%) cliff sites are at least partly within existing protected areas, though soft cliffs were found to be under-represented in the network of sites. Candidate Special Areas of Conservation (cSACs) coincide with 135 sites, Special Protection Areas (SPAs) coincide with 100 sites, proposed Natural Heritage Areas (pNHAs) coincide with 150 sites and Nature Reserves coincide with five sites. Sites designated as being of conservation importance often coincide with only part of a cliff site. Anthropogenic influences, which were recorded within and adjacent to cliffs, were noted at 58% of sites.

This study illustrates co-operation towards efficient assessment and monitoring procedures in difficult environments between the State agencies and environmental consultants. It also highlights the ongoing transparency and data sharing between State bodies which results in the efficient use of resources in the monitoring of trend and status of biodiversity.

- As outlined elsewhere in this report, the report on status, trends and distribution of all habitats and species listed in the Habitats Directive was submitted to the EU in 2013, and the Birds Directive report on trends and distribution was submitted in 2014. Many of these assessments are underpinned by scientific research. PhDs are ongoing or recently completed for turloughs, petrifying springs, Killarney fern and protected bryophytes. Detailed vegetation analysis has been undertaken for uplands, grasslands, limestone, turlough and Juniper habitats. Scientific papers on trends and/or assessment methodologies have been published on turloughs, bats, otter and frog. Recent surveys have also been undertaken on some cetaceans, bees, butterflies, rare plants and semi-natural grasslands.

- Creating a range of integrated mapping products of the physical, chemical and biological features of some 125,000 km2 of Ireland's most productive and commercially valuable inshore waters, the Integrated Mapping For the Sustainable Development of Ireland's Marine Resource (INFOMAR) programme 2006-2016 is a joint venture between the Geological Survey of Ireland and the Marine Institute. In addition, an Atlas of the Irish Marine Environment has been developed using data products that were specifically compiled in support of the MSFD Initial Assessment (Marine Institute, 2013a). The Atlas contains all of the spatial information that was used to determine the current status of pressures and habitats and is publicly available for viewing and interrogation: http://atlas.marine.ie/

- As detailed on page 22 of this report, an atlas of the distribution and relative abundance of marine mammals in Irish offshore waters was published in 2013 and represents the culmination of over 5,000 hours of survey effort across a six year period by the Irish Whale and Dolphin Group (Wall *et al*., 2013).

- A national working group of public bodies was established in 2012 to progress the development of a national landcover and habitat map. The group includes representatives of Environmental Protection Agency, Heritage Council, Ordnance Survey of Ireland, National Parks and Wildlife Service, Department of Agriculture, Food and Marine and Teagasc. All parties agreed on the merits of working on a joint proposal for the development of a national landcover mapping programme in light of the emerging National Spatial Data Strategy and National Landscape Strategy. The technical specifications for a national landcover mapping programme have been developed using County Roscommon as a case study.

- The National Platform for Biodiversity Research, run under contract to NPWS and EPA, produced a set of biodiversity research recommendations under five thematic areas. The themes were: i) marine, ii) agriculture, grassland and soil, iii) freshwater, iv) uplands, peatlands and wetlands, and v) alien invasive species. As part of the Irish presidency of the EU, Ireland hosted a meeting of the European Platform for Biodiversity Research Strategy (EPBRS) on 'Research priorities to attain targets of the EU Biodiversity Strategy 2020' in May 2013.

- The EPA Ecorisk project examines the prospects for quantifying the economic value of ecosystem services for use within the Environmental Liability Directive (ELD), namely for compensatory remediation. However, other outputs include a review of ecological research that has been conducted in Ireland relevant to the assessment of ecosystem services, in combination with national and international reviews of economic valuations of ecosystems or environmental goods. This information will be developed into a database whereby policy makers and practitioners would be able to search for data and advice on the methods needed to assess

various levels of environmental risk or damage, indicating also the types and sources of data required.

- The National Biodiversity Data Centre established a National Crop Wild Relative (CWR) database in 2010 to support in-situ conservation through the identification of threatened CWR hotspots. The database continues to be updated. A supporting website provides full species accounts for all 181 CWR species that occur in Ireland, including information on the location of any ex-situ collections. Ex-situ collections of plant genetic resources are held by the DAFM, with additional supplementary collections held by Trinity College Dublin and the Irish Seed Savers Association. Furthermore, DAFM manages the national version of the EFABIS database as a communication and information tool that provides stakeholders a searchable database of breed related information, management tools and reference library. Censuses are primarily conducted by the relevant breed societies, but the Kerry, Irish Maol and Dexter cattle, Irish Draught horse, Connemara pony, Kerry Bog Pony and Galway sheep are designated as endangered, therefore DAFM directly implement management schemes for these breeds. Since 2011, 42 of 170 breeds present in Ireland have had their population data updated.

- The Environment Protection Agency Research Strategy 2014-2020 includes the theme *"Natural Capital and Ecosystem Services including soils and biodiversity*", and issued a research call including this theme in June 2014.

Increased awareness

A wide range of initiatives take place regularly to increase awareness on biodiversity, promoted by State Agencies, Government Departments and NGOs. Examples include:

- National Biodiversity Week, which takes place annually and centres on UN International Day for Biodiversity 22 May. The Irish Environment Network delivers many events taking place across the country including dawn chorus walks, bat walks and other guided walks, moth identifications, storytelling, music and dancing, traditional craft fairs, tree, shrub and plant identification, bug hunts, wildflower hunts and many more.

- The Green Schools Initiative, providing seminars to schools to develop their own biodiversity projects, leading to the award of a Green Flag for biodiversity. The programme is run by An Taisce, and involves some 500 schools.

- The BT Young Scientist event continues to attract substantial visitors, approx. 60,000 in 2014. There is a high level of interest in Biodiversity projects among students and teacher and the visitors to the exhibition which runs over several days.

- Dublin Zoo hosts a native species weekend every year in partnership with a variety of wildlife experts and organizations. The aim of this weekend is to highlight native wildlife and how everyone can play a role in conserving it.

- The National Biodiversity Data Centre has organised a "Bioblitz" event for several years, with four sites chosen each year for a search for the most species at the site over 24 hours. The event attracts many non-specialists and was subject of a popular TV programme.

- As part of the EU Biodiversity Strategy to 2020, member states agreed to integrate Natural Capital Accounting (NCA) into their Gross Domestic Product calculations by 2020. A "Natural

Capital Ireland" conference was held in May 2013. Actions arising from this conference include the establishment of a Natural Capital Forum to coordinate and advance a comprehensive economic assessment of the goods and services provided by the Irish environment via Natural Capital Accounting (NCA).

The Natural Capital Value of Native Woodland in Ireland

(Alamar)

Extensive native forest once covered most of Ireland. Today only about 100,000 hectares of this forest remains or approximately 1.2% of the land area. This remnant forest is not just a natural asset, but a natural capital asset that provides a range of benefits in the form of ecosystem goods and services. The EU 2020 Biodiversity Strategy requires Member States to integrate these values into national accounting and reporting systems by the end of this decade. This requirement is recognised in Ireland's 2nd National Biodiversity Plan (Actions for Biodiversity 2011 –2016). Bullock and Hawe (2014) quantify, for the first time, the economic value of the ecosystem goods and services provided by the natural capital of Ireland's native woodlands.

The authors demonstrate that Ireland's existing area of native woodland has an economic value of between €100 million and €143 million/yr. The amenity use of native woodland is worth at least €35 million/yr, woodlands-related domestic and international tourism expenditure brings in €50 million/yr and carbon sequestration up to €8 million/yr. These baseline estimates have principally been derived by proportionately relating the area of native woodland to estimates of the public goods value of the total forest area in Ireland.

However, native woodland has a premium value in that it typically provides a higher output of public goods compared to equivalent areas of plantation forest comprised of exotic conifer species. The economic and social benefits outlined in this report are derived from the provisioning, regulating, cultural and supporting ecosystem services that flow from the natural capital of native woodlands. This assessment will inform and coordinate decision-making and provide the foundation for incentives and forest policies necessary to unlock natural capital values for the purpose of sustainable economic growth. The values established are obviously significant, but they are only a fraction of the benefits that could be realised through an expansion of native woodland to – and beyond -- the targets envisaged in the National Biodiversity Plan. Bullock and Hawe (2014) quantifies the value of expanding native woodland, through new woodland creation/restoration, in three scenarios. Native forest at present makes up to 14% of total forest cover in Ireland. Expanding this to 25%, 50% and 100% of current total forest cover could yield to €274, €436m and €650 million respectively. Some of these economic benefits are market values; others are public goods. There is a relationship between the two: the public good of amenity contributes to tourism income, and to savings on the public health budget.

Conserve and restore terrestrial species and ecosystems

- The steps required to provide legal protection to Ireland's terrestrial network of SACs and SPAs are largely complete. A final formal designation of sites is underway, although legal protection is already in place.

- A draft National Peatlands Strategy, Raised Bog SAC Management Plan and Review of the Raised Bog NHAs were published in early 2014. The objective of the Peatlands Strategy is to set down clear principles which will guide Government policy in relation to all Irish peatlands. These principles will be applied through their incorporation into the more detailed sectoral plans, policies and actions adopted and undertaken for each policy area. Semi-state bodies, in so far as their statutory mandates allow and public authorities with sectoral responsibilities, are being asked, as part of this Strategy, to assess how well the values and principles set out in this strategy are reflected in existing plans and policies and how they will, if necessary, realign their policies and plans to make them consistent with the Peatlands Strategy.

  The aim is to fully harness the potential for more effective management of all of Ireland's peatlands. A strategic approach across many sectors and policy areas is required. The Strategy acknowledges obligations arising from International Agreements such as the Convention on Biological Diversity, RAMSAR, and the United National Framework Convention on Climate Change (UNFCCC), EU legislation, including the Water Framework Directive, the Cleaner Air for Europe (CAFE) Directive, Floods Directive, the Environmental Liabilities Directive, the Environmental Impact Assessment Directive, the Habitats and Birds Directives and regulations relating to climate change, which oblige Ireland to assess and address how the various activities on its peatlands are being managed.

  The issue of the management of Ireland's peatlands has become a matter of significant debate and dispute in recent years as the Government moved to protect Ireland's resource of raised bog SACs and NHAs in compliance with obligations under the EU Habitats and EIA Directives. In April 2011, the Government established a Peatlands Council to bring together stakeholders and committed itself to the preparation of a Peatlands Strategy to set out overall policy on Ireland's peatlands.

  The Government is committed to ensuring that the law is upheld in relation to nature protection. However the implementation of these laws can interfere with the operation of traditional rights associated with ownership. This makes implementation particularly challenging. The Government is committed to meeting this challenge in a transparent way, working with communities to implement the measures required by legislation in a manner that is consistent with the principles (see below) contained in this Strategy.

  A programme has been initiated for the production of detailed conservation objectives for 53 raised bog SACs over the next two years.

- There is ongoing active engagement between relevant Government Departments and agencies, and others, on Ireland's next Rural Development Plan and future agri-environment schemes and management measures in the period 2014-2020. This will be informed by the Prioritised Action Framework for the Natura 2000 network in Ireland which focusses on both habitats and species protected under European and Irish law.

- Many species protection/restoration projects are underway, mainly but not entirely for birds. These include :
    - The Grey Partridge (*Perdix perdix)* Project in Co. Offaly which has restored an almost-extinct species through the creation and management of suitable habitat for the partridge.
    - Cooperation between a range of key groups to produce a species action plan for red grouse (*Lagopus lagopus)* – see http://www.greypartridge.ie/conservation/irish-red-grouse-species-action-plan.429.html; and collaboration at 14 sites around the country between hunters, farmers, NGOs and the State sector on habitat management to benefit the red grouse.
    - Reintroduction of golden eagle (*Aquila chrysaetos*), white-tailed eagle *(Haliaeetus albicilla)* and red kite (*Milvus milvus).*
    - Conservation of the roseate tern *Sterna dougallii* at its main north-west European breeding sites
    - Enlargement of the range of Natterjack toad *(Epidalea calamita)*

- The Minister for Agriculture, Food and Marine has submitted plans for an expansion of the Burren Farming for Conservation Programme under the draft RDP submitted in July 2014. The programme aims to support high environmental value farming in the Burren, continuing and mainstreaming the findings of the BurrenLIFE Project. It is envisaged that further funding will be provided for similar output-based projects, such as a freshwater pearl mussel measure, under the new programme.

- Initiated through Invasive Species Ireland, there is good national coordination of information flows on Invasive Species in Ireland as a prerequisite for delivery of a Rapid Response system. Agreement has been reached by the key national bodies on sharing of information on newly recorded species, a process coordinated by the National Biodiversity Data Centre. A team of national experts has been identified who provide verification of records of newly arrived sightings of invasive species, and following verification of reported sightings, species alerts are issued by the National Biodiversity Data Centre. Since 2011, alerts for three species, Japanese Kelp, Squirrel Pox Virus and Raccoon have been issued. Inland Fisheries Ireland has a very proactive response to invasive species and has provided basic training for its staff in respect of aquatic and riparian invasive species identification and how to report new sightings in an accurate and timely manner. A dedicated Invasive Species Group, comprising personnel from each of the River Basin Districts, has also been established by IFI.

- The National Biodiversity Data Centre published a report on the "Invasive and Non-native Species in Ireland - Trends in Introductions", which was the first review of the arrival dates of non-native species in Ireland. Part of this work involved a horizon scanning exercise to identify potential new invaders to Ireland to assist policy formulation and introduction of mitigation measures. Invasive Species Risk Assessments have been undertaken for 41 high risk species to enable the full implementation of Regulations 49, 50 and 79 of the European Communities (Birds and Natural Habitats) Regulations 2011 in Irish Legislation.

- Joint operations have been undertaken and are continuing between An Garda Síochána and the NPWS which resulted in a number of successful prosecutions for breaches of the Wildlife Acts. In the period 2011 to 2013, 100 prosecution cases were taken by the Department under the Wildlife Acts and Habitats Regulations, of which 74 were successful.

- Since 2011, five EU Life projects have been successfully funded such as the Aran LIFE and Burren LIFE projects, the LIFE Kerry Freshwater Pearl mussel conservation project (approved in May 2014) and the Raptor LIFE project focussing on connecting and restoring habitats for Hen Harrier, Merlin, Atlantic salmon and Brook Lamprey.

- There has been substantial effort in relation to the reduction of poisoning risks to reintroduced large raptors and other native raptors and owls through cooperation between the Government Ministries and agencies. This has led inter alia to
    - Publication of Ireland's first report on poisoning/persecution of birds of prey (NPWS, 2011). The second and third reports will be published in 2014.
    - Launch of Campaign for Responsible Rodenticide Use in Ireland (CRRU Ireland) in September 2013

Conservation and restoration of aquatic species and ecosystems

- There is very considerable work ongoing in the protection of aquatic ecosystems from pollution and other damage by relevant State agencies and local authorities. This in part fulfils Ireland's obligations under the EU Water Framework Directive.

- The steps required to provide legal protection to Ireland's network of SACs and SPAs covering freshwaters are largely complete. A final formal designation of sites is underway, although legal protection is already in place.

- 6 substantial new marine SACs were advertised by the Department of Arts, Heritage and Gaeltacht in late 2011. Detailed site-specific conservation objectives have been published for 57 SACs and 27 SPAs, mainly coastal and marine sites and a further 36 are scheduled for completion by the end of 2014.

- The EU LIFE+ Project CAISIE (Control of Aquatic Invasive Species and Restoration of Natural Communities in Ireland) concluded in January 2013. The broad objective of the project was to contribute to the halting of biodiversity loss in Ireland by preventing further impacts on native biodiversity from high impact aquatic invasive species.

- The management of fisheries is the principal and most direct intervention used in Ireland to protect and restore salmon stocks. Conservation Limits for 139 salmon rivers have been developed and advice on status of stocks and appropriate catch levels to ensure compliance with conservation requirements is provided annually by the Salmon Standing Scientific Committee comprising of scientists from MI, IFI, ESB, IFI, EPA, Loughs Agency and AFBINI.

- Common Fisheries Policy stocks are managed within MSY framework in accordance with CFP and MSFD targets.

- Common Fisheries Policy Spatial fisheries management measures are in place in the Irish EEZ to protect vulnerable marine habitats in offshore NATURA 2000 sites (e.g. corals); spawning aggregations, juvenile fish and depleted stocks. The management measures range from the prohibition of fishing with bottom impacting fishing gear to temporal closures of fishing for different species and/or with different gears. Management arrangements for benthic impacting

fishing gears are currently being considered in inshore Natura 2000 sites (managed nationally) to protect sensitive habitats and associated biodiversity.

Obstacles to implementation

Progress in the implementation of the NBAP in the first three years of the six year programme has been significant, with 89% of actions in progress or implemented. This implementation is ongoing despite the following obstacles.

Since 2007, Ireland has experienced its worst economic recession in modern history (Roche *et al.,* 2011). In 2007, the unemployment rate stood at 4.4 per cent, but by 2009 it had increased to 12.5 per cent. Towards the end of 2010 the level of unemployment stood at 13.6 per cent by April 2014 this had decreased slightly to 11.4% (CSO, 2014).Despite the dramatic downturn in Ireland's economy, sectors based on natural resources were seen to be more resilient, as illustrated in Figure 7.1.

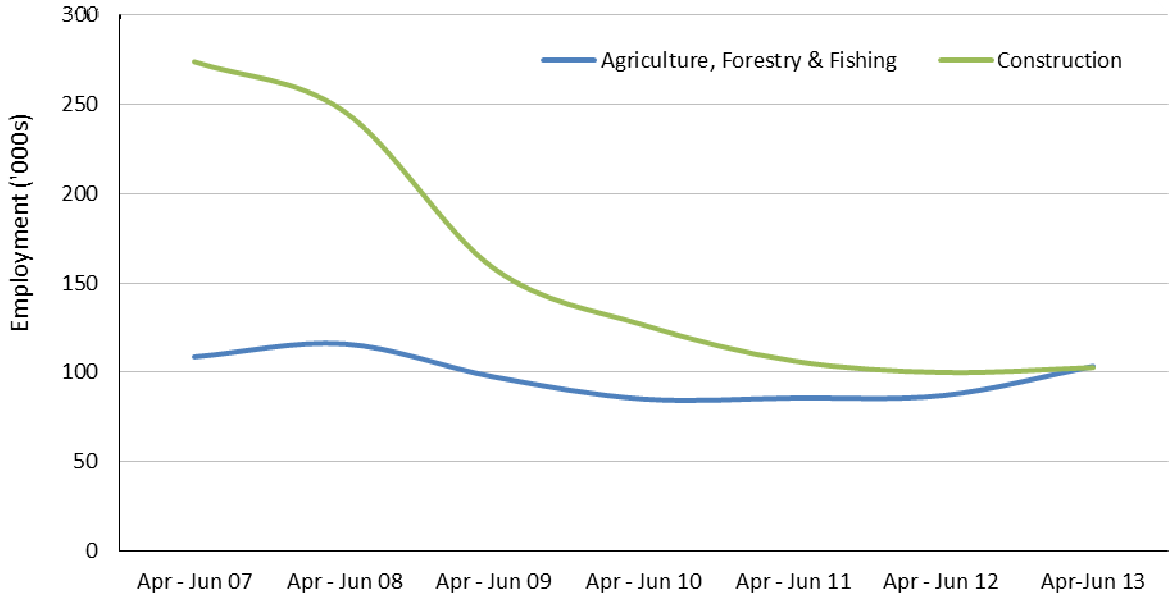


Figure 7.1. Employment in Ireland per sector 2007-2013 (Source CSO)

The Government's priorities are job creation and economic growth. The control of the public finances continues to be a critical task of Government. This inevitably leads to a significant impact on the human and financial resources available for biodiversity related work.

- A current restriction on resources exists within public bodies with government expenditure down 16% since 2010, a 9% decline in the number of public sector employees in past six years and an ongoing embargo on hiring staff (CSO, 2014; Boyle, 2014).

- Despite increased efficiencies and Ireland's public administration ranking above the European average for effectiveness (11th of the EU28, World Bank 2011), ongoing restrictions on resources within the public sector have made the implementation of the national biodiversity action plan, particularly in relation to expanding the knowledge base, training and public awareness actions, more challenging. However, the degree of partnership and participatory planning across public sectors has increased since the previous report, as reflected by the growth in number and diversity of members in the Inter-Departmental Steering Group on the implementation of the national biodiversity action plan.

- Since 2010, the operational budgets of public bodies responsible for biodiversity protection have experience significant cuts: National Parks and Wildlife Service, 49.3%; Environmental Protection Agency, 44.0%; Sea Fisheries Protection Authority, 7.4% (Department of Finance, Annual Revised Estimates Reports).

Notwithstanding the economic situation, other obstacles remain. For example, the sheer scale of Ireland's offshore area means high costs for comprehensive management and monitoring of marine habitats and species.

Question 8: How effectively has biodiversity been mainstreamed into relevant sectoral and cross-sectoral strategies, plans and programmes?

Mainstreaming Biodiversity into National Policy

Mainstreaming biodiversity in decision making across all sectors is the first objective within Ireland's national biodiversity action plan. An Interdepartmental Working Group on Biodiversity was established in 2012 to gain the engagement of key Government Departments and State Agencies in the implementation of the Actions for Biodiversity 2011-2016. The interim review of this national biodiversity action plan will be completed in 2014 and will serve to focus efforts in accelerating the implementation of the plan and the further integration of biodiversity into national plans and programmes (see Questions 6, 7 and 9 for further detail). Recent government actions to mainstream biodiversity include:

- The transposition of the EU Habitats Directive and the EU Birds Directive into national legislation into the Planning and Development Act 2010 and the EC (Birds and Natural Habitats) Regulations 2011. These legal instruments extended existing protection provisions, including those regulating hunting, and in particular placed clear obligations on state agencies with regard to habitat- and site-specific conservation and ensuring that all plans and individual projects are compliant with the EU Directives. The Department of the Arts, Heritage and the Gaeltacht continue to draft amendments further supporting their implementation and enforcement, clarifying administrative procedures and related issues that have arisen in the course of operation.

- In 2010, guidance for planning authorities in conducting Appropriate Assessments for plans and projects, to address issues of mitigation and avoidance of impacts on sites protected by the EU Habitats and Birds Directives, was published. Guidance to manage the risk of underwater sound to marine mammals was also published.

- Government consumption accounts for a sizeable part of economic activity and demand. The annual public sector procurement budget accounts for 10% to 12% of Ireland's GDP. In monetary terms, this equated to about €14 billion in 2011. In 2012, the Department of Public Expenditure and Reform published and began the implementation of a national action plan for green procurement: "Green Tenders – An Action Plan for Green Public Procurement". Its overall objective is to assist national and local public authorities to successfully plan and implement green public procurement by highlighting existing best-practice and outlining further actions to boost green public procurement.

- Following the transposition of the EU Environmental Liability Directive into Irish law, the Environmental Protection Agency produced specific guidance documents in 2011 to support both regulatory authorities and the public in preventing and remediating water damage, land damage and damage to natural habitats and protected species.

- A National Strategic Environmental Assessment Forum has been established with all five state environmental authorities represented, with regional fora established in association with the local authorities. The national forum completed and published a SEA Effectiveness Review and Action Plan in 2012 indicating that implementing legislation in Ireland is broadly appropriate and no significant difficulties arose with interpretation to date that would warrant substantial changes to Irish law. Subsequently in 2013, the Environmental Protection Agency published a SEA Environmental Integration Guidance Document to assist national and local planning authorities in the preparation and implementation of SEA for plans, programmes and strategies in Ireland to comply with the EU SEA Directive.

- In 2012, the Department of Environment, Community and Local Government developed a medium to long-term framework for advancing sustainable development and the green economy in Ireland entitled "Our Sustainable Future". The framework aims to integrate sustainable development into key areas of policy, to put in place effective implementation mechanisms and to progress sustainable development. The framework prioritises action on the development of an integrated approach to green infrastructure into sectoral polices and the creation of green corridors to enhance biodiversity.

Mainstreaming Biodiversity across Sectors

Agriculture

Ireland has secured €2.2 billion in EU funding for the new Rural Development Programme (RDP) up to 2020 and the Department of Agriculture, Food and the Marine (DAFM) has committed substantial national funding, giving an overall total of over €4 billion. The draft Programme submitted to the Commission for approval in July 2014, includes a new agri-environment scheme which is expected to attract some 50,000 participant farmers. It is envisaged that the programme will be agreed by the end of 2014, with implementation of measures commencing in 2015. Many biodiversity actions are being considered for inclusion within the new agri-environment scheme, including specific actions for vulnerable habitats and threatened species, as well as some general actions which will have wider biodiversity benefits. The new scheme will also have a water quality and climate action focus, which will have added benefits for ecosystem services. Parallel strategic environmental assessments and an appropriate assessment on the forthcoming programme will assist in ensuring there will be no significant adverse effects on biodiversity from the measures in the RDP when implemented.

A grant aid scheme by DAFM funds projects to identify, inventory, and conserve threatened genetic resources in Ireland. A National Genetic Conservation Strategy Document for animal genetic resources was published in 2013 by DAFM. Ireland lists seven populations of livestock as endangered. These include three populations of cattle, three populations of equines and one population of sheep. The 2013 strategy provides recommendations to ensure the conservation and use of animal genetic resources in Ireland. An equivalent strategy document will be produced for plant genetic resources in 2014. These national strategy documents will then be used to direct funding towards priority areas in future years. The draft RDP also includes measures which will aid the conservation of genetic resources at farm level, with the updated agri-environment measure giving priority access to breeders of listed livestock and a general action for the conservation of traditional apple trees species also included.

Forestry

A new Forestry Bill was presented to the Irish Government in October 2013. The primary purpose of the Bill is to reform and update the legislative framework relating to forestry and to support the development of a modern forestry sector, which operates in accordance with good forest practice and with a view to the protection of the environment. A number of provisions are included in the Bill which

are designed to integrate the protection of the environment and associated legal requirements under various relevant EU Directives and transposing national legislation into the central decision-making processes regarding the granting of approvals and licences by the Department of Agriculture, Food and the Marine.

In relation to the controlling imports of illegally harvested timber into Ireland, the EU Timber Regulation came into effect in March 2013 and does not require any further national legislation *per se* for its key provisions to have the force of law in Ireland. The development of effective, proportionate and dissuasive penalties to ensure full compliance with the EU Timber Regulation and the process of transposition into Irish law is at an advanced stage.

The Forest Service Native Woodland Scheme (NWS), developed and implemented in partnership with the Department of Agriculture, Food and the Marine, National Parks and Wildlife Service, Woodlands of Ireland, and Inland Fisheries Ireland, is aimed at protecting and expanding Ireland's native woodland resource. The Forest Service has also reached agreement with Ireland's Environmental Protection Agency to amend the existing protocol regarding afforestation in acid sensitive areas, to facilitate the creation of new native woodlands in these areas and associated water protection.

In addition, Ireland's Forest Service policy is to ensure that, at a national level, 30% of afforestation comprises broadleaf species. This is pursued through various measures, including: (i) the heightened level of grant and premiums available for broadleaf planting under the afforestation grant and premium schemes; (ii) the requirement to include 10% broadleaf species within all new individual afforestation projects, and (iii) the Native Woodland Establishment Scheme, focused on creating new native woodlands primarily comprising native broadleaf species.

Finally, a report commissioned by Woodlands of Ireland in March 2014 entitled "The Natural Capital Values of Ireland's Native Woodland", outlines a methodology for estimating the economic value of native woodlands in terms of a public amenity, tourism, public health, biodiversity utility, water quality, flood and erosion control, carbon storage and sequestration, and timber and wood fuel. The current estimate for existing native woodlands (0.17% land area) is €100-143 million p.a.

Maritime

The EU Marine Strategy Framework Directive (MSFD) established a framework within which EU Member States are required to take the necessary measures to achieve or maintain good environmental status within the marine environment by 2020. The Directive aims to protect Europe's marine waters by applying an ecosystem-based approach to enable the sustainable use of marine goods and services. The MSFD was transposed into Irish law in 2010 and a task force established to implement the MSFD in Ireland. Work on the initial assessment of Irish marine waters, the determination of good environmental status and the establishment of environmental targets has been completed and uploaded to the European Commission website (EIONET). To further facilitate public participation a national report which provides narrative information on the status of Irish marine waters has also been prepared and was published in 2013 along with Ireland's Marine Atlas.

EU Common Fisheries Policy (CFP) spatial fisheries management measures are in place in the Irish EEZ to protect vulnerable marine habitats in offshore EU Habitats Directive sites, spawning aggregations, juvenile fish and depleted stocks. The management measures range from the prohibition of fishing with bottom impacting fishing gear to temporal closures of fishing for different species and with different gears. Management measures for benthic impacting fishing gears are currently being considered in inshore conservation sites to protect sensitive habitats and associated biodiversity. Common Fisheries Policy stocks are also managed within maximum sustainable yield framework in accordance with CFP and

MSFD targets. Harvest control rules are in place to bring stocks to maximum sustainable yield in 2015, where possible (ICES, 2013). The new Common Fisheries Policy provides for measures to be put in place to adjust the fishing capacity of the fleets to levels of fishing opportunities consistent with maximum sustainable yield targets with a view to having economically viable fleets without overexploiting marine biological resources. Ireland will be reporting on the balance on an annual basis. If those reports show an imbalance, an action plan for adjustments must be put in place.

Finally, the European Parliament has endorsed the European Maritime and Fisheries Fund (EMFF). With a budget of €6.5 billion for 2014-2020, the fund will finance projects to implement the new reformed Common Fisheries Policy (CFP) and provide financial support to fishermen, fish farmers and coastal communities to adapt to the changed rules. The Fund will also finance projects to boost 'blue' growth and jobs under the EU's Integrated Maritime Policy (IMP). The new EMFF will provide investment and funding opportunities to help reduce the impact of fisheries on the marine environment and to rebuild fish stocks. The fund will also help eliminate discarding practices – a key aspect of the new policy. It will also assist the coordination of the Integrated Maritime Policy. Funding will focus on initiatives that benefit multiple sectors such as maritime spatial planning, integrated maritime surveillance and marine knowledge.

Local Authorities

The establishment of Heritage Officers and Biodiversity Officers across local authorities has greatly facilitated and accelerated the implementation of the National Biodiversity Action Plan within local planning processes and actions for biodiversity protection. For example, as an initiative of the Heritage Council under its Heritage Officer Programme, surveys of hedgerows, of which Ireland has an estimated 300,000 km, were carried out in many local authority areas. In 2013, a national initiative coordinated by Woodlands of Ireland worked to develop a Hedgerow Appraisal System with three objectives: i) develop a standard recording methodology, ii) develop a standard and accessible national database, and iii) develop a method for hedgerow appraisal. As a result of this initiative, a National Hedgerow Appraisal - Best Practice guidance on hedgerow surveying, data collection and appraisal was published. A national hedgerow database, bringing the data from hedgerow surveys carried out in 15 counties, has also been established. The database and the national standard are now an open source biodiversity resource hosted by the National Biodiversity Data Centre.

Synergies with other conventions

In Ireland, the primary legislation relating to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) are the Irish Wildlife Act 1976, the Wildlife (Amendment) Act 2000 and the EU Wildlife Trade Regulations implemented in 1984. A nominated officer of Ireland's Revenues Customs Service is a member of the EU Wildlife Trade Enforcement Group and attends each of the bi-annual meetings at the EU Commission. In 2013, a National Wildlife Crime Conference was held to coordinate further actions on enforcement of the convention across the relevant state departments.

Under the OSPAR Convention to Protect the Marine Environment of the North East Atlantic, Ireland committed to establishing marine protected areas (MPAs) to protect biodiversity. No legislation is currently used in Ireland to legally underpin protected areas established to fulfil commitments under international conventions. Therefore, since the creation of OSPAR MPAs would not afford any legal protection to the relevant areas on their own, in 2011 Ireland established a number of its EU Habitats Directive Special Areas of Conservation as OSPAR MPAs for marine habitats.

Under the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention), Ireland was one of the first countries to become signatories to the Agreement on the Conservation of

Populations of European Bats (EUROBATS) in 1994. In 2012, Ireland hosted the EUROBATS Advisory Committee Meeting and facilitated the production of guidance documents relating to sustainable forestry, light pollution, infrastructure development, lethal fungal infections, managing bat feeding areas and monitoring bat migrations. Also with respect to the Bern Convention, the OSPAR Convention and the International Whaling Commission, in 2013 the Irish Marine Institute funded and published a study developing methodologies to strengthen research, monitoring and protection of marine mammals and megafauna in Irish waters (Berrow et al., 2013).

The Department of Foreign Affairs and Trade, through Irish Aid, is actively engaged with the development of the UN Sustainable Development Goals (SDGs) including inputting to the UN Open Working Group (OWG) on the SDGs through the (OWG) seat shared between Ireland, Denmark and Norway. There have been inputs across the spectrum of OWG 'focus areas' including to the focus area on ecosystems and biodiversity. Working with the Department of Environment, Community and Local Government, the Department of Foreign Affairs and Trade, is actively engaged with the United Nations Framework Convention on Climate Change process.

Trans boundary Co-operation

There is frequent contact between relevant Ministries in Northern Ireland and the Republic of Ireland on a wide range of biodiversity issues, seeking to improve cooperation, pursue joint cross-border projects and ensure a harmonised approach to shared problems.

For example, the Department of Arts, Heritage and the Gaeltacht has been working with the Northern Ireland Environment Agency to fund and manage the Invasive Species Ireland Project since 2006. This initiative provides advice and guidance on the management of a range of invasive species which can negatively impact on the environment and on property on the island of Ireland. It is expected that the next phase of this project will go out to tender in the second half of 2014. Since its establishment, there is now excellent national coordination of information flows on invasive species in Ireland as a prerequisite for delivery of a Rapid Response system. Agreement has been reached by the key national bodies on sharing of information on newly recorded species, a process coordinated by the National Biodiversity Data Centre.

Ireland as a member of the European Union is routinely involved in discussions and cooperation with other Member States of the EU, in particular neighbouring countries. EU legislation, a key driver of environmental protection, is of course a matter of substantial discussion and negotiation between Member States. EU programmes such as INTERREG fund transboundary programmes including biodiversity-related projects.

Question 9: How fully has the Irish national biodiversity strategy and action plan been implemented?

Actions for Biodiversity 2011-2016

Ireland's second national biodiversity action plan, Actions for Biodiversity 2011-2016, was launched in November 2011 and an interim review of the implementation of this plan will be completed in 2014. As the national biodiversity action plan is currently at a mid-point in its execution, progress towards full implementation for many of the actions is still ongoing. Of the 102 actions listed within Actions for Biodiversity 2011-2016, 24 are fully implemented, 67 are still in progress and 11 require further action (Figures 9.1 and 9.2).

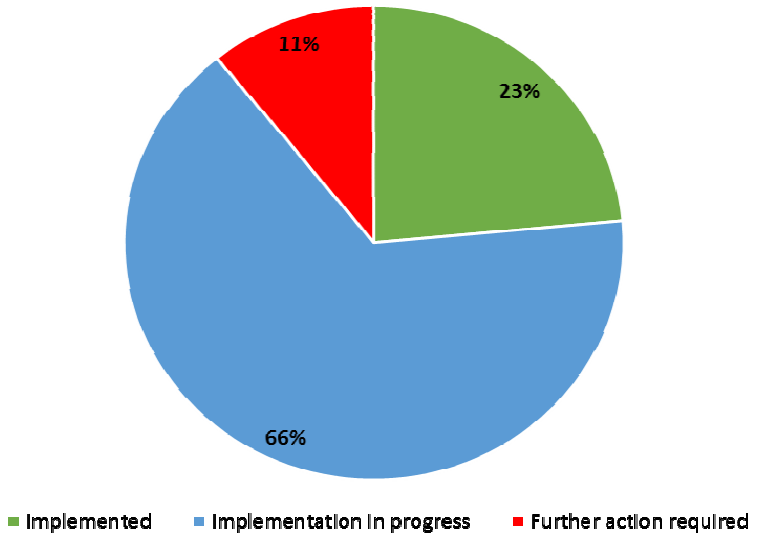


Figure 9.1. Qualitative assessment of progress on the implementation of Ireland's Actions for Biodiversity 2011-2016.

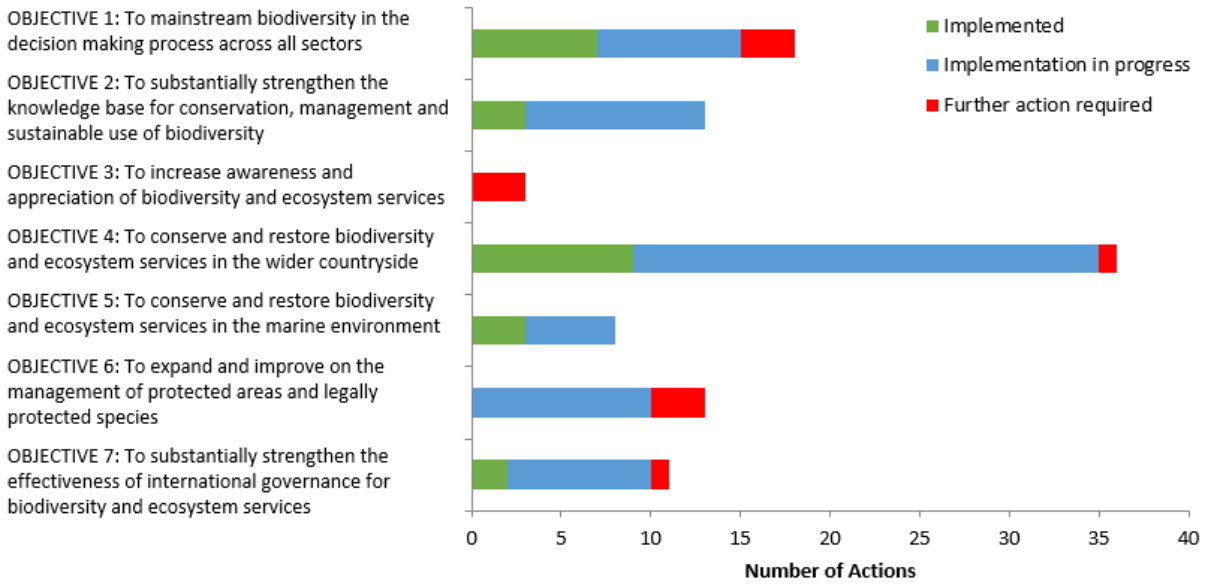


Figure 9.2. Qualitative assessment of progress on the implementation across objectives within Ireland's Actions for Biodiversity 2011-2016.

Details on progress achieved so far is provided under Questions 7 and 8. For remaining challenges to implementation, see Questions 7 and 12.

Part III: Progress towards the 2020 Aichi Biodiversity Targets and contributions to the relevant 2015 Targets of the Millennium Development Goals

Question 10: What progress has been made in Ireland towards the implementation of the Strategic Plan for Biodiversity 2011-2020 and its Aichi Biodiversity Targets?

Ireland's national biodiversity action plan, Actions for Biodiversity 2011-2016, is at a mid-point in terms of the implementation of the Strategic Plan for Biodiversity 2011-2020. Therefore, many actions are of an ongoing nature across the Strategic Goals and Aichi targets. Figures 10.1 and 10.2 summarise the indicative levels of implementation across the 21 targets and 102 actions within the current national biodiversity action plan, which have been mapped against the relevant Strategic Goals and Aichi targets. As with the indicative levels of implementation within the national biodiversity action plan, the mapping exercise is inherently subjective as many actions are cross-cutting across Aichi targets (see Appendix IV).

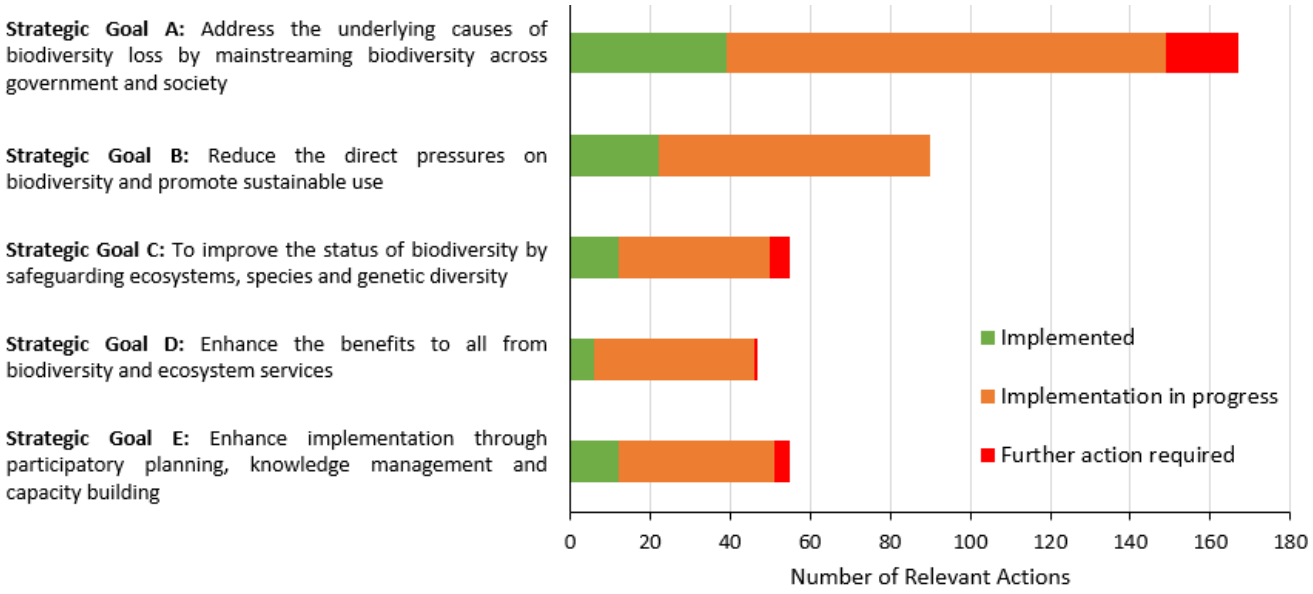


Figure 10.1. Ireland's implementation of the relevant actions within the national biodiversity action plan mapped against the Strategic Goals of the Strategic Plan for Biodiversity 2011-2020.

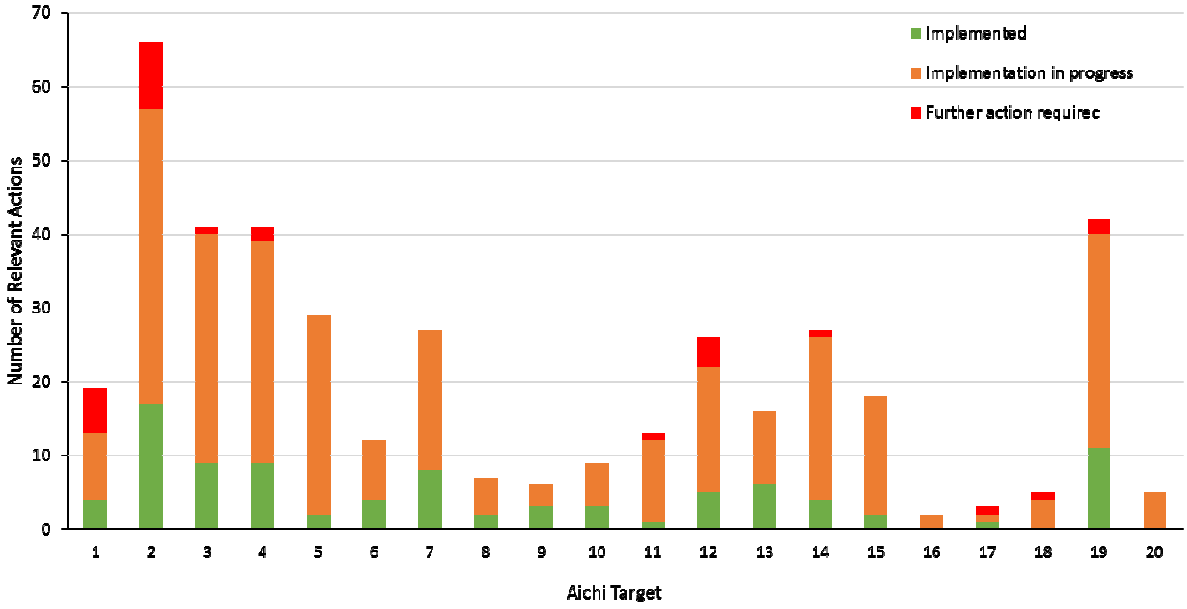


Figure 10.2. Ireland's implementation of the relevant actions within the national biodiversity action plan mapped against the Aichi Biodiversity Targets of the Strategic Plan for Biodiversity 2011-2020.
Overall, the figures highlight areas of contribution to the Strategic Plan for Biodiversity 2011-2020, as well as areas requiring further action within the national biodiversity action plan, which will be addressed at the end of the current plan in 2016. The actions and indicators from the NBAP relate to the five Goals of the Strategic Plan. Narrative text highlights progress under each Aichi target.

STRATEGIC GOAL A: Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society

Target 1: By 2020, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably.

Notice Nature is Ireland's public awareness campaign on biodiversity (www.noticenature.ie). The aim of the campaign is to raise awareness of the importance of biodiversity and to encourage everyone to play their part in its protection. This website links to other important initiatives such as the Green Schools Programme and the National Parks and Wildlife Service education centres.

The national biodiversity forum was re-established in 2014 and includes environmental NGOs and landowners.

Target 2: By 2020, at the latest, biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems.

Legislation relating to the conservation of biodiversity is now incorporated into the 2010 Planning & Development Act.

A Natural Capital forum was established in 2014 with support of public and private agencies to assist in prioritising action on the integration of natural capital in national accounting.

Research into the valuation of ecosystem services is being funded by the EPA, Agricultural and Marine Institutes
The Green Tenders Implementation Group was established in 2012.

Target 3: By 2020, at the latest, incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimize or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio economic conditions.

Positive incentive measures are currently being considered under the on-going development of the new rural development programme (RDP). Parallel strategic environmental assessments and appropriate assessment on the forthcoming programme will ensure there are no adverse effects on biodiversity from the measures when implemented.

Results based payments are being facilitated through the Burren Farming for Conservation Programme, the AranLIFE project and the Natterjack Toad Scheme for habitat protection, creation and improvement. Further output-based measures are also being considered as part of the new RDP, for example a measure to support the Freshwater pearl mussel.

The European Maritime and Fisheries Fund will provide financial support to fishermen, fish farmers and coastal communities to adapt to the changed rules of the EU Common Fisheries Policy. The new fund will provide investment and opportunities to help reduce the impact of fisheries on the marine environment, to

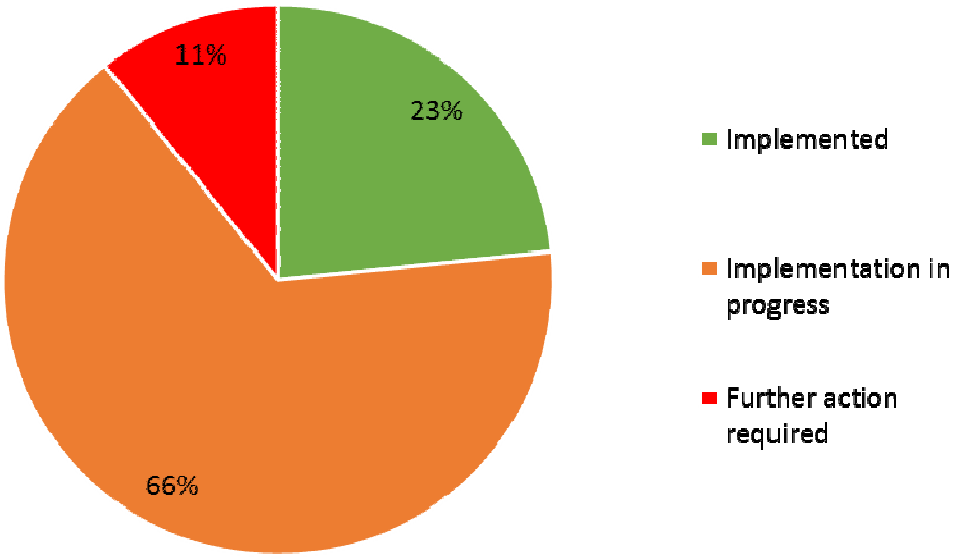
rebuild fish stocks and help eliminate discarding practices.

Target 4: By 2020, at the latest, Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption and have kept the impacts of use of natural resources well within safe ecological limits.

In 2012 a medium to long-term framework for advancing sustainable development and the green economy in Ireland entitled "Our Sustainable Future" was published. The framework aims to integrate sustainable development into key areas of policy, to put in place effective implementation mechanisms and to progress sustainable development. The framework identifies a number of national policies and programmes relating to areas such as: sustainable consumption and production; conservation and management of natural resources; climate change and clean energy; sustainable agriculture; sustainable transport; and education, communication and behaviour change.

See Target 6 for marine sustainable production.

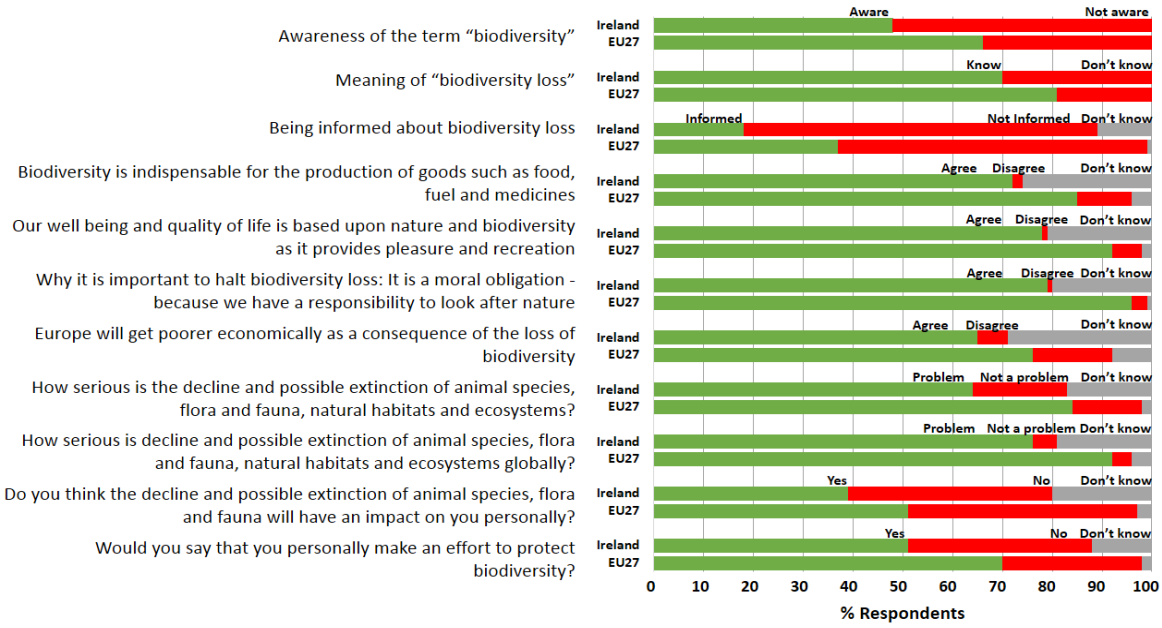
Overall Assessment based on Actions for Biodiversity 2011-2016



Key actions within Ireland's Actions for Biodiversity 2011-2016:

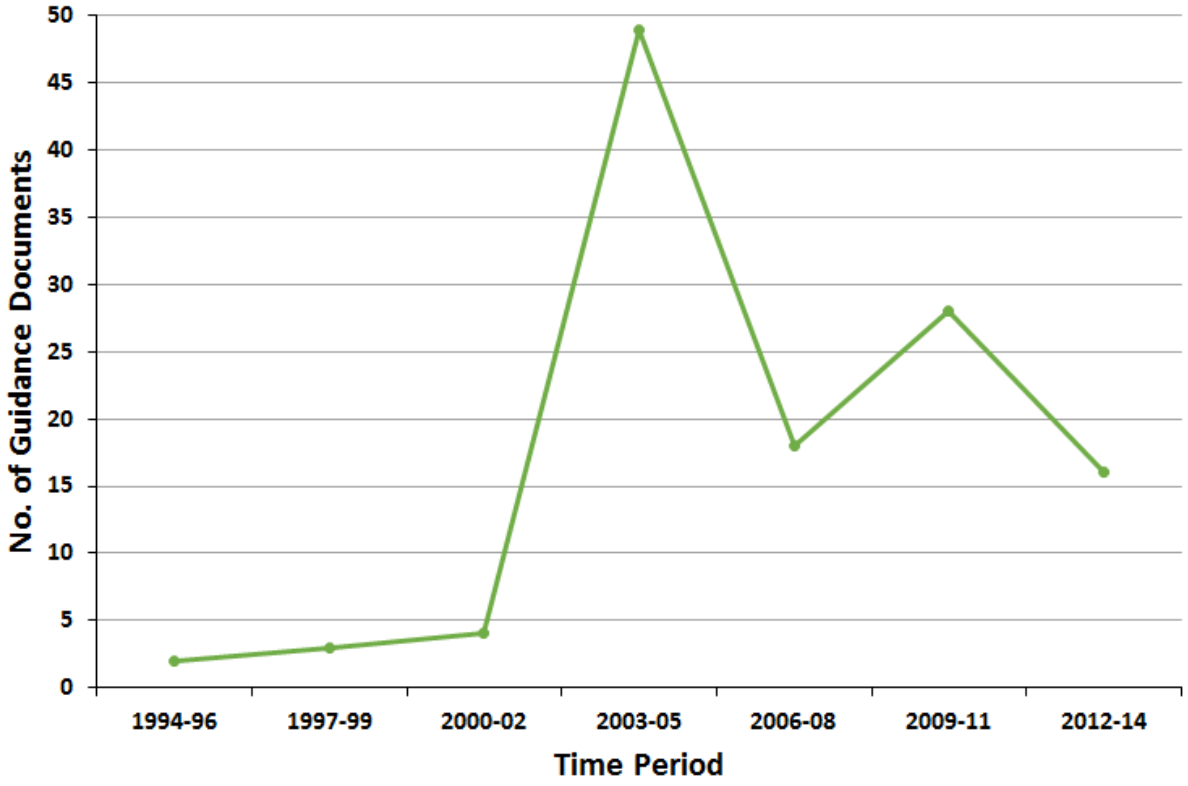
- Develop and use the means to integrate the economic value of biodiversity and ecosystems into national accounts, national and local development strategies and planning processes.
- Raise awareness of the implications of policy and decisions on biodiversity and the requirements to engage in the preparation of biodiversity action plans**.**
- Include in legislation a biodiversity duty to ensure that conservation and sustainable use of biodiversity are taken into account in all relevant plans and programmes and all new legislation.
- Publish and implement the National Action Plan for Green Procurement
- Ensure that all development plans comply with environmental legislation and in particular with the Nature Directives so as to prevent and minimise any potential damages to biodiversity.
- Fully implement the EU Strategic Environmental Assessment Directive
- Based on these standards and procedures, develop a shared information system for biodiversity which makes data freely available to all interested users, streamlines reporting and supports policy evaluation and development at national, regional and global levels by 2015.
- Support and encourage the volunteer network that carries out biological recording.
- Enhance training, communication, cooperation and concerted action between relevant sectors in support of biodiversity conservation.
- Work with relevant Departments and stakeholders to include biodiversity and ecosystem goods and services in relevant courses in secondary and third level education.
- Develop and implement a communications campaign in support of full implementation of this Biodiversity Action Plan and improving public and sectoral understanding of the value of biodiversity
- Provide and implement guidelines for local authorities and other planning bodies on the protection of species listed in Annex IV of the EU Habitats Directive
- International agreements will be serviced to ensure that Ireland plays a role in the future of international biodiversity policy, particularly in the area of mainstreaming biodiversity and ecosystem services across all sectors.
- Identify major impacts of trade on biodiversity and adopt measures to significantly reduce (in case of negative impacts) and/or enhance (in case of positive impacts) these impacts.
- Identify and implement measures aimed at substantially reducing the impact of Ireland's ecological footprint on biodiversity.

Selected indicators:



Percentage of replies to a subset of the questions from The Heritage Council survey on "Biodiversity Awareness: Understanding and Impact of its Loss", conducted on 1,000 people in Ireland in 2010. For comparison, the average responses by EU27 citizens to identical questions in the 2010 Flash Eurobarometer

Report No. 290 are included. Similar to the Eurobarometer, the Heritage Council undertakes occasional surveys in Ireland on biodiversity and related issues. The results of such surveys may be more contextual to Irish concerns and can be used in comparison to similar European-wide surveys.



Number of biodiversity-related guidance documents published by governmental agencies per year. Guidance on the role of biodiversity, and the need for its conservation, in all sectors is needed in order to raise awareness and encourage action by non-biodiversity-related agencies. This indicator tracks the number of up-to-date guidance documents available across all sectors. Only documents explicitly stating recommendations for biodiversity management and conservation were included. Reports and surveys summarising the state of biodiversity in a particular taxon or ecosystem were excluded. Data were compiled from documents available on the 06.02.2014.

STRATEGIC GOAL B: Reduce the direct pressures on biodiversity and promote sustainable use

Target 5: By 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced.

Progress with this target requires detailed examination of recent land cover data; this data is currently being processed. Coastal systems are dynamic and stable with very minor losses reported. Peatlands continue to be eroded and extracted. Scrub and heath are likely to be expanding in the west due to abandonment. Woodland cover is increasing, however this is mainly conifer plantation which is at the expense of grassland and heath. The rate of loss of natural habitats is much less than the losses sustained 30-40 years ago following extensive periods of drainage and agricultural intensification.

Significant efforts have been made to reduce degradation by addressing, *inter alia*, inappropriate grazing regimes in upland habitats, reduction of pollutants (see target 8), removal of invasives (see target 9).

Government has recently approved a draft National Landscape strategy 2014-2024. The Strategy will establish principles for protecting and enhancing the landscape while positively managing its change. It will provide a high-level policy framework to achieve balance between the management, planning and protection of the

landscape and ensure fragmentation is reduced.

Target 6: By 2020 all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits.

Common Fisheries Policy stocks are managed within a Minimum Sustainable Yield (MSY) framework in accordance with CFP and MSFD targets. Harvest control rules are in place to bring stocks to MSY in 2015 where possible. There has been a strong reduction in fishing pressure of fish stocks in Irish waters in the last decade. The Marine Institute Stock Book 2013 indicated that of the marine fish stocks in Irish waters which are fully assessed, 59% are now fished at or below MSY, while 60% of stocks are within safe biomass limits.

Effects of marine fisheries on the marine ecosystem are being evaluated in relation to fisheries impact on Vulnerable Marine Ecosystems, bycatch (e.g. cetaceans and seabirds) and fish biodiversity. Risk assessments and mitigation plans for fisheries in and close to Natura 2000 sites are ongoing.

Completed assessments for Natura 2000 sites and mitigation plans are published online at www.fishingnet.ie. Risk assessment of sea-fisheries interactions with protected habitats and species for the rest of the Irish coast (within 12 nautical miles) is close to completion. Mitigation strategies are being developed and will undergo consultation prior to conclusion and implementation. A number of Natura 2000 sites are closed on a precautionary basis to certain fishing practices.

Target 7: By 2020 areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.

Aquaculture and forestry licence procedures incorporate a comprehensive environmental analysis in all applications.

The new Rural Development Programme up to 2020 includes a substantial commitment for a new agri-environment scheme (building up approx. 50,000 participant farmers). It is envisaged that the programme will be agreed by the end of 2014, with implementation of measures commencing in 2015. A number of biodiversity actions are being considered for inclusion within the new agri-environment scheme, including specific actions for vulnerable habitats and threatened species, as well as some general actions which would have wider biodiversity benefits. A number of biodiversity related output-based schemes have also being proposed.

Target 8: By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.

There has been very little change in the quality of lakes, rivers and transitional waters in the last 10 years with approximately half considered to be in good status

The percentage number of high quality river sites has almost halved in the last 21 years from almost 30 per cent of the total sampled in the 1987-1990 period to less than 17 per cent in 2007-2009.

Investment in waste water infrastructure has resulted in significant improvements in the treatment of urban waste water. 94 per cent of urban waste water at areas >500 population equivalents (p.e.) now receive at least secondary (biological) treatment compared to less than 30 per cent in 2001. However, urban waste water still poses a threat to the quality of receiving waters in some areas.

A review of the Good Agricultural Practice Regulations was completed in 2014 with the updating of the regulations, under S.I. 31 of 2014. The regulations include increased setback distance for the application of

chemical fertiliser to land in the vicinity of a watercourse (to 2 metres). In the case of organic fertilisers and soiled water, new site specific and risk-based approach to be used by Local Authorities in setting setback distances around drinking water abstraction points. The Nitrogen and Phosphorus allowances have also been adjusted in certain circumstances to match inputs more closely with crop requirements/outputs.

Target 9: By 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.

Invasive Species Risk Assessments have been undertaken for 41 high risk species.

The EU LIFE+ Project CAISIE (Control of Aquatic Invasive Species and Restoration of Natural Communities in Ireland) concluded in January 2013. The broad objective of the project was to contribute to the halting of biodiversity loss in Ireland by preventing further impacts on native biodiversity from high impact aquatic invasive species.

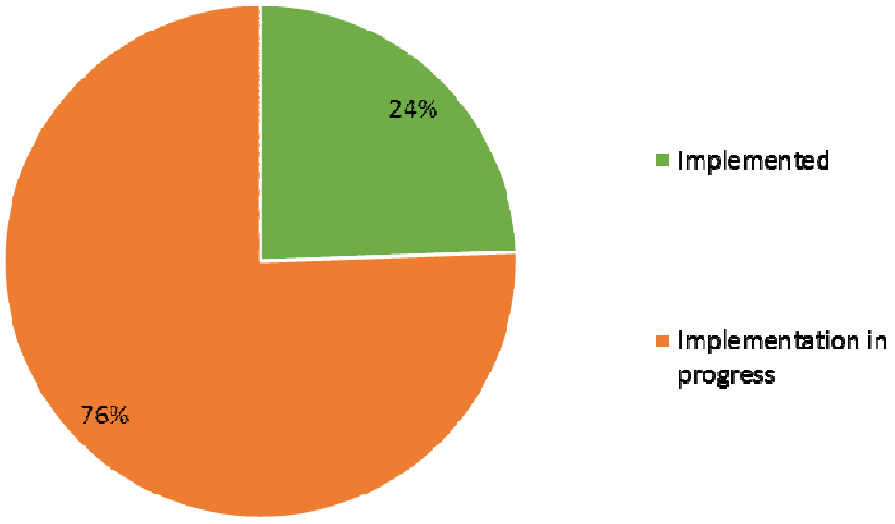
Progress has been made with the control and eradication of some recently arrived and established invasive species e.g. Chub, Water primrose, Hottentot fig and Giant rhubarb.

Initiated through Invasive Species Ireland, there is good national coordination of information flows on Invasive Species in Ireland as a prerequisite for delivery of a Rapid Response system. Agreement has been reached by the key national bodies on sharing of information on newly recorded species, a process coordinated by the National Biodiversity Data Centre. A team of national experts has been identified who provide verification of records of newly arrived sightings of invasive species, and following verification of reported sightings, species alerts are issued by the National Biodiversity Data Centre. Since 2011, alerts for three species, Japanese Kelp, Squirrel Pox Virus and Raccoon have been issued.

Target 10: By 2015, the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning.

The new rural development programme will have a climate action focus which will have added benefits for ecosystem services.

Overall Assessment based on Actions for Biodiversity 2011-2016:

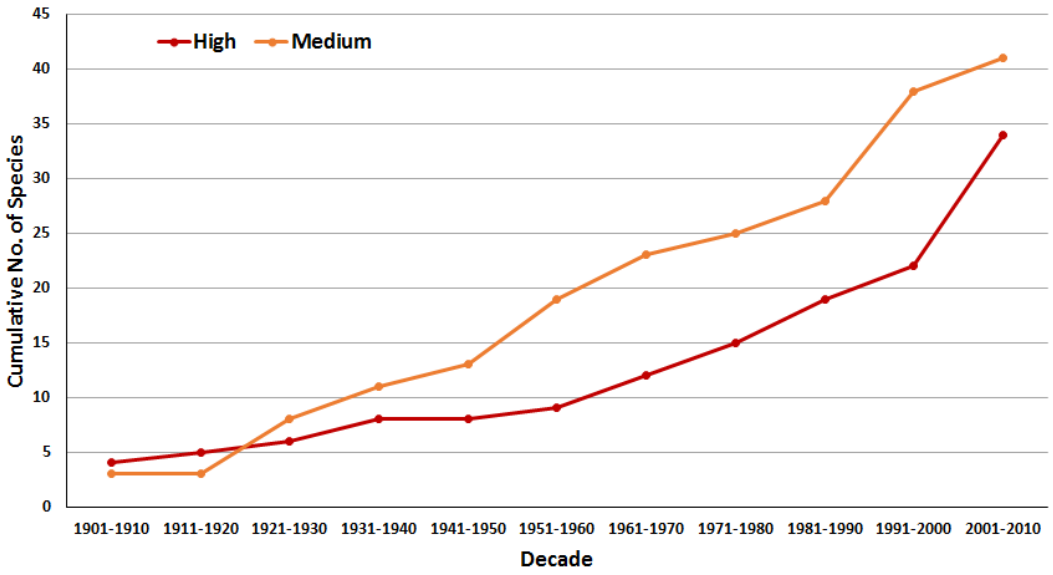


Key actions within Ireland's Actions for Biodiversity 2011-2016:

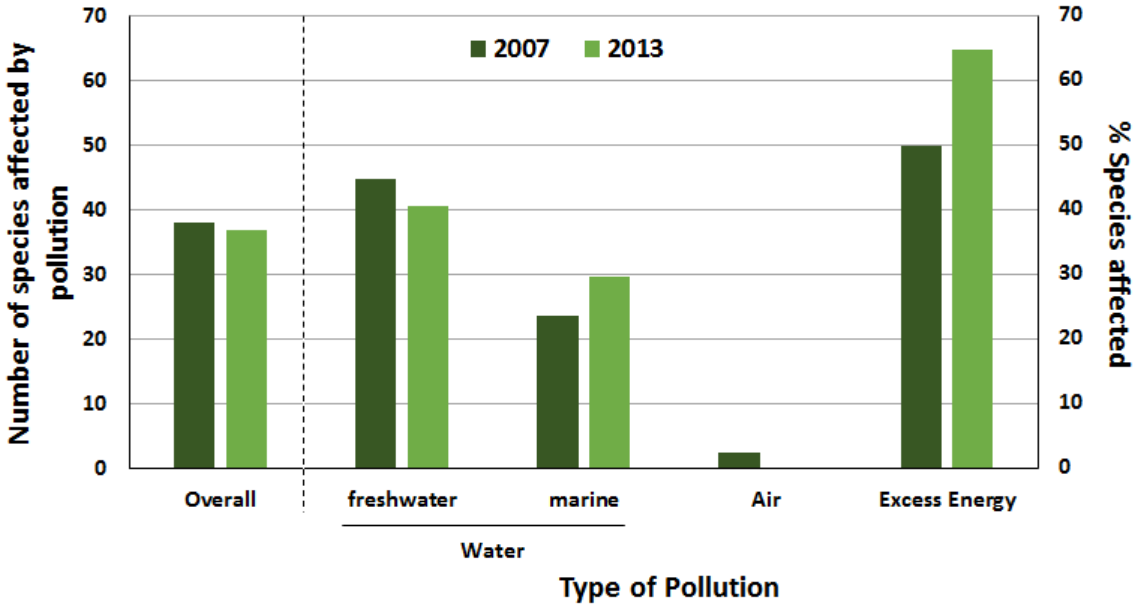
- Develop measures in future rural development programmes for the protection and enhancement of ecosystem services and biodiversity.
- Conduct a systematic evaluation process for any agri-environmental schemes delivered, involving a robust ecological monitoring programme.

- Review the control of overgrazing and undergrazing.
- Ensure effective implementation of cross-compliance, statutory management requirements and forest service guidelines/requirements to ensure conservation of biodiversity.
- Consider and develop guidance on alternative forestry management options which aim to deliver additional biodiversity benefits.
- Ensure implementation of operational monitoring programmes, publication of River Basin Management Plans and establishment and implementation of River Basin District Programmes of Measures, in line with provisions of the EU Water Framework Directive.
- Significantly reduce pollutant pressures on terrestrial and freshwater ecosystems through implementation of relevant EU Thematic Strategies and Directives.
- Prepare detailed species and pathway risk assessments and develop exclusion and contingency plans for priority pathways and high impact species that are likely to invade Ireland.
- Continue and enhance measures for eradication, where feasible, control and containment of invasive species.
- All public bodies will endeavour to use native species, landraces and breeds and the public will be encouraged to do so.
- Develop a marine spatial plan for Ireland.
- By 2015, identify programmes of measures designed to achieve good environmental status as required by the Water Framework Directive and Marine Strategy Framework Directive and in line with the OSPAR Convention.
- Continue seeking to ensure the Common Fisheries Policy and marine fisheries provide for the conservation of fish species and marine biodiversity generally and adopting the ecosystem approach to fisheries management.

Selected indicators:



The arrival into Ireland for both high and medium impact invasive alien species since 1901.These data are derived from risk assessments conducted for 377 non-native species recorded in Ireland up to 2012 from the Invasive Species in Ireland 2013 prioritisation risk assessment database. The risk assessment process is detailed is Kelly et al. (2013) and broad trends summarised in O'Flynn *et al.* (2014), where species were categorised as being of high (48 species), medium (79 species) or low risk (250 species) to Irish ecosystems. Only those species considered to be of high or medium risk are presented in this indicator.



The number of EU Habitats Directive species conservation status' affected by pollution, and the percentage of species affected by pollution type. Excess energy refers to noise pollution, light pollution and seismic exploration or explosions. Under Article 17 of the EU Habitats Directive, each member state is obliged to report to the European Commission on the status of listed habitats and species every six years. In 2007 and 2013, Ireland submitted assessments of conservation status for 61 species covered. There was little change between the two reporting periods: The most important form of pollution was freshwater or marine-based pollution.

STRATEGIC GOAL C: To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity

Target 11: By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area based conservation measures, and integrated into the wider landscape and seascapes.

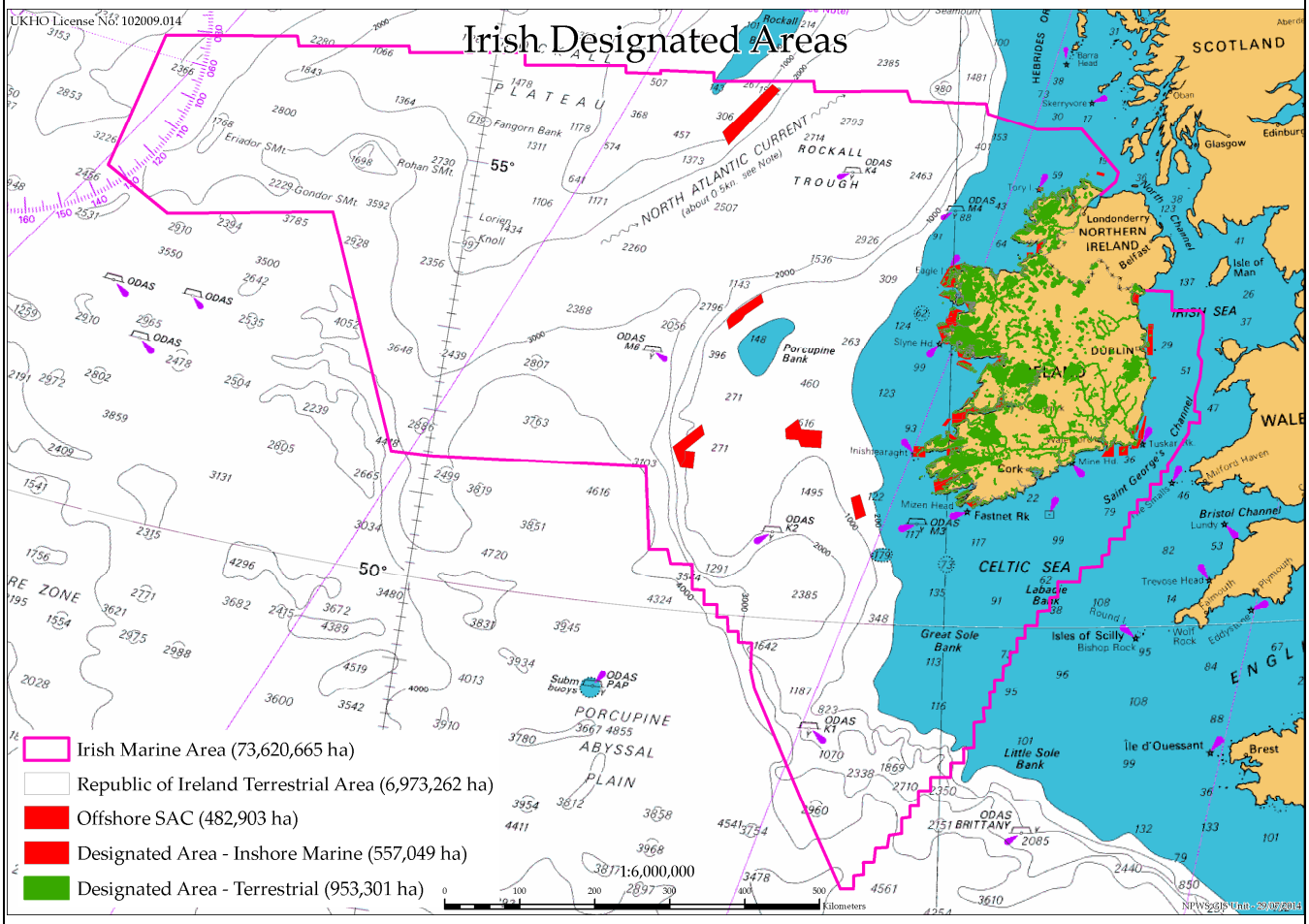
The designation process for Ireland's Natura 2000 network is very advanced with some 583 sites (154 SPAs for birds and 479 SACs), covering some 14% of the terrestrial and inland waters of the state, designated in accordance the terms of the EU Birds and Habitats Directives. The completion of the formal designations process is underway with Statutory Instrument already in place for 141 sites.

Only 1.4% of Ireland's extensive marine territory is so designated, although other protective measures such as the Common Fisheries Policy also cover the marine territory.

Target 12: By 2020 the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained.

The National Botanic Gardens (NBG) ex-situ conservation programme for rare and threatened flora entails assessment of population numbers and genetic diversity, establishment of living material within the gardens, seed banking and cryopreservation. The NBG currently holds 58 specimens of Red Data or Flora Protection Order species. Cryopreservation is used for rare and threatened bryophytes

Fota Wildlife Park currently has 15 endangered species involved in European breeding and reintroduction programmes.



Dublin Zoo is responsible for the ex situ care of approximately 500 animals representing 95 different species (86 vertebrate species and 9 invertebrate species). Currently 40 of these species are part of international breeding programmes.

Tayto Wildlife Park is currently participating in the Grey Partridge reintroduction programme and is currently in the process of registering its Fishing Cats, Jaguarundi and Eurasian Lynx in the European Endangered Species Programme.

There are ongoing programmes at Galway Atlantaquaria relating to sea turtle rehabilitation and White skate conservation.

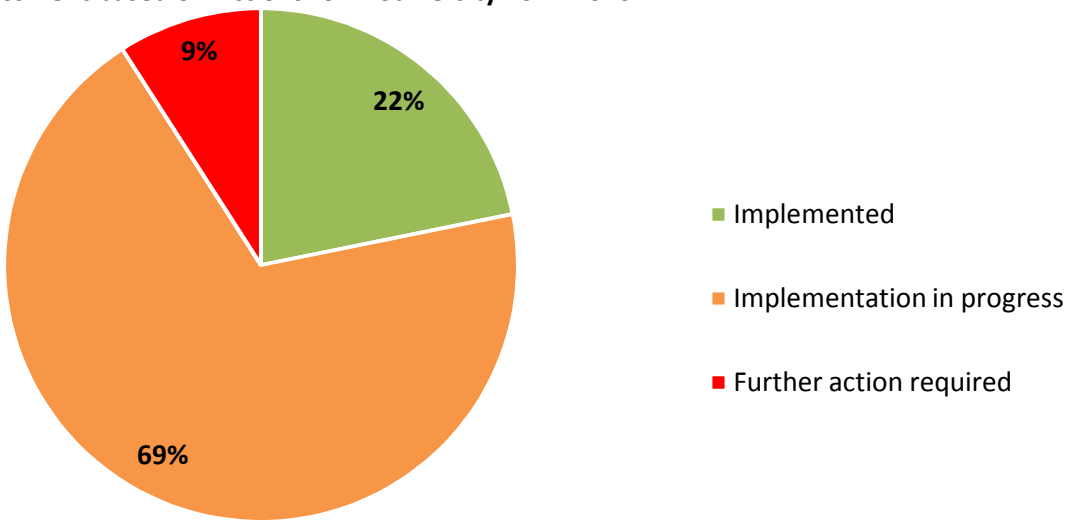
Other species conservation programmes are mentioned under Q.7 in this report.

Target 13: By 2020, the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed

The National Biodiversity Data Centre established a National Crop Wild Relative (CWR) database in 2010 to support in-situ conservation through the identification of threatened CWR hotspots. The database continues to be updated. A supporting website provides full species accounts for all 181 CWR species that occur in Ireland, including information on the location of any ex-situ collections. Ex-situ collections of plant genetic resources are held by the DAFM with additional supplementary collections held by Trinity College Dublin and the Irish Seed Savers Association. Additionally, the grant aid scheme for the Conservation of Genetic Resources Grant Aid Scheme for Food and Agriculture (DAFM) continues to fund projects to identify, inventory, and conserve threatened plant genetic resources in Ireland.

Developed by the European Federation of Animal Science (EAAP) from 2007-2010, the European Farm Animal Biodiversity Information System (EFABIS) project merged two pre-existing databases on the status of animal breeds in Europe into a unified Open Source farm animal biodiversity information system (FABISnet). DAFM manages the national version of the EFABIS database as a communication and information tool that provides stakeholders a searchable database of breed related information, management tools and reference library. Censuses are primarily conducted by the relevant breed societies, but the Kerry, Irish Maol and Dexter cattle, Irish Draught horse, Connemara pony, Kerry Bog Pony and Galway sheep are designated as endangered, therefore DAFM directly implement management schemes for these breeds. Since 2011, 42 of 170 breeds present in Ireland have had their population data updated. Of the 72 breeds that have national-level risk assessment using FAO criteria, 1 is extinct, 16 are considered critical, 26 are endangered and 29 are not at risk.

Overall Assessment based on Actions for Biodiversity 2011-2016:



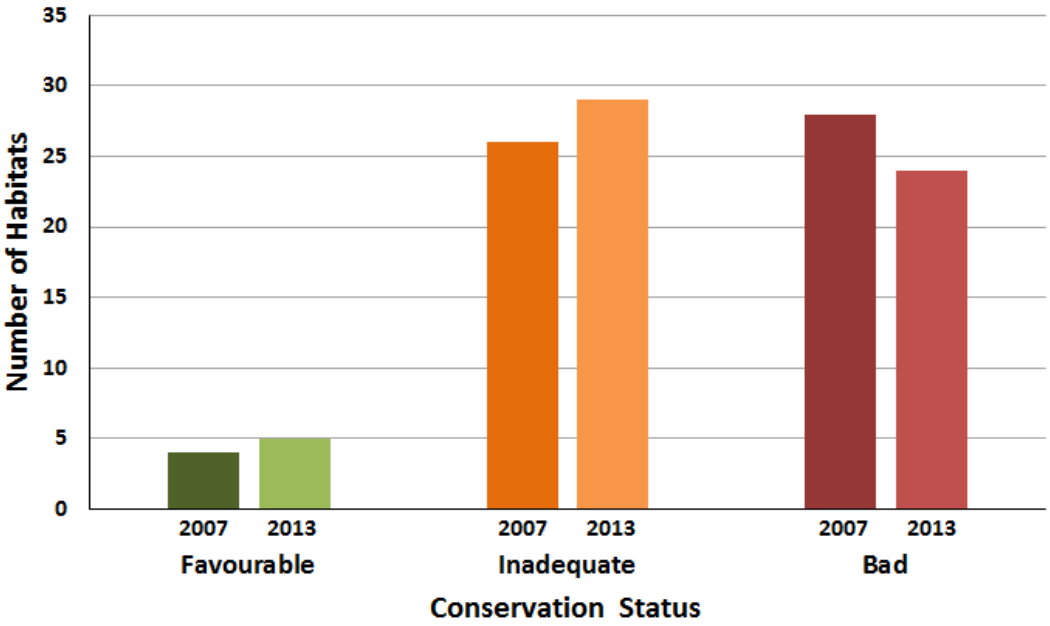
Key actions within Ireland's Actions for Biodiversity 2011-2016:

- Publish a Bill by 2014 to consolidate the Wildlife Act.
- Introduce legislation to reduce further the risk to wildlife caused by the use of poisons in the environment.
- Continue to update, identify and create inventories of important genetic resources for food and agriculture, both in situ and ex situ as appropriate, in particular those genetic resources whose survival is threatened and which may not have been identified or quantified to date.
- Strengthen measures to ensure conservation, and availability for use, of genetic diversity of crop varieties, livestock breeds and races, and of commercial tree species and promote in particular their *in situ* conservation.
- Develop a marine spatial plan for Ireland.
- Continue and complete national measures to research and reduce adverse effects of marine fisheries, aquaculture, etc. on biodiversity in particular within Natura 2000 areas.

- Complete designation process for SACs and SPAs, in particular for marine coastal and offshore SACs by 2012 and marine SPAs by 2014.
- By 2015, review previously proposed Natural Heritage Areas and designate as appropriate under the Wildlife (Amendment) Act, 2000.
- By 2015 strengthen the coherence, connectivity and resilience (including resilience to climate change) of the protected areas network using, as appropriate, tools that may include flyways, buffer zones, corridors and stepping stones.
- Provide and implement guidelines for local authorities and other planning bodies on the protection of species listed in Annex IV of the EU Habitats Directive.
- Continue to implement measures to improve the status of habitats and species assessed as "bad" in the 2007 report to the EU on the status of protected habitats and species, involving habitat action plans if necessary, and by 2015 have in place a full prioritised programme of work.
- By 2015 implement existing species action or management plans for species under threat and review and update as necessary; develop and implement additional species action or management plans for a wider range of species under threat; ensure monitoring of implementation and effectiveness of plans.
- By 2012 identify and subsequently fill critical gaps in ex-situ conservation programmes for wild species, in line with best practice.

Selected indicators:

Number of habitats protected under the EU Habitats Directive between 2007 and 2013 with Favourable, Inadequate or Bad conservation status. Under Article 17 of the Habitats Directive, each member state is obliged to report to the European Commission on the status of listed habitats and species every six years. In 2007 and 2013, Ireland submitted assessments of conservation status for all 58 habitats covered under Article 17 that occur in Ireland. The current status has been derived by the National Parks and Wildlife Service using the best available information on the range, area, structure, threats and management of the habitat, although in some cases there are inadequate data to make a precise statement on conservation status. In 2013, five habitats had Favourable assessments, 29 Inadequate, and 24 Bad. Overall, between 2007 and 2013, 10 habitats have improved in conservation status, seven have declined and 41 have remained the same. Changes can occur within and between categories.



STRATEGIC GOAL D: Enhance the benefits to all from biodiversity and ecosystems

Target 14: By 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.

Ireland has completed the 1st cycle of River Basin Management Planning under the EU Water Framework Directive (WFD) and is planning the 2nd cycle based on the experiences derived from the 1st cycle.

Ireland has taken substantial steps to protect peatlands, especially raised bogs, since 2010. The draft National Peatlands Strategy, reported under Quest 7 above, sets out policies in relation to peatland ecosystems.

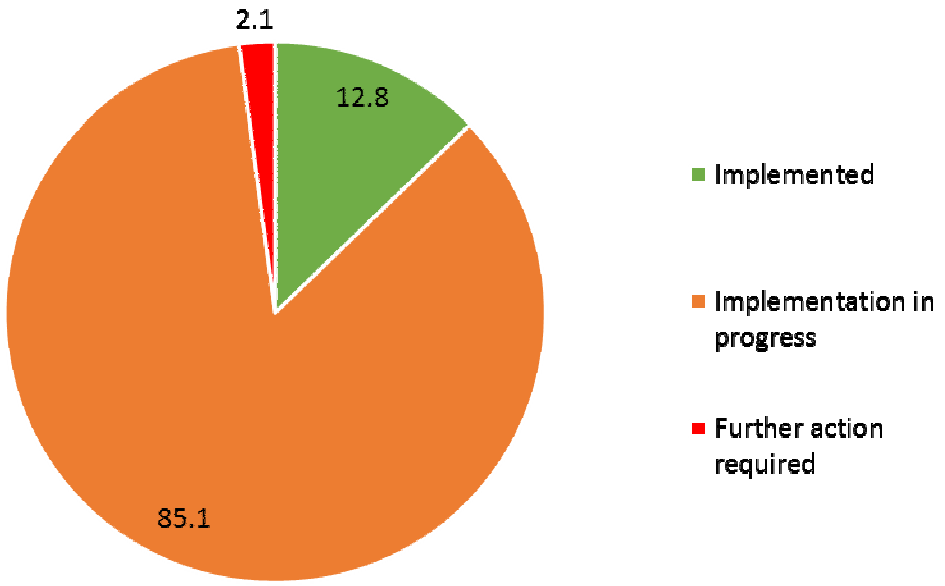
Target 15: By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification.

A limited amount of work on peatland restoration has been carried out during the reporting period, and an escalation of such work is planned.

Target 16: By 2015, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is in force and operational, consistent with national legislation.

Ireland has signed the Protocol and the development of administrative arrangements for its operation has begun.

Overall Assessment based on Actions for Biodiversity 2011-2016:



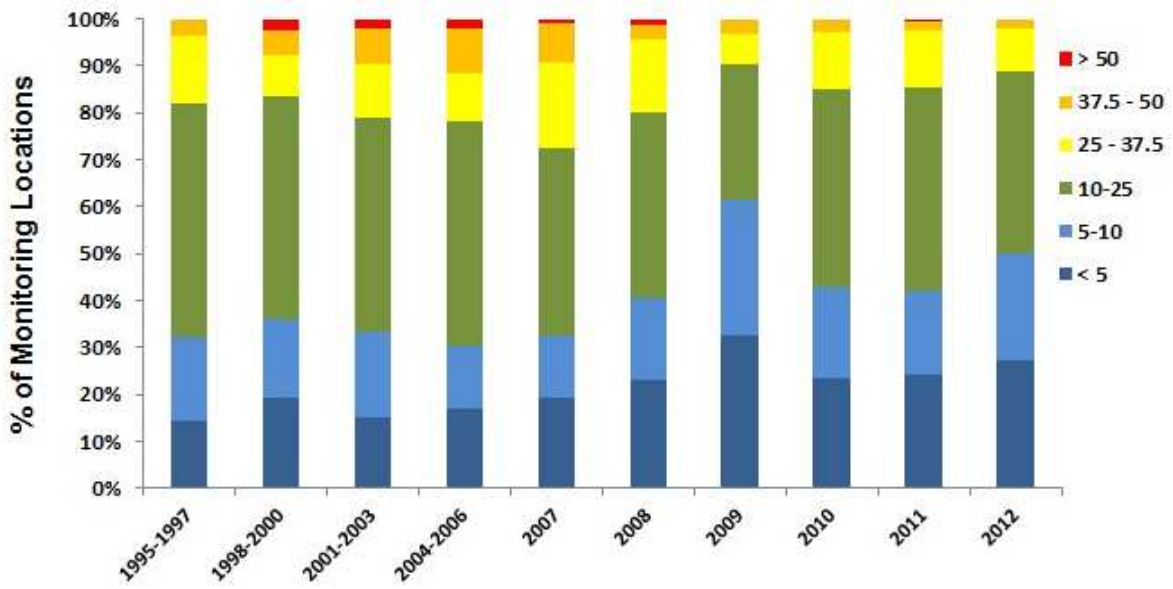
Key actions within Ireland's Actions for Biodiversity 2011-2016:

- Introduce revised forest legislation which will support the conservation, protection and sustainable management of forest biological diversity.
- Maintain target of 30% broadleaf planting in afforestation.
- Ensure effective implementation of cross-compliance, statutory management requirements and forest service guidelines/requirements to ensure conservation of biodiversity.
- Ensure implementation of operational monitoring programmes, publication of River Basin Management Plans and establishment and implementation of River Basin District Programmes of Measures, in line with provisions of the Water Framework Directive.
- Continue investment in Water Service Investment Programme, and ensure biodiversity concerns are

considered in the programme.

- Incorporate objectives to minimise biodiversity loss and degradation of ecosystem services, and to optimise biodiversity gains, in flood risk management plans.
- Continue to ensure that all significant drainage, including both initial drainage and maintenance drainage, is assessed for its implications for biodiversity and particularly for wetlands.
- Enforce Government decision in relation to the cessation of turf cutting on raised bogs and drawing up of peatland strategy.
- Identify areas of biodiversity value, or biodiversity hotspots, within Bord na Móna lands by 2015.
- Continue ecological surveys, preparation of habitat maps and planning of rehabilitation for all Bord na Móna bog areas.
- Prepare for ratification of the Protocol on Access to Genetic Resources and Fair and Equitable Sharing of Benefits (ABS) and implement a national strategy, if ratified.

Selected indicators:



Trends in nitrate concentrations (mg/l NO_3) at groundwater monitoring locations. Groundwater is important as a source of drinking water in Ireland, providing approximately 25% of drinking water nationally. It also has significance in driving the ecology of many rivers, lakes and estuaries, especially during low-flow periods when groundwater forms a significant part of surface water flows. Elevated nitrate concentration in groundwater is an issue, particularly in the southeast and south of Ireland, as it can contribute to eutrophication of surface waters and affect drinking water.

STRATEGIC GOAL E: Enhance implementation through planning, knowledge management and capacity building

Target 17: By 2015 each Party has developed, adopted as a policy instrument, and has commenced implementing an effective, participatory and updated national biodiversity strategy and action plan.

An updated National Biodiversity Plan was published in 2011 and an interim review is currently being undertaken. A biodiversity working group was established to oversee the implementation of the NBSAP. This group is made up of stakeholders from, *inter alia*, the agriculture, fisheries, customs, environment, education, tourism, law enforcement ministries.

Target 18: By 2020, the traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations,

and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels.

The Burren Farming for Nature Conservation programme relies heavily on traditional knowledge to deliver its results.

Target 19: By 2020, knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, and applied.

Monitoring programmes have been developed and initiated for upland, grassland, hard water lake, turlough, woodland, dune, saltmarsh, limestone habitats. Countryside Birds, Wintering Waterbirds, Breeding Terns, Bats, Vertigo species, Seals, Crayfish, Petalwort, Sickle moss, Killarney fern, Clubmosses, Marsh Saxifrage, Marsh Fritillary, butterfly, bumblebee Otter, Irish hare, Frog and Natterjack toad and Salmon. Biodiversity elements are monitored as part of Water Framework Directive monitoring.

Many different approaches are being considered including the development of specific apps, the use of citizen science and real-time surveillance.

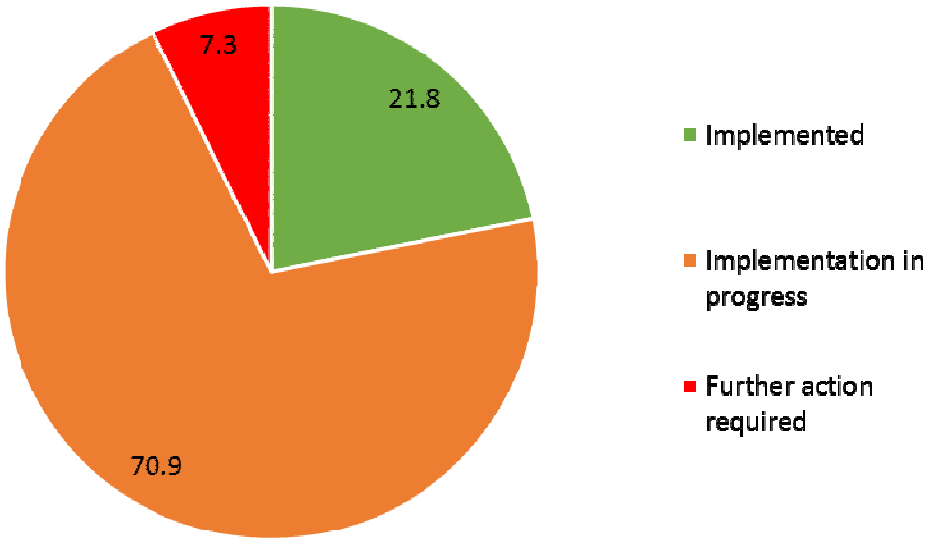
Status, trends and distribution of all habitats and species of Community interest were completed by in 2013. Many of these assessments are underpinned by scientific research. Overview reports were published to highlight the results of these assessments.

An inter-agency/departmental steering committee aims to finalise in 2014 an action plan for the implementation of the INSPIRE Directive and the development of shared standards from data capture to data publishing, and develop metadata catalogues to interoperability of data across public bodies.

Target 20: By 2020, at the latest, the mobilization of financial resources for effectively implementing the Strategic Plan 2011-2020 from all sources and in accordance with the consolidated and agreed process in the Strategy for Resource Mobilization should increase substantially from the current levels. This target will be subject to changes contingent to resources needs assessments to be developed and reported by Parties.

A Prioritised Action Framework was drawn up in 2013 to establish conservation priorities and associated costs for the financial cycle 2014-2020.

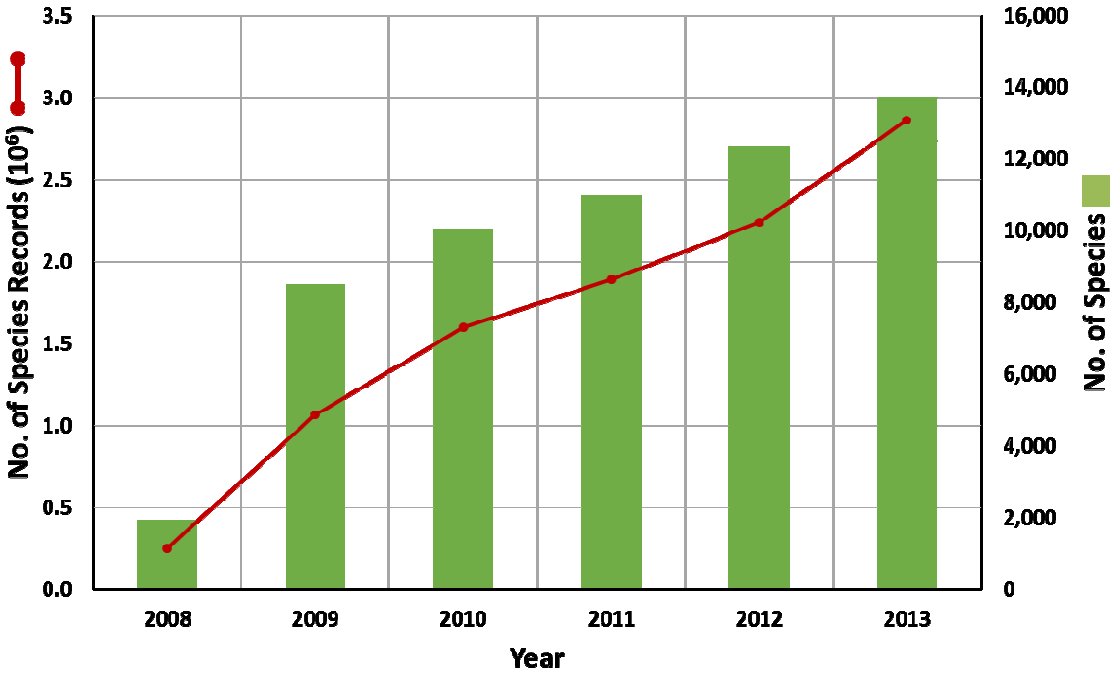
Overall Assessment based on Actions for Biodiversity 2011-2016:



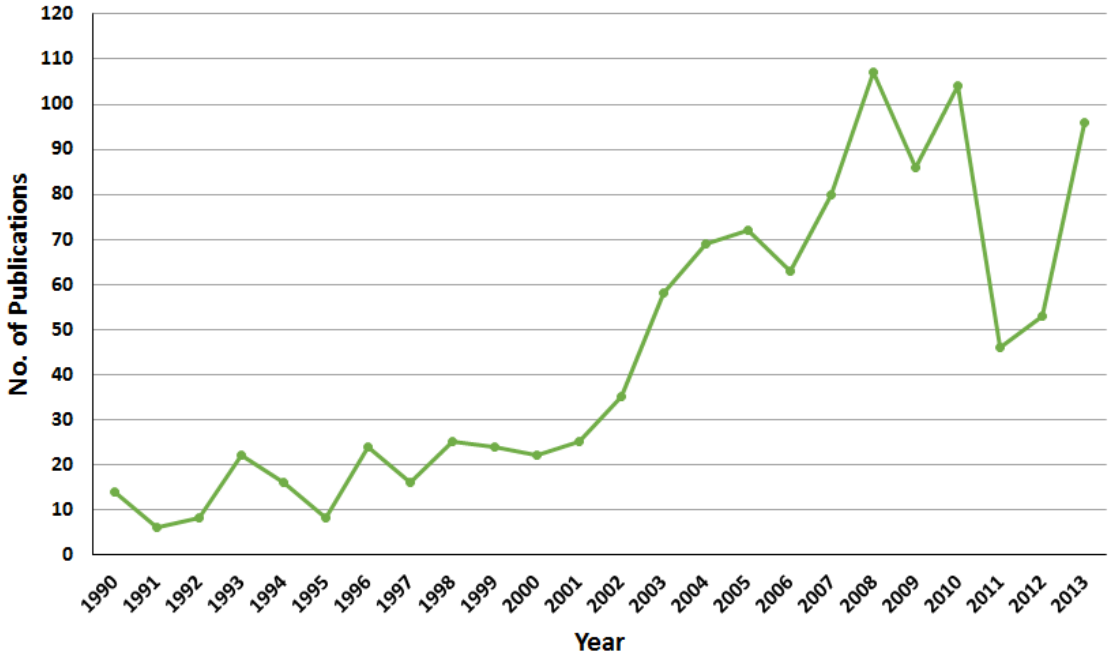
Key actions within Ireland's Actions for Biodiversity 2011-2016:

- Relevant Government Departments and State agencies to prepare sectoral Biodiversity Action Plans in line with the National Biodiversity Action Plan to ensure and promote the conservation and sustainable use of biodiversity.
- Each local authority to publish a Local Biodiversity Action Plan or review existing plans.
- Carry out further and more detailed research on the economic value of ecosystems and biodiversity in Ireland.
- Enhance the capacity to build and maintain the human resources, systems and infrastructure needed to identify, obtain, collate and curate the biological specimens that are the basis for taxonomic knowledge
- Continue investment in Water Service Investment Programme, and ensure biodiversity concerns are considered in the programme.
- Use, and develop, monitoring tools, approaches and frameworks to reveal key trends.
- Monitor conservation status of Habitats Directive habitats and species.
- Monitor the status of species and species groups listed on the Birds Directive.
- Work with the EU Commission to ensure that the Community funding instruments are used to ensure adequate financing for Natura 2000; identify national priorities for co-financing; distribute funds (national and Community) to beneficiaries; monitor cost effectiveness of actions financed (in terms of biodiversity outcomes); audit expenditure.
- Biodiversity will be made a component of Ireland's development cooperation programme; and support to, and co-operation with developing countries shall take into account biological diversity through the application of the CBD.

Selected indicators:



The growth in the number of species records and species being held by Ireland's National Biodiversity Data Centre. One of the objectives of the National Biodiversity Data Centre is to serve as a national repository for biological data, and make good quality and reliable data on Ireland's biological diversity freely and universally available via the Internet. The National Biodiversity Data Centre's state-of-the-art mapping system Biodiversity Maps is a web portal to biodiversity data and information. This system serves as a national platform for data management and presentation, and makes high quality data available to recorders, researchers and decision makers.



The number of peer-reviewed publications from Irish scientists in a biodiversity-related discipline since 1990. This indicator is an indirect measure of the amount of research being undertaken in a biodiversity-related discipline in Ireland. Three major academic literature databases were queried for biodiversity-related peer-reviewed publications: JSTOR, ScienceDirect and the Web of Science. Although efforts to digitise and include older publications in these databases are ongoing, inconsistences across individual journals and databases result in pre-1990 publications being underrepresented. Therefore, at present this indicator only includes publication post-1990. Due to differences in the search function for each digital library, a different search strategy was conducted per database.

Question 11: What has been the contribution of actions to implement the Convention towards the achievement of the relevant 2015 targets of the Millennium Development Goals in Ireland?

In Ireland, the actions taken to implement the Convention, particularly the implementation of the 2015 milestones and Aichi Biodiversity Targets of the Strategic Plan for Biodiversity 2011-2020 are carried out via the National Biodiversity Action Plan. Objective 7 of the NBAP is "to substantially strengthen the effectiveness of international governance for biodiversity and ecosystem services". As well as the actions set out above to conserve biodiversity in Ireland, there is also a role to be played globally through the overseas aid programme: by minimising trade in endangered species; by reducing trade in commodities in cases where production causes damage to biodiversity; by Ireland's involvement in important global issues such as climate change and access to genetic resources; and by acting as an advocate for biodiversity in international fora.

Irish Aid, on behalf of the Irish Government, is responsible for Ireland's overseas development aid programme. The Millennium Development Goals (MDGs) have underpinned Ireland's programme for international development and the achievement of the MDGs is a central objective of the programme.

A particularly strong focus of Irish Aid programme support, over the period of the MDGs has been on the eradication of hunger, i.e. MDG 1: 'Eradicate Extreme Poverty and Hunger'. Irish Aid has targeted much of its 'hunger support' in the in the areas of food security, agro-forestry and sustainable agriculture. This support has benefitted ecological goods and services by reducing ecosystem degradation and increasing

the potential for people in developing countries to derive livelihoods and incomes from natural and managed landscapes. Notwithstanding, therefore, specific MDG7 relevant support, this hunger focus has generated strong biodiversity benefits from the Irish Aid programme.

Of particular relevance to biodiversity is "Goal 7 (MDG7): Ensure environmental sustainability". The specific targets of MDG 7 are to:

- Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources.
- Reduce biodiversity loss, achieving, by 2010, a significant reduction in the rate of loss.
- Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation.
- Achieve significant improvement in the lives of at least 100 million slum dwellers, by 2020

Ireland's aid programme has supported the objectives of MDG7 not only within its own programme, but also through the influencing of impacting EU and UN policy processes. Working with Ireland's Department of Environment, Community and Local Government (DECLG), Irish Aid is actively engaged with the UNFCCC process. Irish Aid is also actively engaged with the development of the UN Sustainable Development Goals (SDGs) process including inputting to the development of proposals on 'ecosystems and biodiversity'.

Ireland's aid programme support to environmental sustainability has been made clear in important policy documents including the (2006) 'White Paper on Irish Aid', the (2007) 'Environmental Policy for Sustainable Development' and the (2013) 'One World, One Future: Ireland's Policy for International Development'.

Ireland's policy position has recognised that poverty and the environment are inextricably linked, that it is the poorest people who rely most heavily on their immediate environment for their livelihoods and that it is the most vulnerable who are disproportionately affected by environmental degradation, climate change and the loss of biodiversity.

Ireland's support has generally been channelled through like-minded partners both in direct support and through our bilateral, multilateral and civil society programmes. Like minded partners, on biodiversity, that have been directly supported over much of the period of the MDGs include the World Resources Institute (WRI), the International Institute for Environment and Development (IIED) and the World Conservation Union (IUCN).

Case Studies

At a bilateral level Ireland's aid programme is supporting biodiversity relevant activities in all its Partner Countries. Examples of projects are provided below.

Agroforestry and Food Security in Malawi

World Agroforestry Centre (ICRAF) has been implementing Agroforestry Food Security Project (AFSP) since 2007. An external evaluation was commissioned in 2012 which revealed that the project contributed towards improving food and nutrition security of households (with spill over effects to non-project beneficiaries) as well as perceived improvements in terms of soil fertility, ecosystem management and biodiversity. A total of 184,000 smallholder farmers (in 10 districts of Malawi) adopted agroforestry practices, with over 18,400 hectares of land replanted with indigenous trees and devoted to agroforestry. A seed collection system has been established to collect indigenous seed for use to establish tree nurseries and replanting schemes.

The project further led to mainstreaming of agroforestry within University curriculums as well as revived functionalism of Agroforestry Policy Working Group in the Ministry of Agriculture and Food Security. The programme greatly contributed to increased coordination and partnerships within agroforestry, with inclusive participation from government, academia, farmers associations as well as lead farmer groups. Some key gaps were noted as regards monitoring of the programme to track soil fertility/texture changes and an over extension of the programme's geographical coverage. Based on the external evaluation and stakeholder consultations, a successor Phase II AFSP was developed and approved as a multi-annual 4 year project starting from 2012. One key feature of the current programme is the reconstruction of the biophysical baseline (in addition to socio-economic baseline) which will create benchmark in terms of soil health status. The new programme is now focused on work in three Districts: Dedza, Mzimba and Thyolo.

EU Presidency

In 2013, Ireland availed of the opportunity of its Presidency of the EU to promote the linkages between environmental degradation and hunger amongst vulnerable people in developing countries. In April 2013, the Government of Ireland and the Mary Robinson Foundation-Climate Justice, co-hosted an international conference on Hunger-Nutrition-Climate Justice. The conference was organised in partnership with the World Food Programme and the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) with support from the International Institute for Environment and Development (IIED) and the Children's Investment Fund Foundation (CIFF).

The conference brought together a diverse audience, of approximately 300 people, connecting key policy makers and global thought leaders with local people and practitioners facing the realities of rising food prices, failed crops and under-nutrition. The objective of the conference was to facilitate a respectful dialogue: learning from practical experience and discussing robust evidence to inform a new approach to addressing hunger, nutrition and climate justice, in the context of the new Post-2015 international development agenda.
The CCAFS research report at the conference demonstrated the threats posed to crop wild relatives by climate change and habitat conversion. Analyses showed the very poor conservation status of these gene pools. Based on this work, and with support from Irish Aid, the Global Crop Diversity Trust made crop wild relative collecting a high priority activity.

At the Conference a strong emphasis was placed on ensuring that the voices of those most affected by the impacts of climate change and environmental degradation, in developing countries, were heard and approximately 100 delegates representing their communities' experiences participated. The local participants brought their personal and communities experience of sustaining their local ecosystems on which their livelihoods depend. The remaining participants included policy makers, civil society, business and advocacy groups, research institutions and academia.

The conference aimed to inspire new ways of thinking about global development challenges and to invigorate and broaden the debate, at all levels, by listening to and learning from the experiences of local people, and rooting future policy approaches in their lives and their efforts to cope.

Question 12: What lessons have been learned from the implementation of the Convention in Ireland?

Lessons learned

- The implementation of the EU Nature Directives is the main driver of conservation for biodiversity in Ireland. However the Directives cover only a small proportion of species present in the State, and do not fully embrace the range of important habitats. The publication of a national Biodiversity Plan affords a useful policy driver for Government to set out a more complete set of objectives and actions for the protection of biodiversity.
- Open ended actions within plans, i.e. actions without a clearly defined targets and timeframe for implementation, are more challenging to assess and implement. Future actions should be clearly defined, with specific tasks to be completed and appropriate indicators adopted to assess progress within a specific timeframe, facilitating both evaluation and implementation. This approach in Ireland's 2nd Biodiversity Plan has been useful.
- The structured approach of defining targets and actions and subsequent evaluation has proved useful in prioritising action areas and also highlighting areas of successful and less successful implementation. In particular, the interim review and evaluation processes have resulted in significant lessons being learned in areas of National interdepartmental co-operation, funding prioritisation, political harmonisation, and the importance sustainable development in the marine and terrestrial environments.
- Consultation and collaboration with all stakeholders inside and outside Government, along with awareness raising and education, are critical elements in the protection of biodiversity
- Despite good progress to date, more co-operation and co-ordination between governmental and non-governmental biodiversity organisations is needed to effectively increase national awareness of biodiversity, so that it becomes a fundamental element incorporated into decision making, from individual- to governmental-levels.
- Training, communication, cooperation and concerted action between relevant public bodies in support of biodiversity conservation needs to be strengthened and expanded so that it becomes enshrined as 'normal' practice.
- It is important to recognise possible opportunities that may arise for local stakeholders through conservation of biodiversity, and to work to develop the potential wider societal benefits, including economic benefits, that biodiversity protection can offer when developing management arrangements. For example, a major project being initiated in Ireland in conjunction with the EU LIFE Programme to develop sustainable management of agriculture to protect freshwater pearl mussels will also investigate opportunities to increase farm incomes by value-added marketing and local eco-tourism initiatives.
- The collection of comprehensive baseline data is not only important in terms of protecting biodiversity but also supports an informed and refined regulatory system that can proactively support sustainable development which in turn generates confidence for inward sectoral investment.
- As illustrated by the impact of recent Irish studies on conservation policy, e.g. Bullock et al. (2008), Bullock and Hawe (2014), DAFM (2012), Indecon (2003) and IFI (2013), Natural Capital Accounting has the potential to play a pivotal role in the enhancing societal understanding of the importance of biodiversity and the ecosystem services it provides to the Irish economy and human well-being. In particular, the unforeseen costs associated with unsustainable development and resource utilisation can only be fully quantified when such evaluations are carried out. The methodological framework of Natural Capital Accounting can clearly help prioritise funding towards the sustainable development of biodiversity and help realise the true potential of biodiversity-based goods and services.

Remaining Challenges

- Despite the considerable progress made in implementing the first and second NBAP, the resulting positive impacts on biodiversity have yet to fully realised. This time-lag between action and outcome is both a product of the biological reality of restoration, where ecosystems, animal and plant population regenerate at decadal timescales or where action has been ineffective in sufficiently reducing pressures. Consequently, evaluating and prioritisation action at timescales below that where successes and failures can be measured, will continue to be problematic.
- Following the publication of the NBAP Interim Report, actions requiring further progress will be prioritised in the current NBAP, and will inform the development of the third Biodiversity Action Plan for Ireland 2017-2022.
- Little to date has been achieved to raise awareness of products sourced overseas that can be grown and harvested by both sustainable and unsustainable methods. Comprehensive sustainability certification of products is required to aid national-level policies relating to green procurement and consumer choice. Including specific sustainable/unsustainable commodity coding on such produce will also facilitate the compilation and analyses of national trade statistics to inform future policies on reducing the impact of Irish trade on global biodiversity and ecosystem services.
- Spatial assessments of biodiversity play a fundamental role in mainstreaming biodiversity across sectors and participatory planning for biodiversity conservation. The knowledge and human resource base required to conduct and manage the data arising from these spatial assessment needs to be greatly expanded to facilitate periodic evaluations of change in status of ecosystems and indicator groups of animals and plant, support the management and expansion of Ireland's protected area networks and integrate Natural Capital Accounting practices across sectors.

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Appendix I. Information concerning the reporting Party and preparation of the fifth national report.

The overall responsibility for the preparation of the 5th National Report to the Convention on Biological Diversity lies with the National Parks and Wildlife Service of the Department of Arts, Heritage and the Gaeltacht. The preparation of the 5th National Report to the CBD was carried out in tandem with the interim report of the NBAP. The National Biodiversity Data Centre and an independent environmental consultant were engaged by NPWS to draft both reports.

The parties consulted with all the relevant Departments and Agencies involved with the 102 actions of the NBAP, and with members of the Biodiversity Action Group which includes the stakeholders to get up to date information on progress of the NBAP to feed into the CBD report. A range of additional resources were also used and are outlined in the References. However, the primary reference for status and trends of species and habitats is the Habitats Directive Article 17 Reporting (NPWS, 2013).

Name	Department/Body
Ciaran O'Keeffe	Dept. of Arts, Heritage and the Gaeltacht
Frank Donohue	Dept. of Arts, Heritage and the Gaeltacht
Linda Bradley	Dept. of Arts, Heritage and the Gaeltacht
Deirdre Lynn	Dept. of Arts, Heritage and the Gaeltacht
Bill Callanan	Dept. of Agriculture, Food and the Marine
Nathy Gilligan	Office of Public Works
Adrian Fitzgerald	Dept. of Foreign Affairs and Trade
Wayne Trodd	Environmental Protection Agency
Niamh O'Flaherty	Dept. of the Environment, Community and Local Government
John Moloney	Dept. of Education and Skills
Cathal Gallagher	Inland Fisheries Ireland
Mathew Jebb	National Botanic Gardens
Liam Lysaght	National Biodiversity Data Centre
Michael O'Dochartaigh	Office of the Revenue Commissioners
Catherine Keena	Teagasc
Karen Gallagher	Uisce Eireann
Aengus Parsons	Marine Institute
Garrett Cunnane	Office of the Attorney General
Jennifer Payne	Office of the Attorney General
Anthony Donnelly	Dept. of Transport, Tourism and Sport
Orla O'Brien	Dept. of Jobs, Enterprise and Innovation
Ciara Phelan	Dept. of Jobs, Enterprise and Innovation
Christina MacCarthy	Dept. of Health
Fergus Healy	An Garda Síochána
Frank Griffin	Dept. of Public Expenditure and Reform
Orla Kenny	Dept. of Justice and Equality
Michael O'Sullivan	Dept. of Defence
Paul Memery	Dept. of Children and Youth Affairs
Michael Starrett	Heritage Council

Appendix II. Further sources of information.

Information	Organisation	Website address
National Governmental Departments/Bodies/Programmes	National Parks and Wildlife Service	www.npws.ie
	Department of Agriculture, Food and the Marine	www.agriculture.gov.ie
	Department of Environment, Community and Local Government	www.environ.ie
	Department of Communications, Energy and Natural Resources	www.dcenr.gov.ie
	Irish Legislation	www.irishstatutebook.ie
	Environmental Protection Agency	www.epa.ie
	Bord Na Móna	www.bordnamona.ie
	Marine Institute	www.marine.ie
	Teagasc	www.teagasc.ie
	Coillte	www.coillte.ie
	Inland Fisheries Ireland	www.fisheriesireland.ie
	Office of Public Works	www.opw.ie
	Irish Aid	www.irishaid.gov.ie
	Water Framework Directive in Ireland	www.wfdireland.ie
	Our Ocean Wealth	www.ouroceanwealth.ie
Non-Governmental Organisations	Lists most of Ireland's Environmental NGOs	www.ien.iemembership
Biodiversity Information Sources	COFORD Forestry Research	www.coford.ie
	National Biodiversity Data Centre	www.biodiversityireland.ie
	National Biodiversity Research Platform	www.biodiversityresearch.ie
	The Heritage Council	www.heritagecouncil.ie
	Central Statistics Office	www.CSO.ie
	National Botanical Gardens of Ireland	www.botanicgardens.ie
	Notice Nature	http:www.noticenature.ie
	Invasive Species Ireland	www.invasivespeciesireland.com
	Green Schools	www.greenschoolsireland.org
	Biodiversity Awareness Portal	www.biology.ie
	Seaweed biodiversity	www.seaweed.ie
Landowner Organisations	The Irish Farmers' Association	www.ifa.ie
	Irish Creamery Milk Suppliers Association	www.icmsa.ie
	Irish Cattle and Sheep Farmers Association	www.icsaireland.com
	Macra na Feírme	www.macra.ie
	Irish Timber Growers Association	www.itga.ie
Information on Threats and Pressures	Eionet-European Topic Centre on Biological Diversity	http://bd.eionet.europa.eu/schemas/natureDirectives/Threats_tes.xml

Appendix III. Objectives, Targets and Actions of the National Biodiversity Action Plan.

OBJECTIVE 1:To mainstream biodiversity in the decision making process across all sectors	
TARGET 1: Shared responsibility for the conservation of biodiversity and the sustainable use of its components is fully recognised, and acted upon, by all sectors	
1.01	Relevant Government Departments and State agencies to prepare sectoral Biodiversity Action Plans in line with the National Biodiversity Action Plan to ensure and promote the conservation and sustainable use of biodiversity
1.02	Raise awareness of the implications of policy and decisions on biodiversity and the requirements to engage in the preparation of biodiversity action plans
1.03	Establish Steering Group and re-establish Interdepartmental Working Group on Biodiversity to advance implementation of this Plan.
1.04	Include in legislation a biodiversity duty to ensure that conservation and sustainable use of biodiversity are taken into account in all relevant plans and programmes and all new legislation.
1.05	Review key existing legislation to determine the need for provisions requiring the conservation of biological diversity.
1.06	Ensure that all development plans comply with environmental legislation and in particular with the nature directives so as to prevent and minimise any potential damages to biodiversity.
1.07	Each local authority to publish a Local Biodiversity Action Plan or review existing plans.
1.08	Each local authority to designate a suitably qualified officer for natural heritage conservation matters in its area.
1.09	Fully implement the SEA Directive.
1.1	Fully implement the Environmental Liability Directive and issue appropriate guidance.
1.11	Continue to publish appropriate guidance to local authorities regarding biodiversity.
1.12	Develop and use the means to integrate the economic value of biodiversity and ecosystems into national accounts, national and local development strategies and planning processes. (See also Action 3.9).
1.13	Publish and implement the National Action Plan for Green Procurement (See also Actions under Target 21).
1.14	Identify and take measures to ensure that incentives and subsidies do not contribute to biodiversity loss, and develop positive incentive measures, where necessary, to assist the conservation of biodiversity.
TARGET 2: Legislation in support of tackling biodiversity loss in Ireland strengthened	
2.01	By 2013 publish legislation to provide a legal basis for National Parks
2.02	Publish a Bill by 2014 to consolidate the Wildlife Act.
2.03	Introduce legislation to reduce further the risk to wildlife caused by the use of poisons in the environment.
2.04	Introduce revised forest legislation which will support the conservation, protection and sustainable management of forest biological diversity.

OBJECTIVE 2: To substantially strengthen the knowledgebase for conservation, management and sustainable use of biodiversity	
TARGET 3: Knowledge on biodiversity and ecosystem services has substantially advanced our ability to ensure conservation, effective management and sustainable use by 2016	
3.01	Enhance research and progress assessments on status, trends and distribution of all habitats and species of Community interest and of additional habitats and species of national and regional importance
3.02	Continue to update the National Vegetation Database and use it to develop a refined Vegetation Classification System for Ireland
3.03	Establish a working group by 2011 to progress the development of a national terrestrial and marine habitat map by 2015
3.04	Adopt and apply a set of headline biodiversity indicators by 2012
3.05	Establish and continue to promote common data standards and quality assurance procedures in line with the INSPIRE Directive and other data standards to enable interoperability of key biodiversity databases and inventories by 2015.
3.06	Based on these standards and procedures, develop a shared information system for biodiversity which makes data freely available to all interested users, streamlines reporting and supports policy evaluation and development at national, regional and global levels by 2015.
3.07	Support and encourage the volunteer network that carries out biological recording.
3.08	Continue and expand on the work of the National Platform for Biodiversity Research guided by the recommendations of the Platform expert working.
3.09	Carry out further and more detailed research on the economic value of ecosystems and biodiversity in Ireland.
3.10	Enhance knowledge of the most significant direct and indirect causes of biodiversity loss; develop and test prevention and mitigation options.
3.11	Continue the existing forest research programme on forest biodiversity, carbon accounting and the interaction of climate change and forest systems.
3.12	Continue to update, identify and create inventories of important genetic resources for food and agriculture, both in situ and ex situ as appropriate, in particular those genetic resources whose survival is threatened and which may not have been identified or quantified to date.
3.13	Enhance the capacity to build and maintain the human resources, systems and infrastructure needed to identify, obtain, collate and curate the biological specimens that are the basis for taxonomic knowledge

OBJECTIVE 3: To increase awareness and appreciation of biodiversity and ecosystem services	
TARGET 4: enhanced appreciation of the value of biodiversity and ecosystem services amongst policy makers, stakeholders and the general public	
4.01	Enhance training, communication, cooperation and concerted action between relevant sectors in support of biodiversity conservation.
4.02	Work with relevant Departments and stakeholders to include biodiversity and ecosystem goods and services in relevant courses in secondary and third level education.
4.03	Develop and implement a communications campaign in support of full implementation of this Biodiversity Action Plan and improving public and sectoral understanding of the value of biodiversity

OBJECTIVE 4: To conserve and restore biodiversity and ecosystem services in the wider countryside	
TARGET 5: Optimise use of opportunities under agricultural, rural development and forest policy to benefit biodiversity 2011-2016.	
5.01	Develop measures in future rural development programmes for the protection and enhancement of ecosystem services and biodiversity
5.02	Further develop criteria to identify High Nature Value farmland and develop measures to address threats
5.03	Ensure effective implementation of cross-compliance, statutory management requirements and forest service guidelines/requirements to ensure conservation of biodiversity
5.04	Conduct a systematic evaluation process for any agri-environmental schemes delivered, involving a robust ecological monitoring programme
5.05	Review the control of overgrazing and undergrazing
5.06	Continue the Burren Farming for Conservation Programme
5.07	Continue to promote the Native Woodland Scheme which features establishment and conservation elements aimed at encouraging the development and conservation of native woodlands
5.08	Consider and develop guidance on alternative forestry management options which aim to deliver additional biodiversity benefits
5.09	Strengthen measures to ensure conservation, and availability for use, of genetic diversity of crop varieties, livestock breeds and races, and of commercial tree species and promote in particular their in situ conservation.
TARGET 6: Principal pollutant pressures on terrestrial and freshwater biodiversity substantially reduced by 2015	
6.01	Ensure implementation of operational monitoring programmes, publication of River Basin Management Plans and establishment and implementation of River Basin District Programmes of Measures, in line with provisions of the Water Framework Directive.
6.02	Continue investment in Water Service Investment Programme, and ensure biodiversity concerns are considered in the programme.
6.03	Significantly reduce pollutant pressures on terrestrial and freshwater ecosystems through implementation of relevant EU Thematic Strategies and Directives (e.g. Water Framework Directive, Sustainable Use of Pesticides and Nitrates).
TARGET 7: optimised benefits for biodiversity in Flood Risk Management Planning.	
7.01	Incorporate objectives to minimise biodiversity loss and degradation of ecosystem services, and to optimise biodiversity gains, in flood risk management plans.
7.02	Continue to ensure that all significant drainage, including both initial drainage and maintenance drainage, is assessed for its implications for biodiversity and particularly for wetlands
Target 8: Harmful invasive alien species are controlled and there is reduced risk of spread of new species	
8.01	Prepare, by 2011, detailed species and pathway risk assessments and develop exclusion and contingency plans for priority pathways and high impact species that are likely to invade Ireland.
8.02	Continue and enhance measures for eradication, where feasible, control and containment of invasive species.
8.03	Examine options for rapid response when new invasive species are discovered
8.04	Increase awareness within the horticultural and constructed wetlands industries of native alternatives that can be used in place of invasive species
8.05	All public bodies will endeavour to use native species, landraces and breeds and the public will be encouraged to do so.
TARGET 9: effective hedgerow and scrub management ensured by 2016	
9.01	Review options on regulation of scrub removal/Hedgerow Management
9.02	Production of guidance documents hedgerows/scrub
9.03	Hedgerow surveys will be continued by local authorities.

TARGET 10: Continued rehabilitation or restoration of biodiversity elements	
10.01	Identify areas of biodiversity value, or biodiversity hotspots, within Bord na Móna lands by 2015.
10.02	Continue ecological surveys, preparation of habitat maps and planning of rehabilitation for all Bord na Móna bog areas.
10.03	Continue to develop a network of biodiversity areas within Bord na Móna sites.
10.04	Continue the programme of reintroduction of large raptors.
10.05	Maintain target of 30% broadleaf planting in afforestation
10.06	Continue to update the inventory of native woodlands, review and, where appropriate, incorporate the results of the Native Woodland Survey into the conservation and expansion of the native woodland cover
10.07	Develop, adopt and implement restoration programmes for salmon, sea trout and eels.
TARGET 11: Improved enforcement of Wildlife Law	
11.01	Enhance the role of An Garda Siochána and Customs in enforcing Wildlife legislation, through, among other actions, the provision of specific training and guidance.
11.02	Ensure adequate training in Wildlife Crime detection and enforcement is provided to all NPWS enforcement staff.
11.03	NPWS enforcement staff will investigate along with An Garda Síochána and Revenue (Customs) officials (as appropriate) suspected and alleged wildlife crime affecting biodiversity
11.04	Continue to enforce the Wildlife Acts and Regulations
TARGET 12: Monitoring providing adequate data flow for reporting on biodiversity by 2016	
12.01	Use, and develop, monitoring tools, approaches and frameworks to reveal key trends.
12.02	Monitor conservation status of Habitats Directive habitats and species.
12.03	Monitor the status of species and species groups listed on the Birds Directive.

OBJECTIVE 5: To conserve and restore biodiversity and ecosystem services in the marine environment	
TARGET 13: Substantial progress made towards 'good ecological status' of marine waters over the lifetime of this Plan	
13.01	Develop a marine spatial plan for Ireland
13.02	By 2015, identify programmes of measures designed to achieve good environmental status as required by the Water Framework Directive and Marine Strategy Framework Directive and in line with the OSPAR Convention.
TARGET 14: Stock levels maintained or restored to levels that can produce maximum sustainable yield	
14.01	Continue seeking to ensure the Common Fisheries Policy and marine fisheries provide for the conservation of fish species and marine biodiversity generally and adopting the ecosystem approach to fisheries management.
14.02	Continue and complete national measures to research and reduce adverse effects of marine fisheries, aquaculture, etc. on biodiversity in particular within Natura 2000 areas.
14.03	Prepare plan of action to implement stock recovery plans as soon as needed for any stocks outside safe biological limits, and management plans to maintain other stocks at safe biological levels as determined by the standards for Good Environmental Status in the Marine Strategy Framework Directive.
14.04	Adjust fishing capacity to improve balance between fishing capacity and available fish stocks.
14.05	Adopt and implement provisions under Common Fisheries Policy for the establishment of no-take zones that conserve biodiversity and fish stock

	levels.
14.06	Take concerted action to combat illegal, unreported and unregulated fishing.

OBJECTIVE 6: To expand and improve on the management of protected areas and legally protected species	
TARGET 15: Natura 2000 network established, safeguarded, designated by 2012 (2014 for marine SPAs) and under effective conservation management by 2016	
15.01	Complete designation process for SACs and SPAs, in particular for marine coastal and offshore SACs by 2012 and marine SPAs by 2014.
15.02	Prepare and implement site specific conservation objectives, management advice and /or plans on Natura 2000 sites, Nature Reserves and National Parks in consultation with affected landowners and the public as appropriate.
15.03	Work with the EU Commission to ensure that the Community funding instruments are used to ensure adequate financing for Natura 2000; identify national priorities for co-financing; distribute funds (national and Community) to beneficiaries; monitor cost effectiveness of actions financed (in terms of biodiversity outcomes); audit expenditure.
15.04	Ensure that agri-environmental schemes provide targeted and costed prescriptions that will contribute to favourable conservation status in farmed designated sites.
15.05	Maintain the current NPWS farm plan scheme while exploring options for the most efficient delivery of targeted measures in Natura 2000 sites and NHAs.
TARGET 16: Sufficiency, coherence, connectivity and resilience of the protected areas network substantially enhanced by 2016 and further enhanced by 2020	
16.01	By 2015, review previously proposed Natural Heritage Areas and designate as appropriate under the Wildlife (Amendment) Act, 2000.
16.02	By 2015 strengthen the coherence, connectivity and resilience (including resilience to climate change) of the protected areas network using, as appropriate, tools that may include flyways, buffer zones, corridors and stepping stones.
TARGET 17: No protected habitats or species in worsening conservation status by 2016; majority of habitats or species in, or moving towards, favourable conservation status by 2020	
17.01	Enforce Government decision in relation to the cessation of turf cutting on raised bogs and drawing up of peatland strategy.
17.02	By 2015 implement existing species action or management plans for species under threat and review and update as necessary; develop and implement additional species action or management plans for a wider range of species under threat; ensure monitoring of implementation and effectiveness of plans.
17.03	Informed by the draft Action plans developed by Bird Watch Ireland, identify and implement a suite of agreed measures for the protection of categories of endangered bird species in the wider countryside. This will be delivered through the engagement and participation of all relevant stake-holders across the public, private and voluntary sectors.
17.04	Continue to implement measures to improve the status of habitats and species assessed as "bad" in the 2007 report under to the EU on the status of protected habitats and species, involving habitat action plans if necessary, and by 2015 have in place a full prioritised programme of work.
17.05	Provide and implement guidelines for local authorities and other planning bodies on the protection of species listed in Annex IV of the Habitats Directive
17.06	By 2012 identify and subsequently fill critical gaps in ex-situ conservation programmes for wild species, in line with best practice.

OBJECTIVE 7: To substantially strengthen the effectiveness of international governance for biodiversity and ecosystem services	
TARGET 18: substantially strengthened support for biodiversity and ecosystem services in external assistance.	
18.01	Biodiversity will be made a component of Ireland's development cooperation programme; and support to, and co-operation with developing countries shall take into account biological diversity through the application of the CBD
TARGET 19: enhanced contribution to international governance for biodiversity and ecosystem services	
19.01	International agreements will be serviced to ensure that Ireland plays a role in the future of international biodiversity policy, particularly in the area of mainstreaming biodiversity and ecosystem services across all sectors.
19.02	Prepare for ratification of the Protocol on Access to Genetic Resources and Fair and Equitable Sharing of Benefits (ABS) and implement a national strategy, if ratified
TARGET 20: enhanced co-operation with Northern Ireland on common issues	
20.01	Ongoing communication and harmonized action on issues of common concern
20.02	Produce a strategy on Invasive Alien Species in co-operation with Northern Ireland to improve harmonisation of the policy framework
20.03	Further co-operation on and co-ordination of All-Island Species Protection Plans
TARGET 21: substantial reduction in the impact of Irish trade on global biodiversity and ecosystem services	
21.01	Identify major impacts of trade on biodiversity and adopt measures to significantly reduce (in case of negative impacts) and/or enhance (in case of positive impacts) these impacts (see also action 1.13).
21.02	Ensure CITES Regulations are adequately implemented and enforced.
21.03	Analyse options for further legislation to control imports of illegally harvested timber into Ireland. Facilitate exchange of best practice in private and public sector procurement policies favouring wood products from sustainable sources, including certifiable wood products.
21.04	Identify non-wood imports driving deforestation and investigate the effectiveness of any potential measures to prevent, minimise and/or mitigate this deforestation.
21.05	Identify and implement measures aimed at substantially reducing the impact of Ireland's ecological footprint on biodiversity

Appendix IV. Mapping of Aichi Biodiversity Targets against Ireland's National Biodiversity Action Plan (NBAP): Actions for Biodiversity 2011-2016.

The mapping exercise is inherently subjective as many actions are cross-cutting across Aichi targets, but consensus was reached between the appropriate reporting parties for each action.

		Relevant Aichi Target per Action																			
NBAP	NBAP	A				B						C			D			E			
Target	Action	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	1.01		2		4													17			
	1.02	1	2																		
	1.03		2															17			
	1.04		2	3	4																
	1.05			3																	
	1.06		2	3	4																
	1.07		2																		
	1.08	1	2																18		
	1.09		2	3	4		6	7	8		10										
	1.10		2	3	4				8												
	1.11		2																		
	1.12	1	2	3	4										14					19	
	1.13		2		4																
	1.14			3											14						
2	2.01		2	3								11			14						
	2.02		2	3		5						11	12	13							
	2.03		2	3									12								
	2.04		2	3	4	5		7						13	14	15					
3	3.01																			19	
	3.02																			19	
	3.03																			19	
	3.04	1	2															17		19	
	3.05																			19	
	3.06		2																	19	
	3.07	1																		19	
	3.08		2																	19	
	3.09														14					19	
	3.10																			19	
	3.11					5								13	14	15				19	
	3.12													13						19	
	3.13																			19	20
4	4.01	1	2		4															19	
	4.02	1																		19	
	4.03	1	2																		
	5.01		2	3	4			7						13	14				18		
	5.02		2		4			7												19	
	5.03		2		4	5		7					12	13	14	15					
	5.04							7												19	

		Relevant Aichi Target per Action																			
NBAP	NBAP	A				B						C			D			E			
Target	Action	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	5.05		2	3	4			7					12							19	
5	5.06			3	4			7													20
	5.07	1	2	3	4	5		7						13	14	15					
	5.08		2		4	5		7						13	14	15					
	5.09		2	3	4									13							
6	6.01			3		5	6		8						14					19	
	6.02		2	3	4	5			8				12		14						20
	6.03		2	3	4	5			8				12			15					
7	7.01		2			5									14						
	7.02		2		4	5									14	15					
8	8.01		2							9										19	
	8.02		2	3		5				9			12							19	
	8.03									9										19	
	8.04	1	2							9				13							
	8.05	1	2							9				13							
9	9.01			3				7							14					19	
	9.02	1	2					7							14						
	9.03		2		4			7												19	
10	10.01				4	5									14	15				19	
	10.02				4	5									14	15				19	
	10.03				4	5									14	15				19	
	10.04												12								
	10.05		2	3	4	5		7							14	15					
	10.06					5		7				11			14	15				19	
	10.07		2	3	4		6	7					12								
11	11.01		2	3	4								12								
	11.02		2	3	4	5							12								
	11.03		2	3	4	5							12								
	11.04		2	3		5							12								
12	12.01	1	2																	19	
	12.02		2									11	12							19	
	12.03	1	2										12							19	
13	13.01		2		4	5	6	7			10	11			14	15				19	
	13.02					5	6	7	8		10									19	
14	14.01		2	3	4		6	7			10		12	13						19	
	14.02				4		6	7	8		10	11	12	13						19	
	14.03				4		6	7						13						19	
	14.04		2	3	4		6	7			10			13						19	
	14.05		2	3	4		6	7			10			13							
	14.06		2	3	4		6	7			10			13							
15	15.01		2	3		5						11	12		14	15					
	15.02		2			5						11				15					
	15.03		2	3		5						11									20
	15.04		2	3	4	5		7					12		14				18		

		Relevant Aichi Target per Action																			
NBAP	NBAP	A				B						C			D			E			
Target	Action	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
	15.05		2	3	4			7							14				18		
16	16.01			3		5						11	12			15					
	16.02					5						11	12		14	15					
17	17.01		2	3	4	5						11			14	15			18		
	17.02		2										12								
	17.03	1	2										12								
	17.04					5						11	12		14	15					
	17.05		2										12								
	17.06												12							19	
18	18.01		2	3	4																20
19	19.01		2	3	4												16				
	19.02		2	3	4												16				
20	20.01	1	2							9											
	20.02		2							9											
	20.03	1	2										12								
21	21.01		2	3																19	
	21.02	1	2	3									12								
	21.03		2	3	4	5		7													
	21.04					5		7												19	
	21.05	1	2	3	4	5	6	7			10				14	15				19	