

Note:

This downloaded document combines all five summary thematic recommendations documents finalised in February 2012. These documents were produced by the National Platform for Biodiversity Research to summarise the research priorities identified for Ireland by working groups in a number of key sectoral areas. The documents may be downloaded individually from the NPBR website www.biodiversityresearch.ie/news.html.

The five documents are as follows, and have been combined in the following order:

1. Research recommendations of the National Platform for Biodiversity Research: Enabling actions in support of biodiversity research
2. Research recommendations of the agriculture, soil and grassland working group of the National Platform for Biodiversity Research
3. Research recommendations of the freshwater working group of the National Platform for Biodiversity Research
4. Research recommendations of the marine working group of the National Platform for Biodiversity Research
5. Research recommendations of the uplands, peatlands and wetlands working group of the National Platform for Biodiversity Research



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**Recommendations of the
National Platform for Biodiversity Research:
*Enabling actions in support of biodiversity research***



February 2012

This document summarises the enabling actions required to ensure the research priorities identified by the working groups of the National Platform for Biodiversity Research are implemented in an efficient and cost effective manner.

The enabling actions recommended in this document are cross-cutting in nature and apply to all areas of biodiversity research. They are described in detail in each of the thematic areas examined by the NPBR (listed below) which are available to download at <http://www.biodiversityresearch.ie/>

- Marine
- Agriculture, grasslands and soil
- Freshwater
- Uplands, peatlands and wetlands
- Invasive alien species

Integration of the policy environment

There is a clear need for a coordinated inter-departmental system to facilitate targeted biodiversity research programmes, designed to facilitate the implementation of legislative requirements.

See detailed priorities 1 to 7.

The coordination and dissemination of biodiversity data (including metadata)

The coordination and dissemination of biodiversity research data (including metadata) is urgently needed.

See detailed priorities 8 to 12.

Funding of biodiversity research

A clear and coordinated funding mechanism to ensure the most urgent biodiversity research needs are delivered is required.

See detailed priorities 13 to 15.

Detailed Priorities

Integration of the policy environment

The establishment of an inter-departmental working group, including the relevant key technical experts to:

1. Ensure coordinated research effort and knowledge sharing between departments and agencies to maximise efficiencies and research effort of direct relevance to the implementation of legislative requirements.
2. Evaluate impacts, compatibilities and conflicts between government policies and biodiversity objectives and economic practice. This review should be based around the relevant sectors.
3. Identify policy blind spots and suggest methods that might be used to resolve policy conflicts. This should also include developing the actions required from research recommendations e.g. responsibility for dealing with invasive alien species.
4. Identify more effective ways of integrating existing knowledge from both fundamental and applied research thereby facilitating evidence-based policy making.
5. Identify, develop and demonstrate appropriate policy implementation tools (e.g. recommend methodologies for habitat identification, prioritisation and assessment, monitoring, use of indicators and evaluation tools).
6. Identify appropriate and innovative Departmental mechanisms to finance Natura 2000 initiatives, including an assessment of the efficacy of current funding provided through the RDP.
7. Identify how Government policies can be used as opportunities for biodiversity enhancement.

The coordination and dissemination of biodiversity data (including metadata)

To facilitate the coordination and dissemination of biodiversity research data the following specific measures need to be undertaken:

8. All existing biodiversity data resources should be collated and centralised. This includes information contained in Environmental Impact Statements currently held by local authorities.
9. National biodiversity research metadata entry should be agreed and standardised.
10. National biodiversity research database standards should be developed and co-ordinated.
11. Biodiversity research outputs should be disseminated as a two way process. This should include the appropriate format for the dissemination of research results by the funding agencies.
12. A mechanism to conduct integrated analysis of newly available biodiversity data sets that have been collated by the National Biodiversity Data Centre and other organisations should be developed.

Funding of biodiversity research

13. Evaluate and ensure research is targeted in a prioritised manner.
14. Identify a mechanism that has the capacity to match competitive research calls to the themes identified for funding.
15. Establish a mechanism to ensure funders discuss proposed research funding with competent authorities, for example through a funding referral officer available to assist in devising and evaluating research proposals.



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**Research recommendations of
the agriculture, soil and grassland working
group of the National Platform for Biodiversity
Research**



February 2012

This document summarises the main thematic research priorities identified by the agriculture, soil and grasslands working group of the Irish National Platform for Biodiversity Research. The working group was tasked with identifying gaps in the research knowledge required to meet the needs of policy in relation to the protection of national biodiversity, specifically with regard to the area of agriculture, soil and grasslands. The backing document in support of the priority areas listed below can be downloaded at <http://www.biodiversityresearch.ie/>.

A separate document detailing the enabling actions required to support the implementation of biodiversity research can be viewed at <http://www.biodiversityresearch.ie/>.

The Identification of areas of high biodiversity value

The identification of areas of high biodiversity value, including biodiversity hotspots, the evaluation of threats to these areas and the production of effective conservation strategies to protect their conservation interests is required.

See detailed research priorities 1 to 7.

Habitat management and restoration

There is a clear need for research to improve the design and effectiveness of agri-environment schemes and habitat management techniques, the identification of High Nature Value farmland and the restoration of marginal agricultural land.

See detailed research priorities 8 to 18.

Long-term studies and the development of a network of long-term study sites

There is a need to develop an inter-institutional research programme to support the establishment of long-term experimental study sites and the development of an integrated research model incorporating the conservation and utilisation of biodiversity in the development of sustainable grass-based agriculture.

See detailed research priorities 19 and 20.

Functions and processes

The development of a co-operative, inter-institutional research programme to investigate the relationship between biodiversity and ecosystem functions and processes is required.

See detailed research priorities 21 to 27.

Detailed Research Priorities

The Identification of areas of high biodiversity value

1. The production of national inventories of species.
2. The national spatial and temporal patterns of Annex I species and Annex II habitats within agricultural and grassland ecosystems.
3. The establishment of the status and distribution of rare or threatened species in agricultural and grassland ecosystems.
4. The undertaking of nationwide surveys of agricultural and grassland habitats of national and European importance that have not been the subject of previous surveys or where such surveys have delivered insufficient information.
5. The undertaking of nationwide surveys of those species of national and European importance in agricultural and grassland ecosystems that have not been the subject of previous surveys or where such surveys have delivered insufficient information.
6. National surveys of species listed in the EU Birds Directive. Specifically, to undertake national surveys of the distribution and status of declining farmland habitats to enable early identification of necessary remedial actions to protect associated threatened species.
7. 'Pre-emptive' national surveys of 'amber-list' taxa within agricultural and grassland ecosystems to enable early identification of necessary remedial actions.

Habitat management and restoration

8. Research to develop farming for conservation systems to meet the needs of High Nature Value farmland areas in Ireland.
9. Research to investigate the environmental consequences of different habitat management techniques such as grazing, cutting, burning, targeted herbicide use in unwanted vegetation control.
10. Research to Investigate the environmental impacts of alternative landuses in marginal agricultural areas and its impact on biodiversity e.g. wind turbines, biofuels, recreation etc.
11. Research to better understand the socio-economics of biodiversity production e.g. support requirements, labour inputs, etc.
12. Research to establish methodologies for the objective identification of HNV farmland and the agricultural systems that support the maintenance of biodiversity in HNV areas.
13. Research on large-scale ecological restoration of the Irish uplands, with emphasis on quantifying sustainable grazing levels to maintain and enhance biodiversity.
14. A series of biodiversity management reviews required for key habitats starting with priority habitats and species under the EU Habitats and Birds Directive.
15. A programme of national habitat mapping, both within and outside designated areas to include habitat types, and classify these habitats into their soil, elevation, vegetation type and overall habitat rating. Such a mapping system needs to take cognisance of mapping programmes already completed and underway to ensure best use of available data and a standardised approach.
16. Identify and prioritise specific agri-environment objectives for farmland wildlife, to ensure that agri-environmental schemes contribute to halting biodiversity loss.
17. Investigate innovative habitat restoration and conservation practices within landscapes affected by anthropogenic factors. This should be a support to the development of the High Nature Value model and should be underpinned by basic classification of HNV status, extent and condition.
18. The development of tailored, tested, prescriptions for roll-out through agri-environment schemes. In addition, baseline information needs to be collected to allow for monitoring at farm and scheme level, with a strong emphasis on use of indicators as a monitoring tool.

Long-term studies and the development of a network of long-term study sites

19. Establishment of a working group to identify a suitable network of sites. While taking into account existing long-term study sites and the research data gathered from them.
20. Within these study sites conduct a programme of research within agricultural and grassland ecosystems to better understand:
 - The impacts of agricultural activities and practices (e.g. fertilizers, pesticides and disturbance) on habitat, species and soil biodiversity.
 - The impacts on soil and surface-active invertebrates of poaching (trampling of flooded soil by livestock) and soil compaction at different stocking levels.
 - The long-term impacts of depositing sewage sludge and other organic wastes on to agro-ecosystems.
 - The consequences of biofuel production for biodiversity at field, landscape and regional levels.
 - How soil carbon can be retained and and further carbon sequestered in the soil.
 - Landscape analysis of the impact of the abandonment of traditional patterns of land use and farming systems biodiversity in economically marginal areas.
 - The development of tools for monitoring the effects of changing farm practice, by development of an index-based method for the quantification of farmed landscape structure and quality and the development of indicators.

Functions and processes

21. Research to quantify the ecosystem services provided by land with different agricultural land use intensities and biodiversity levels, in particular pollination, C sequestration, water storage and purification.
22. Research to halt degradation of ecosystem services. Including the identification and prioritisation of ecosystem services, specific threats to them and the development of restorative measures to mitigate identified threats.
23. Research to understand the environmental consequences of farming patterns ranging between the extremes of widespread extensification vs. complete segregation of agricultural production and conservation areas.
24. Landscape analysis research on the extent and impact on biodiversity and ecosystem services due to abandonment of traditional patterns of land use and farming systems in economically marginal areas.
25. Research on the interaction of biodiversity effects across habitat and ecosystem boundaries through nature corridors. Including research to assess the effects of robust species-rich environments on the economic viability of farming in adjacent areas.
26. Research into species interactions (such as pollination, predation and competition).
27. Research on the extent of functional plasticity of species, in particular those species listed under Annex II of the Habitats Directive and the Annex I of the Birds Directive.



**Research recommendations of
the freshwater working group of the National
Platform for Biodiversity Research**



February 2012

This document lists the main thematic research priorities identified by the freshwater working group of the Irish National Platform for Biodiversity Research. The working group was tasked with identifying gaps in the research knowledge required to meet the needs of policy in relation to the protection of national biodiversity, specifically in the area of the freshwater. The backing document in support of the priority areas listed below can be downloaded at <http://www.biodiversityresearch.ie/>.

A separate document detailing the enabling actions required to support the implementation of biodiversity research can be viewed at <http://www.biodiversityresearch.ie/>.

Functions and processes

There is a clear need for the development of a co-operative, inter-institutional research programme to investigate the relationship between biodiversity and ecosystem functions and processes in freshwater ecosystems.

See detailed research priorities 1 to 10.

Inventory, distribution and taxonomic expertise

There is a need to strengthen the capacity of state institutions to undertake taxonomy of freshwater species, to include specialist training of taxonomists, as a pre-requisite to conducting the research required to identify freshwater biodiversity hotspots and the production of inventories and maps of the distribution of freshwater species.

See detailed research priorities 11 to 19.

Biodiversity and economic values

There is a need for a fully integrated, multidisciplinary approach to examine the ecosystem goods and services delivered through freshwater ecosystems to include all sectors.

See detailed research priorities 20 and 21.

Detailed Research Priorities

Functions and processes

1. Research on the impact of sedimentation on biodiversity, including modelling of sediment movements.
2. Biodiversity-production studies, the importance of species complementarities and extent of species redundancy in freshwater ecosystems.
3. Research on the impact of sedimentation on biodiversity, including modelling of sediment movements.
4. Research to investigate innovative habitat restoration and conservation practices within floodplain habitats affected by anthropogenic factors.
5. Research to halt degradation of freshwater ecosystem services. Including the identification and prioritisation of ecosystem services, specific threats to them and the development of restorative measures to mitigate identified threats.
6. Research to investigate the effects of drainage maintenance and sedimentation processes on freshwater ecosystems, including those resulting from forestry, agricultural and peatland management practices.
7. Research to develop biological metrics for watershed hydrology, sediment delivery, and sediment composition.
8. Research to understand the effects of water abstraction in major freshwater ecosystems.
9. Research to develop appropriate agri-environment programmes to address the favourable conservation status of key habitats and species (e.g. freshwater pearl mussel).
10. Research to develop practical tools to (a) provide a workable classification of Irish Rivers, lakes and streams and (b) assess the conservation status of Irish Rivers, lakes and streams.

Inventory, distribution and taxonomic expertise

11. Strengthening the capacity of State institutions to undertake taxonomy of freshwater species to include specialist training of taxonomists in this area.
12. The production of interactive web-based keys for the taxonomic identification of freshwater species.
13. Research on the status and distribution of rare or threatened freshwater species.
14. Identification of hotspots that have a high biodiversity value in Ireland, with particular reference to regional/catchment level studies.
15. Production of national inventories for less well-known freshwater taxa (e.g. freshwater mites and sponges) and their distribution.
16. Research on indicators of freshwater biodiversity and ecosystem health.
17. Early warning systems for the identification and detection of non-native species in freshwater ecosystems.
18. Establishment of networks of long-term study sites for larger-scale (spatial and temporal) monitoring and evaluation of biodiversity in freshwater habitats to help integrate research and provide long-term baseline data.
19. National surveys of freshwater habitats listed under Annex I, and species listed in Annex II of the EU Habitats Directive.

Biodiversity and economic values

20. Identify the economic importance and relevance of freshwater resources and biodiversity in all sectors of the Irish economy. A baseline review and projections for the future (over the next 10 years and longer) are required.
21. Assess the relationship between the payment of subsidies to farmers, fishermen and other sectors and its impact on protecting and enhancing freshwater biodiversity.



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**Research recommendations of
the marine working group of the National
Platform for Biodiversity Research**



February 2012

This document lists the main thematic research priorities identified by the marine working group of the Irish National Platform for Biodiversity Research. The working group was tasked with identifying gaps in the research knowledge required to meet the needs of policy in relation to the protection of national biodiversity, specifically in the area of the marine environment. The backing document in support of the priority areas listed below can be downloaded at <http://www.biodiversityresearch.ie/>.

A separate document detailing the enabling actions required to support the implementation of biodiversity research can be viewed at <http://www.biodiversityresearch.ie/>.

The identification and conservation of areas of high biodiversity value

The identification of areas of high biodiversity value and biodiversity hotspots, the evaluation of threats to these areas and the production of effective conservation management plans to protect their conservation interests is required.

See detailed research priorities 1 to 9.

The establishment of long-term study sites

There is a clear need for the establishment of a network of long-term marine study sites and a programme of research to be conducted within these sites.

See detailed research priorities 10 to 18.

Invasive Alien Species

There is an urgent need to to develop an early warning system for alien invasive species backed by the research required to understand the processes and pathways that facilitate the introduction and dispersal of invasive alien species.

See detailed research priorities 19 to 26.

Detailed Research Priorities

The identification and conservation of areas of high biodiversity value

1. The development of the criteria necessary to classify an area as an area of high biodiversity value and to allow these areas to be then prioritised for future research, monitoring, management and protection.
2. The production of national inventories of marine species.
3. The production of national inventories for less well-known taxonomic groups of marine algae and invertebrates and their distribution.
4. The establishment of the status and distribution of rare or threatened species in marine ecosystems.
5. The undertaking of nationwide surveys of those habitats of national and European importance that have not been the subject of previous surveys or where such surveys have delivered insufficient information.
6. The undertaking of nationwide surveys of those species of national and European importance that have not been the subject of previous surveys or where such surveys have delivered insufficient information.
7. Account should also be taken of biodiversity and the potential for marine research associated with deep-water environments, which may be required to fulfill the requirements under the Marine Strategy Framework Directive.
8. The identification of key species and their potential effects on targeted species loss in nationally important marine ecosystems.
9. The production of red data books for marine species (algae, invertebrates and fish) should be commenced and will be facilitated by the supporting actions in 2 to 6 above.

The establishment of long-term study sites

The establishment of a working group to identify a suitable network of sites, while taking into account existing long-term study sites and the research data gathered from them. Particular attention should be paid to the establishment of sites in the offshore marine environment.

Within these study sites conduct a programme of research to better understand

10. Patterns of spatial and temporal variation at a range of scales, particularly for Annex I habitats and Annex II species.
11. The interactions between fisheries and fish predators (mammals and birds).
12. The impacts of fisheries and aquaculture on ecosystems, habitats and species. Particularly Annex I habitats and Annex II species and methods of mitigation.
13. Variation in ecological patterns.
14. Minimum viable areas of species of conservation importance.
15. Ecological changes associated with long-term environmental change, e.g. climate change, ocean acidification and shorter-term impacts, e.g. nutrient pollution and harmful algal blooms.
16. The effectiveness of biomonitoring tools by sampling and experimentation, including ground truthing.
17. Natural and anthropogenic variation in biodiversity and its relationship with ecosystem functioning and provision of ecosystem services.

18. The functional importance of interactions within and between habitats and species, in particular those species listed under Annex II of the Habitats Directive and Annex I of the Birds Directive.

Invasive Alien Species

19. Establishment of a permanent working group to assist in the coordination of efforts to deal with the issues of non-native invasive species and to enable a rapid response.
20. The production of inventories, including spatial distribution and temporal occurrence, of non-native marine species.
21. Research to understand the dispersal mechanisms of non-native species needs urgent attention since the capability of such mechanisms could exceed the ability of management measures employed.
22. Research to enable risk-assessments on impacting (target) species likely to arrive based on current and future trade, likely entry points and subsequent spread.
23. Research to assess likely hubs of inoculation and the development of *a priori* plans for dealing with specific invasions likely to be of impact.
24. The development of strategies for the effective control of species identified as high risk at the first sign of their arrival.
25. Development of indicators of the impacts of non-native species and assessment of the possible ecological and economic impact of current and potential invasives to help prioritise management responses towards the most damaging species.
26. Research to reduce the impact of Ireland as a donor of IAS to other countries and biogeographical provinces.



**Research recommendations of
the uplands, peatlands and wetlands working
group of the National Platform for Biodiversity
Research**



February 2012

This document lists the main thematic research priorities identified by the uplands, peatlands and wetlands working group of the Irish National Platform for Biodiversity Research. The working group was tasked with identifying gaps in the research knowledge required to meet the needs of policy in relation to the protection of national biodiversity, specifically in the area of uplands, peatlands and wetlands. The backing document in support of the priority areas listed below can be downloaded at <http://www.biodiversityresearch.ie/>.

A separate document detailing the enabling actions required to support the implementation of biodiversity research can be viewed at <http://www.biodiversityresearch.ie/>.

Mapping, inventory and analysis

The collation, mapping and analysis of all data relating to upland, wetland and peatland habitats is required to provide a mechanism for the evaluation of the effectiveness of agri-environment schemes in these habitats. This should include gap analysis of these datasets to facilitate targeted mapping and inventory for effective conservation management.

See detailed research priorities 1 to 9.

Protection of biological resources

There is a need for research to further our understanding of systems and processes affecting the protection, restoration and utilisation of biodiversity within upland, wetland and peatland habitats.

See detailed research priorities 10 to 23.

Strategic Environmental Assessment of plans and programmes

There is a need for research to assess past and potential future impacts of plans and programmes on upland and peatland habitats and to develop a framework to mitigate possible future impacts on upland and peatland habitats and prescriptions for accelerating habitat recovery.

See detailed research priorities 24 and 25.

Detailed Research Priorities

Mapping, inventory and analysis

1. Construct a national habitat map of all Annex I upland, peatland and wetlands habitats.
2. Construct a national vegetation map at Fossitt level 2.
3. Quantify the actual extent of domestic peat cutting, especially on blanket bogs.
4. Identify indicator species.
5. Identify indicators of change.
6. Identify biodiversity hotspots.
7. Identify HNV farmland systems that support biodiversity.
8. Assess the conservation status of Annex I habitats and Annex II species listed by the Habitats Directive.
9. Assess where gaps exist in our current knowledge of the location and distribution of these habitats and their component species to facilitate targeted surveys likely to include:
 - The completion of national inventories of all upland, wetland and peatland Annex I habitats.
 - The production of national inventories for less well-known taxa (including lichens, fungi and bryophytes) and their distribution.
 - The creation a national vegetation classification system for all Irish habitats; including uplands, peatlands and wetlands.

Protection of biological resources

10. Research to investigate innovative habitat restoration and conservation techniques within landscapes affected by anthropogenic factors to assess their effectiveness in terms of hydrology, carbon storage and sequestration potential and biodiversity at all levels.
11. Costed and targeted prescriptions that can be delivered through agri-environmental schemes, which can address undergrazing and overgrazing.
12. Analysis of various habitat prescriptions implemented to date through agri-environmental schemes in upland and peatland habitats.
13. Research into the re-creation requirements for raised bog communities/habitats on industrial cutaway/cutover bog areas, as opposed to creation of non-peat forming wetlands.
14. Research to enhance our understanding of restoration and conservation of the remaining raised bogs, which is critical to preventing further degradation due to past drainage and cutting.
15. Research to investigate the effectiveness of specific environmental measures and schemes such as agri-environmental, forestry and transport schemes to ensure these schemes protect and enhance biodiversity in accordance with best scientific knowledge for protecting biodiversity.
16. Research into possible “greening measures” that could be delivered in extensive landscapes and supported through direct payments to farmers.
17. Research to investigate greenhouse gas emissions from peat soils under various managements (to be used towards Tier 3 reporting of the Kyoto protocol).
18. Mechanisms to ensure that all policy drivers of change (schemes, initiatives etc) are compliant with the requirements of the Habitats and Birds Directives in relation to the protection of Natura 2000 sites and respect the Wildlife Acts and other national legislation.

19. Classification and identification of all peatlands along a degradation scale.
20. Research and development into alternative material to replace peat in horticulture and other products.
21. Research to investigate the cultivation of *Sphagnum* moss for use in growing media.
22. Research into paludiculture on degraded peatlands should be developed.
23. Wet heaths are often associated with blanket bogs and are listed in the Annex I of the Habitats Directive as important habitat to protect. An assessment of the disturbance to these habitats is required as they have serious consequences in terms of carbon loss and water quality.

Strategic Environmental Assessment of plans and programmes

24. Assess past and potential future impacts of plans and programmes (such as windfarms and single farm payment eligibility) on upland and peatland habitats.
25. Develop a framework to mitigate possible future impacts on upland and peatland habitats and prescriptions for accelerating habitat recovery.