



The mission of the European Platform for Biodiversity Research Strategy (EPBRS) is to ensure that research contributes to halting the loss of biodiversity by 2010.

Action Plan for Biodiversity Research in Europe
formulated by the
European Platform for Biodiversity Research Strategy
and adopted at its meeting in
Budapest, Hungary, 31st March – 4th April 2005

Biodiversity is declining at an unprecedented rate - as much as a thousand times what it would be without the impact of human activity... We must reverse this process... while helping people who currently depend on [biodiversity]. Kofi Annan (April, 2002)

Life on Earth depends on the components of biological diversity. We depend on biodiversity to provide, amongst other things, food, breathable air, clean water, fibre and shelter and we also enjoy biodiversity for spiritual well-being and recreation. Biodiversity maintains essential ecosystem functions including primary production and decomposition. Humans are part of biodiversity, but our activities, deficient knowledge and ever-increasing demand on natural resources are among the main causes of the loss of diversity in the living world around us.

Aims

This Action Plan aims to identify knowledge that is necessary to halt the loss of biodiversity in Europe and elsewhere, and to improve understanding of the drivers and ecological, economic and social consequences of biodiversity change. It elaborates on targets for changes in the funding and organisation of biodiversity research in Europe that are necessary to enable science to contribute to halt the loss of biodiversity. The elements of the plan will contribute to conservation and sustainable use of biodiversity, and thus to the implementation of the Convention on Biological Diversity.

The intended audiences for this Action Plan are, for example, the EU Institutions and Member States, national and international agencies, enterprises, scientists and research policy makers involved in the strategic planning and design of biodiversity research. The Action Plan is intended to help actors to identify the most urgent research needs and scientific challenges in the field of biodiversity. Actors will determine the detailed schedules.

Background

The EC Biodiversity Strategy, adopted in 1998, was developed to meet the EC's obligations as a Party to the Convention on Biological Diversity. Four associated Biodiversity Action Plans, covering agriculture, natural resources, fisheries and economic cooperation and development, were adopted in 2001 and each outlines what actions should be taken within each sector to implement the strategy.

In 2001, the European Council committed to ‘halt the decline of biodiversity by 2010’¹, and heads of state and government then made a commitment at the 2002 World Summit on Sustainable Development to achieve ‘by 2010 a significant reduction in the rate of loss of biological diversity.’² Consultative reviews conducted in 2003 and considered in greater detail at a stakeholder conference in Malahide (Republic of Ireland) in May 2004 highlighted recommendations for improving implementation of the Biodiversity Action Plans³. The EPBRS⁴ meeting in Killarney (Republic of Ireland) in May 2004 suggested recommendations on research needs to help achieve the goals of the Biodiversity Strategy and the Action Plans⁵.

Research needs

This Action Plan for Biodiversity research draws on the *Message from Malahide* in particular on Objective 16, the *Killarney Declaration and Recommendations* and previous EPBRS recommendations for research that contribute to halting the loss of biodiversity in Europe and elsewhere in the world.⁶

Knowledge outcomes

The following research needs are grouped according to the three categories status pressures and tools for conservation of biodiversity. Research priorities specific to the EU Biodiversity Action Plans, due to their particular importance for the 2010 targets are listed separately in this document but should be considered in conjunction with all the preceding points.

¹ Presidency Conclusions, Goteborg Council, 15 and 16 June 2001. SN/200/1/01 REV1, page 8.
<http://ue.eu.int/newsroom/newmain.asp?lang=1>

² WSSD Plan of Implementation, Paragraph 44.
http://www.un.org/esa/sustdev/documents/WSSD_POI_PD/English/POIToc.htm

³ *Message from Malahide. Halting the decline of biodiversity: priority objectives and targets for 2010*. Outcome from stakeholders conference on *Biodiversity and the EU: sustaining life, sustaining livelihoods* held 25-27 May 2004, Malahide, Ireland

⁴ More information on EPBRS recommendations can be found on www.epbrs.org

⁵ Recommendations of the meeting of the European Platform for Biodiversity Research Strategy held under the Irish Presidency of the EU Killarney, Ireland, 21st – 24th May 2004 concerning “Sustaining Livelihoods And Biodiversity: Attaining The 2010 Target In The European Biodiversity Strategy”

⁶ Particular attention should be paid to areas where ecological and anthropogenic pressures on biodiversity are greatest. This includes islands and archipelagos, and other historically or geographically isolated ecosystems, such as natural and old growth forests and traditional agricultural landscapes.

The way things are: status and trends of biodiversity and ecosystems and why they matter

Status, trends and distribution of all habitats and species of Community Interest and of additional habitats and species of policy relevance known. (Malahide target 16.1)

To achieve this target research is needed to:

- 1 assess distribution, status and trends of European species and habitats, especially those of Community interest
- 2 develop methods to assess minimum viable areas, favourable conservation status and effective ecological networks
- 3 assess genetic diversity of species of conservation or economic importance
- 4 further develop the concept of dynamic ecosystems and improve the classification of habitats and ecosystems
- 5 improve understanding of biodiversity in poorly understood ecosystems, including soils and the deep sea
- 6 understand the interaction between biological diversity and ecosystem function and resilience, and assess trends in key functional groups, for example pollinators
- 7 increase long-term taxonomic capacity and significantly step up efforts to complete inventories in Europe
- 8 improve knowledge of goods and services provided by ecosystems
- 9 improve understanding of biodiversity in the urban environment and its role in the life and wellbeing of citizens
- 10 improve understanding of public beliefs, perceptions, attitudes and preferences regarding biodiversity
- 11 increase knowledge of the cultural, social, spiritual, economic and other values of biodiversity
- 12 quantify the contribution of biodiversity to livelihoods and further understand how changes in biodiversity and ecosystem functions influence livelihoods
- 13 understand the consequences of biodiversity change on health and the incidence of disease in humans and other species

How it got like this: the drivers of biodiversity loss

Impacts of the most significant pressures on biodiversity for each key sector of the European Community Biodiversity Strategy discriminated, ranked and quantified where possible, and prevention and mitigation options developed and tested. (Malahide target 16.2)

To achieve this target research is needed to:

- 14 identify, quantify, understand and predict drivers of biodiversity change including their relation to degradation and loss of habitats
- 15 understand how trade and tourism affect biodiversity and how biodiversity is used in both sectors

- 16 assess and predict changes in ecosystem functioning due to unsustainable use including marine biodiversity not directly targeted by fishing
- 17 investigate how public beliefs, perceptions, attitudes and preferences regarding biodiversity influence human behaviour and public policy
- 18 improve understanding of how the use of natural resources affects biodiversity, ecosystem goods and services and the resilience of ecological-economic systems
- 19 greatly increase understanding of the causes and effects of biological invasions
- 20 understand interaction between biodiversity and climate change

What to do about it: governance, policy and tools to address biodiversity loss and its impacts

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Tools for measuring, anticipating and improving the effectiveness of the most important policy instruments for conservation and sustainable use of biodiversity in each of the sectors of the European Community Biodiversity Strategy developed and applied. (Malahide target 16.3)

To achieve this target research is needed to:

- 21 develop methods to prevent, mitigate and, where possible, reverse degradation and loss of ecosystems, species and genetic diversity
- 22 develop governance and management options for biodiversity conservation and sustainable use, including intellectual property right regimes
- 23 develop indicators of sustainable management of renewable resources, ecosystem integrity and ecosystem goods and services, vulnerability of livelihoods, and funding to biodiversity
- 24 develop, test and evaluate indicators on the status and trends of biodiversity, the drivers of biodiversity change and the success of policies designed to halt the loss of biodiversity by 2010 and beyond
- 25 establish how to use biological resources, goods and services in a sustainable manner, incorporating lessons learned from traditional knowledge, innovations and practices
- 26 establish methods and guidelines to assess environmental risk posed by chemicals and biotechnology, including genetically modified organisms
- 27 further develop models at relevant scales, within and across disciplines, to understand and predict biodiversity change
- 28 further develop participatory and conflict management methods and effective and cost-effective policy instruments, implementing sustainable use and biodiversity conservation
- 29 develop methods to implement, evaluate and improve the principles and application of the ecosystem approach of the CBD
- 30 improve and assess strategies for promoting sustainable livelihoods, lifestyles and poverty alleviation in the context of biodiversity conservation
- 31 develop incentives and policies that motivate restoration and enhancement of biodiversity
- 32 improve the evidence-based conservation⁷ of biodiversity

⁷ conservation based on scientifically proven cause-and-effect relationships

- 33 develop biotechnological tools (e.g. gene banks and manipulation of soil organisms) to support conservation of biodiversity, and assess their cost-effectiveness in comparison to other conservation strategies
- 34 develop methodologies to evaluate and improve high nature value farming systems and sustainable forest management
- 35 improve understanding of how biodiversity policy is formed and implemented in relation to other policies
- 36 develop improved spatial planning instruments and tools that better integrate biodiversity issues.

Research Priorities for EU Sectoral Biodiversity Action Plans

These research priorities should be considered in conjunction with all the preceding points.

Priorities for Biodiversity Action Plan on Conservation of Natural Resources

- Assess and evaluate legislation, policy and sectoral activities, at all scales, that impact the conservation of natural resources, and identify solutions to conflicts
- Develop and assess methods of conserving natural resources that achieve sustainable lifestyles and that reduce negative impacts on biodiversity
- Develop concepts, tools and methods to achieve favourable conservation status of habitats and species and establish baselines and targets
- Understand how species interact and contribute to ecosystem function, structure and services, and discriminate anthropogenic and natural dynamics in ecosystems
- Develop concepts, tools and methods to enable species recovery and to restore and manage the various functions of degraded ecosystems with reference to their resilience

Priorities for Biodiversity Action Plan on Fisheries

- Develop the ecosystem-based approach to the management of fisheries and aquaculture supported by appropriate sociological and socio-economic research
- Improve the understanding of the population structure of commercial species, using genetic and traditional approaches, to optimise stock management
- Improve understanding of the ecosystem effects of fishing activities and how they may be reduced in particular through fishing gear developments including selectivity
- Pursue further research into the ecological impacts of aquaculture to facilitate informed and sustainable development and management
- Investigate new and alternative approaches to ensure the future economic and environmental sustainability of the aquaculture sector

Priorities for Biodiversity Action Plan on Agriculture

- Assess the performance of the reformed CAP in achieving the target of halting biodiversity loss by developing a harmonized framework for evaluation and urgently support the development of monitoring systems using agreed indicators
- Define harmonized farming and landscape classification systems for the identification of priority biodiversity objectives, establish reference condition and targets and develop appropriate policy instruments for specific farm contexts and habitats
- Improve the design, implementation, monitoring and evaluation of agri-environmental instruments at the scales at which they most effectively deliver on the 2010 biodiversity targets
- Develop ecologically-based agricultural and food supply systems that enhance biodiversity and utilize its benefits, starting with research for conservation programmes for the most vulnerable and potentially useful species
- Analyse land managers' attitudes, motives and behaviour in order to promote and enhance their role as conservers of biodiversity in different farming contexts.

Priorities for Biodiversity Action Plan on Economic and Development Cooperation

- Identify and quantify the causes of biodiversity change in developing countries and the impact of this change on livelihoods
- Develop and evaluate economic, social, institutional, political, policy and environmental instruments in developing countries to alleviate the impacts of biodiversity change on livelihoods and to develop sustainable use and management of renewable resources
- Develop and evaluate long-term biodiversity monitoring programmes and indicators that contribute to the assessment of the global 2010 target in developing countries
- develop improved methods for in-situ and ex-situ conservation in developing countries.

Enabling outcomes

Funding of biodiversity research programmes

Adequate financial resources (to achieve knowledge and enabling outcomes) allocated by 2006 to European and national biodiversity research and to the dissemination of its results, including sufficient funding under the Community's FP7.

Continuous funding of biodiversity research at national and European levels is essential. This research should include interdisciplinary programmes whose results will help sound decision making. Funding should also be available for the communication of research results.

Several funding mechanisms are envisaged, including:

- planning and funding of research organised formally between funding agencies from more than one Member State should be further encouraged;
- EU community funding through the EU Framework Programmes of Research and Technological Development⁸
- international collaboration involving existing initiatives such as the Global Biodiversity Information Facility;
- voluntary collaboration between scientists working for public or private organisations in more than one Member State, organised in some cases by the European Science Foundation, DIVERSITAS, or other appropriate regional or global initiatives.
- national funding of biodiversity research from government departments, agencies, NGOs and private sector.

Indicator: estimated amount (euro) spent on biodiversity research in Europe.

Better coordination of biodiversity research: The European Research Area

Effective and inclusive European Research Area for biodiversity established, research capacity in key disciplines (e.g. taxonomy) with interdisciplinary and participatory science strengthened by 2008.

European scientists have a strong tradition of collaboration and cooperation.. The ERA-nets, Networks of Excellence and Integrated Projects in the field of biodiversity provide important opportunities for strengthening co-ordination. The reinforcement of the cooperation within and between learned

⁸ Some of the issues mentioned in this plan are the subject of research projects part-funded under the 5th and 6th Framework Programmes, but even these major efforts will not completely fill the information gaps identified here.

societies, NGOs, policy makers and funding agencies is essential to build a common research agenda for the future. Such efforts should be maintained and possibly stepped up.

Indicator: Percentages of the biodiversity research budgets, projects or programmes of Member States that are coordinated.

Institutional arrangements

Institutional arrangements in place to ensure essential policy-relevant research is done and research outcomes are assimilated by policy-makers.

An effort is needed by the EU to increase the capacity to identify and undertake essential biodiversity research. To improve the transmission of scientific knowledge into legislation and management, special arrangements should be reinforced or established in the science - policy interface. They should collect, collate and analyse existing data and results, carry out scientific assessments, to identify research gaps, convert results into information for sound decision-making and policy development in national governments and EU institutions and monitor the effectiveness. Many European States have established national biodiversity platforms or other mechanisms to undertake this work, but few of them have a secure future.

Indicator: number of national platforms or alternative mechanisms in place; number of international meetings with formal EPBRS representation

Common data standards and quality assurance procedures

Common data standards and quality assurance procedures established and promoted to enable interoperability of key European and national biodiversity databases and inventories by 2008.

Research funded at national and European levels should adhere to common data standards and quality assurance procedures and be designed so that its results make it possible to compare biodiversity and its drivers from all major ecosystems across Europe.

Indicators include: Number of European databases accessible through GBIF; percentage of research project proposals independently reviewed; results of projects published in peer-reviewed journals.