

Science in action for biodiversity (UK, 1998-2001)

1. Context

Identification of research needs in support of the UK BAP (Biodiversity Action Plan = major policy framework that sets out a strategy for implementing the CBD ; drew together existing instruments and programmes for nature conservation in the UK and set out a series of activities for a 20 year period).

2. Executant

Private consultants + biodiversity research working group (BRWG). BRWG = representatives from the biodiversity challenge group, statutory conservation agencies, academia, DEFRA, NERC, CEH, etc.

3. Time frame

? (3-10 year)

4. General methodology

Research requirements arising from UKBAP reviewed by consultants. The review established that a high proportion of the research needs identified in species (SAP) and habitat action plans (HAP) were being addressed but identified a lack in addressing large-scale, cross-cutting research topics which seems to fall between the major strategic research programmes funded by the National Environment Research Council.

Establishment of a time-limited ad-hoc group (BRWG) to develop a list of cross-cutting research needs in order to help deliver BAP objectives. Cross-cutting projects = those that impinge on many species and habitats, or that involve different sectors of human activity. Monitoring studies were excluded from the scope of the group. Information exchange is facilitated by an internet-based information system. Mechanisms for co-operation and potential funding partnerships were also explored. Research requirements and priorities in relation to current gap and opportunities were discussed in a series of small workshops overseen by the BRWG (theme identified from earlier work as a priority but not intended to be comprehensive of all possible issues; attended by specialists from a range of institutions and organisations involved in biodiversity conservation and research, including both scientists and practitioners).

- biodiversity and agriculture
- introductions, translocations and genetic conservation
- coastal and marine issues
- landscape ecology, habitat fragmentation and land use change scenarios
- biodiversity monitoring and indicators

Examples of research need identified in the workshops: methodologies for developing indicators and best management practices, identification of human impacts on biodiversity, stakeholder participation, etc.

5. Major axes

Cross-cutting research emerging from previous workshops were identified. Research topics were packaged into meaningful and cohesive research programmes with obvious cross-cutting benefits of the UK BAP. Six programmes of cross-cutting research were identified:

- science for the conservation of **genetic** and native **species** diversity
- addressing the impacts of **NNS** (non native species)
- understanding the roles of biodiversity in ecosystem **function**
- science-based **monitoring** of biodiversity and evaluation of actions
- science-based **management** of habitats and ecosystems

- developing tools to optimise **science policies** to favour biodiversity

Research Needs for UK biodiversity (UK, 2003-2006)

1. Context

Follow up of the publication of Science in Action for Biodiversity, a report of the BRWG (see here above). Aims to promote research in support of the UK BAP, and hence the CBD, and to fulfil the role of a national biodiversity research platform.

2. Executant

Biodiversity Research Advisory Group (UK BRAG).

3. Time frame

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4. General methodology

The cross-cutting themes identified previously by the BRWG were further developed in a series of research topics to address knowledge gaps associated with these themes.

5. Major axes

The research needs associated with climate change adaptation have been considered as an additional theme as it poses a new threat to UK's biodiversity.

- **socio-economic** issues
- the role of biodiversity in ecosystem **function**
- **monitoring** and surveillance of biodiversity and evaluation of actions
- habitat and ecosystem **management**
- conservation of **genetic diversity**
- the impact of **NNS**
- **climate change** and adaptation

UK BRAG has made use of specialist sub-groups to address each of the specific research themes.

Examples of research topics:

Socio-economic issues: test the role of biodiv in sustainable development, test the cost-effectiveness of existing conservation efforts, understand the relationship between biodiv and the production of goods and services, understand people's perception of the value of biodiv...

Role of biodiv in ecosystem function: linking biodiv with ecosystem function and the provision of services, evaluating changes in ecosystem function in response to environmental change, impact of changing ecosystem function on human well being...

Monitoring: classification and mapping of habitats, survey techniques, indicators, analytical techniques, modelling, ...

Habitat and ecosystem management: ecological dynamics of sites, site-based management, landscape scale...

Genetic diversity: managing genetic diversity in situ, translocations, units to conserve...

Impacts of NNS: risk assessment, pathways & vectors, economic costs, ecological research & modelling, social perception, management, legislation...

Climate change and adaptation: assessing the effectiveness of landscape-scale initiatives, coastal zone and marine adaptation, impact on ecosystem goods and services, indicator species, review of conservation targets, phenology & population dynamics, planning of adaptation strategies...

The seven cross-cutting themes addressed by the UK BRAG can be classified in four broad headings or research priorities, i.e.

- (i) definition, distribution and status of biodiv,
- (ii) ecosystem management,
- (iii) ecosystem goods and services,
- (iv) environmental changes.

Linkage between the four broad research priorities and the cross-cutting themes:

	Definition, distrib. & status	Ecosystem management	Ecosystem goods & services	Environmental change
Socio-economics		x	x	x
Ecosyst. function	x		x	
Monitoring	x			
Ecosyst. manag.	x	x		
Genetic diversity		x		x
Non-native sp.	x	x		x
Climate change	x	x	x	x

Biodiversity knowledge programme for Ireland 2005 (IE)

1. Context

CBD, EU Directives, National Biodiversity Plan (policy driven framework)

2. Executant

Irish Platform for Biodiversity Research (NPBR)

3. Time frame

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4. General methodology

- Audit of biodiversity research and development of a database of research projects
- Gap analysis
- Working group meetings to discuss those gaps
- Preparation of a research agenda

5. Major axes

Research in support of a biodiversity policy (= needs to inform policy) (EUR 2.1M/year)

The biodiversity research agenda should commission scientific reviews in order to:

- evaluate impacts, compatibilities and conflicts between government policies and biodiversity objectives and economic practices (with a focus on the following sectors: agriculture, fisheries, tourism, urban and rural development);
- identify policy blind spots and suggest methods that might be used to resolve policy conflicts;
- identify more effective ways of integrating existing knowledge from both fundamental and applied research, thereby facilitating evidence-based policy making;
- 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);

- identify how government policies can be used as opportunities for biodiversity enhancement (e.g. habitat creation with road developments; biodiversity enhancement at local authority level).

Predicted outcomes:

- the provision and use of scientific knowledge more directly relevant to the decision-making tools of policy makers;
- Identification of priority scientific knowledge gaps;
- Improved liaison and a common understanding between policy makers and researchers

Research to improve knowledge and skills development (EUR 20.24M/year)

Need to develop a strong linkage between research effort and the practical needs of policy makers (i.e. relevant to the most pressing management and conservation issues: species and habitats most at risk, environment impact assessment of sectoral activities, etc.).

- Development of monitoring methods and baseline information (incl. taxonomy, surveys, indicators, long-term monitoring studies);
- Functions and processes (incl. ecosystem services and biodiversity patterns);
- Protection of ecological services (incl. biological resource management, impact assessments, development of conservation policies, modelling the impact of environmental changes, conservation of rare and threatened species).

Research to support economic, social and educational needs (EUR 4.44 M/year)

Appreciation of the socio-economic benefits of environmental conservation measures:

- Quantification of the economic and social benefits of biodiversity (generic and sectoral research)
- Communication and education

Recommendations and funding structures to implement the biodiversity research agenda (EUR 3.3 M/year)

- Overall management strategy (e.g. national advisory group on biodiversity research)
- Definition of a funding mechanism and institutional support
- Collation and management of research information (incl. database development)

Visions in biodiversity research 2002 (CH)

1. Context

New and integrative approach to biodiversity research. Aims to stimulate research that improves our understanding of the processes affecting biodiversity and which enables us to conserve and use it sustainably (CBD). Based on the experience of the Swiss Priority Programme Environment (SPPU), an interdisciplinary research programme which was completed in 2002.

2. Executant

Swiss biodiversity forum

3. Time frame

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4. General methodology

Current issues and gaps in biodiversity research were assessed and evaluated based on a questionnaire sent to all members of the Swiss Biodiversity Forum (23 experts). Experts were asked to rank items on a proposed list of biodiversity areas according to the need for further research (to address complex environmental problems). A workshop was organised afterwards in order to define a new integrated biodiversity science.

The questionnaire was structured as follows:

- open questions to collect information about what scientists would like to focus on in the future, major hypotheses that should be tested, how to better integrate research fields, how to transfer at best research results to practitioners, etc.
- list of items to prioritise for future research (score), structured into 4 major sections: biodiversity itself (species richness, functional diversity, trophic interactions, phylogeny, etc.), biodiversity change (main drivers: habitat alteration, climate change, IAS, GMO's, etc.), biodiversity and ecosystem functioning (primary production, nutrient cycling, ecosystem stability, etc.), biodiversity values for society (ecosystem goods and services, perception and valuation of biodiversity, etc.).

5. Major axes

Four principal focus areas (= function-based categories) identified as essential for an integrated approach to biodiversity science:

- **concept** of biodiversity (incl. quantification & valuation, transfer knowledge, etc.)
- natural [evolution & ecology] and anthropogenic **drivers** of biodiversity
- biodiversity as a driver of ecosystem **functioning** and the basis for human life
- the **assessment** of biodiversity (scoring, monitoring, systematics, databases, etc.)

PS: those four categories are more or less equivalent to those proposed a priori in the questionnaire.

National biodiversity research strategy for sustainable development (FR)

1. Context

Need of a combination of scientific and technical developments to create conditions for sustainable development over the next twenty years. The French strategy is deeply grounded in sustainable development issues (e.g. Guesnerie report '*La recherche au service du développement durable*' which refers to the Johannesburg summit). Reference also to the 2010 target.

Anonyme, 2003a, *La Recherche au service du développement durable, Rapport intermédiaire*, éditions du ministère délégué Recherches et nouvelles Technologies, 53 p.
<http://160.92.130.199/rapport/devdurable/ddinter.pdf>

2. Executant

Institut Français pour la Biodiversité (IFB)

3. Time frame

20 years (2003-2023)

4. General methodology

Strategic avenues were identified based on the priorities identified by Diversitas and EPBRS, taking into account recommendations from the Guesnerie report.

5. Major axes

- **Characterising** and evaluating biodiversity (genetics, species and ecosystems)
Outputs: red lists, ecological maps, taxonomic reference material, identification software.

- Understanding the **dynamics** of biodiversity and predicting changes
Outputs: databases, surveillance procedures, early warning systems, models
 - Evaluating the ecological, economic and social **impact of changes in biodiversity**
Outputs: best management and restoration practices to reduce impacts
 - Developing **sustainable use** and **management** of species and habitats
Outputs: best management practices, evaluation indicators
- + priority research topics:
- towards sustainable agriculture
 - biodiversity & health
 - biodiversity & management of renewable resources
 - biodiversity & global change
 - maintaining the potential for evolution
 - biodiversity & land use
 - public policies & biodiversity