Policy & Management Impacts

Why?

Biodiversity is not an issue that stands alone. It is a concept that sits within a co-evolving system of social and ecosystem interactions at a variety of scales. To address biodiversity fully, it is necessary to see the context within which it is framed. This module seeks to explore the conflicting influences on decisions that affect biodiversity, for example:

Improving engagement and governance requires:

- Changes in markets and consumer demand
- Climate change
- Normative influences within the agricultural community
- Changes in policy and agricultural funding schemes

We take an integrated approach to examine the biodiversity implications of policy and management change, using the latest computer modelling techniques to explore the issues, together with broader qualitative analyses.

Outcomes

- Understanding of the wider influences of management and policy on biodiversity change
- Evaluation of scale issues associated with biodiversity change (scales of management, scales of policy implementation, scales of impact)
- Assessment of potential biodiversity impacts of future policy changes

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"Environment – Land Use and Rural Stewardship" (Programme 3) will contribute to the evidence base for the Governments' five strategic objectives of a Healthier, Smarter, Safer & Stronger, Wealthier & Fairer, as well as, Greener, Scotland. In particular, enhanced knowledge will inform policy schemes that shape and sustain rural landscapes and communities for the benefit of all Scotland's people.

Management of Biodiversity Change requires a robust, predictive understanding of actual and potential impacts of the main drivers of change, to inform the development of management options to conserve and enhance our natural heritage.

We investigate these issues from an integrated perspective, combining ecological, biophysical and socio-economic research within 4 inter-linked modules, providing information of direct relevance to the Scottish Biodiversity Strategy.

Our wide range of knowledge transfer& exchange is detailed in the leaflet for the linked work package "Biodiversity Structure & Function".

The research theme is being tackled by teams of ecological, environmental, social & economic scientists from Macaulay Institute, Royal Botanic Garden, Edinburgh, Scottish Agricultural College & Scottish Crop Research Institute.

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PROGRAMME 3
ENVIRONMENT - LAND USE AND RURAL STEWARDSHIP

People's Values & Influences

Drivers Of Biodiversity Change

Conservation & Restoration

Policy & Management Impacts

Management of Biodiversity Change

COMMISSIONED BY The Scottish Government

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People's Values & Influences

Why?

How do people see biodiversity, biodiversity changes and biodiversity management? We seek to understand peoples' values, the wider mental constructs in which such values are embedded, and how they are translated through attitudes and behaviour into impacts on biodiversity, through:

- Exploring the mental constructs that individuals build around biodiversity-related issues and the links with other related concepts, such as 'wildness','naturalness', 'balance' and 'nativeness'
- Investigating the ideas and values that shape people's views on biodiversity management approaches, e.g., with regard to woodland restoration

We examine the ideas, values and discourses used by different groups of actors, and how they interact and conflict with each other, in order to inform biodiversity-related decision making and develop conflict management strategies.

Outcomes

- Identification of the key factors affecting the appreciation of species, habitats and diversity, and the evaluation of biodiversity management options
- Understanding how different types of information affect attitudes and attitudinal change
- Development, assessment and refinement of methods for assessing biodiversity values and changes in the ways people evaluate biodiversity

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Drivers Of Biodiversity Change

Why?

Changes in land-use, pollution and climate threaten the sustainability of key Scottish habitats & species. Protecting & managing biodiversity in a changing environment requires:

- Knowledge of past and present impacts of different drivers on a range of key habitats
- Understanding how these drivers affect ecosystem dynamics
- Prediction of potential future impacts to inform management & mitigation measures

We use experimental and modelling approaches at a range of scales, from small experimental plots to analysis of UK (& world)-wide biodiversity patterns, to provide information to underpin conservation policy responses to natural & human-induced changes in our environment.

Outcomes

- Understanding how different drivers & their interactions affect the biodiversity and functioning of Scottish woodlands, moorlands and montane habitats
- Quantification of how key Scottish habitats have responded to human impacts in the recent past, informing predictions of future change
- Understanding of the relative sensitivity of different Scottish ecosystems to predicted future environmental changes

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Conservation & Restoration

Why?

One of Scotland's foremost assets is the biodiversity of its natural and semi-natural systems. A science-based conservation and restoration strategy depends upon knowledge of:

- Species and habitat responses to management & policy-driven changes
- Impacts of habitat fragmentation on genetic, as well as species diversity and how this affects habitat/species resilience and responses to further environmental change

We aim to deliver protocols for conservation and restoration of two important and contrasting habitats: upland grasslands (widespread, high income generating potential, lower biodiversity value) and native pinewoods (flagship natural conservation resource, but highly fragmented).

Outcomes

- Predictions of how changes in conservation & agri-environment policies (particularly through influencing livestock numbers) will influence management and biodiversity goals
- Evaluation of the extent and consequences of fragmentation of pine woodlands for genetic diversity and conservation
- Protocols for genetic and ecological management of targeted upland & woodland plant species to guide biodiversity & conservation action

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