

Ecosystems and Land Use Policy Exchange Group (ELPEG) Bulletin

Issue 1, June 2016

What is the ELPEG Bulletin?

The ELPEG bulletin will provide updates for policy stakeholders on research activities being undertaken in the Scottish Government Strategic Research Programme, in particular in the areas of Biodiversity and Ecosystems, and Integrated Natural Assets. The focus will be the policy areas of:

- Scottish Biodiversity Strategy; Land Use Strategy for Scotland; Report on Proposals and Policies (Climate Change); SRDP and CAP greening; Scottish Forestry Strategy.

This edition of the Bulletin does not try to cover all of the research being undertaken in the Biodiversity and Ecosystems and the Integrated Natural Assets work packages. It focuses on the work where there will be policy-related outputs and stakeholder engagement during the period April 2016 to March 2017, and which we believe will be of direct interest to policy makers working in these areas.

A further update is planned in conjunction with the next ELPEG meeting in Autumn 2016, which provides an opportunity to take account of changes in the policy context.

Scottish Biodiversity Strategy

- The **impact of management regimes on biodiversity, ecosystem function and ecosystem service delivery** is being examined in upland ecosystems. The mediating role of plant traits is being examined in data from a long-term study of the impact of grazing management, with an analysis of data scheduled for completion in **August 2016** (Robin.Pakeman@hutton.ac.uk). Larger-scale studies in upland management systems will explore how changes in management regime alter ecosystem service supply; first findings from this work will be discussed with stakeholders (**February 2017**) and the wider stakeholder community (**March 2017**; Davy.Mccracken@sruc.ac.uk).
- The development of **Ecosystem Health Indicators** will be supported through work in the Strategic Research Programme (SRP), and collaboration between SRP researchers and key stakeholders (e.g. SNH staff). An initial step is establishing a working group to define stakeholder needs, which involves running a joint workshop on this topic by **November 2016** (Rob.Brooker@hutton.ac.uk); this will also link to work on refinement of the **Natural Capital Asset Index** (NCAI). A consultation on options for refining the index will be circulated in **September 2016**, with a final list of proposed refinements available in **March 2017** (Rob.Brooker@hutton.ac.uk).
- **System – including ecosystem – resilience** is becoming an important focus for research. To better understand the complexity of systems, research will explore concepts of resilience in relation to key environmental drivers. It will synthesise the findings of previous studies, identify the state of current knowledge, and distil elements of wider applicability of the study of resilience to a range of ecosystems in Scotland. The aim is to enable the development and targeting of management actions to enhance resilience. The work will be initiated through synthesis of current scientific understanding (**September 2016**) followed by stakeholder consultation (**December 2016**; Glenn.Iason@hutton.ac.uk).
- **Animal diseases and the spread of INNS** are a threat to Scotland's natural environments. Good scientific knowledge is essential to underpin management. Work within the SRP examines in particular the role of squirrelpox virus (SQPV) in the replacement of native red squirrels by invasive grey squirrels. Data on this topic will be provided to the Scottish Squirrel Group (**March 2017**; Colin.McInnes@more.dun.ac.uk).
- There are various **options for biodiversity and ecosystem service management in Scotland**. Depending on the stakeholder group and the aims of management these may be more or

less acceptable. Work in the research programme will explore, with stakeholders, options for biodiversity and management of ecosystem services in Scotland, focussing on how these management options are perceived by stakeholder groups. This work will involve a range of stakeholder engagement activities, including meetings with policy teams to discuss the main results from fieldwork on biodiversity management options (**January 2017**), the production of a report reviewing current literature and experiences with different biodiversity management mechanisms in Scotland (**March 2017**), and sharing initial findings and participation in development of the research using the forum of ESCom events (**March 2017**; Paula.Novo@hutton.ac.uk).

- Research will explore **the consequences of environmental and climate change for ecosystem resilience** by focussing on the possible redistribution of high impact and umbrella vertebrate species. Focal species include ticks and Capercaillie, both high profile species and central to current land and woodland management strategies. Work on Capercaillie modelling will include consultations and the gathering of expert opinion (**November 2016**; Scott.Newey@hutton.ac.uk). (See below for work on climate change and native woodlands).
- A **working tool to account for habitat/species distributions and impacts** of habitat loss and gain in the context of urban planning will be developed. This work will consider both habitats at risk from different types of development (identified at local and national levels) and where habitats might be created (e.g. green infrastructure investments such as in the Central Scotland Green Network). The biodiversity and ecosystem services associated with these habitat changes will be characterised. Models will be used to analyse the potential effects that habitat change might have depending on their spatial context, and translated into draft maps for ground-truthing with stakeholders (Alistair.Mcvittie@sruc.ac.uk, **March 2017**).

Land Use Strategy for Scotland

- A **Natural Asset Register** will be developed. This work will review and report on existing natural asset or ecosystem service registers and databases; design and construct the Natural Asset Register database and populate it with ecosystem service data sets. A draft review of existing registers will be available in **August 2016** and a consultation on the structure of the draft register will be started in **December 2016** (David.Donnelly@hutton.ac.uk).
- **Cultural Ecosystem Services indicators and mapping** will focus on existing data collation and gap analysis to guide research operationalising the Common International Classification of Ecosystem Services (CICES), including intangible aspects such as tranquillity or spirituality. A consultation with stakeholders (**July 2016**) will inform a report on an inventory of available data (**November 2016**, Inge.Aalders@hutton.ac.uk).
- Research is ongoing to improve our understanding of **ecosystem service flows and our inventory of natural assets**. This work will focus on improving the spatial resolution of ecosystem service modelling (using a range of tools and refined data sets) to answer future policy questions. A report on improvements to these models is due in **February 2017** (Alessandro.gimona@hutton.ac.uk).
- These tools will identify **current status and historic trends associated with delivery of ecosystem services** (e.g. nutrient retention, sediment retention, carbon storage, provision of arable, livestock grazing or timber, pollination and habitat networks) and results will be presented to the ELPEG or the Soils Engagement Group, if requested in **Spring 2017**. Simultaneously, we will begin a **Policy option appraisal for delivery of multiple benefits**. We will explore options for sustainable land use under multiple drivers of change, impacting multiple ecosystem services, by modelling different scenarios. Discussions with stakeholders about which policy topics and options to model will start in **July 2016**. (Alessandro.gimona@hutton.ac.uk).

- Case studies of **Natural Capital Accounting** will be developed to test the methodology in a sector/habitat in order to consider the supply and demand of ecosystem services in that sector/habitat (Alistair.McVittie@sruc.ac.uk). A shortlist of possible case studies will be consulted on in **October 2016**.
- Research **assessing economic impacts of changes in Ecosystem Services** will explore economic methods to investigate the contribution of ESS values/flows to economic growth (Dominic.Moran@sruc.ac.uk). The work will commence with a stakeholder meeting on economy-wide modelling and the integration of environmental values (**June 2016**).
- We will identify **opportunities to increase multiple benefits through policy and industry delivery mechanisms**. This work will consider how to integrate delivery mechanisms embedded in policies associated with soils, water, biodiversity, agricultural, forestry, peatland and peri-urban land use (Kerry.Waylen@hutton.ac.uk). The identification of barriers to integration derived from research in the 2011-16 SRP synthesised with insights from research in the NEA Follow On has been presented at a seminar on the LUS (**May 2016**) and initial results on how to tackle these barriers will be presented to ELPEG or the Soils Engagement Group, if requested, in **Spring 2017**.
- Research on **using social innovation to deliver multiple benefits** will develop a typology of social innovation for testing in Scotland (Maria.Nijnik@hutton.ac.uk) and initial results will be presented to ELPEG, if requested, in **Spring 2017**.
- We will be developing an **adaptive management approach to facilitate the evaluation and coordination of measures to deliver multiple benefits** (kit.macleod@hutton.ac.uk). This work will review approaches to adaptive management and select appropriate ones for use in a Scottish context; then develop an approach to help us evaluate our agricultural, woodland and catchment applications (see below). A report on the framework (**October 2016**) will be discussed at a workshop (**November 2016**).

Report on Proposals and Policies (Climate Change)

- Research **assessing multiple land use options** will build or refine tools to consider the climatic resilience of ecosystem services (including carbon storage) associated with woodlands and peatlands through to 2050. The initial focus will be on the integration of an existing multi-criteria tool developed for the Aberdeenshire Regional Land Use Pilot with the WISE tool developed through CXC peatlands. A stakeholder meeting to discuss the options for the tool development will be held in **September 2016** (Alessandro.Gimona@hutton.ac.uk).

SRDP and CAP greening

- Work to assess **new management options for agri-environment schemes** will bring together existing evidence, and information gathered from engagement with stakeholders, to propose new management measures for inclusion in agri-environment schemes in Scotland. It will link to work being undertaken on perceptions of and attitudes towards management options. A stakeholder consultation on novel measures will be undertaken, with stakeholders identifying those novel measures to be tested in the field (March 2017), and an associated policy brief will be written (March 2017; Robin.Pakeman@hutton.ac.uk).
- An associated activity is the development of methods for **targeting SRDP payments for biodiversity**. This work will assess and collate the relevant species/habitat data (September 2016) and consult on how to refine SRDP targeting and how species respond to targeting (March 2017; Robin.Pakeman@hutton.ac.uk).
- Research is planned to **assess the potential for Environmental Focus Areas (EFAs), Agri-Environmental Climate Schemes (AECS) and the Environmental Cooperation Action Fund (ECAAF) to deliver multiple benefits at a landscape scale**. This work will include case study catchments based around i) the arable Balruddery Centre for Sustainable Cropping and ii)

the three MRP grassland research farms (Glensaugh, Hartwood and Kirkton/ Auchentyre) to demonstrate the effectiveness of EFAs and AECS management options in delivering multiple benefits across their catchments (Justin.Irvine@hutton.ac.uk). A report from stakeholder engagement, including the co-constructed research agenda will be available in **December 2016**, with annual demonstration days planned each Spring (**March 2017**).

- Research will also consider how to **integrate SRDP interventions with Natural Flood Management (NFM) and General Binding Rules (GBR) for the delivery of multiple benefits**. This work will collaborate with ongoing initiatives in the Tweed and use an adaptive management approach to evaluate the effectiveness of SRDP measures to deliver multiple policy goals whilst maintaining viable land based businesses (Kit.Macleod@hutton.ac.uk). A report from stakeholder engagement, including the co-constructed research agenda will be available in **December 2016**. We will contribute to a technical report on applying adaptive management for integrated catchment management due in **March 2017** (led by Waters Work Package).
- Research on **improving the environmental performance of beef supply chains** will classify Scottish beef production systems and design a conceptual model for quantitative modelling of how changes to the supply chain will deliver multiple benefits (Klaus.Glenk@sruc.ac.uk). A conceptual framework for analysis of trade-offs will be available by **March 2017**.

Scottish Forestry Strategy

- Woodland systems will be the focus of work considering how management interventions, and their effect on the relationship between people and the environment, can alter the **supply of ecosystem services**. Using case studies of woodland management in the Cairngorms National Park (potentially as part of the Capercaillie conservation programme), and the Central Scotland Green Network, initial activities include developing a conceptual framework - through engagement with stakeholders - for assessing the production of woodland ecosystem services, and developing scenarios for the outcome of management interventions (e.g. ecosystem restoration) for discussion with stakeholders. A stakeholder engagement weekend at selected study sites will take place by **October 2016** (David.Miller@hutton.ac.uk) This framework will be discussed with the wider stakeholder groups (including ECom) by **February 2017** (Anke.Fischer@hutton.ac.uk) and will be followed by the development of a draft specification of scenarios for discussion with local stakeholders (**March 2017**).
- Related work to develop **approaches that reconcile woodland expansion with other land use priorities** will in part use the same study sites. This work will address benefits and trade-offs from woodland expansion, incentivised by the Woodland Grants Scheme, using paired case studies: i) in the peri-urban sites in the Central Scotland Green Network and ii) in accessible rural woodland around settlements in the Cairngorms National Park (CNP). Initiation meetings will be held with stakeholders in each case study areas, to discuss an Adaptive Management approach (**June 2016**). This will be followed by a report on the benefits derived by communities from the case study areas, identifying the main trade-offs (**December 2016**), and the development of maps of woodland expansion options and consequences for ecosystem services and biodiversity (**March 2017**; katrina.brown@hutton.ac.uk).