

# How to link ecosystem services knowledge, tools and practice?



## Summary

### **Ecosystems provide humankind with a wide range of benefits.**

Yet the rate at which we consume and exploit these benefits is increasing so rapidly that many of the major ecosystems are at risk of being unable to support our existence. In response, high-level policy frameworks have begun to adopt the concepts of ecosystem services and natural capital to better manage and preserve our ecosystems. However, there is some disparity between the wealth of ecosystem science and the practical application of this knowledge in policy and decision-making. The aim of the OPERAs project was to explore whether, how and under what conditions these concepts can move beyond the academic domain towards practical implementation in support of sustainable ecosystem management.

## Key messages

- ▶ A meta-analysis of research into ecosystem services was carried out to identify gaps, needs and obstacles.
- ▶ Twelve 'exemplar' case studies were developed based on this meta-analysis. These exemplars were designed to fill gaps in knowledge and encourage collaboration between different stakeholder groups.
- ▶ The knowledge and practical experience gained from the exemplars was used to develop tools, instruments and guidance to help overcome obstacles to policy and decision-making.
- ▶ The resulting tools, instruments and guidance were also tested in the exemplar areas, before being shared with the wider community.
- ▶ The OPERAs Blueprint protocol provides a consistent structure for projects to report and share lessons learned.

## Knowledge

**Despite there being a wealth of research on the subject of ecosystem services, the principles of the concept don't always make it into practice.**

There are a number of reasons for this. Gaps in knowledge as well as practical obstacles can create bottlenecks that slow down progress. A lack of standardisation in the methods used for research, or the reporting of findings, can make it difficult to compare projects, identify trends and make recommendations for improvement. These issues in turn can make it difficult for policy-makers to know where to focus funding, which behaviours to encourage and how to give guidance on best practice.

The OPERAs project aimed to address these issues through an iterative process combining knowledge, instruments and practice. Practical and theoretical knowledge from reviews and case studies was used to develop tools and instruments, which were tested in the field. Information from field-testing was then fed back into tool development. A protocol was also developed to enable standardised project reporting. This has encouraged collaboration and allowed some interesting conclusions to be drawn from the research.

## Practice

**OPERAs research was put into practice through twelve 'exemplar' case studies, where the operational use of ecosystem services was investigated across a variety of settings.**

OPERAs exemplars were selected to represent a range of socio-ecological systems at different scales. These were the testing grounds where project partners collaborated closely with stakeholders, where instruments were developed and applied, and where empirical research was carried out leading to both methodological and theoretical developments.

The exemplars were designed to generate knowledge, instruments and guidance to help answer questions about:

- The interaction between policy and ecosystem services provision
- The demand for ecosystem services using different valuation techniques
- Ideal governance structures for sustainable ecosystem services
- How best to engage stakeholders in developing effective solutions to natural resource management problems

## Instruments

**The need for new instruments to support the operational use of ecosystem services was identified through meta-analysis and consultation with stakeholders.**

In response to this need, a number of new instruments were developed and tested in the field, including both information support tools and decision support tools.

Although many tools and guidance documents already exist, they are often dispersed across different sources and can be difficult to access when needed. To help address this problem the OPERAs project developed **Oppla**: an online platform for collating the latest research, tools and expertise in one place – a “one stop shop” for knowledge about natural capital, ecosystem services and nature-based solutions.

# The Pentlands exemplar: linking knowledge, tools and practice

## OPERAs worked with nine Scottish organisations to establish Ecosystem Services Community Scotland (ESCom) for individuals with an interest in ecosystem services.

With over 500 members and regular events bringing together researchers, decision-makers and practitioners, ESCom illustrates how an ecosystem services community of practice can create space, align motivations and build trust. ESCom stakeholders helped to identify the knowledge needs of the Pentland Hills Regional Park and provided a platform for sharing results and lessons learned in this project with other interested practitioners.

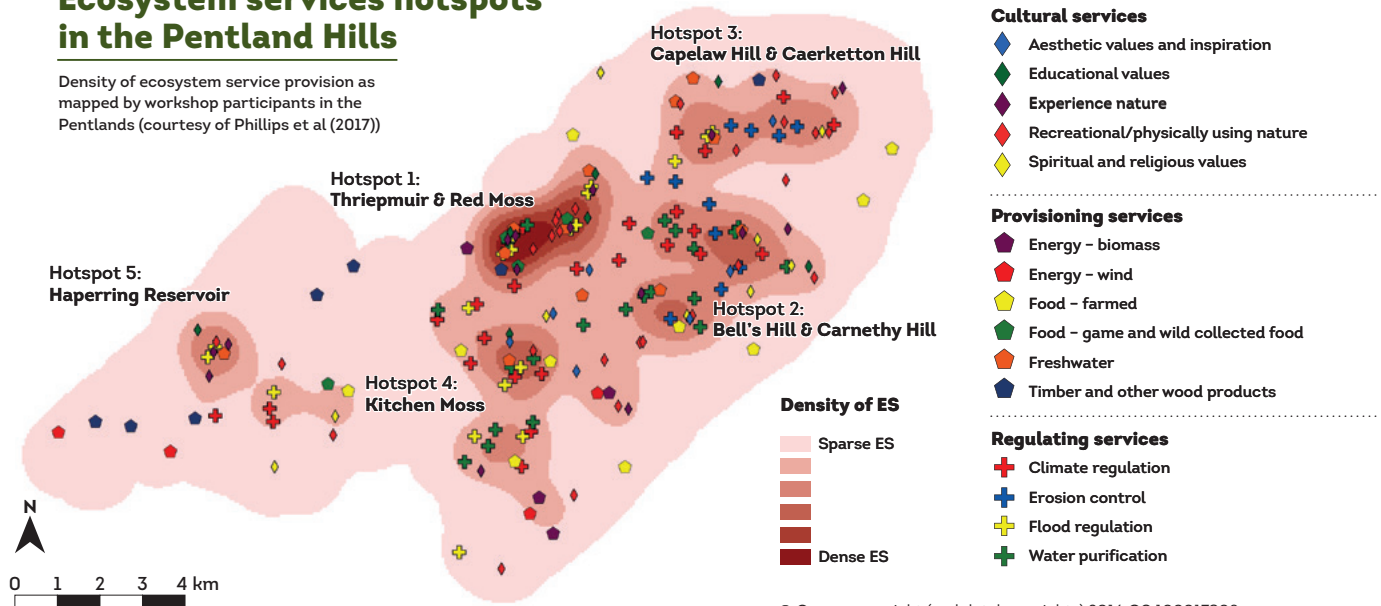
OPERAs identified nine main ecosystem services and employed a range of social-cultural valuation methods to understand how visitors and managers value the park. Services such as the physical and experiential use of nature, as well as habitat and biodiversity, were found to be particularly important. The outcomes of the study have informed development of the Pentlands management plan, including a series of workshops supporting the regional park managers in identifying future land use and management opportunities.



An interactive tool to assess land use preferences of visitors to the park (LANDPREF) was developed for the Pentland Hills, which enables participants to create their own desired landscape on a tablet computer. It enforces trade-offs between competing land uses and provides instant visual feedback of the implications on the landscape. The tool was initially developed for the Pentland Hills Regional Park and has since been adapted and tested further in the Scottish Highlands and in Brandenburg, Germany.

## Ecosystem services hotspots in the Pentland Hills

Density of ecosystem service provision as mapped by workshop participants in the Pentlands (courtesy of Phillips et al (2017))





## The Future

**OPERAs advocates an iterative process of: 1) learning through engaging with stakeholders; 2) combining this with research to create plans and solutions; 3) sharing the outcomes, expertise and tools with the wider community.**

These principles of co-creation and co-design have been applied in many different contexts across the twelve OPERAs exemplars. Demonstrating the success of this approach, and producing guidance and tools to help others replicate it, has given decision-makers greater confidence in using the ecosystem services framework to solve natural resource management problems.



Interviews with Pentland park visitors

This study shone a spotlight on the Pentland Hills Regional Park and revealed an opportunity to utilise and build on this research to help inform a refresh of the Park's Management Plan. In collaboration with OPERAs, we co-designed an innovative participatory land use planning project, applying the principles of the ecosystem approach, mapping ecosystem services and eliciting socio-cultural values. All of this work is successfully being used to inform the next iteration of the Park Plan and to support external funding bids to deliver positive land use management on the ground."

Neville Makan, Scottish Natural Heritage

Really good questionnaire, particularly the image of the 'ideal' landscape. Thought provoking stuff."

Pentlands visitor

Great promotion of practical delivery for ecosystem services through the seminars and conferences. Collaboration on developing the agenda for liaison between research community and others/end-users is very positive."

Policy officer,  
Scottish Environment Protection Agency



Find further details about this theme on Oppla:  
[oppla.eu/operas/linking](https://oppla.eu/operas/linking)

[www.operas-project.eu](http://www.operas-project.eu)  
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