OpenNESS

Operationalisation of Natural Capital and Ecosystem Services

Case 09: Cairngorms National Park Management

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OpenNESS has received funding from the European Union's Seventh Programme for research, technological development and demonstration under grant agreement n° 308428.

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AIM

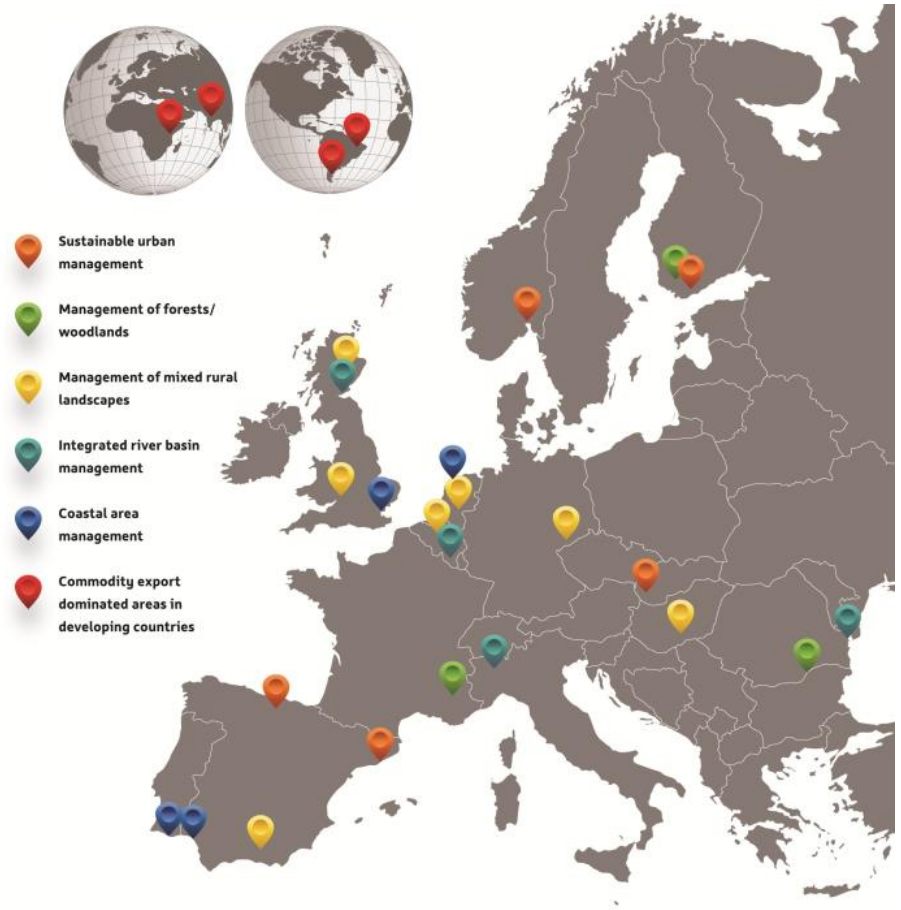
To work **collaboratively with stakeholders** in each case study to **identify the problems** they face in **operationalising the Natural Capital (NC) and Ecosystem Services (ES) concepts** in their specific policy and decision-making context;

Method

To **apply and refine the methods** and models developed in the project to the case studies to **test their relevance and usefulness** in an iterative manner

Output

Characterise any common lessons that can be learnt on the operational potential of the ES and NC concepts **across the multi-scale case studies.**



27 Global Case study sites

Funded by the European Union within the 7th Framework Programme,
Duration: December 1st, 2012 – Novemeber31th, 2017

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Aims and objectives of the case study

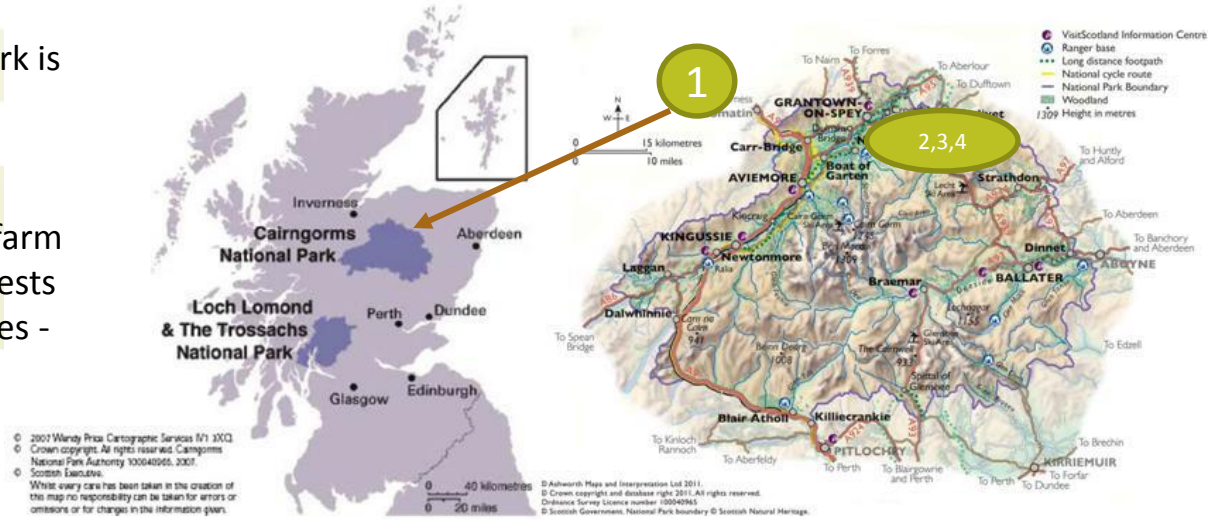
Four subprojects are ongoing which consider different actors and geographical scales within the park and are all link to the objectives of the Cairngorms Nature Strategy Group which are also the OpenNESS 'Case study Advisory Board'.

1. Recreation opportunity mapping – whole park – Sustainable Management planning ✓
2. Management of Glenlivet Estate – one 'owner' – Competitiveness planning ✓
3. Mitigation of *Cryptosporidium* in Tomnavoulin – catchment – Human Well-being
4. Tomintoul and Glenlivet Regeneration Strategy and Master Plan – postcode delimitated scale - multi-actor planning - Sustainable Management ✓

All four sub-projects are related to governance

Cairngorm Nation Park is Britain's largest (4,528 km²)

Glenlivet Estate has farm land, commercial forests and sporting tenancies - shooting & fishing (230 km2)



✓ ESTIMAP model potentially relevant

European Commission

ESTIMAP
The Ecosystem Service Mapping Tool

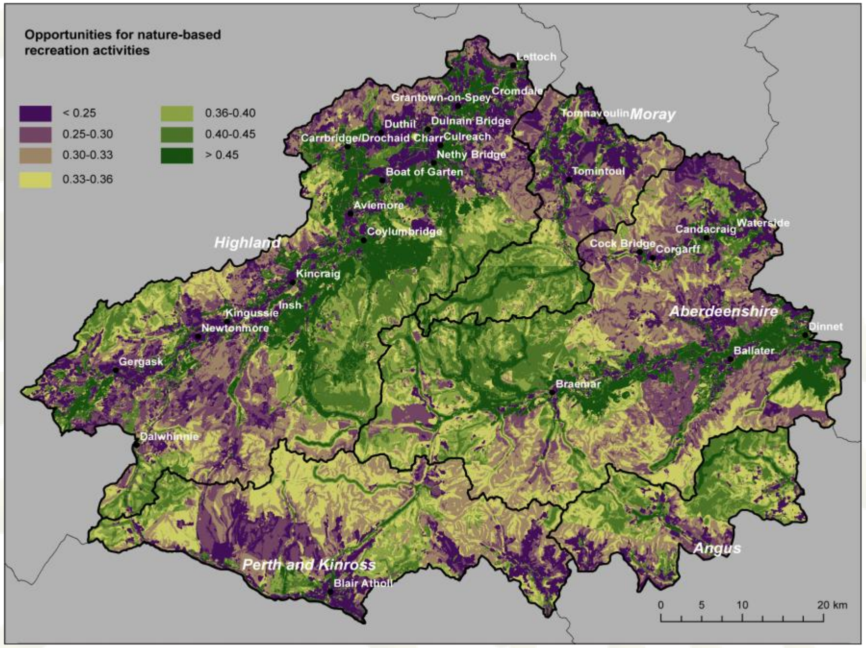
www.jrc.ec.europa.eu

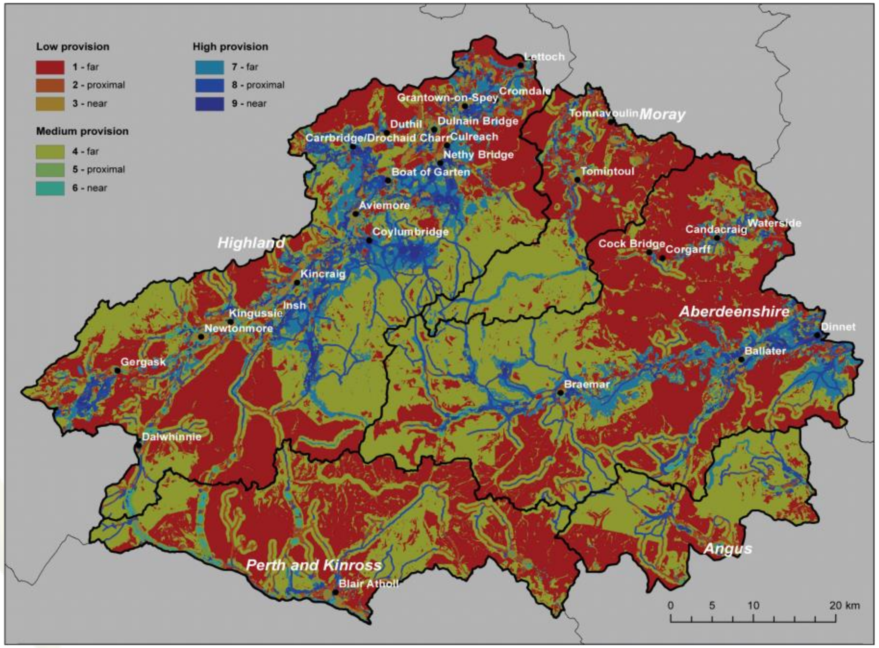
Serving society
Stimulating innovation
Supporting legislation

Recreation opportunity mapping - ESTIMAP

Recreation is evaluated using a composite model framed in two parts.

- The first part estimates the capacity of land and ecosystems to support recreational activities and outputs a *Recreation Potential* (RP) raster map (dimensionless).
- The second regards the proximity of RP to potential users, and creates a *Recreation Opportunity Spectrum* (ROS), *a raster map* which matches 3 level of provision (low, medium and high) and 3 degree of proximity (from proximal to remote).

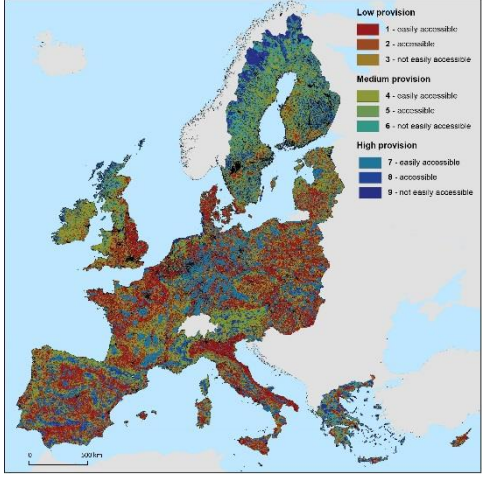




Out-door recreation service

ESTIMAP: Assesses the capacity of ecosystems to provide out-door recreational opportunities

Indicators:



Recreation potential [RP]

- ✓ Recreational opportunities provided by nature (dimensionless)
- ✓ Method: composite mapping
- ✓ Inputs: land cover data, natural protected areas, bathing water quality data, scoring system

Recreation Opportunity Spectrum [ROS]

- ✓ Degree of service available according to the proximity to population
- ✓ Method: cross tabulation mapping
- ✓ Inputs: road network, scoring system, Recreational Potential

Estimate of potential trips at local level

- ✓ Inputs: accessibiliy or population density, ROS

SEVENTH FRAMEWORK PROGRAMME

Data sources: Recreational Potential

The setting of the Recreational Potential (RP) depends on four components: (a) Suitability of land to support recreational activities; (b) Features influencing the potential provision e.g. infrastructures; (c) Natural features; and (d) Presence of water.

Recreation potential input (RP)		
(a) Suitability of land to support recreational activities	Land use	Morton, R.D., Rowland, C.S., Wood, C.M., Meek, L., Marston, C.G., Smith 2014
	Historic Land use Assessment	http://www.historic-scotland.gov.uk/index/heritage/valuingourheritage/historiclandscapes.htm
	HNV farmland	Paracchini & Capitani 2011
(b) Features influencing the potential provision	National Forest Estate Scotland Recreation Points –Routes and Areas	http://www.forestry.gov.uk/datadownload
	Nature paths (walk highlands)	http://www.walkhighlands.co.uk/
(c) Features influencing the potential provision	Geological formations	https://gateway.snh.gov.uk/natural-spaces/index.jsp
	Slope (DEM)**	Morris & Flavin 1990
	Native Woodland Survey of Scotland	http://scotland.forestry.gov.uk/supporting/strategy-policy-guidance/native-woodland-survey-of-scotland-nwss
	National Forest Inventory	http://www.forestry.gov.uk/datadownload
	National Vegetation Classification	http://jncc.defra.gov.uk/page-4259
(d) Water	Streams	Morris & Flavin 1994
	Lakes	http://www.geofabrik.de/data/download.html

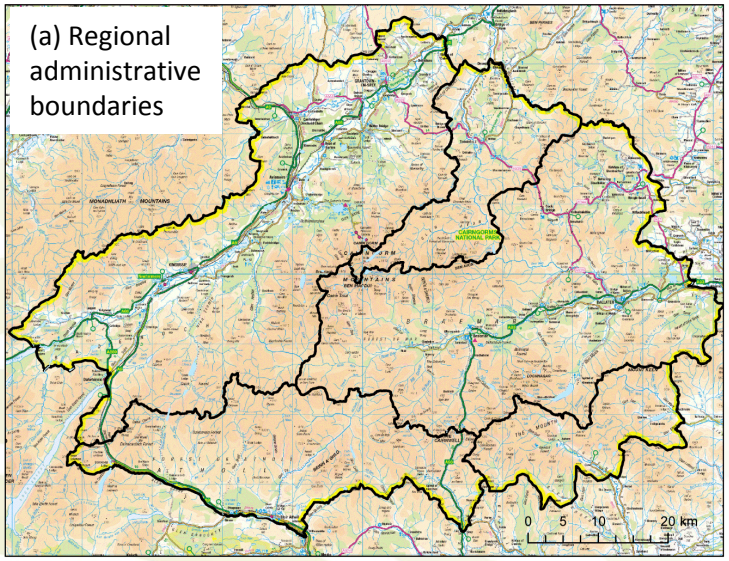
Data sources: Recreational Opportunity Spectrum

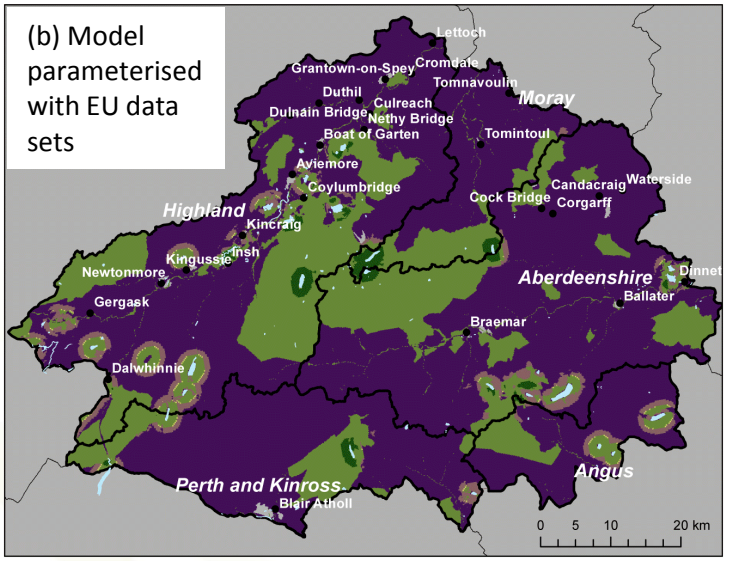
The Recreation Opportunity Spectrum (ROS) represents the degree of service available according to proximity to roads and residential areas. It combines the potential opportunities offered by nature (RP map) and a proximity map to derive 9 categories of service (3 levels of provision (low, medium and high provision) and 3 degrees of proximity (from proximal to remote).

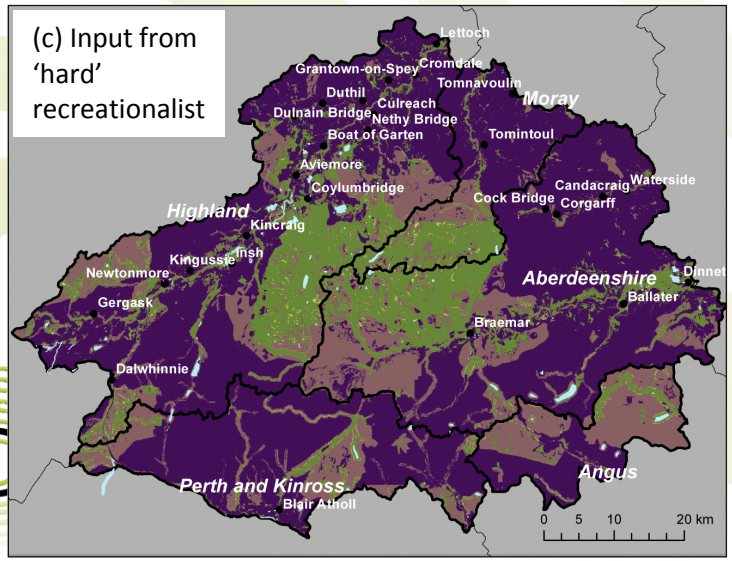
Proximity input		
Proximity	Residential Buildings and settlements	Morton, R.D., Rowland, C.S., Wood, C.M., Meek, L., Marston, C.G., Smith 2014
	Local roads and bike paths	http://www.geofabrik.de/data/download.html
Wildlife input		
Wildlife data	Site of Special Scientific Interest (*SSSI*)	http://www.snh.gov.uk/protecting-scotlands-nature/protected-areas/national-designations/sssis/
	RSPB reserves	http://www.rspb.org.uk/forprofessionals/gis/

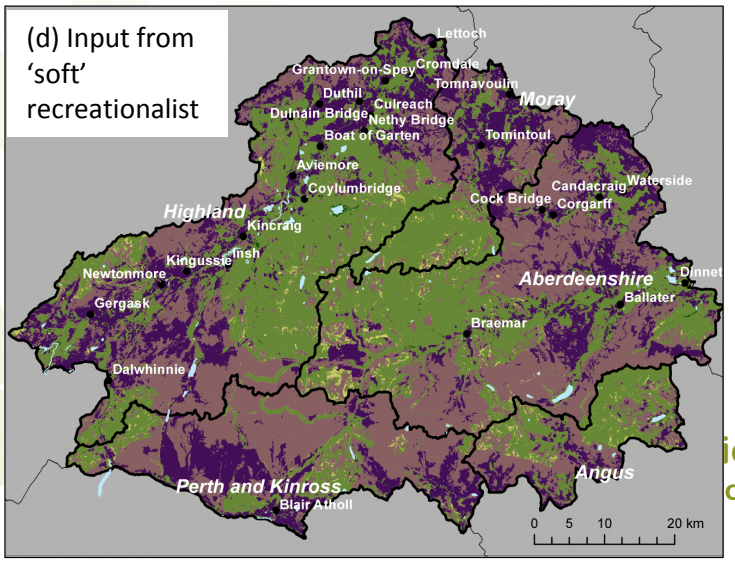
Who decides the scoring of recreational potential?

Variation in the scores used in the model influences the resultant maps

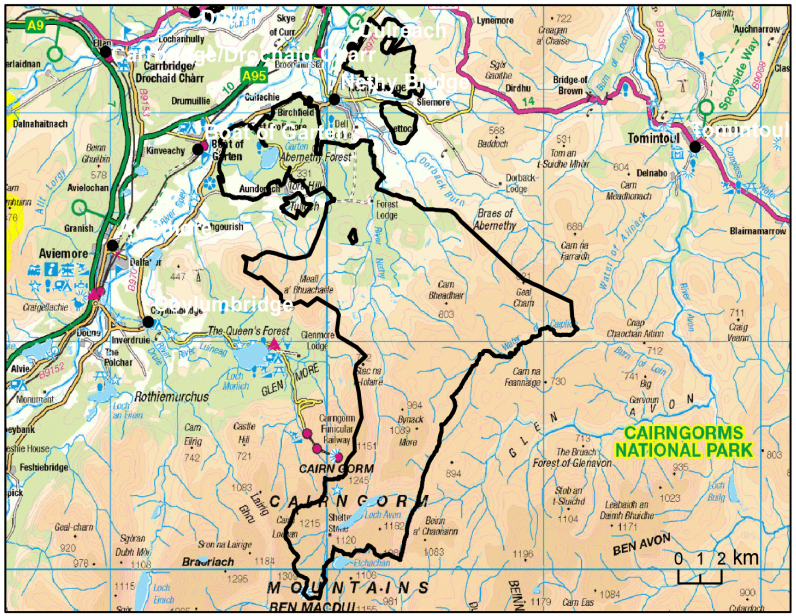


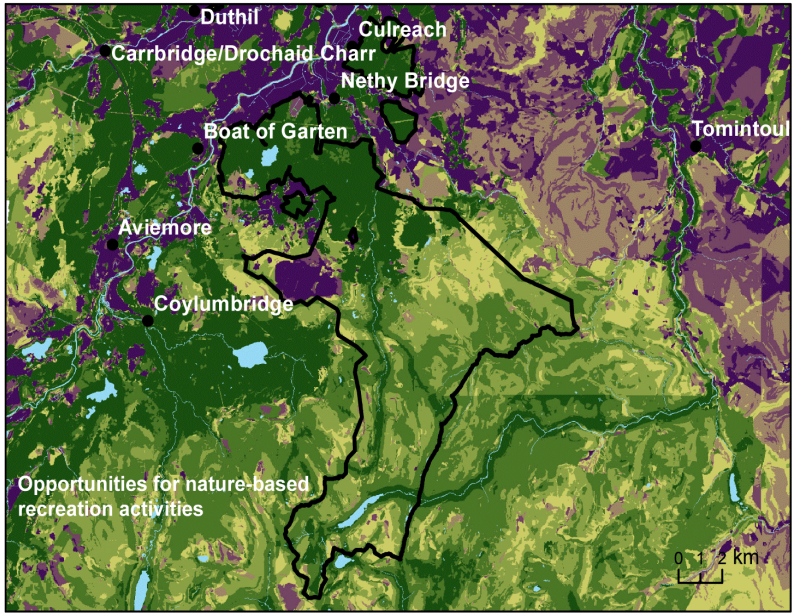






Is the approach useful at a local scale?





Opportunities for nature-based recreation activities

< 0.25	0.36-0.40
0.25-0.30	0.40-0.45
0.30-0.33	> 0.45
0.33-0.36	RSPB reserve

Recreation Opportunity Spectrum(ROS)

Low provision

- **1** - far
- **2** - proximal
- **3** - near

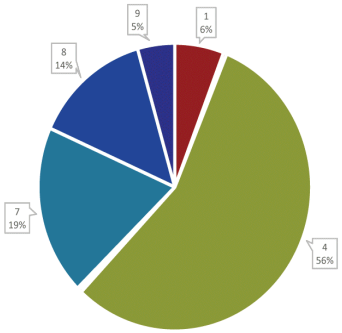
Medium provision

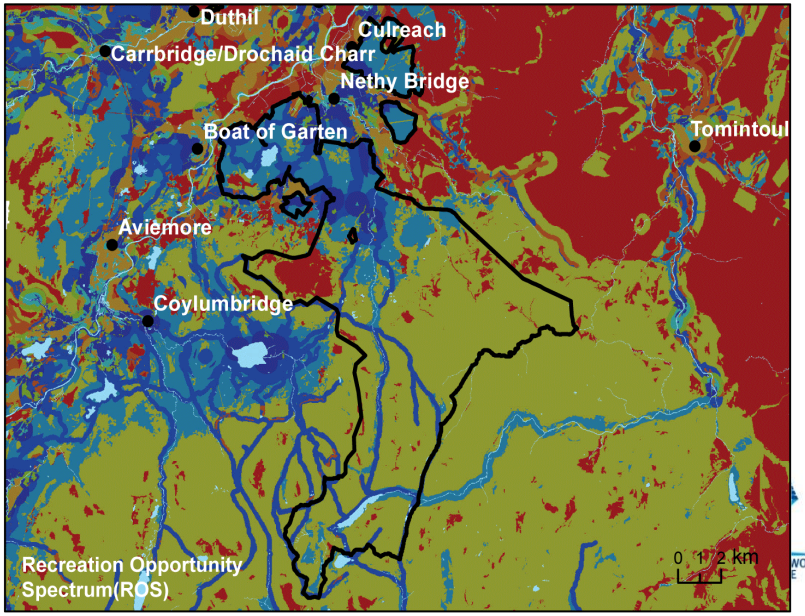
- **4** - far
- **5** - proximal
- **6** - near

High provision

- **7** - far
- **8** - proximal
- **9** - near

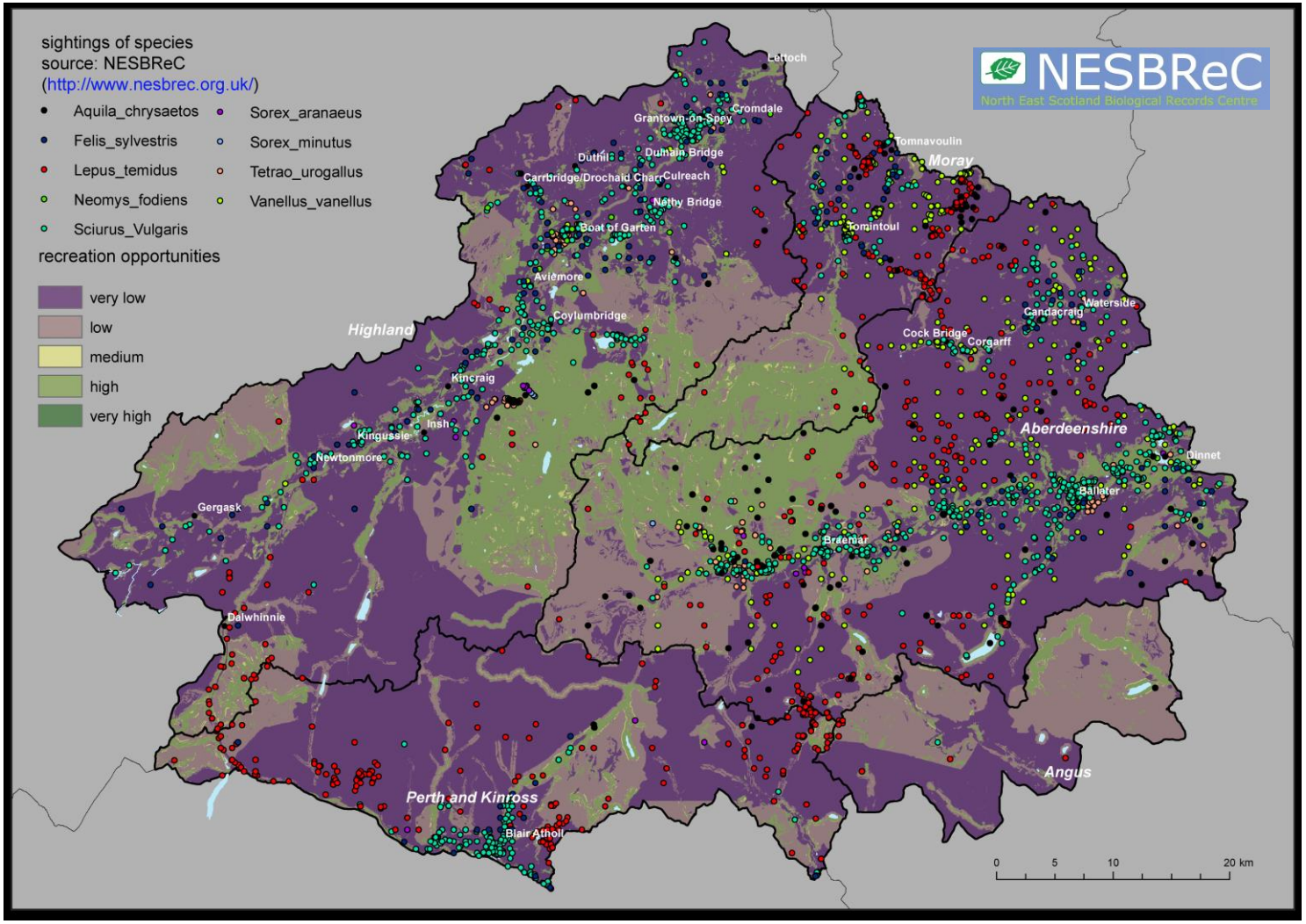
% surface per ROS categories





Is the approach useful when combining with other spatial data?

Combining citizen science biodiversity data on rare species with recreational potential



Thoughts and comments