



The importance of habitat connectivity – examples of our research

**Alison Hester, Alessandro Gimona,
Marie Castellazzi, Andrea Baggio**

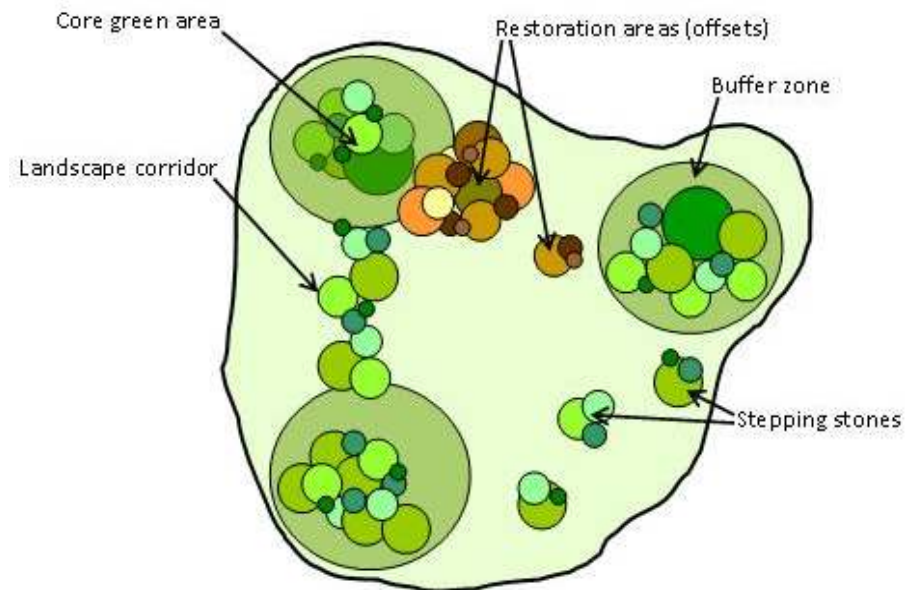


The James
Hutton
Institute

Connectivity and ecological networks

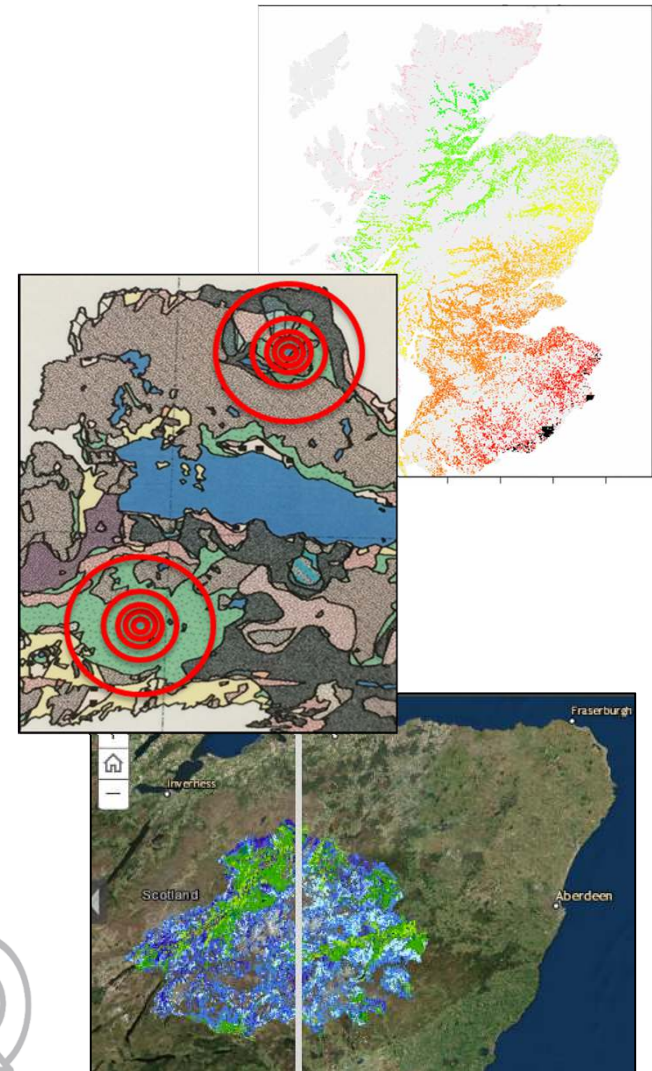
- Many of Scotland's habitats are fragmented – disconnected patches, sometimes with large distances between them
- This disrupts natural dispersal and makes local extinctions more probable. Biodiversity and ecosystem services are often much-affected
- Increased connectivity can enhance resilience to multiple pressures, including climate change.

**Components of an ecological network
(redrawn from Lawton 2010)**



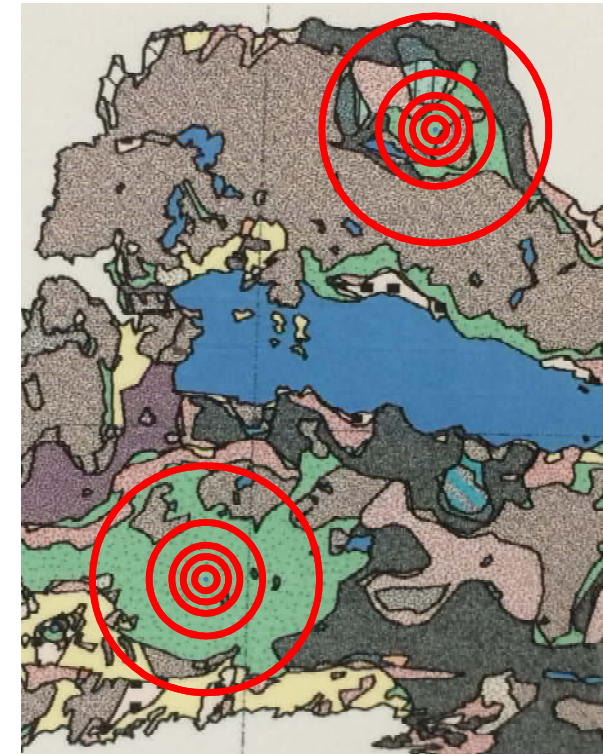
Two examples of our research on connectivity and ecological networks

1. Testing the importance of connectivity for different habitats using long-term data on biodiversity change
2. Maximising multiple benefits through location and configuration of habitat networks – example: woodland expansion planning.



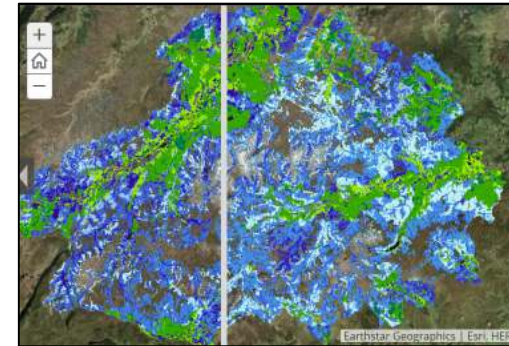
1. Importance of connectivity for different habitats - long-term biodiversity change data

- Biodiversity change in Scotland's habitats over c 40 years shows significant associations with climate and other drivers
- We are testing whether the connectivity and extent of habitat patches has affected these long-term biodiversity changes
- Example: native pine forest. More fragmented, smaller pine forest areas had:
 - greater 'invasion' of other tree species
 - More biodiversity changes.



2. Maximising multiple benefits – example: woodland expansion

- = Multiple map-layering of preferences and constraints...



Preferential locating of new woodlands for:

- Improved connectivity
- Natural flood management
- Reduced erosion
- Riparian areas (shade)
- Etc...



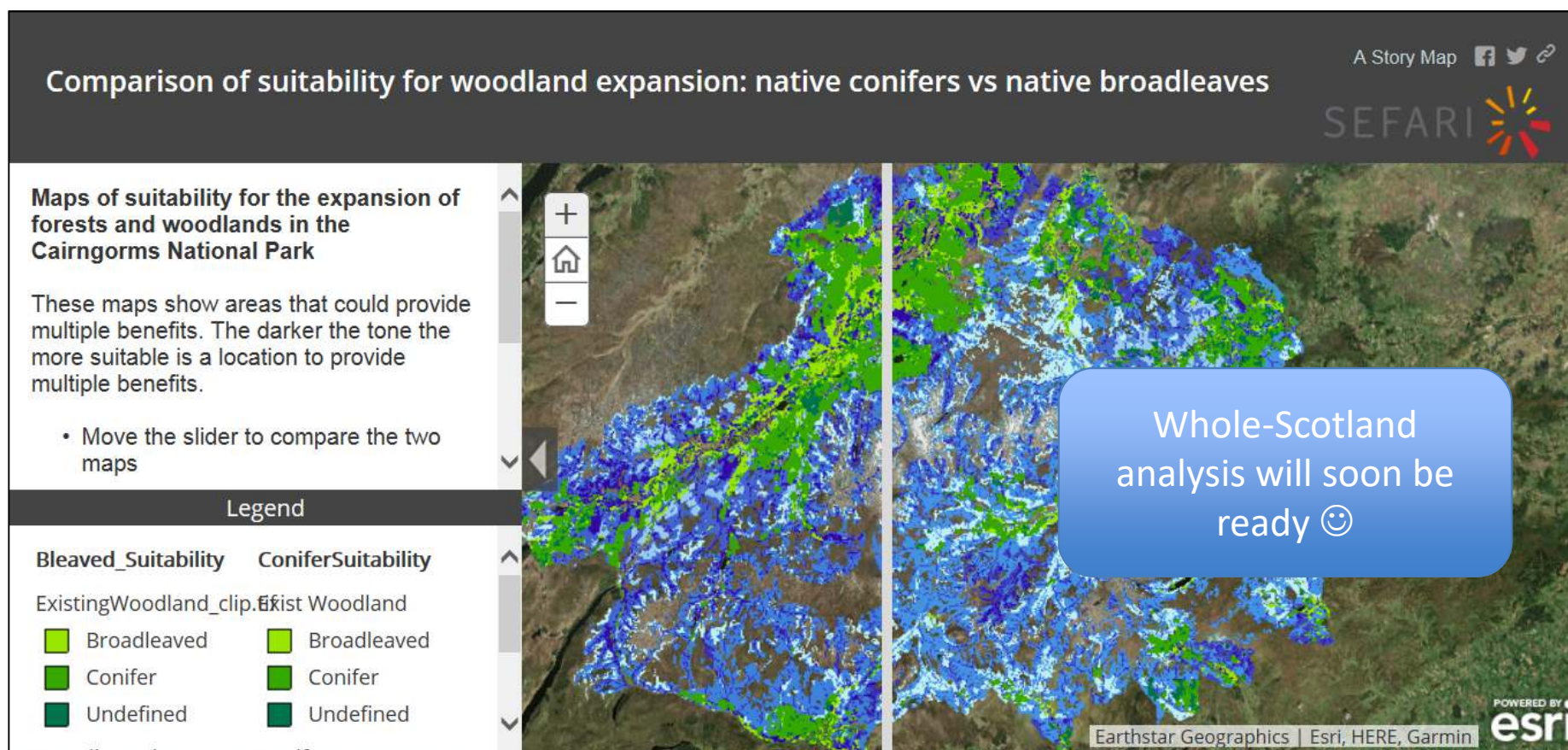
Constraints (areas to avoid):

- Prime agricultural land
- Wader habitat
- Other protected habitats
- Peatlands
- Etc...



2. Maximising multiple benefits – example: woodland expansion

- Multiple layering of preferences and constraints produces ‘opportunity map’ like this...



Thank you

And particular thanks to the Scottish Government – the primary funder of the work shown to you today (RESAS Strategic Research Programme)



Scottish Government
Riaghaltas na h-Alba
gov.scot