

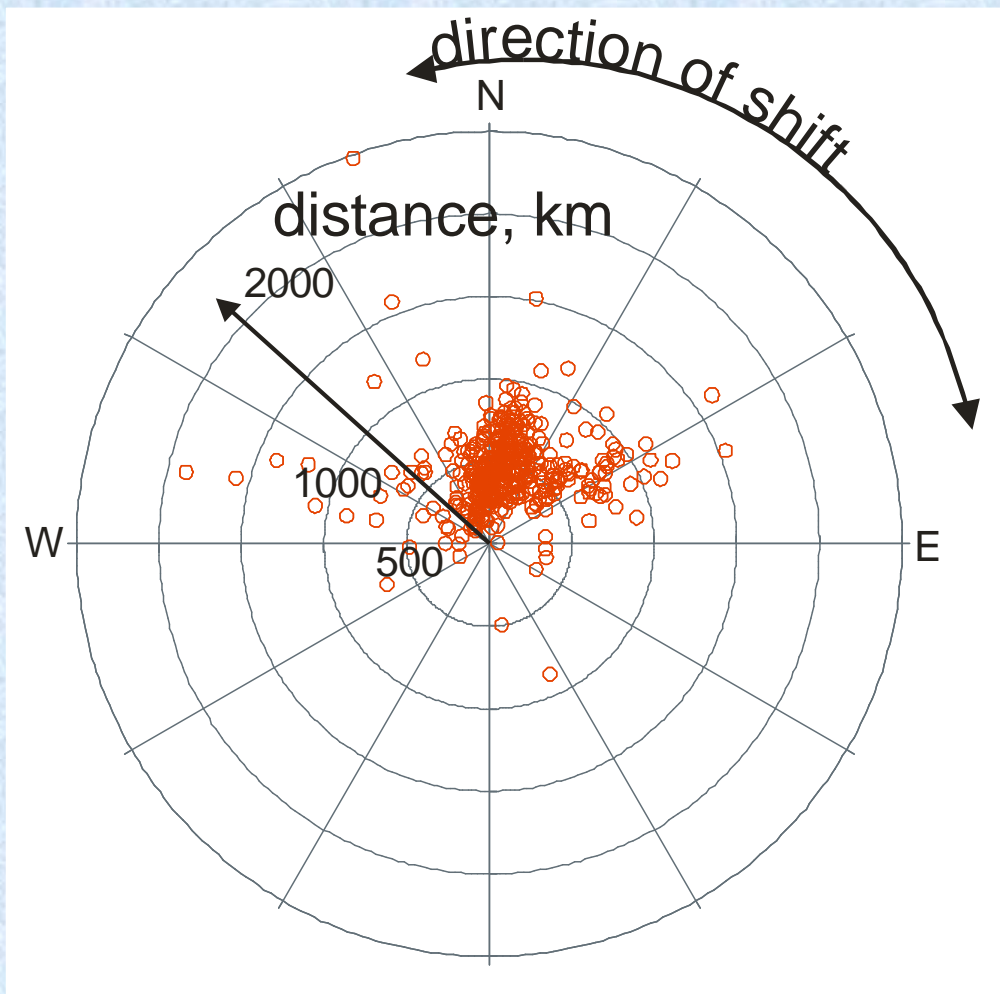


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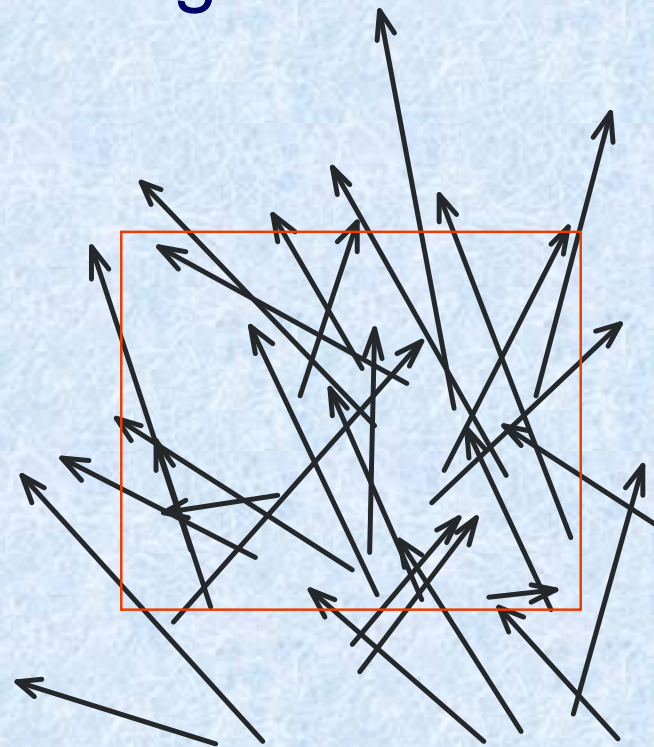
Introduction to the Condatis software

Jenny Hodgson
February 2015

Species need to move because of climate change

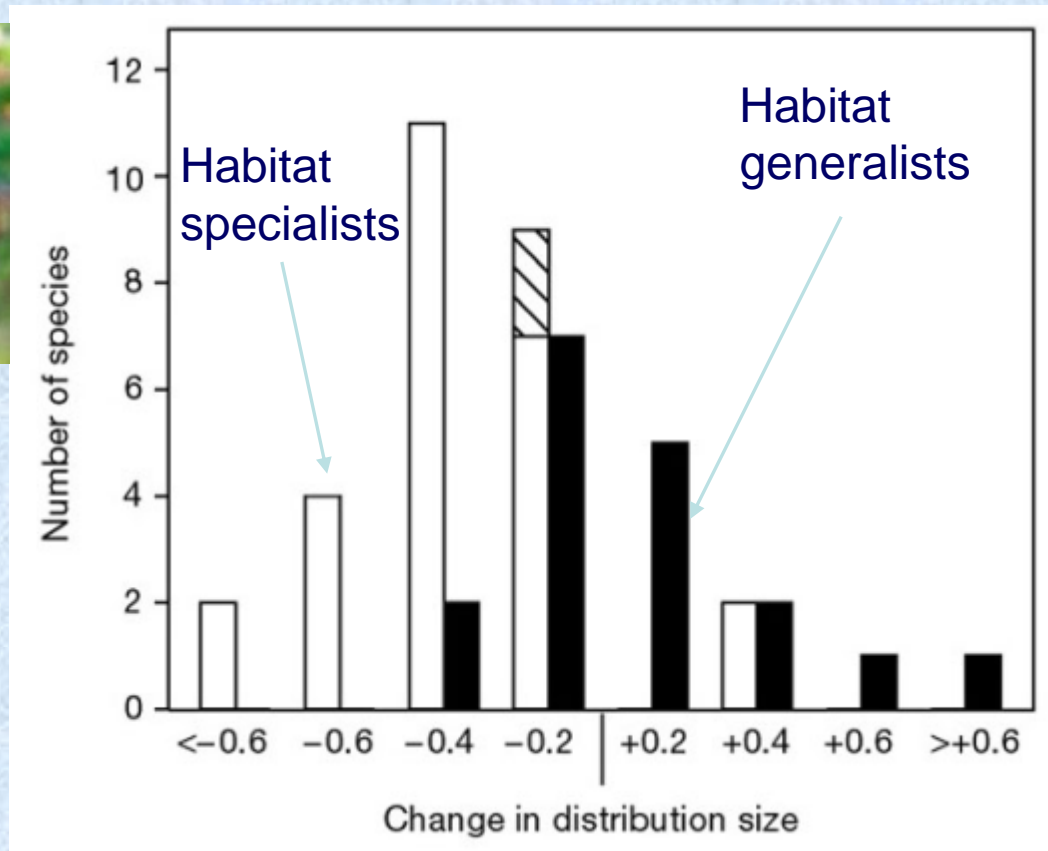


Each individual landscape will have species moving in and out



Huntley et al. (2007) *A climatic atlas of European breeding birds*

Lack of habitat is prime culprit in species failure to shift



Warren, M.S....& Thomas, C.D. (2001) Rapid responses of British butterflies to opposing forces of climate and habitat change. *Nature*, **414**, 65-69.

There are increasingly plans for habitat restoration



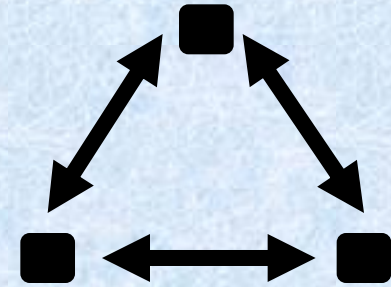
Question is where best to restore?



Nature Improvement Areas

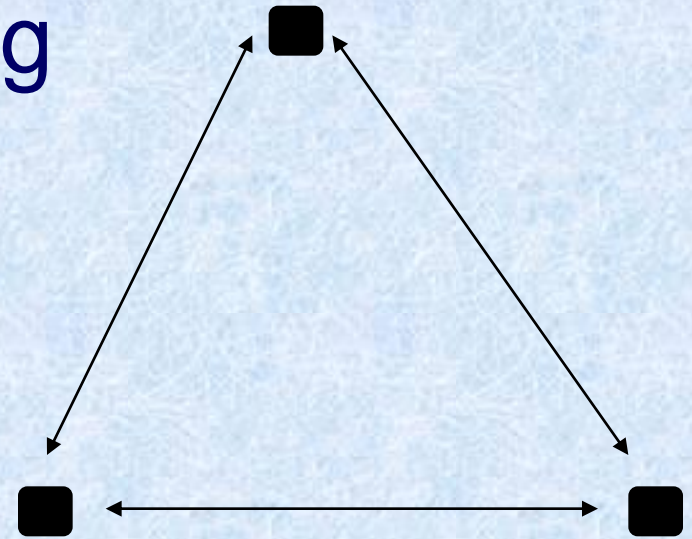
“Classical” principles of reserve arrangement

- Aim to prevent population decline and extinction
- Theory recommends clustered/aggregated configurations

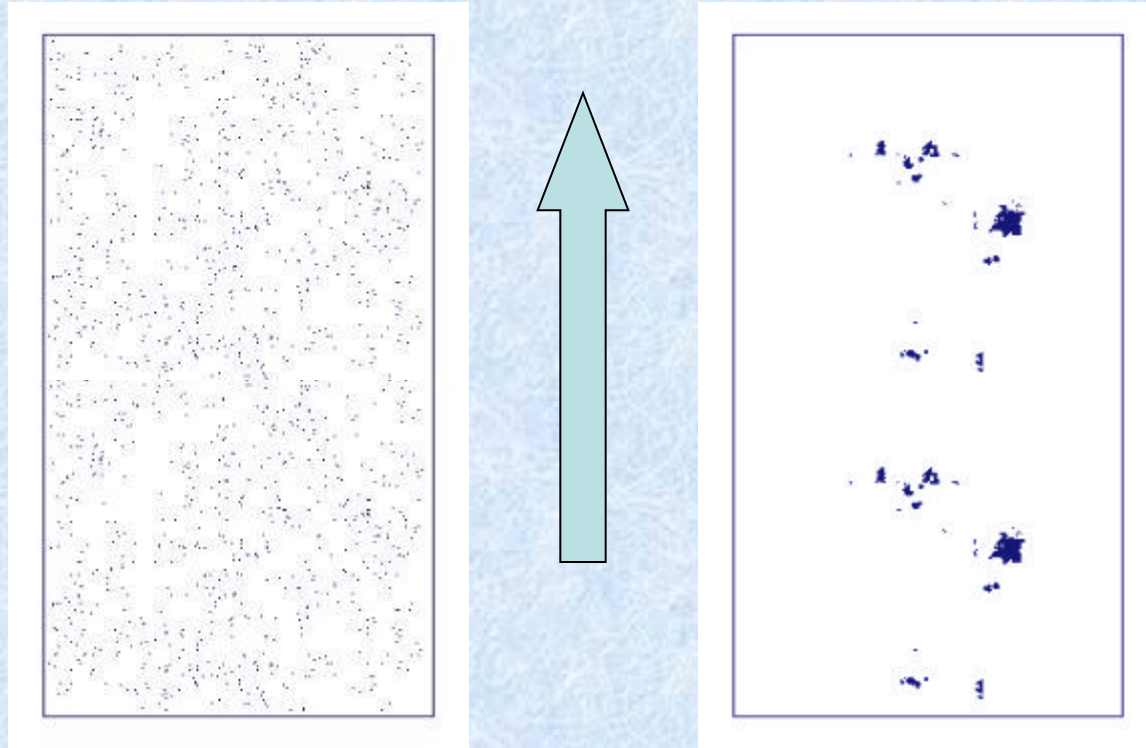


Benefits of clustering

- Rescue after chance extinctions
- Less dispersal mortality

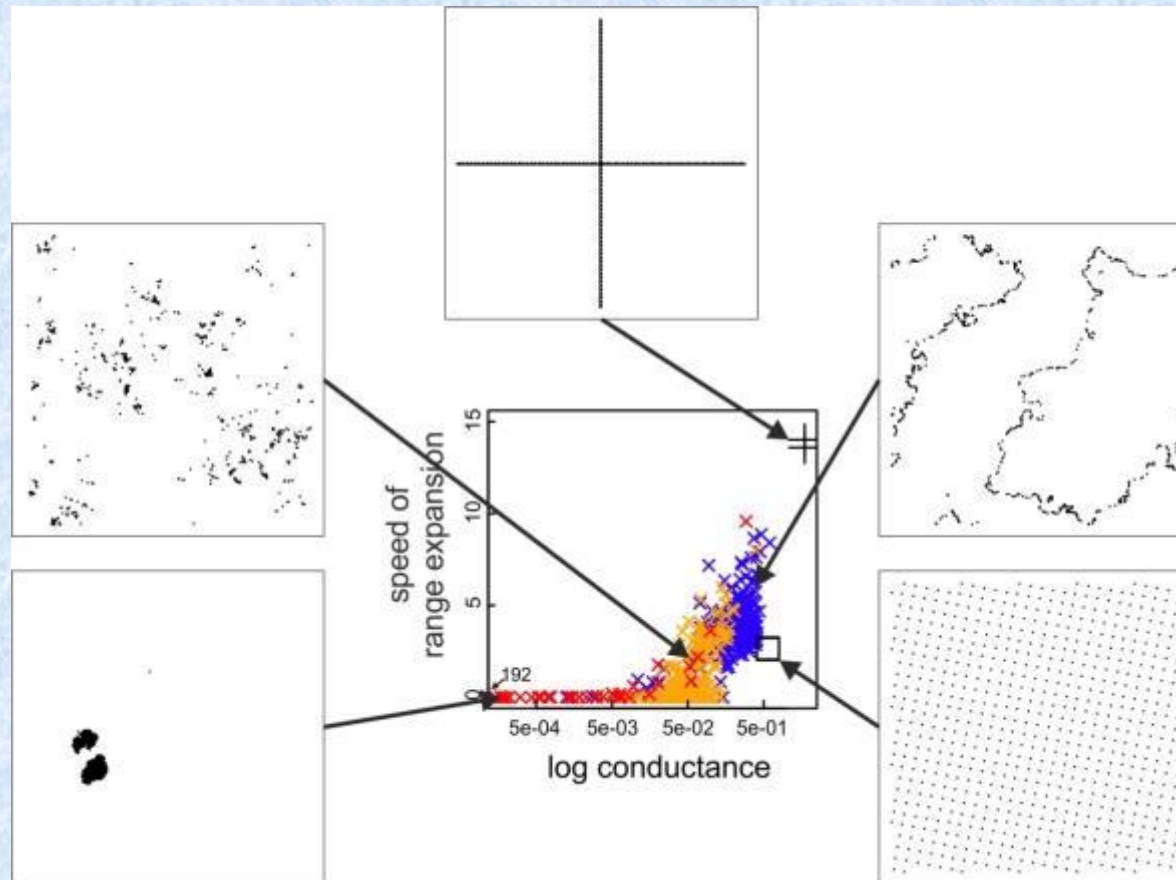


But with climate change



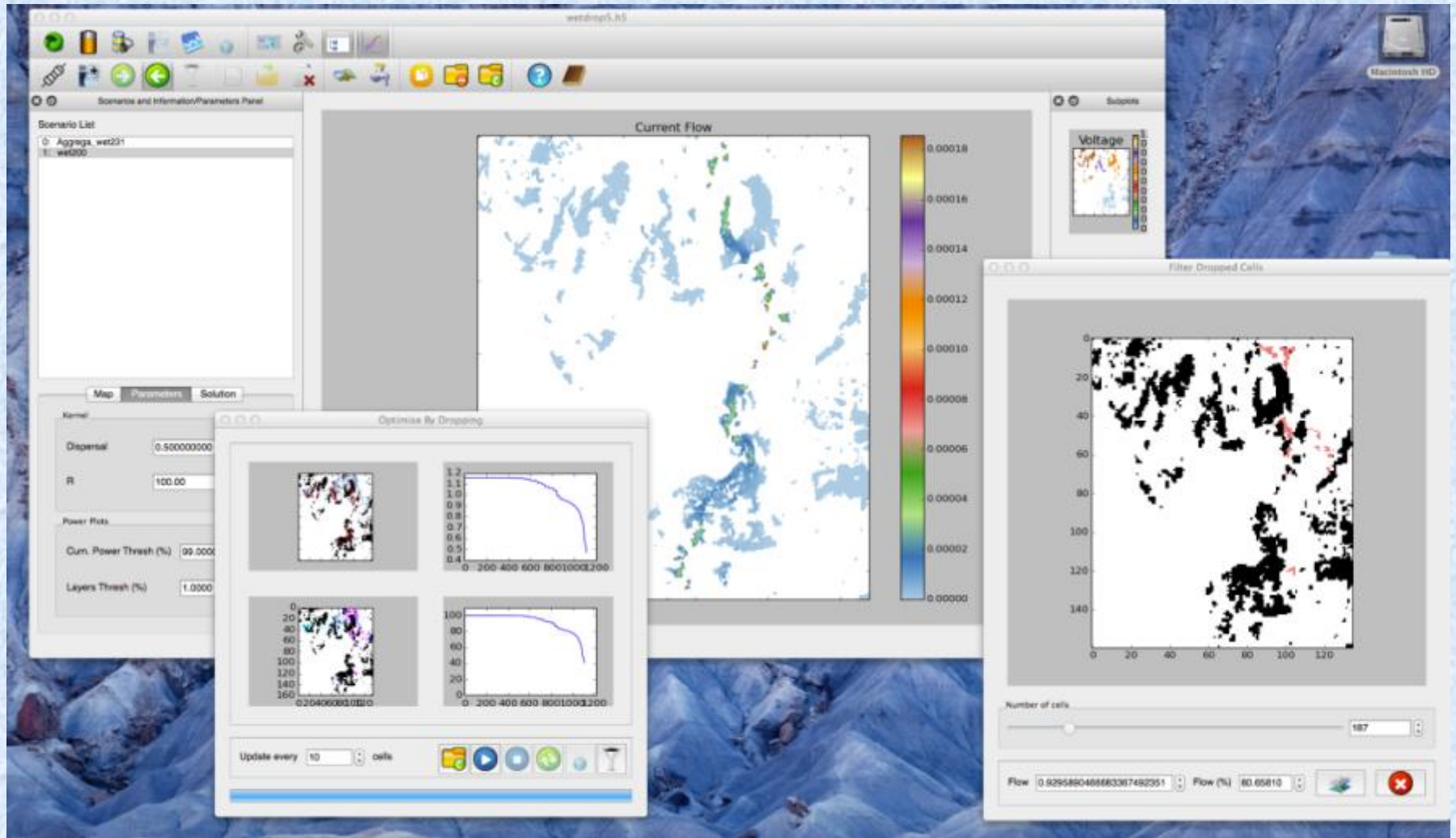
- Bigger aggregated clumps mean bigger gaps
- “increase connectivity” is ambiguous

New metric of conductance predicts speed of range expansion



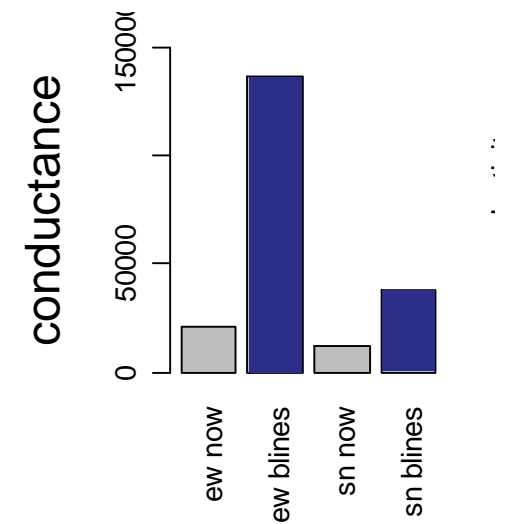
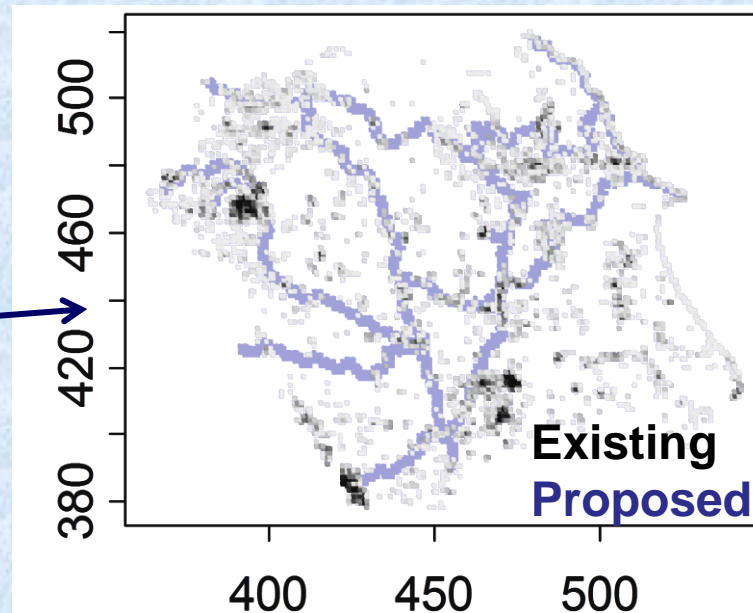
Hodgson, J.A., et al (2012) The Speed of Range Shifts in Fragmented Landscapes. *Plos One*, 7, e47141.

From theory to software: Condatis

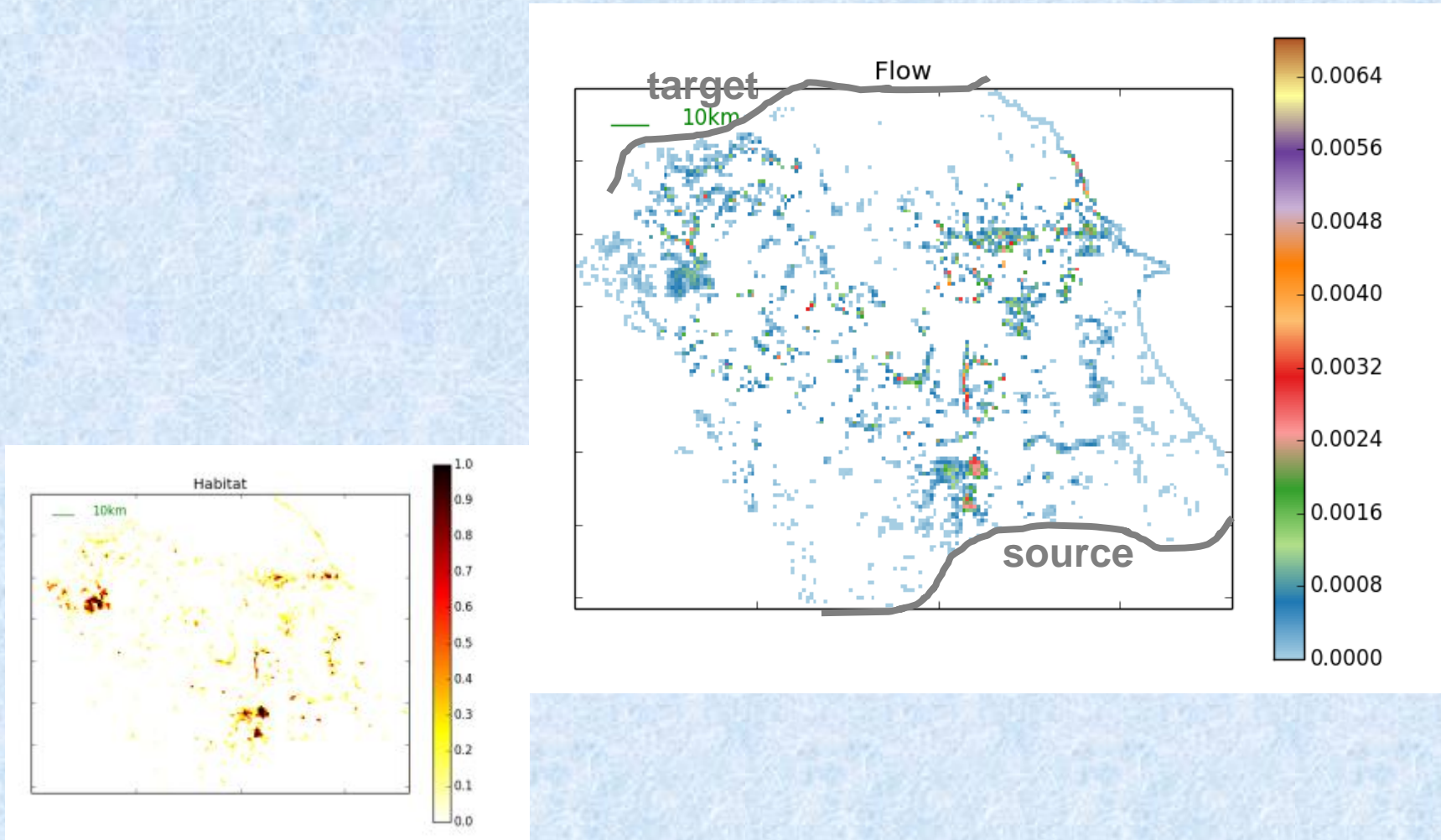


Applications

- Quantification of how real landscapes could be improved



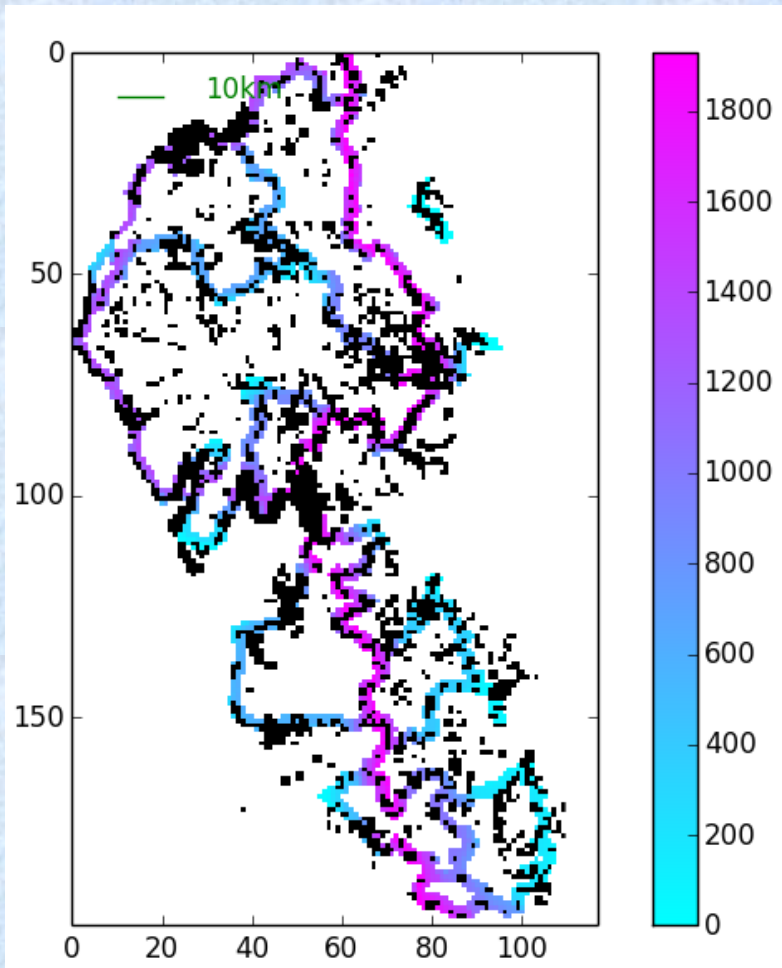
Highlight existing habitat-rich routes



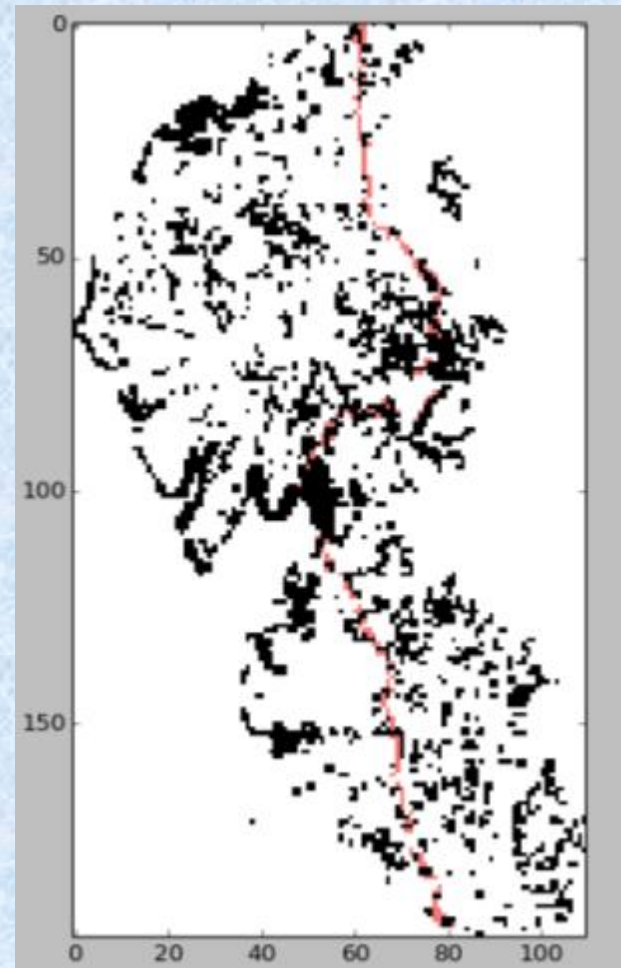
Collaboration with Buglife B-lines project

Prioritise

- Ranking



- Top 10%



Collaboration with Buglife B-lines project

Acknowledgements

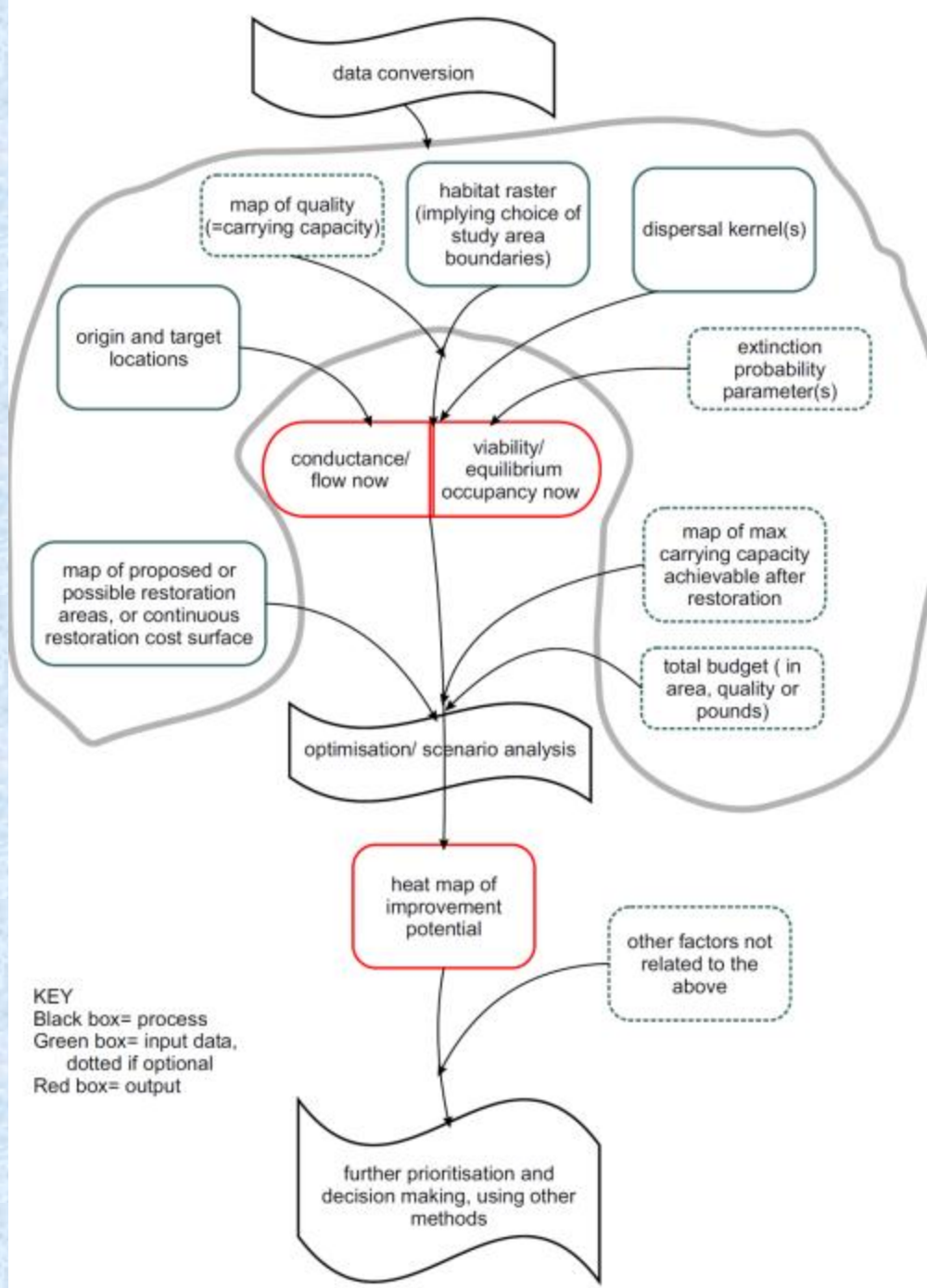
- Buglife
- Durham, Lancashire and Yorkshire Wildlife Trusts
- Forest Research
- Natural England
- Natural Resources Wales
- RSPB
- Scottish Natural Heritage

Find out more:

www.condatis.org.uk

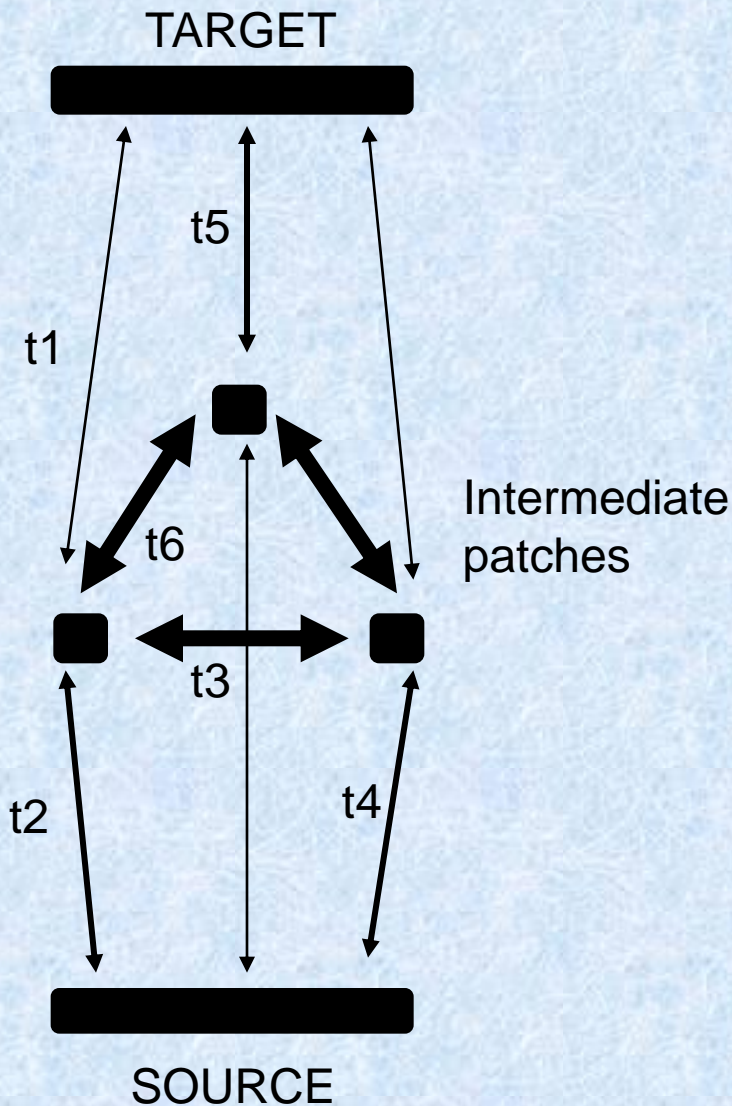
Attend a free workshop!

- University of Liverpool. Monday 9th March (Afternoon)
- University of Exeter. Tuesday 10th March (Afternoon)
- Edinburgh, SNH offices. Friday 13th March (10:30 – 15:00)
- Peterborough, NE Offices. Friday 20th March (Morning)



KEY
 Black box= process
 Green box= input data,
 dotted if optional
 Red box= output

What is conductance?



- Range expansion is a chain of colonisation and establishment events.
 - $t_1 + t_2$ or
 - $t_1 + t_3 + t_4$ or
 - $t_5 + t_6 + t_2$ or...
- Time \equiv electrical resistance
- Time depends on habitat area, emigration rate and dispersal distance.

Survival different from shifting potential

- Survival of species that don't need to shift is still best in the biggest habitat cluster

