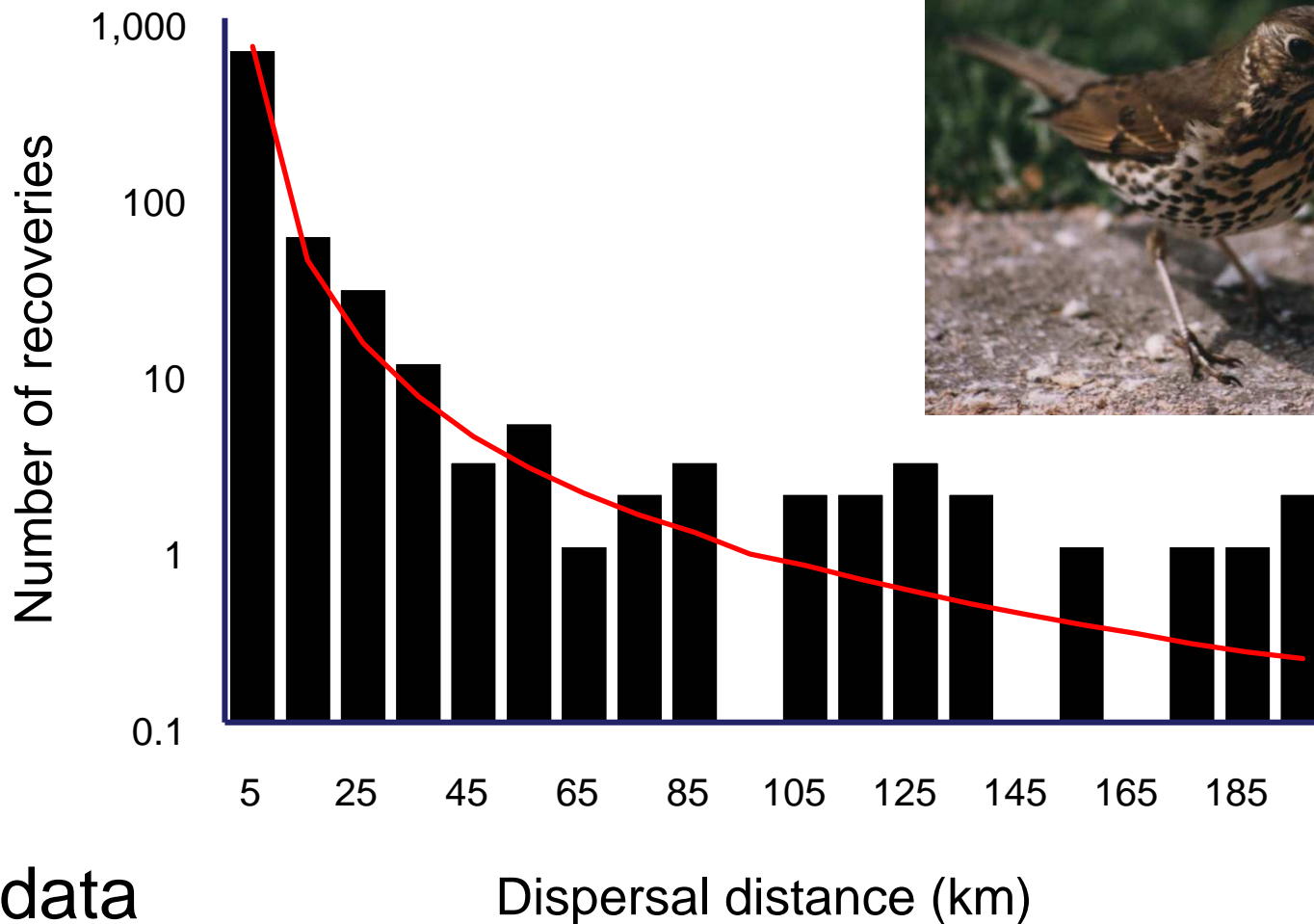


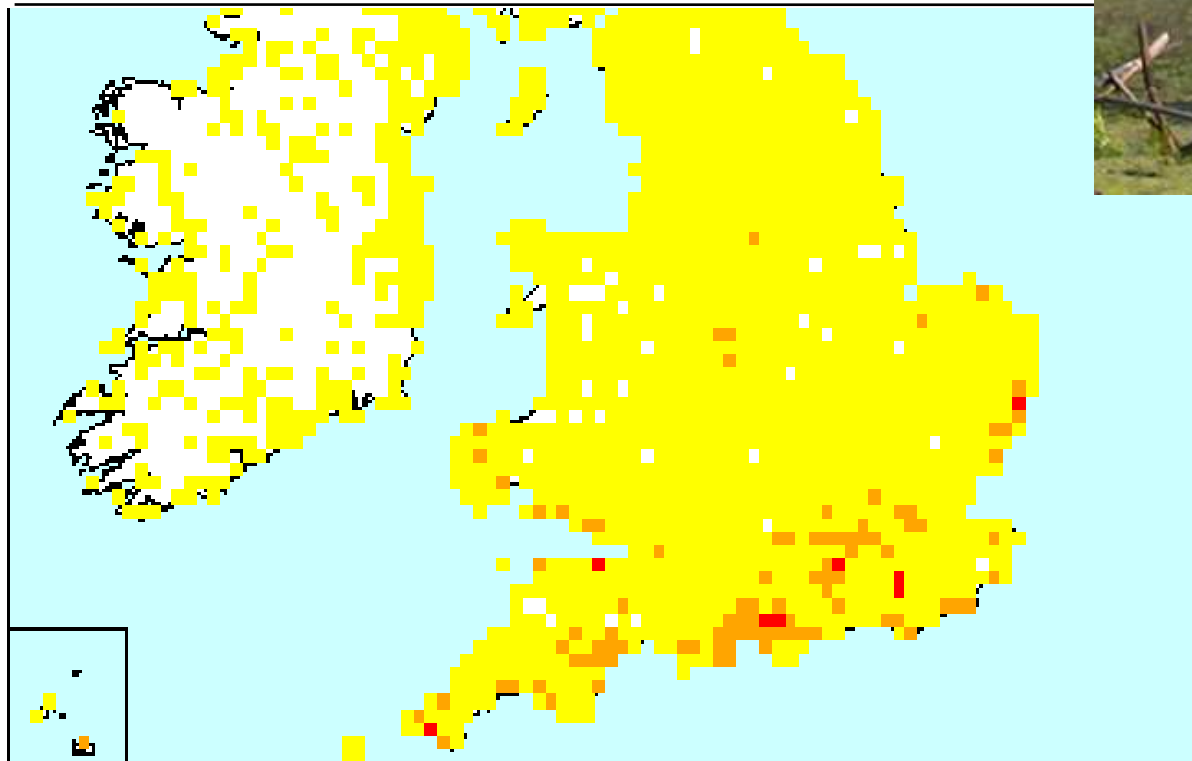
Distribution of natal dispersal movements for Song Thrush



BTO data

Dispersal distance (km)

Dartford Warbler expansion – amazing!



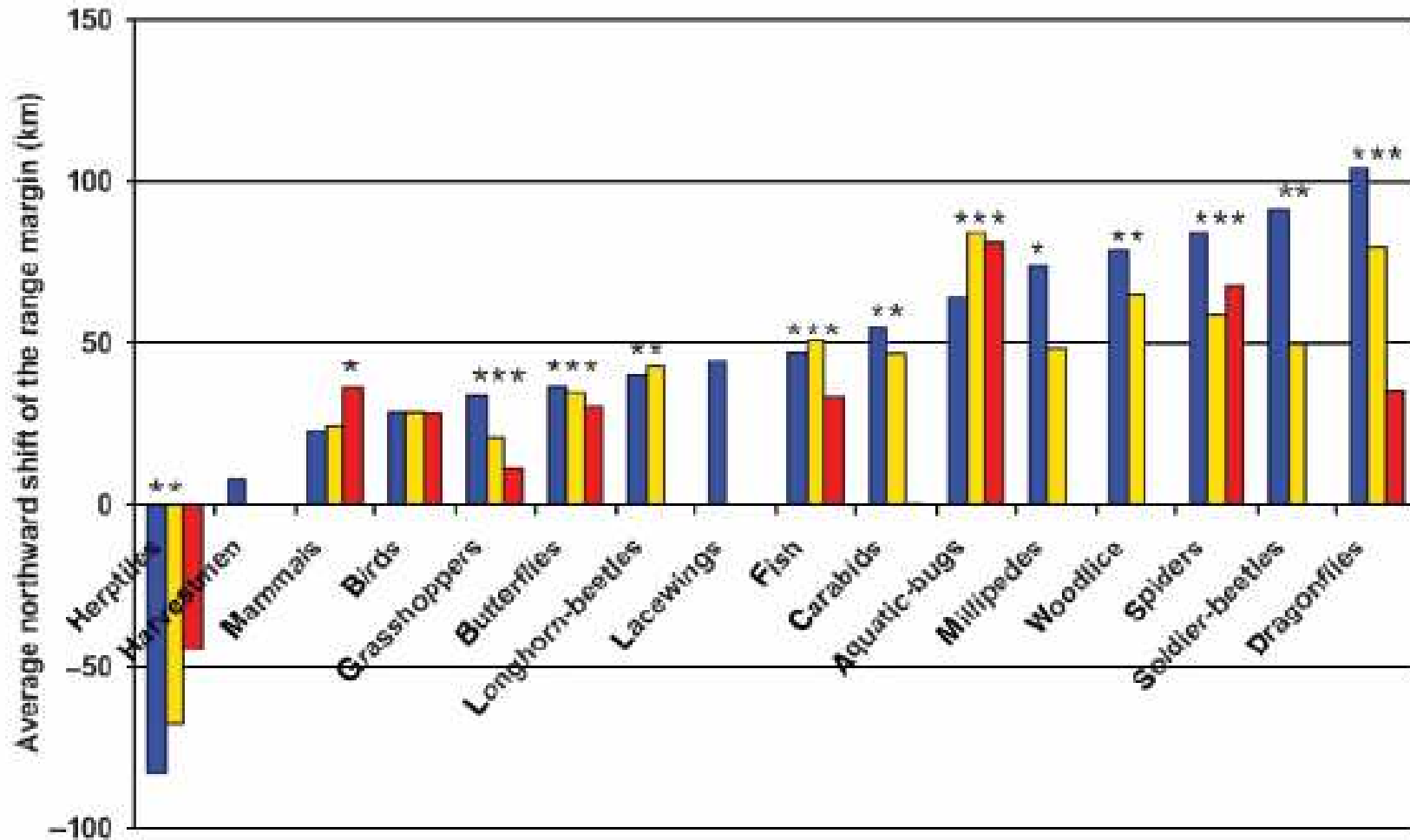
Jill Pakenham - BTO

BirdTrack data 2008,
BTO-RSPB-BWI

However, there are other problems....

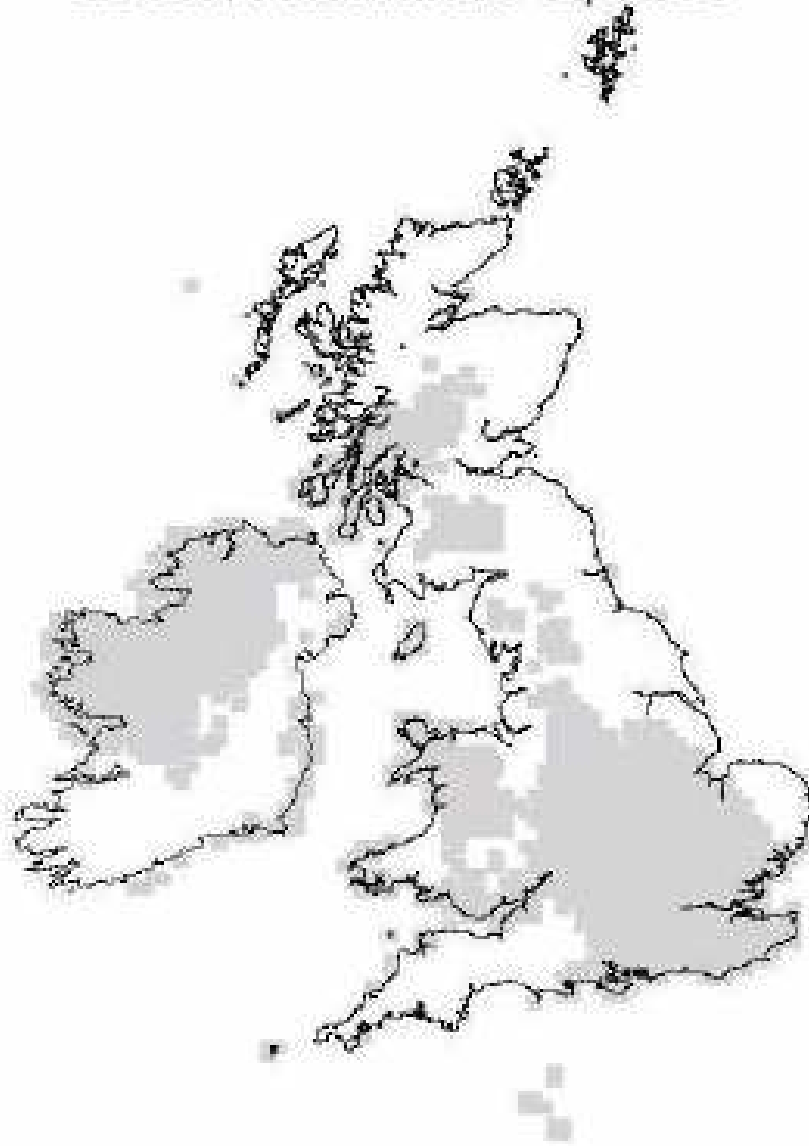


Average northward shift of 16 taxa over past 30 years



Hickling et al 2006

2050H Anomalous squares



Jo Hossell – MONARCH
-Modelled bioclimatic zones
-Non-analogous climates
appear

Regime Shifts



**Most devastating...
....the complete loss of sites**



Saltmarsh loss through coastal squeeze?

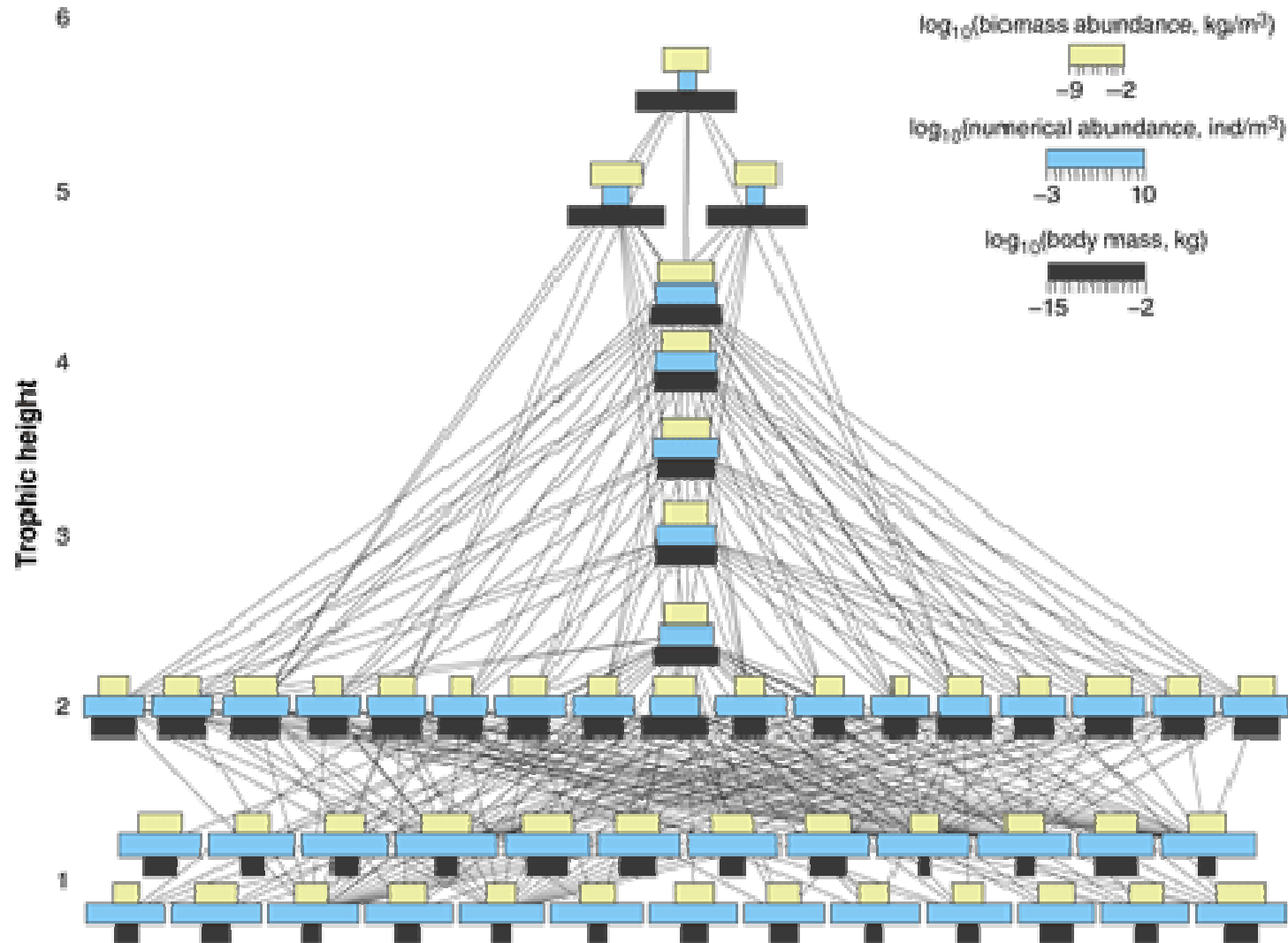




SO – WHAT CAN BE DONE?

Embrace Change!

Lake Tuesday (Michigan) Food web



Create completely new sites: Bittern habitat lost and found



Create novel habitat!

In some cases rewilding large areas might be desirable, especially if land zoning due to the intensity of landuse increases markedly



More assisted colonisation?



Designated sites also offer so much more....



**Semi-natural
woodland**

Semi-natural Woodlands Ecosystem Services



- Renewable fuel and materials
- Carbon sequestration
- Reduce risks from soil erosion, flooding etc.
- Micro-climate regulation - shading and shelter
- Recreation



Blanket Bog

Blanket bog

Ecosystem services



- Carbon storage
- Water supply
- Sheep / grouse production
- Recreation

Coastal realignment at Alkborough Flats



- 170 ha inundated
- Storm surge protection
- Annual flood protection worth £400K
- Protects 300,000 people
- Carbon sequestration benefits
- Wildlife habitats valued at £500K per year

Conclusions



- Ecological networks provide the core areas to ensure resilience to climate change through low external stresses, maintaining genetic variation, providing heterogeneity
- They provide high quality colonisation sites
- They provide many additional benefits to “just” biodiversity conservation
- Conservationists will have to be more flexible and innovative in accepting or even welcoming change and may need to think more trans-nationally when conserving biodiversity within broader networks

Thanks



- Colleagues at Natural England:
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 - Mike Morecroft
 - Jon Webb

