

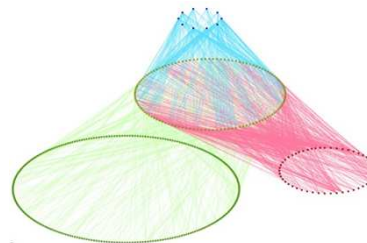
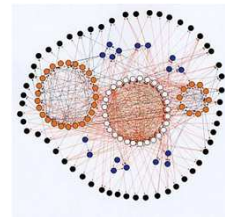
Assessing the impacts of environmental change on ecological interactions



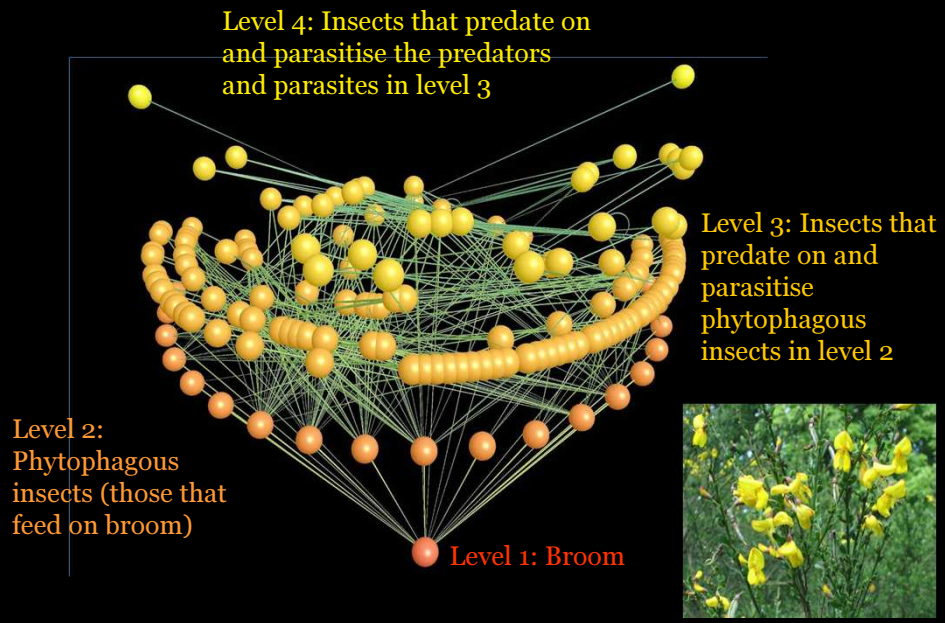
Dr. Darren Evans
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Overview

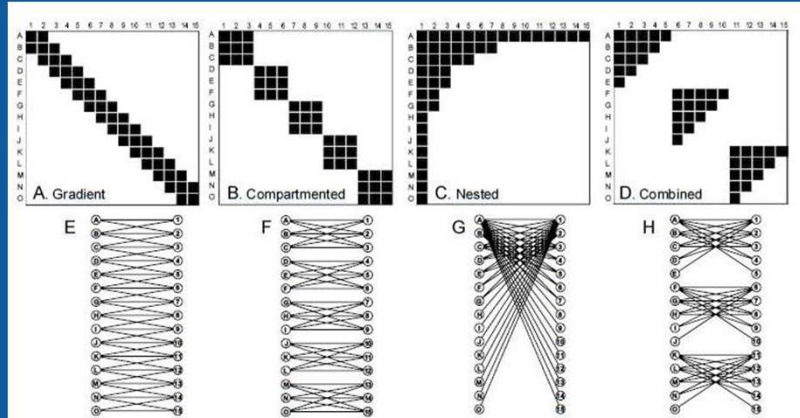
- Introduction to ecological networks
- Case studies
 1. Restoration of moorland pollination
 2. Loss of natural biocontrol
- Proposed research with MFF



A qualitative network for a single species of plant



Qualitative network structures

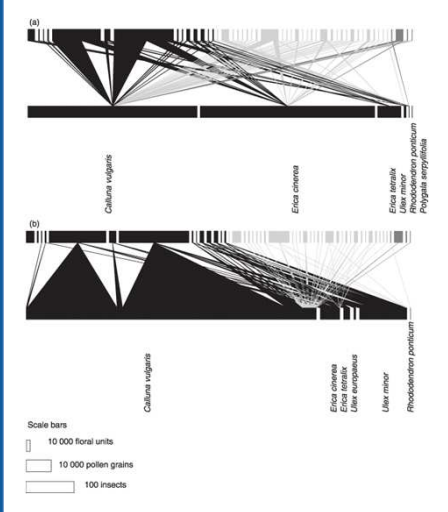


Quantitative network: Farmland seed herbivores and parasitoids



Evans et al. (2010) in prep.

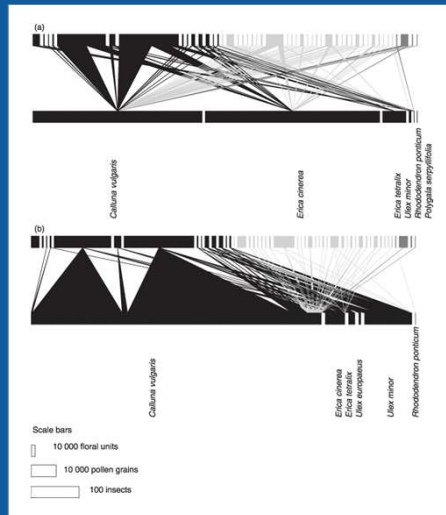
Case study 1: Restoration of moorland pollination



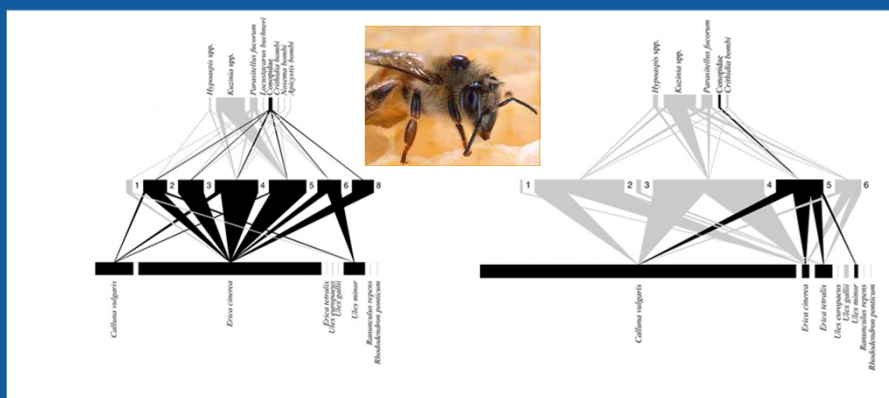
Forup et al. (2008) *Journal of Applied Ecology* 45: 742-752



Case study 1: Restoration of moorland pollination



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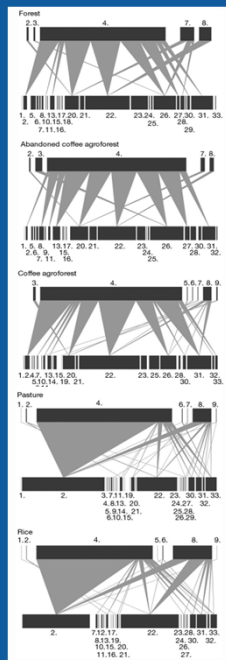


Ancient heath

Restored heath

Henson *et al.* (2009) *Ecology* 90: 1850-1851

Case study 2: Loss of natural biocontrol



Change in
land use



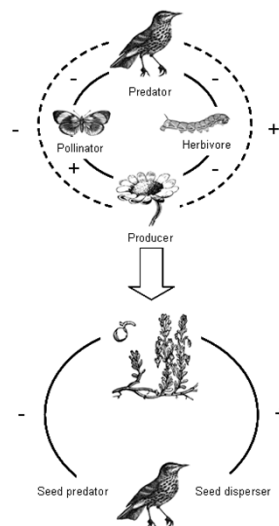
Tylianakis *et al.* 2007 *Nature* 445:202-205

Proposed research

1. Assessing moorland restoration using a 'temporal gradient'
 - Plant species richness and diversity
 - Quantitative pollination network
 - Pollen transfer
 - Tripartite host-parasite network



Proposed research

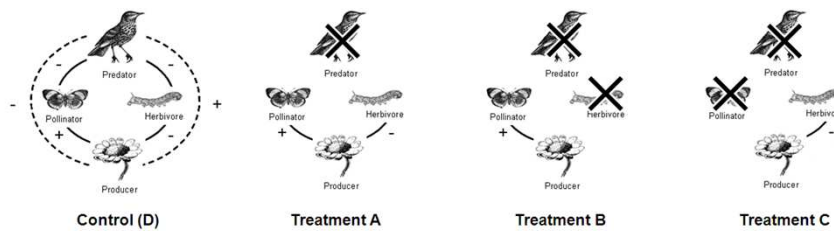


Time



Proposed research

2. Investigating the impacts of N deposition on trophic interactions



Take home messages

- Ecological networks move beyond looking at communities and assemblages and focus on how species interact
- Possible to assess the impacts of environmental change on the structure of ecological works, their resilience to species loss and the consequences for species populations
- Provide essential information on ecological processes such as pollination, seed dispersal and pest control which are important ecosystem services
- Can be incorporated into existing monitoring methods

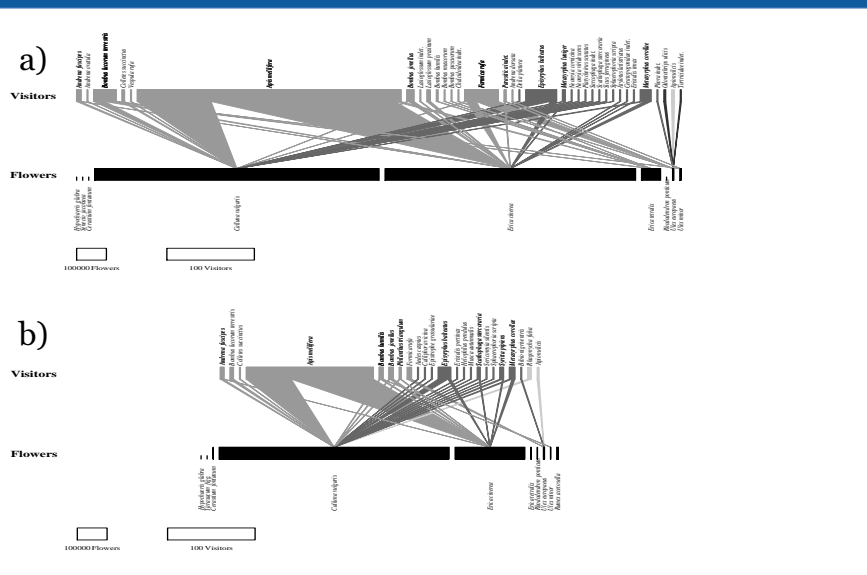
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Visitation webs from Arne NNR (a) old Heath (b) restored heath



Thanks to Kate Henson