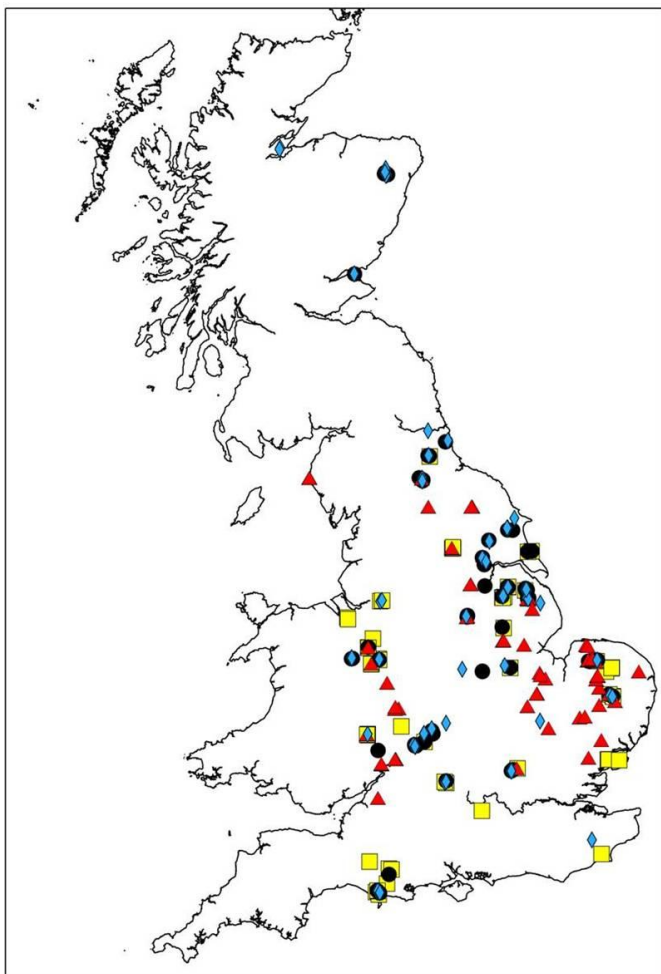


Carabid Beetle Ecosystem Services: Potential for Regulating Arable Weeds



Data resource: Farm Scale Evaluations (FSE)



▲ 66 beet



■ 68 maize



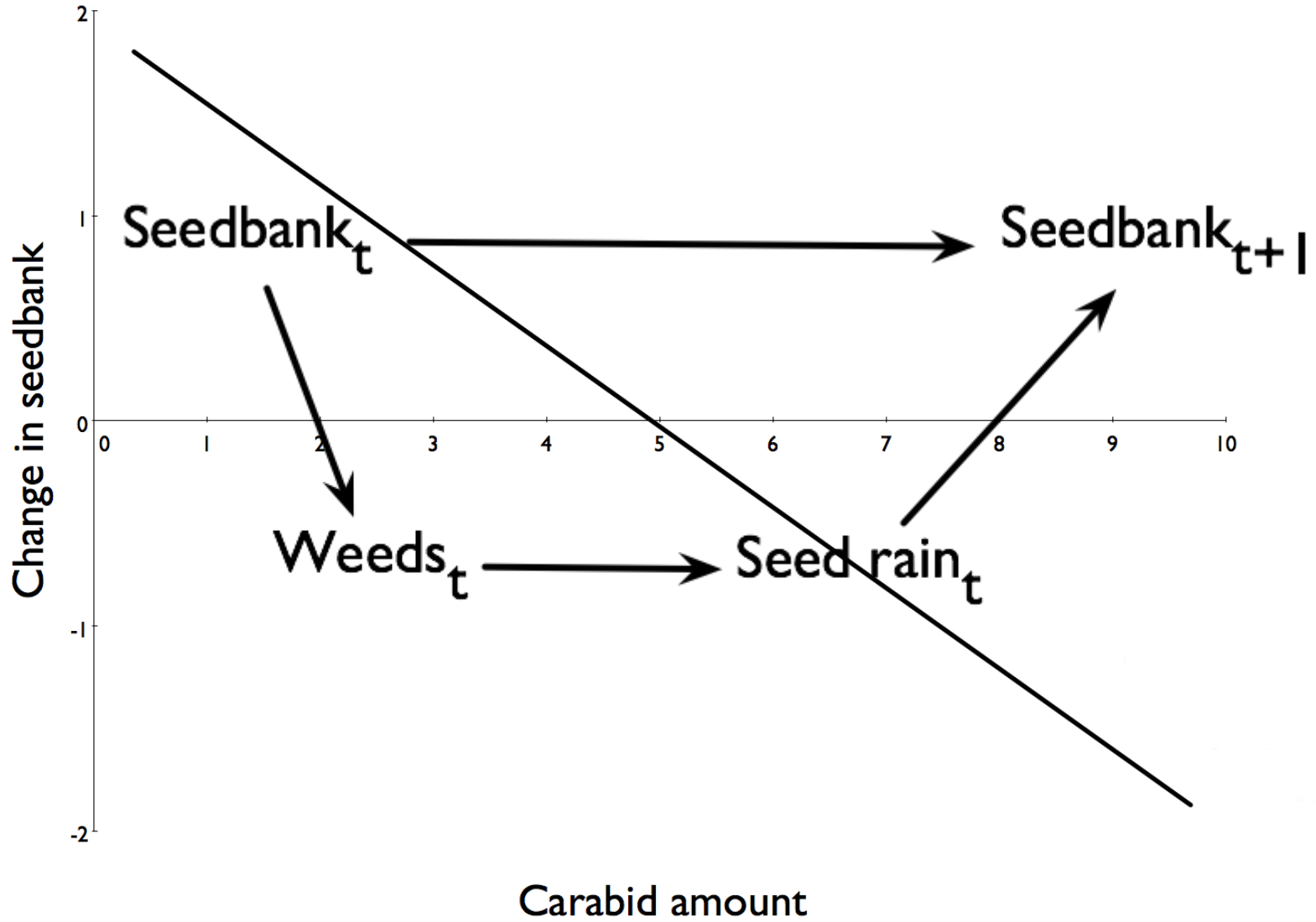
● 67 spring oilseed rape



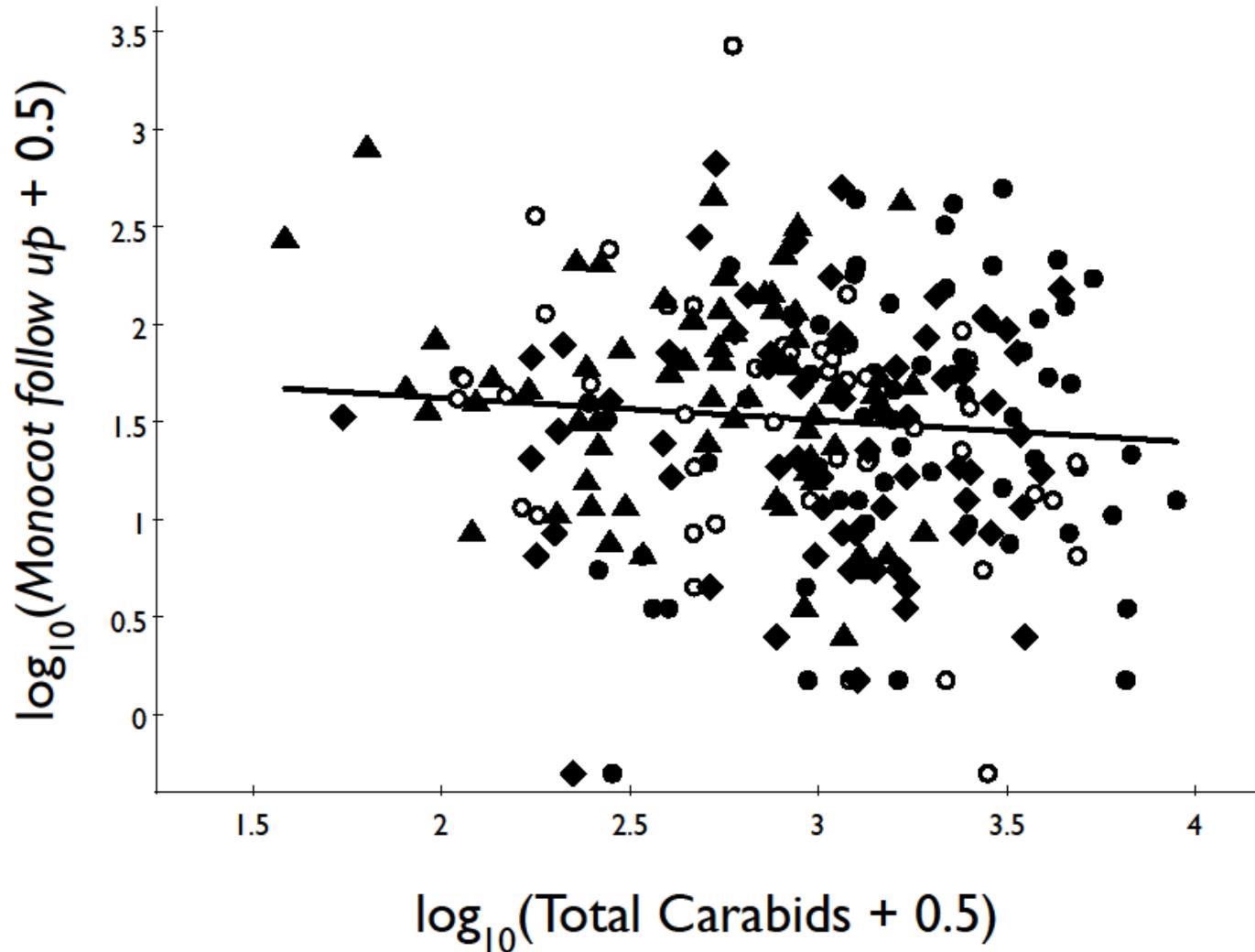
◆ 65 winter oilseed rape



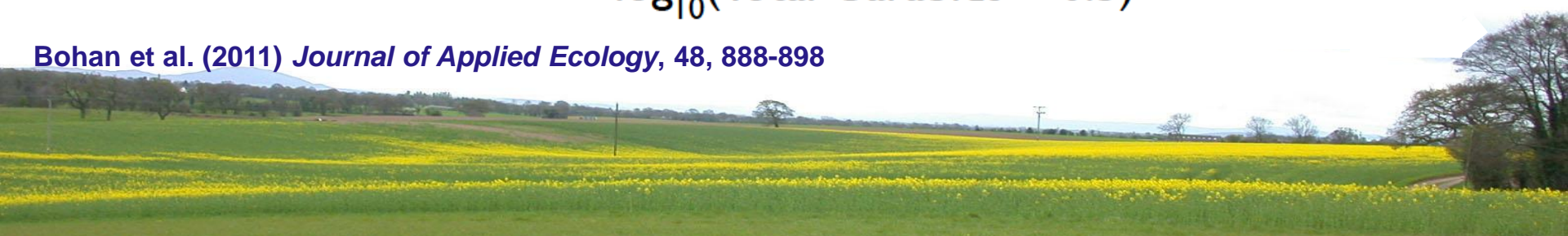
Carabid ecosystem services – regulation of weed seedbanks



Carabid ecosystem services – regulation of weed seedbanks

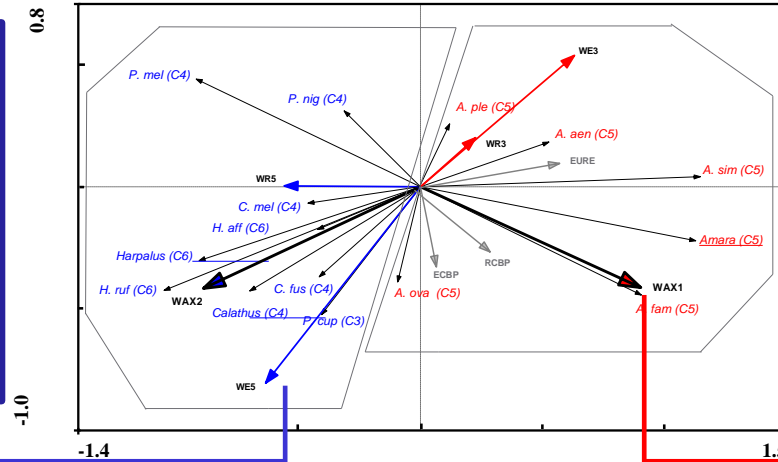


Bohan et al. (2011) *Journal of Applied Ecology*, 48, 888-898

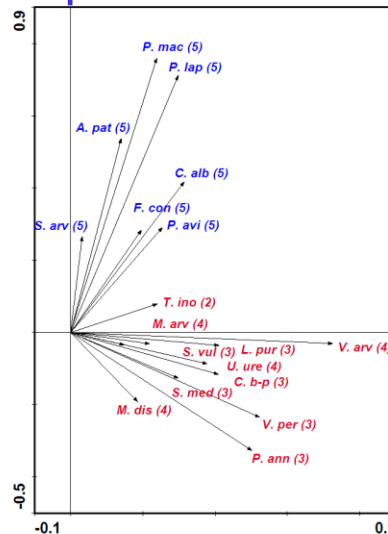


National-scale trophic links between weeds and carabids

Harpalus rufipes (Group 6)



Amara similata (Group 5)



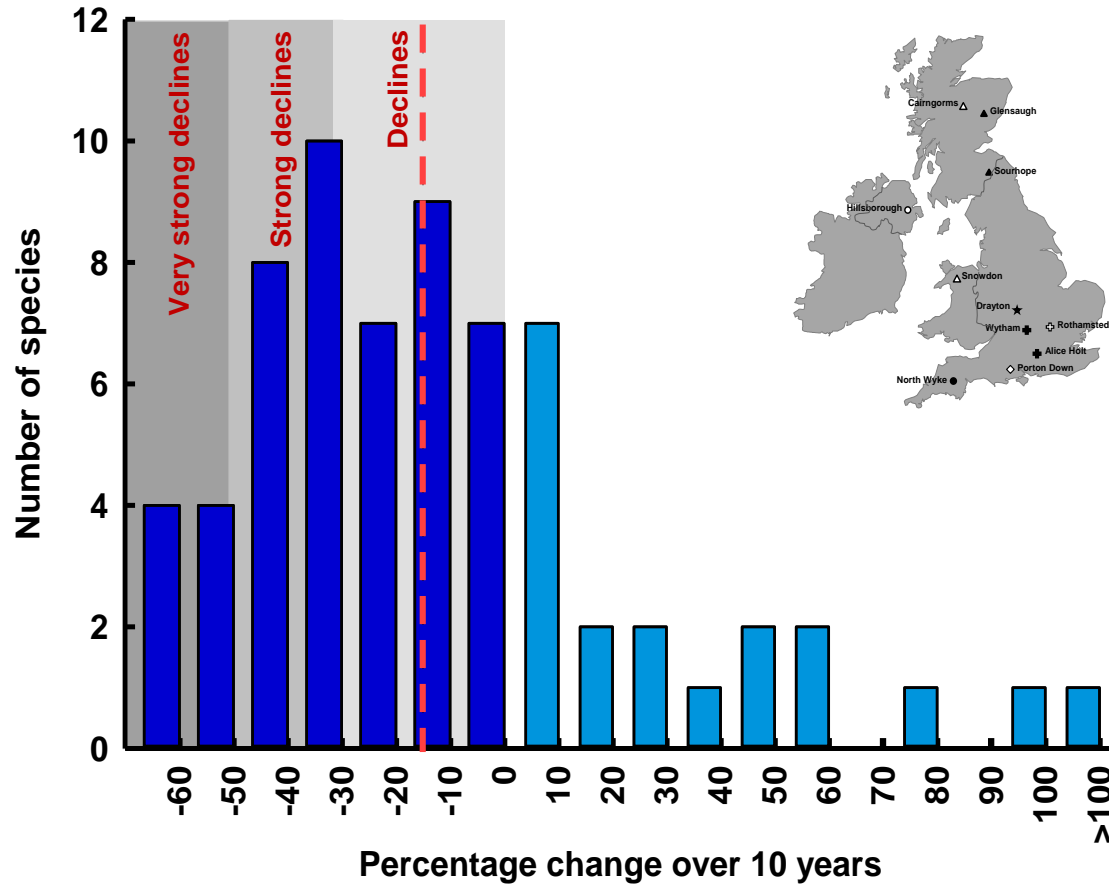
- **Weeds:**
Spring germinating
Large seeds
- **Carabids:**
Autumn breeding
Large bodied
More generalist omnivores

- **Weeds:**
Autumn germinating
Small seeds
- **Carabids:**
Spring breeding
Smaller bodied
More granivorous preference

Brooks et al. (2012) *Journal of Animal Ecology*, 81, 4-13



Temporal trends in carabid biodiversity in the ECN network



Brooks et al. (2012) *Journal of Applied Ecology*, 45, 1009-1019



Enhancing carabid weed seed regulation – conservation in the farmed landscape

- Boosting food chain links and supply – soil invertebrates



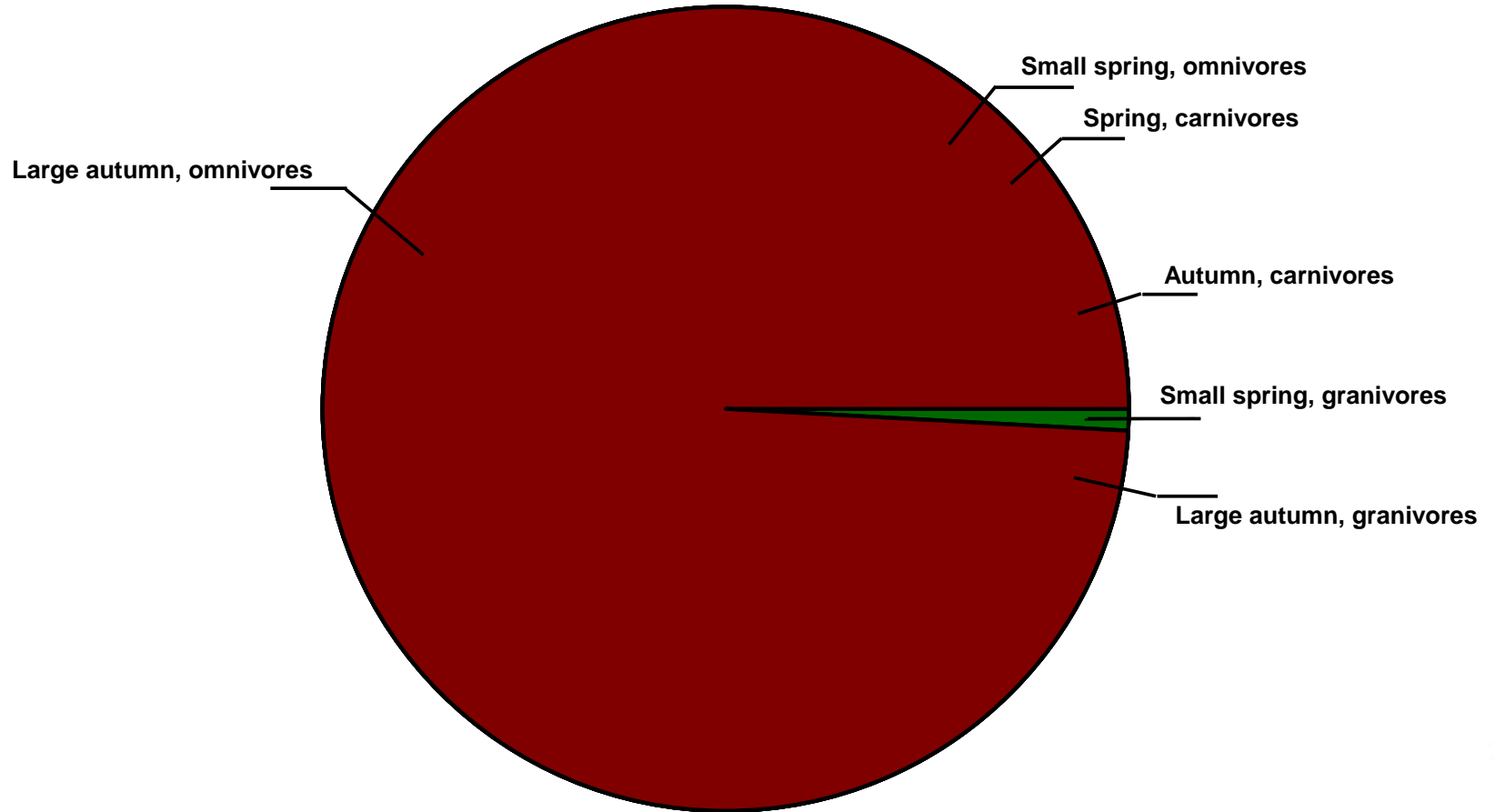


Enhancing carabid weed seed regulation – conservation in the farmed landscape

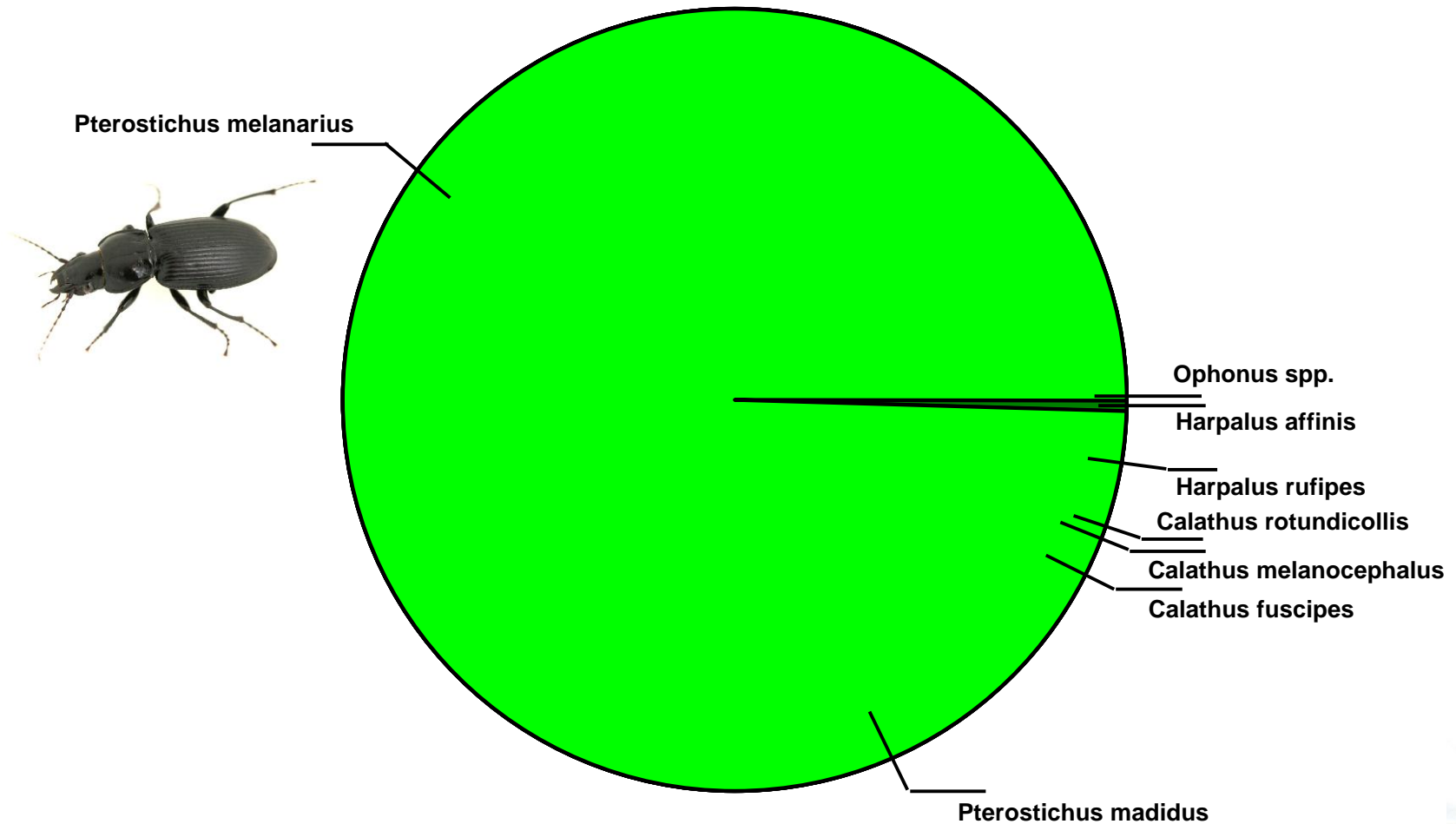
- Boosting food chain links and supply – soil invertebrates
- Composition and diversity of crops and their rotations



Relative abundance of carabid functional groups

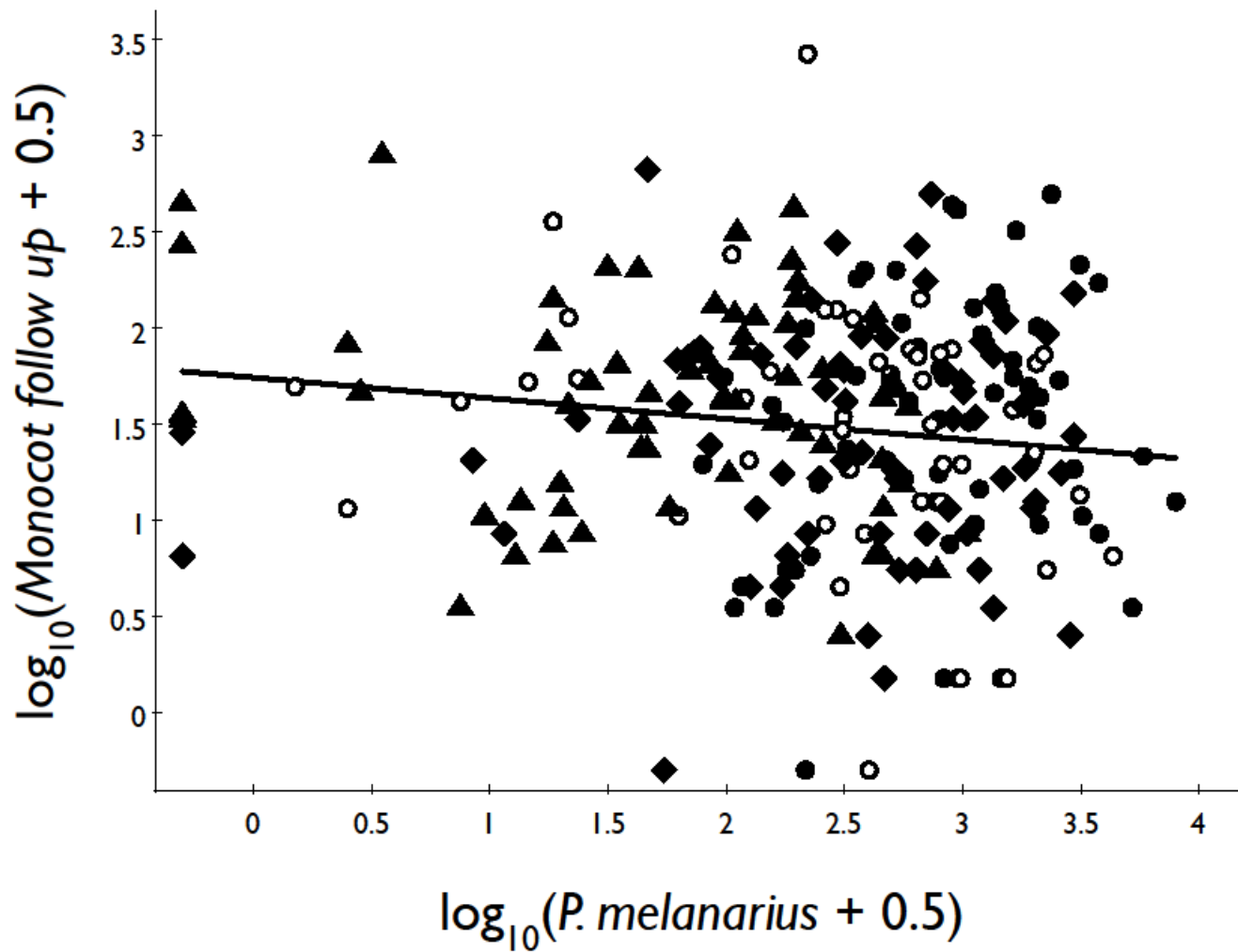


Relative abundance of carabid species within Groups 4 & 6





Carabid ecosystem services – regulation of weed seedbanks



Bohan et al. (2011) *Journal of Applied Ecology*, 48, 888-898

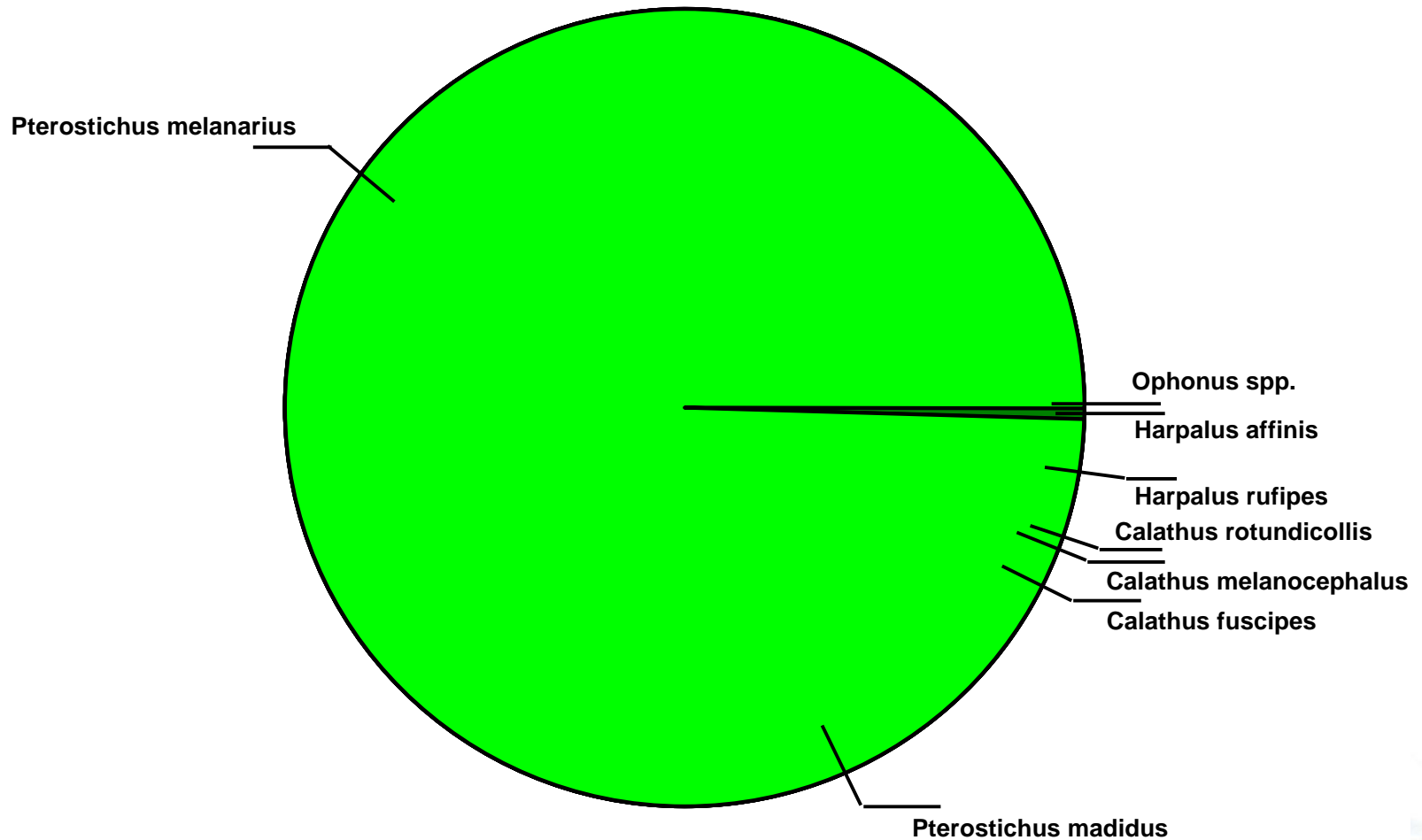


Enhancing carabid weed seed regulation – conservation in the farmed landscape

- Boosting food chain links and supply – soil invertebrates
- Composition and diversity of crops and their rotations
- Landscape composition and diversity



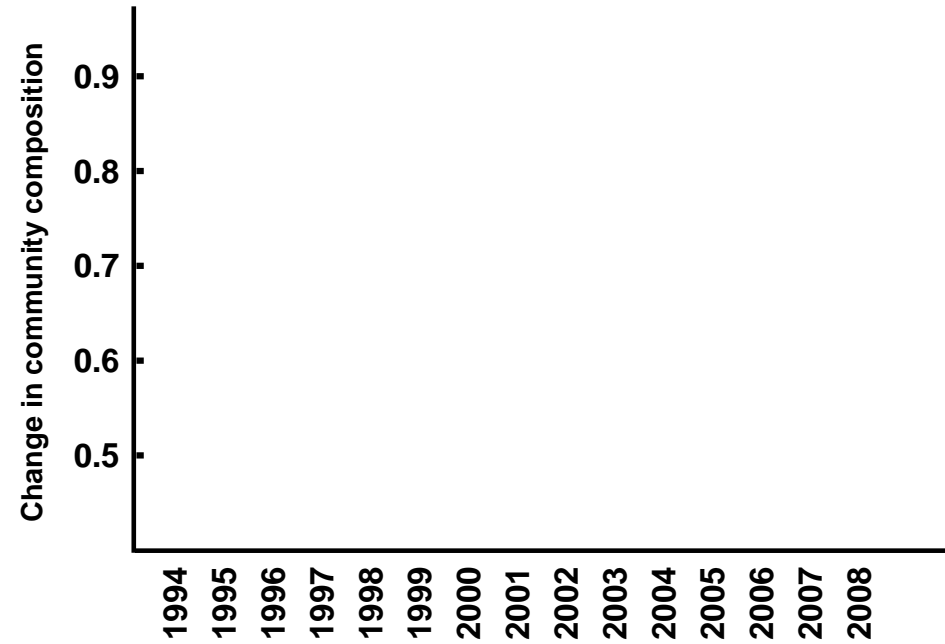
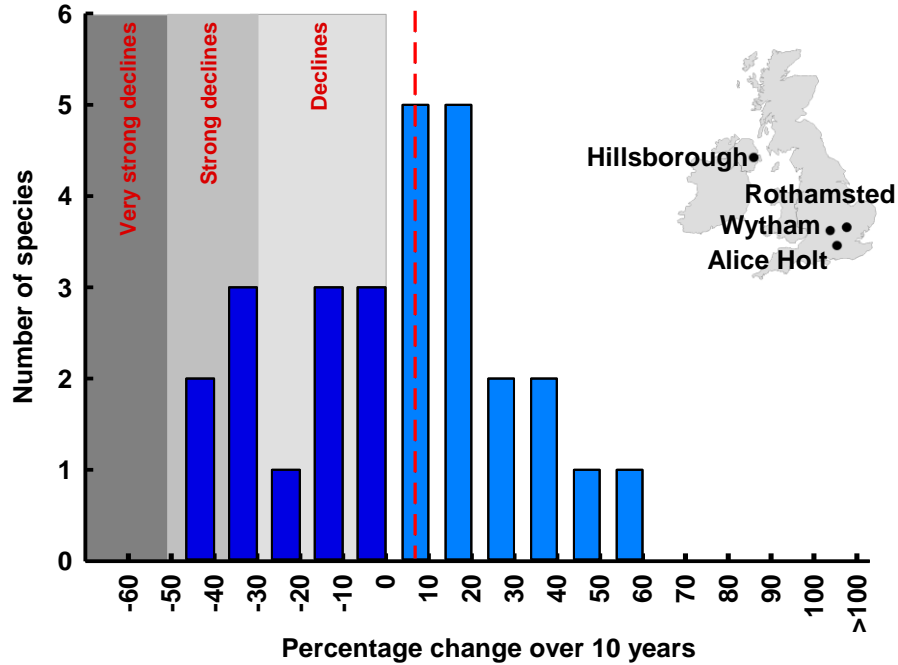
Relative abundance of carabid species within Groups 4 & 6





Temporal trends in carabid biodiversity in the ECN network

Woodland & southern hedgerow



Brooks et al. (2012) *Journal of Applied Ecology*, 45, 1009-1019



Enhancing carabid weed seed regulation – conservation in the farmed landscape

- Boosting food chain links and supply – soil invertebrates
- Composition and diversity of crops and their rotations
- Landscape composition and diversity
- Still much work to do!!

