

AGRILAND

the impact of the field campaign results

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01. Overview

02. Introduction

03. Methods

04. Results



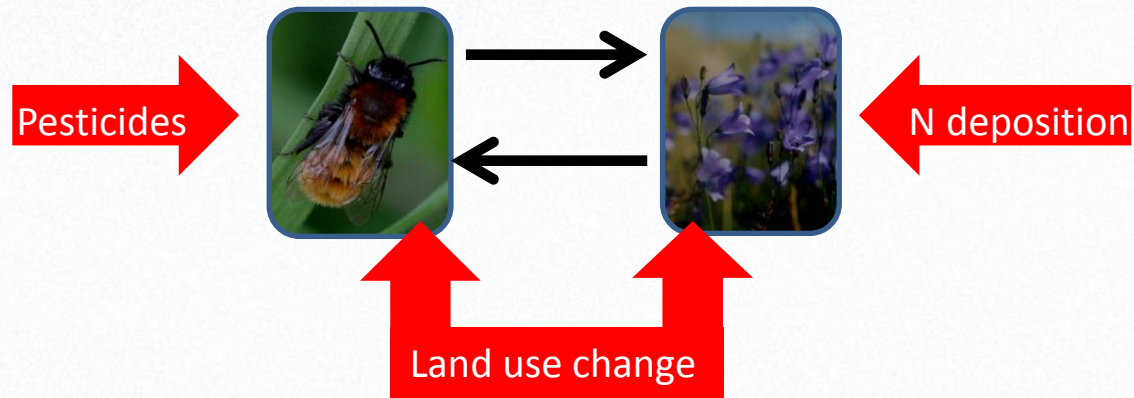
05. Impact



06. Conclusions

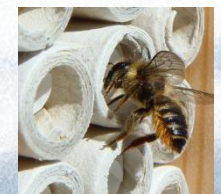
02. Introduction

Rationale and research questions



Main question: How is current land use linked to pollinator populations and communities?

How do pressures combine to affect:



03. Methods

April to Sept. 2012 and 2013



Floral surveys

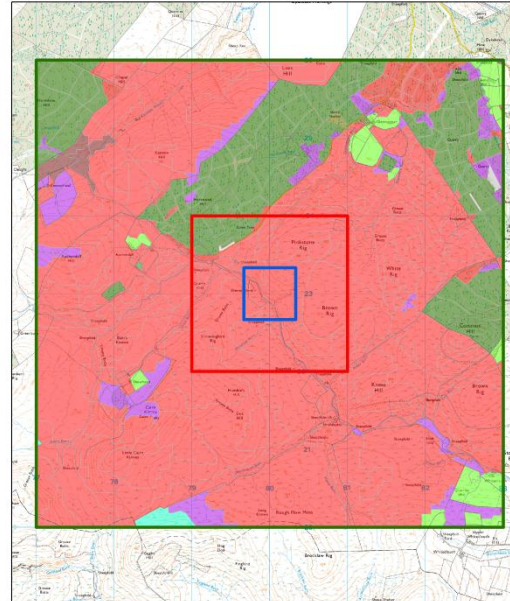
Repeated counts of all species occurring along fixed, proportional transects



«Bee hotels»

Solitary bee nests of cardboard tubes to attract local females and test landscape usefulness

NS72W



Multiple scales

Data on habitat diversity collected at 3 scales



Pan trapping

Repeated and standardised trapping of local populations for later identification



«Phytometers»

Experimental potted plants exposed to local pollinators to test pollination effectiveness

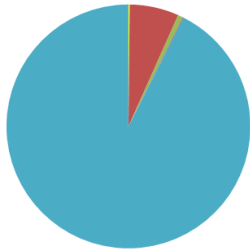
04. Results

2012 & 2013 combined catch results

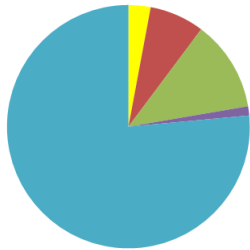
- 1: Honeybees
- 2: Bumblebees
- 3: Other bees
- 4: Wasps
- 5: Hoverflies

Totals

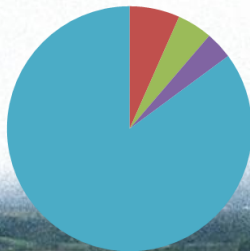
7799



1730



2388



Inverness-shire

Ayrshire

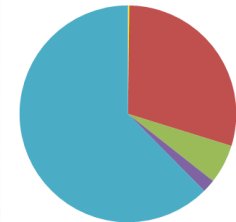
Yorkshire/Cumbria

Cheshire/Staffordshire

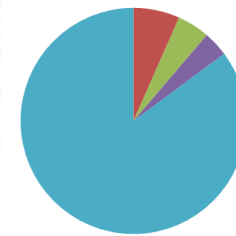
Wiltshire/Gloucestershire

Camb

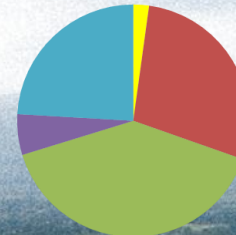
Totals
977



1855



3164



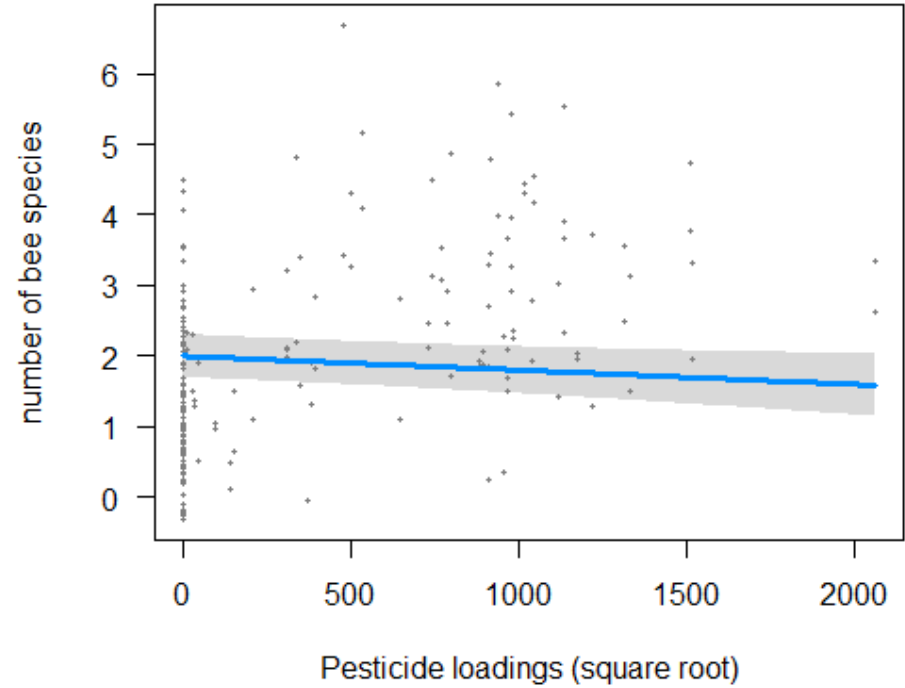
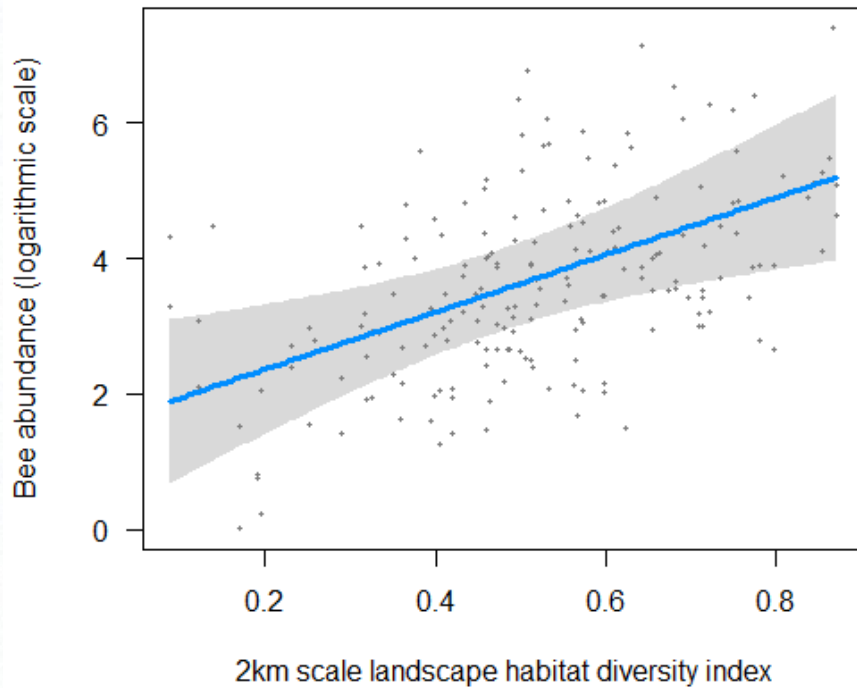
04. Results

Analysis of bee data – abundance, species richness, diversity

	Habitat diversity			Floral resources		Floral diversity	Honeybees	Pesticides	Fertiliser	Management intensity	Habitat composition score
	S	M	L	S	M						
Total bee number		+			-	+	+			-	+
Total bee diversity	+	(-)	-			+	+			(-)	
Total bee species		+					+	-	-		varied
Bumblebee number			(-)		-		(+)	(-)	+	-	varied
Bumblebee diversity			-			+	+		(-)		+
Bumblebee species	(+)		-	+			-	-		(+)	varied
Solitary bee number	+	-				+	+			(-)	-
Solitary bee diversity			-			+	+	-	-		-
Solitary bee species							+		-		-
Average seed number		+					+		-		+

04. Results

Analysis of bee data – abundance, species richness, diversity



04. Results

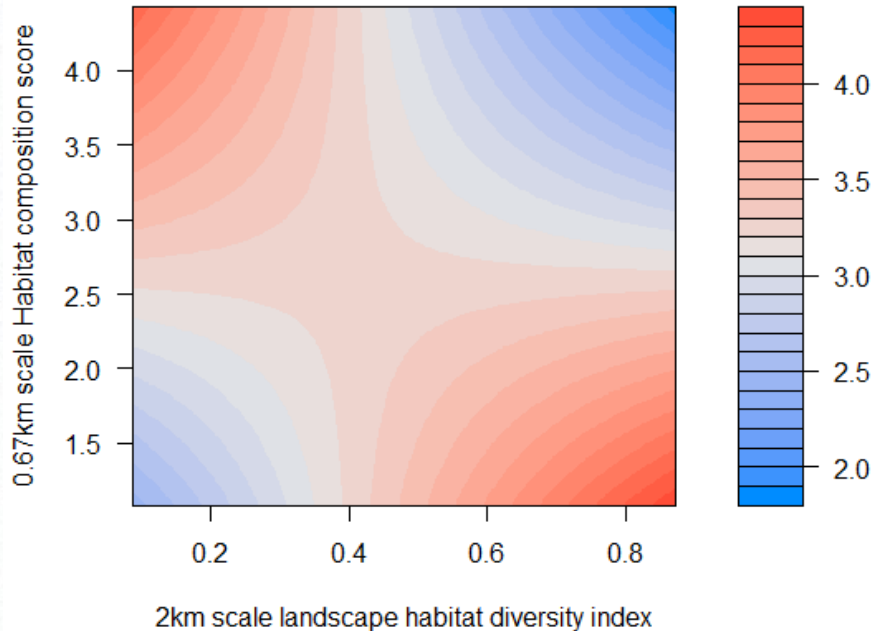
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Total bee diversity	+	(-)	-			+	+			(-)	
Total bee species		+					+	-	-		varied
Bumblebee number			(-)		-		(+)	(-)	+	-	varied
Bumblebee diversity			-			+	+		(-)		+
Bumblebee species	(+)		-	+			-	-		(+)	varied
Solitary bee number	+	-				+	+			(-)	-
Solitary bee diversity			-			+	+	-	-		-
Solitary bee species							+		-		-
Average seed number		+					+		-		+

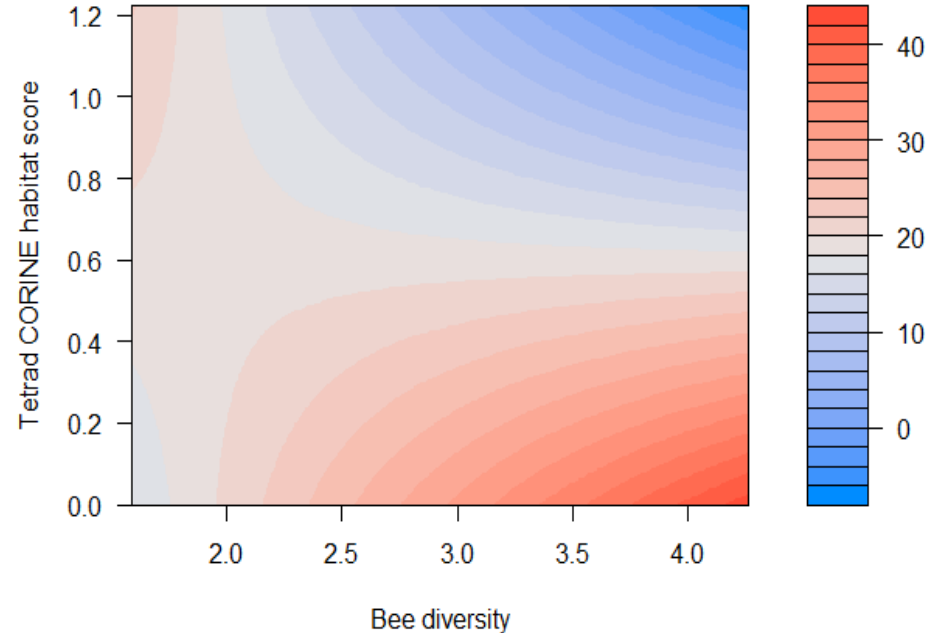
04. Results

Pressures acting in concert

Bee abundance (logarithmic scale)



Mean seed number



05. The impact of the results

Habitat diversity (and composition)

General effects:

- Always important to pollinators AND pollination
- Effect of scale

More detailed analyses needed:

- Habitat composition breakdown
- Important levels of habitat diversity

Impact:

- Need to start considering relevant landscape composition in policy
- Scenario specific guidelines for landscape improvement
- Emphasis on farm-scale improvement?



05. The impact of results

Floral resources

General effects:

- Floral diversity often more important than amount

More detailed analyses needed:

- Seasonal effects
- Ideal levels of diversity
- Important flower species, species specific responses



Impact:

- Support for evidence of floral diversity/continuity effects
- Improving seed mixes and AES
- Scenario specific guidelines

05. The impact of results

Pesticides/management intensity

General effects:

- Often negative effects as expected
- Group and Species specific responses

More detailed analyses needed:

- Breakdown of pesticide types
- Specific responses and generalisations

Impact:

- Importance rarely shown at this scale
- Advancement of scientific research
- Education on a controversial issue
- Guidance for when, where, how, when, how much?



05. The impact of results

Honeybees

General effects:

- Almost universal positive effects, including pollination
- No evidence for competition effects; unlikely to be the opposite

More detailed analyses needed:

- Use of more reliable estimates

Impact:

- Recognition of honeybee keepers!
- Contribution to science, conservation, policy, agriculture?
- Caution advised



06. Conclusions

Overall impact of results

Varied effects within groups, species and among pressures show that the story is complex

Interactions complicate generalisations

Individual species and groups affected in different ways

Encourage policy to take a more tailored approach to pollinators

Targeted guidelines for AES

Highlight areas for further study

Identify some “ideal” combinations of landscape factors – unlikely to be one answer

AGRILAND

thank you for
listening

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