

# Working together to reverse insect pollinator decline

**Lynn Dicks**

**Launch of POST Note 442  
*Reversing insect pollinator  
decline*, 12<sup>th</sup> September 2013**

# What are pollinators?

- Bees
- Hoverflies
- Other flies
- Beetles
- Wasps
- Butterflies
- Moths



# Global pollinator crisis

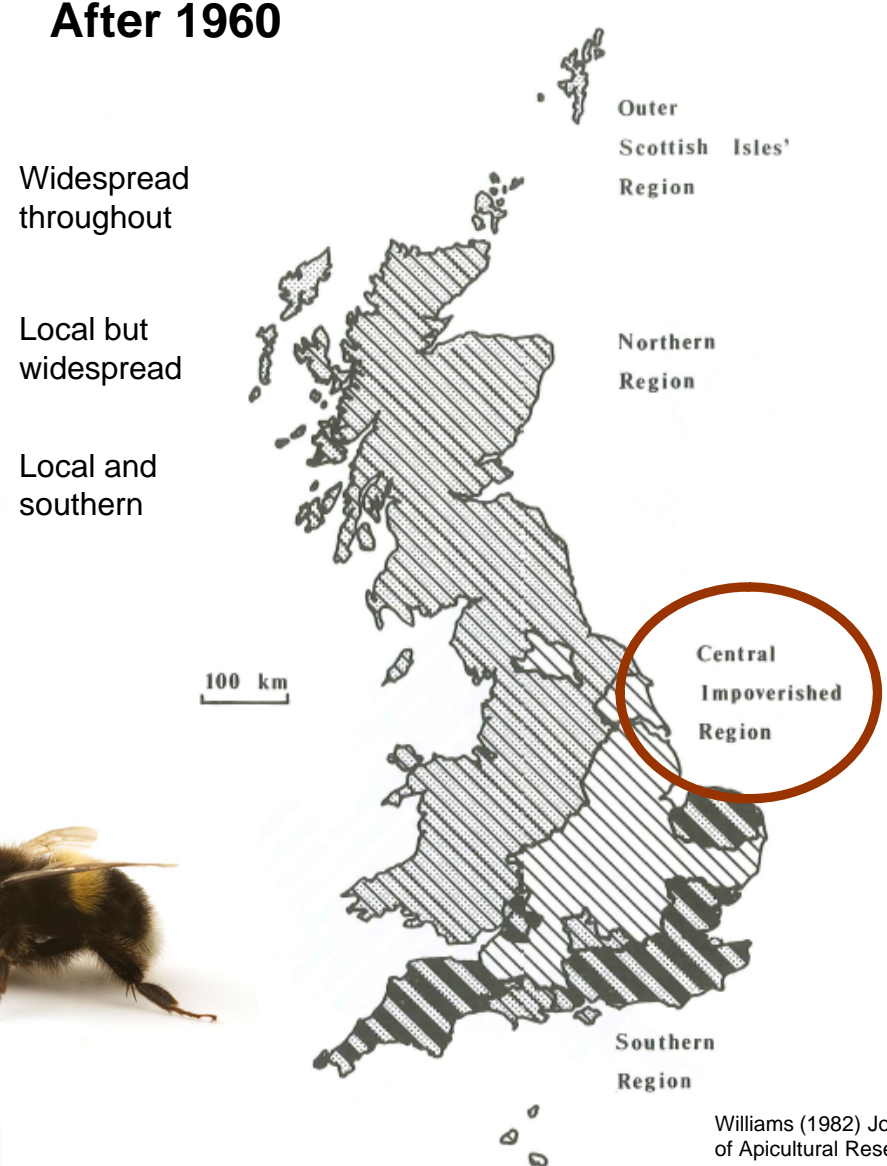


# The first we heard...UK bumblebees

Before 1960



After 1960



Widespread throughout

Local but widespread

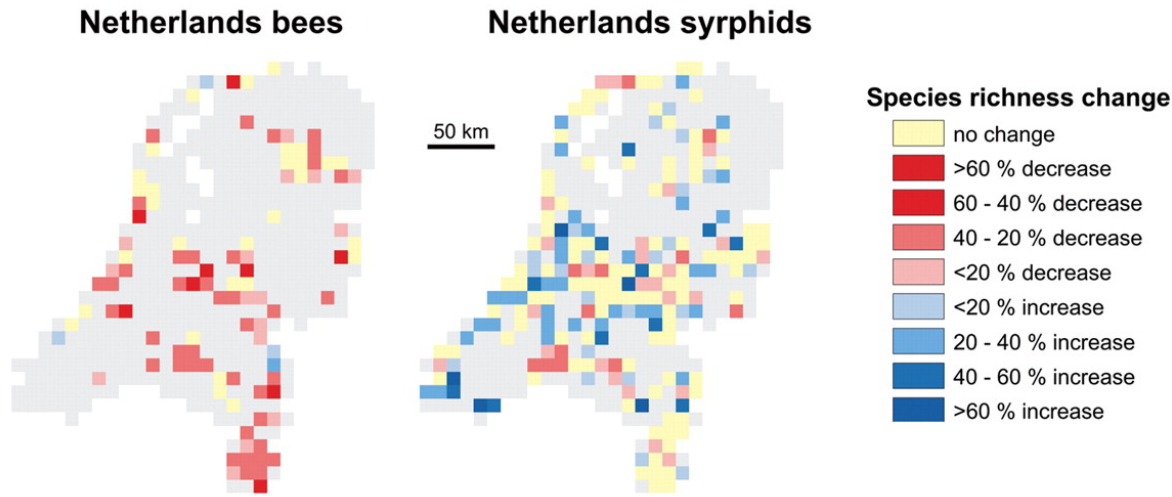
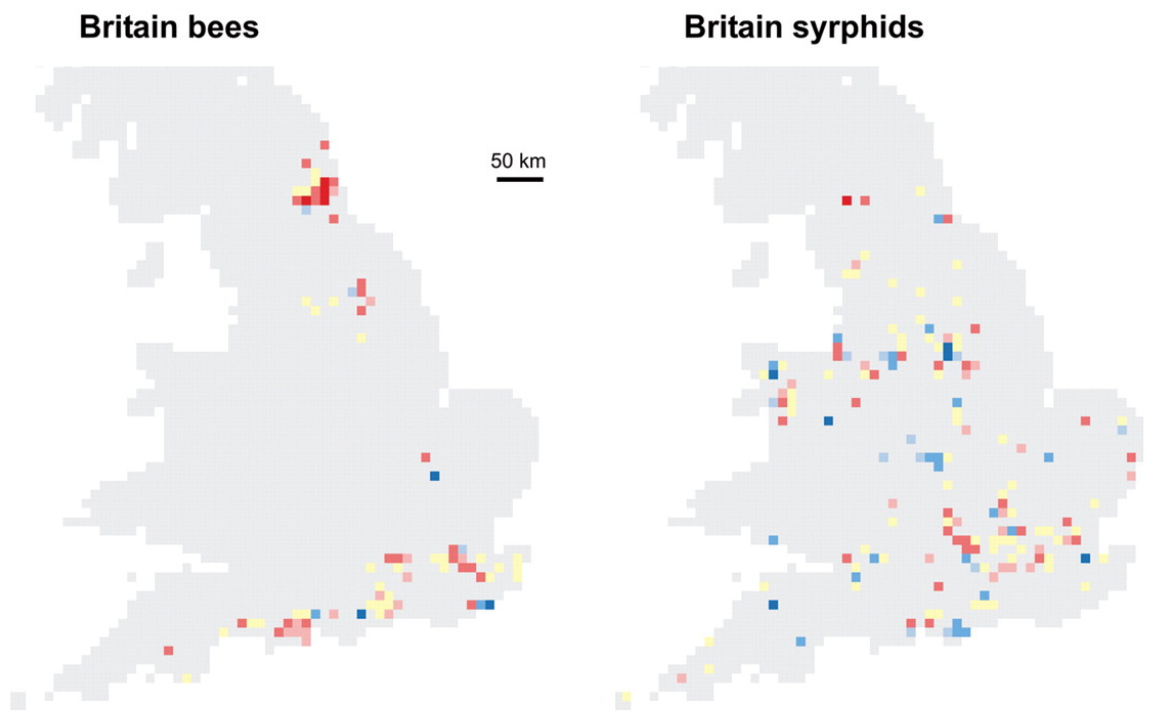
Local and southern



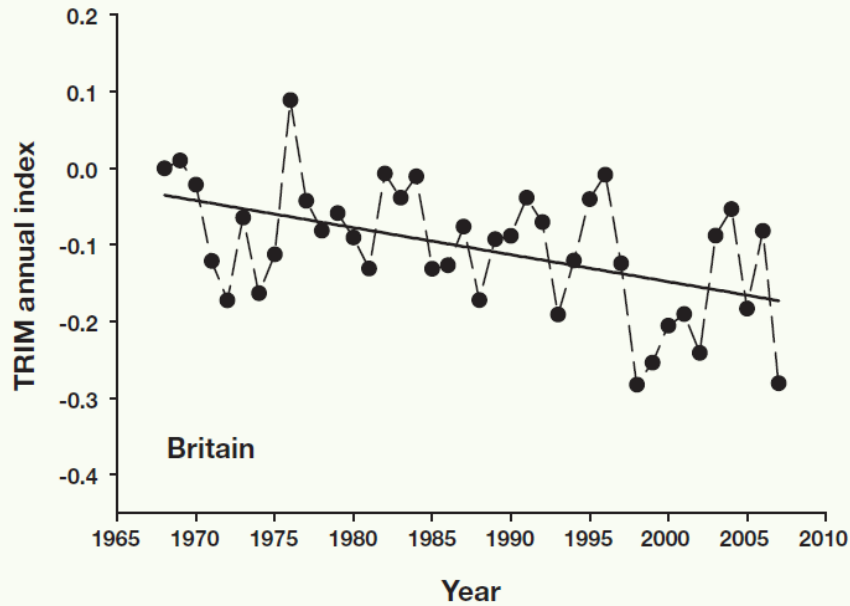
# More evidence...

Biesmeijer *et al.* (2006) *Science*

- Change measured before and after 1980
- Bees declined in over half of British and Dutch squares
- Specialist, non-migrants, with one generation per year more likely to have declined
- →Carvalho *et al.* (2013) *Ecol. Letters*



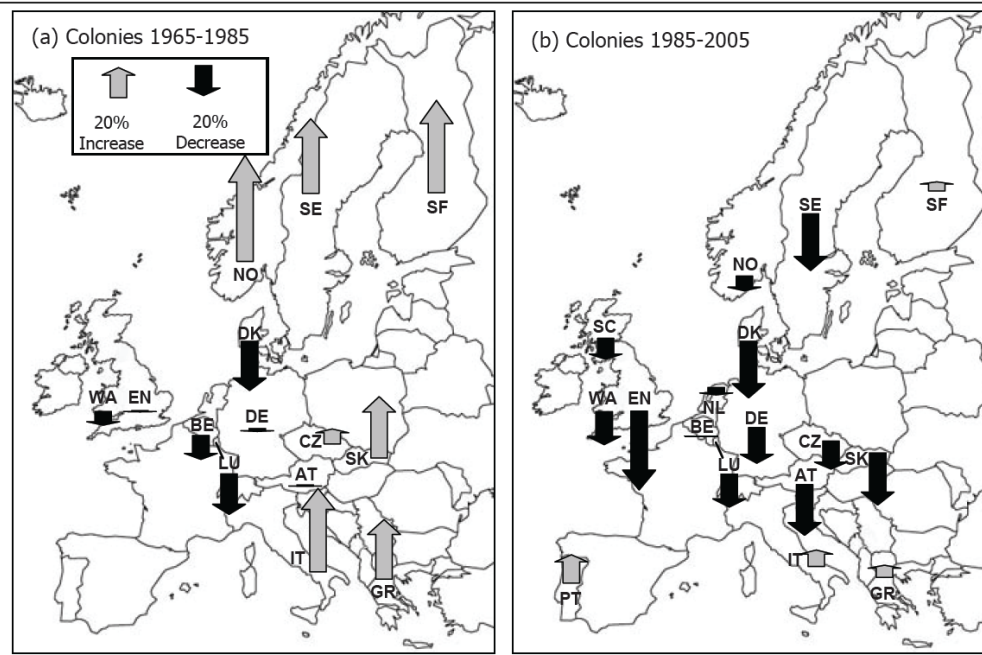
**Figure 1** Change in the total abundance of all larger moths caught in the Rothamsted light-trap network 1968-2007.



**And also...**



Fox *et al.* (2013) *Butterfly Conservation*



Potts *et al.* (2009) *Journal of Apicultural Research*



*Narrated by John Hurt*

# MORE THAN HONEY

*One in three mouthfuls of the food we eat is dependent on pollination...*

© 2009 ENTERTAINMENT LTD. PRESENTS "MORE THAN HONEY" A ZDF ONE FILM, ALLEGRO FILM, THELMA FILM, ORWENS FILM CO. PRODUCTION. IN ASSOCIATION WITH SWISS FILM AND FERNSEHEN / ZDF. CO-PRODUCED BY NIKOLAUS WIEBER. WRITTEN AND DIRECTED BY NIKOLAUS WIEBER. EDITED BY NINA SCHMID. COUNSELLOR OF ZDF AND ZDF ONE: ANDREAS WITTMANN. MUSIC BY ANDREAS WITTMANN. COSTUME DESIGNER: KERSTIN HOPPENHOLZ. SPECIAL THANKS TO PETER SCHIEFER. PRODUCTION MANAGER: JESSICA SCHNEIDER, KATHARINA BOGENSCHNEIDER. PRODUCED BY THOMAS KOPFUS, HELMUT GRASSER, PIERRE-ALAIN WEIER, NIKOLAUS WIEBER.

# One in three mouthfuls?

“**35%** of global production volume comes from crops that depend *to some extent* on pollinators”

Klein *et al.* (2007) Proc Roy Soc B.

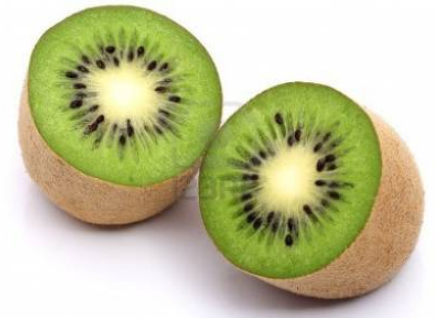
**Yield losses without pollinators**



**25%**



**40-90%**



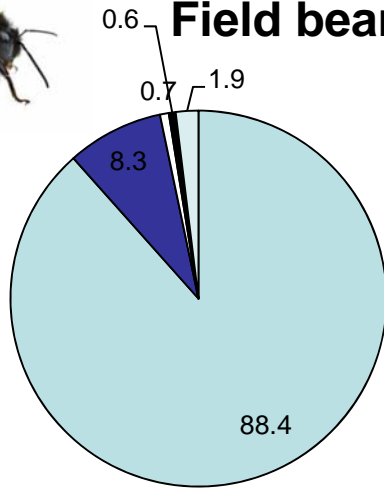
**>90%**





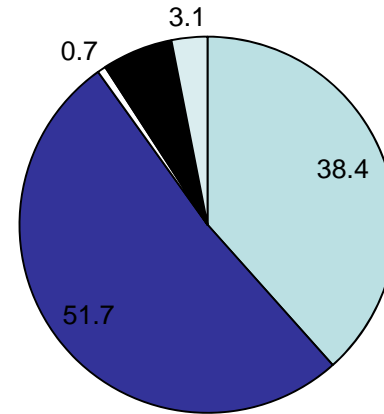


### Field beans



- Bumblebees
- Honey bees
- Solitaries
- Hoverflies
- Other

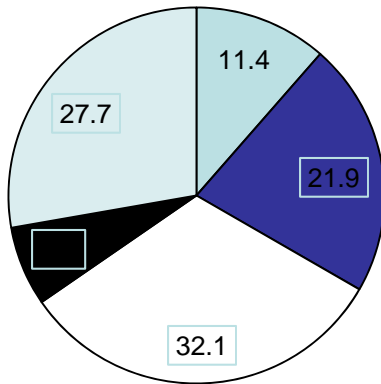
### Strawberries



- Bumblebees
- Honey bees
- Solitaries
- Hoverflies
- Other

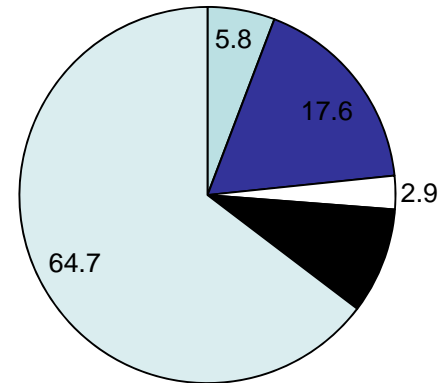


### Apple



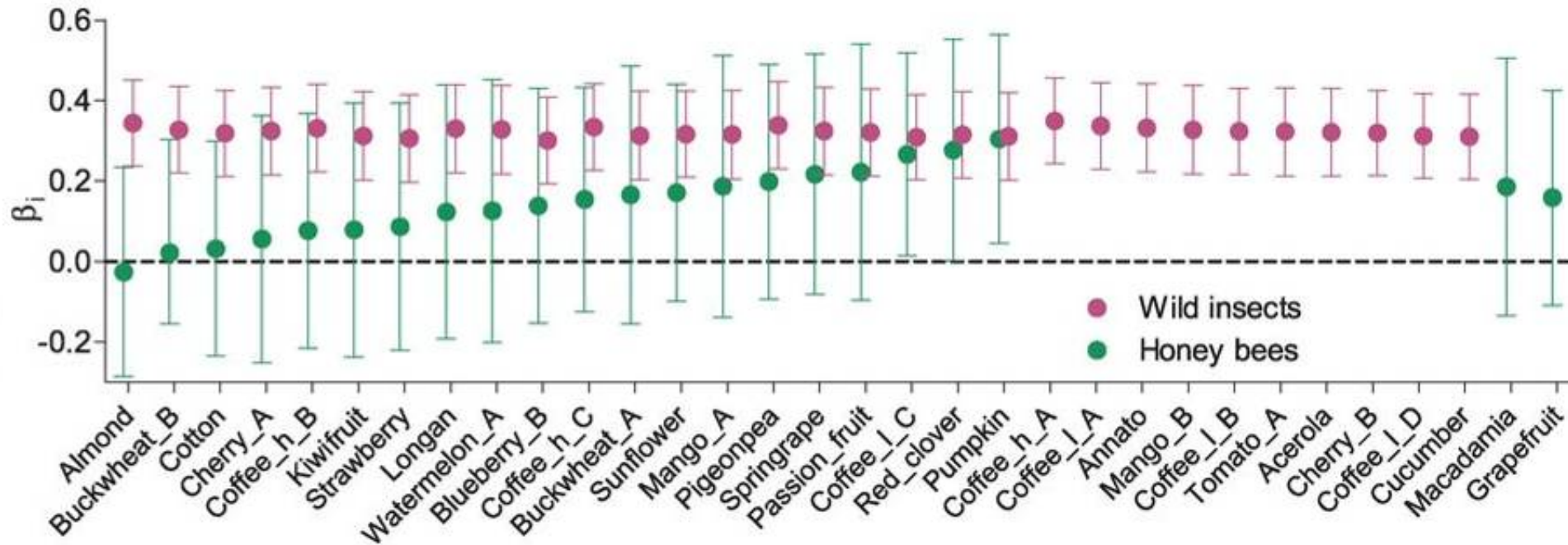
- Bumblebees
- Honey bees
- Solitaries
- Hoverflies
- Other

### Oilseed



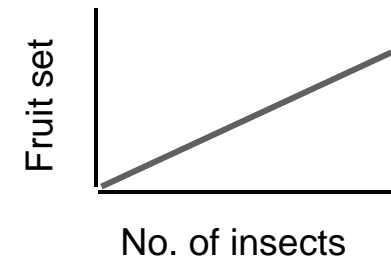
- Bumblebees
- Honey bees
- Solitaries
- Hoverflies
- Other

# Wild insects linked to fruit set in crops



$\beta_i$  = regression coefficient

$\beta_i > 0$  means a positive slope between number of insects and fruit set



# Working together to protect wild pollinators

## Pollinator Conservation Delivery Group set up 2011



Sainsbury's

Waitrose

ASDA

The co-operative farms

syngenta



# Priority questions

- 35 priority questions
- Ranked by **non-scientists**



1. How important is the diversity of pollinator species to the resilience and reliability of the pollination service?
2. How important are wild pollinators for crop yields?
3. What are the sub-lethal effects of chemicals (pesticides and other environmental pollutants) on wild pollinators?
6. How to train conservations, agronomists and land managers in pollinator conservation.

# Addressing the priority questions

September 2012



Generate ideas

Build support for projects

Develop winning projects

12 projects



# One of those projects: Environmental Land Management for Pollinators

Waitrose



# Take home messages

- Pollinating insects are diverse
- The **diversity** is important to the pollination service
- Scientists and stakeholders working **together** generates good use of science

Thanks to: Stuart Roberts, Dave Goulson, Simon Potts, Tom Breeze, Mike Garratt, Mark Gillespie, Warren Photographic, Nico Vereecken, Claire Carvell.







1. What are pollinators?
2. What's been happening to them?
3. Why should we care?
4. Working together to protect wild pollinators



## GLOBAL ACTION ON **POLLINATION SERVICES** FOR SUSTAINABLE AGRICULTURE

[HOME](#) | [CASE STUDIES](#) | [DOCUMENTS](#) | [GLOSSARY](#) |



[Español](#) | [Français](#)

**POLLINATION INFORMATION MANAGEMENT SYSTEM [PIMS]**

### PIMS QUESTIONS

- **What are the pollination needs of a particular crop?**
- What is the current understanding of managing the pollination of a particular crop?
- What studies have been carried out on the pollination of this crop?
- What is known about the pollinators of this crop?

### Pollination Need of Crops

What are the pollination needs of a particular crop?

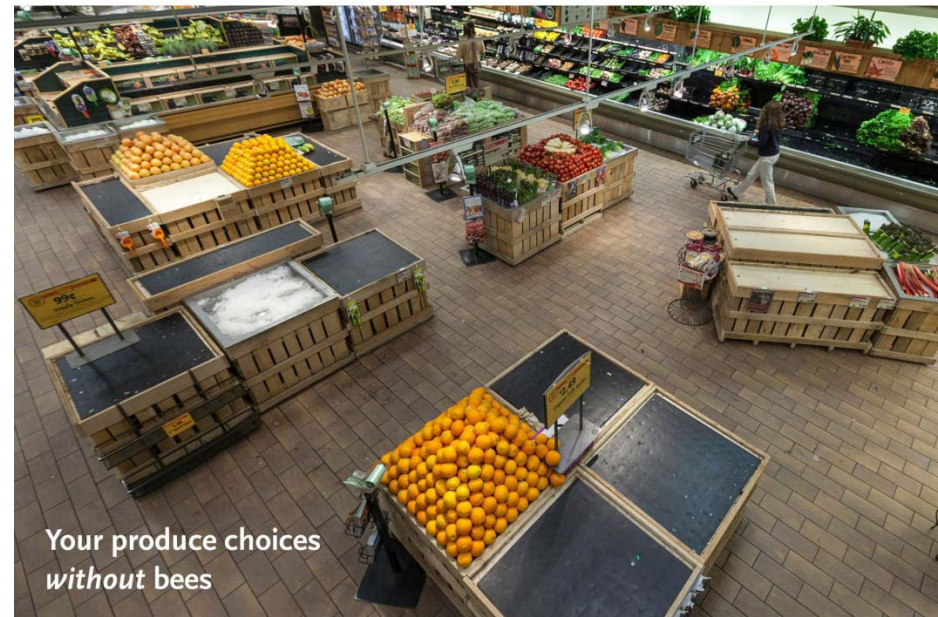
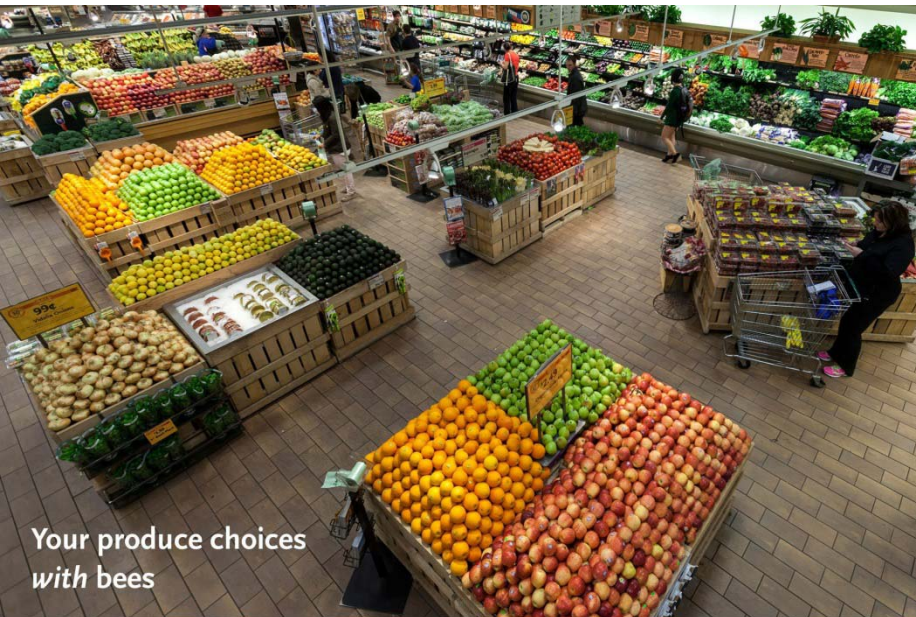
The leading global food crops as reported in FAOSTAT have been evaluated for their dependence on animal pollinators. Information for each crop evaluated is searchable here, by entering the name of a given crop - either the common name or the scientific name.

Enter name of crop (common or scientific name):

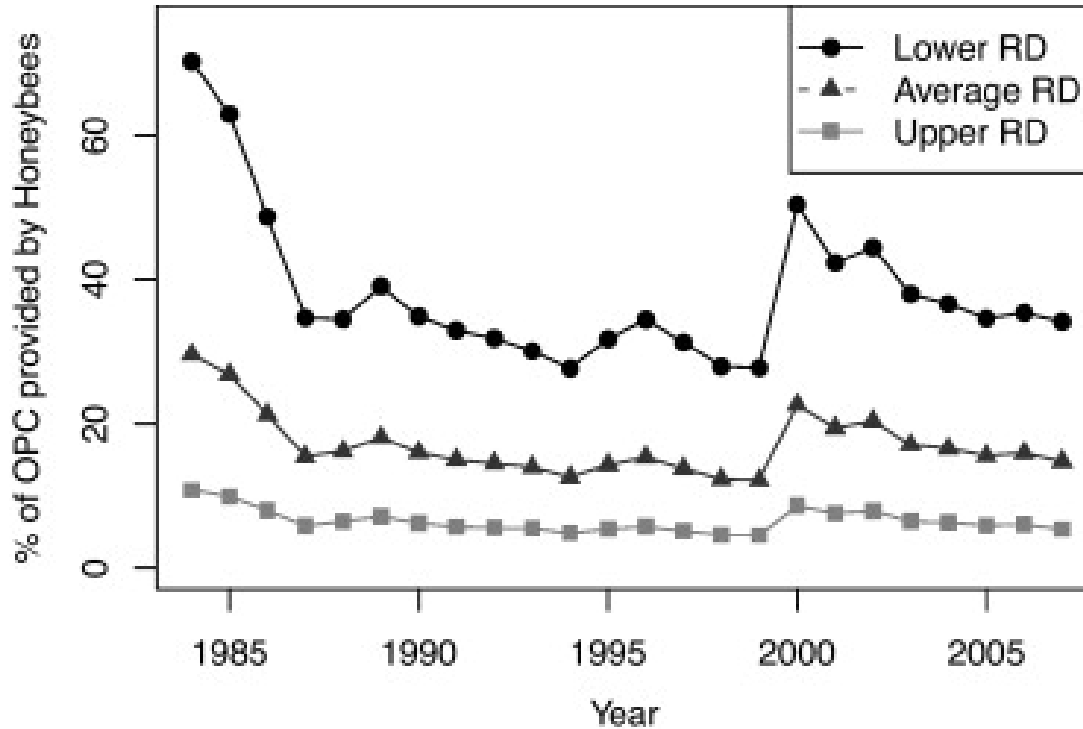
>> **SUBMIT**

# How much is crop pollination worth?

In the UK, this crop pollination service is worth an estimated **£430 million** (8% of total crop market value)



A 2011 study estimated that two-thirds of the crop pollination service is provided by **wild pollinators**, not by managed honey bees

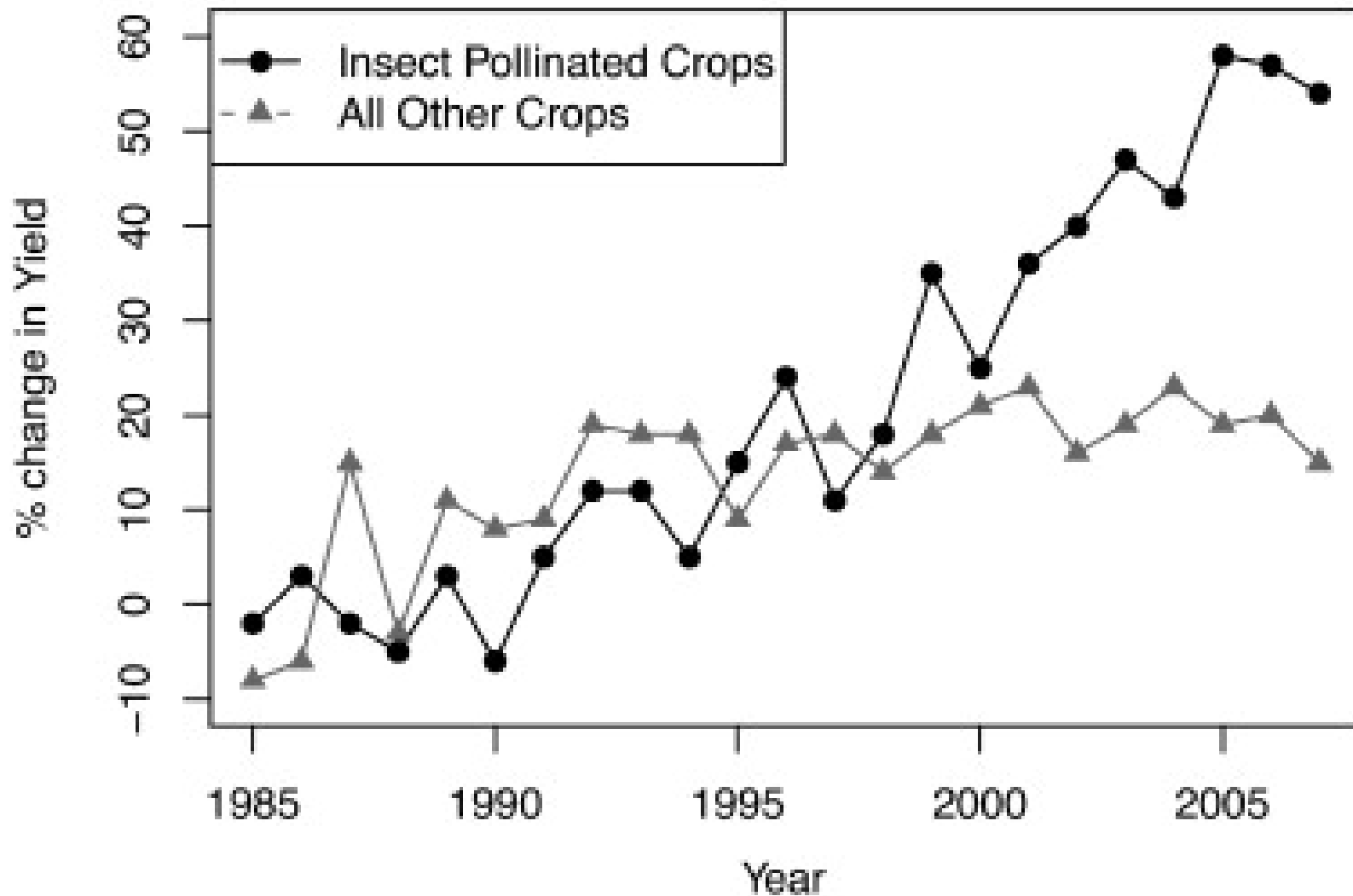


OPC = Number of hives

Estimated number hives needed

Maximum capacity of honeybees to satisfy optimal pollination service demand to UK crops by honeybees between 1984 and 2007 at the lowest, average and upper recommended hive densities (RD) per hectare.





Average % change in per ha yields of insect pollinated crops and all other crops in the UK using 1984 as a base year.