



Habitat creation for pollinators on farmland: a research update

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POST Pollinators Update, London: 2nd December 2015

Outline

1. Policy context
2. Habitat quality
3. Quantity - how much habitat?
4. Where in the landscape?
5. Impacts on crop yield
6. Future priorities

Photo: L. Hulmes

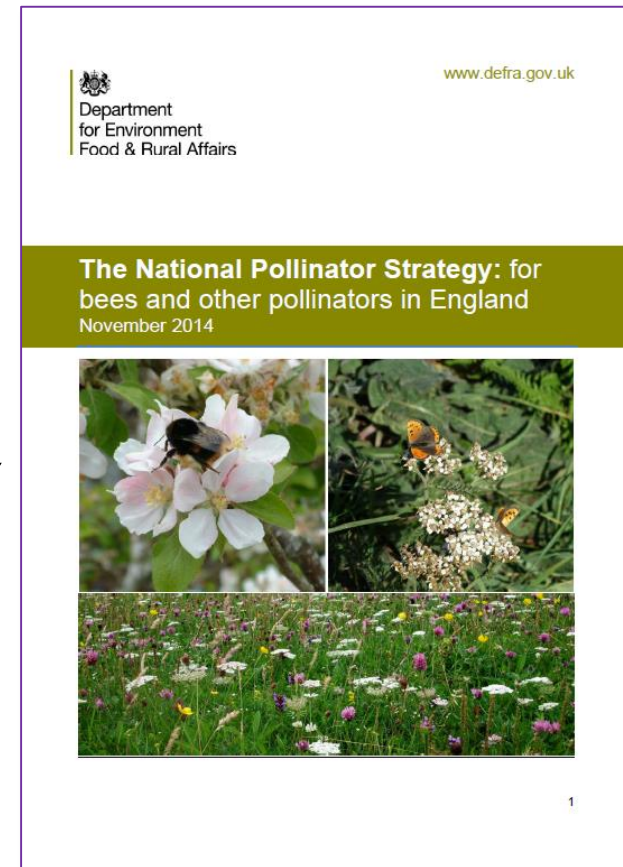
1. Policy context – National Pollinator Strategy

First of five key areas (2014 – 2024):

Supporting pollinators on farmland through the CAP & voluntary initiatives

and outcomes:

“more, bigger, better...diverse high-quality flower-rich habitats supporting our pollinators across the country”



1. Policy context – Countryside Stewardship

Wild Pollinator and Farm Wildlife Package

- Set of options to provide **key floral and nesting resources** throughout the year
- New **incentive** for wild pollinators, birds and other wildlife in the wider countryside
- 1-3 ha flower-rich habitat/100 ha
- 500 m to 2 km of flowering hedgerow/100 ha
- **Targeted** to locations where declining species recorded



2. Habitat quality

- Limited uptake and poor quality of habitats under ELS?

(6.6% of ELS agreements included nectar flower mix)

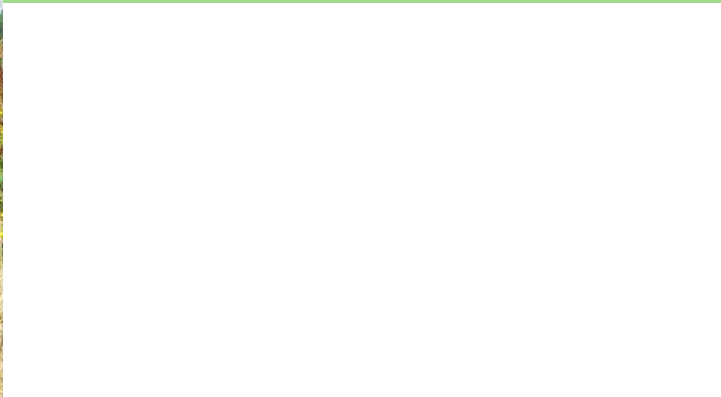
- Good **establishment** and **management** key to success



Photo: C. Carvell

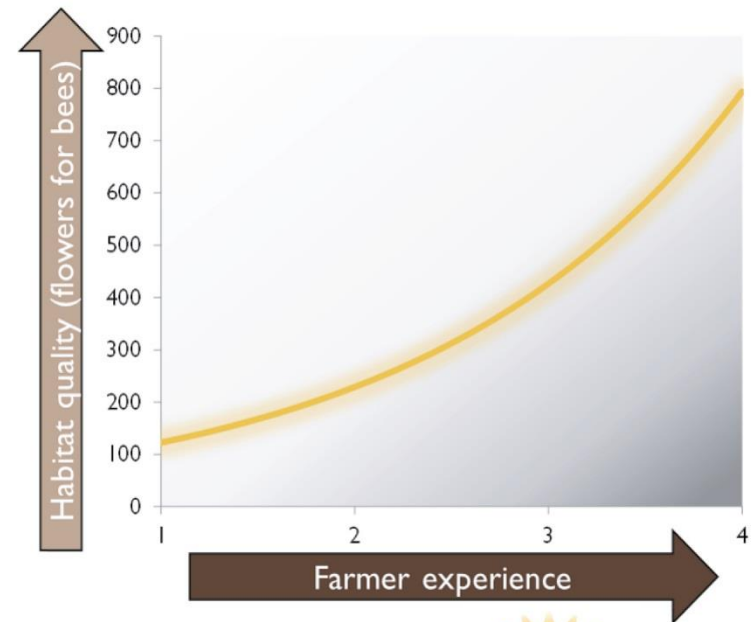


Photo: M Nowakowski



2. Habitat quality

- Limited uptake and poor quality of habitats under ELS?
- Good **establishment** and **management** key to success
- Farmer experience and training benefit habitat quality and pollinators

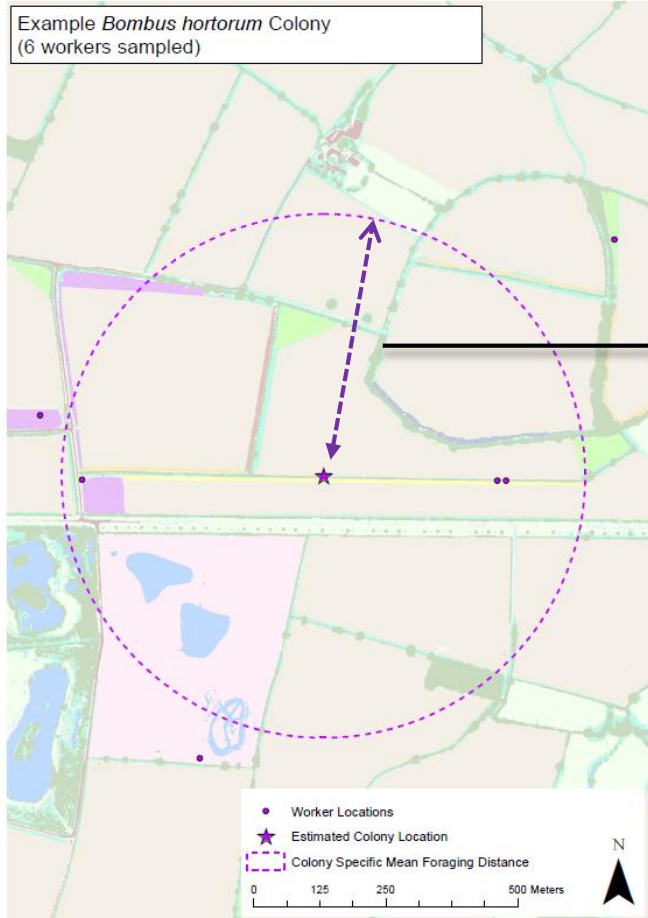


McCracken et al. (2015) J Applied Ecology
RELU Policy and Practice Note No. 37 (July 2012)

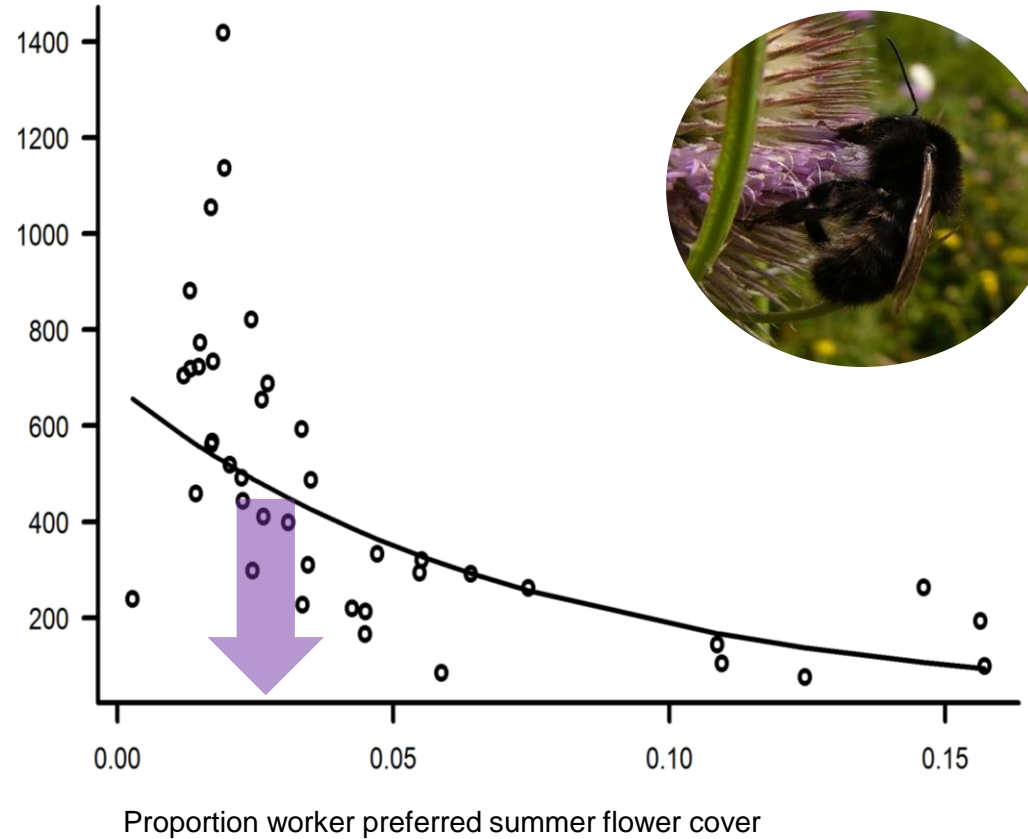
3. How much flower-rich habitat?



Example *Bombus hortorum* Colony
(6 workers sampled)



b) *Bombus ruderatus*



Insect Pollinators Initiative

Carvell et al. (2014). BBSRC Grant reference BB/I000925/1
Redhead et al (in press) Ecological Applications

3. How much flower-rich habitat?



1. Which species to target?

6 common wild bee species, key crop pollinators

2. Which resources limit their populations in farmed landscapes?

floral resources, especially pollen

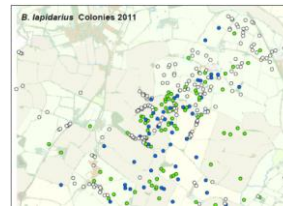
3. Which management options provide these resources?

flower-rich grasslands, sown mixtures



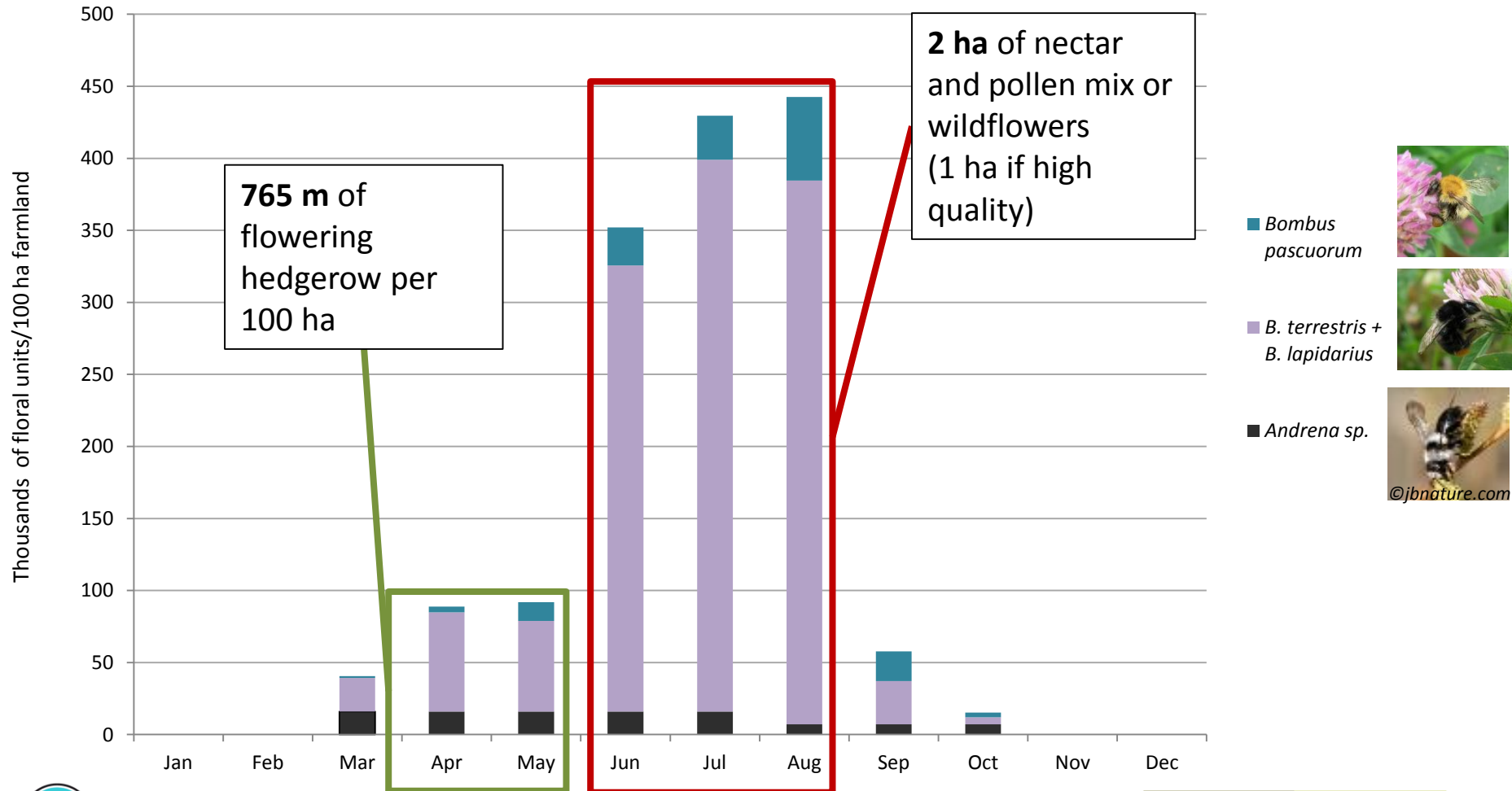
4. What area of each option is needed to provide enough resources?

pollen demand/bee; bees/nest; nests/ha, pollen volume/flower, flower density/ha habitat



3. How much habitat?

Low estimates of pollen demand for larval rearing, in floral units/100 ha, for six common wild bee species

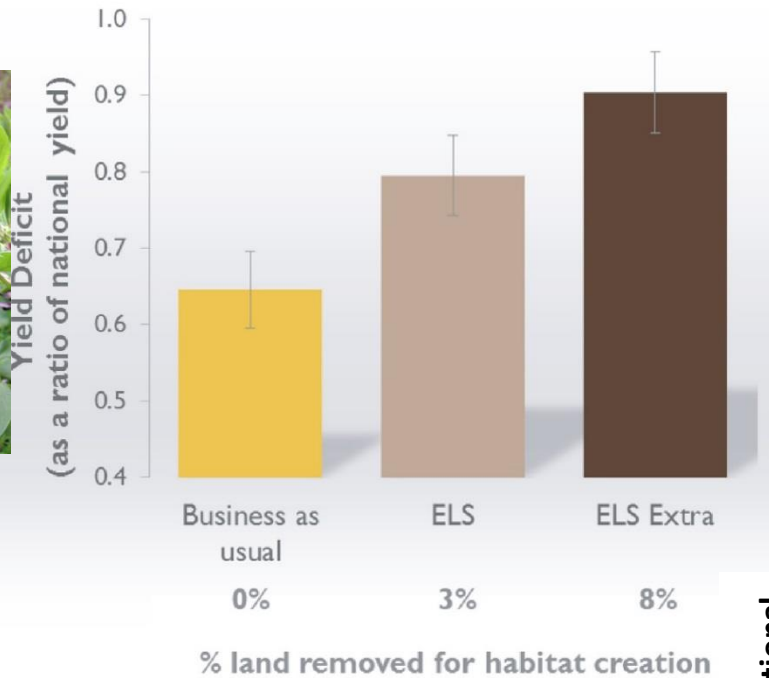


4. Where in the landscape?



Carvell et al. (2015) *Basic and Applied Ecology*
Scheper et al (2013) *Ecology Letters*

5. Linking habitat creation to food production



PROCEEDINGS B

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Research



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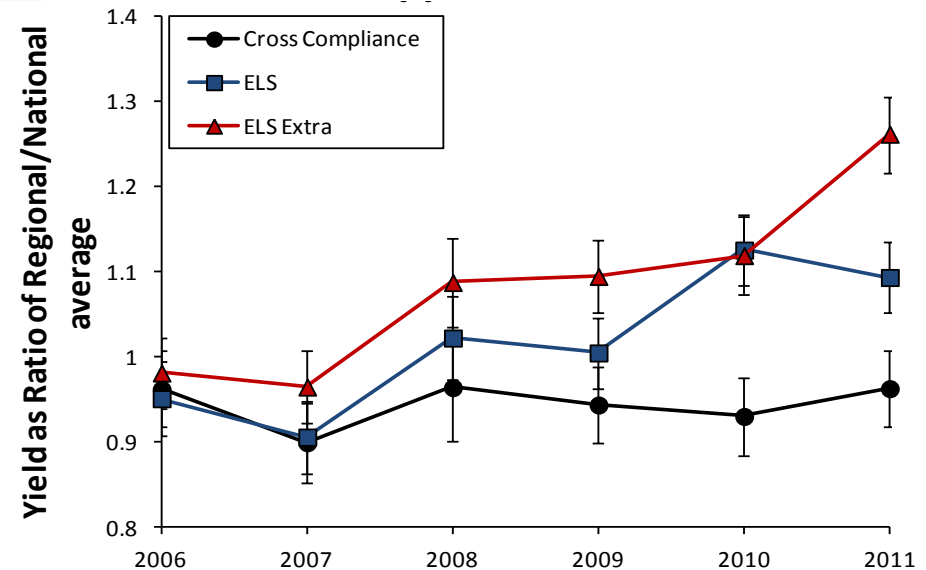
Wildlife-friendly farming increases crop yield: evidence for ecological intensification

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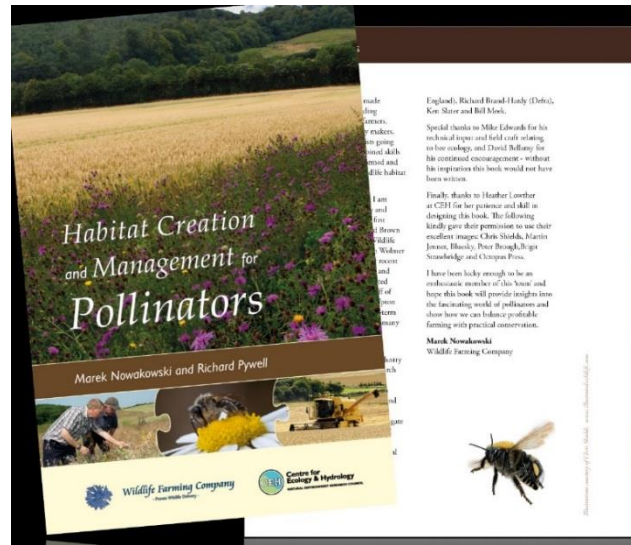
²Wildlife Farming Company, Bicester OX26 1UN, UK

Combined yield trend with time



6. Future Priorities

- Knowledge transfer



(Copies of “Habitat Creation and Management for Pollinators” will be freely available from the Centre for Ecology & Hydrology in early 2016)

- **Systematic monitoring** of bee and hoverfly **abundance** to measure **long-term impacts** of habitat creation and **predict future threats**



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