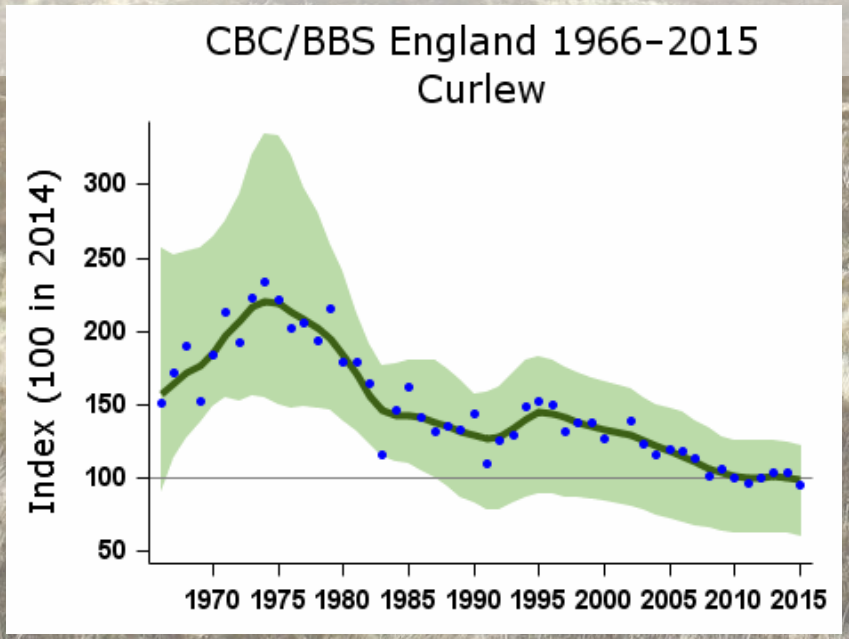
Identifying problems and testing solutions

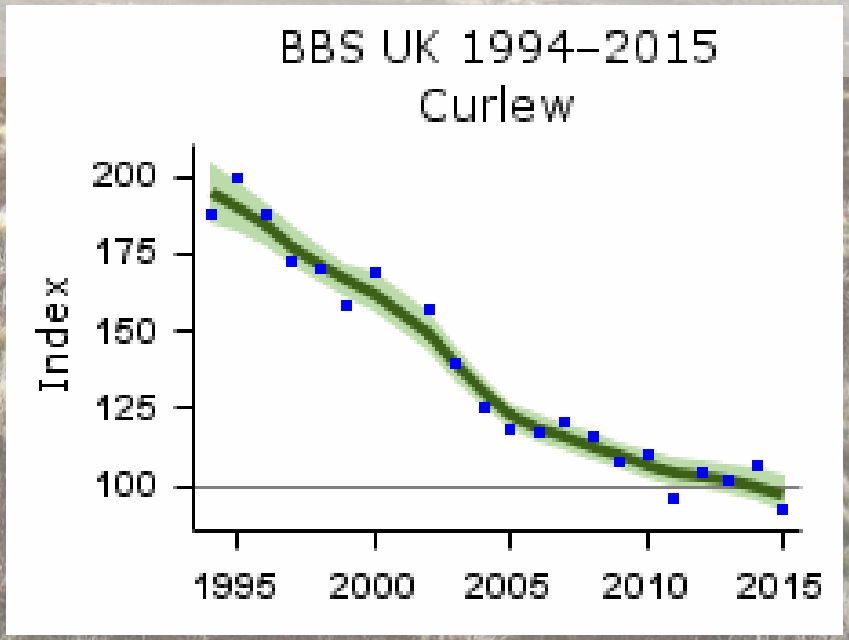
James Pearce-Higgins
Director of Science
British Trust for Ornithology

A tale of loss

Over the past 20 years, the UK has lost half its breeding curlew

In Ireland, only 500 pairs may remain





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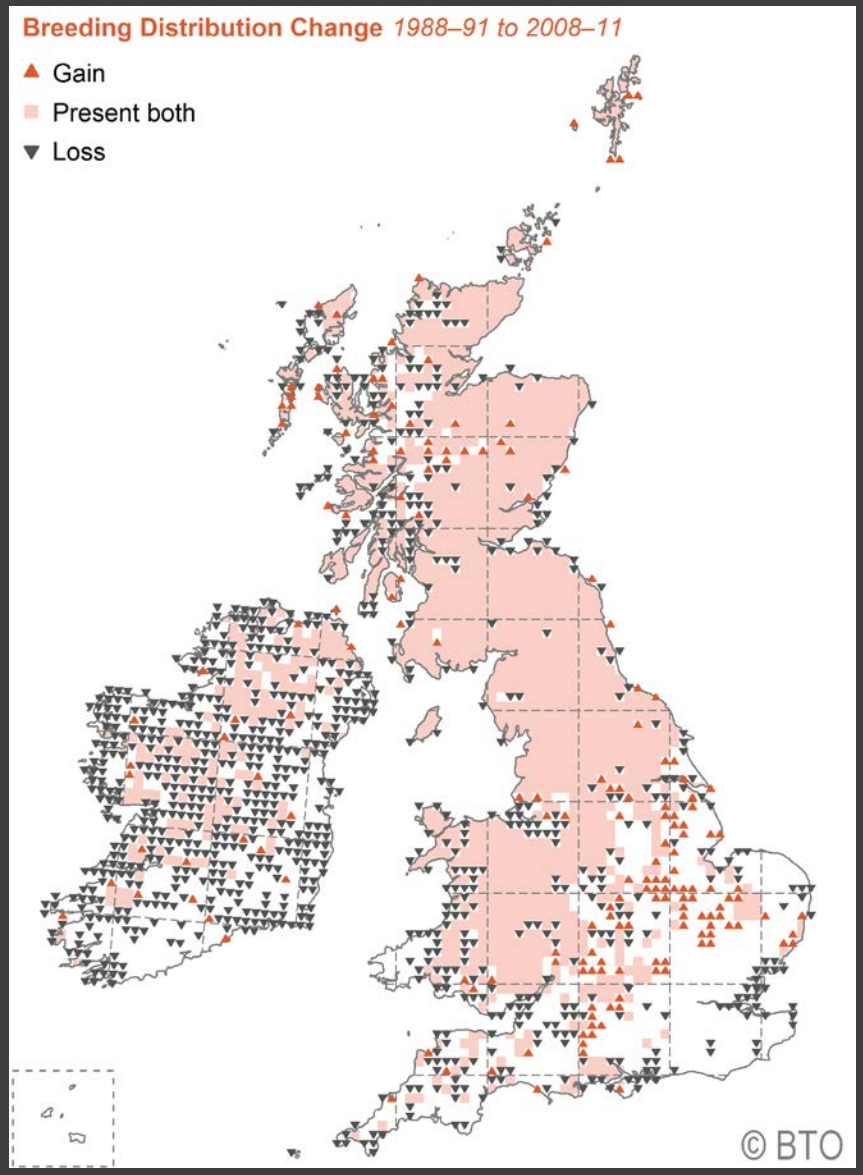
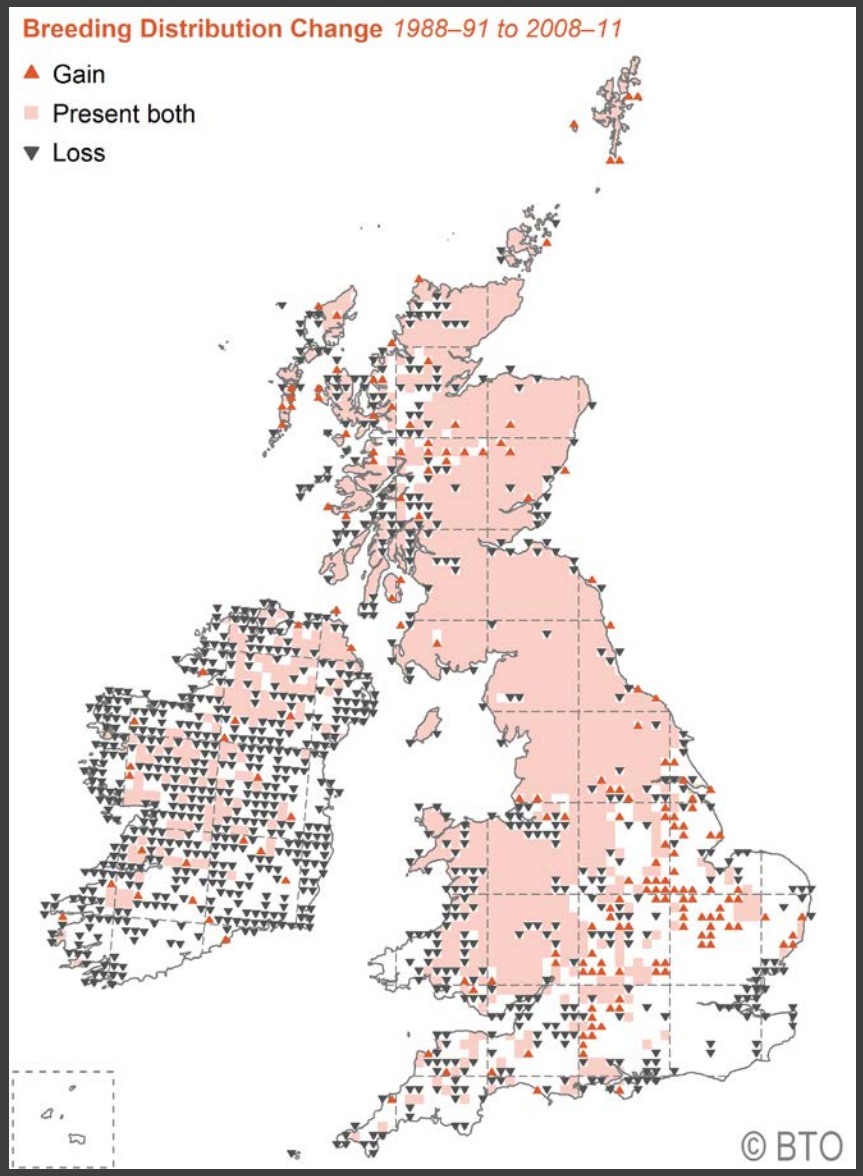
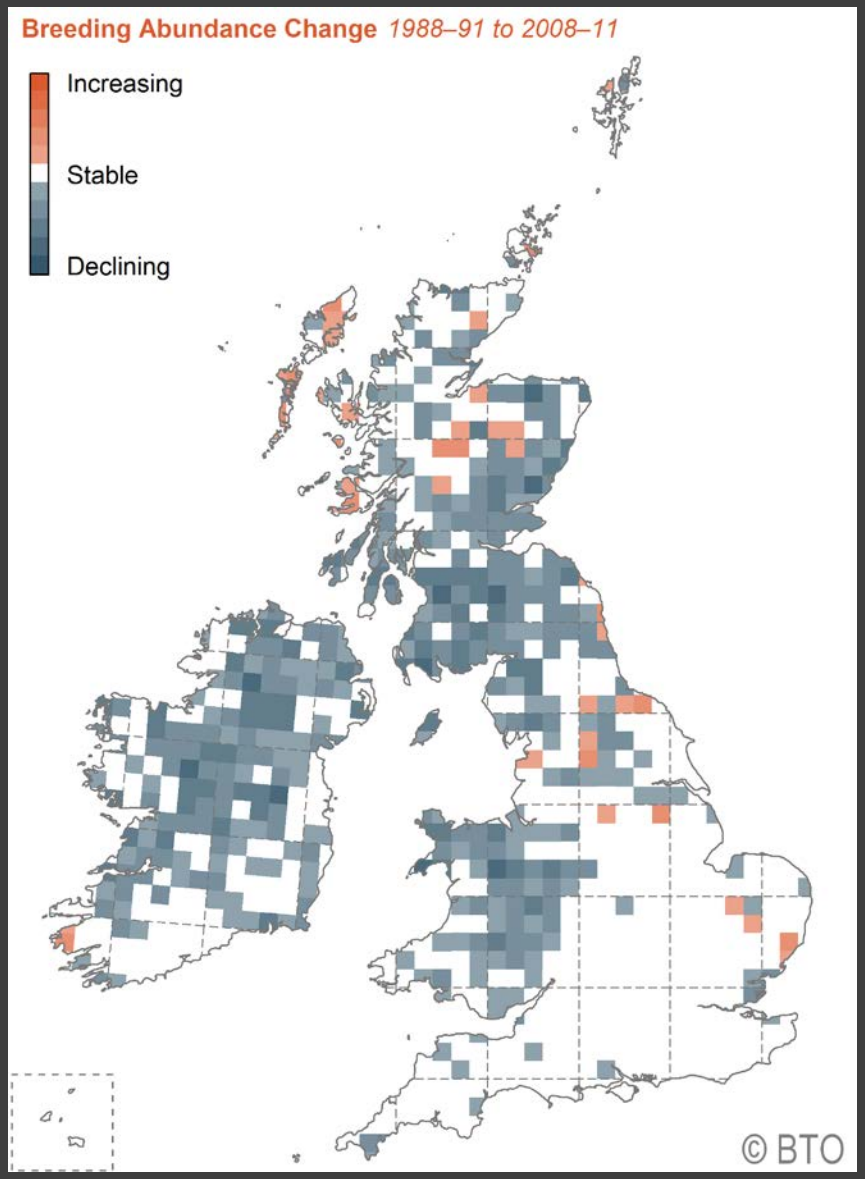
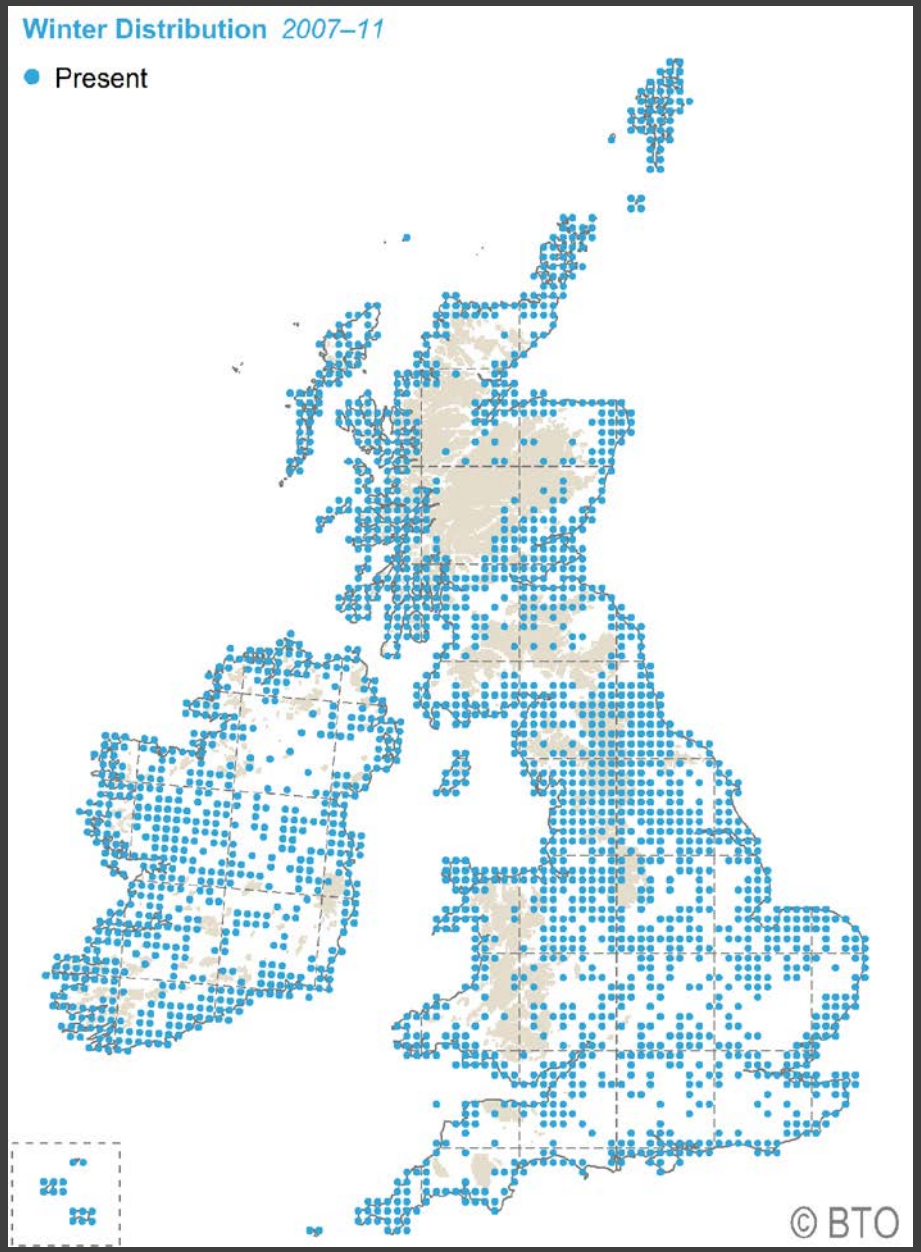


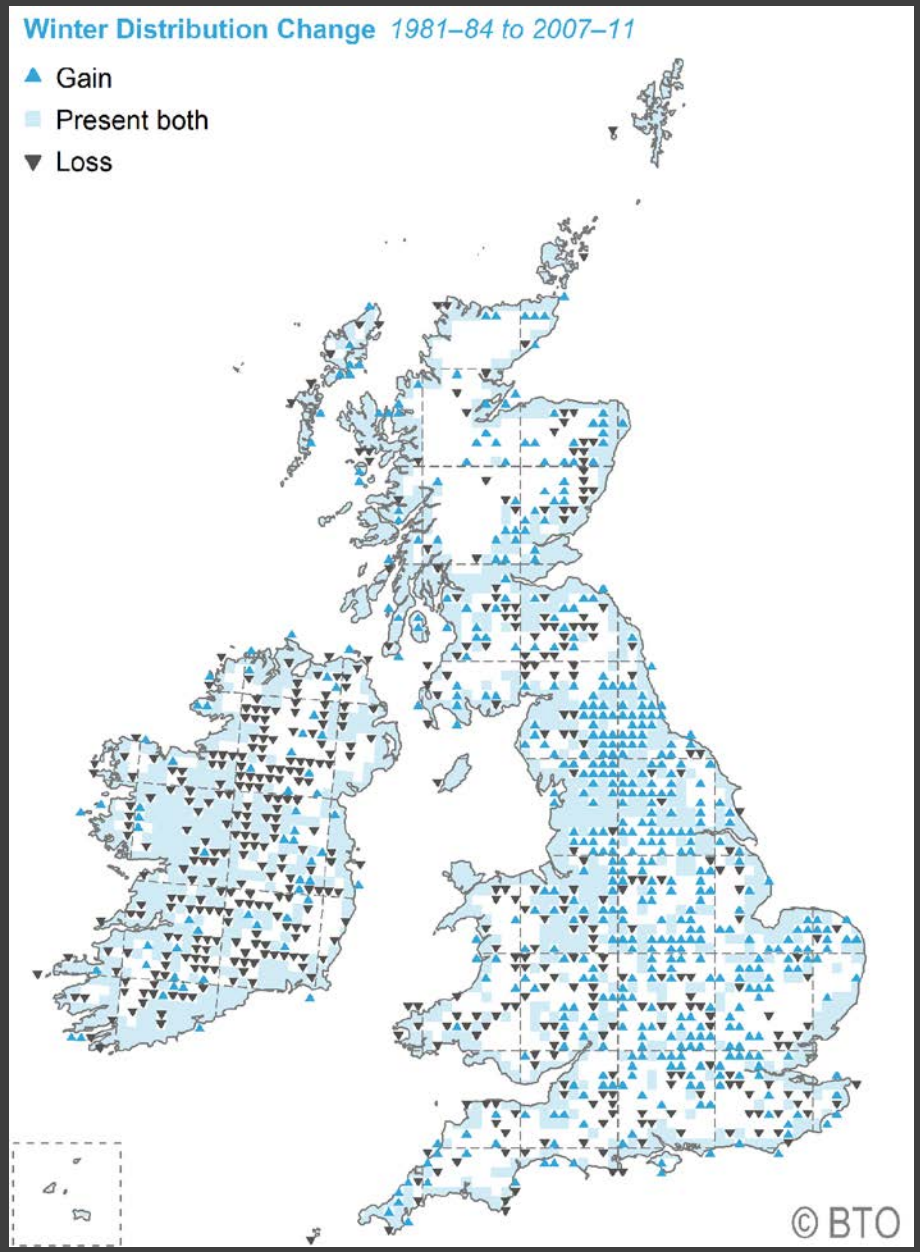
78% range contraction in Ireland, 17% in Britain



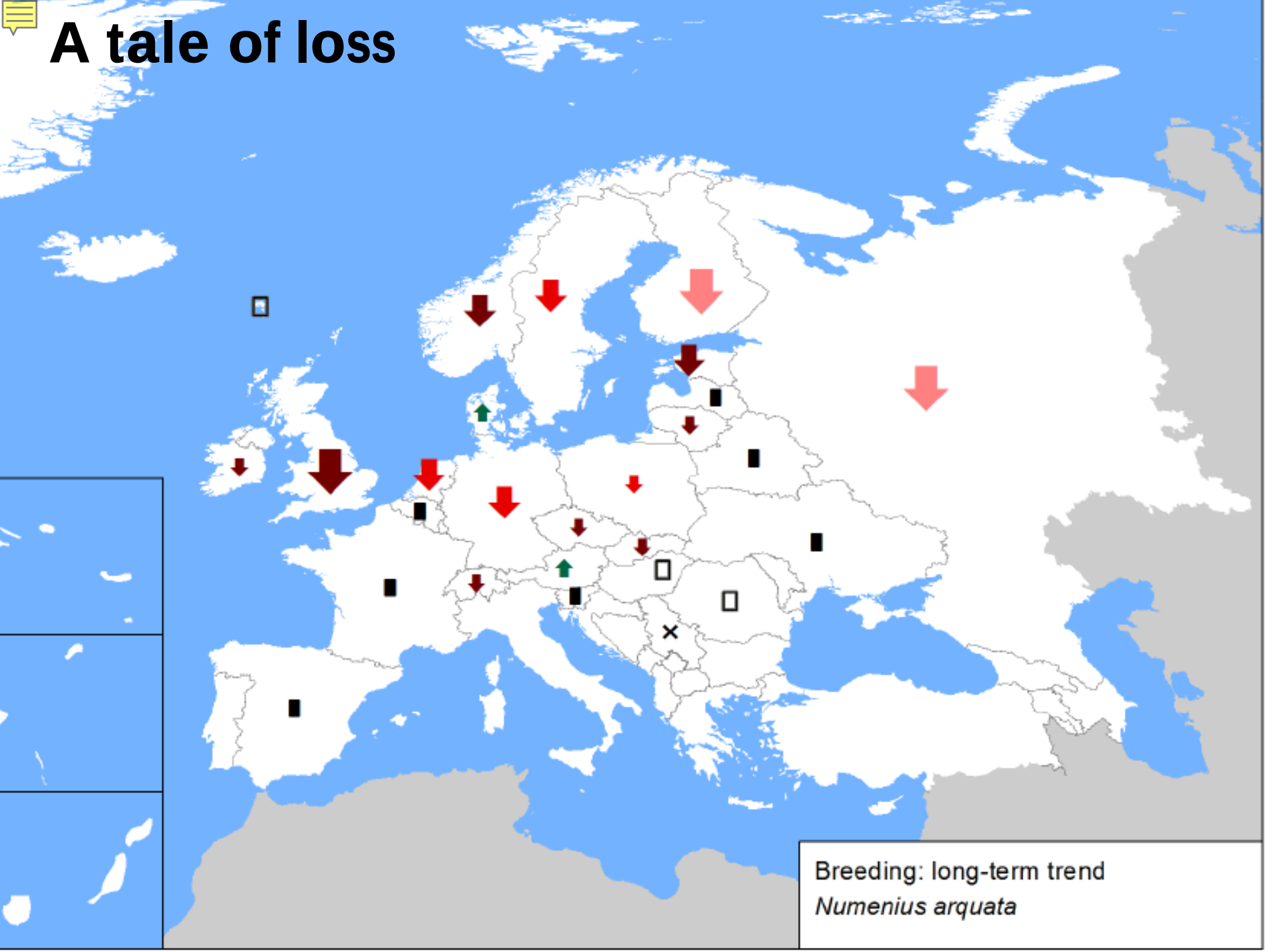


and in winter?





A tale of loss



A group prone to extinction?

Eurasian curlew

Whimbrel

Long-billed curlew

Far Eastern curlew

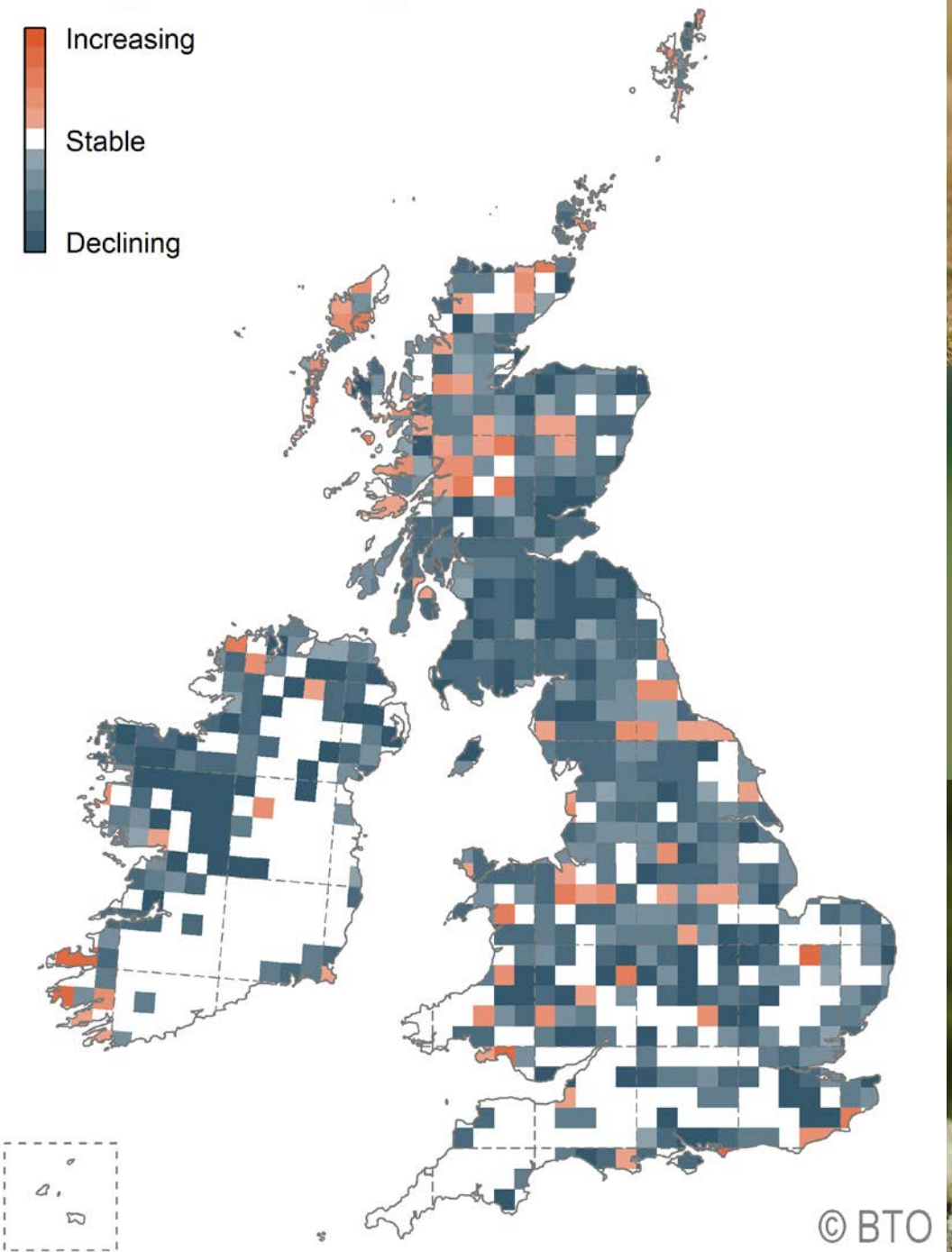
Bristle-thighed curlew

Little curlew

Slender-billed curlew

Eskimo curlew

Breeding Abundance Change *1988–91 to 2008–11*



Reasons for decline

BIRD STUDY, 2017
https://doi.org/10.1080/00063657.2017.1359233

BTO
Looking out for birds

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Environmental correlates of breeding abundance and population change of Eurasian Curlew *Numenius arquata* in Britain

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ABSTRACT

Capsule: Across Britain, breeding Eurasian Curlew *Numenius arquata* are less numerous and have shown greater population declines in areas with more arable farming, woodland cover and higher generalist predator abundance.

Aims: We present the first national-scale analysis of the potential drivers of Curlew population change in Britain, which is needed to guide conservation action for this globally near-threatened, declining species.

Methods: Breeding Bird Survey data and environmental predictors were used to model variation in Curlew abundance in 1995–99 and 2007–11, and population change between these periods.

Results: Arable farming and woodland cover were negatively associated with Curlew abundance and population declines. Curlew abundance was positively associated with extent of protected area coverage and gamebird numbers. Abundance and population change were positively associated with cooler temperatures and higher summer rainfall, but negatively associated with numbers of generalist predators.

Conclusions: We found support for the negative effects of intensive agriculture, forestry, increases in generalist predator populations and climate warming on Curlew abundance and population change. Effective site protection and measures to reduce generalist predator abundance may be important conservation measures, together with improving breeding habitat quality in the wider countryside.

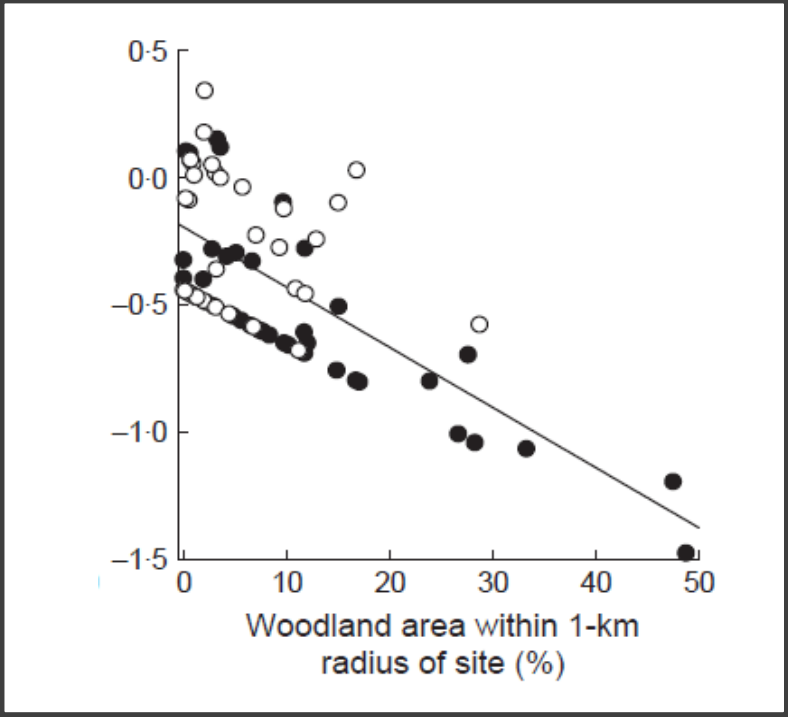
ARTICLE HISTORY
Received 19 December 2016
Accepted 12 June 2017

Reasons for decline: **habitat change**

- Grazing
- Grassland improvement
- Agricultural intensification
- Bog drainage & peat extraction
- Vegetation change

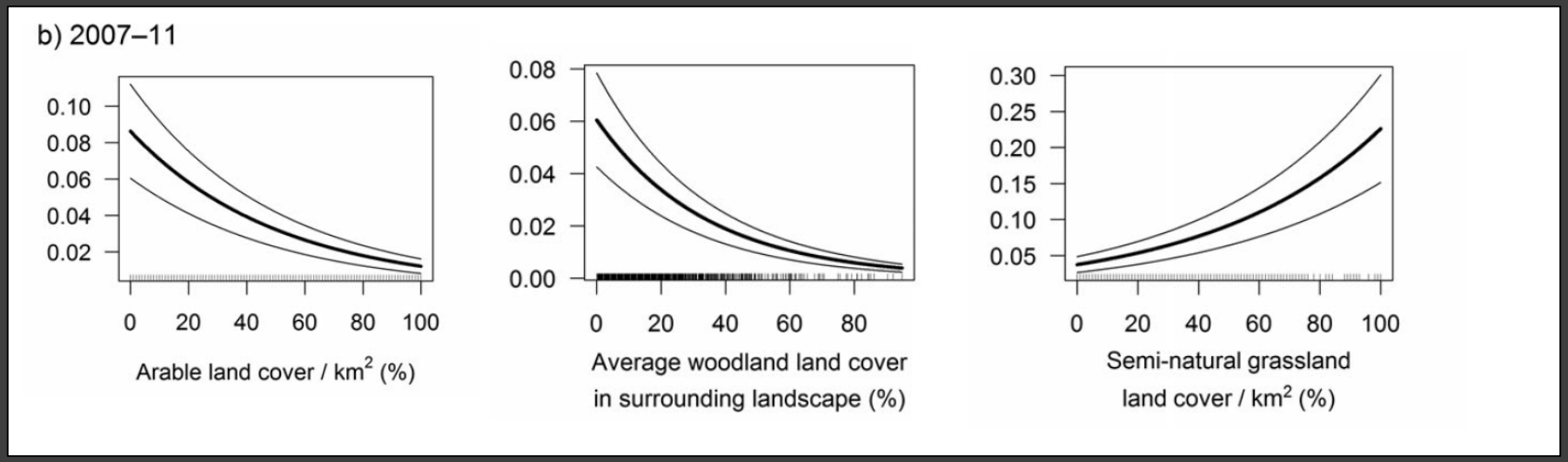
Reasons for decline: **habitat change**

- Afforestation
  - displacement
  - edge effects
  - predator sources



Douglas et al. 2014 J Applied Ecology

Variable	Effect on curlew abundance
Arable farming	–
Afforestation	–
Semi-natural grassland	+



Variable	Effect on curlew abundance	Population change
Arable farming	–	–
Afforestation	–	–
Semi-natural grassland	+	

Reasons for decline: **predation pressure**

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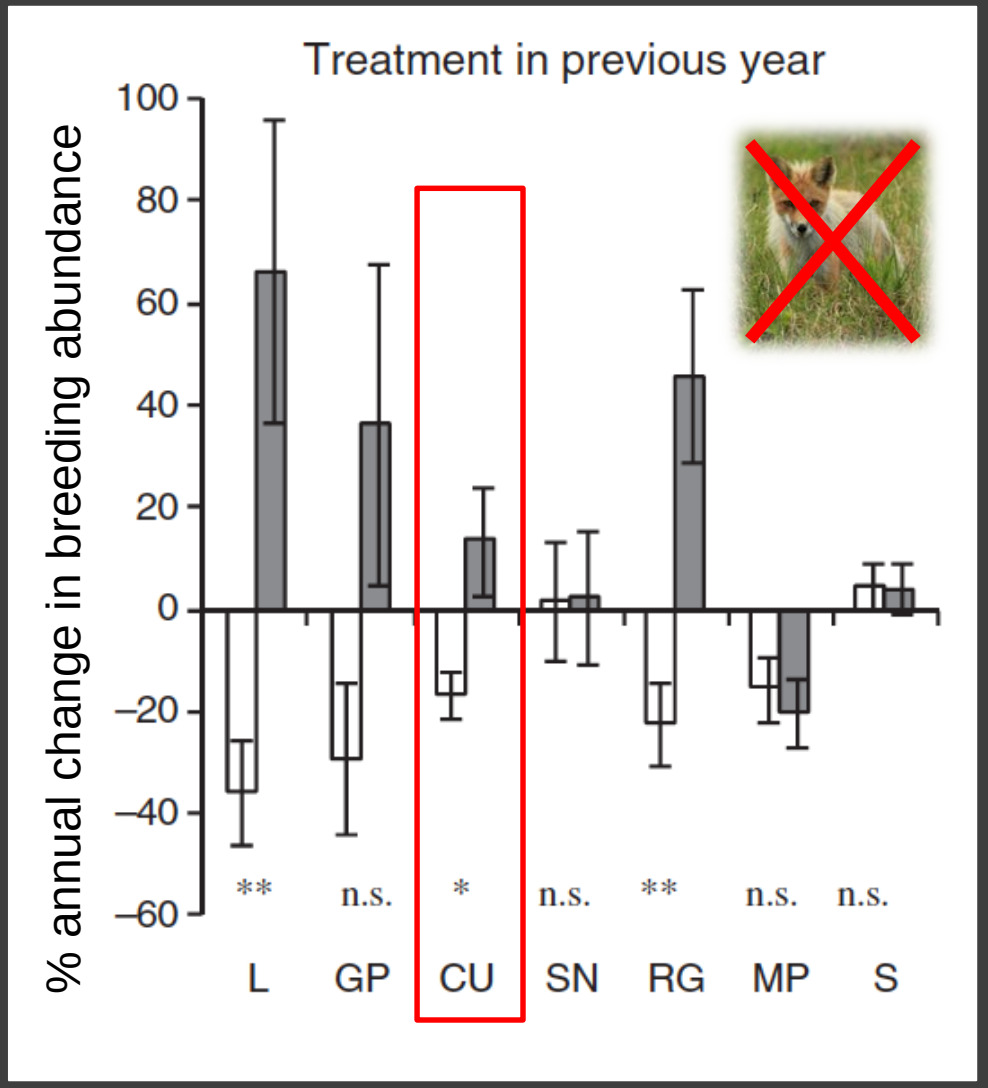
- Gamebird management
  - predator control



Fletcher et al. 2010 J Applied Ecology

Reasons for decline: **predation pressure**

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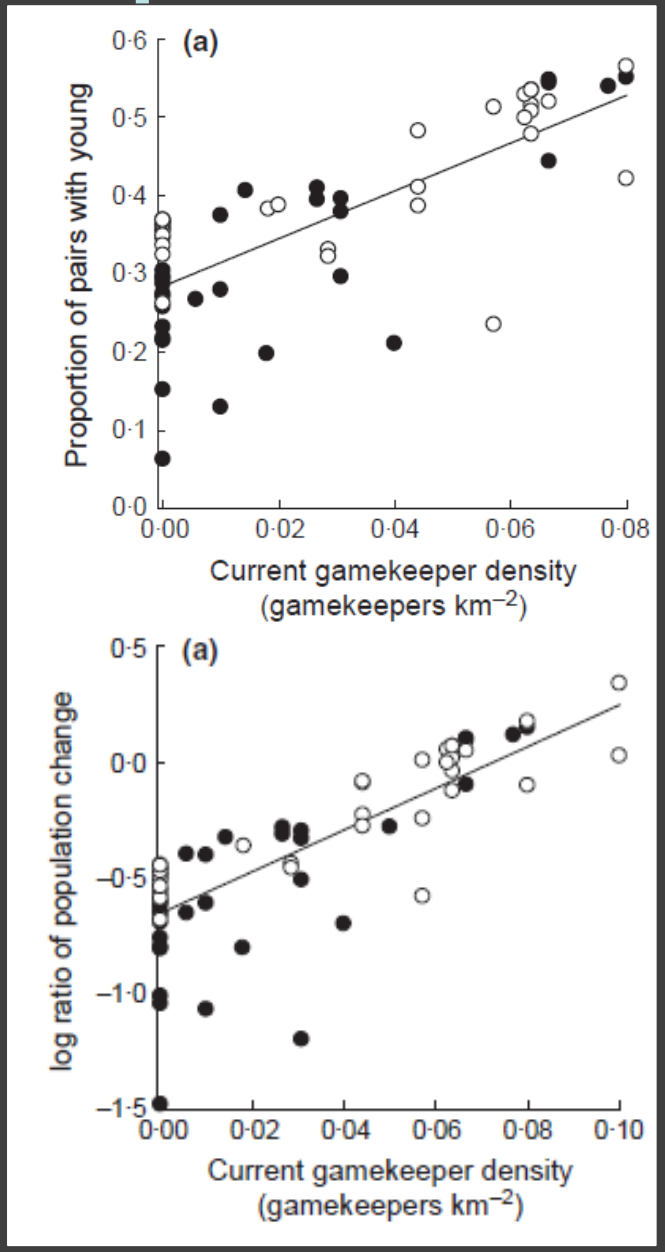
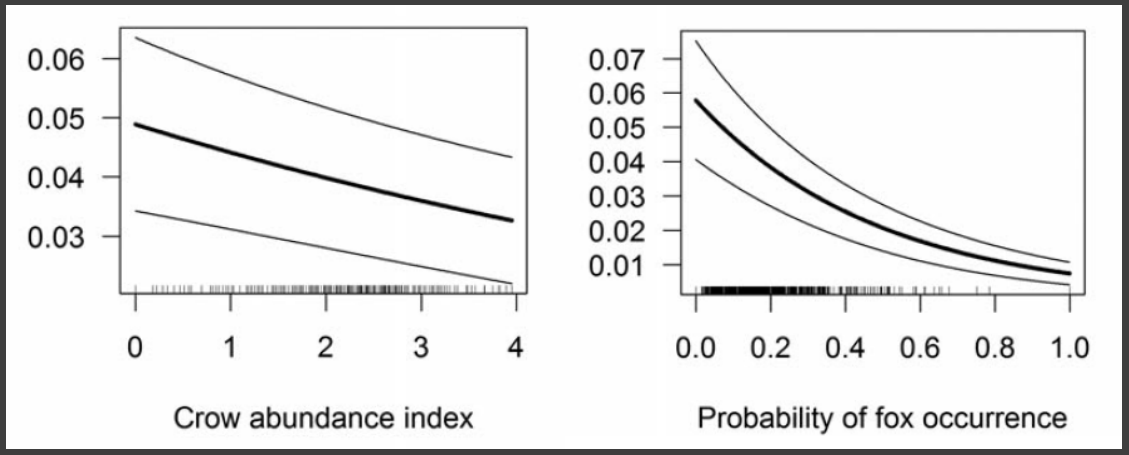
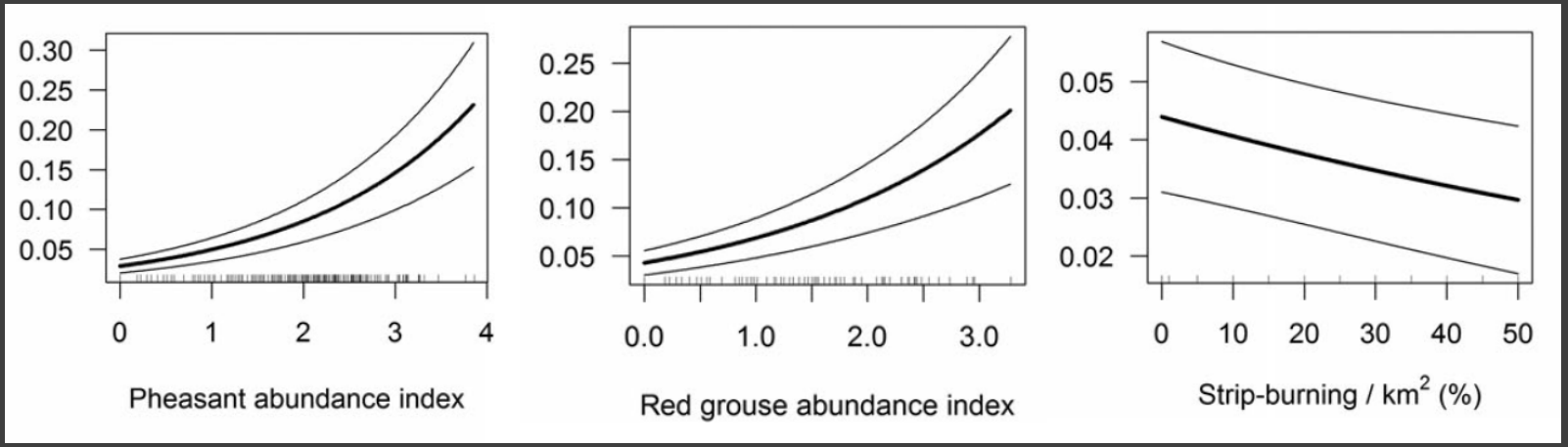


Douglas et al. 2014 J Applied Ecology

Variable	Effect on curlew abundance
Crow & fox abundance	–
Gamebird abundance	+
Strip burning	–

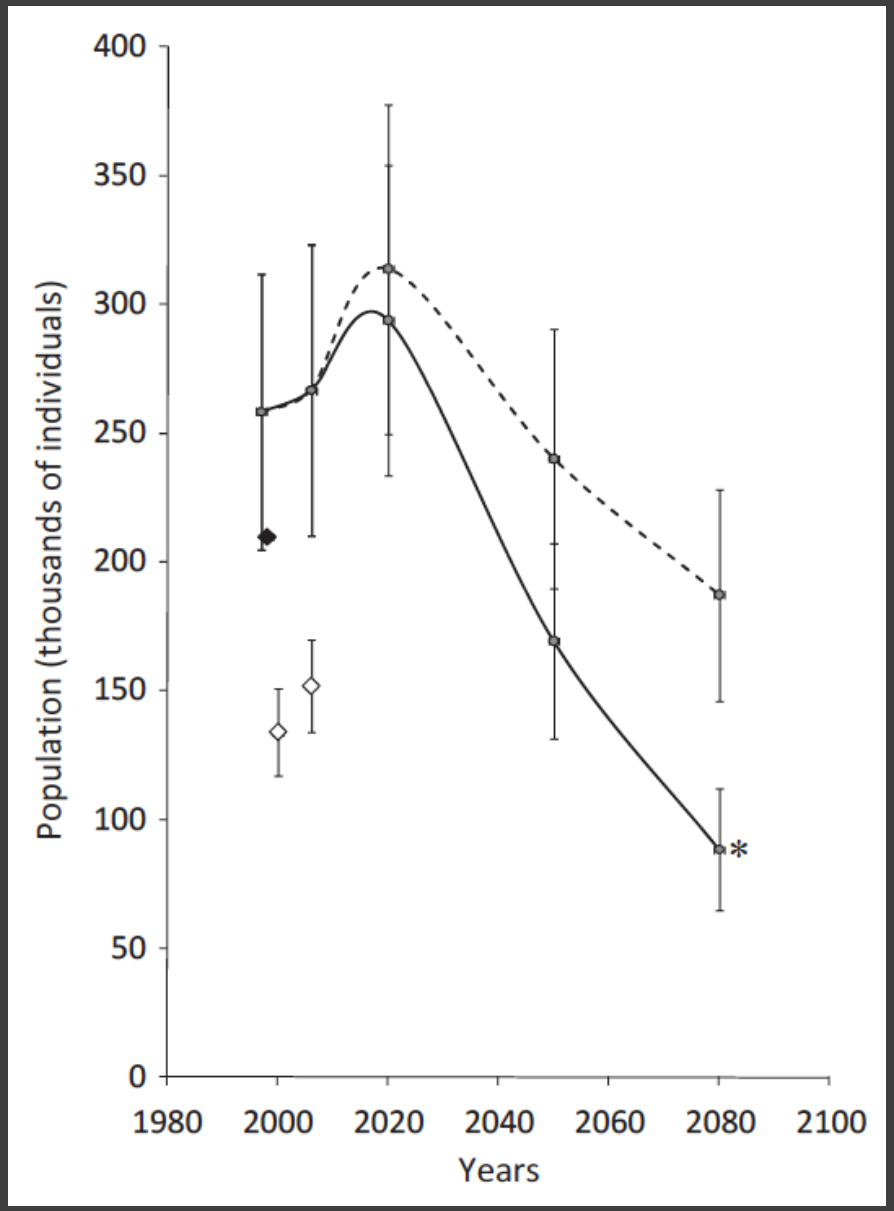


Variable	Effect on curlew abundance
Crow & fox abundance	–
Gamebird abundance	+
Strip burning	–



Variable	Effect on curlew abundance	Population change
Crow & fox abundance	–	– –
Gamebird abundance	+	
Strip burning	–	

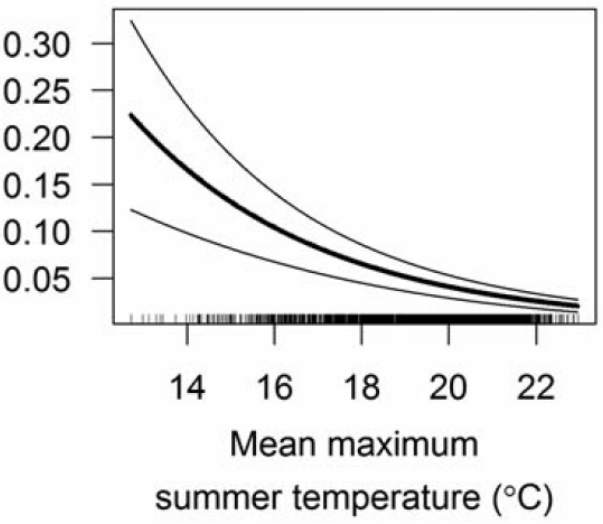
Reasons for decline: **climate change**

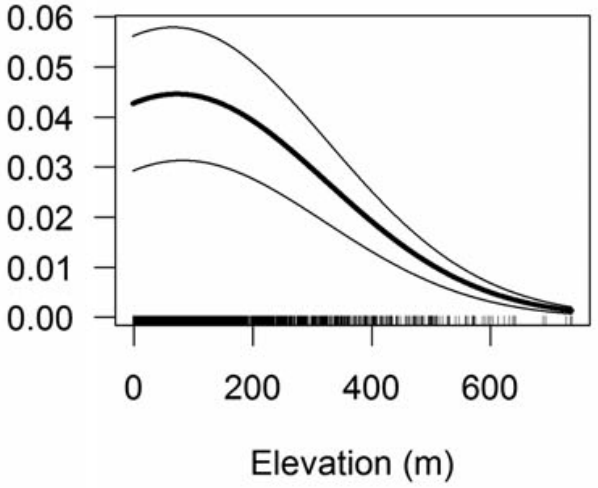


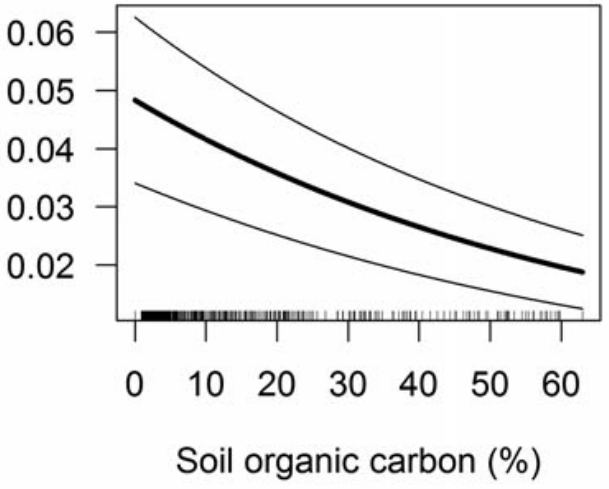
Projected decline of > 60% due to a warmer & drier climate

Renwick et al. 2012 Diversity & Distributions

Variable	Effect on curlew abundance
Temperature	–
Elevation	–
Peat	–

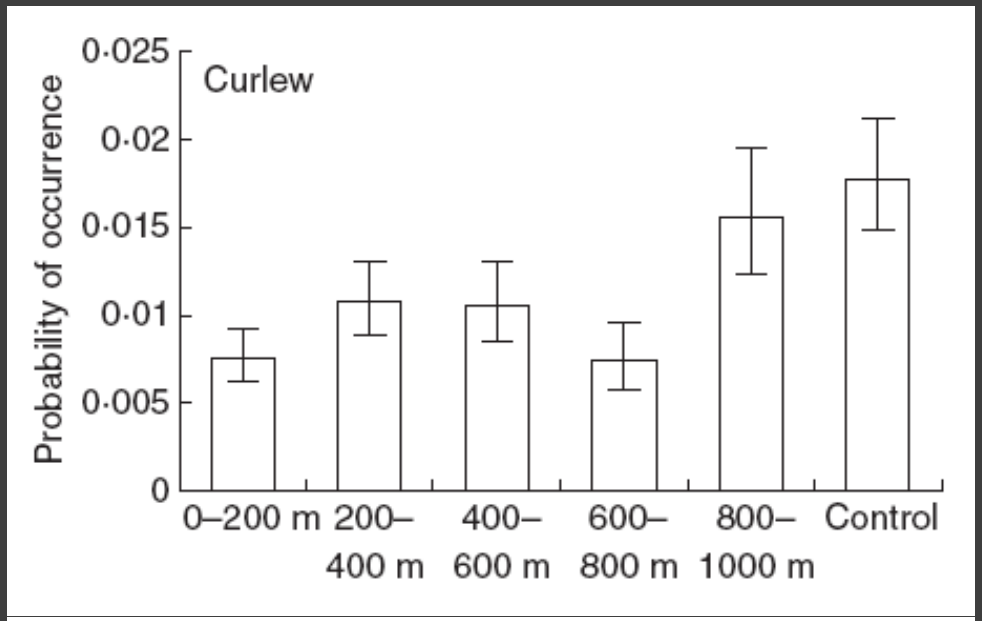


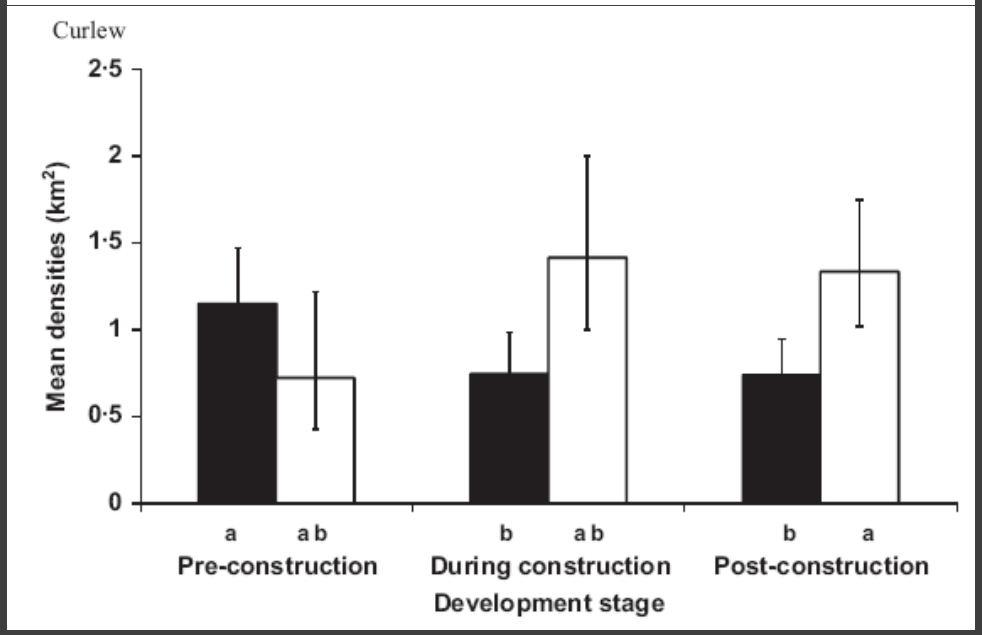




Variable	Effect on curlew abundance	Population change
Temperature	–	– (rain +)
Elevation	–	–
Peat	–	–

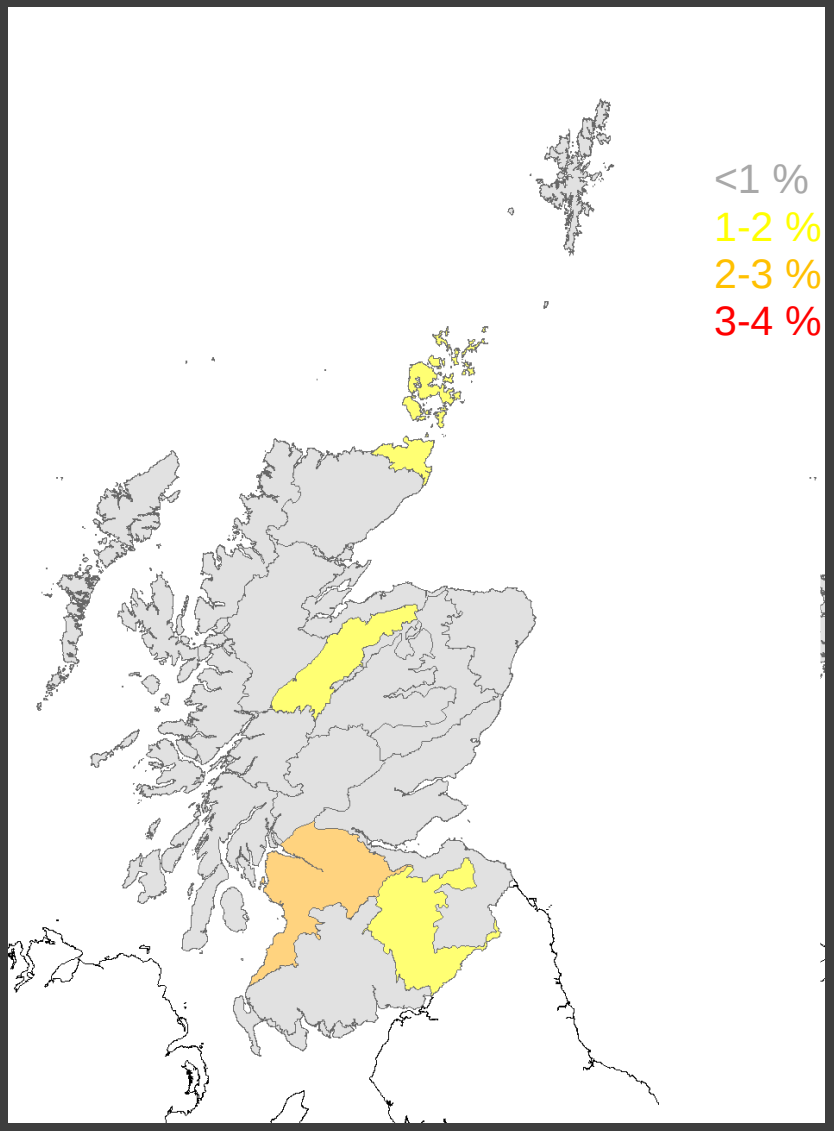
Reasons for decline: **wind farms**





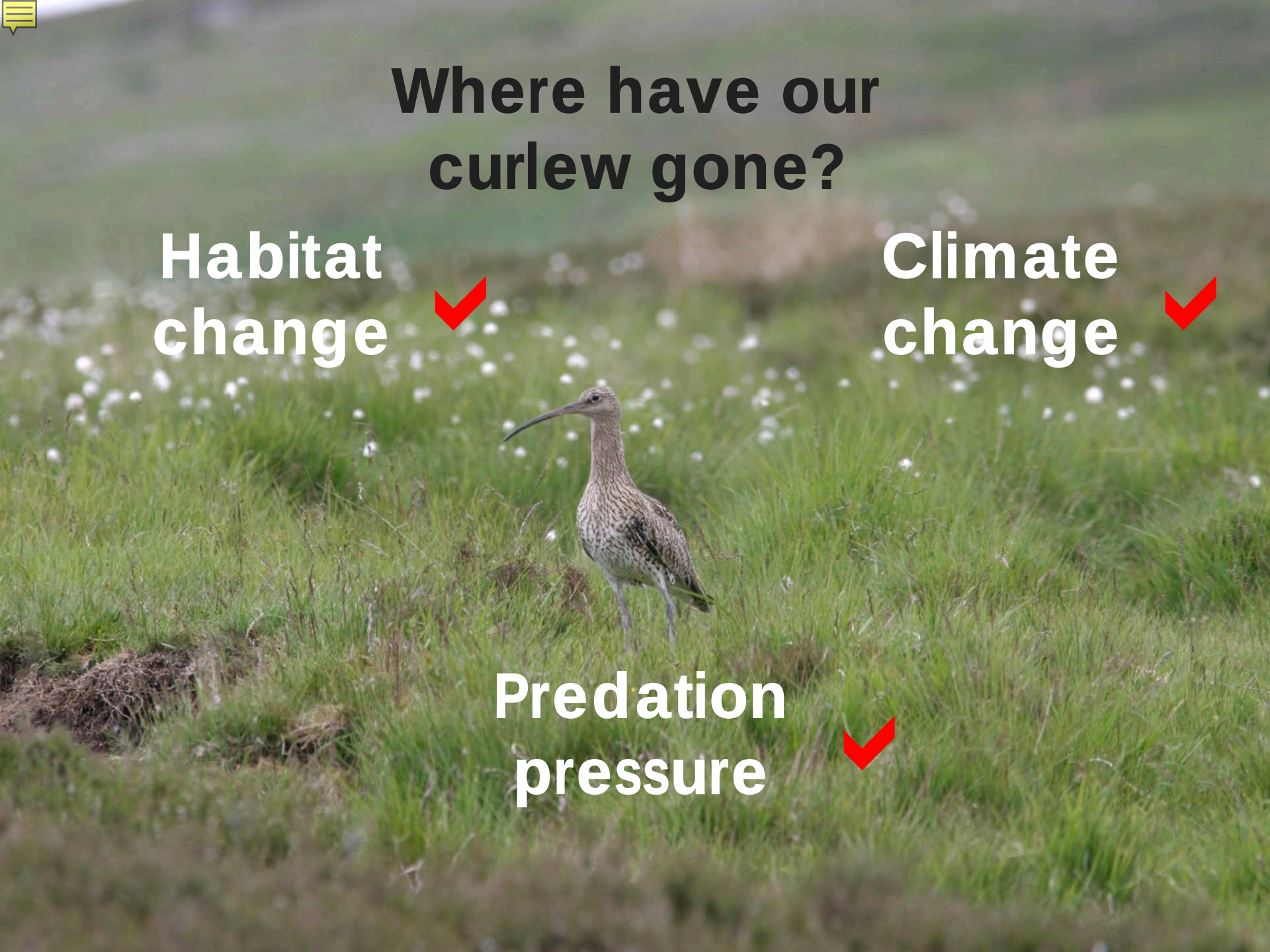
Pearce-Higgins *et al.* (2009) *J. Appl. Ecol*
Pearce-Higgins *et al.* (2012) *J. Appl. Ecol*

Reasons for decline: **wind farms**



Dobson *et al.* (2014) *BTO report*

Where have our curlew gone?



Testing solutions

Evaluating the effectiveness of conservation measures for European grassland-breeding waders

Running title: Conservation of grassland-breeding waders

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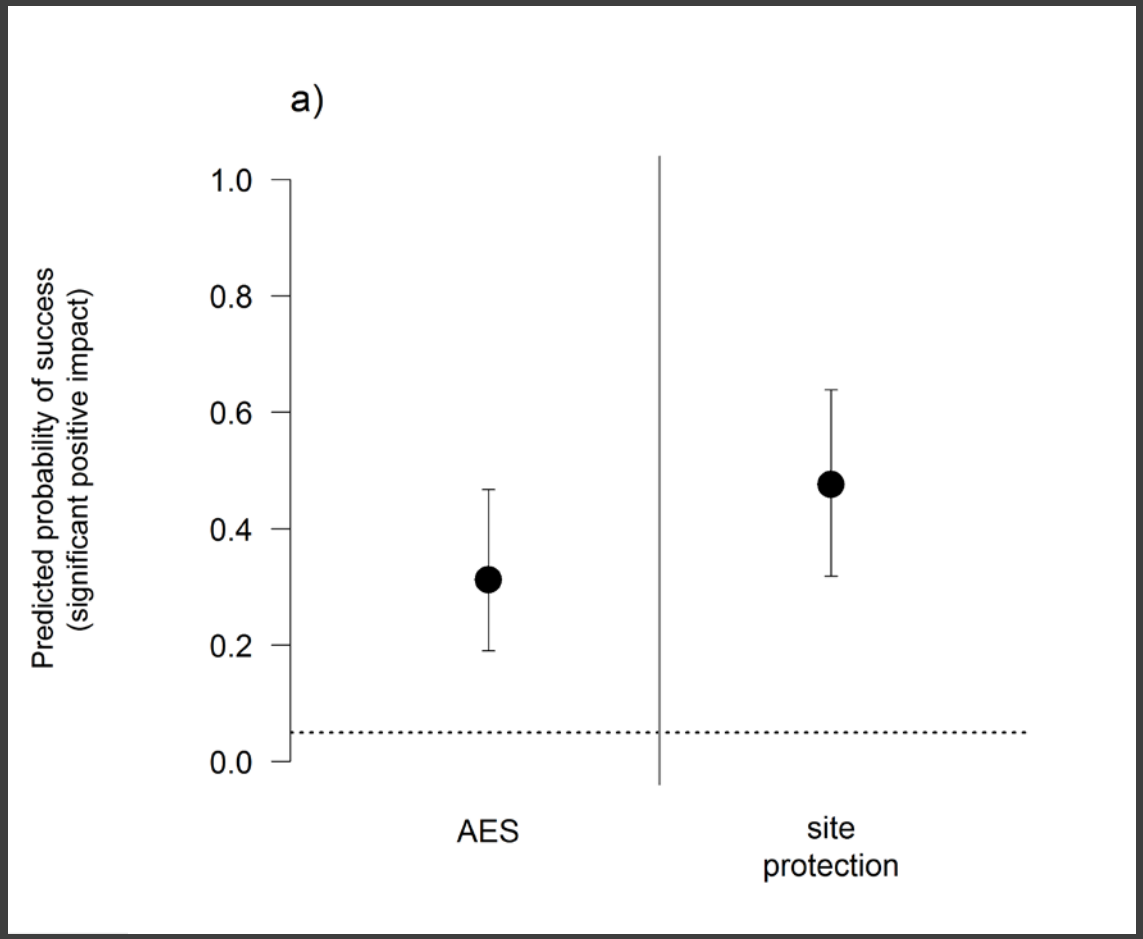
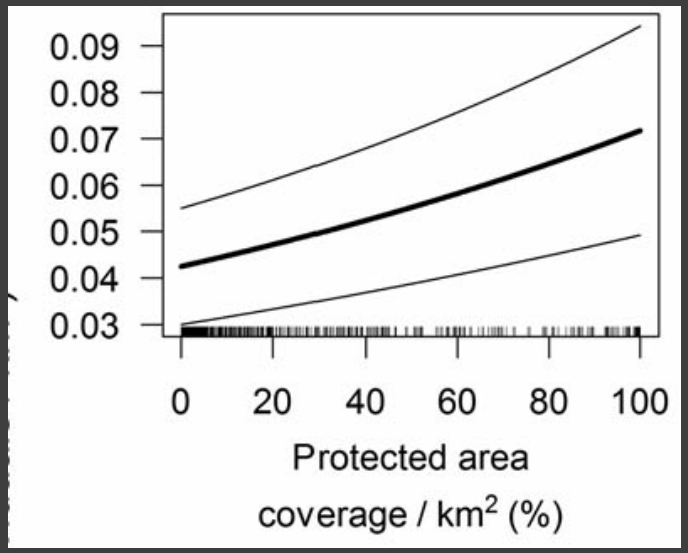
Franks *et al.* (2018) *Ecol & Evol*

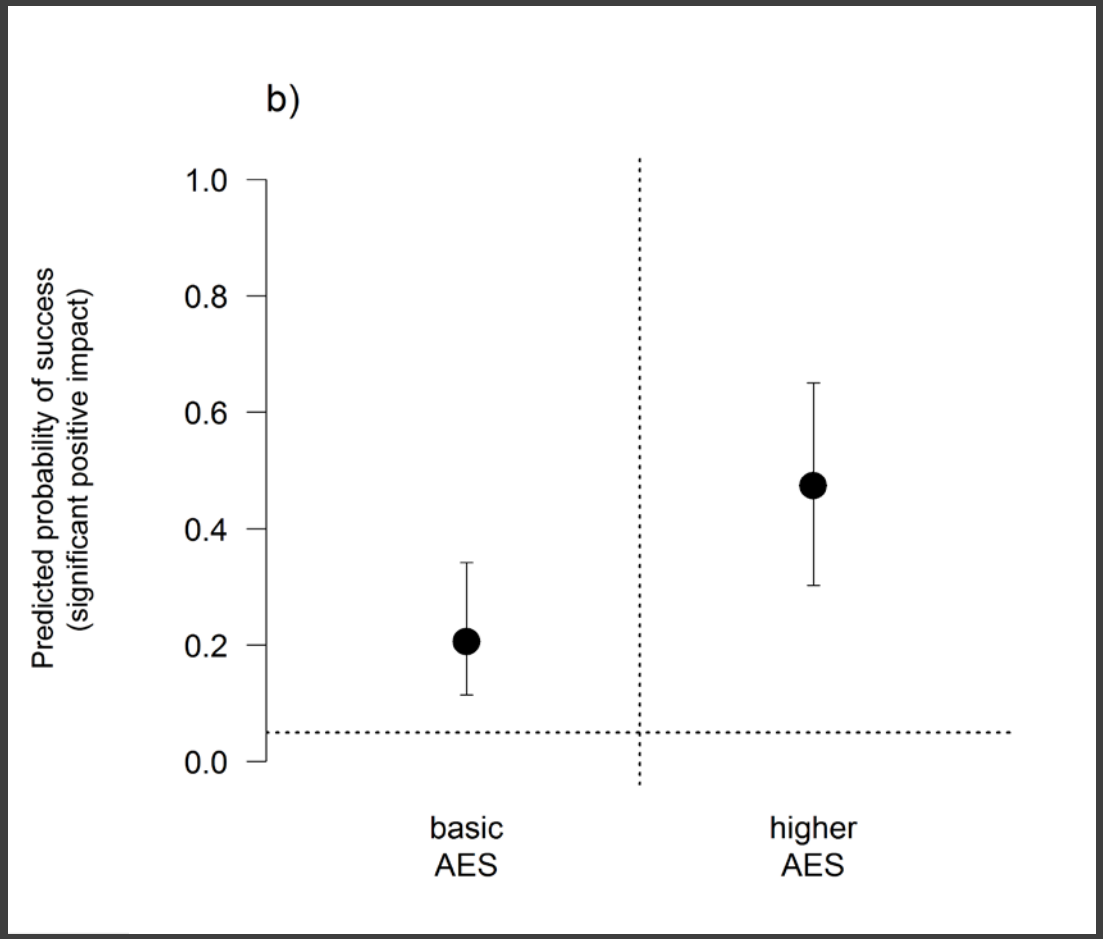
Testing solutions: agriculture





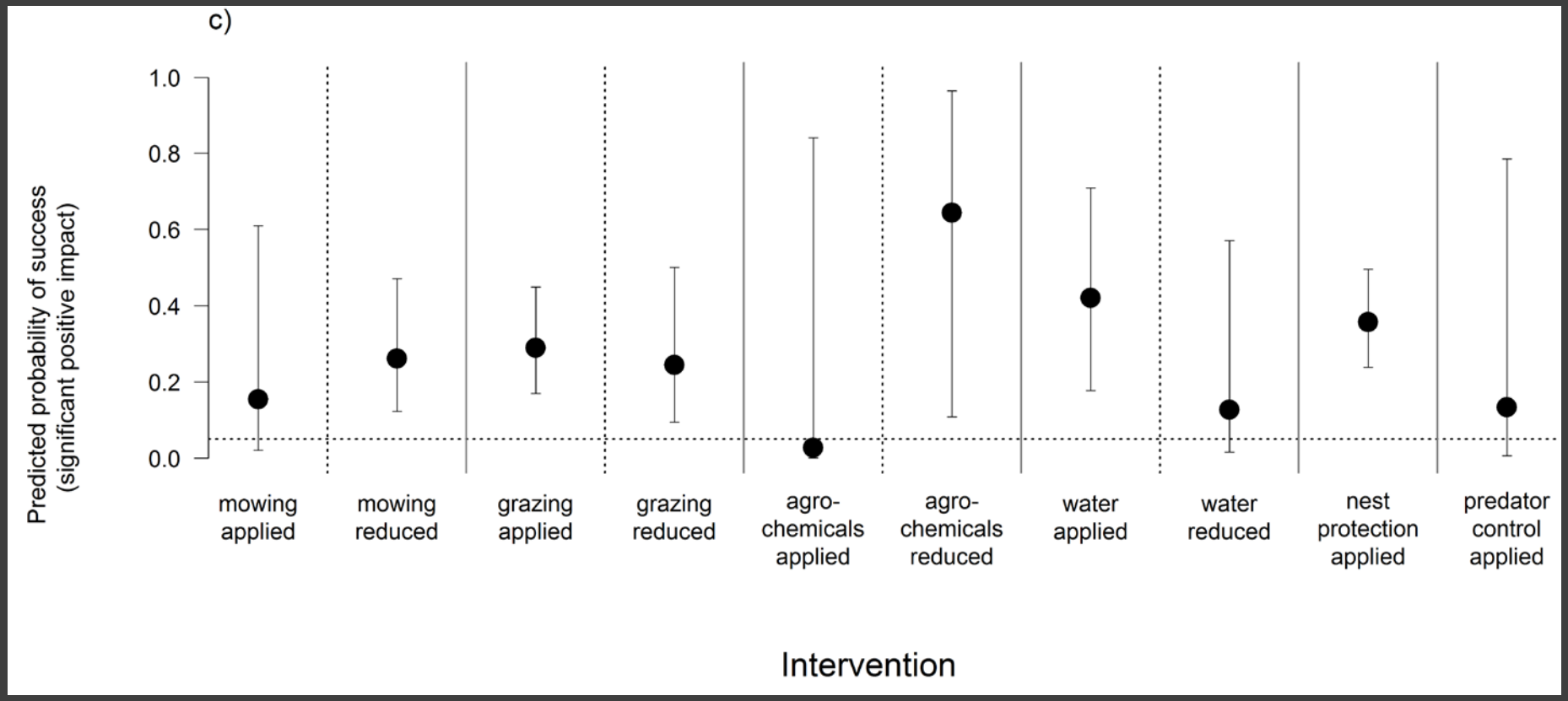
Franks *et al.* (2018) *Ecol & Evol*

Testing solutions: agriculture



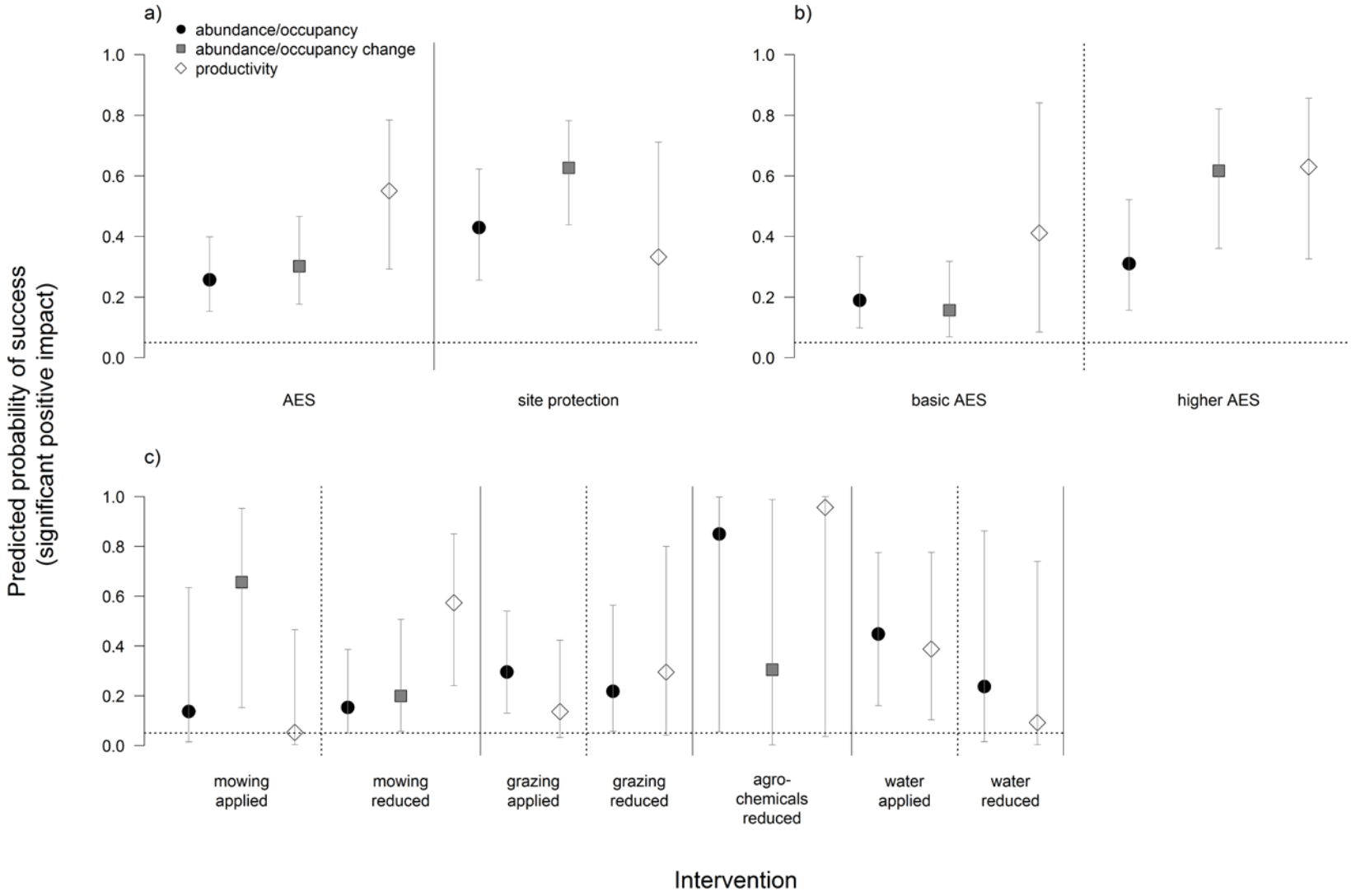
Franks *et al.* (2018) *Ecol & Evol*

Testing solutions: agriculture



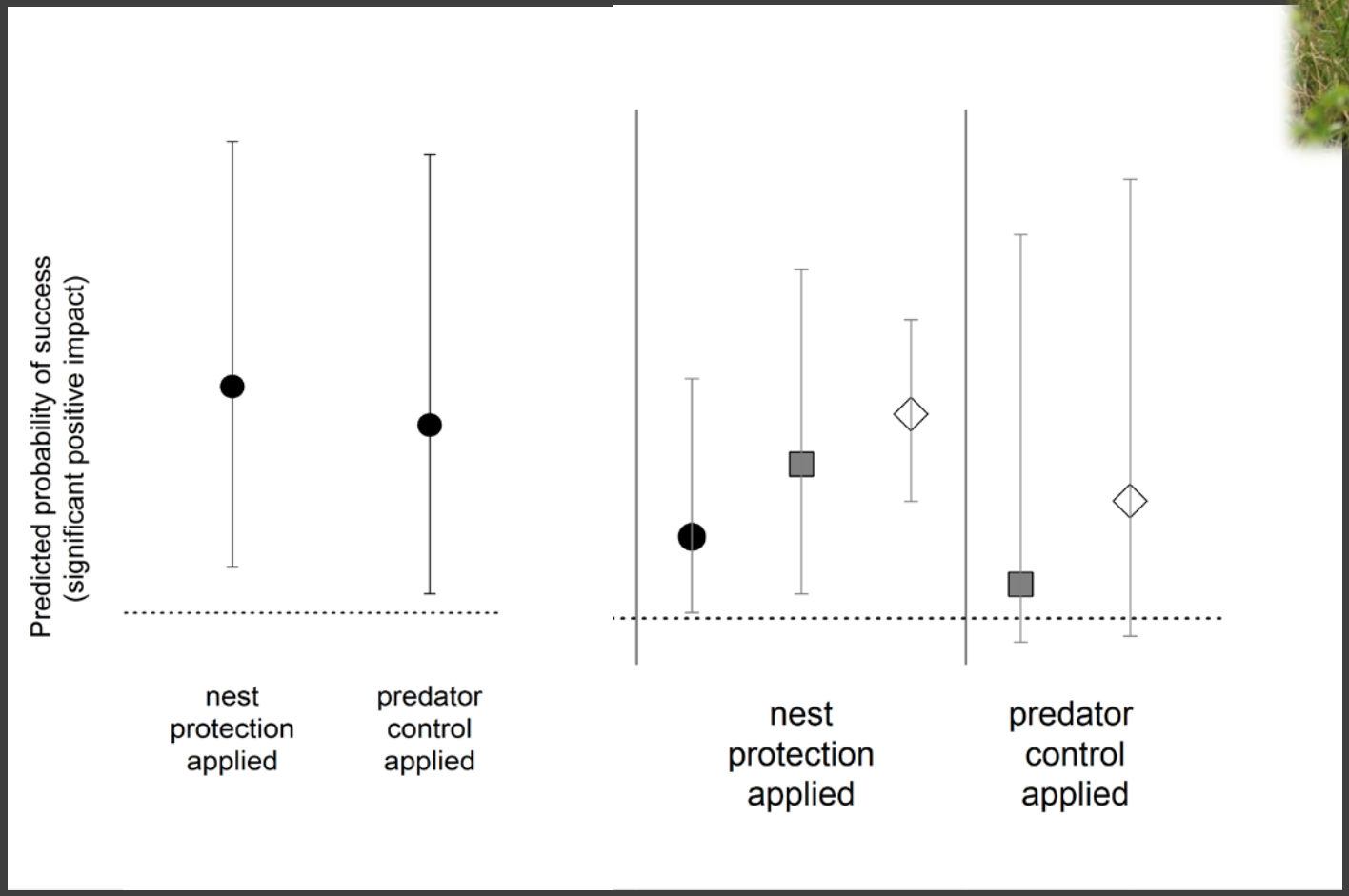
Franks *et al.* (2018) *Ecol & Evol*

Testing solutions: agriculture



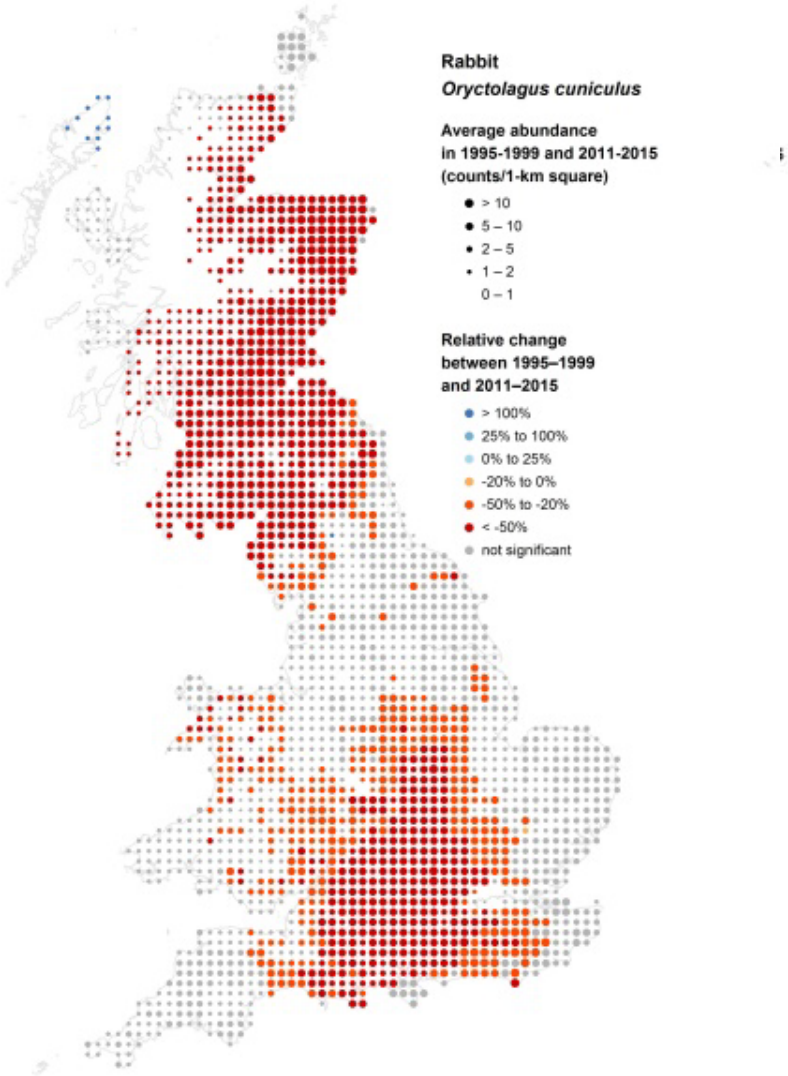
Franks *et al.* (2018) *Ecol & Evol*

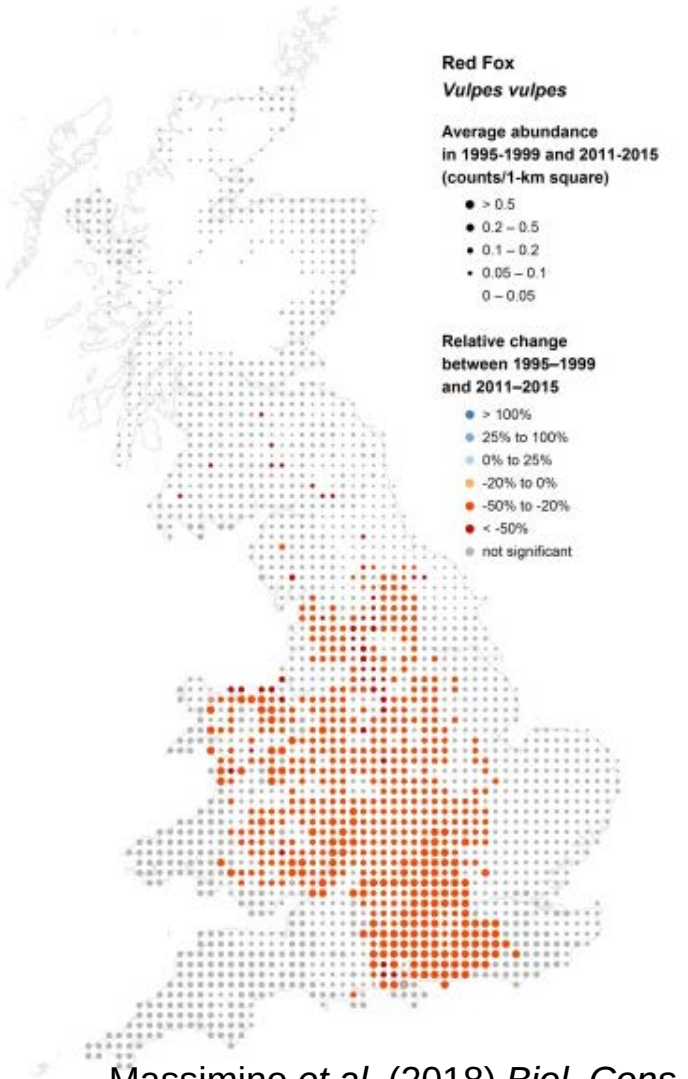
Testing solutions: predation



Franks *et al.* (2018) *Ecol & Evol*

Testing solutions: predation

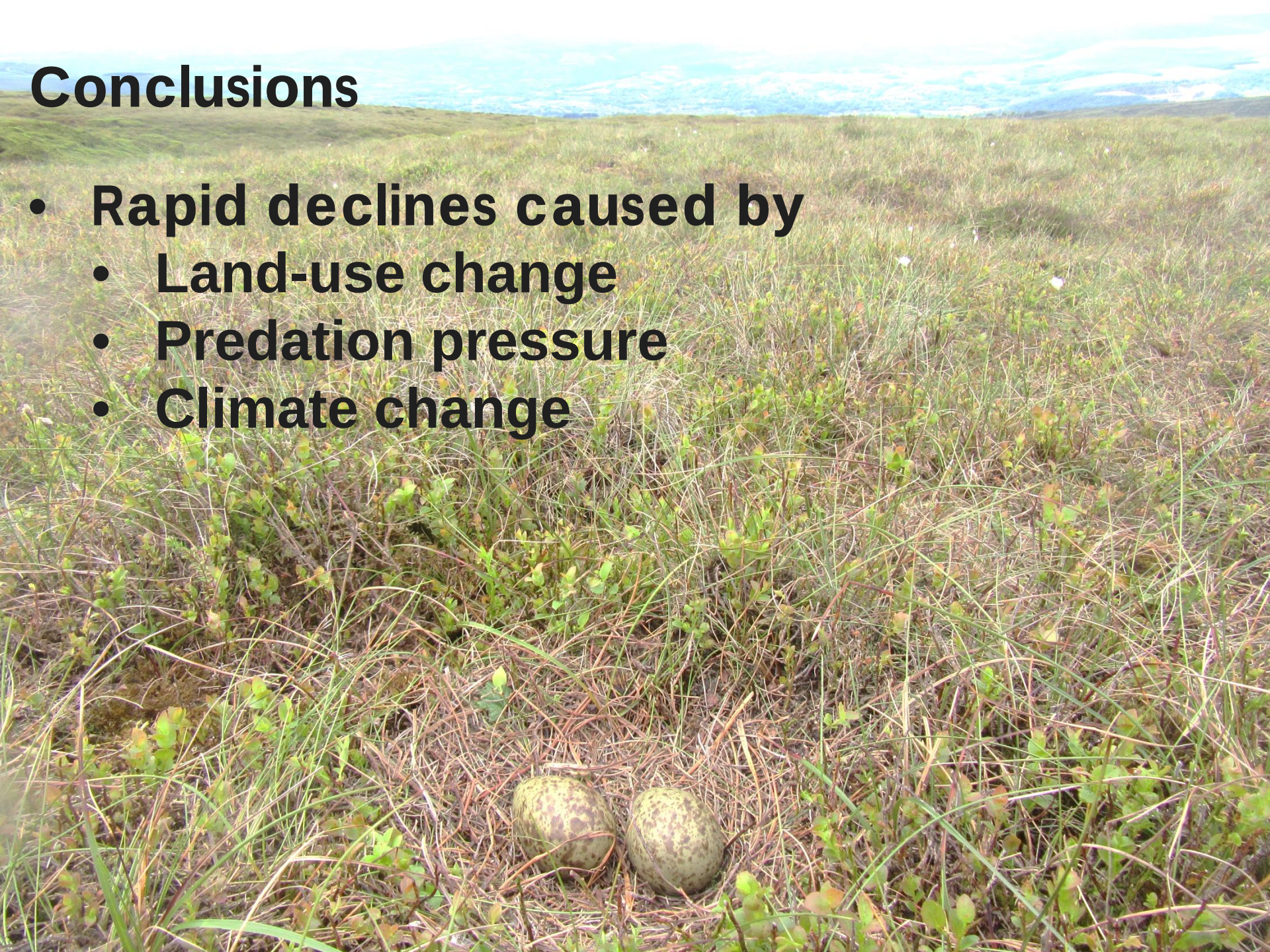




Massimino *et al.* (2018) *Biol. Cons.*

Conclusions

- Rapid declines caused by
  - Land-use change
  - Predation pressure
  - Climate change



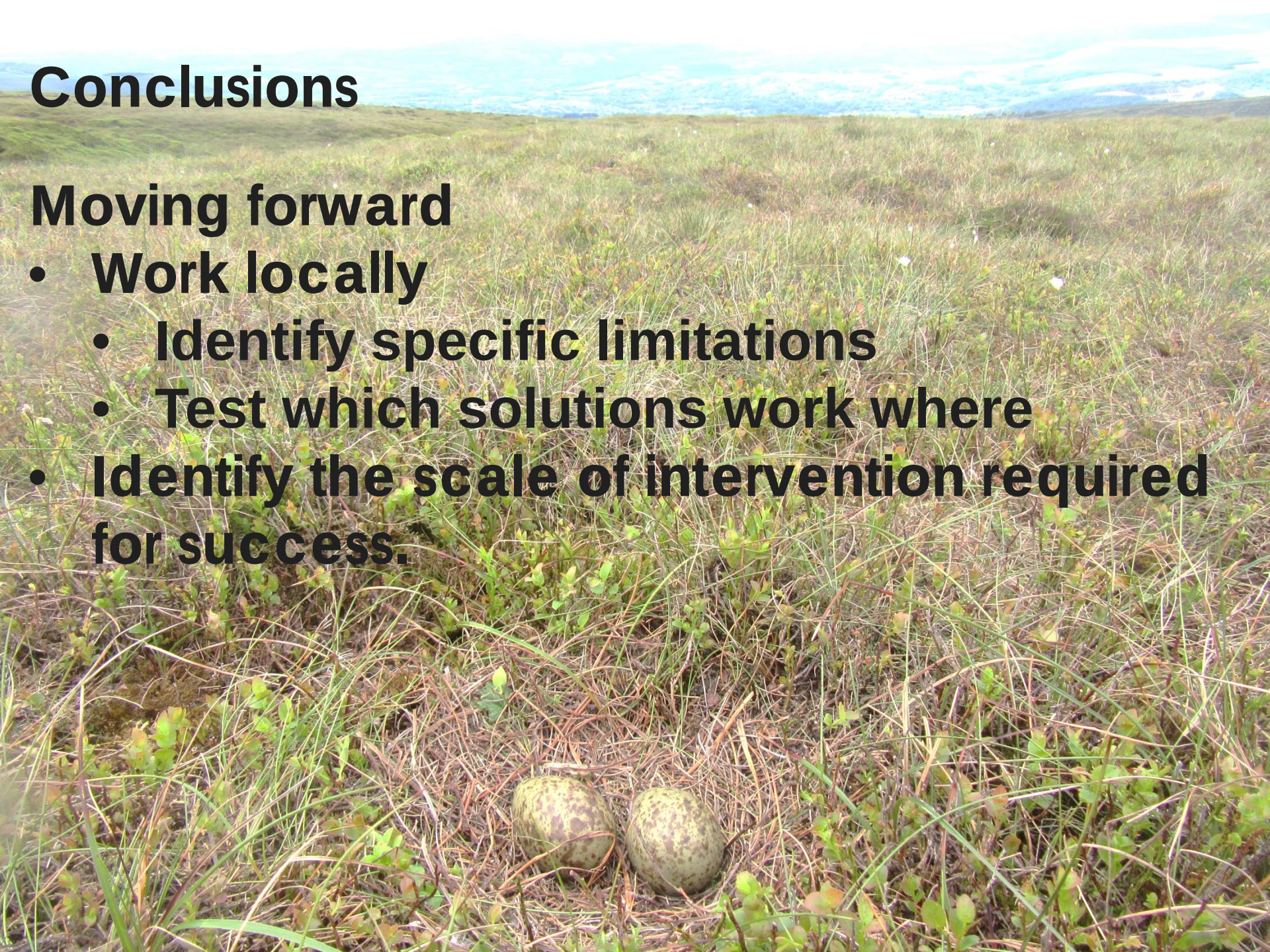
Conclusions

- We know what works for waders (?less so for curlew):
  - Agri-environment schemes
    - Appropriate grazing levels
    - Manage water levels
    - Reduce losses through agricultural activity
  - Reduce predation
    - Nest protection
    - Predator control
  - Spatial planning for wind farms

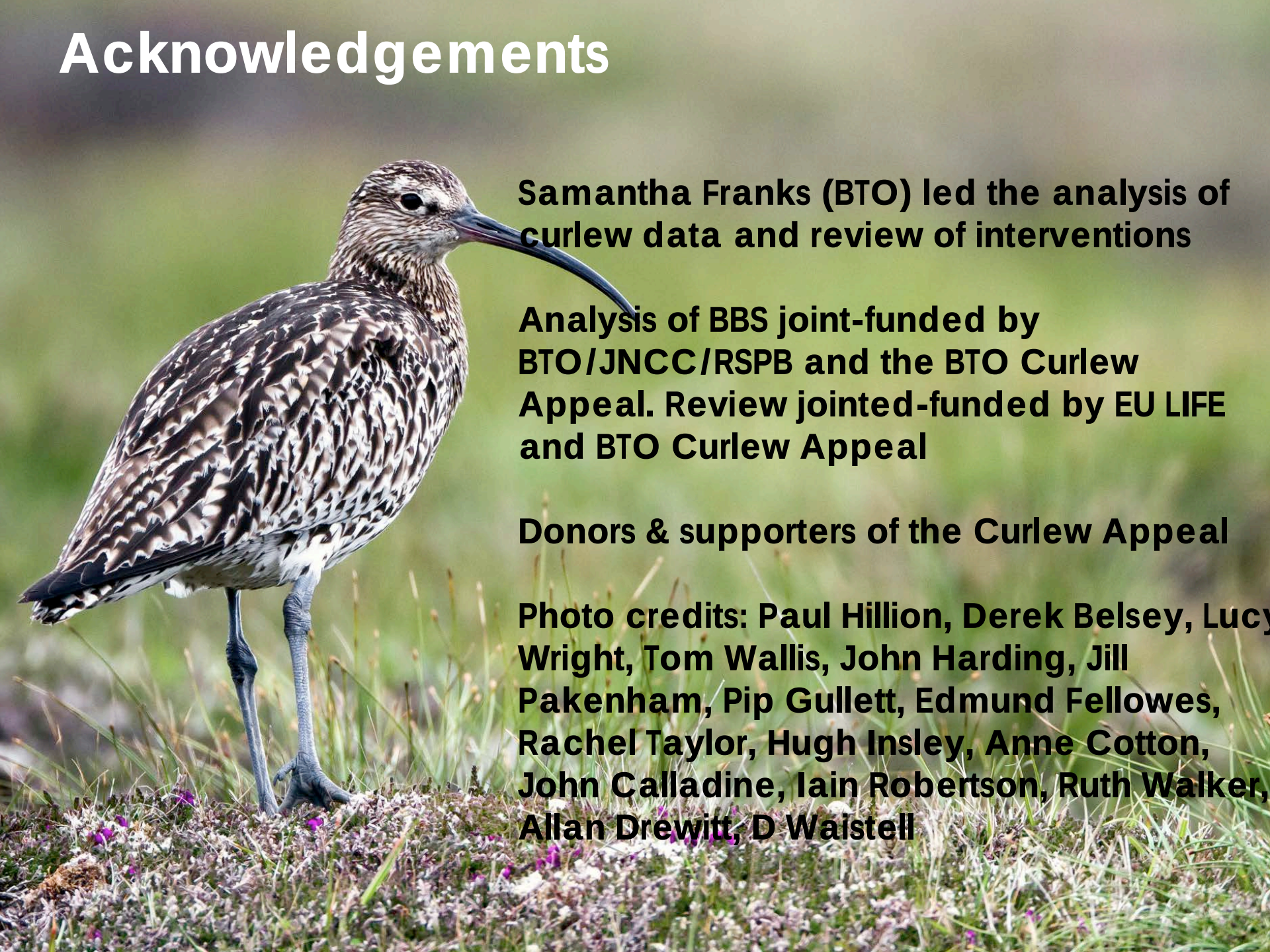
Conclusions

Moving forward

- Work locally
  - Identify specific limitations
  - Test which solutions work where
- Identify the scale of intervention required for success.



Acknowledgements



Samantha Franks (BTO) led the analysis of curlew data and review of interventions

Analysis of BBS joint-funded by BTO/JNCC/RSPB and the BTO Curlew Appeal. Review jointed-funded by EU LIFE and BTO Curlew Appeal

Donors & supporters of the Curlew Appeal

Photo credits: Paul Hillion, Derek Belsey, Lucy Wright, Tom Wallis, John Harding, Jill Pakenham, Pip Gullett, Edmund Fellowes, Rachel Taylor, Hugh Insley, Anne Cotton, John Calladine, Iain Robertson, Ruth Walker, Allan Drewitt, D Waistell