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Tracking birds of the Humber Estuary: a study of a near-threatened species – The Curlew *(Numenius arquata)*

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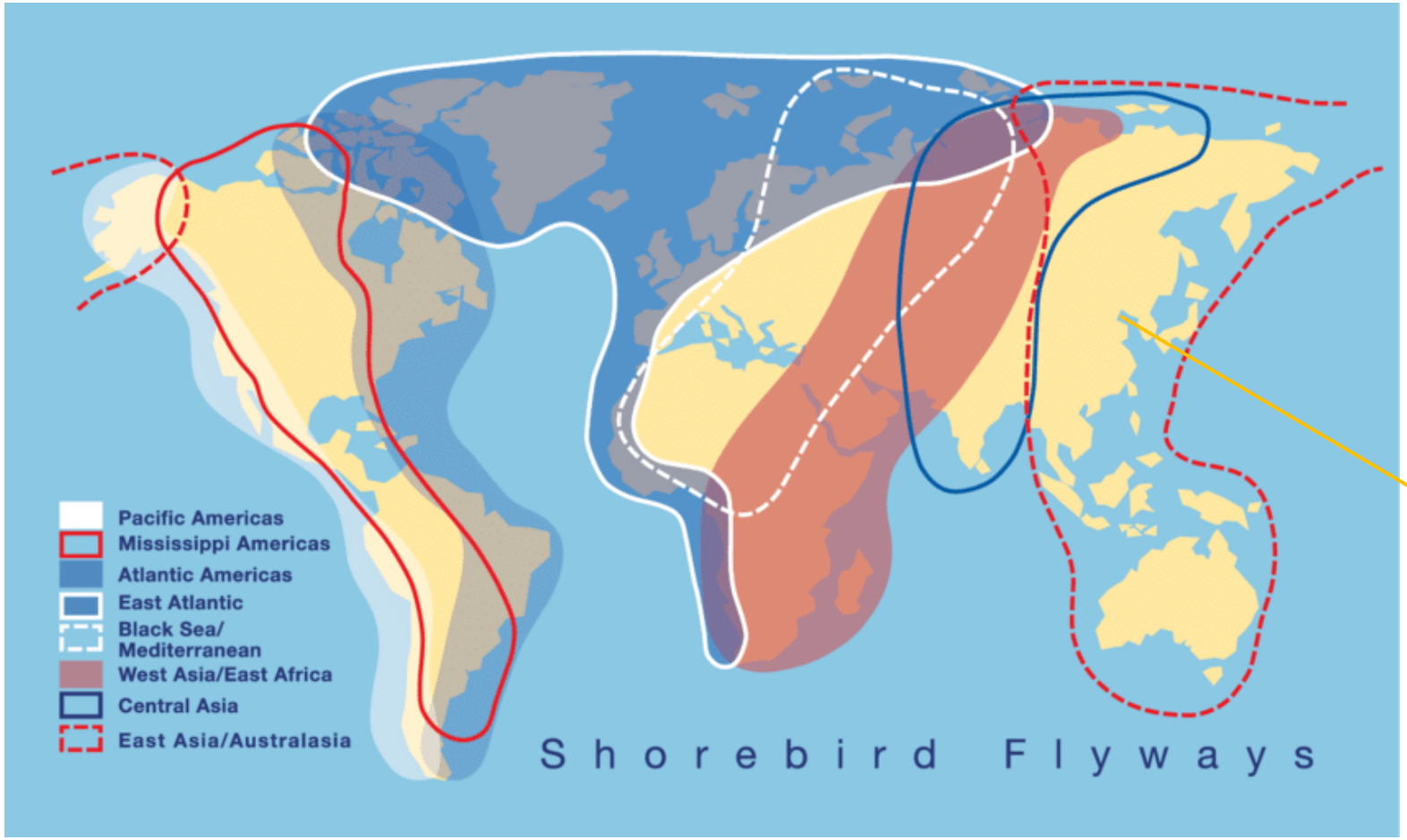
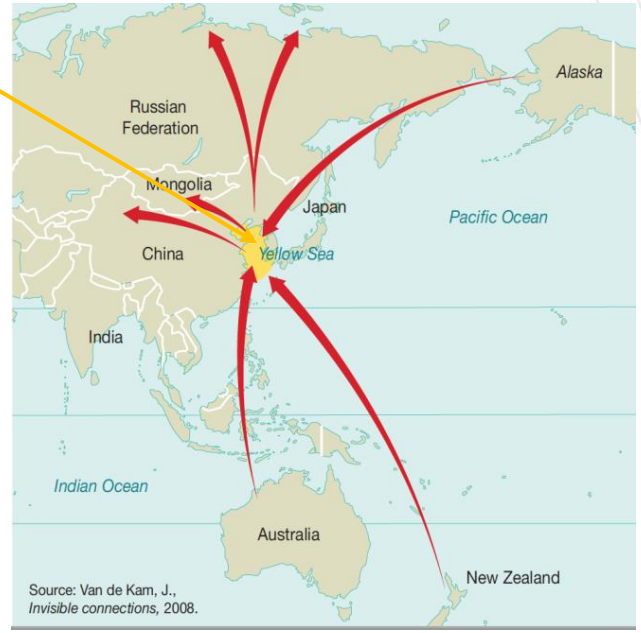
Nine major shorebirds flyways



Shorebird decline along the **East Asian Australasian Flyway** linked to habitat deterioration and degradation in the Yellow Sea.



Carry-over effects occur when processes in one season influence the success of an individual in the following season.

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The tribe of Numeniini: a group prone to extinction

Numeniini	IUCN Status
Eskimo Curlew Slender-billed Curlew	Critically endangered (Possibly extinct in the case of Eskimo Curlew)
Far Eastern Curlew	Endangered
Bristle-thighed Curlew	Vulnerable
Eurasian Curlew Bar-tailed Godwit Black-tailed Godwit	Near-threatened
Upland Sandpiper Whimbrel Little Curlew Long-billed Curlew Marbled Godwit Hudsonian Godwit	Least concern

Tribe of 13 species, of which 2 are probably extinct:

Eskimo Curlew

Slender-billed Curlew

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Breeding distribution / winter distribution

Source: BTO

Source: BTO

UK breeding population: 68,000 pairs **~ 25% of the European population**

In winter, Britain and Ireland supports **~ 50% of the European population** of Curlew with 210,000 birds.

UK has important role to play in Curlew conservation

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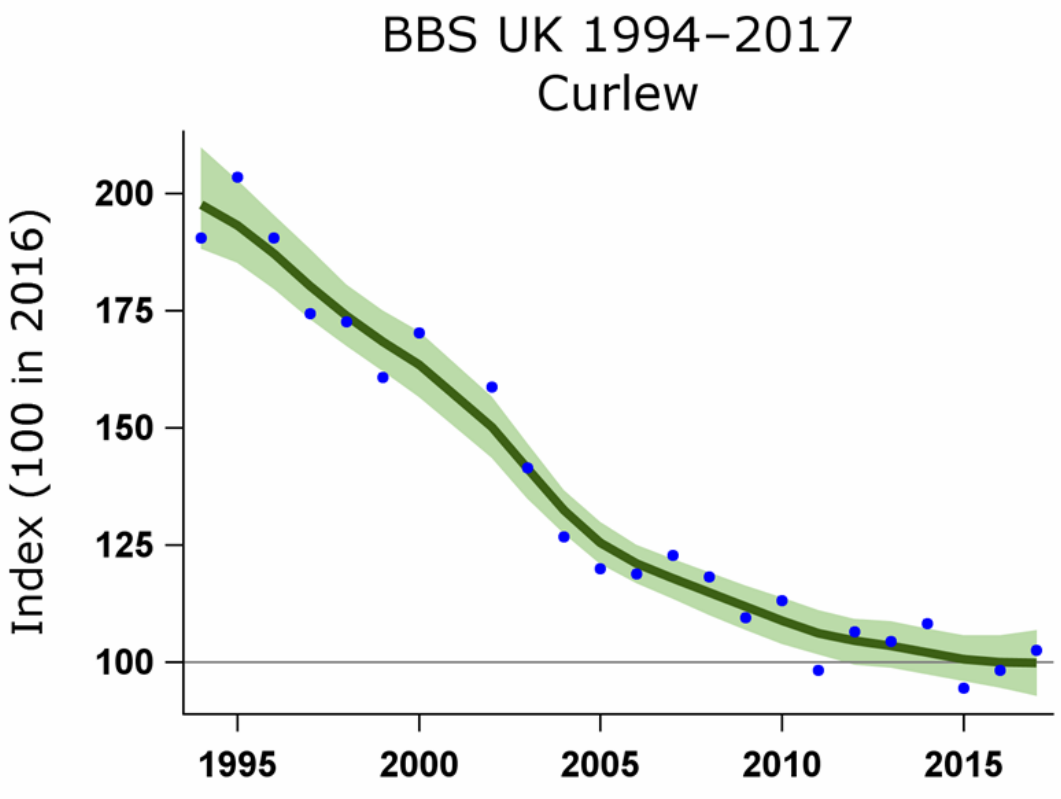
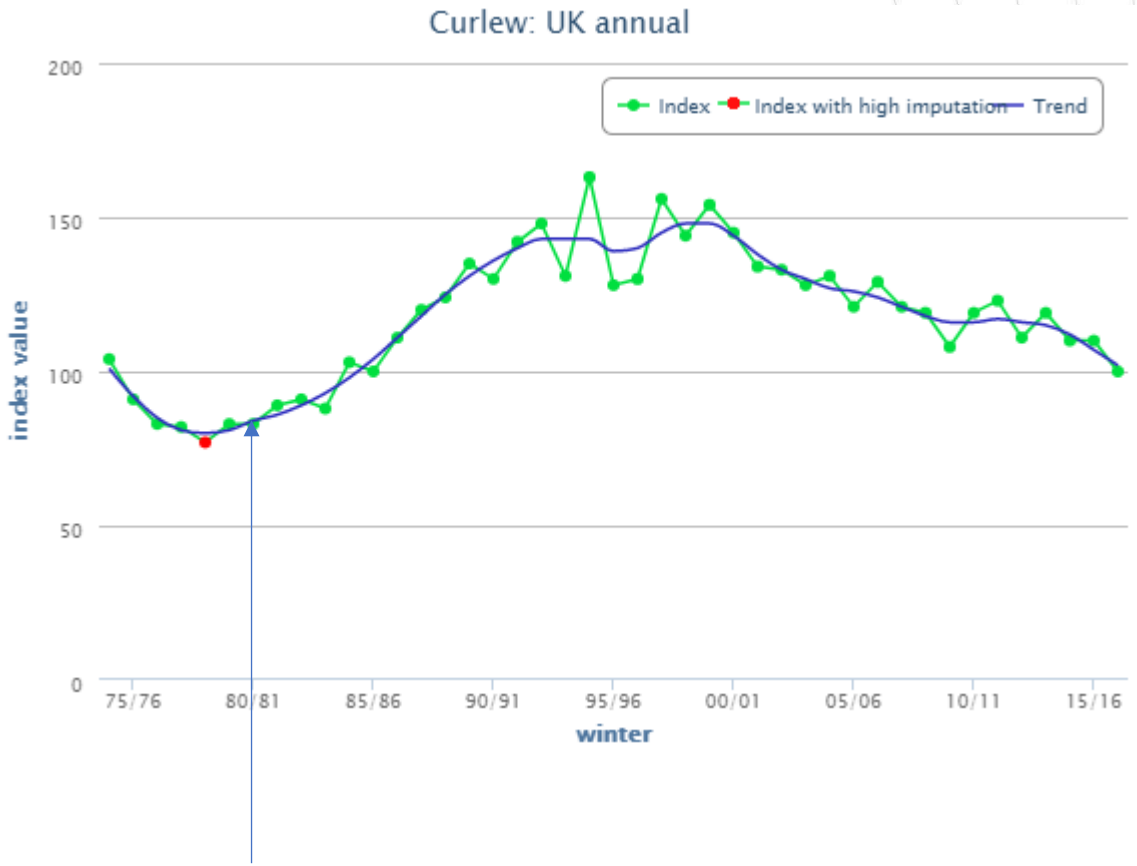
Breeding birds



Wintering birds



Shooting stops in England, Scotland and Wales

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Decline in breeding birds

- Habitat change (loss and deterioration of breeding habitats).
- Predation pressure linked to afforestation and predator control.
- Climate change.

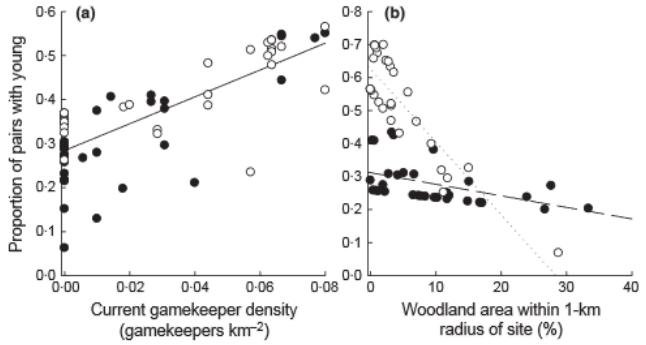
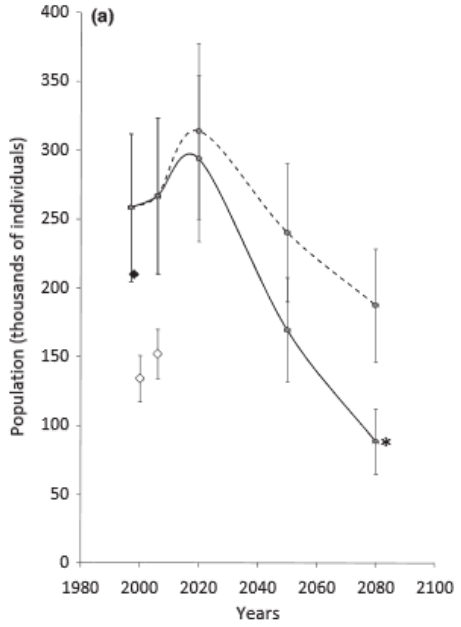


Fig. 4. Correlates of curlew nesting success in 2009–2010. Plots show fitted relationships with single solid line where there was no interaction between a variable and study region and separate lines where the regional interaction was significant. Southern Scotland = filled circles and dashed line, South Pennines = open circles and dotted line.

Douglas et al. 2014 J Applied Ecology



Renwick et al. 2012 Diversity & Distributions

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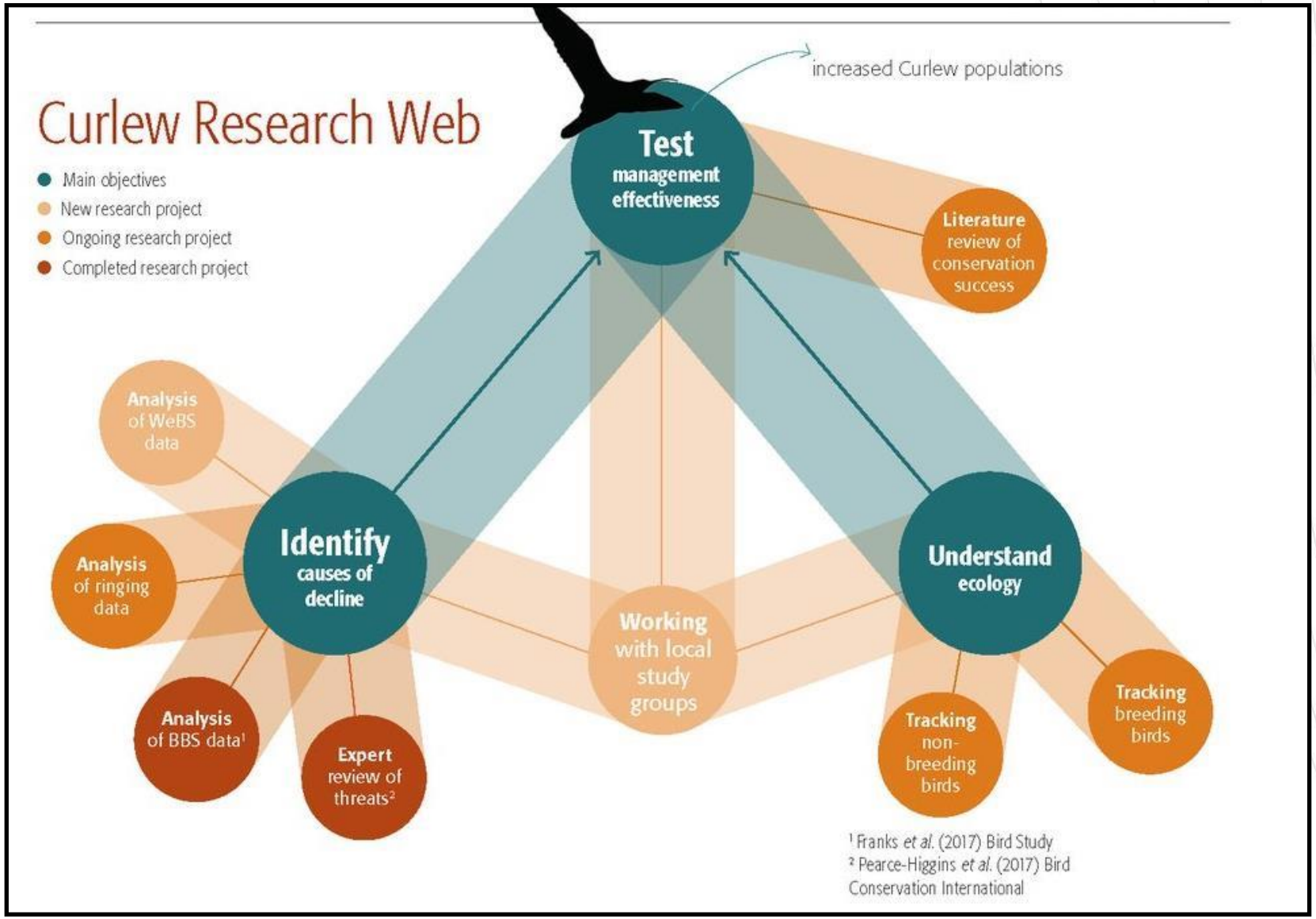

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1- Humber Curlew population

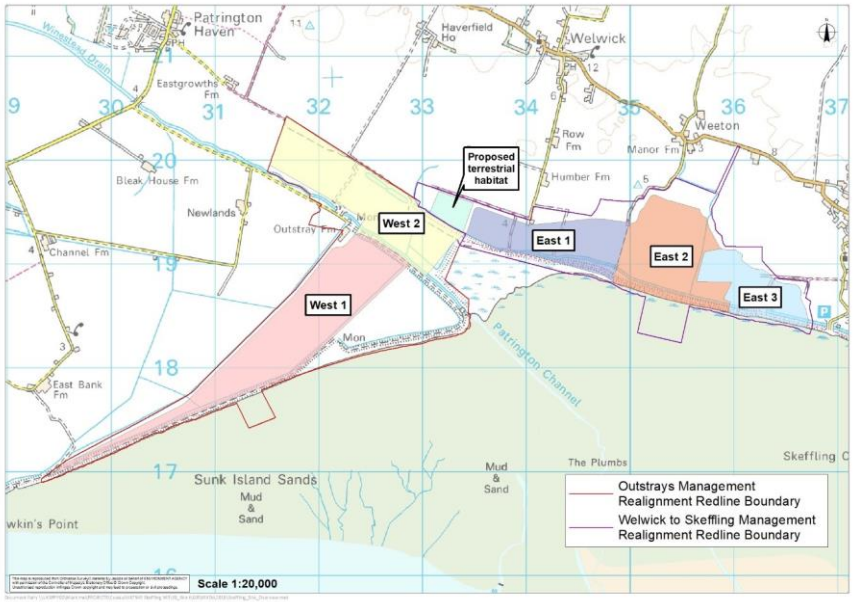
- Seventh sites in the UK for wintering Curlew
- Latest five-year average of 2,806 birds
- Stable population

2- Tracking pilot study

http://www.humbernature.co.uk/admin/resources/bto-rr688-hnp-tracking-curlew-and-redshank-on-the-humber-estuary-final-2016-09-26.pdf

Cook et al. 2016 BTO report

3- Proposed and existing managed realignment sites



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Curlew in estuaries: what do we know?

Different strategies: tidal flats vs. terrestrial fields.

(i) Birds feed on the tidal flats more or less through the winter.

(ii) feed on the fields throughout the winter.

(iii) feed on tidal flats in autumn and then, as the temperature dropped, move to the fields only returning to tidal flats in bad weather (deep snow, frozen ground) and/or in spring.

Townshend, D.J. 1981, Unpublished Thesis

Feeding on mudflat at Spurn - Pete Short (RSBP)

Field feeding at Broomfleet - Pete Short (RSBP)

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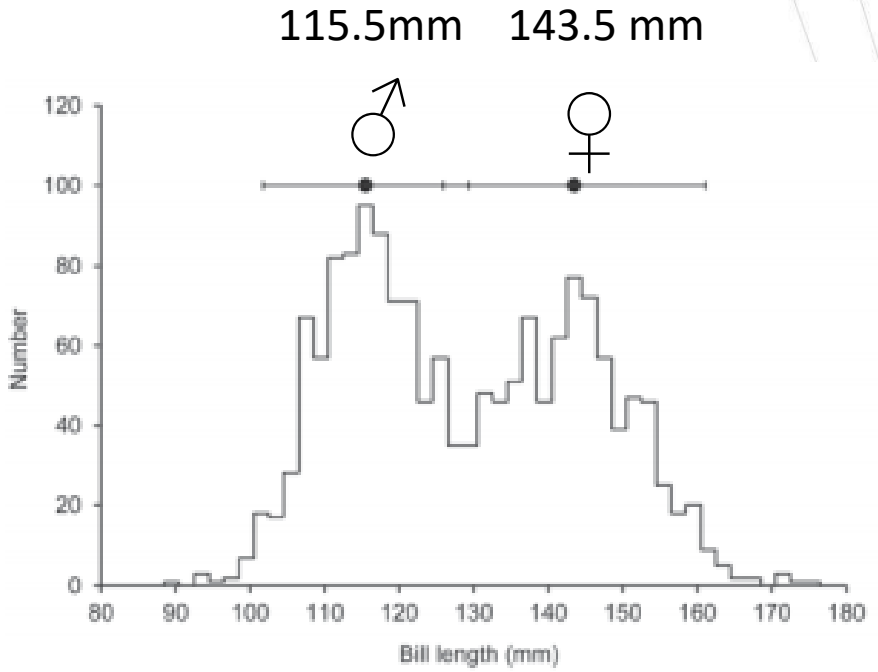
Sexual dimorphic species

Male and female Curlew side by side
Pete Short (RSBP)



Summer et al. 2012. Wader study group

Example of small-scale sexual segregation: Male more frequently recorded field feeding e.g. Tees estuary.

Townshend, D.J. 1981, Unpublished Thesis

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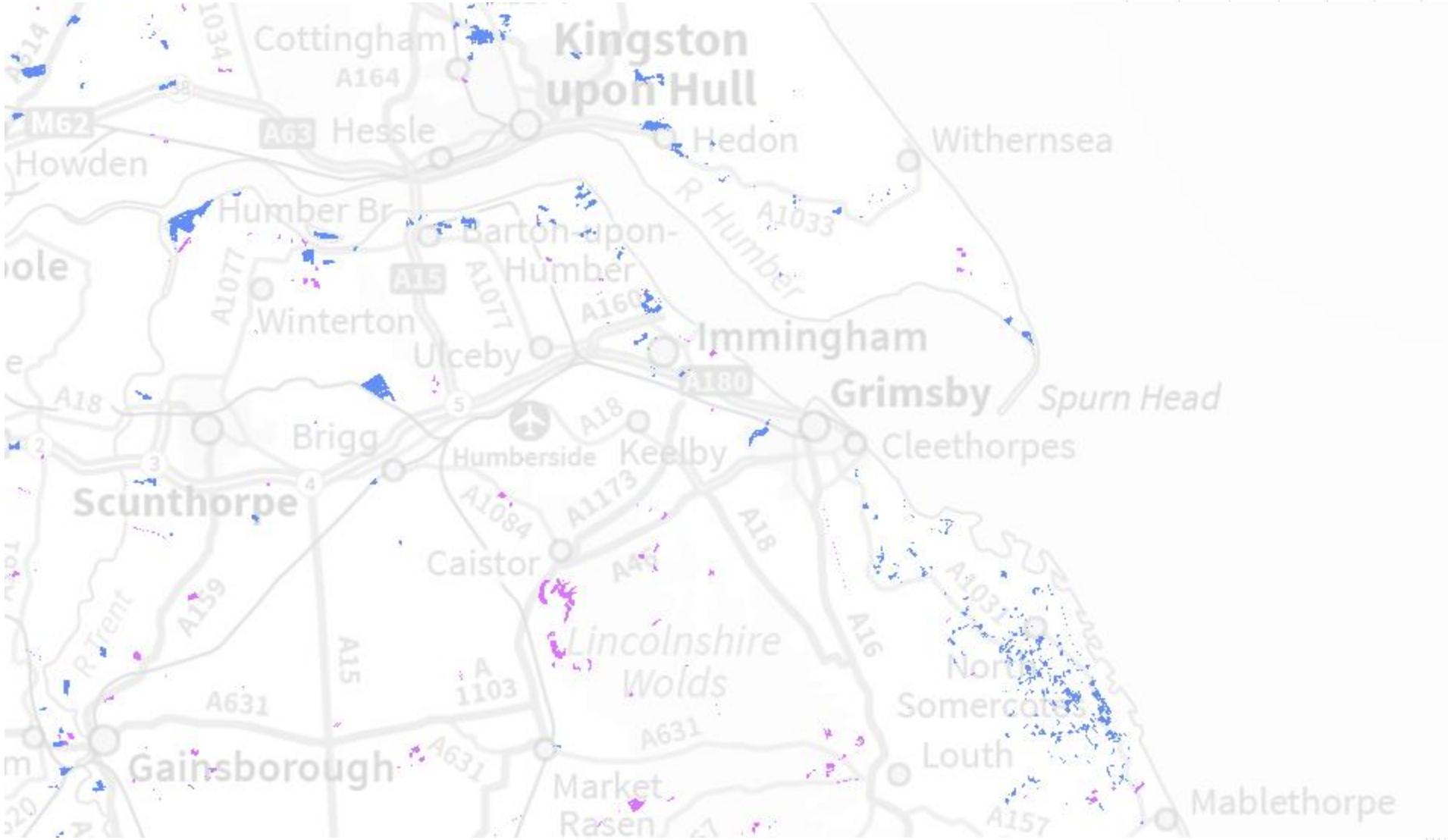
Availability of grassland around the Humber Estuary

Coastal and Floodplain Grazing Marsh

Good quality semi-improved grassland



Source: https://magic.defra.gov.uk/MagicMap.aspx

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Aim of the study

- Deploy 20 GPS tag on Curlew on the Humber Estuary

- Examine nocturnal activity
- Connectivity between tidal flats and terrestrial habitats
- Use of managed realignment sites

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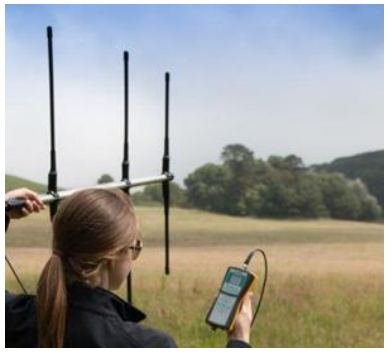
A bit about the tracking technology

Increasing price and weight

- VHF radio tags



- Geolocators

- GPS loggers

- PTT (Platform Transmitting Terminal)

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GPS/UHF tag

GPS/UHF tags with small solar panel

Glue-mounted on the back between the wings

Transmit data via UHF signal to a base station

Data download from the base station

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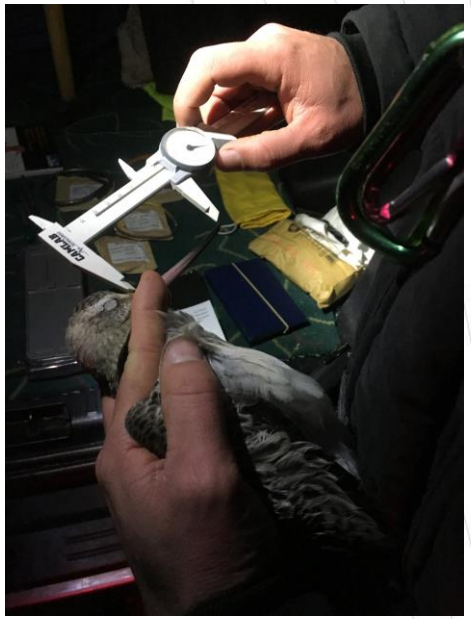

Mist-netting at Welwick Saltmarsh with the Humber Wader Ringing Group

@lucasmander

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Year 1

Welwick Curlew
- 961 fixes between 03 February and 05 April (62 days of tracking).

Long Bank Marsh Curlew
- 346 fixes between 17 February and 8 March (20 days of tracking)

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Difference in utilisation of terrestrial and intertidal habitats.

Proportion of fixes (%) recorded in farmland and on intertidal habitats

	Welwick	Long Bank Marsh
Habitats	**Adult – unknown sex**	**Immature Male**
Improved grassland	0.00%	1.45%
Unimproved grassland	0.00%	52.02%
Fallow fields	0.00%	15.61%
Autumn cereals	1.35%	0.29%
Oil seed rape	4.06%	13.87%
Intertidal habitats	94.59%	16.76%

- The Welwick Curlew held a territory on the intertidal area.
- The Long Bank Marsh Curlew was more frequently recorded in farmland.

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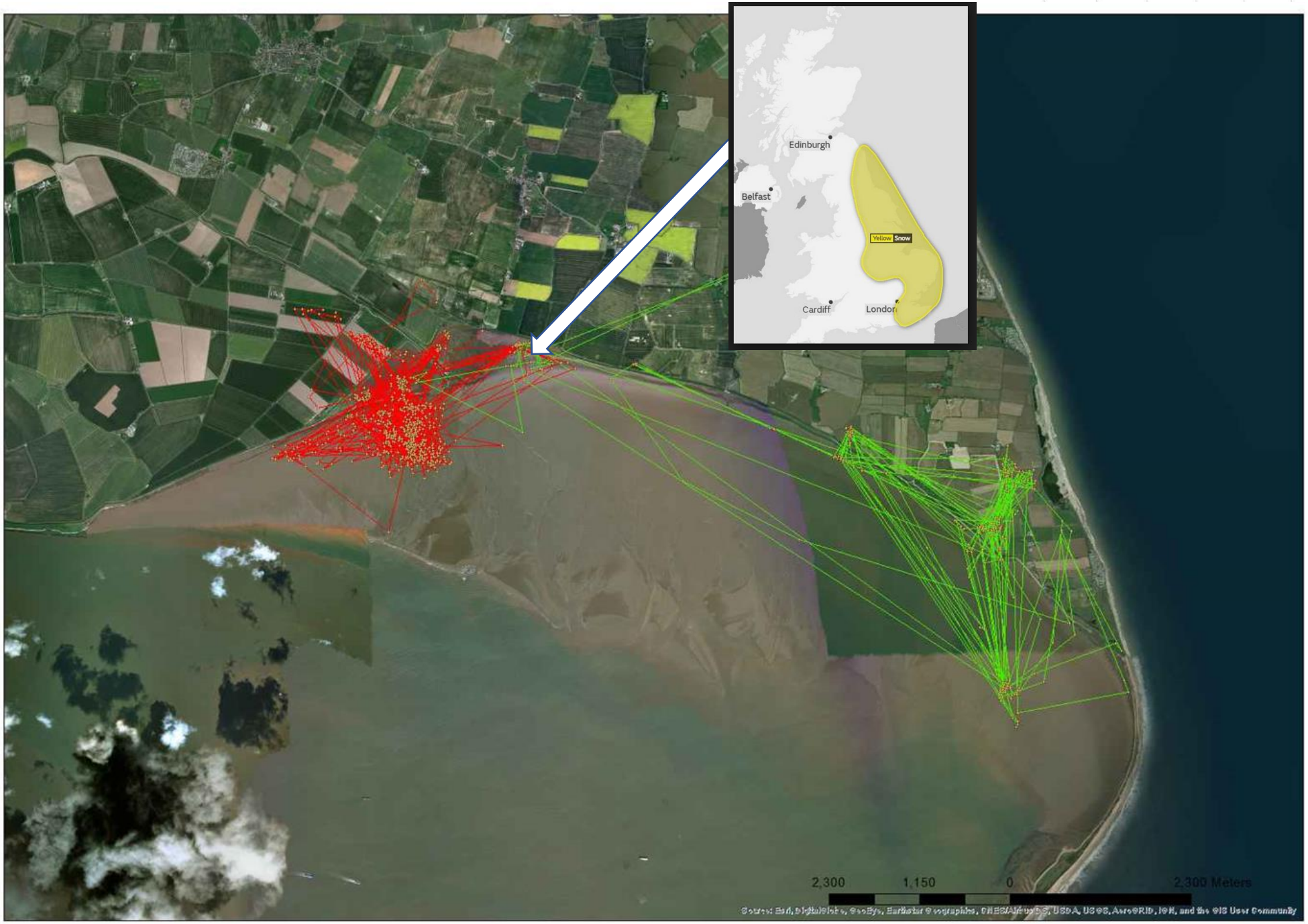
Effect of weather

bird switched roost during ‘beast from the East’



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Summary of findings

- High level of site fidelity
- Little use of terrestrial habitats except for short-billed males
- Daytime use of terrestrial fields
- Reliance on ABP welwick realignment site as a roosting site
- Curlew appeared to be territorial when foraging on tidal flats

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Examine survival rates of Curlew on the Humber Estuary

Individual-based Model follow the decision of each individual in a population as they attempt to meet their daily energy requirement

Stillman et al. 2000. Journal of Applied Ecology

Curlew feeding on earthworm – Pete Short (RSPB)

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Acknowledgments:

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Humber Wader Ringing Group

BTO Looking out for birds

The Wildlife Trusts

Yorkshire Wildlife Trust

IECS

Humber Nature Partnership