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Foras na Mara

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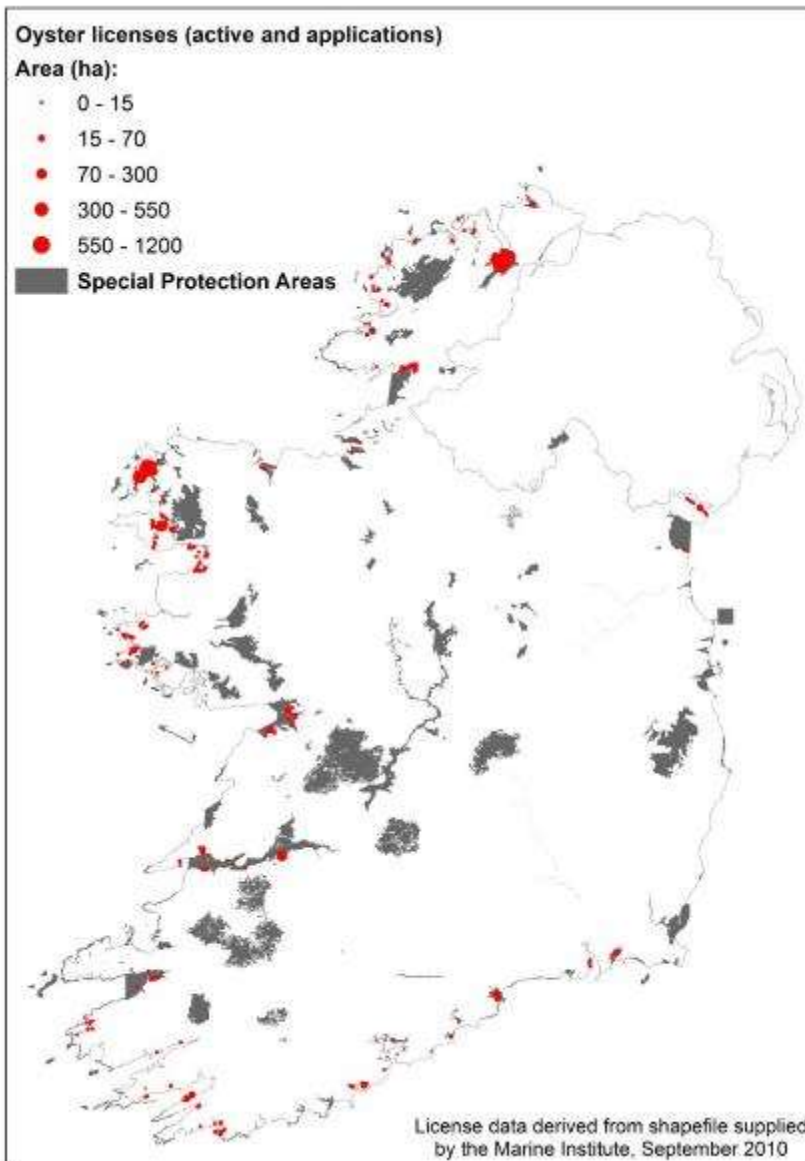
The effects of intertidal oyster (*Crassostrea gigas*) culture on the spatial distribution of waterbirds

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[On behalf of the Marine Institute]



Oyster licenses

Overall:

- 398 active (4626 ha)
- 45 applications (784 ha)

In SPAs:

- 16 coastal SPAs
- 177 active (2262 ha)
- 45 applications (499 ha)



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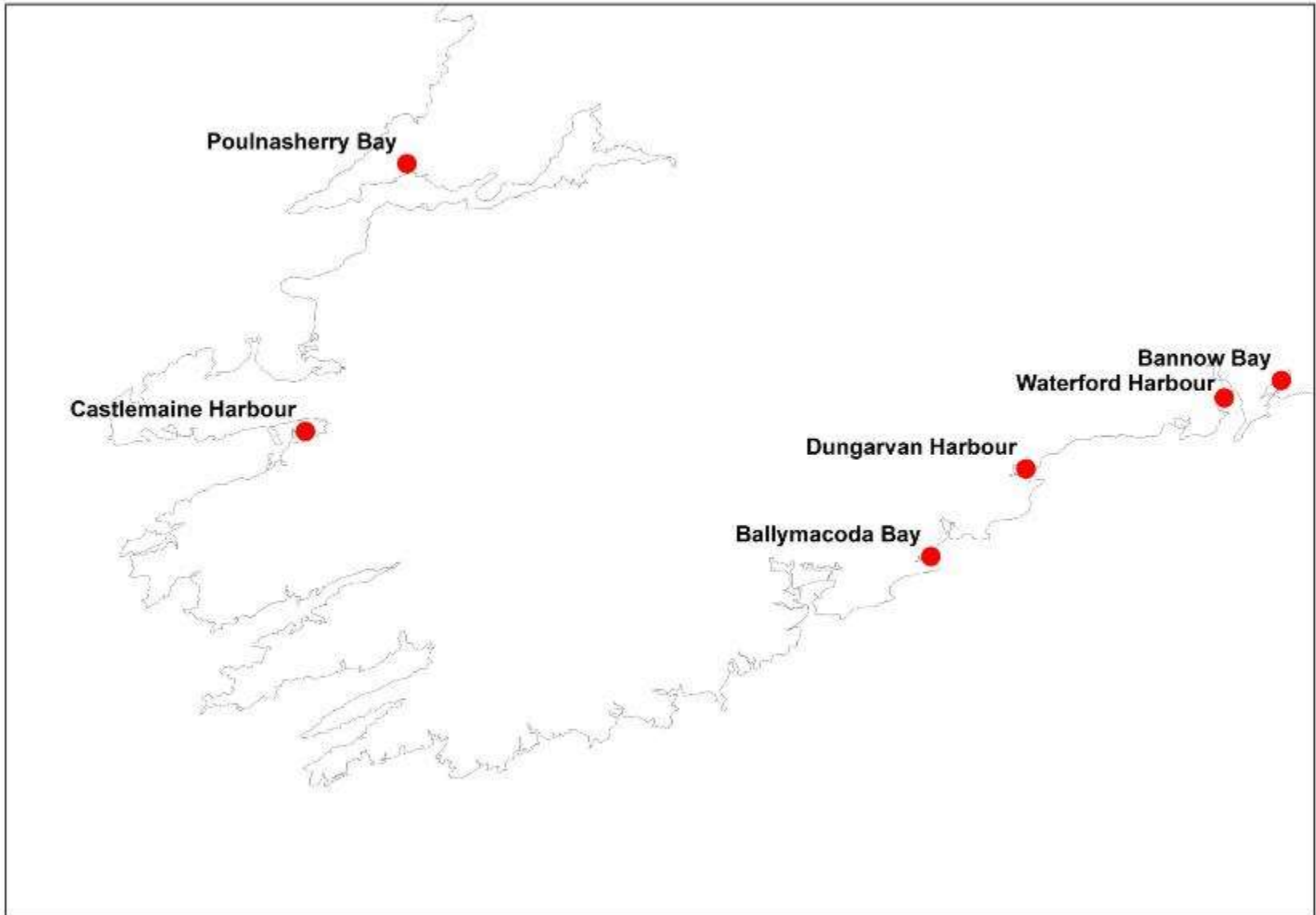
Issues:

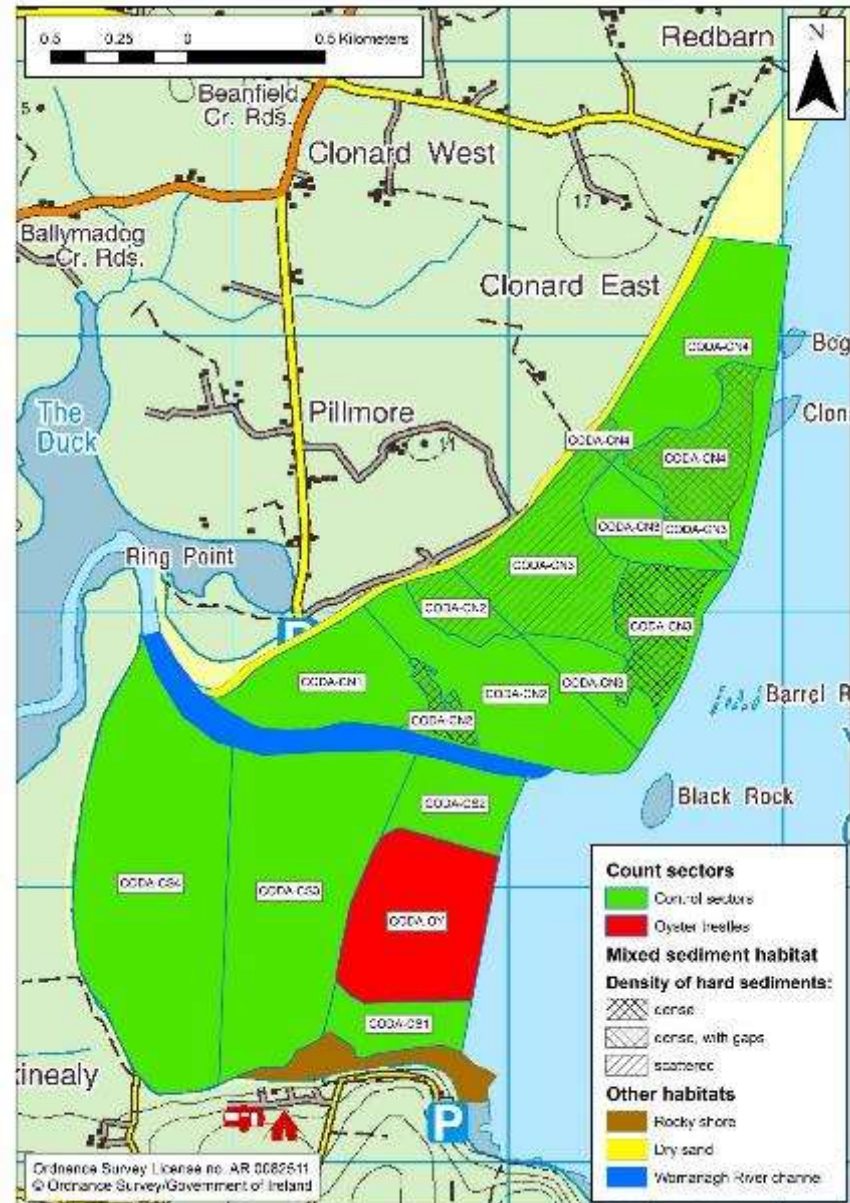
- Impacts on waterbirds
- Appropriate Assessment
- Sustainable aquaculture



Study Design

- Identification of consistent patterns across sites of positive and/or negative associations between waterbird distribution and oyster trestles
- Six sites
- 7-14 count sectors per site
- 4-8 counts on 4-5 days, Jan-Feb 2011
- Waterbird counts: numbers, within or outside trestle blocks, tideline or intertidal, and feeding or roosting/other
- Disturbance recording and tideline mapping

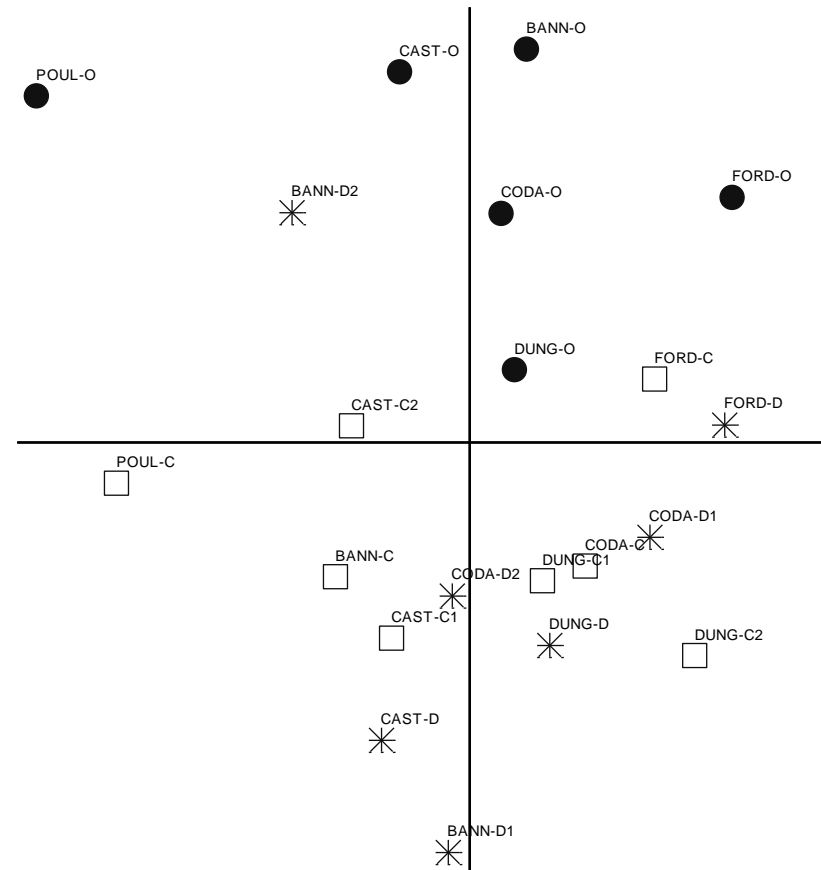






Assemblage variation

- 3 groups of sectors:
 - Oyster trestle areas (OY)
 - Close controls (C)
 - * Distant controls (D)
- Non-metric multidimensional scaling analysis (NMS) of species data



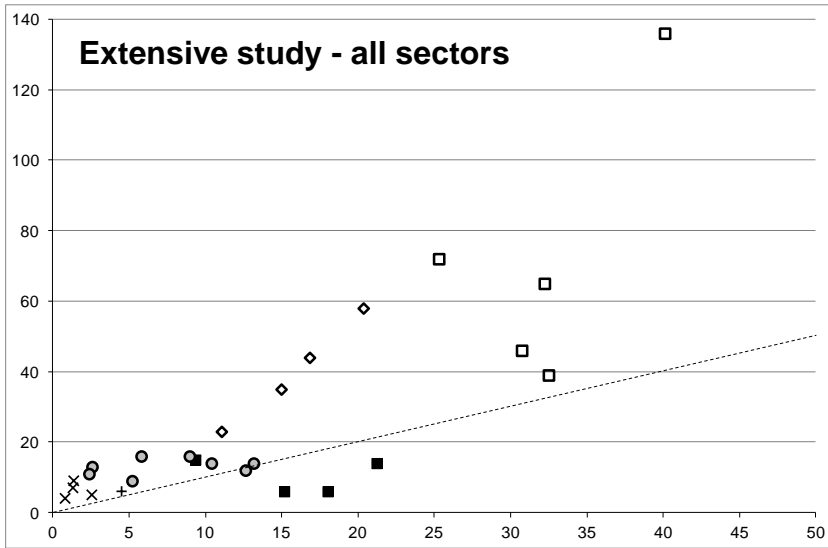


Data analysis – species distribution

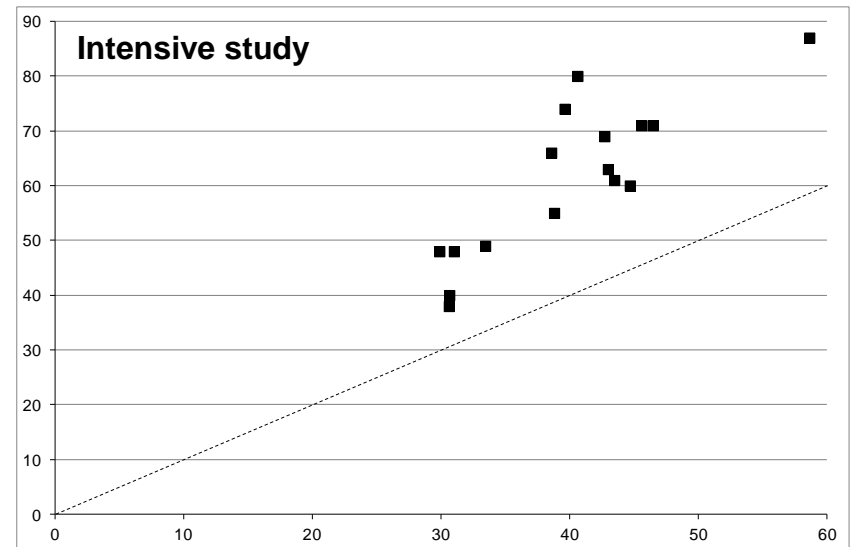
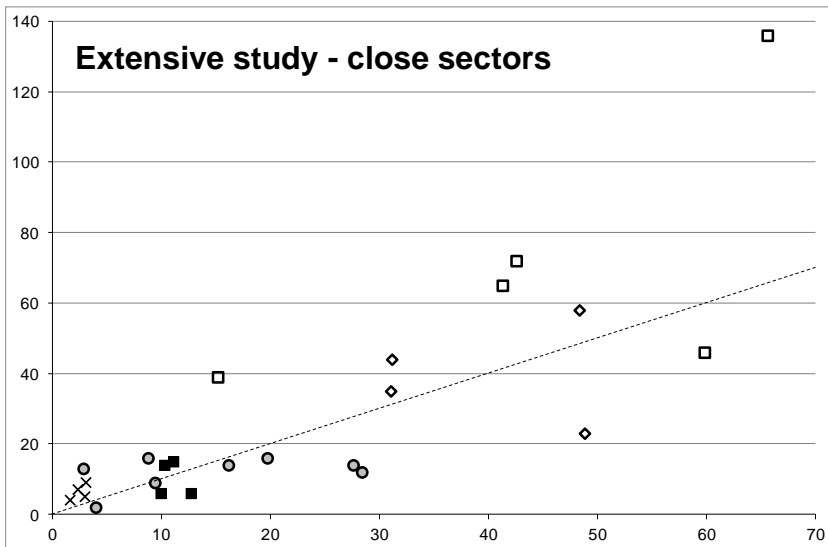
- Null hypothesis: observed occurrence of birds within areas of oyster trestles not significantly different from that predicted by the percentage of the available habitat occupied by the oyster trestles
- Expected number = (total number in intertidal away from tideline * proportion of intertidal habitat area within oyster trestles) + (total number on tideline * proportion of tideline within oyster trestles)



Observed number within oyster trestles



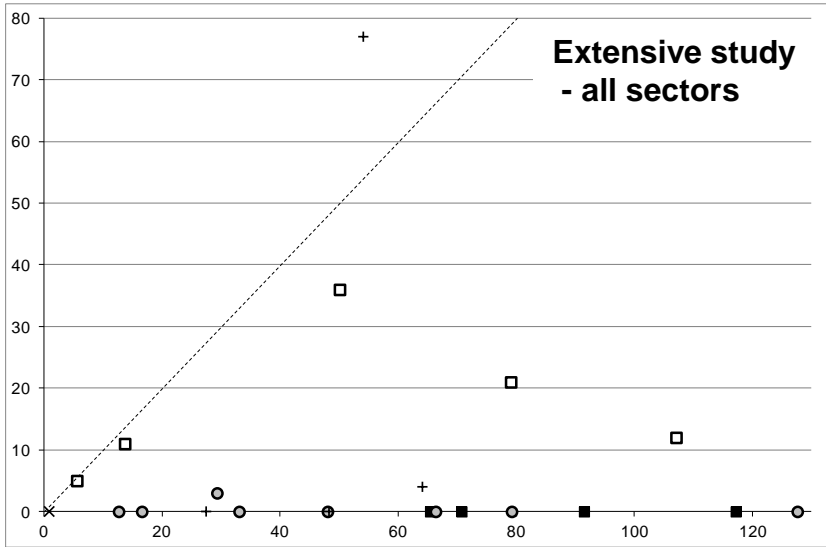
Oystercatcher



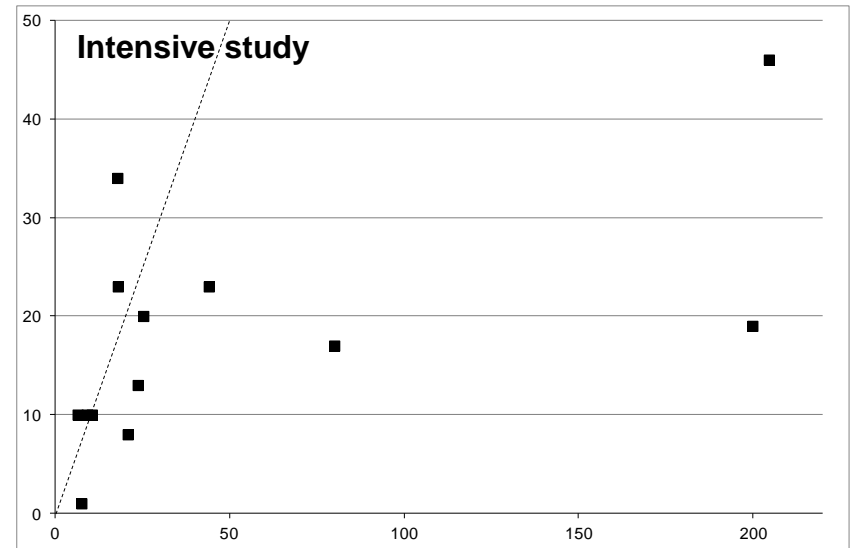
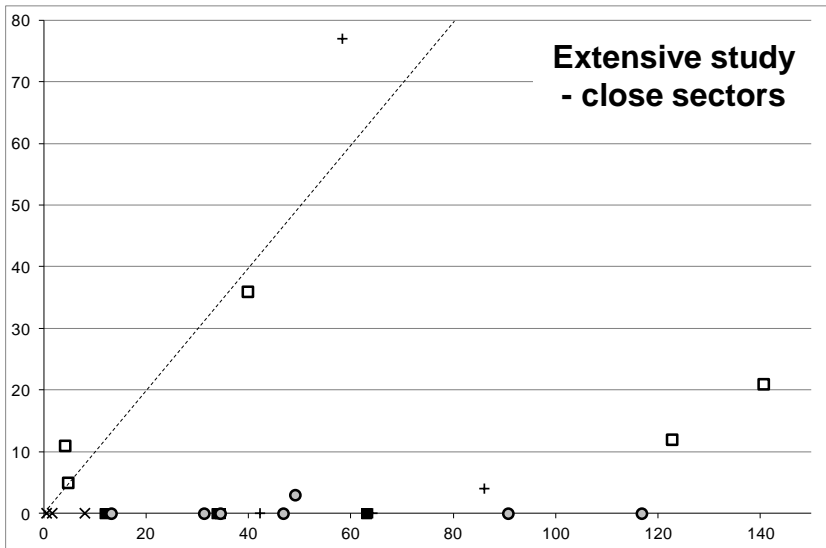
Expected number within oyster trestles



Observed number within oyster trestles



Dunlin



Expected number within oyster trestles



Response of waterbird species to intertidal oyster cultivation

Neutral/positive response:

- Oystercatcher, Curlew, Redshank, *Greenshank* and Turnstone

Variable response:

- Light-bellied Brent Goose, Black-headed Gull, Common Gull and Herring Gull

Negative response:

- *Shelduck*, *Ringed Plover*, *Lapwing*, *Sanderling*, *Dunlin*, *Black-tailed Godwit*, *Bar-tailed Godwit*, *Great Black-backed Gull*

Exclusion:

- Grey Plover and Knot



Why do trestles cause negative responses in some species?

- Neutral/positive response: waders that tend to feed in small flocks or as widely dispersed individuals/loose flocks
- Negative response: species that tend to feed in large flocks of tightly packed individuals
- Negative response may be stronger when large flocks are involved

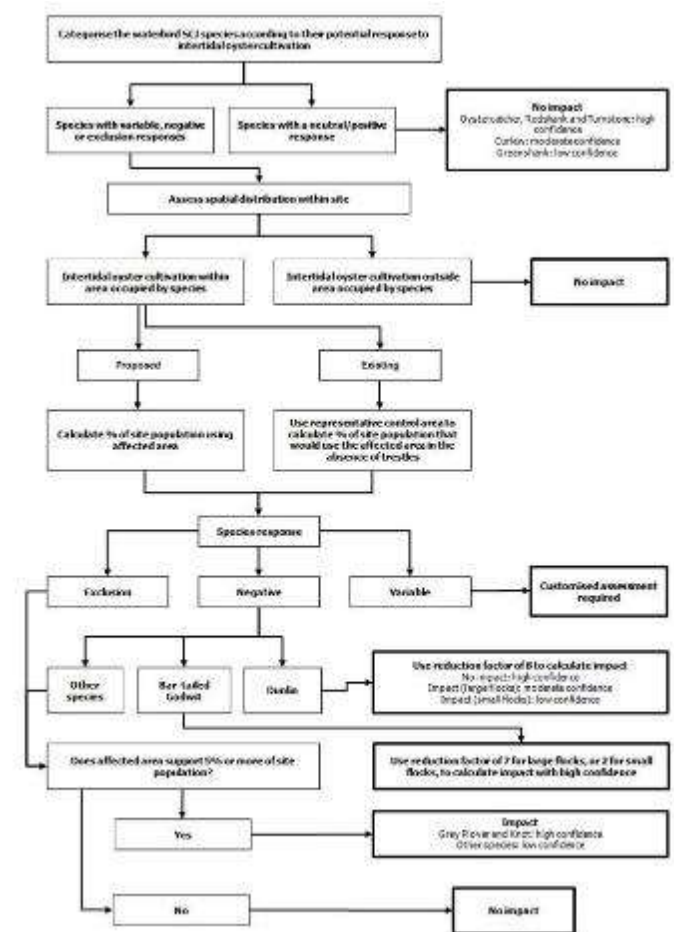


- Negative response due to oyster trestles interfering with flocking behaviour?



Policy Implications and Further Research

- Toolkit for Appropriate Assessment
- Use of mixed sediment or rocky shore sites to reduce potential impact, and simplify AA requirements
- Further research required on Brent Goose
- Monitoring of new licenses to test predictions





Acknowledgements

- Sineád Cummings, Chris Cullen, Dave Daly, Michael O’Clery, Laura O’Mahony, Chris Peppiatt, Pat Smiddy and Chris Wilson (Birdwatch Ireland/NPWS Baseline Waterbird Survey Programme)
- Oliver Tully, Francis O’Beirn and John Evans (Marine Institute)
- Ross Macklin and Katie O’Hora (Atkins)
- Lesley Lewis and David Tierney (National Parks and Wildlife Service)
- Catherine Butler, Peter Donlon, Joanne Gaffney, Mary Hannan, Dave Millard and Grainne O’Brien (BIM)
- Damien Predriel (Baile Mhic Coda Shellfish), Brendan Garvey, Michael Galvin, Bernard Mahony and Hugh Sheehy

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