KEC 5 Habitat loss effects on marine bird populations

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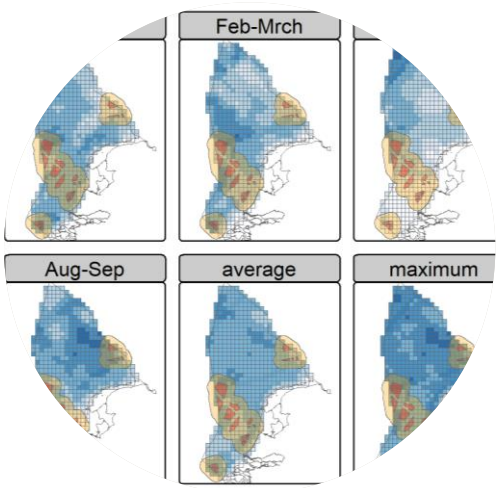
Wageningen Marine Research

KEC5 Stakeholder meeting, 15 October 2024



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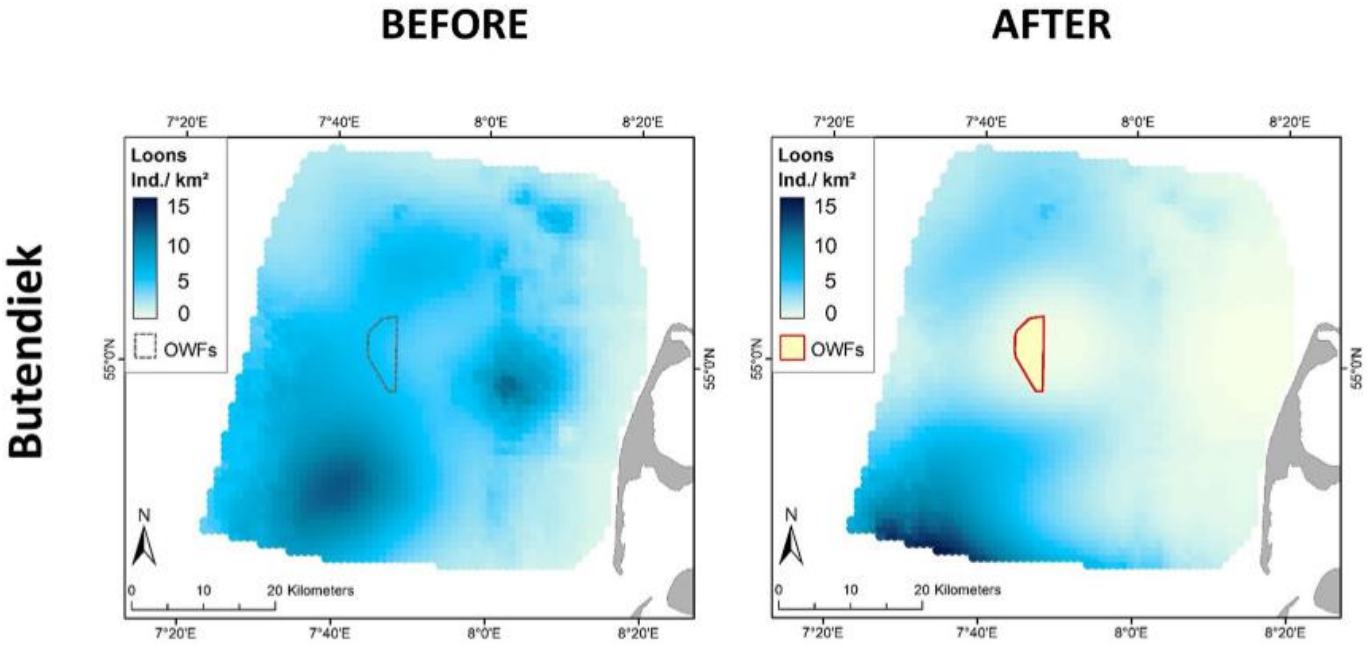
WOZEP DUTCH GOVERNMENTAL OFFSHORE WIND ECOLOGICAL PROGRAMME

Habitat loss due to avoidance of offshore wind



Loons; from Garthe *et al*. 2023, 13:4779, Scientific Reports

Habitat loss

Species & scenarios

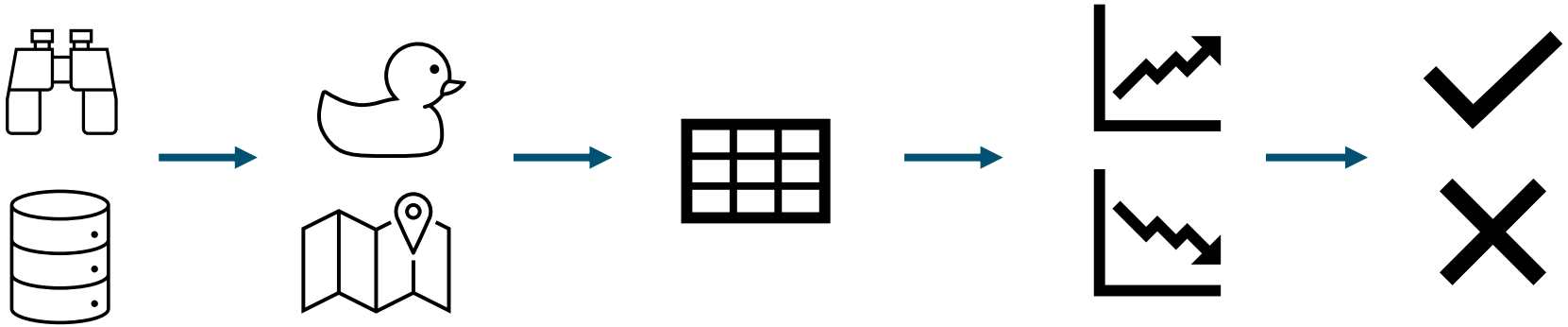
Species

- Razorbill / alk
- Guillemot / zeekoet
- Sandwich tern / grote stern
- Northern gannet / Jan-van-gent

Scenarios

- Basic 2020 scenario
- Basic 2024 scenario
- Total scenario
- International scenario

Overview of methodology



Bird observations & database

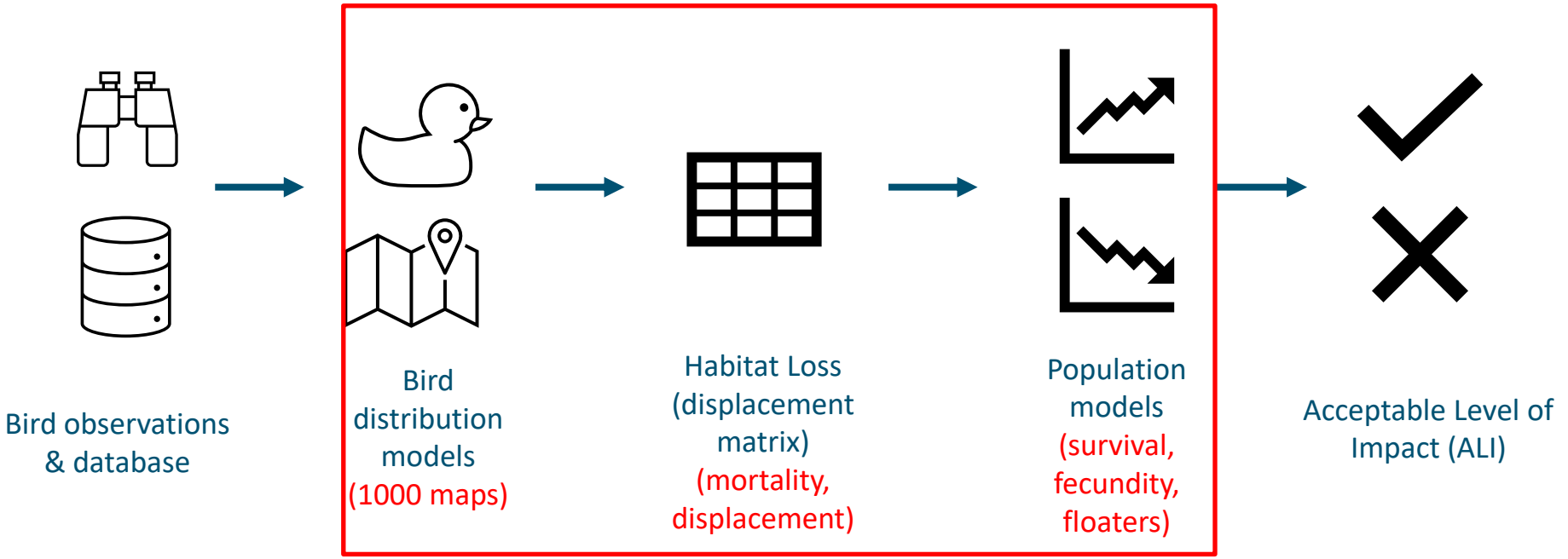
Bird distribution models

Habitat Loss (displacement matrix)

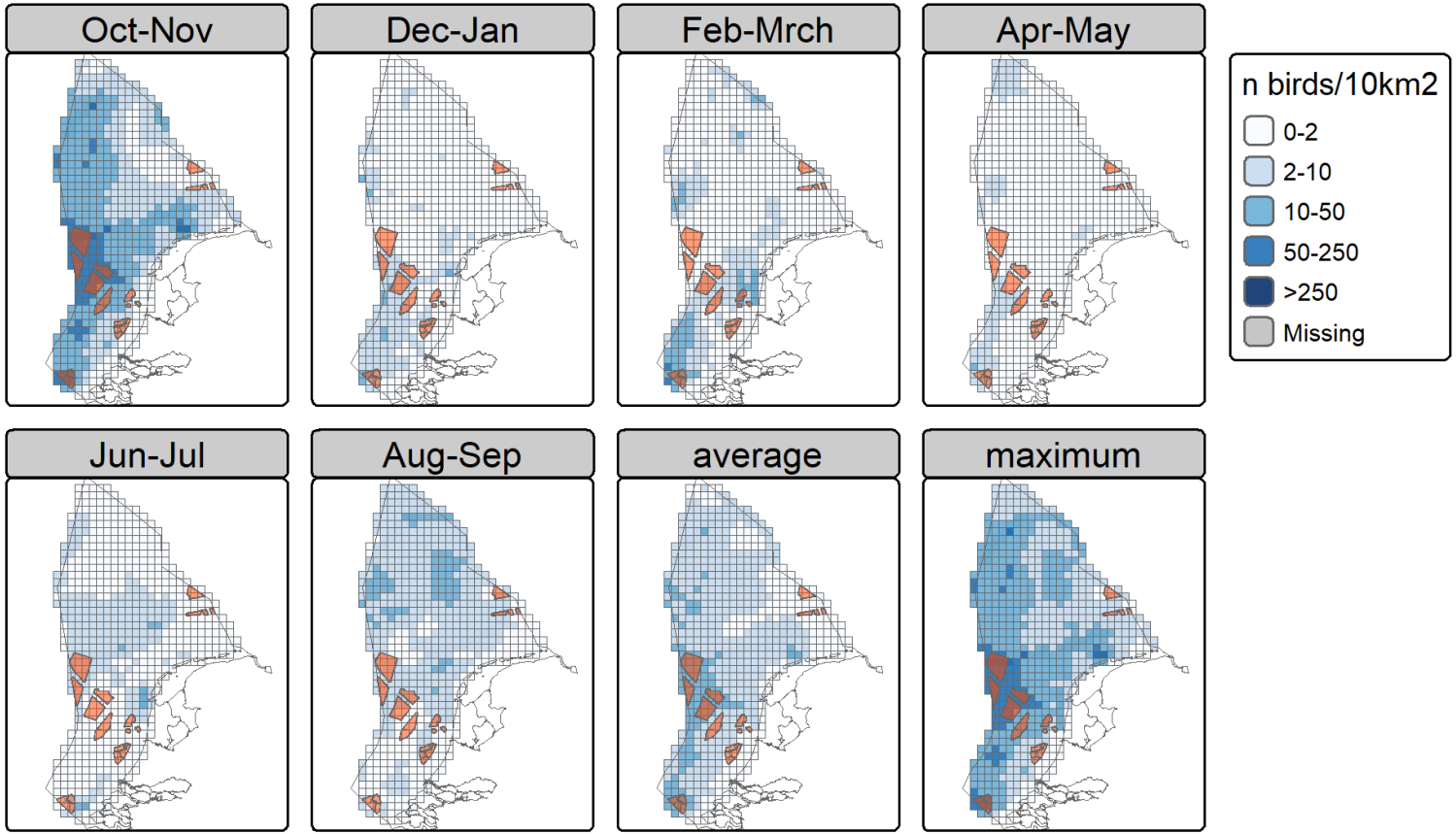
Population models

Acceptable Level of Impact (ALI)

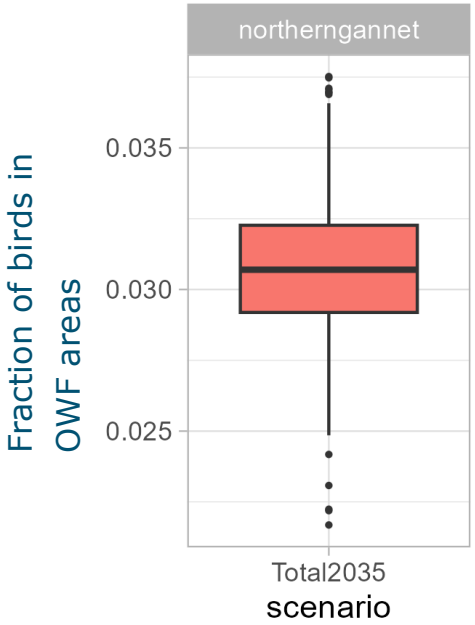
Uncertainty propagation



Northern gannet distribution map, overlap with OWFs



Fraction of northern gannets in OWF areas



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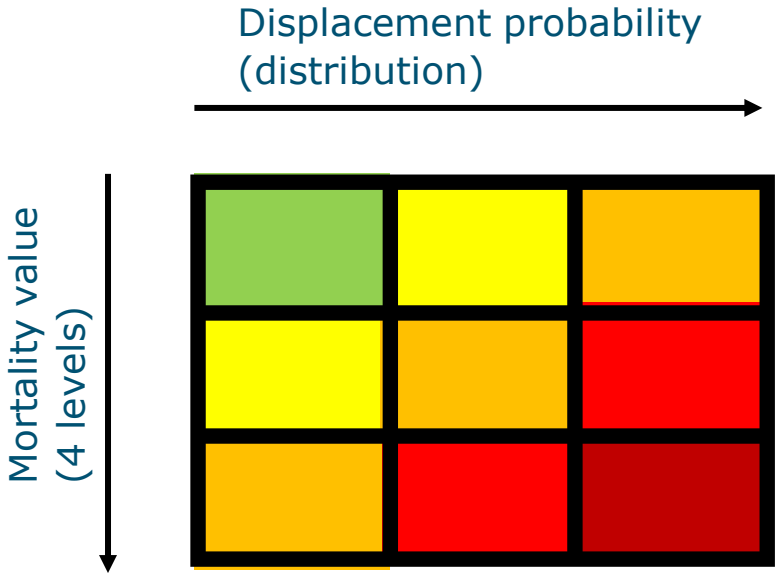
Displacement matrix



Displacement mortalities

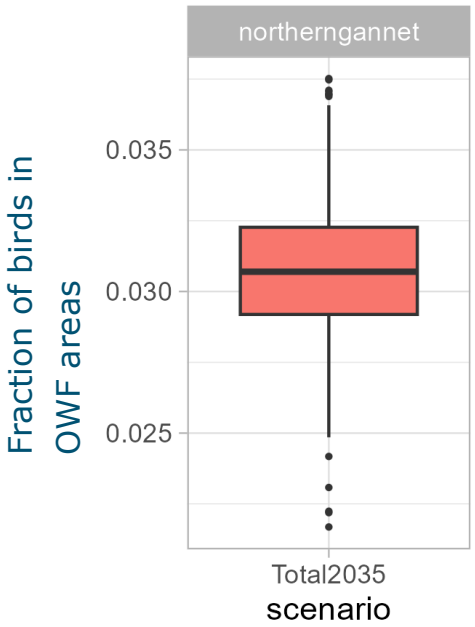
10% rule?

Displacement mortalities

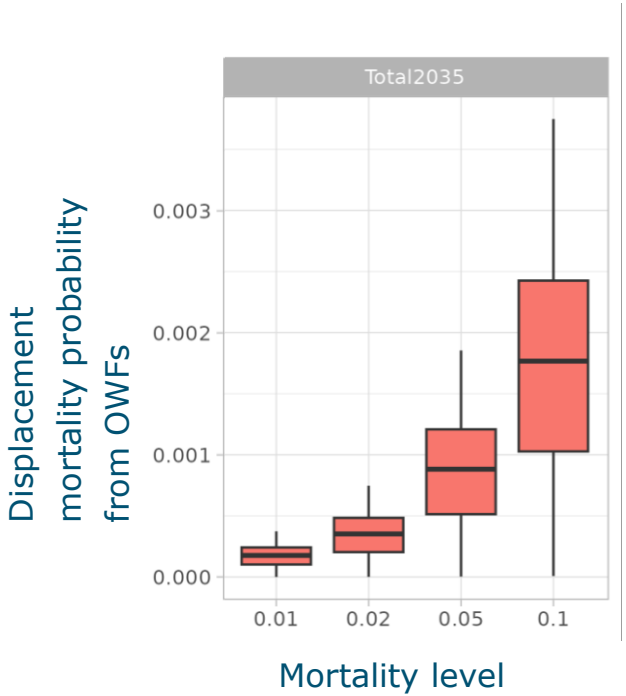
10% rule?

1, 2, 5, 10%

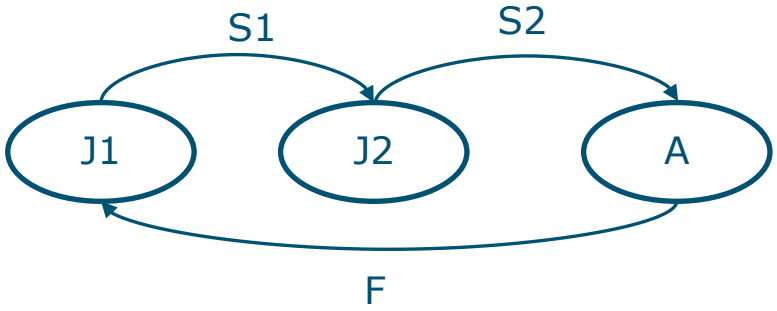
Northern gannet mortality due to habitat loss from OWFs

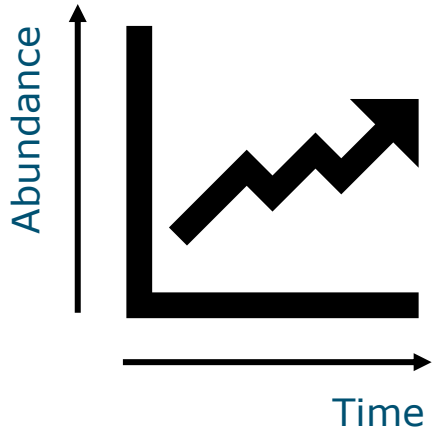


* displacement
* mortality



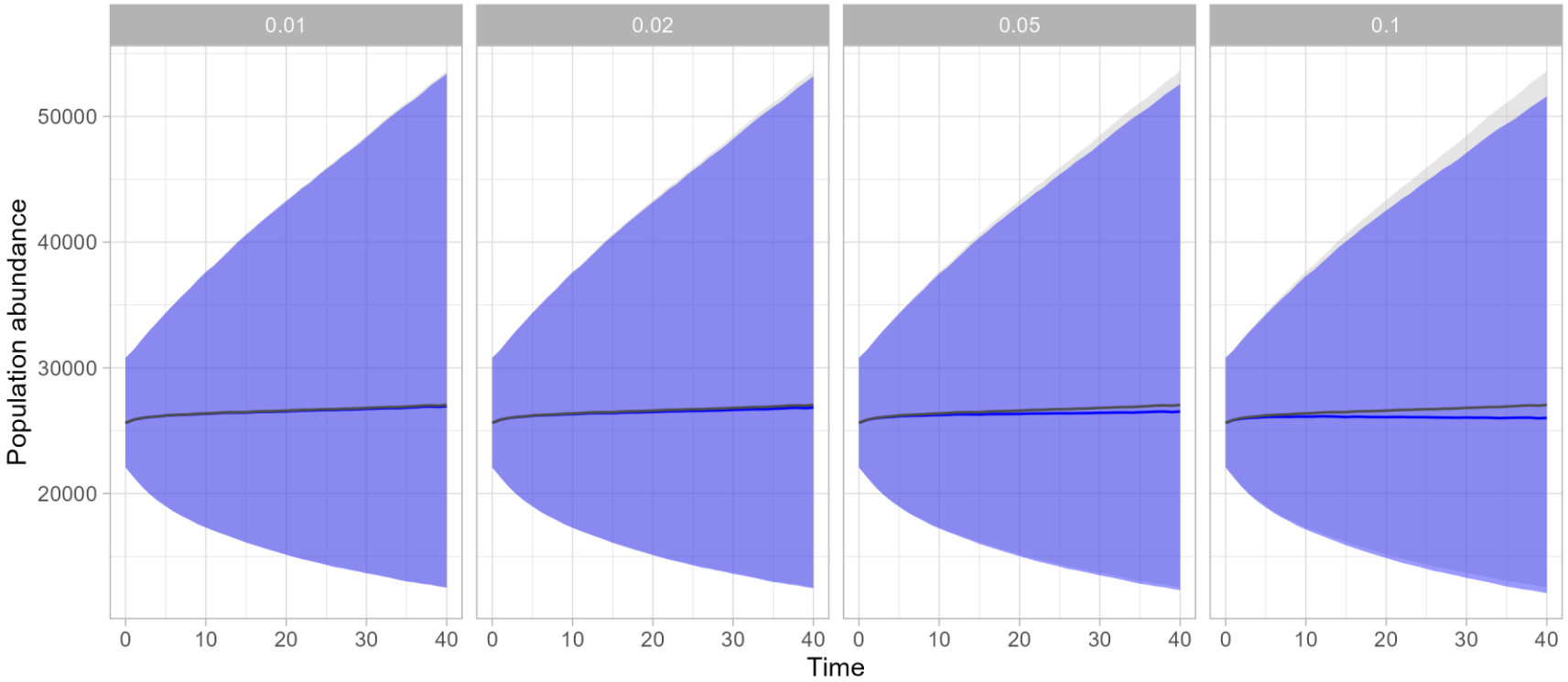
Population models





Soudijn et al. 2021, KEC 4

Northern gannet abundance through time



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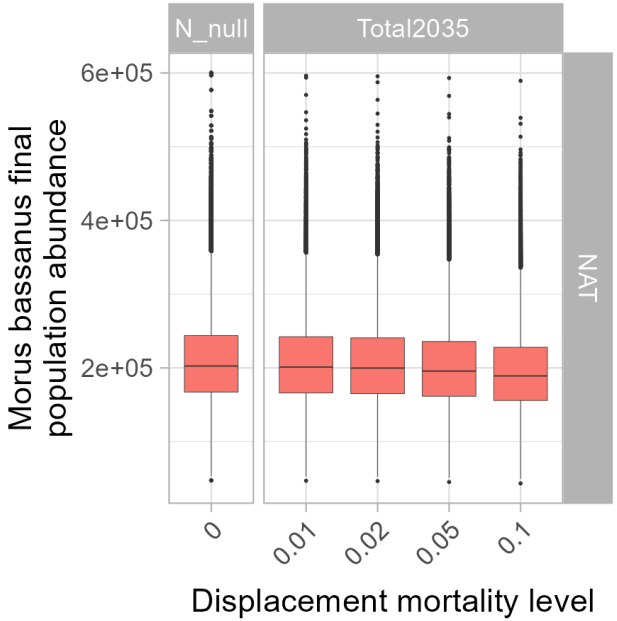
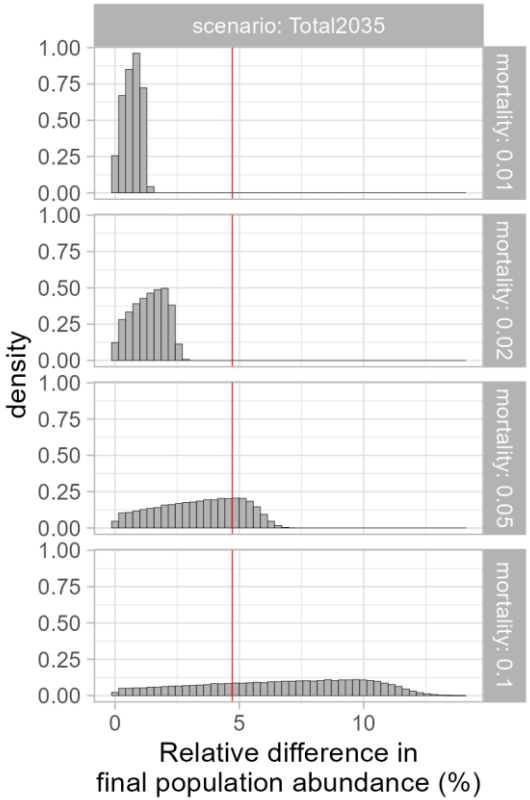
Northern gannet abundance at the end of the simulations

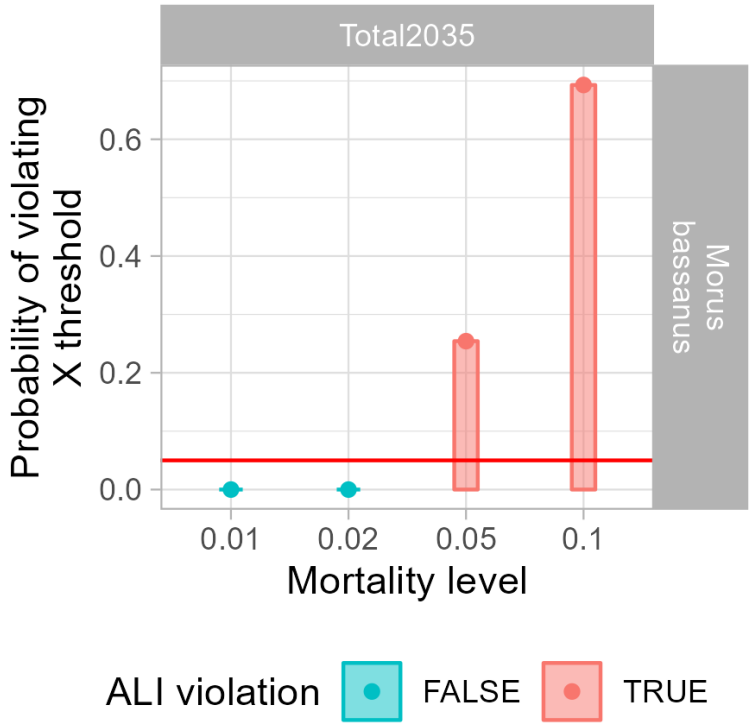


Relative difference in northern gannet abundance

Species	ALI X max(3 x gen. time, 10)	Generation time (yrs)	ALI Y
Northern gannet	5%	14.2	5%



ALI test northern gannet abundance

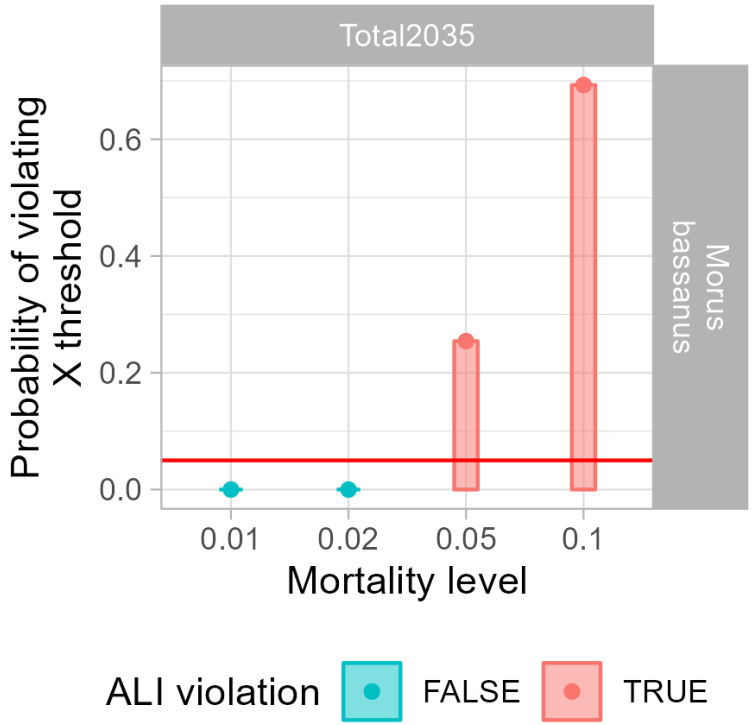


Which displacement mortality value to adapt?

Species	Displacement mortality values	KEC 4 and older (RDRS)
Northern gannet	0.01, 0.02, 0.05, 0.1	0.0094
Sandwich tern	0.01, 0.02, 0.05, 0.1	0.044
Common guillemot	0.01, 0.02, 0.05, 0.1	0.045
Razorbill	0.01, 0.02, 0.05, 0.1	0.084

Bradburry et al., 2014, 9, PloS One

ALI test northern gannet abundance



In summary

- Displacement matrix replaces RDSD score method
- Uncertainty propagation conducted from bird distribution models to population models
- No ALI threshold violation for the northern gannet for the 1% and 2% mortality scenarios, but there is for the 5 and 10% mortality scenarios

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Discussion

- Displacement mortality is highly uncertain
- New method in development, which is more dependent on bird behaviour
- Do distribution maps represent foraging locations?

Questions?