



Animal &
Plant Health
Agency

Looking forward – mammal data and its potential at a national and international scale

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Why do we need to know ?

- Are populations stable? Biodiversity, conservation and pest
- Where are they? Disease risk, pest status
- How many are there? All of the above.

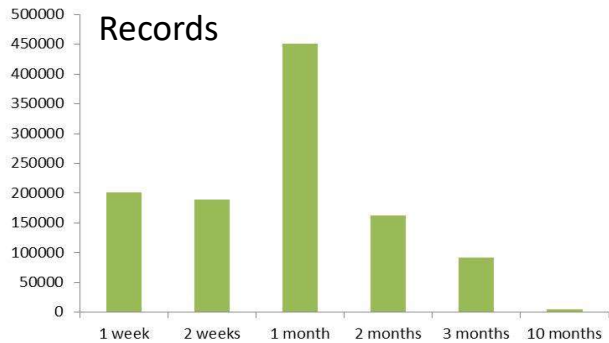
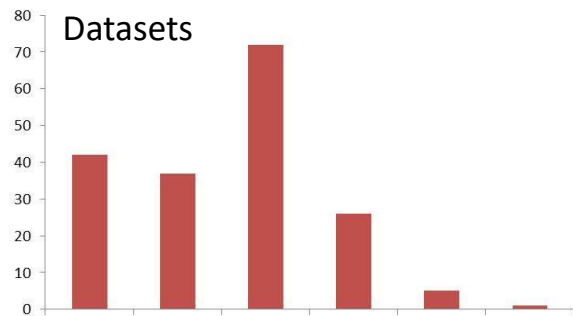
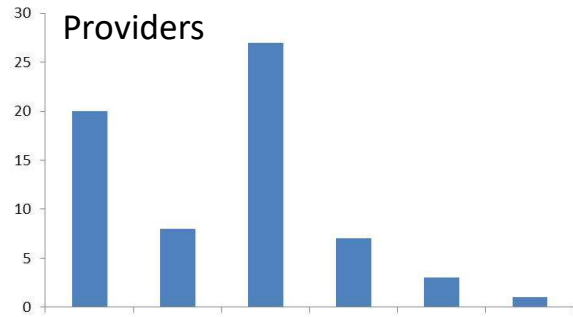
What do we need to know ?

- National population size
- Distribution
- Density
- (Trends over time)

What data do we have (publically available)?

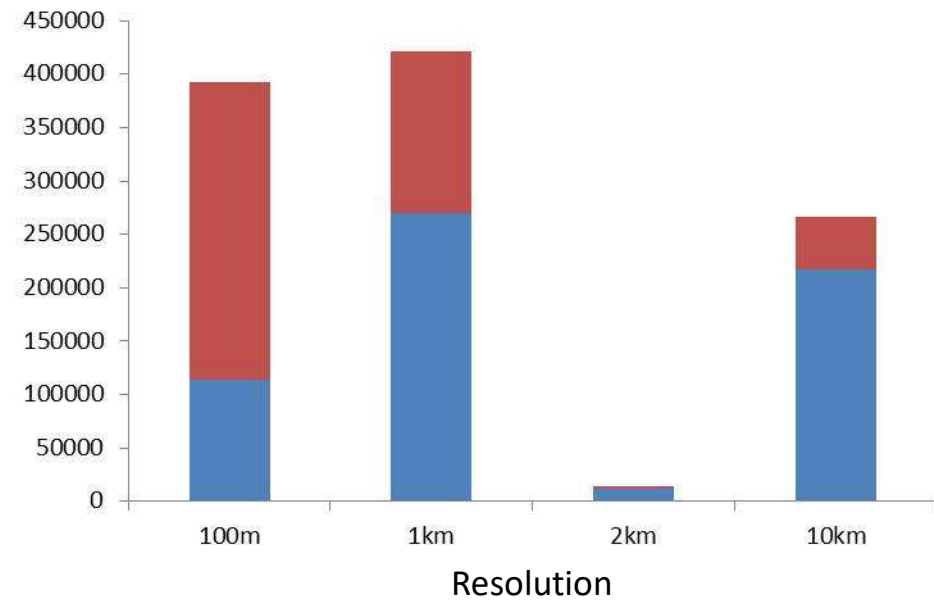
- **Observations**
NBN
- **Density**
published studies

Engagement and data provision (pre-April)



264 datasets from 84 providers with 1.21 million records from 1960 to 2015.

77% engagement granting access to 1.09 million records within 4 months.



Published density estimates

Georeferenced density estimates with defined study boundary.

From a full literature search across all species spanning hundreds of papers only a selection suitable (95 publications spanning 53 species).

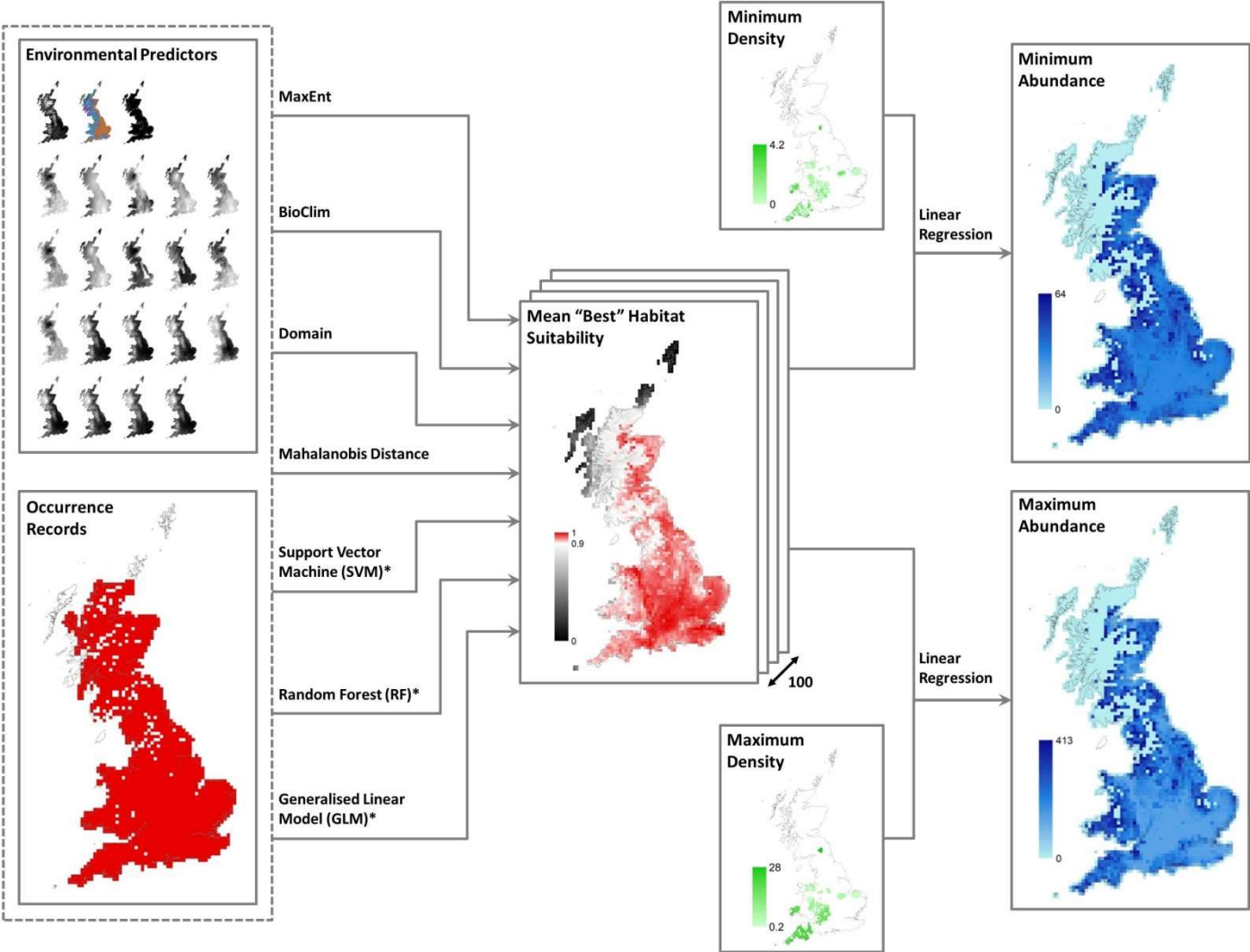
Huge variation in site description and survey details.

Most publications do not provide a reference map of the study site and none provided maps or raw data as electronic supplements.

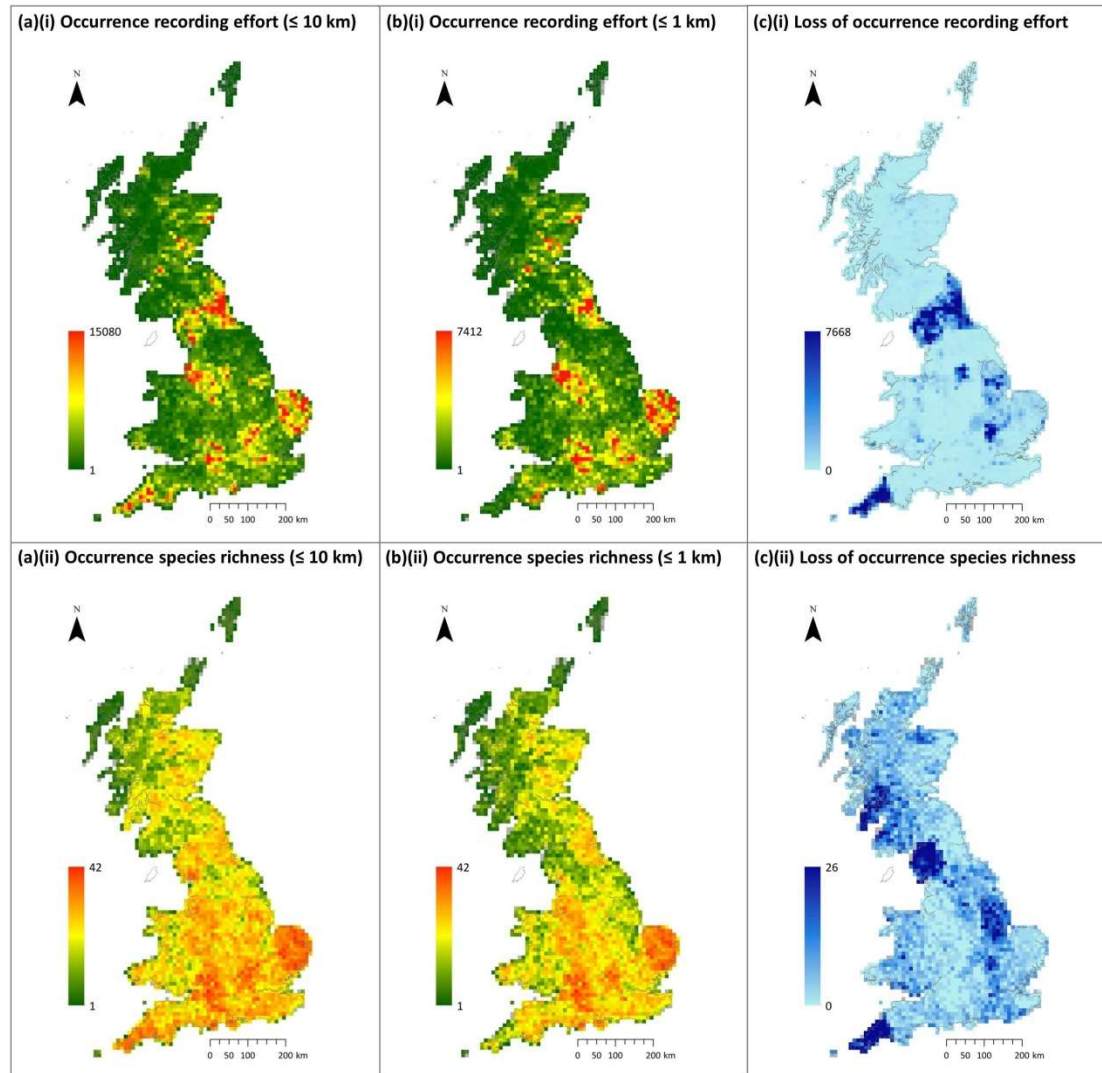
Survey sites chosen based on habitat rather than BNG (as is the case occurrence data).

Typically, high density areas with no projection or comment on wider region and limited variation in density reported within survey sites.

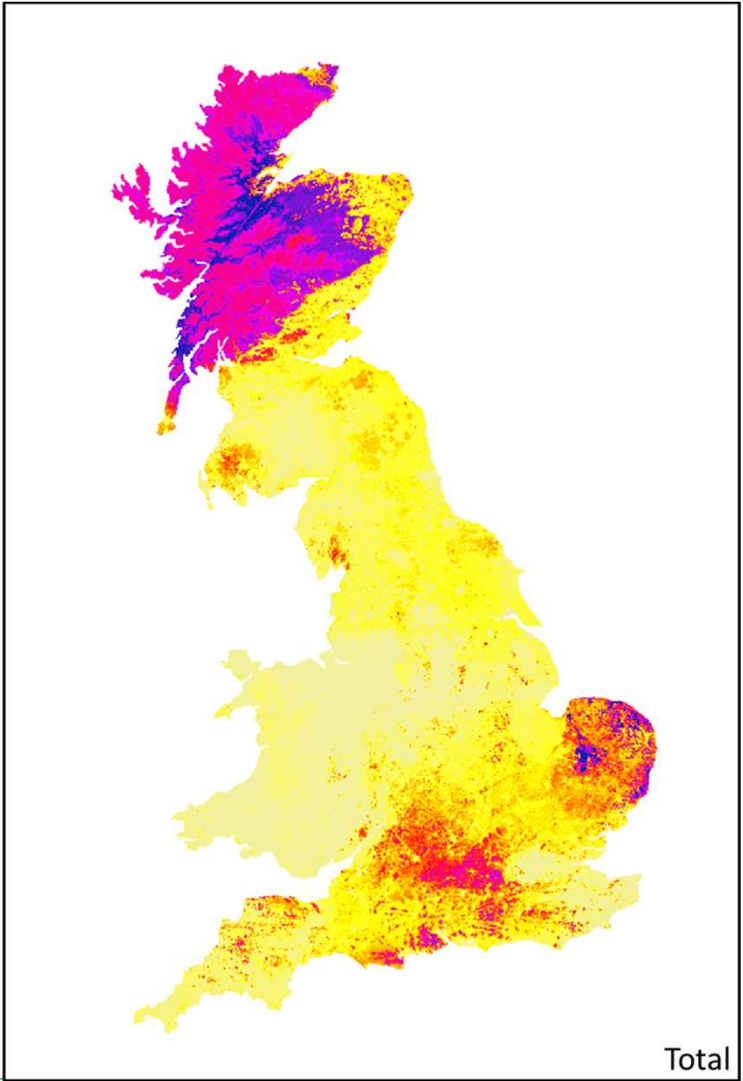
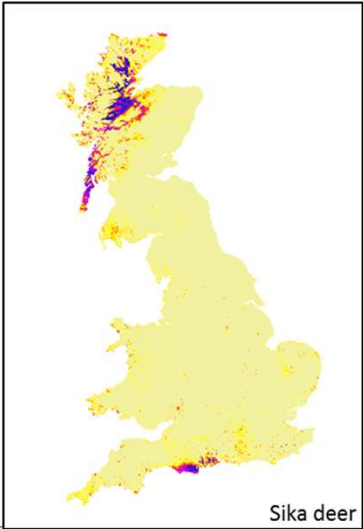
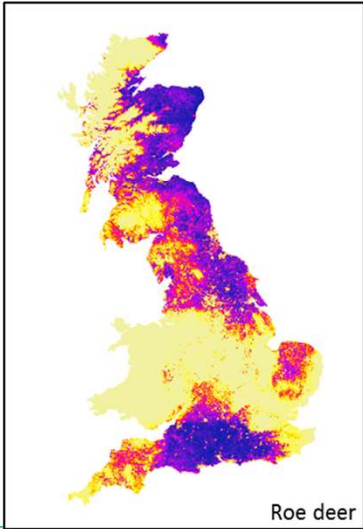
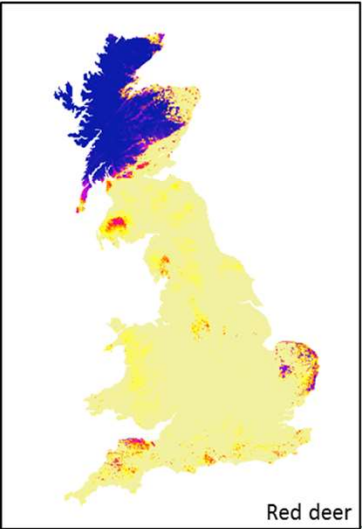
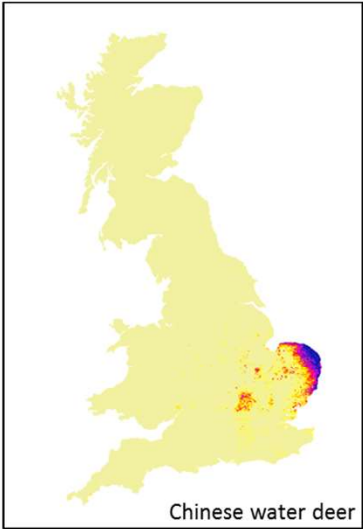
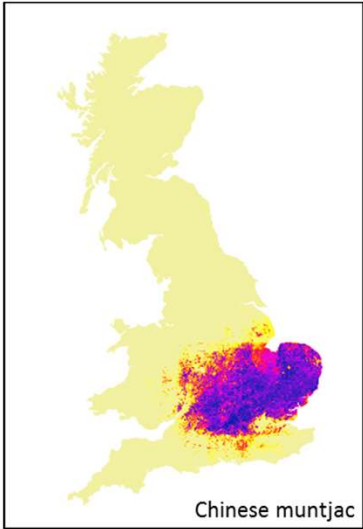
Modelling framework



Regional variation in data provision



Results for selected deer species



Results, limitations and recommendations

Modelling approach reproduces patterns of input data and predicts data relatively accurately (mean AUC approx. 0.7).

Whilst models can fill in some missing data there is a limit to how much can be reliably predicted.

Regional data “deserts” which occur in higher resolution data significantly impact predictions at a national level.

For efficient and standardised access to data at a national scale **biodiversity information should be submitted directly to and managed by selected national survey repositories** such as Mammal Tracker.

Mitigation against the attitudes and actions of a minority of regional data providers.

Model predictions

Distributions mapped for 58 species.

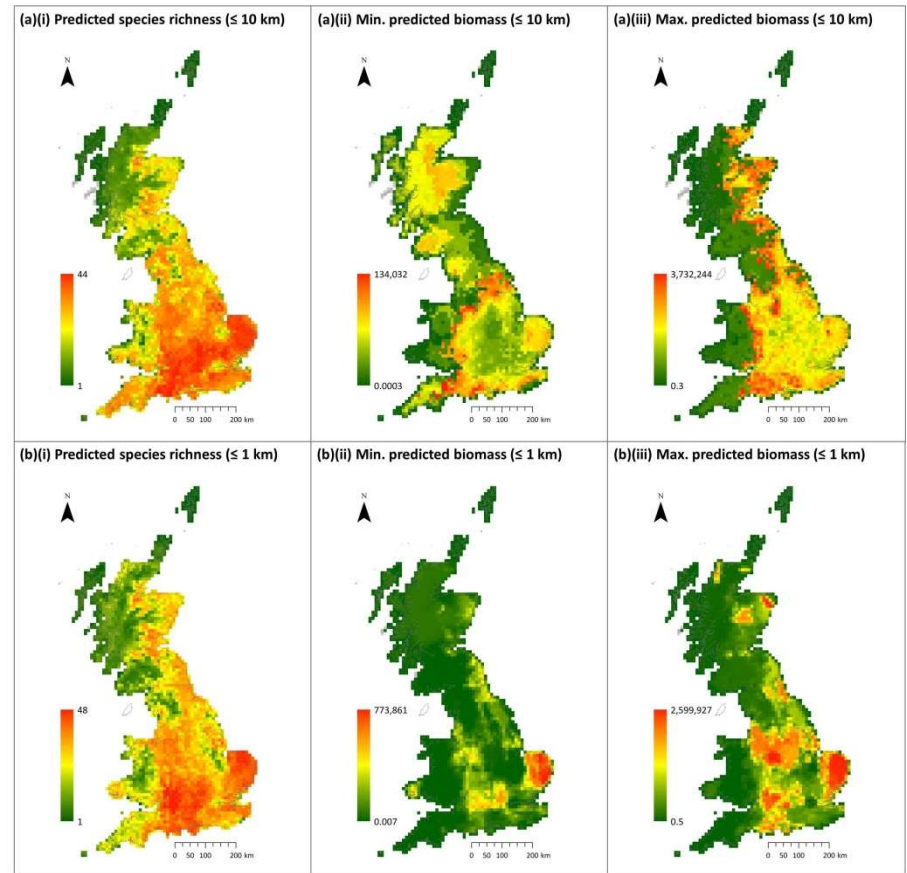
MaxEnt most commonly chosen but not statistically better than RF (or SVM at 1km).

Average AUC approximately 0.7.

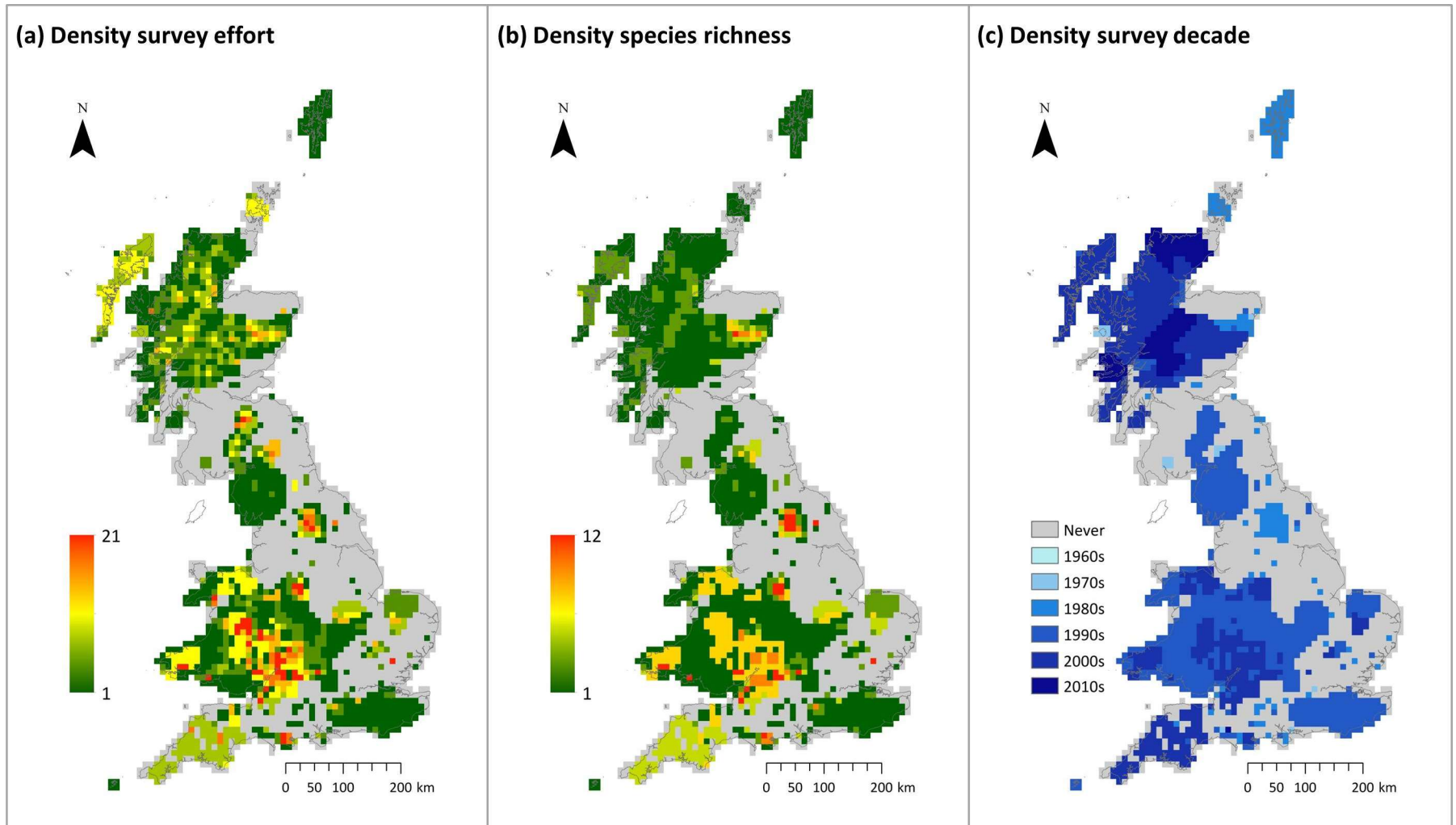
50% of abundance contained 1995 estimate.

Inconsistency in biomass at low resolution due to limited data.

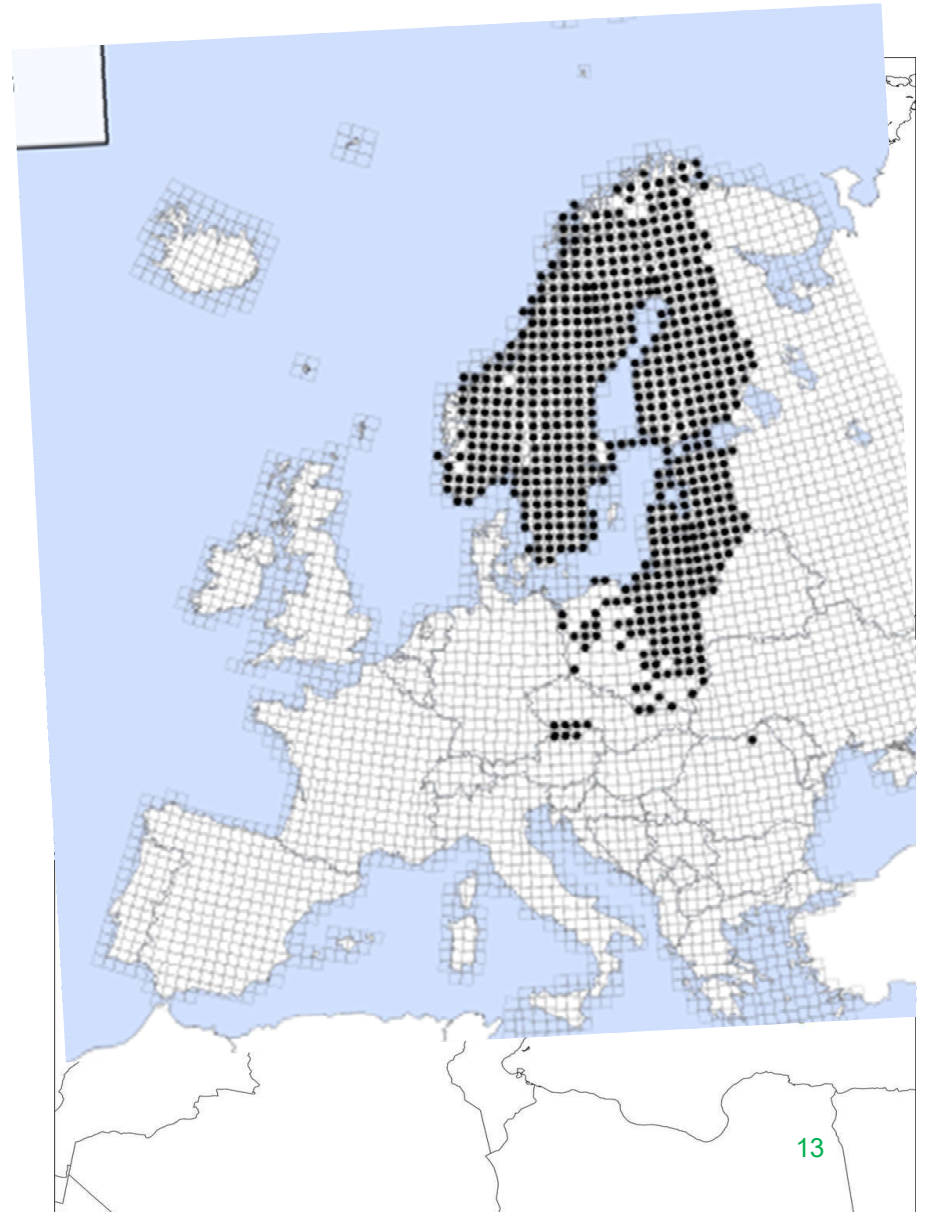
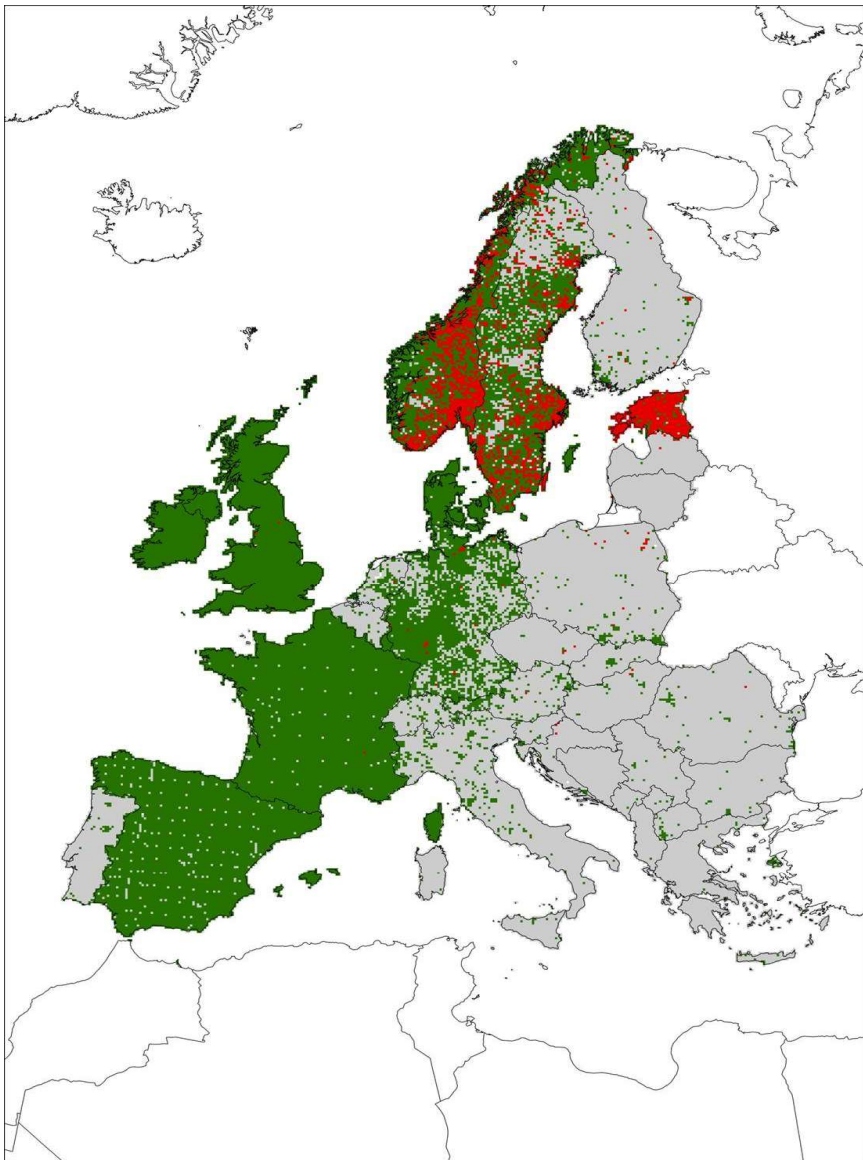
More precise predictions at higher resolution but less correlation with habitat suitability.



Regional variation in survey efforts



European work: GBIF elk distribution for CWD



Atlas Issues

- Still an issue of data availability from different data providers
- Some dates have disappeared
- Some 1km data is at 10km
- Some species have lost 4/5th of the data (no access to data not ported to Atlas)
- Can we access 'sensitive' data at the recorded scale ?

Recommendations

How you can help....

1. Occurrence records submitted directly to national schemes such as Mammal Tracker.
2. More focus is required to gather density estimates for common species and in regions of low or no abundance.
3. Clearer reporting of density estimates; a standardised approach providing estimates based on the 1km BNG (higher resolution if possible) with publications accompanied by electronic maps.
4. NBN/iRecord – automated verification and import of confirmed camera trap images

....thank you for your attention!