Introduction

- Rare species are characterised by low densities, wide ranges and short availability times at the surface.
- **Issue:** Low sighting rates
  - Separately, surveys cannot provide sufficient data to model habitats preferences and distribution of rare species
- **Suggested solution:** Merging large scale visual survey data from various sources to increase the number of input data in the models

How to merge large-scale datasets into a single one and determine where geographical extrapolation can be made while still within environmental interpolation?

Methods

**Data collection:** 15 organisations – visual survey data – 1998 to 2015 – North Atlantic Ocean and Mediterranean Sea

**Data processing:** Data standardisation

**Environmental data extraction:** Static and dynamic variables – 30 days and 0.25° resolutions

**Gap analysis:** To identify areas outside survey areas where variables are within the range sampled in the surveys

- **Univariate gap analysis**
  - Determines the range of the variables sampled and overlays the projection maps
- **Multivariate gap analysis**
  - Determines if the combination of various variables was sampled using the Gower’s distance

Ranges of sampled variables

- **Univariate gap analysis**
  - Intersection of the 4 variable projection maps
  - 40% Interpolation
  - 60% Extrapolation

- **Multivariate gap analysis**
  - Map showing where combination of 4 variables are within surveyed conditions
  - 29.7% Interpolation
  - 70.3% Extrapolation

Conclusion

**Gap analysis methodology highlights interpolation zones where model predictions would be reliable**

**The univariate approach overestimated the interpolation areas compared to the multivariate approach**

**The multivariate approach would reveal the true interpolation area to be considered in the models**

Affiliations