ForestNavigator

Biodiversity indicators

& species distribution modelling

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Species distribution modelling

- Current and projected maps of habitat **suitability** or species **occurrences**

- Statistical relationship between **species observations** and **environmental covariates**

- `ibis.iSDM` software to fit **integrated species distribution models**

Jung, M. (2023). An integrated species distribution modelling framework for heterogenous biodiversity data. Ecological Informatics, 102127

Observations

Temp. annual range   DBH

Habitat suitability
Triturus pygmaeus
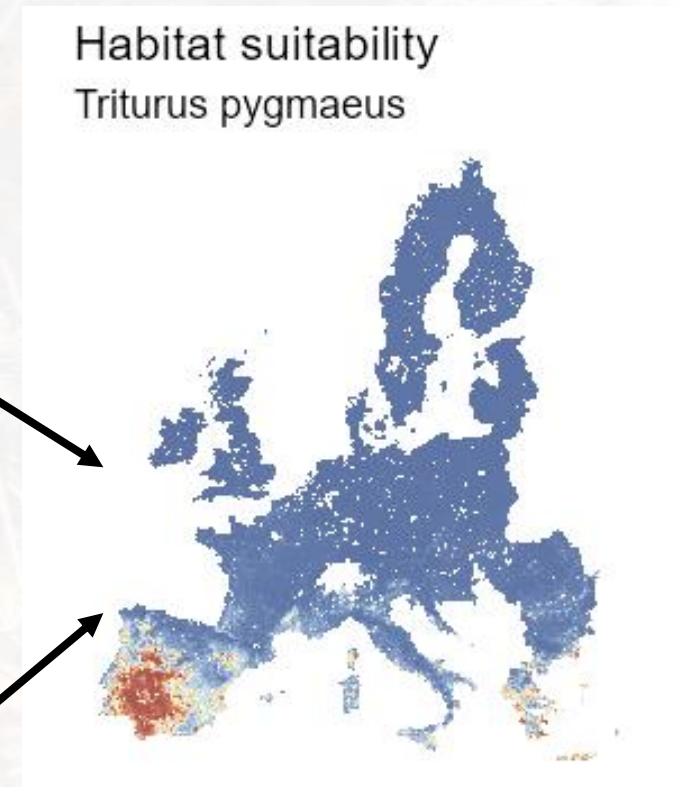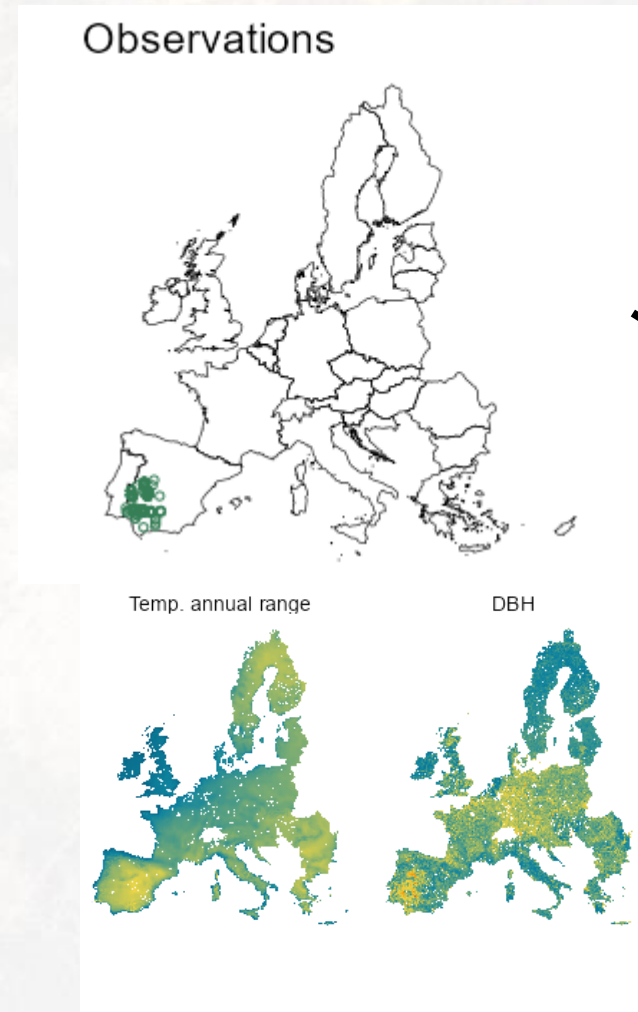
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(Potential) Species pool

Source	Selection criterion	Number species
European Atlases Article 12/17	"*preferred*" association to "*woodlandForest*"	500
European Red Lists of species	Habitat terms: "*forest*", "*tree*", "*wood*", "*coniferous*", "*broadleaf*"	852
Red Lists (subset)	Threat terms: "*cutting*", "*deforestation*", "*felling*", "*forest*", "*logging*", "*silviculture*", "*timber*"	377
eBMS	Listed in Woodland Butterfly Indicator	65
PECBMS	Habitat specified as "forest"	50

🍂 Biodiversity data sources

🍃 *gbif.org* database

🍃 *eBird.org* database

🍃 *IUCN* range maps

🍃 NFI datasets

(Potential) Species pool

Vascular plants
244 species

Beetles
181 species

Mollusca
110 species

Other insects
102 species

Arthropods
40 species

Ferns
29 species

Birds
229 species

Mammals
122 species

Butterflies
105 species

Amphibians/Reptiles
99 species

Bees
40 species

Non-vascular plants
16 species

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Biodiversity indicators

- **Quantify** and **summarize** biodiversity (trends) in space and time

- Capture **different aspects** of biodiversity

- **Non-spatial** or **spatial** indicators

- **Direct** and **derived** indicators

Biodiversity Hotspots
Amphibians/Reptiles

Adapted: https://biodiversity.europa.eu/track/streamlined-european-biodiversity-indicators
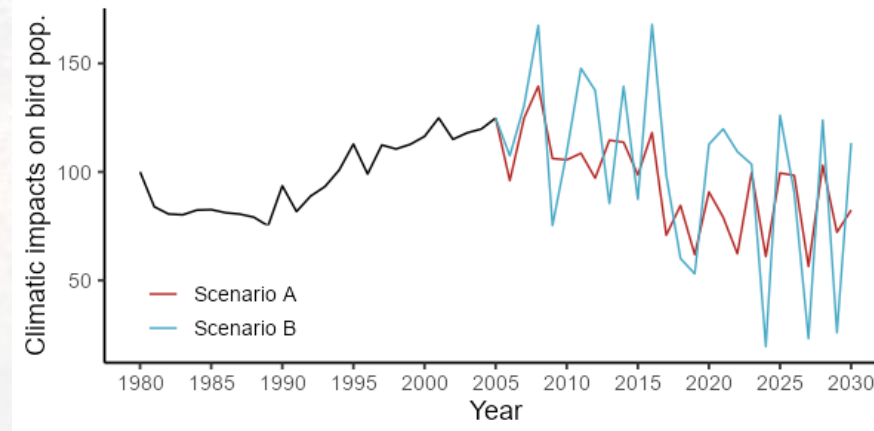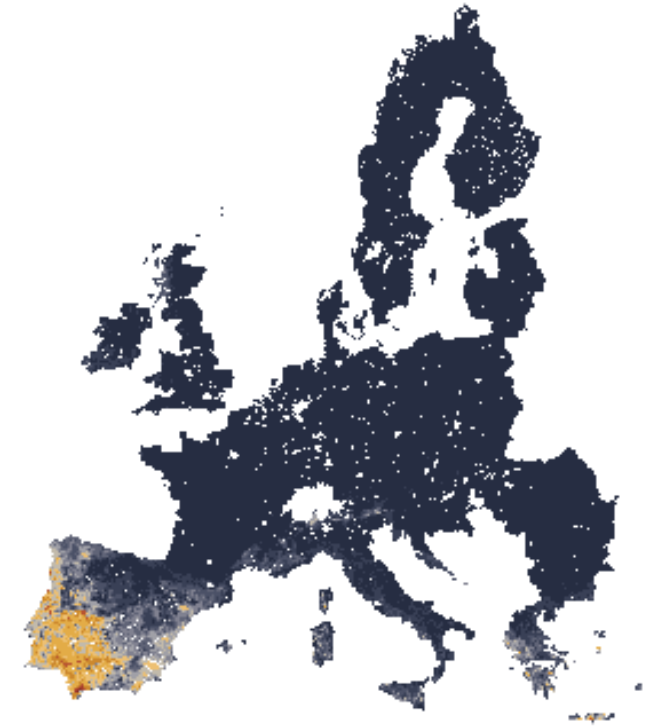
Biodiversity indicators

Indicator	Description
Species richness	Number of present species
Difference in species richness	Species richness relative to base year
Area of suitable habitat	Area of grid cells that are suitable for species
Spatial arrangement of suitable habitat	Landscape metrics of suitable habitat
Difference in suitable habitat	Increase/decrease of suitable habitat
Suitable habitat for relative species pool	Relative number of species pool for which grid cell is suitable habitat

- Indicators can be calculated for
  - Local, national, European, … scale
  - Endangered/threated species
  - Xylophagous beetles, hole-nesting birds, …
  - Keystone, flagship, indicator species, …
- Derivates of indicators
  - Number of species with increasing/decreasing differences

…More to be developed…

Thank you for your attention!

Any questions?

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