Finding space for conservation in Europe

Co-designing a coherent and resilient network of protected areas in an EU-wide planning process

Jutta Beher

representing NaturaConnect

Macaronesian biogeographic seminar
November 8-10th, 2023

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Funded by the European Union

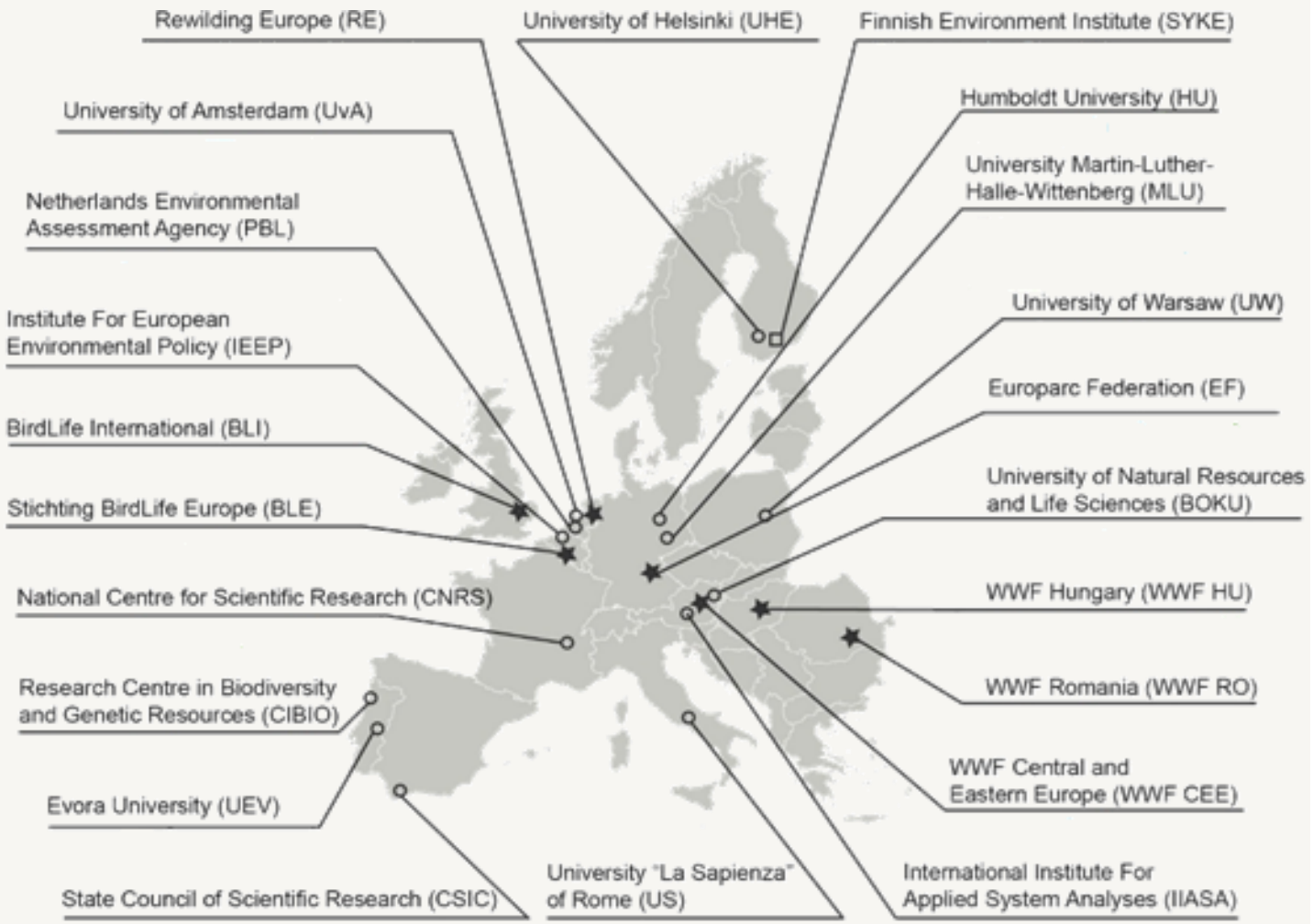
Who we are

15 Research organisations

7 National agencies & NGOs

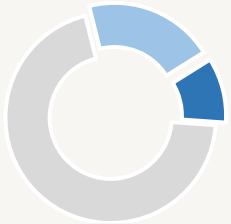
Key ambition of NaturaConnect:

co-create a workflow with key decision-makers and stakeholders from EU Member States to design an ecologically representative, resilient and well-connected network of conserved areas



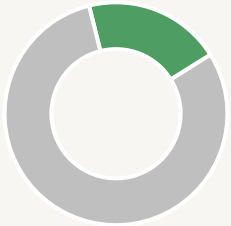
2022 - 2026

European Biodiversity Strategy 2030



Legally protect

at least 30% of the land (incl. freshwater), and 30% of the sea in the EU.
At least **1/3** of this should be **strictly protected**



Actively or passively

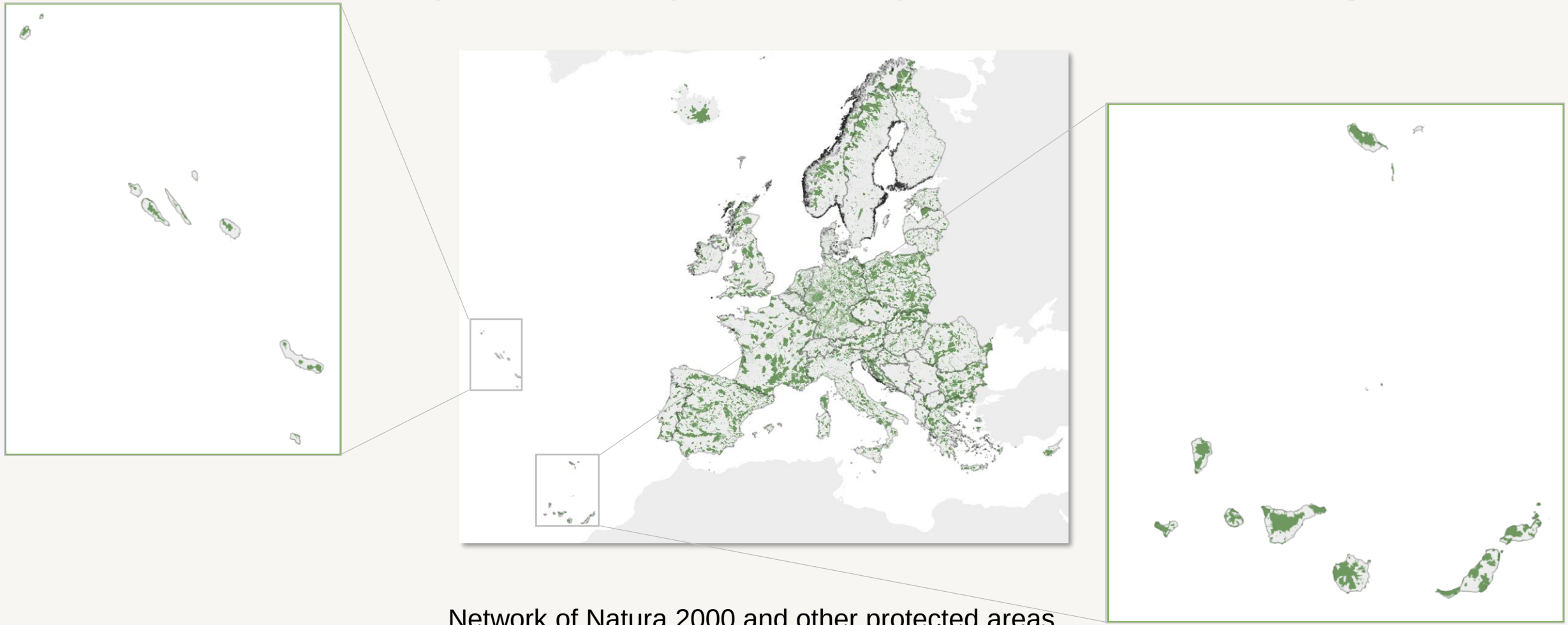
restore

on 20% of lands towards **good condition**

Facilitate ecological corridors (sustainable land management)

Increase resilience (climate change)

How to prioritize where to conserve, restore and sustainably manage ecosystems in Europe?



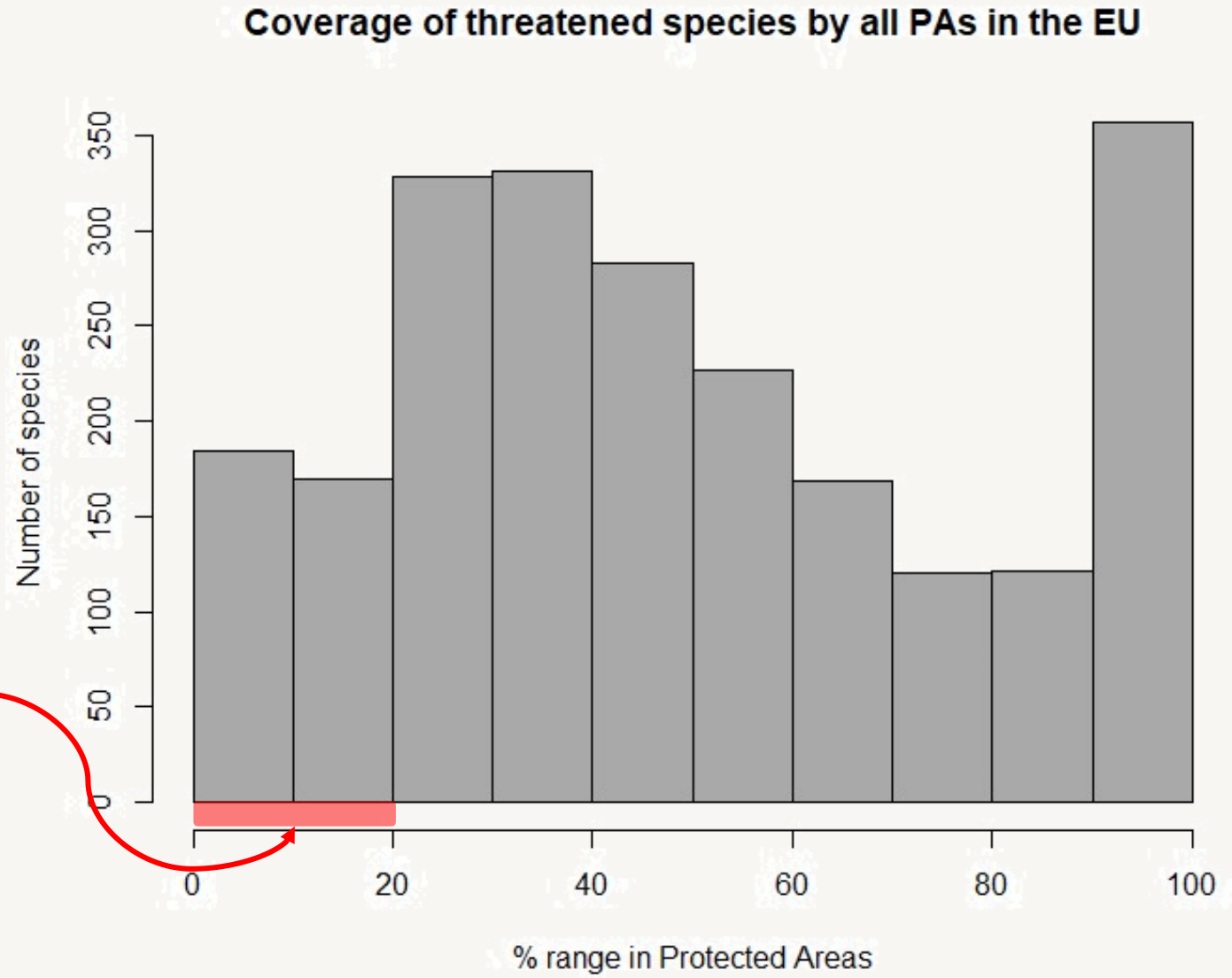
Network of Natura 2000 and other protected areas

What is a « Truly Coherent Trans-European Nature Network » ?

Coherence = provide enough protection to all species & habitats that need it

Currently not the case!

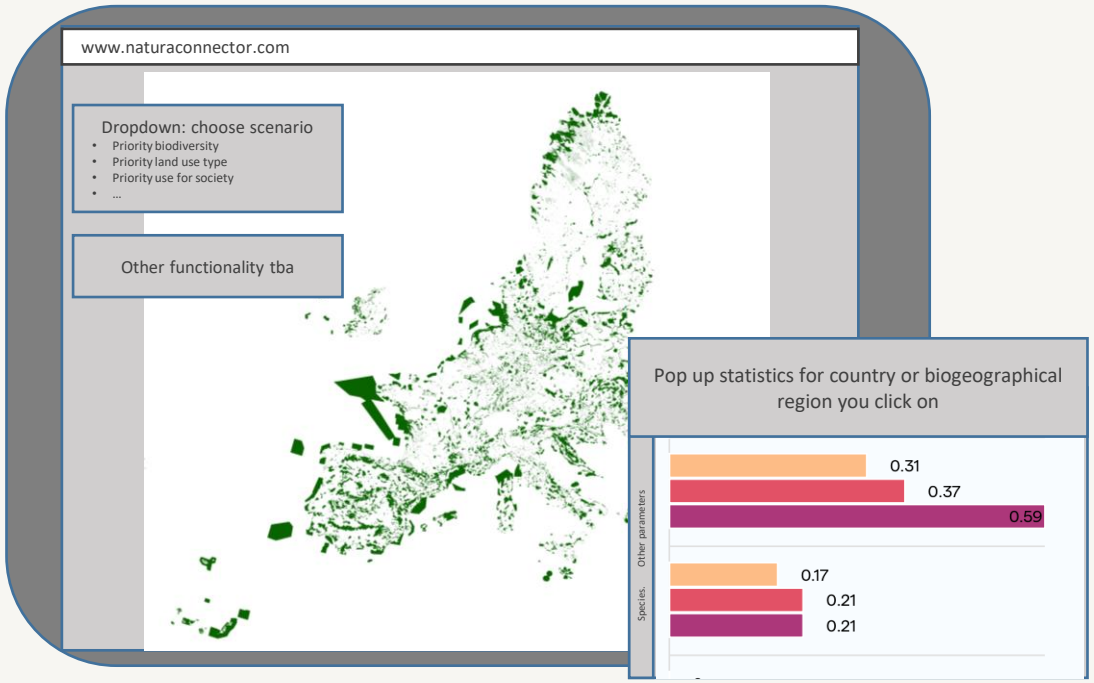
354 globally threatened species have <20% of their EU range protected



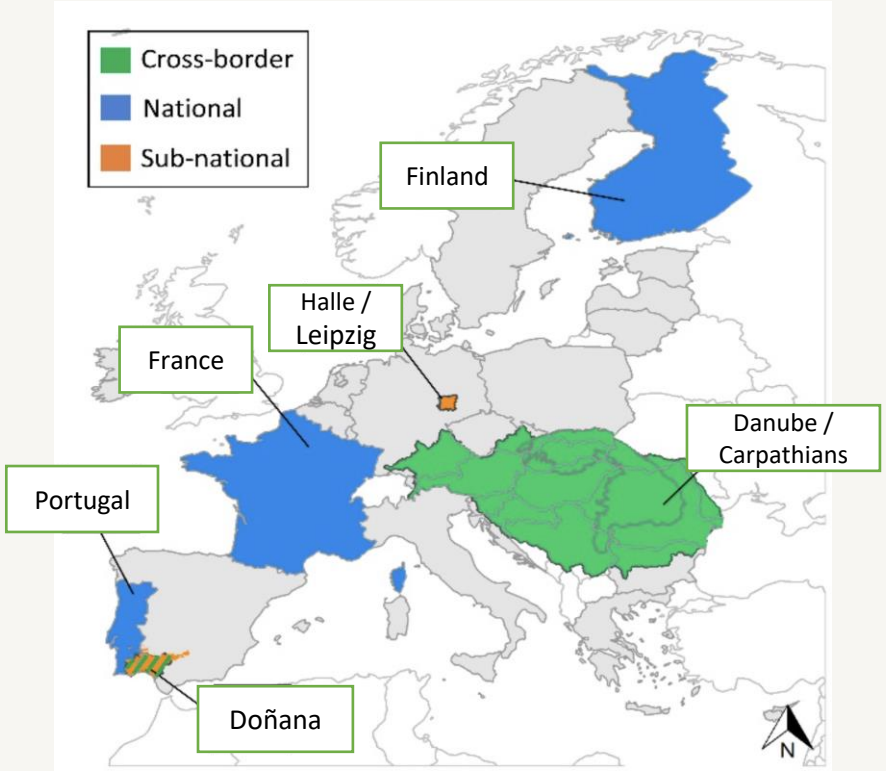
Source: data from Spiliopoulou et al. 2023, https://doi.org/10.1016/j.biocon.2023.110166 analysed by P Visconti

NaturaConnect outputs

Design workflow and produce scenarios for a **coherent, resilient** and **ecologically representative** protected area network
(one focus improved connectivity)



Provide data, tools and examples to support Member States in their planning



NaturaConnect's relevance for Macaronesia

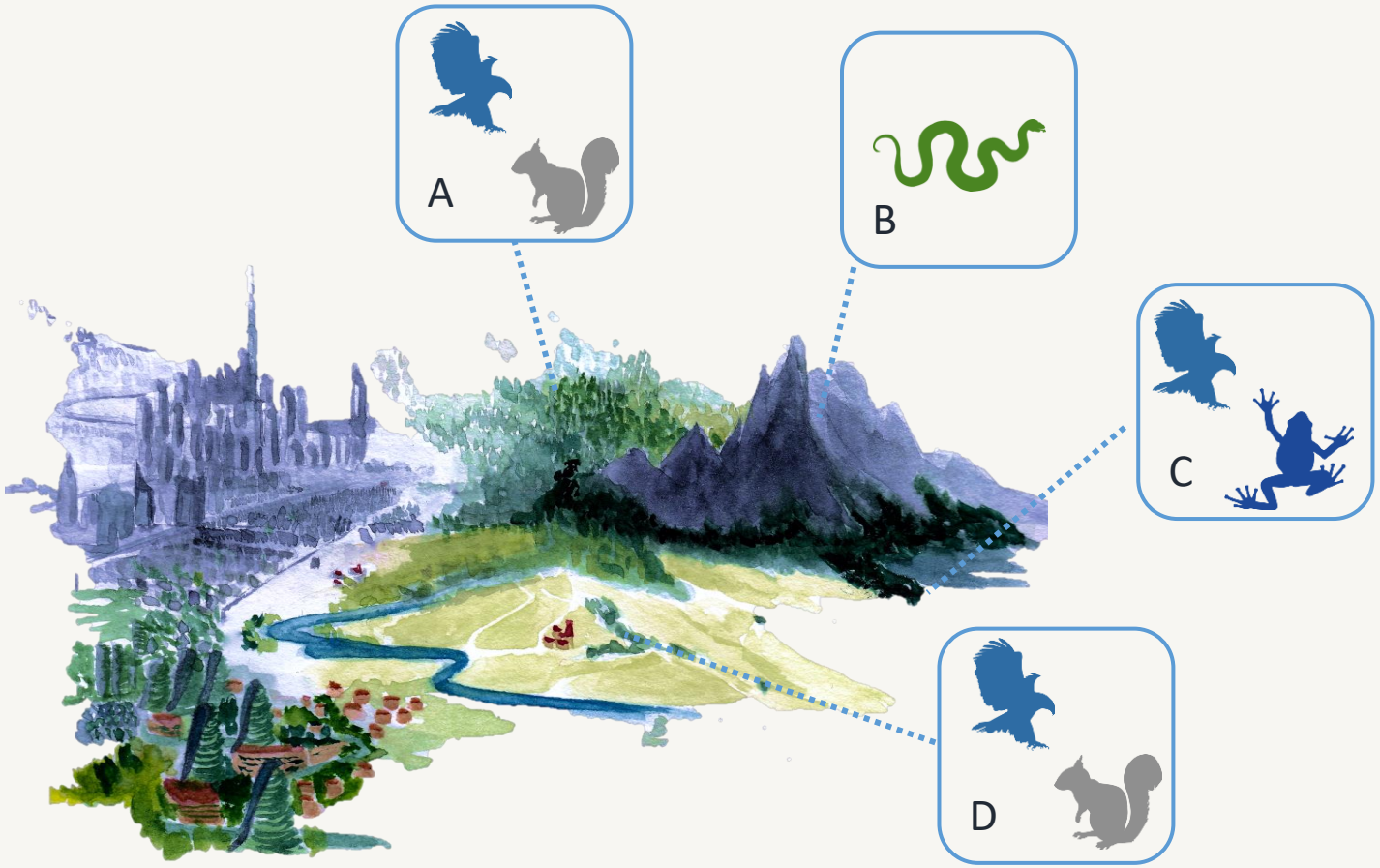
- General **systematic conservation planning** (how to combine data from environment, economy and society to identify priorities)
- Some **preliminary results** for Macaronesia
- How to incorporate **climate change**
- Portugal **case study**

Concept: Systematic Conservation Planning

A few core rules can guide prioritization

Systematic conservation planning: a tool to maximize gains given constrained resources

Number of occurrences:	
	3
	2
	1
	1



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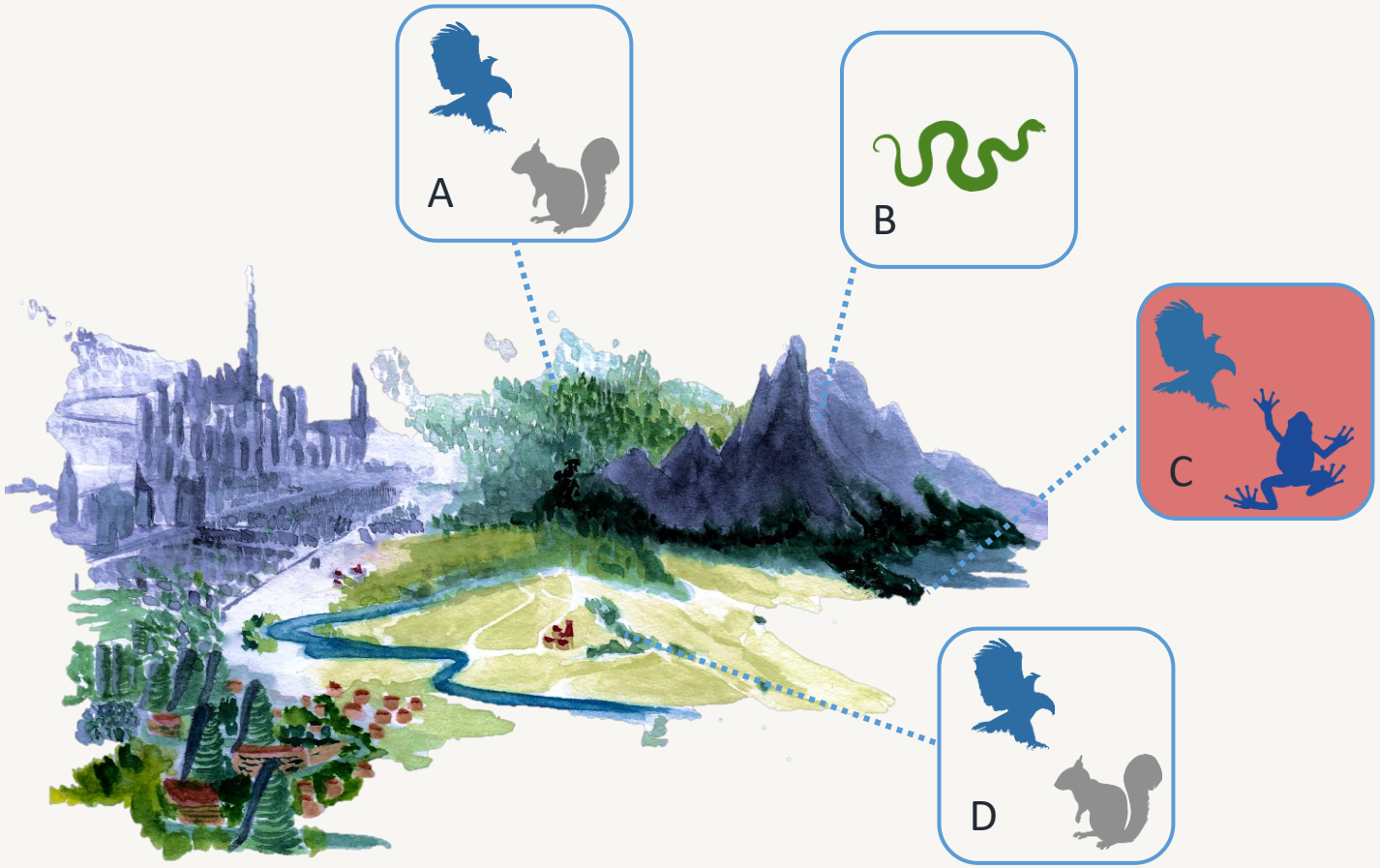

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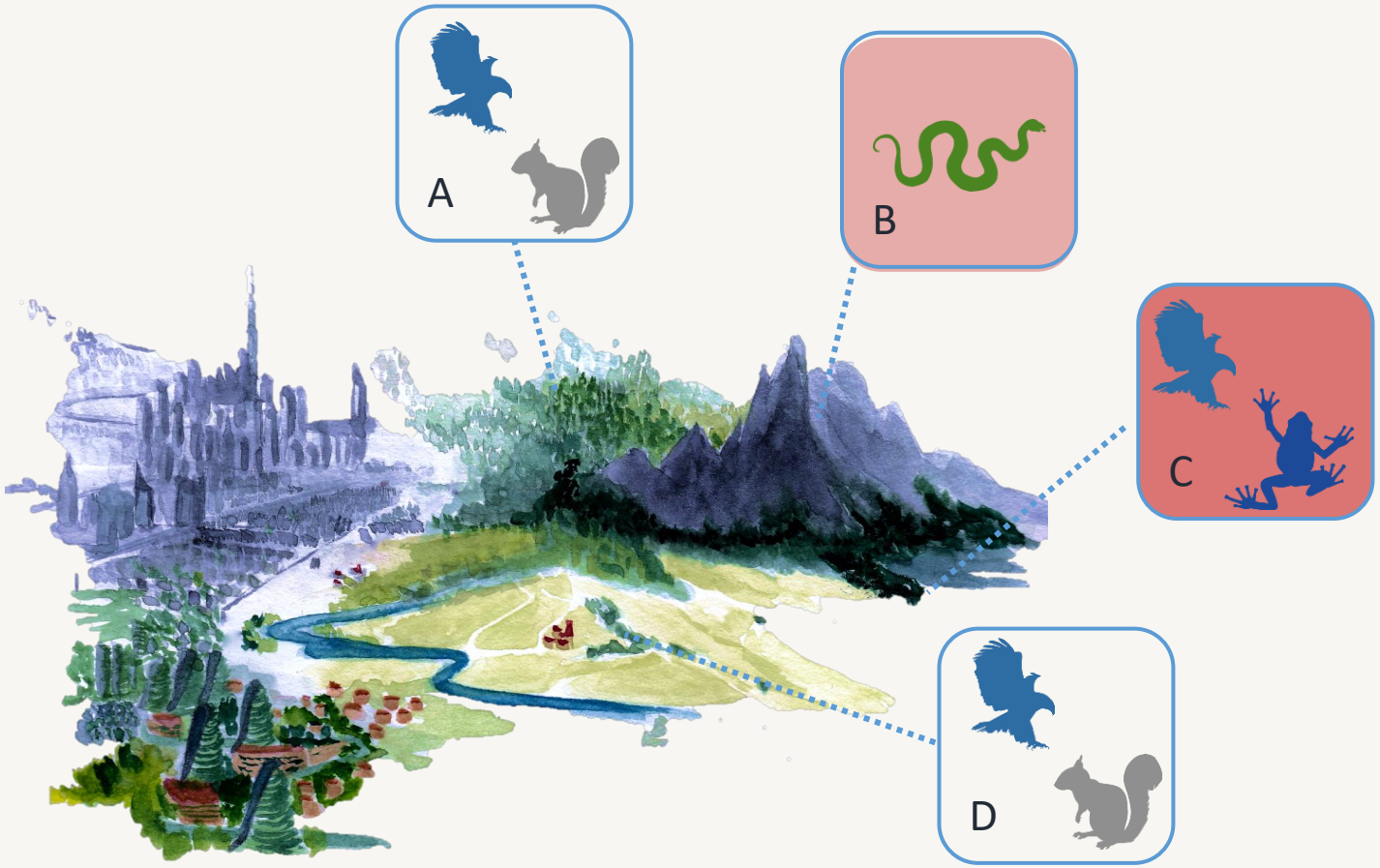

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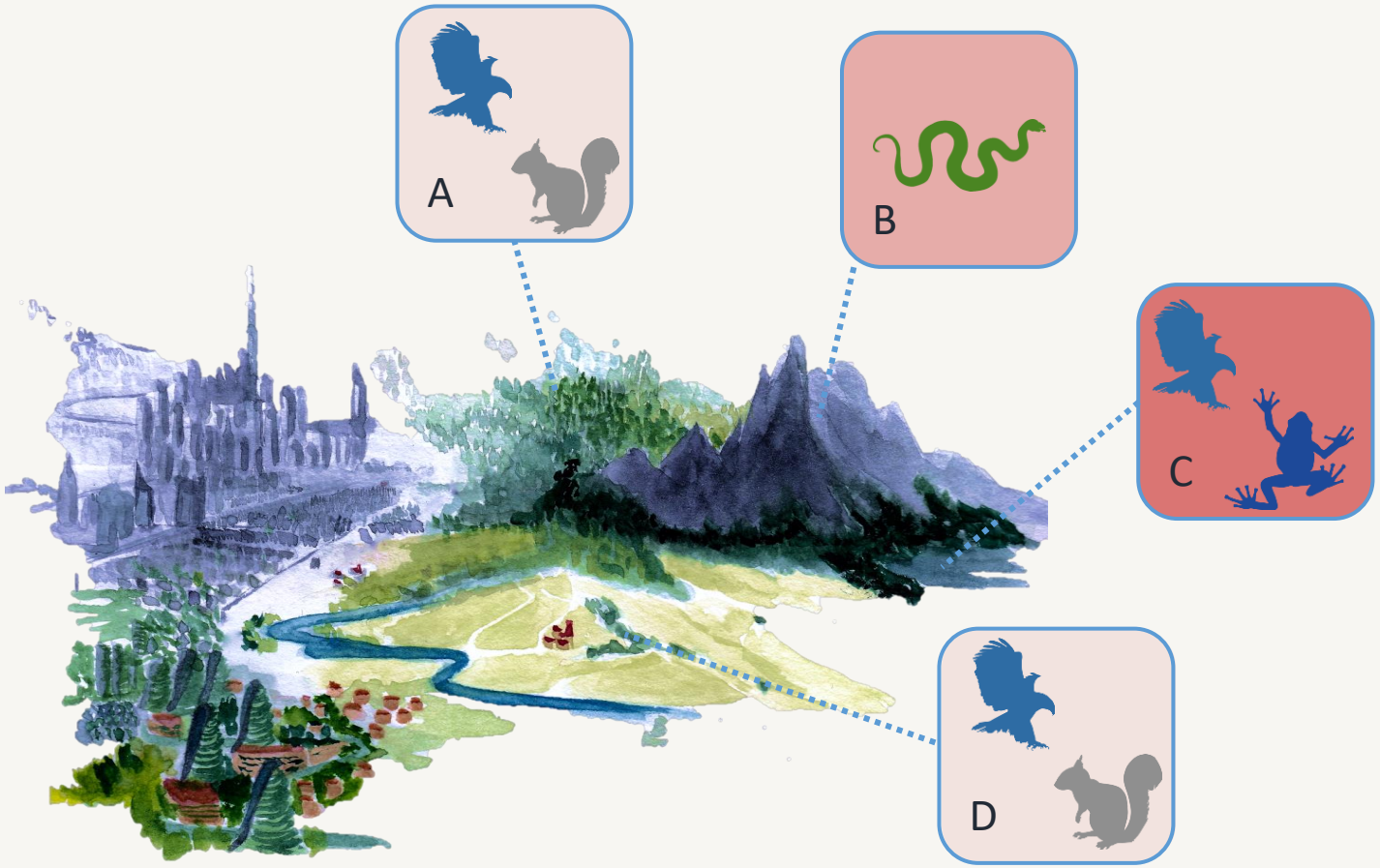

Priorities change depending on… **what is protected**

Number of occurrences:	
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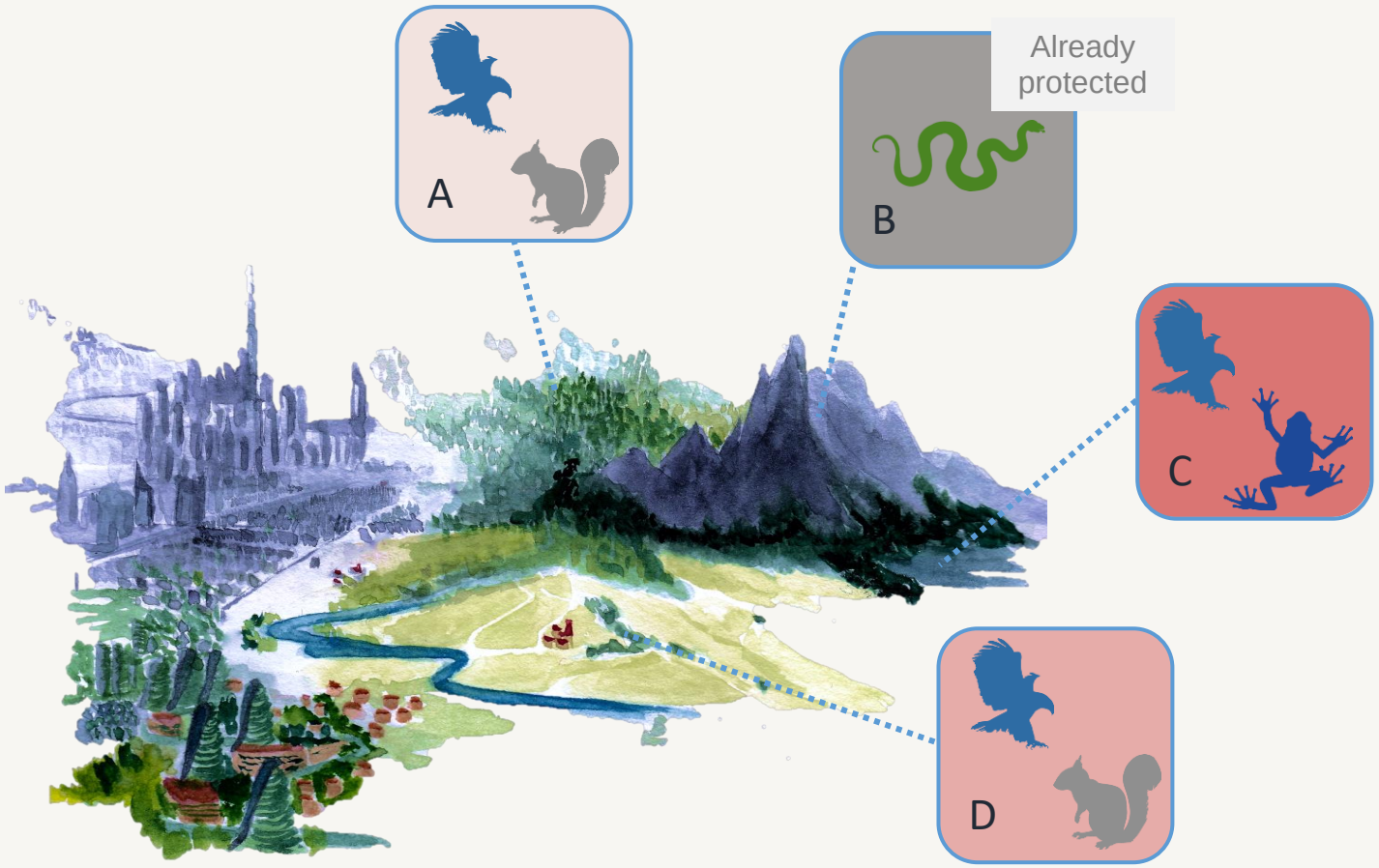
	1
	1



Priorities change depending on… **what we value**

Number of occurrences:	
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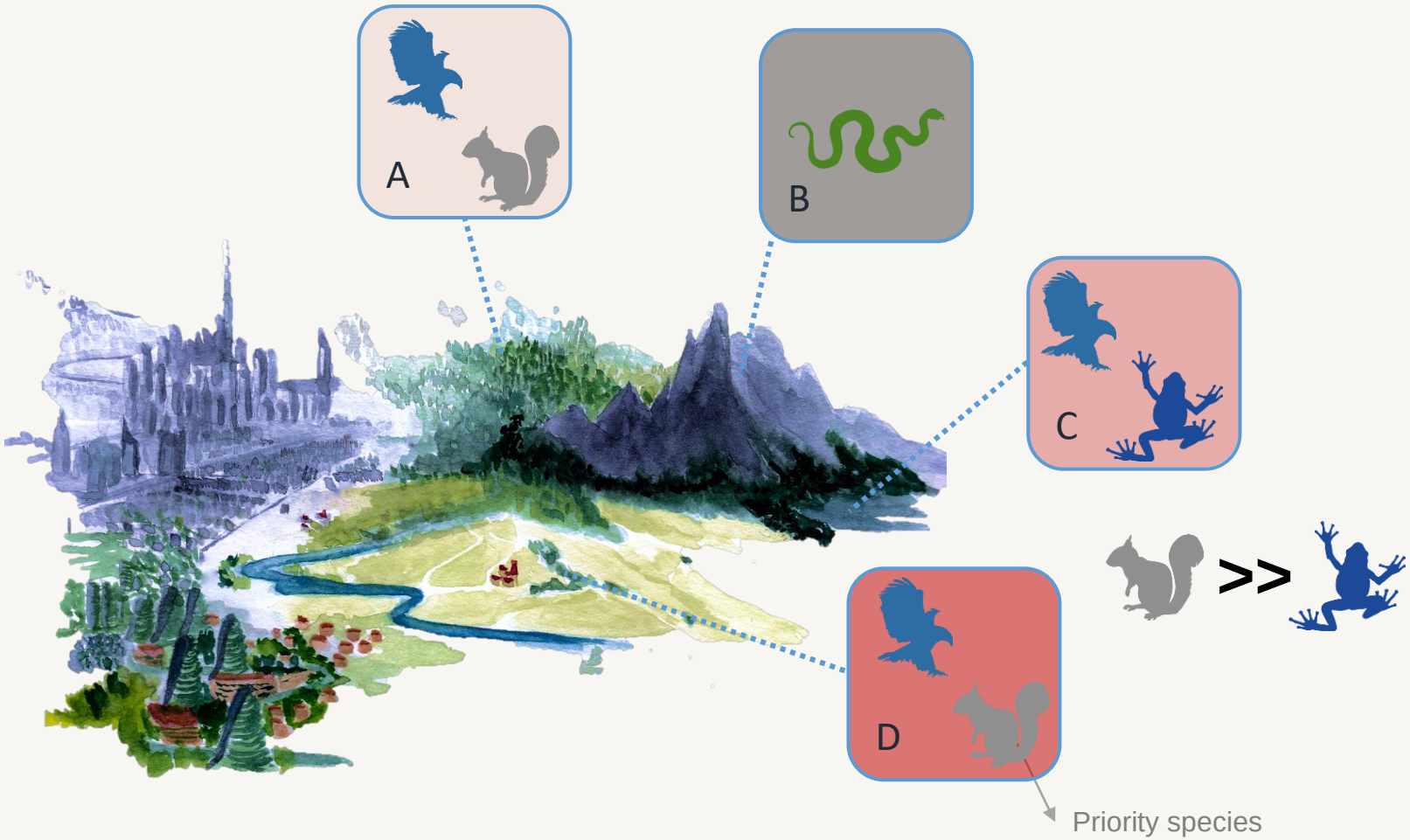

Priorities change depending on… **species included**

Number of occurrences:	
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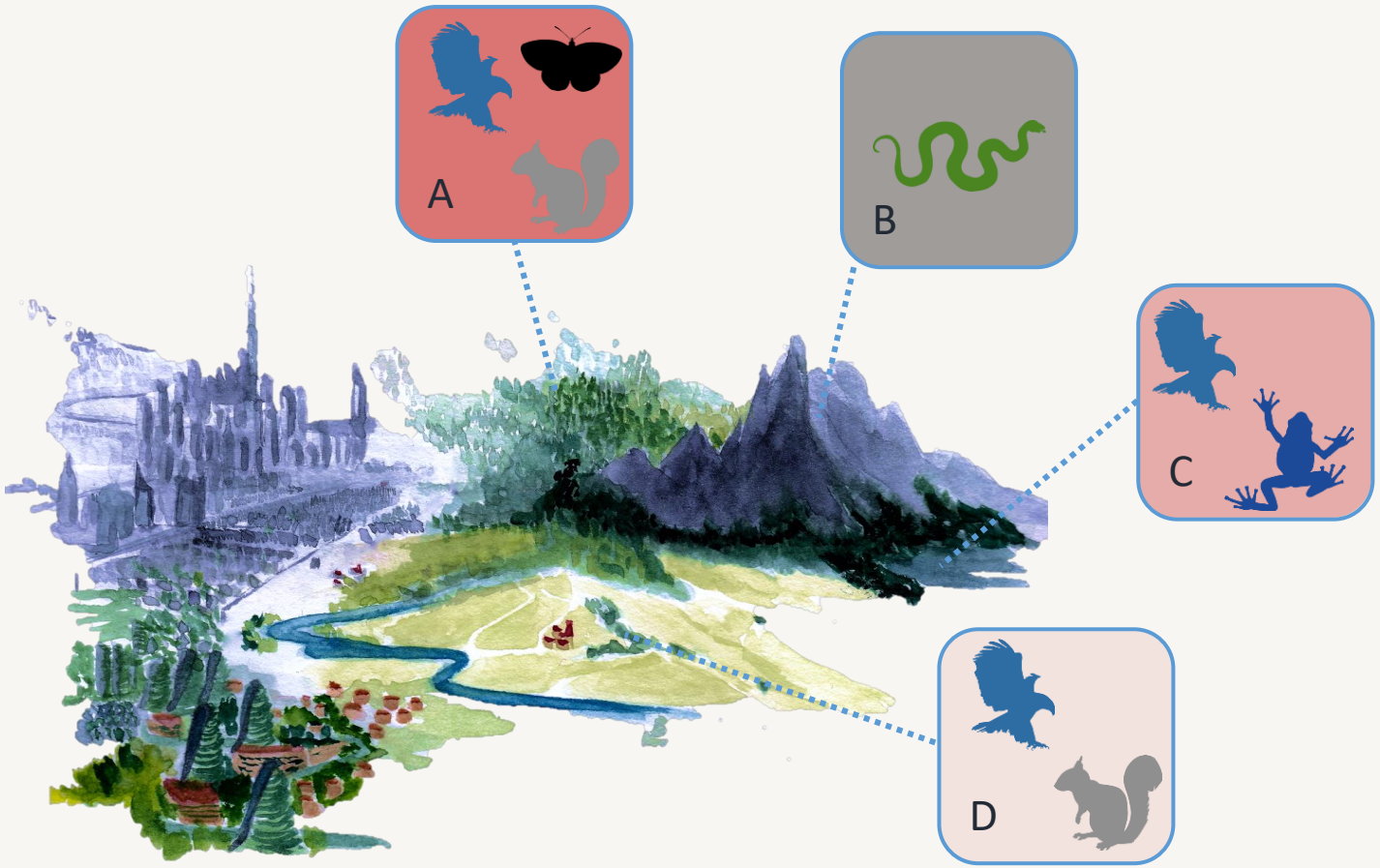
	2
	1
	1
	1



Priorities change depending on… **costs**

Number of occurrences:	
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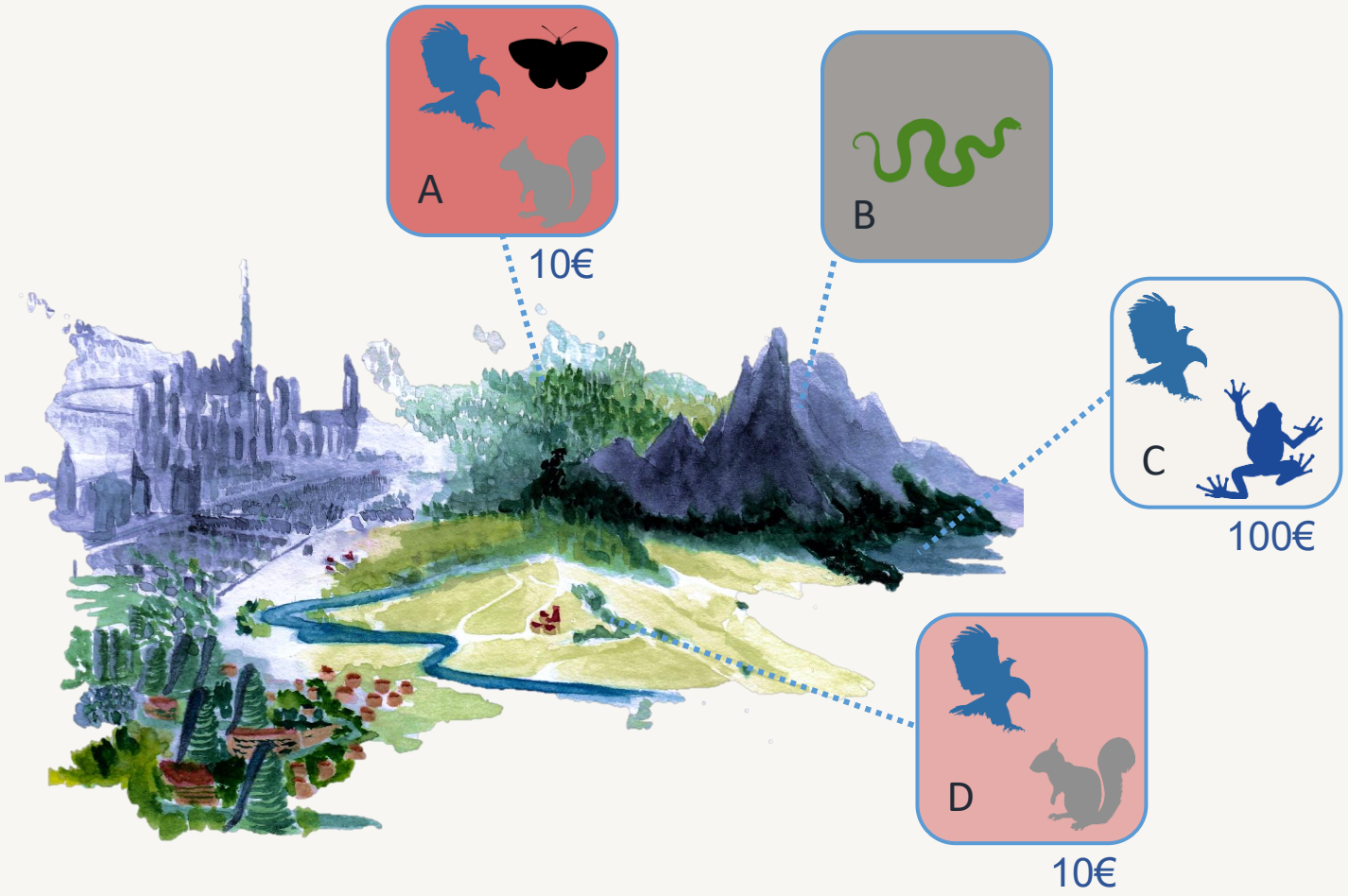
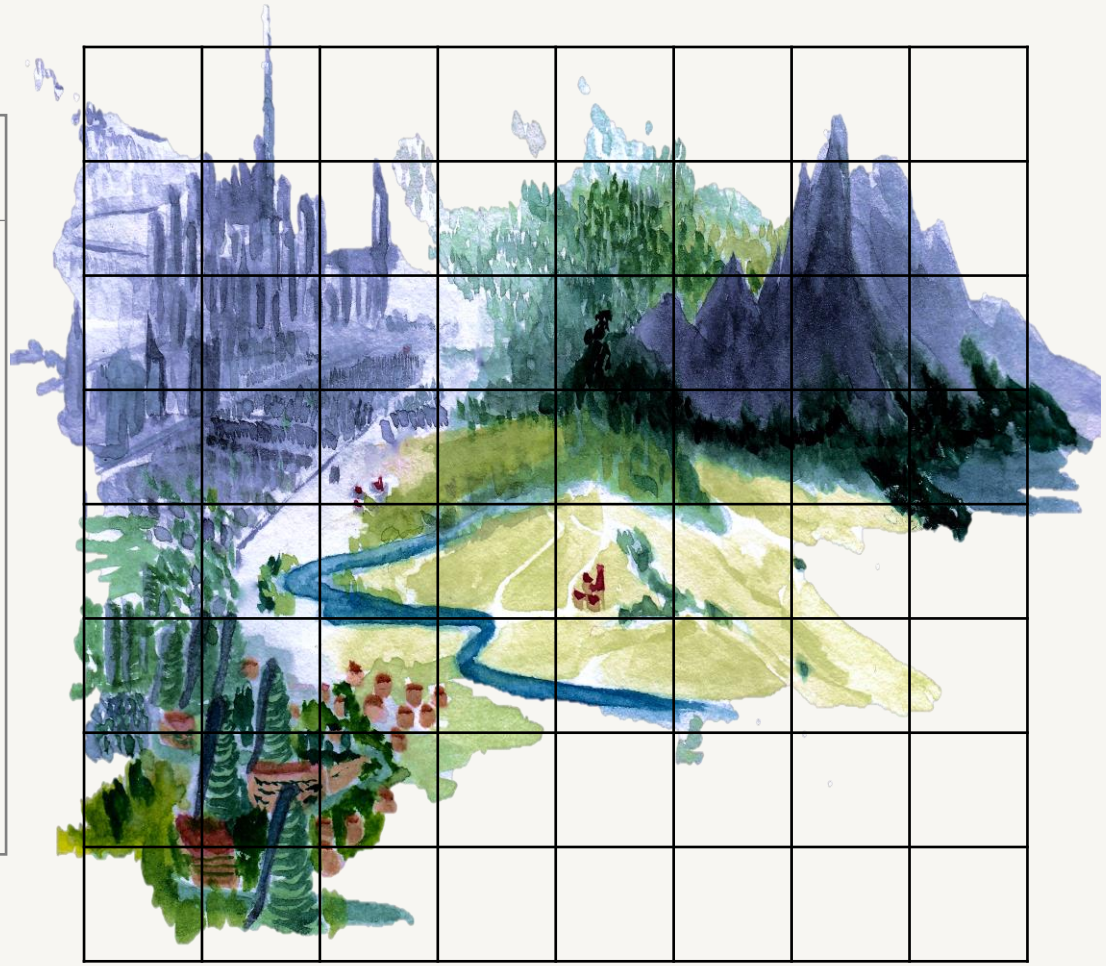
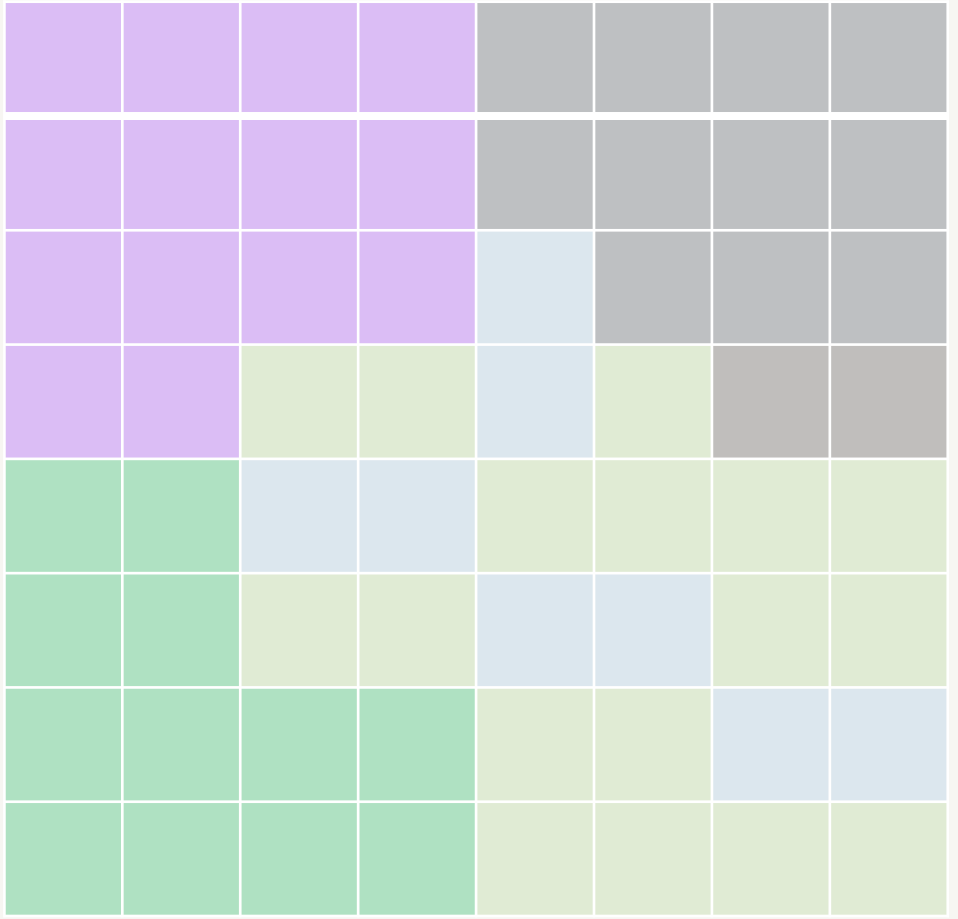
	1
	1



Looking not at single cells, but at the whole landscape

Number of occurrences:	
	14
	11
	5
	5
	4





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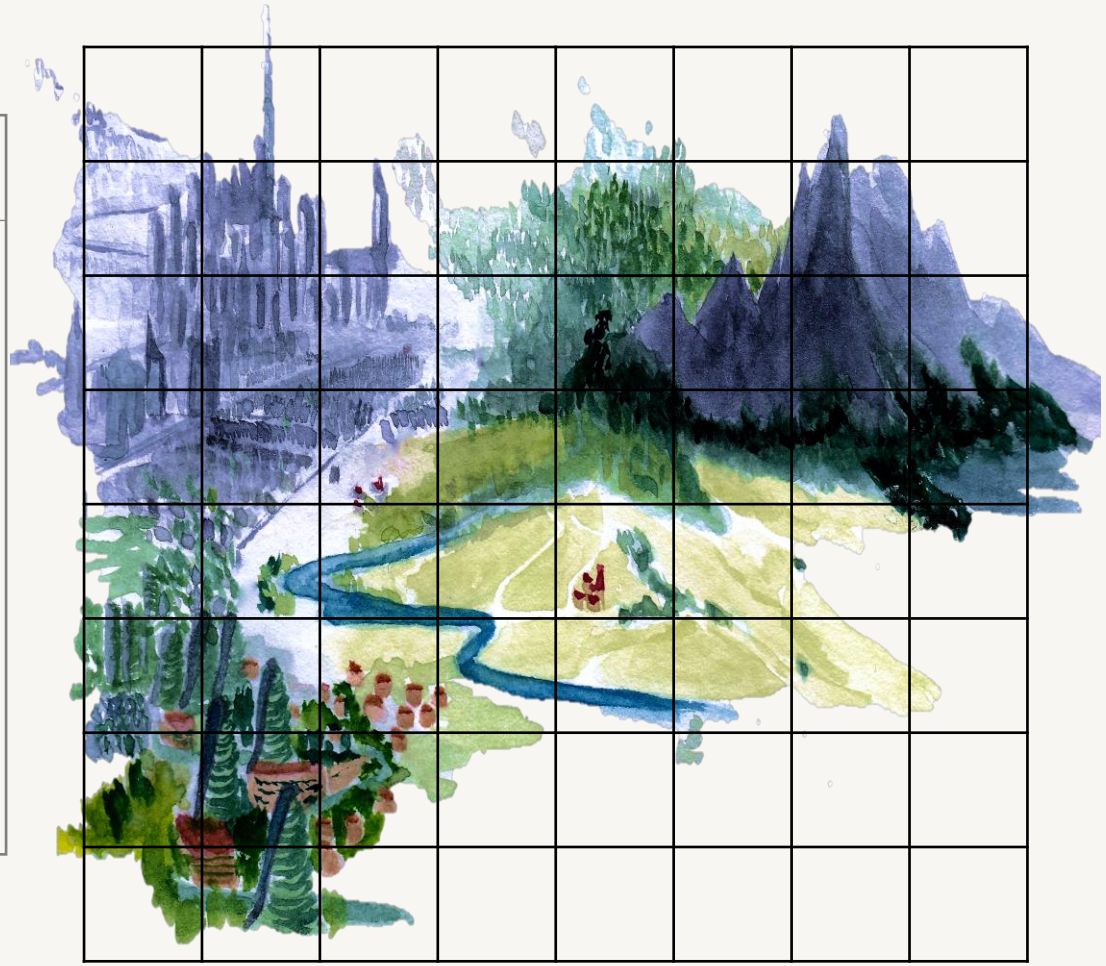
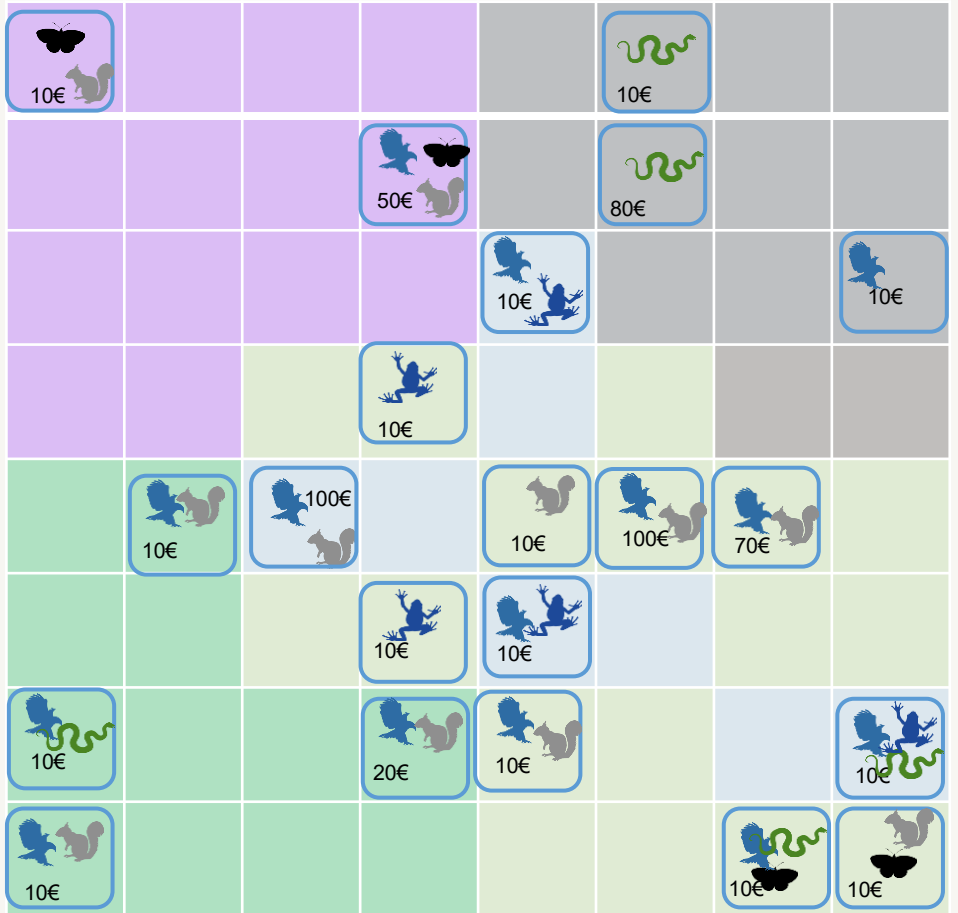
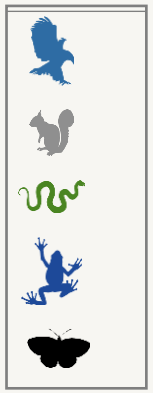




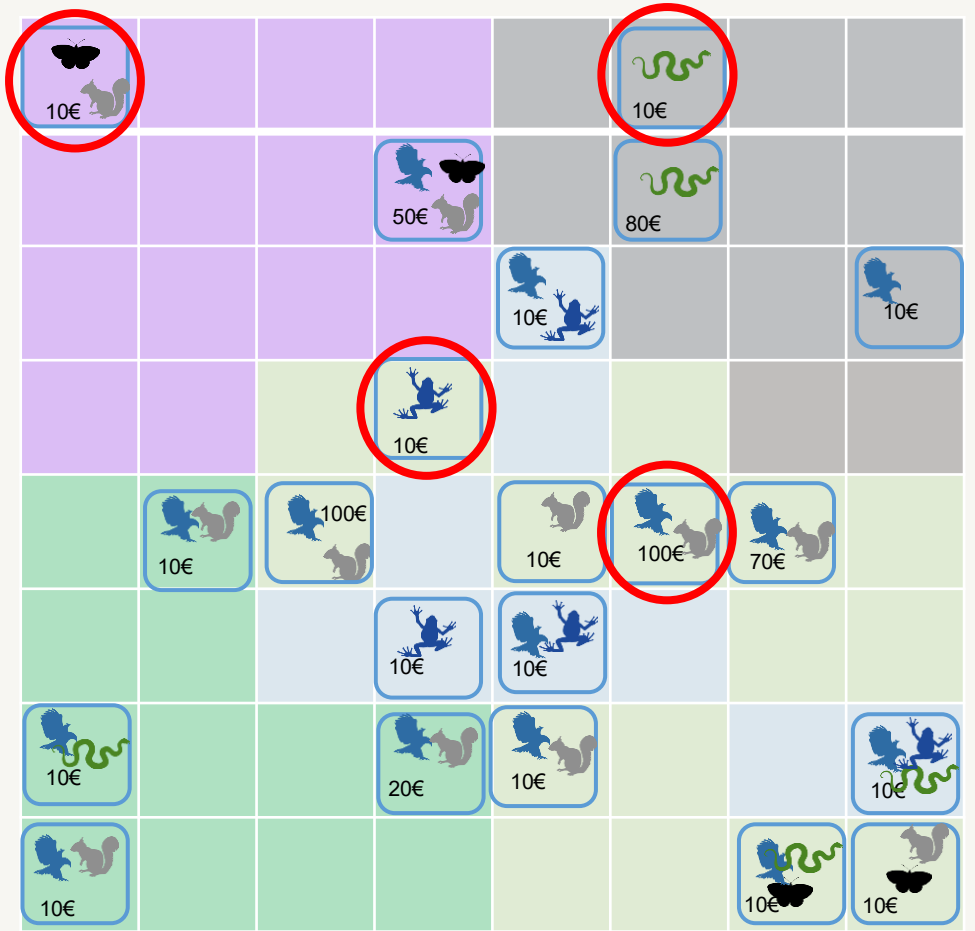
Rules for creating a network that ticks all the boxes

coherent, resilient and **ecologically representative** protected area network

Comprehensive
Adequate
Resilient
Effective



& good for people, too



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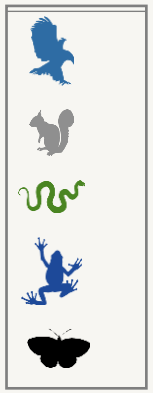

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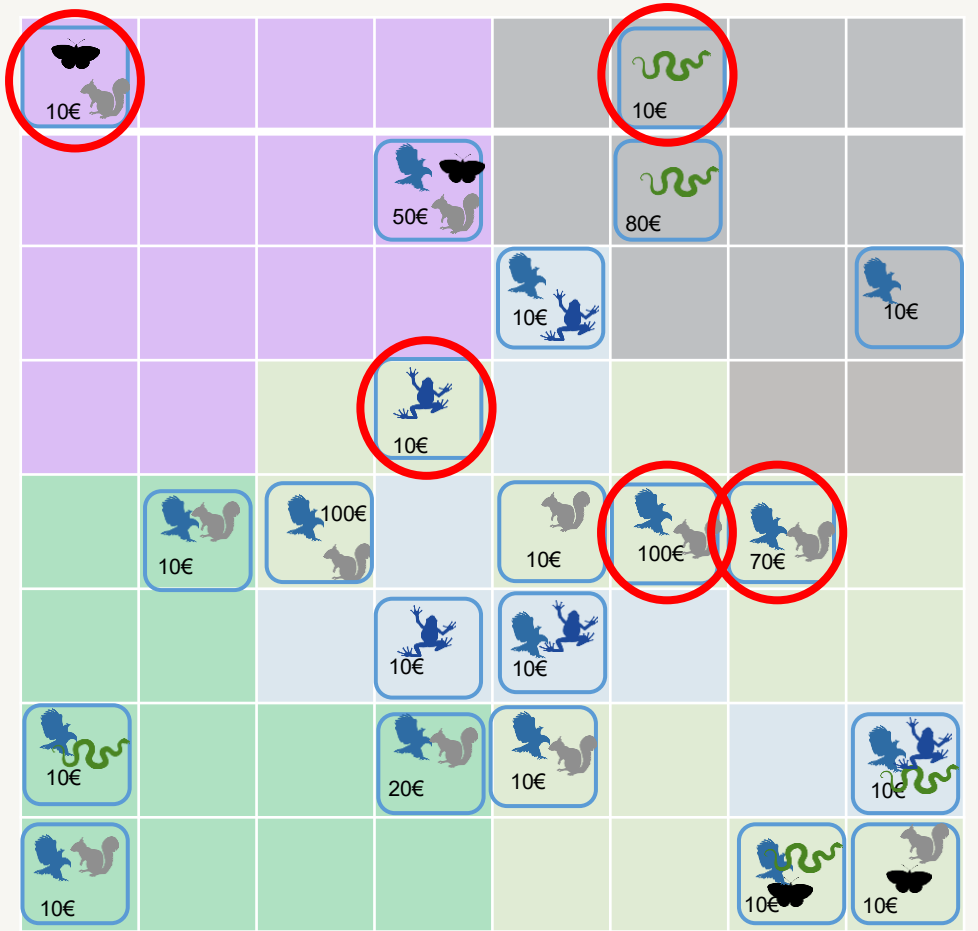

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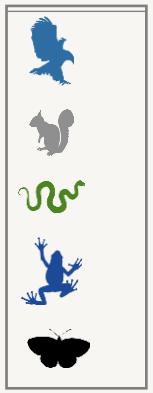

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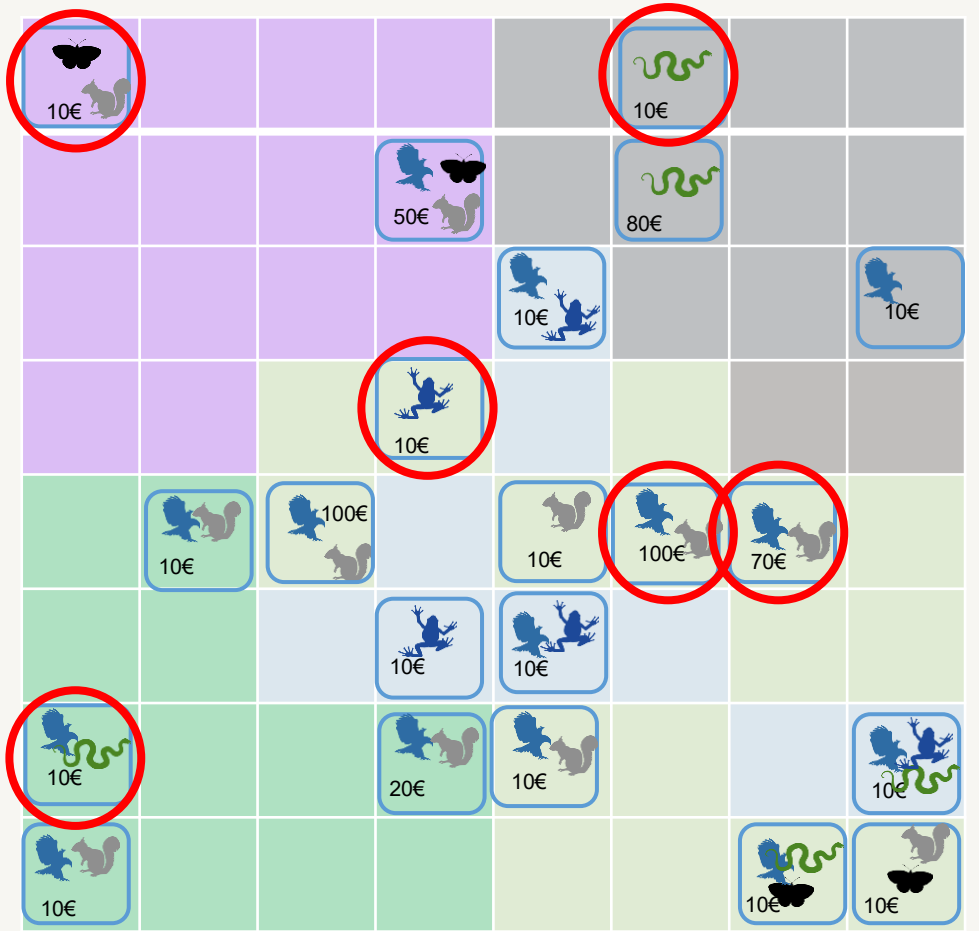
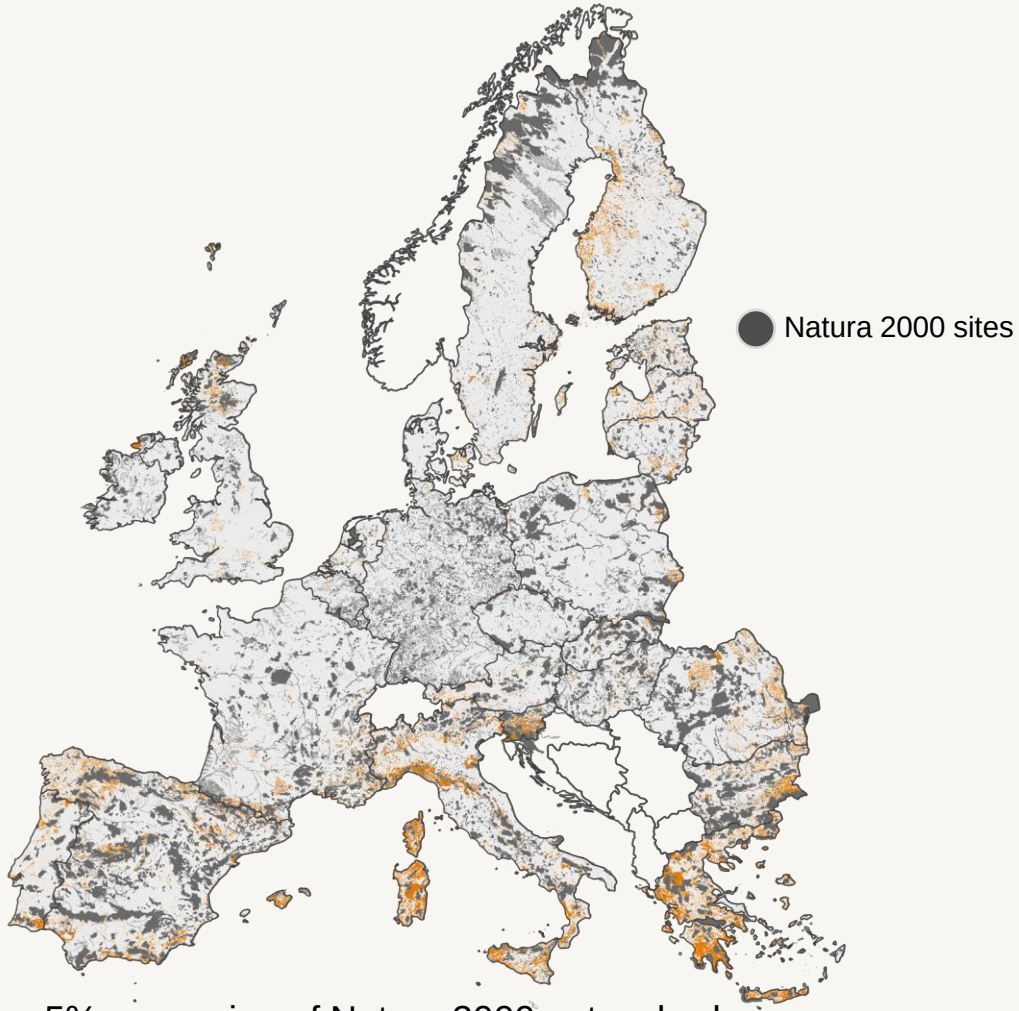
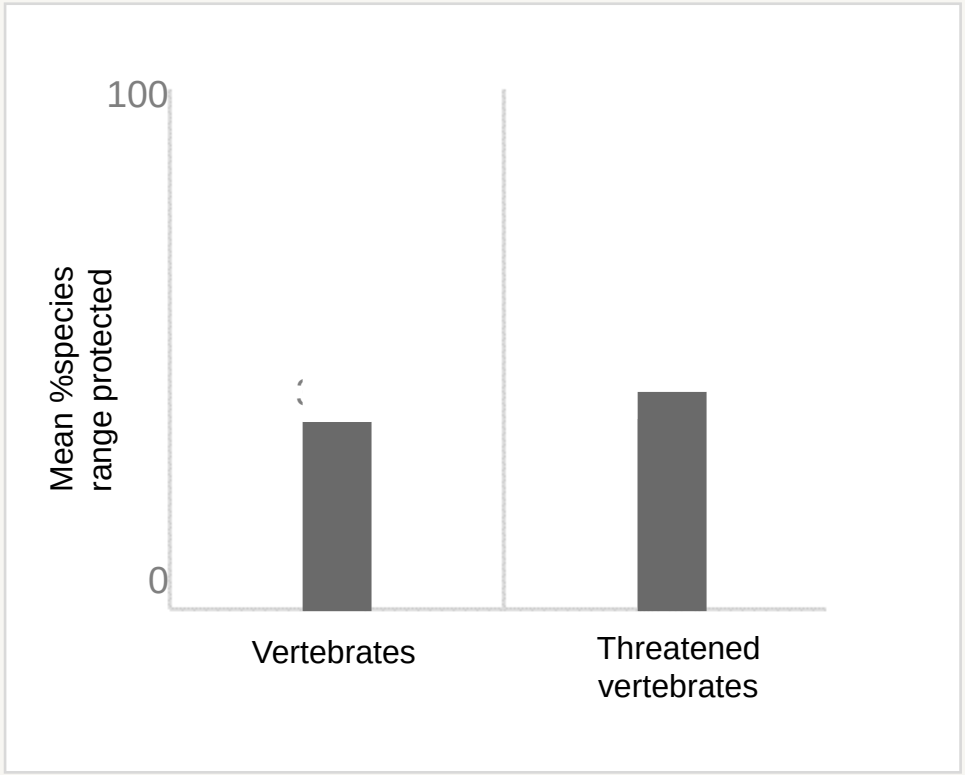


Large conservation gains are possible in few areas



5% expansion of Natura 2000 network when focusing on terrestrial vertebrates



O'Connor et al., 2021

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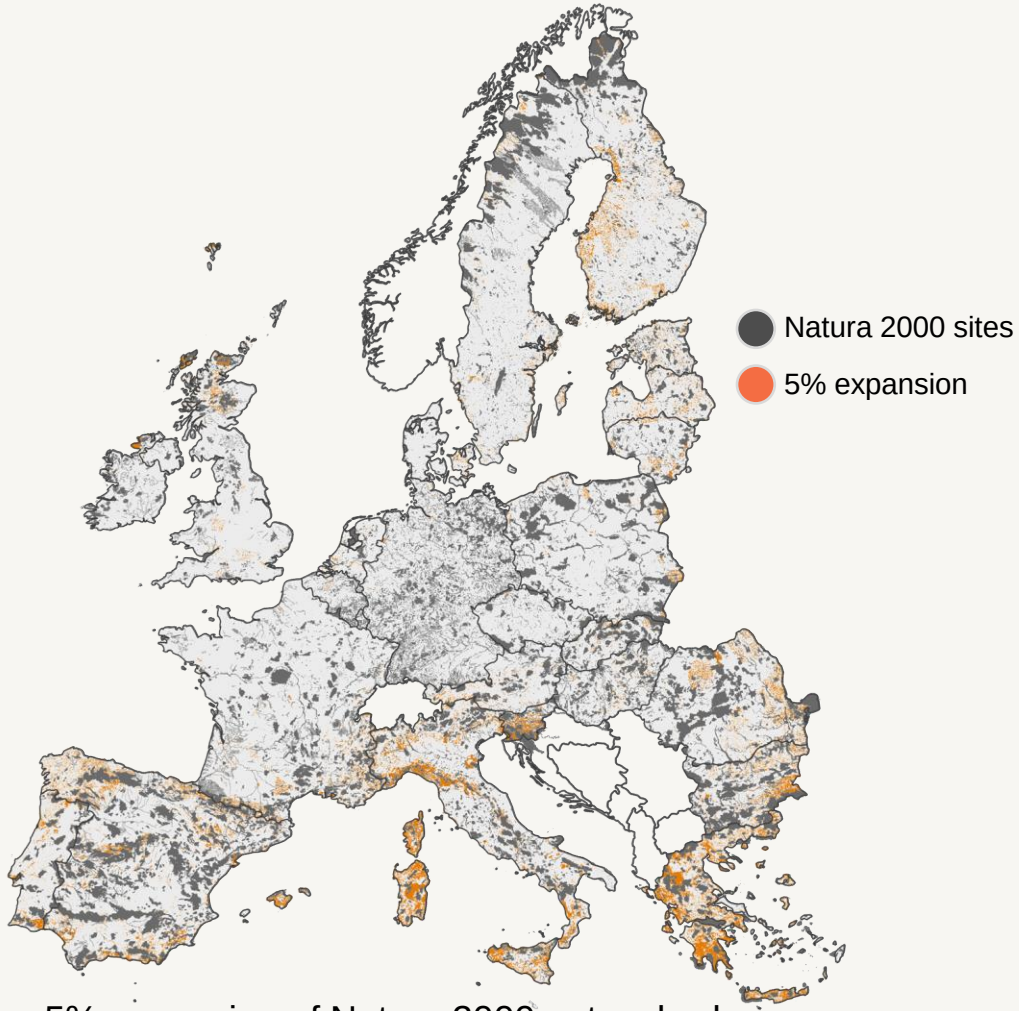

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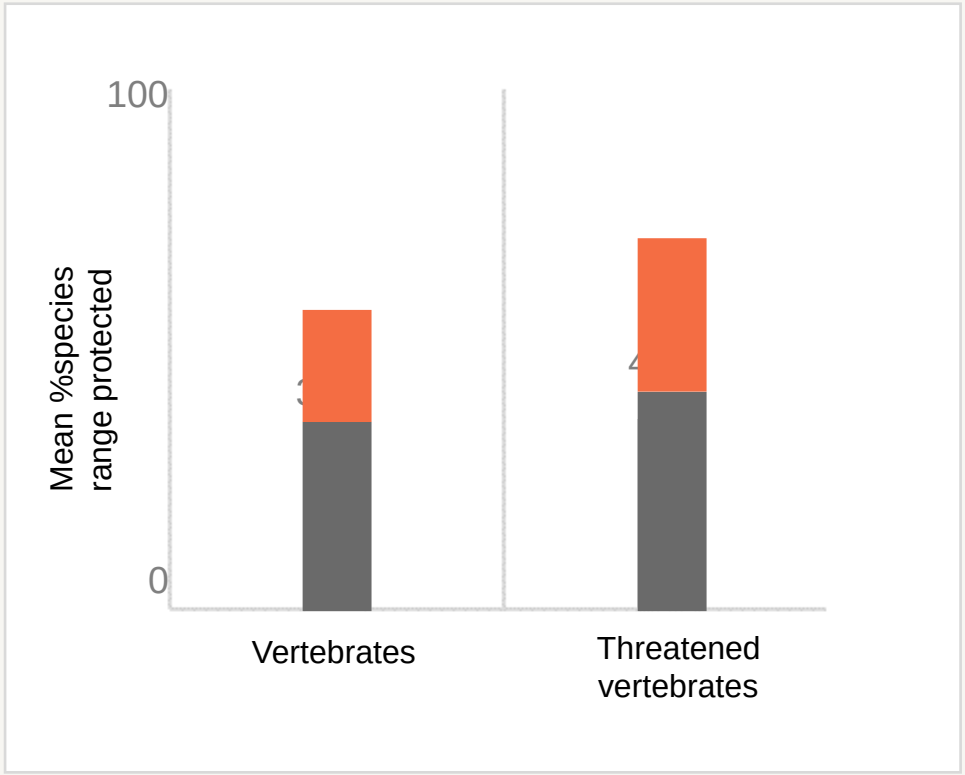
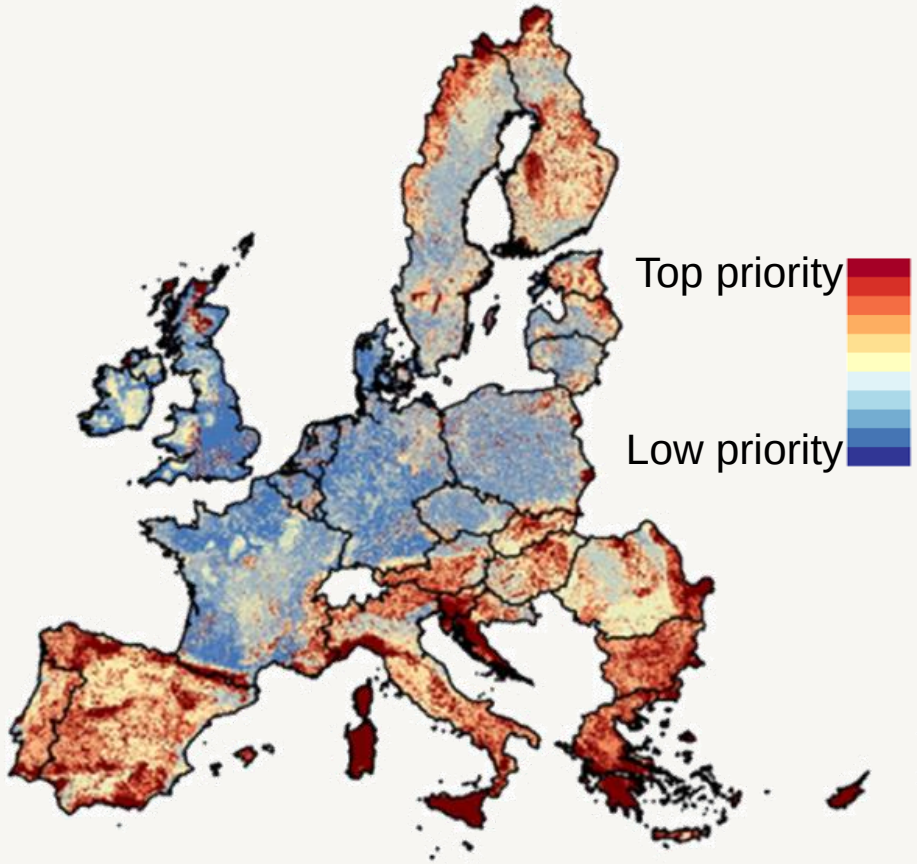


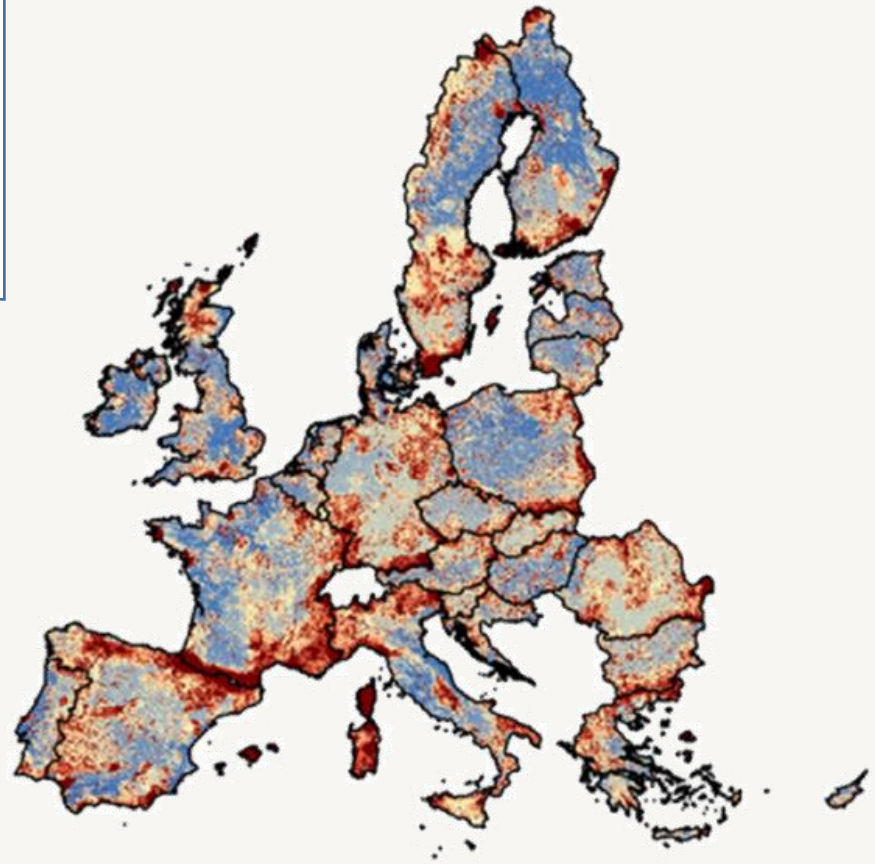
Just a small amount of protected area expansion **in the right places** can make a big difference!

O'Connor et al., 2021

Planning at the European scale is more cost-effective



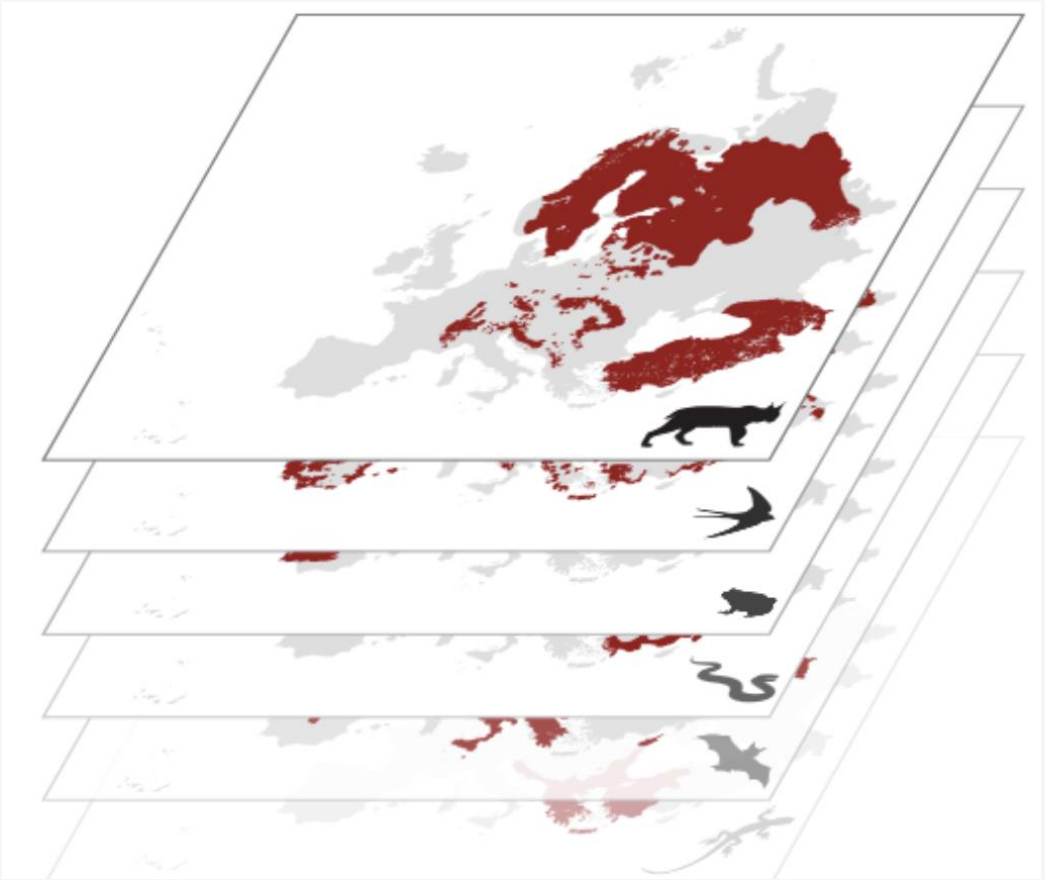
EU-wide priorities



Member State priorities

Kukkala *et al.*, 2016

What are we planning for to produce relevant results?



Species and Habitats in Articles 12 and 17

- mammals
- birds
- reptiles
- amphibians
- plants
- arthropods

Threatened species and ecosystems

Other important ecosystems

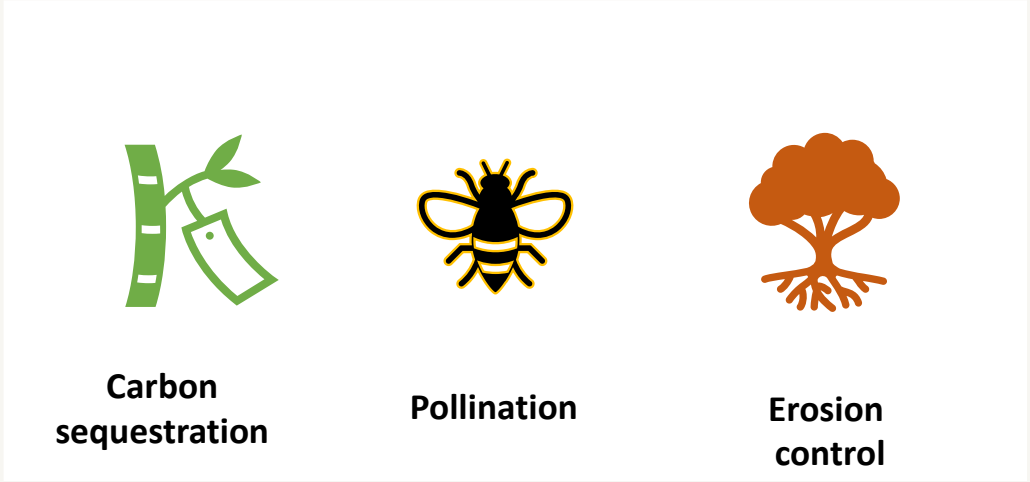
- Primary and old-growth forests

Incorporating socio-economic data

Costs

Typology of the (economic) costs of conservation
(work by project partners in PBL (NL): Douglas Spencer, Aafke Schipper)

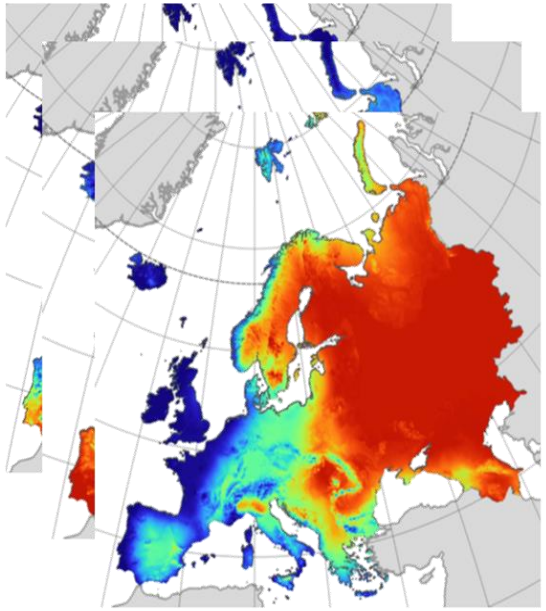
Nature's contributions to people



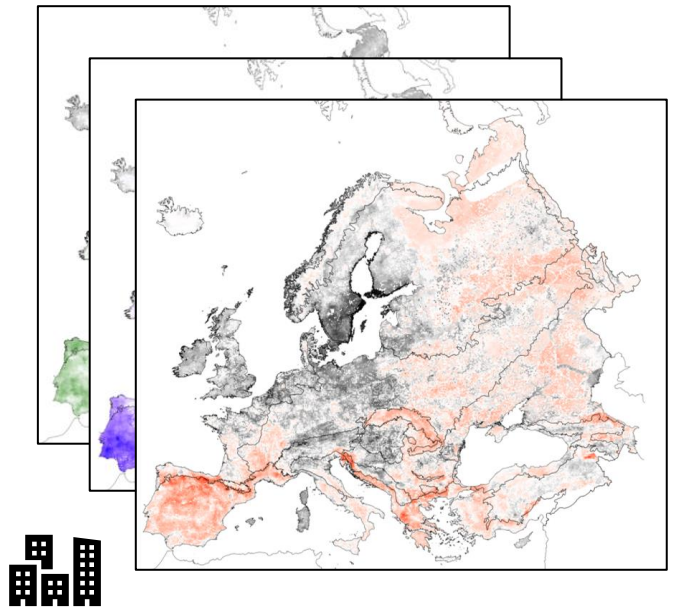
Regulatory & cultural services of nature

Incorporating land use change and climate change

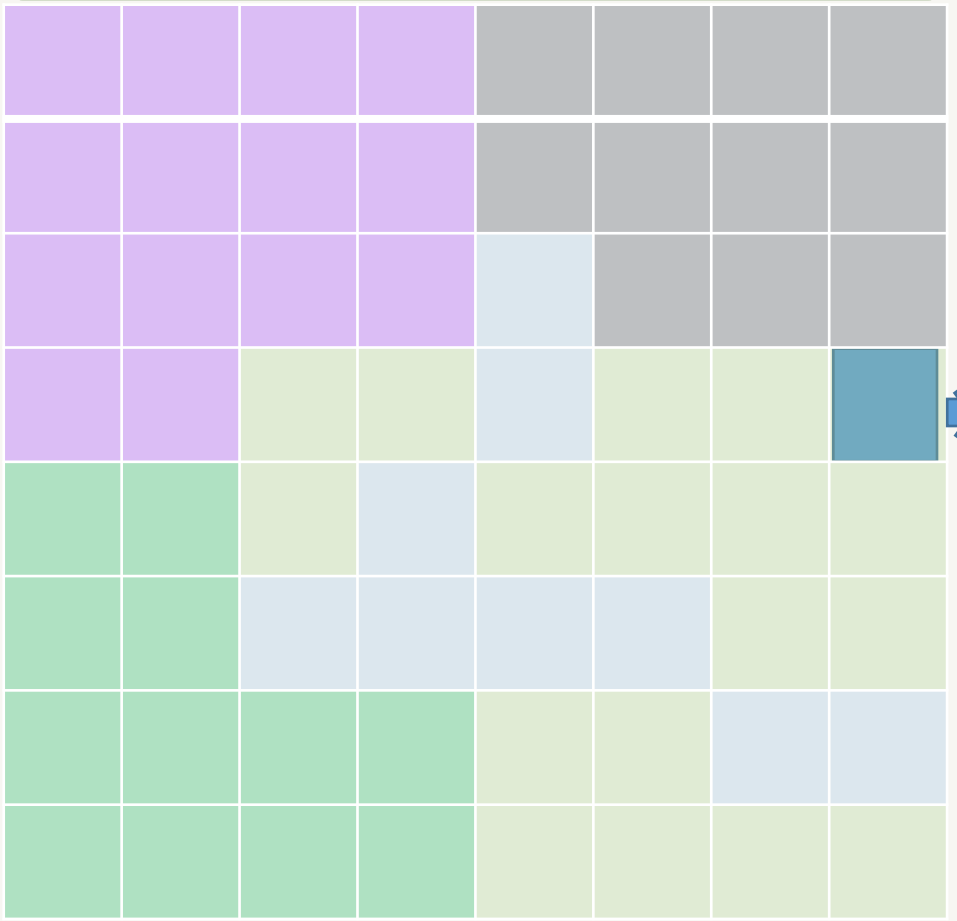
Climate change scenarios



Land use change scenarios



Map with 1 km cells across EU



Species & habitats

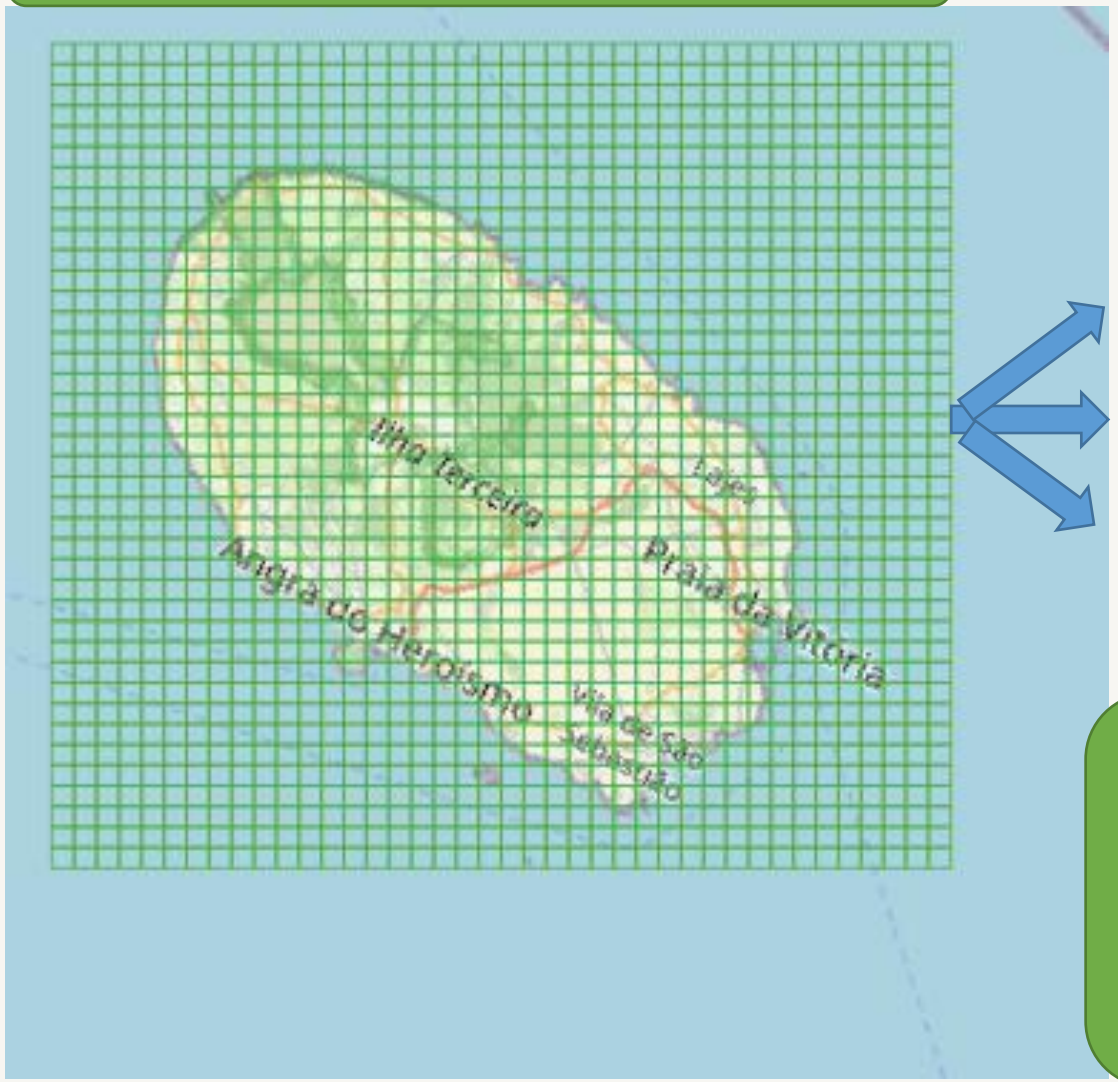
Economic costs and Ecosystem services

Current and future land use and climate

Find set of cells that:

- Meet targets for all species & habitats
- Still work in the future
- Improve connectedness
- Highest benefits per area or cost

Map with 1 km cells across EU



Species & habitats

Economic costs and Ecosystem services

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Find set of cells that:

- Meet targets for all species & habitats
- Still work in the future
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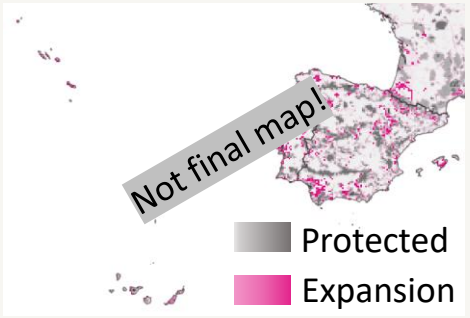
Ways in which we can inform the pledges

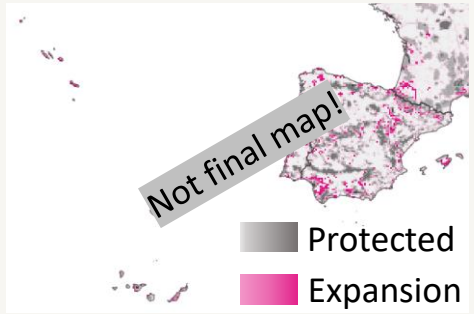
1. How much area should be protected per Member state Biogeographic region to be as cost-effective as possible at the EU level?



Country	Biogeographical region	Conservation priorities (ha)
PT	MAC	xxxx
PT	MED	xxxx
ES	MAC	xxxx
ES	MED	xxxx
ES	ALP	xxxx
ES	ATL	xxxx

2. Where are the best areas to protect given the pledged area?

Country	Biogeographical region	Conservation priorities (ha)
PT	MAC	xxxx
PT	MED	xxxx
ES	MAC	xxxx
ES	MED	xxxx
ES	ALP	xxxx
ES	ATL	xxxx



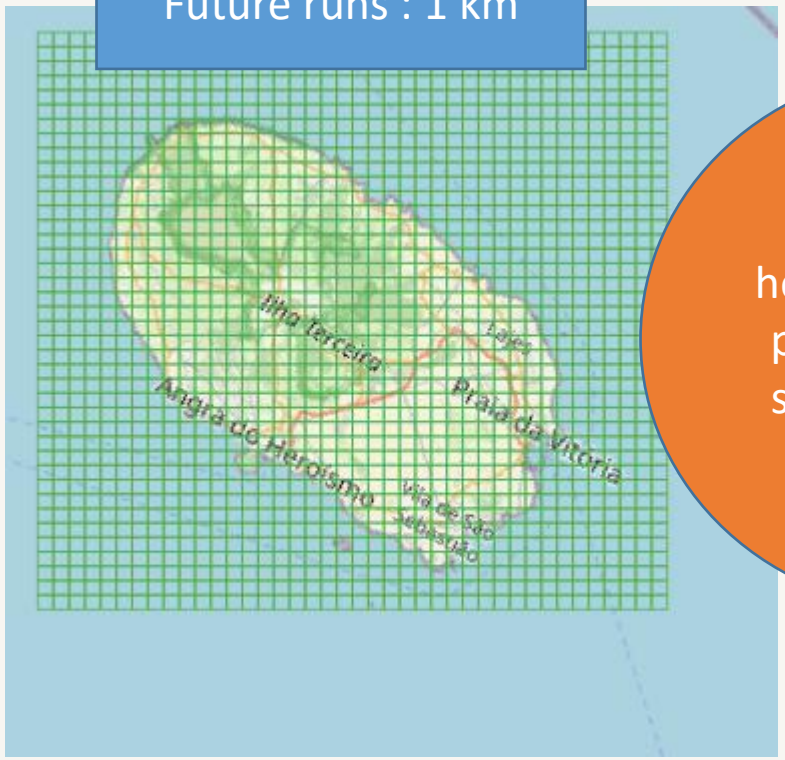
Preliminary results for Macaronesia

Spatial resolution of our project: too coarse?

Macaronesia has also already tackled the 30% goal….

First runs : 10 km

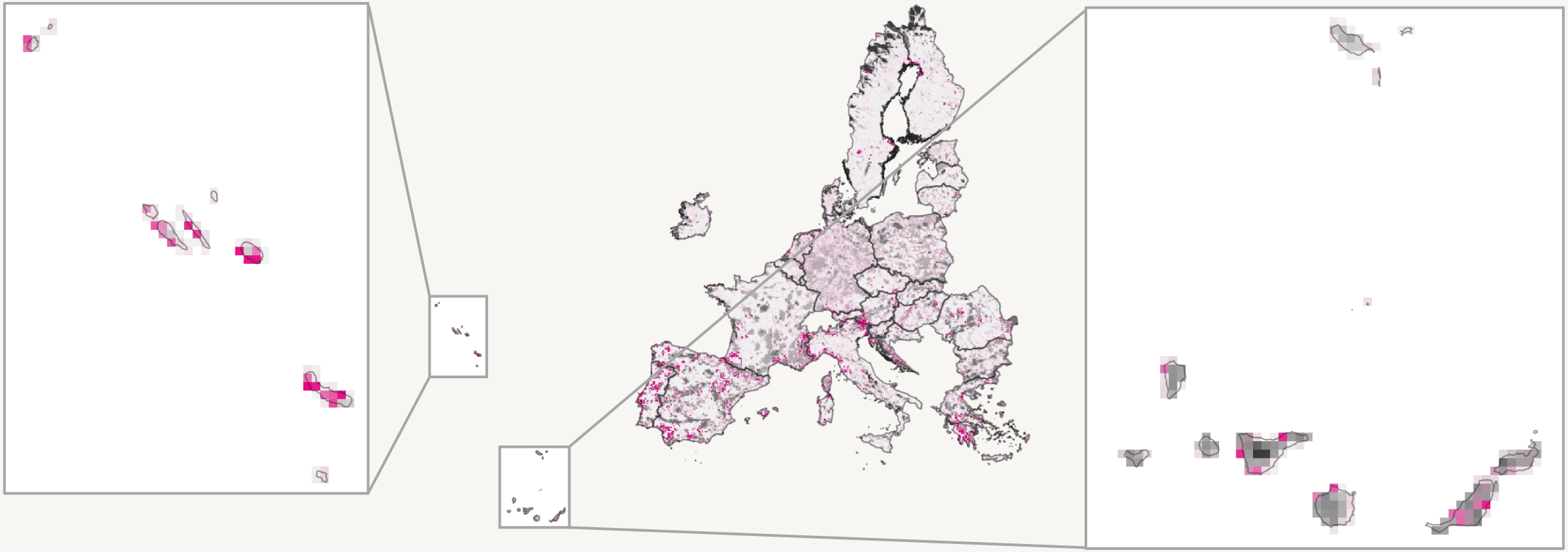
Future runs : 1 km



Is this a useful resolution for helping to identify priorities for e.g. strict protection, restoration or connectivity?

Macaronesia has outstanding conservation value

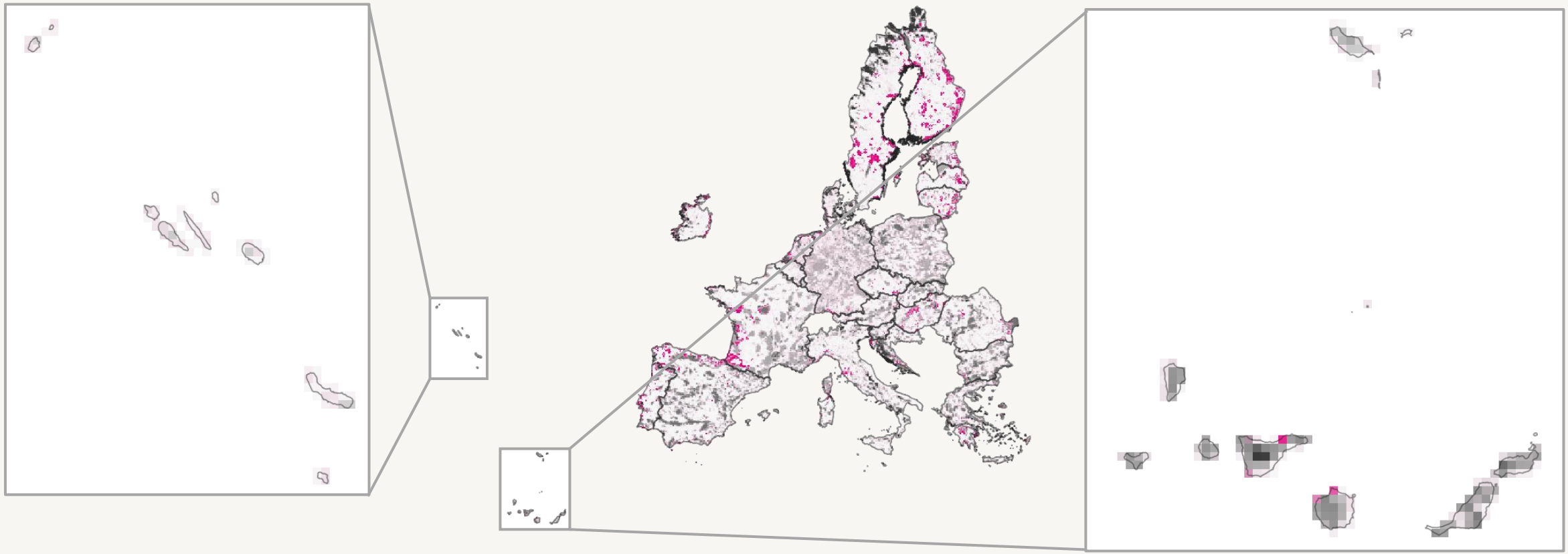
Expanding protection in the Macaronesian region is critical to close conservation gaps for Article 12 and 17 species and habitats.



Top priorities to reach 30% at the **European** level are in pink, expanding on Natura2000 and other CDDA in gray.

Looking beyond the 30% target per bioregion?

Not protecting more than 30% area per biogeographic region across the EU would miss critically important areas for species and habitats in Macaronesia



Top priorities to reach 30% at the **bioregional** level are in pink, expanding on Natura2000 and other CDDA in gray.

Concept: Incorporating climate change

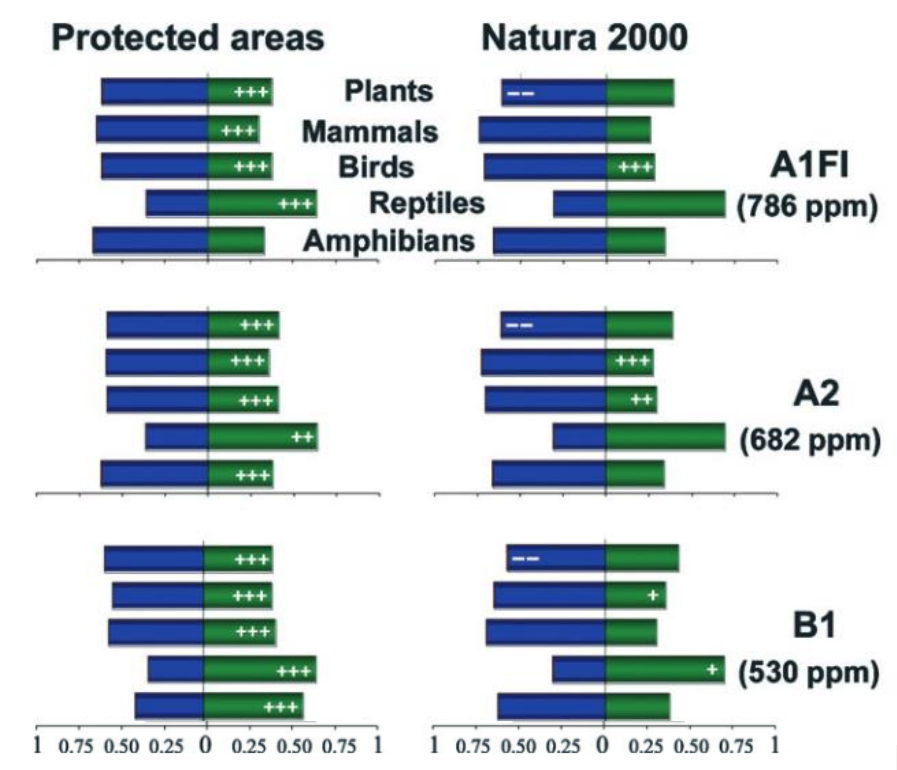
Incorporating climate change

climate change resilience & connectivity between shifting ranges

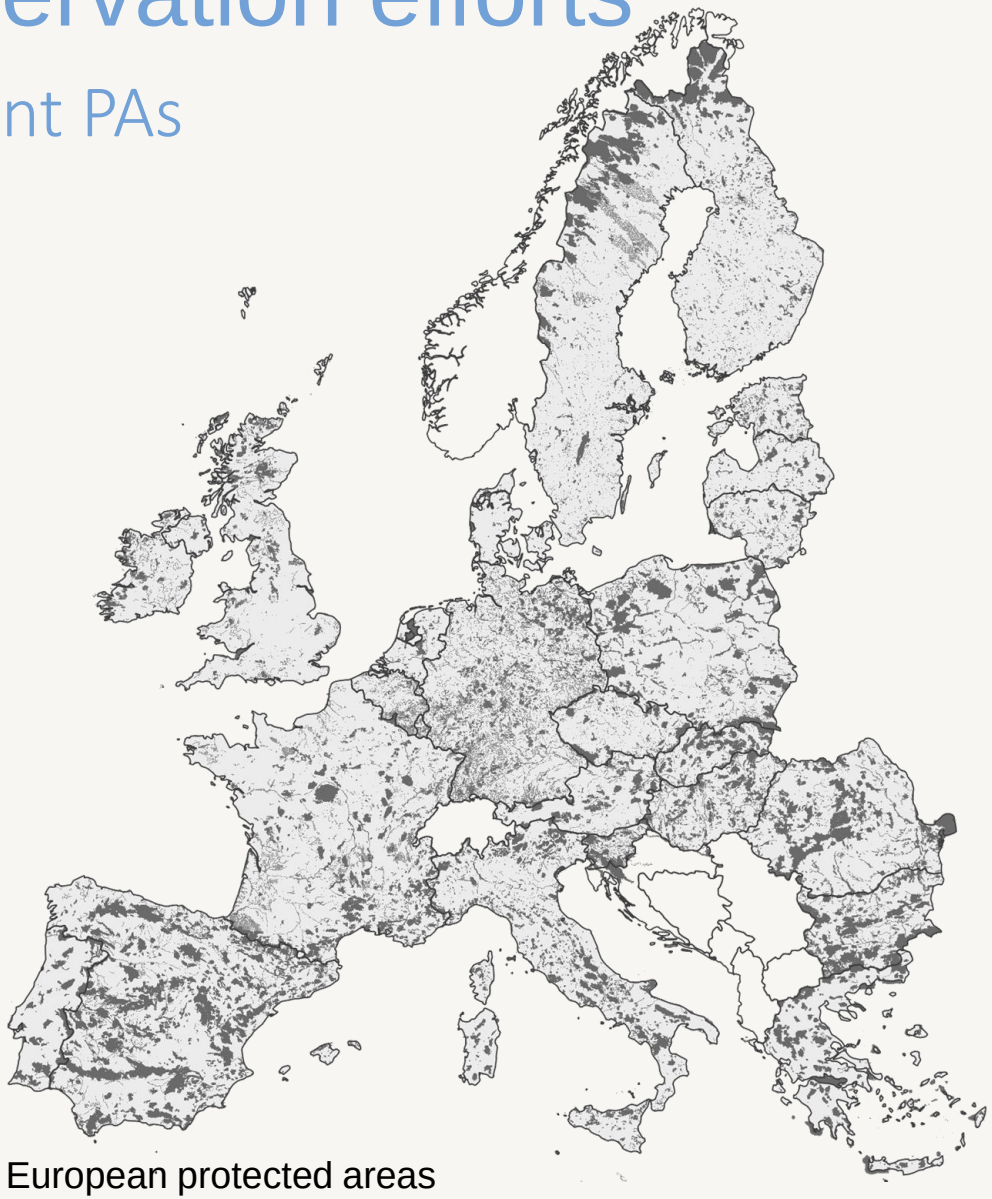
Heini Kujala
& team

Climate change threatens conservation efforts

Species may shift their ranges outside current PAs



Proportion of species projected to
lose (lefthand bars) or **gain** (righthand bars)
climatic suitability in European protected areas by 2080



European protected areas

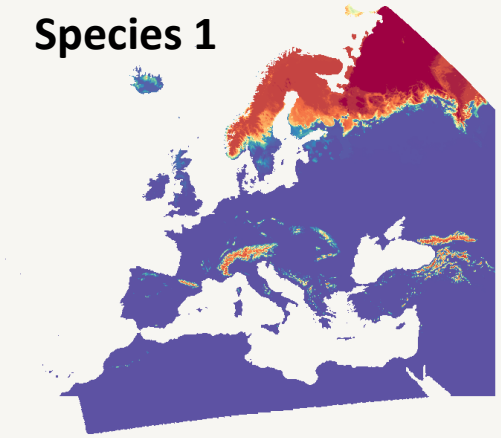
NATURA CONNECT

Araújo et al. (2011) *Ecology Letters*, 14: 484–492

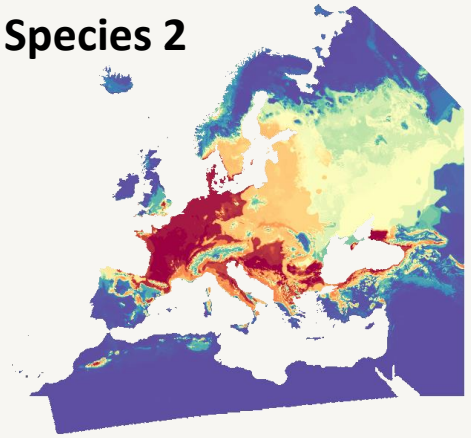
Species range shifts can be anticipated

Losses & gains

Species 1

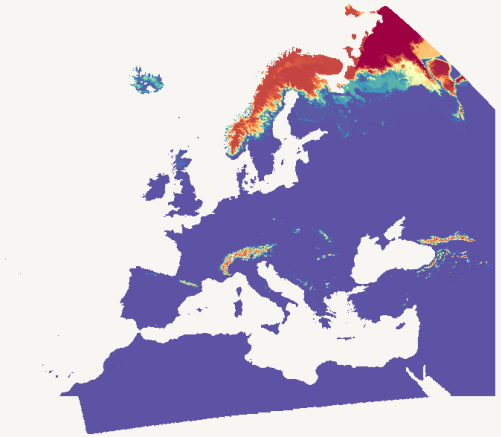


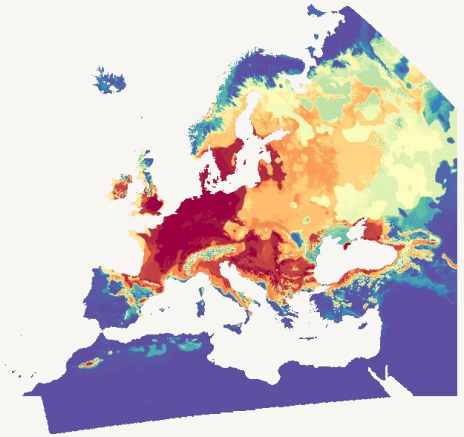
Species 2



PRESENT
suitable climate

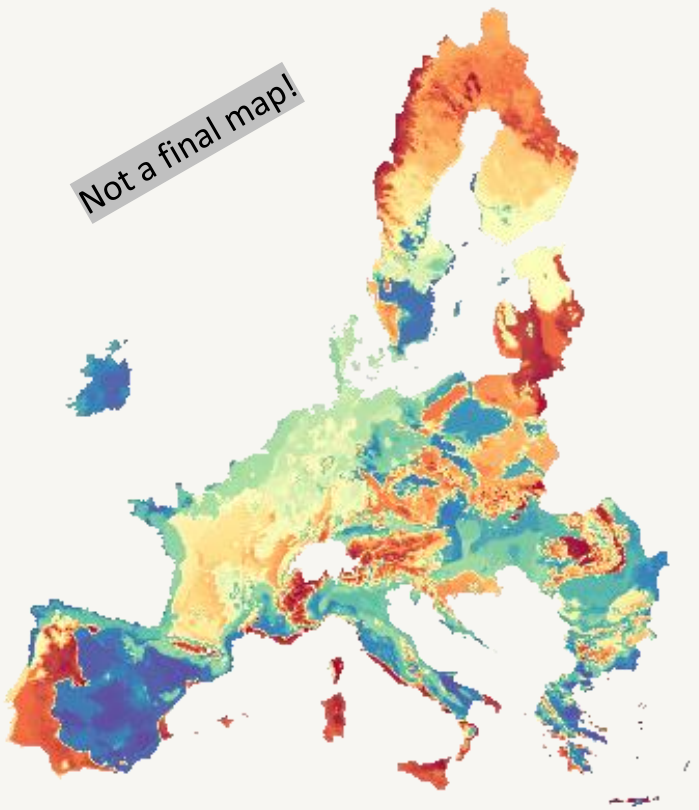
FUTURE
suitable climate



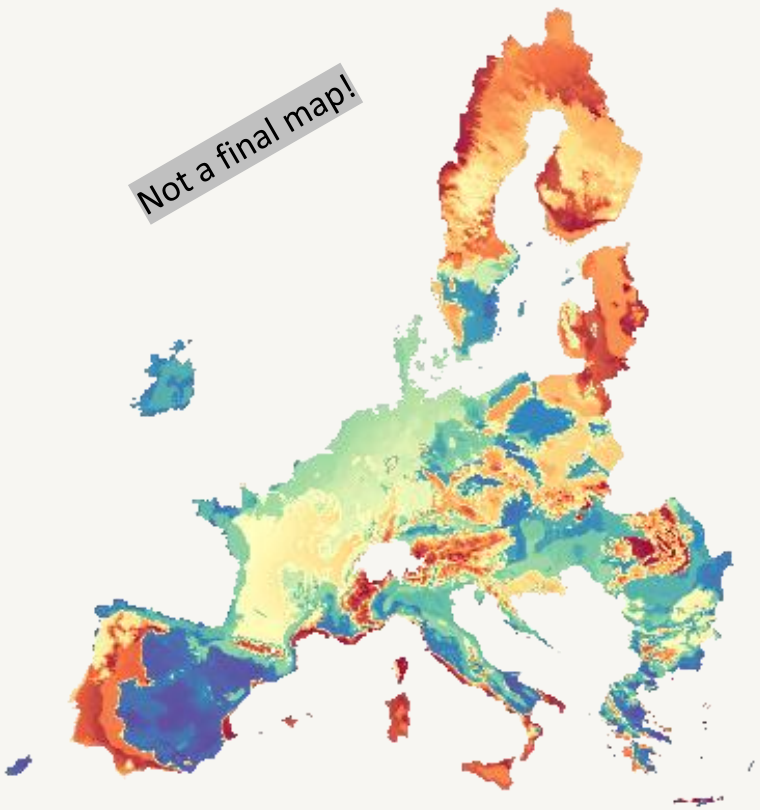


Prioritising for climate resilience

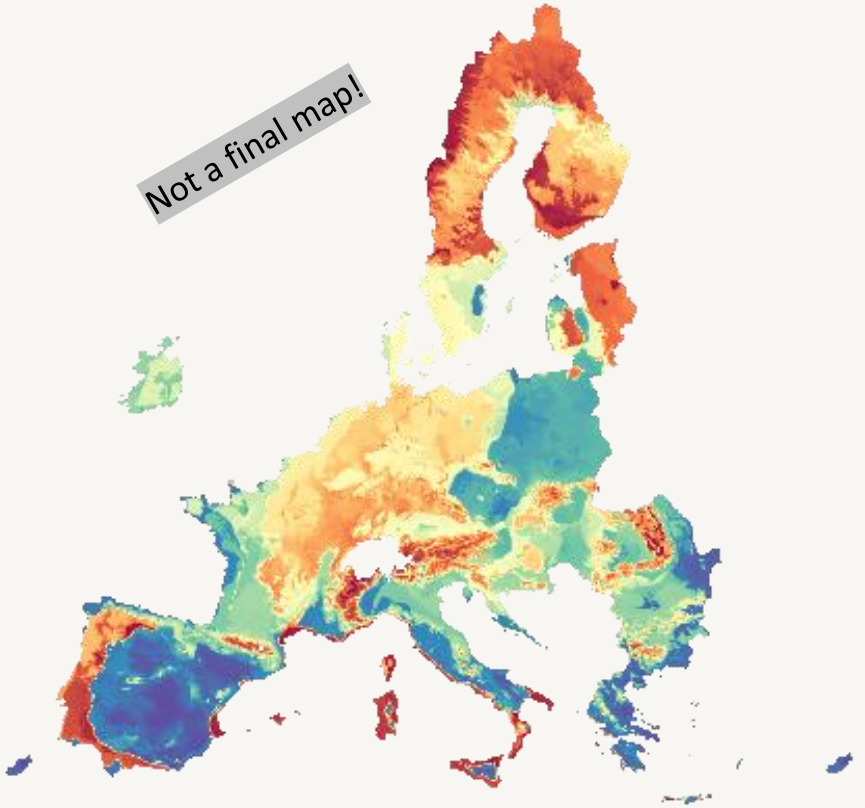
PRESENT



PRESENT + FUTURE + CONNECTIVITY



FUTURE



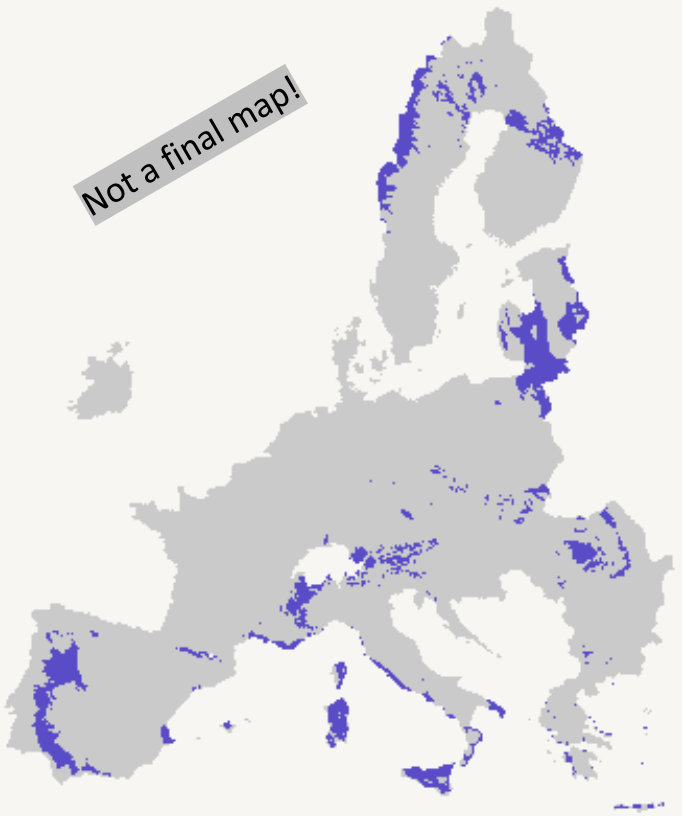
NATURA CONNECT

ZONATION
Conservation planning software

Prioritising for climate resilience

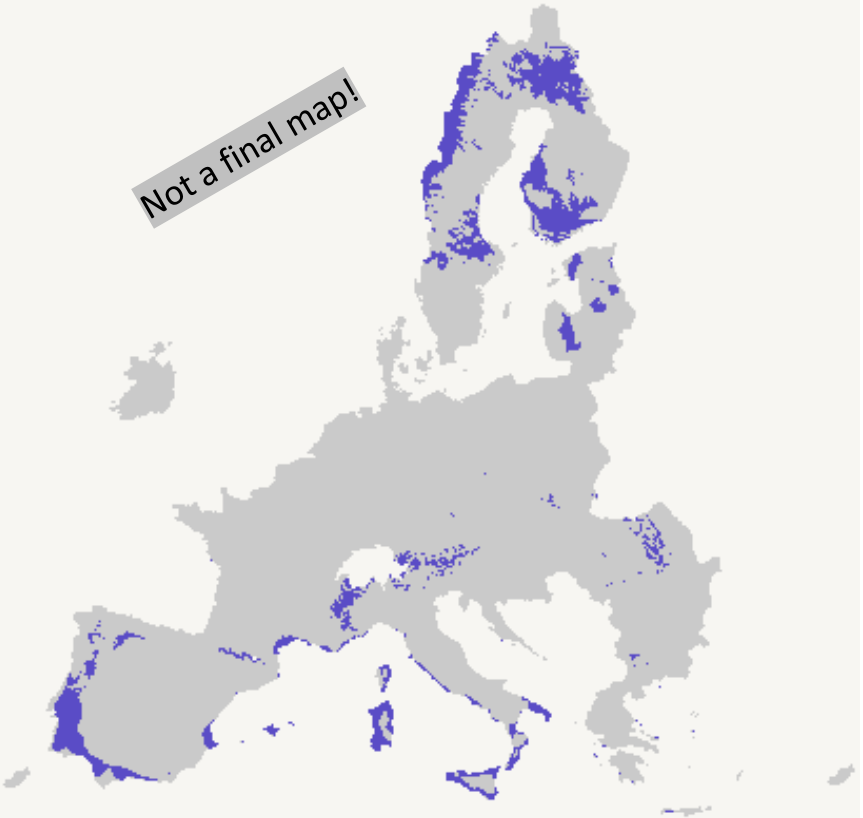
Top 10%

PRESENT



PRESENT + FUTURE + CONNECTIVITY

FUTURE

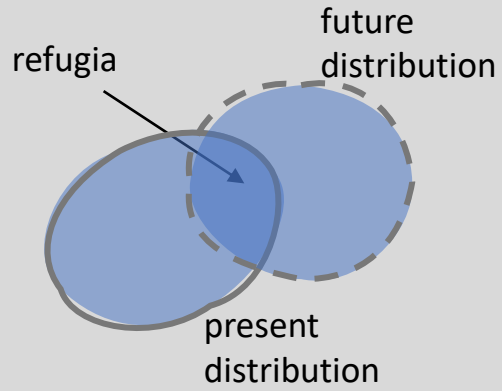


NATURA CONNECT

ZONATION Conservation planning software

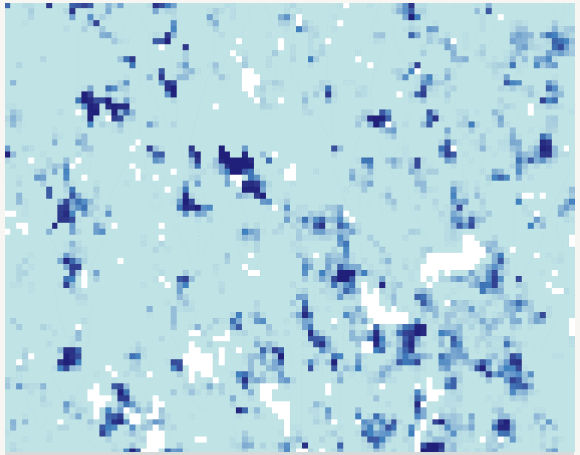
How to plan for uncertain future?

Emphasizing bioclimatic refugia



Securing areas that are good now and in the future

Finding robust solutions across alternative futures



How often a priority?

never — always

Acceptable balance between *certain* present and *uncertain* future

How much weigh can be given to future areas before we risk protection of present?

RAD: Resist, Accept, Direct

Assessments exist for Finland, concept promoted by UN

https://www.usgs.gov/programs/climate-adaptation-science-centers/science/resist-accept-direct-rad-framework

Case study Portugal

Case study Portugal: relevant for Macaronesia?

A systematic conservation plan has been produced for the mainland Portugal, and methods could be shared: Case study within NaturaConnect focuses on implementation (including finances)

Biodiversidade 2030 - Intro w/ English subtitles

Miguel Araujo
& team

3 think-tank / high level discussion groups

3 other events, one of which could be capacity building on the islands if there is interest

How to get in touch

Stay informed

Sign up to our newsletter and stakeholder community!

Sign up here

Get access to data and info material or discuss concepts or a specific analysis

Spatial data

Connectivity

Systematic Conservation Planning

Contact us and we make a time and date to talk!

naturaconnect@iiasa.ac.at
beher@iiasa.ac.at
visconti@iiasa.ac.at

Come talk to us!

We hope to collaborate with you over the next few years

contact us anytime:

naturaconnect.eu

naturaconnect@iiasa.ac.at

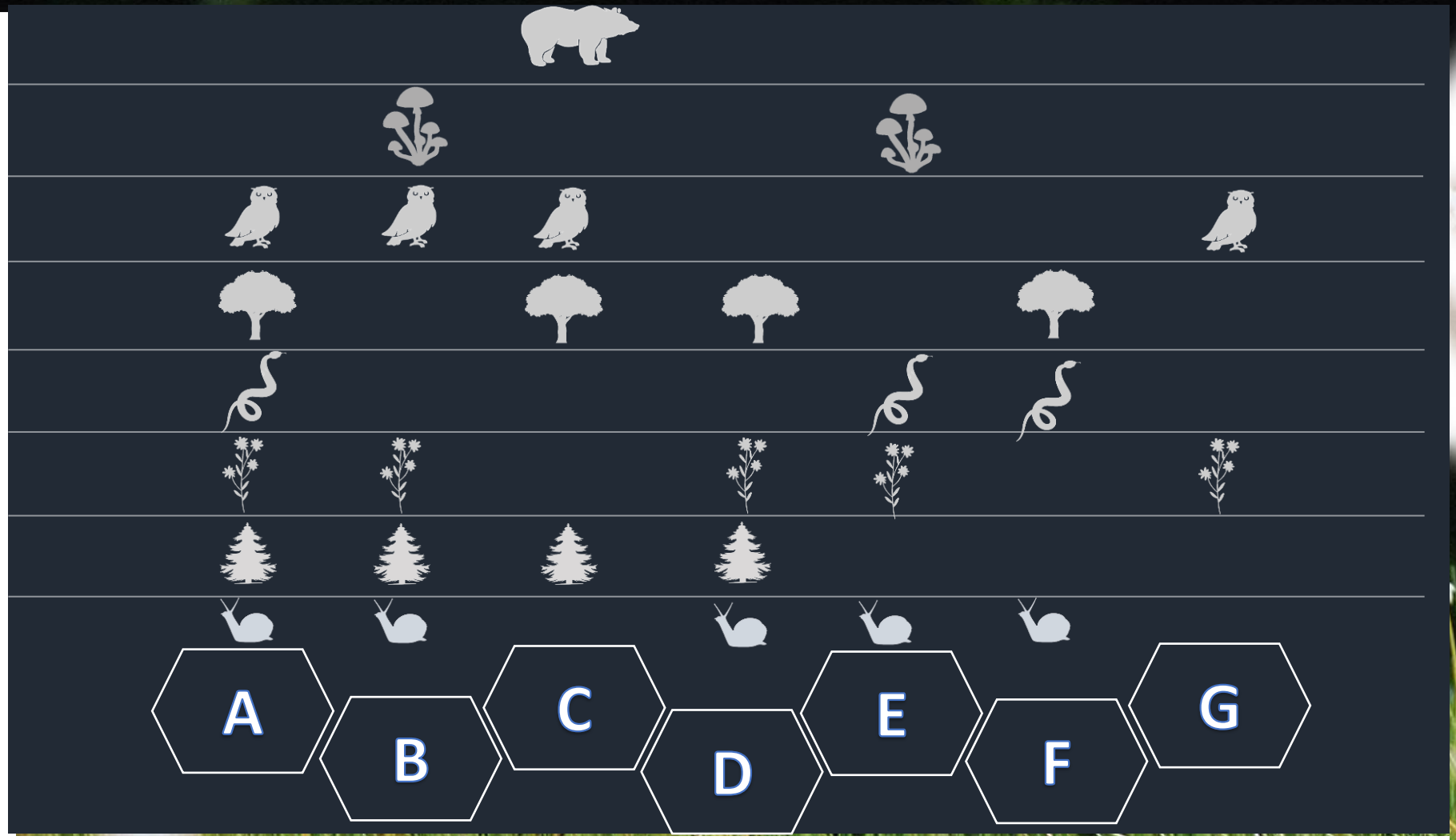
@naturaconnect

NATURA CONNECT

Test yourself:

How many sites would you have to add to your protected area network when you want to cover all species?

Talk to Jutta to see if you found the most efficient solution



Choose from hexagons A-G at the bottom
All species shown directly above the site are present within the site