NaturaConnect

Co-designing a coherent and resilient network of protected areas for the EU

Piero Visconti, Louise O'Connor, Jeremy Dertien, Jutta Beher, Nestor Fernandez

representing NaturaConnect

Mediterranean biogeographic seminar
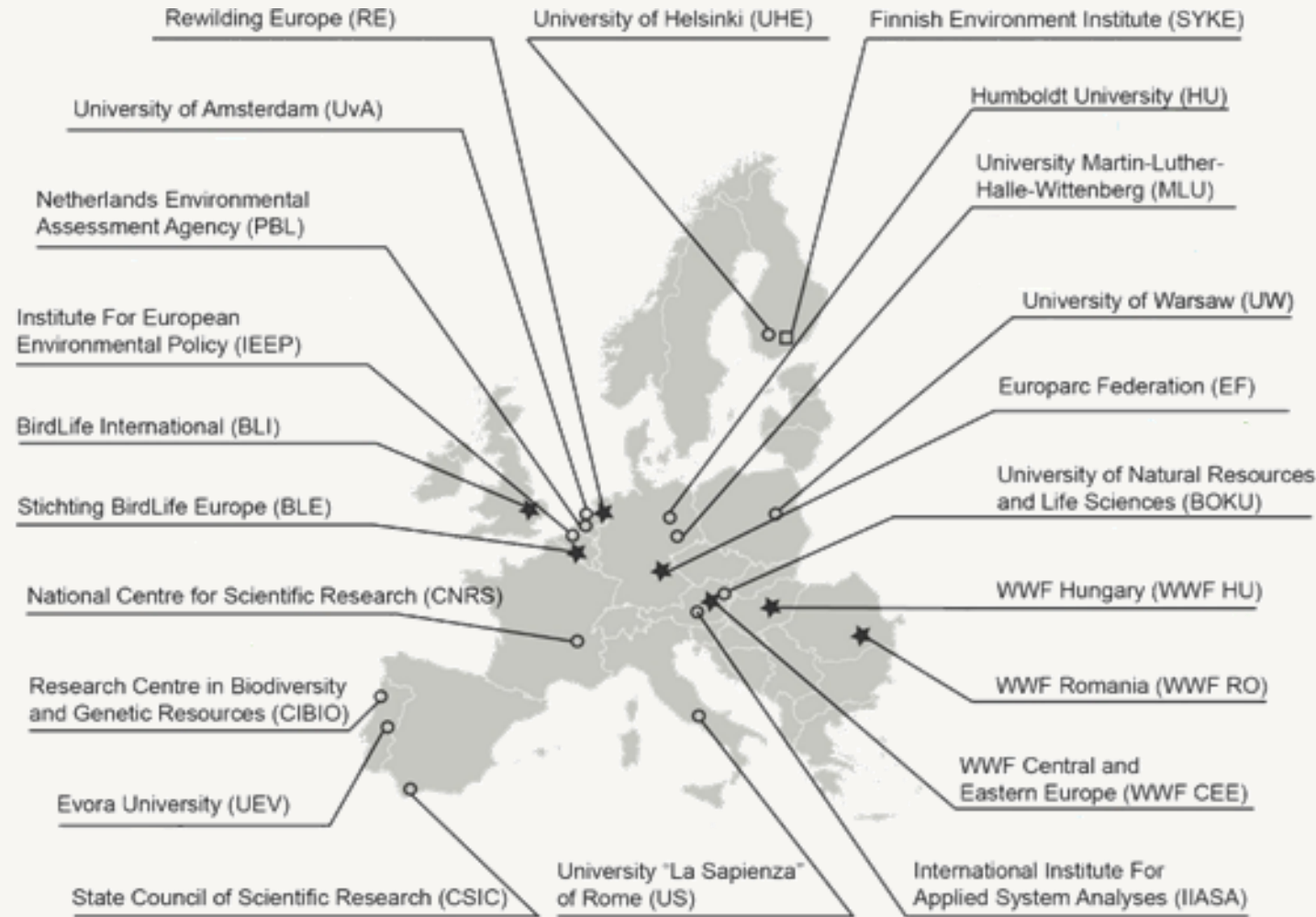April 17-19th, 2024

source: WWF, Matei Plesa

Funded by
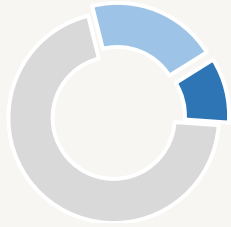the European Union

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Who we are

Key ambition of NaturaConnect:

Co-develop knowledge, tools and capacity building to support Member States in designing and implementing an ecologically representative, resilient and well-connected Trans-European Nature Network

Rewilding Europe (RE)

University of Helsinki (UHE)

Finnish Environment Institute (SYKE)

University of Amsterdam (UvA)

Humboldt University (HU)

Netherlands Environmental Assessment Agency (PBL)

University Martin-Luther-Halle-Wittenberg (MLU)

Institute For European Environmental Policy (IEEP)

University of Warsaw (UW)

Europarc Federation (EF)

BirdLife International (BLI)

University of Natural Resources and Life Sciences (BOKU)

Stichting BirdLife Europe (BLE)

National Centre for Scientific Research (CNRS)

WWF Hungary (WWF HU)

Research Centre in Biodiversity and Genetic Resources (CIBIO)

WWF Romania (WWF RO)

Evora University (UEV)

WWF Central and Eastern Europe (WWF CEE)

State Council of Scientific Research (CSIC)

University "La Sapienza" of Rome (US)

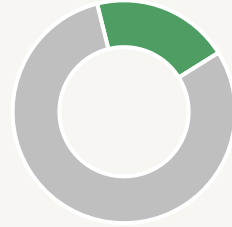International Institute For Applied System Analyses (IIASA)

2022 - 2026

2

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**
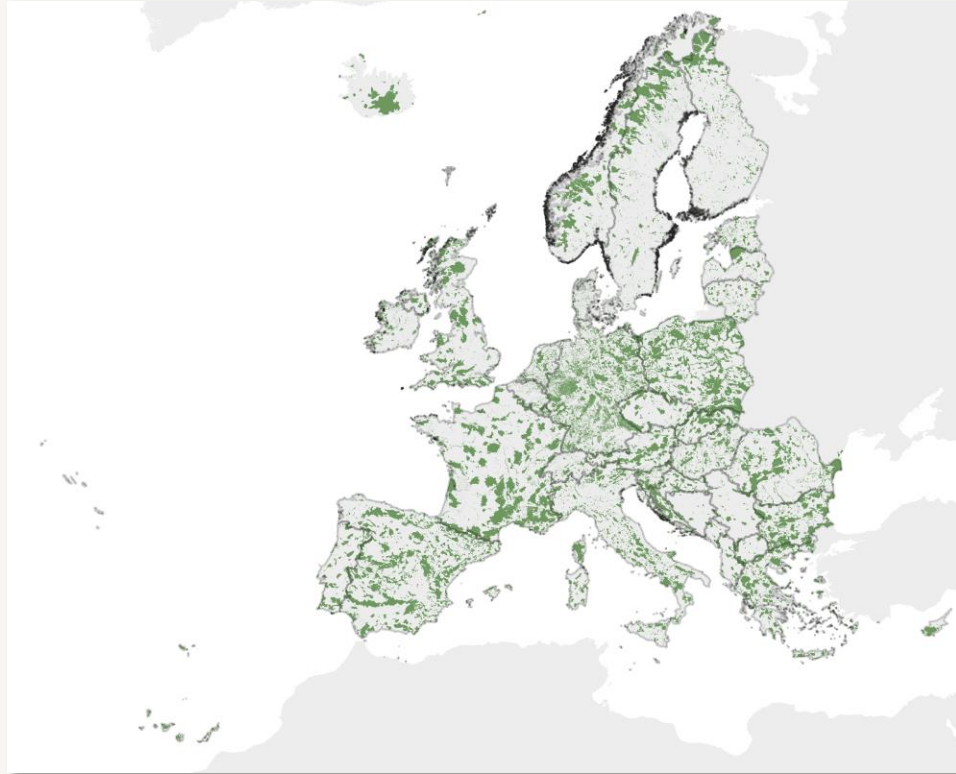
Actively or passively **restore 20%** of land area (terrestrial and freshwater ecosystems) towards **good condition**

Facilitate ecological corridors and support sustainable land management, while **increasing resilience** to climate and land-use change
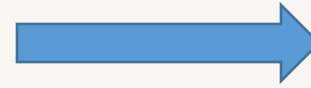
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How to prioritize where to conserve, restore and sustainably manage ecosystems in Europe?
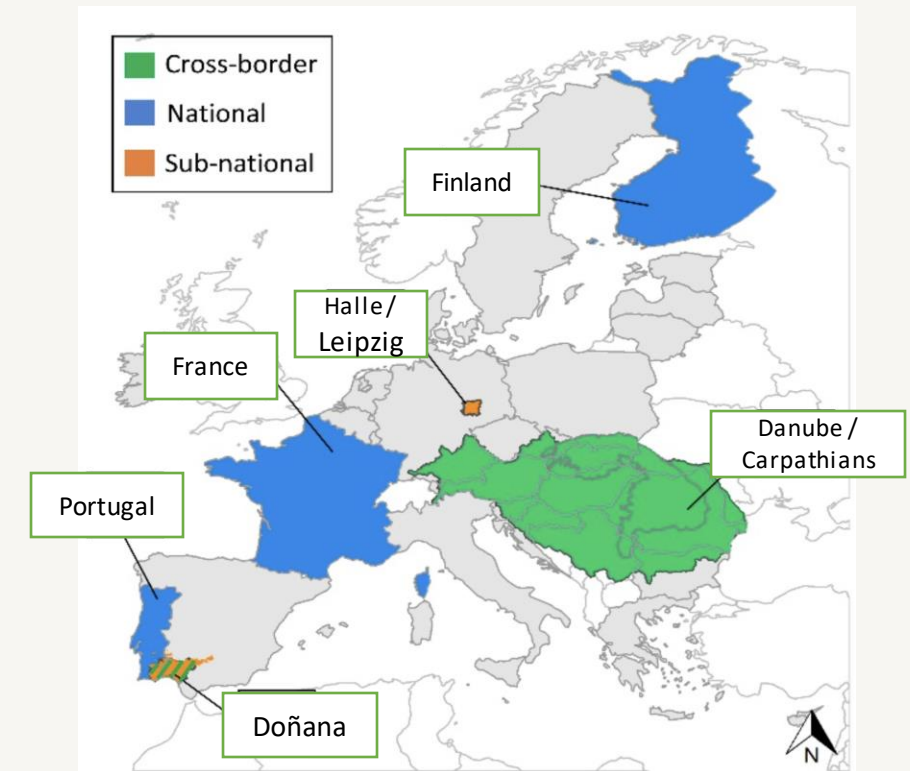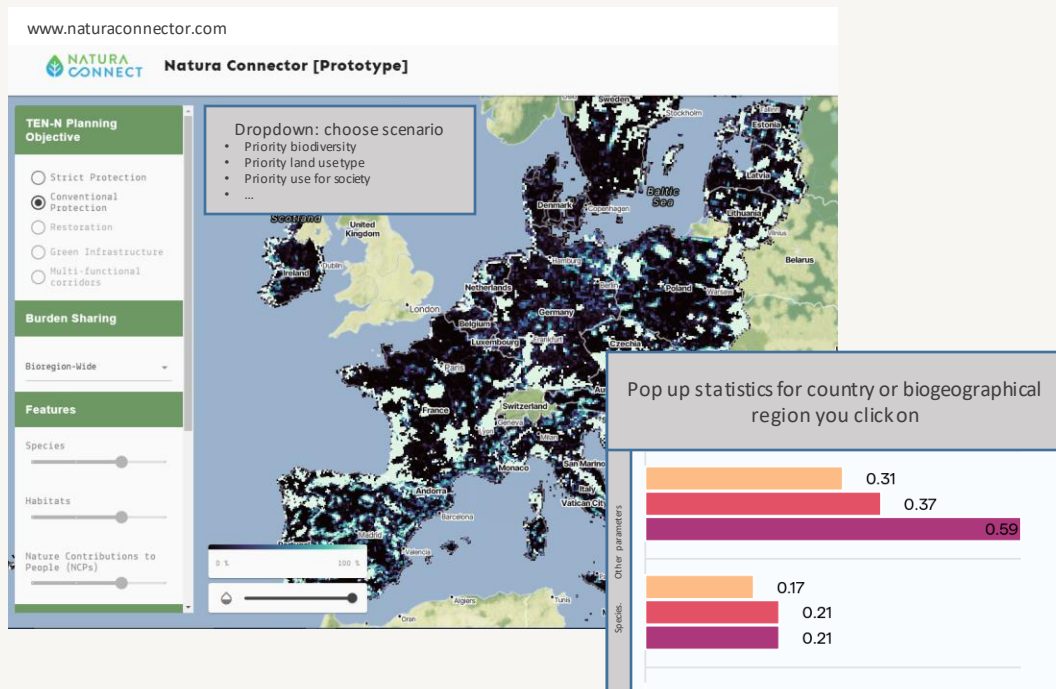

Network of Natura 2000 and other protected areas

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
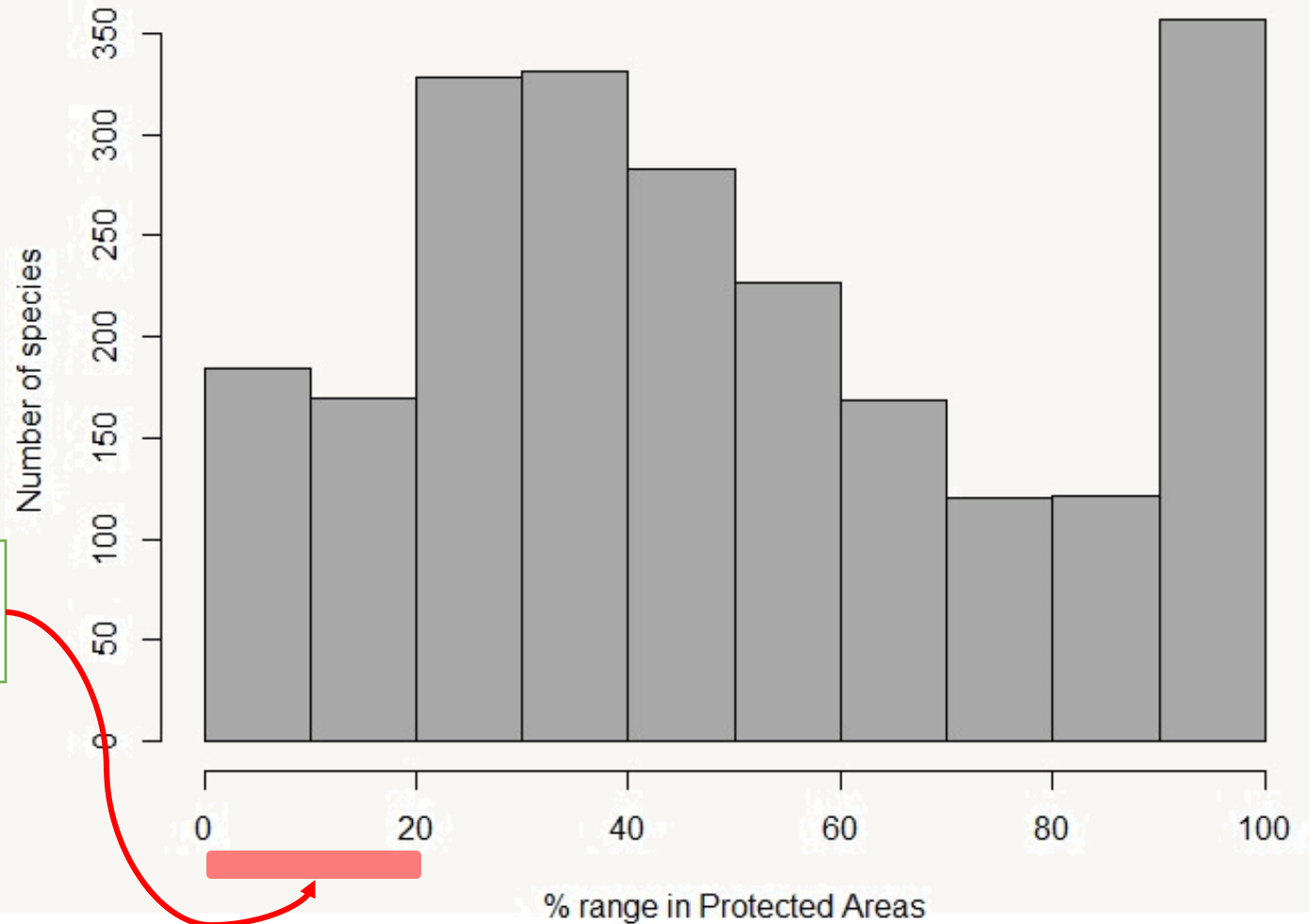
NaturaConnect's relevance for the Mediterranean

- Concept **systematic conservation planning** to identify spatial conservation priorities

- Some **preliminary results** for Europe / case study France

- How to incorporate **climate change**

- How to plan for **connectivity**

- How to **fund TEN-N** (only Marketplace)

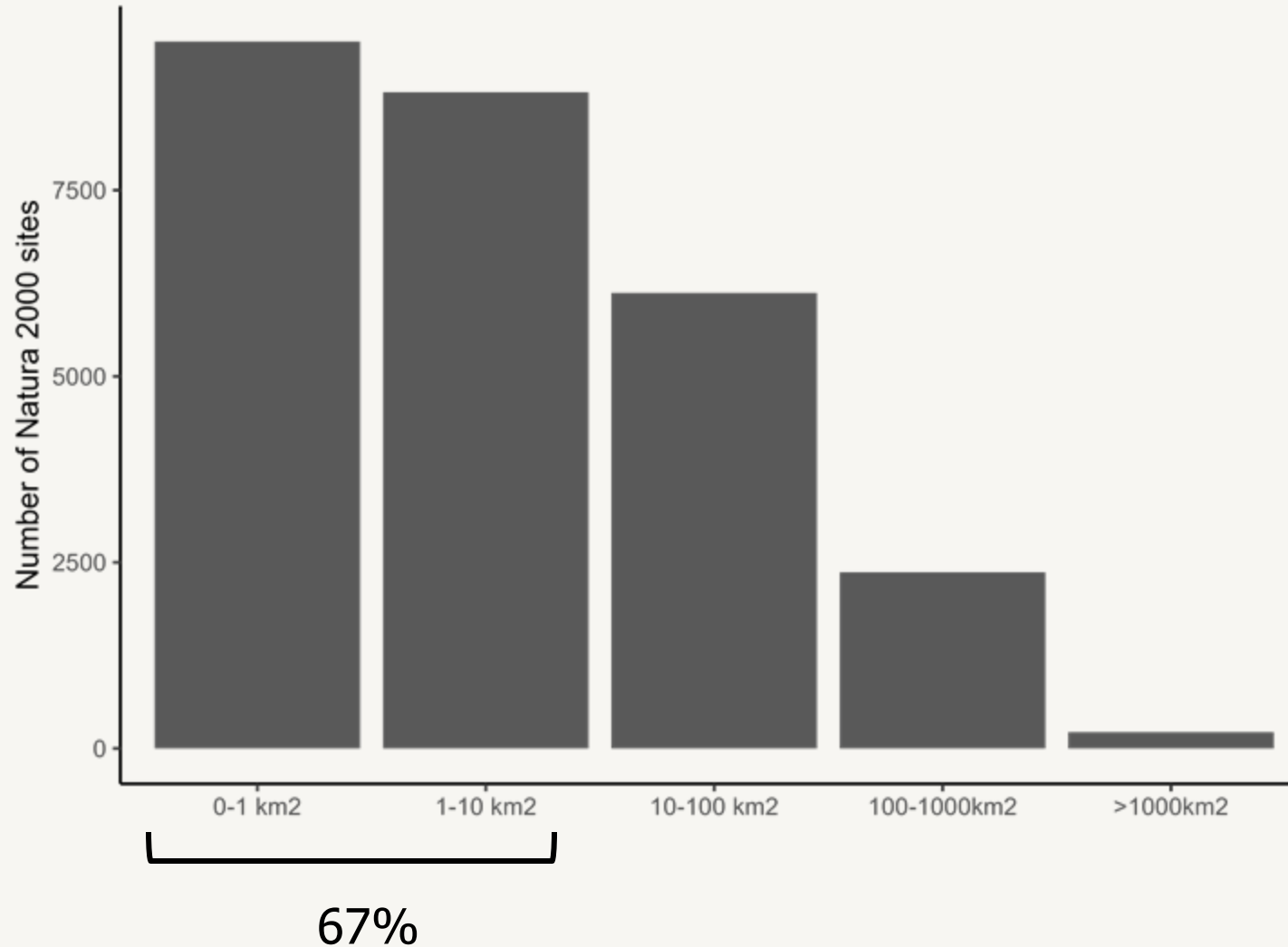- Discuss **strict protection target** (session on Thursday)

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

Coverage of threatened species by all PAs in the EU

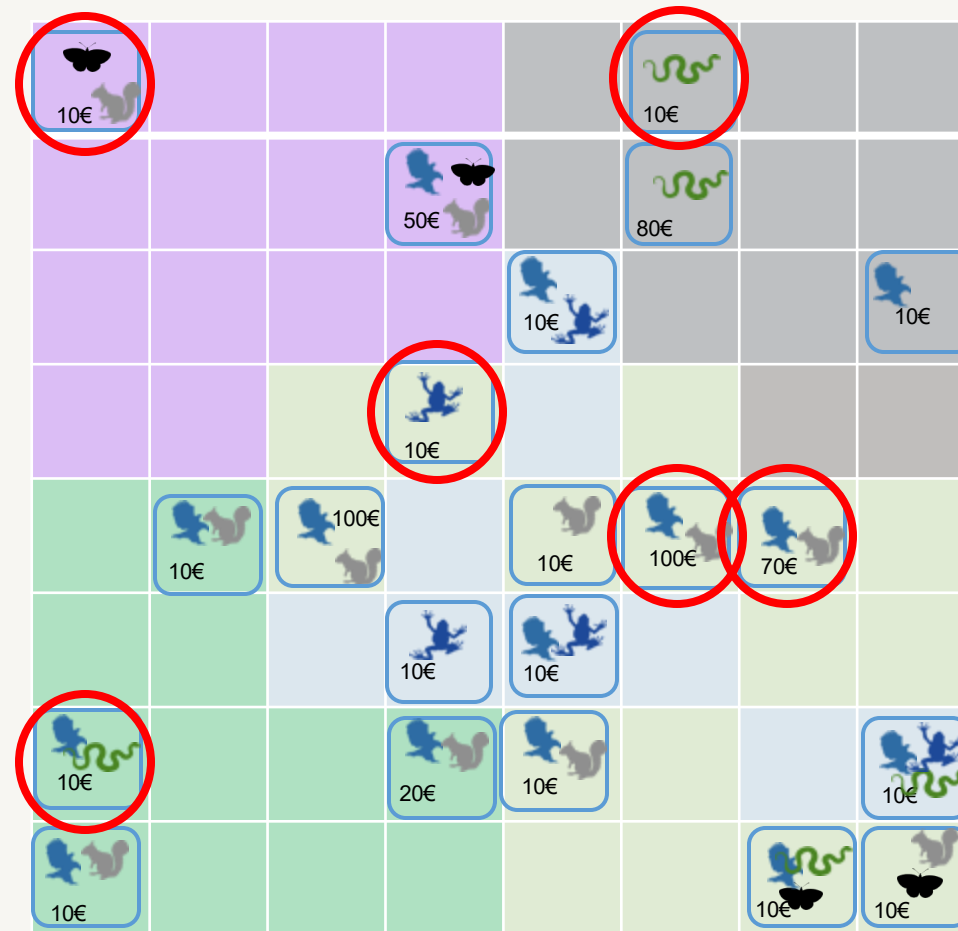**354 globally threatened species have <20% of their EU range protected**

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

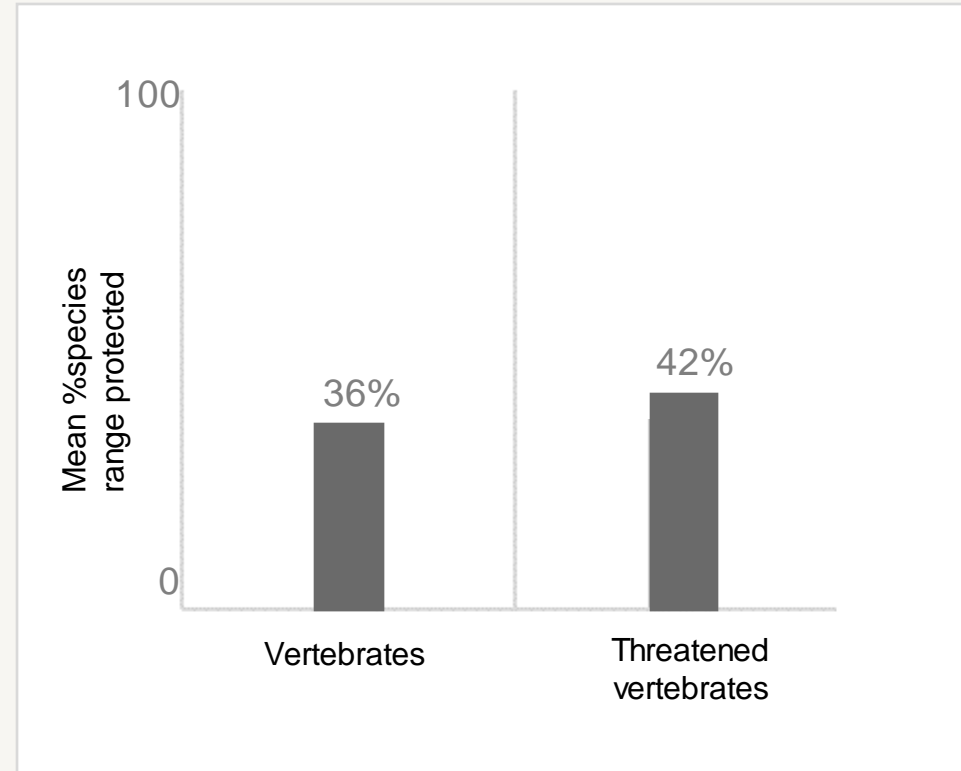# Adequacy – size and fragmentation

Rules for creating a network that ticks all the boxes

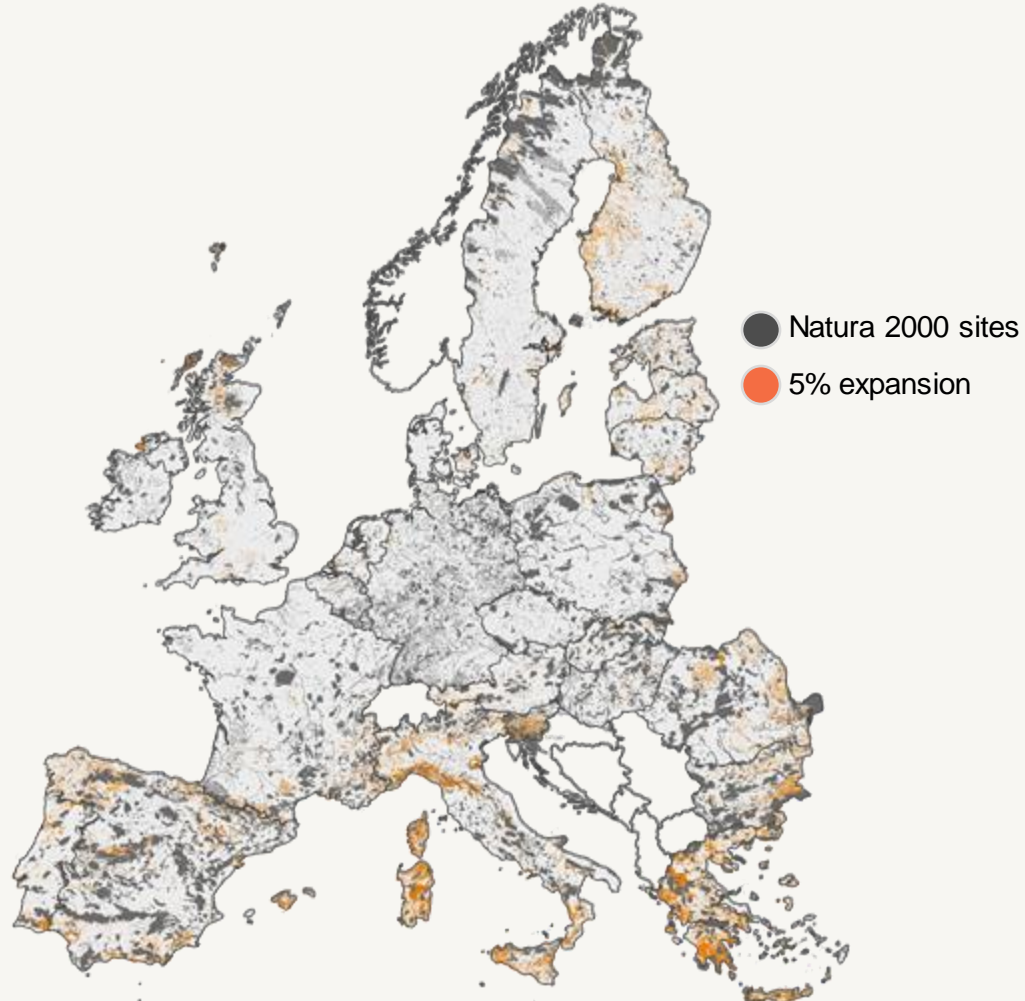**coherent, resilient** and **ecologically representative** protected area network

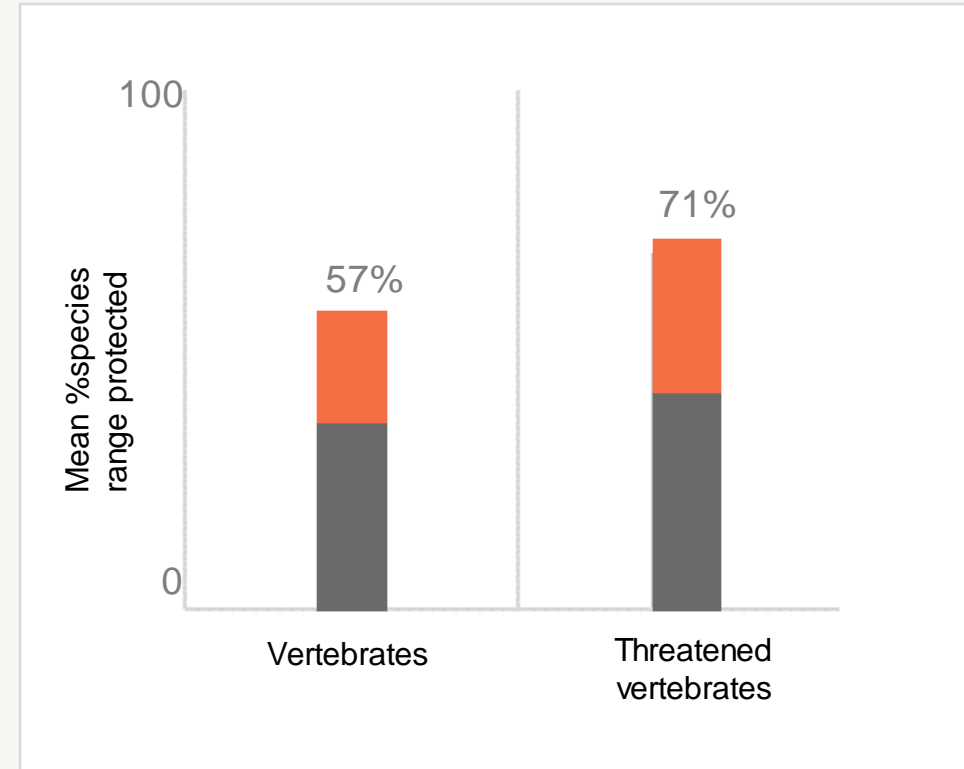**C**omprehensive
Adequate
Resilient
Effective

Large conservation gains are possible in few areas

Natura 2000 sites

Mean %species range protected

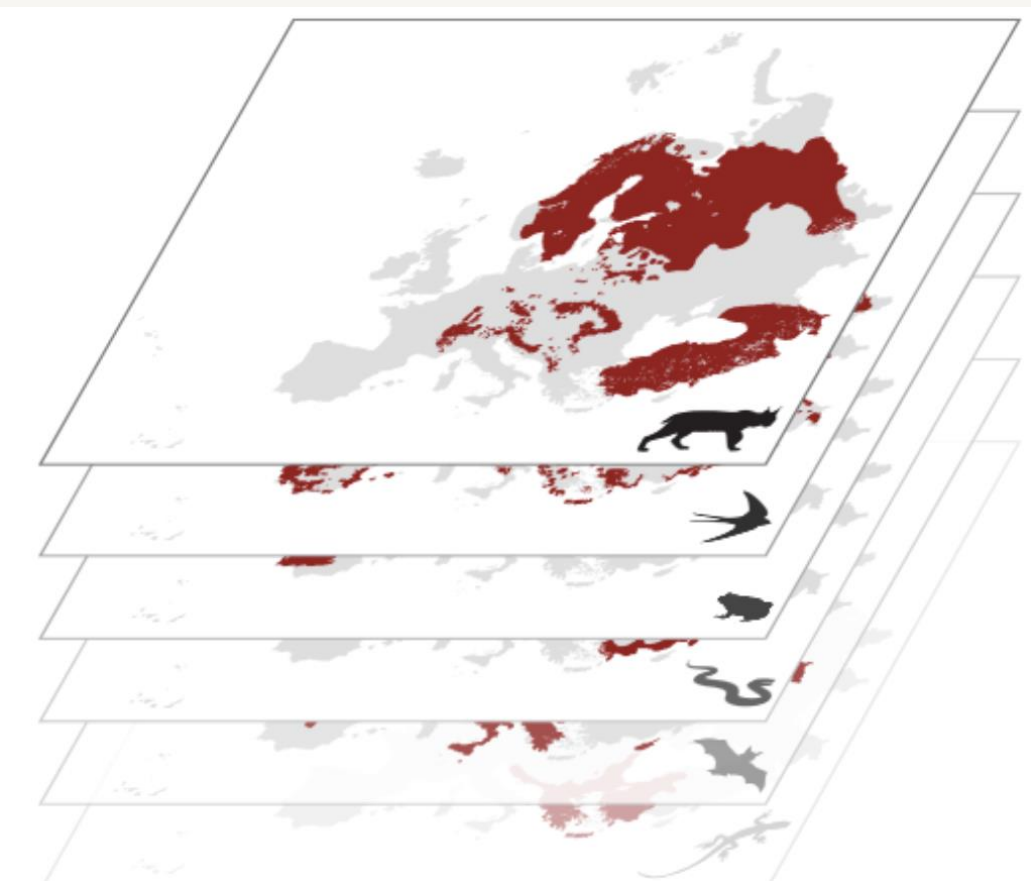100

0

36%

42%

Vertebrates

Threatened vertebrates

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Large conservation gains are possible in few areas

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

Legend:
- Natura 2000 sites
- 5% expansion

Chart: Mean %species range protected
- Vertebrates: 57%
- Threatened vertebrates: 71%

O'Connor et al., 2021

What are we planning for to produce relevant results?

Species and Habitats in Articles 12 and 17

- mammals
- birds
- reptiles
- amphibians
- plants
- arthropods
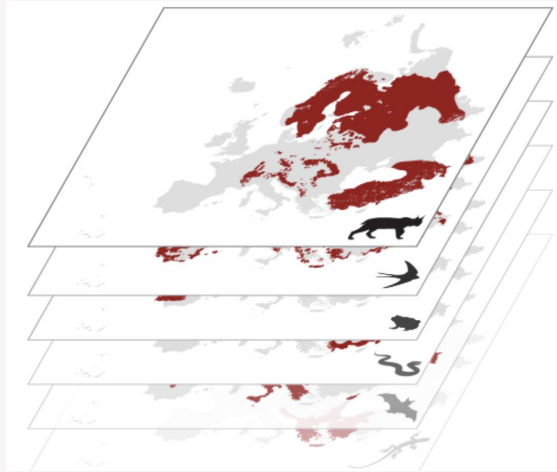
Threatened species and ecosystems

Other important ecosystems

Primary and old-growth forests

Methods for preliminary analysis

Species & Habitats of conservation concern

+ Targets
how much is enough?

+ Weights
how important is it to
protect each species?

Protected areas

Scenarios for
protected area
expansion
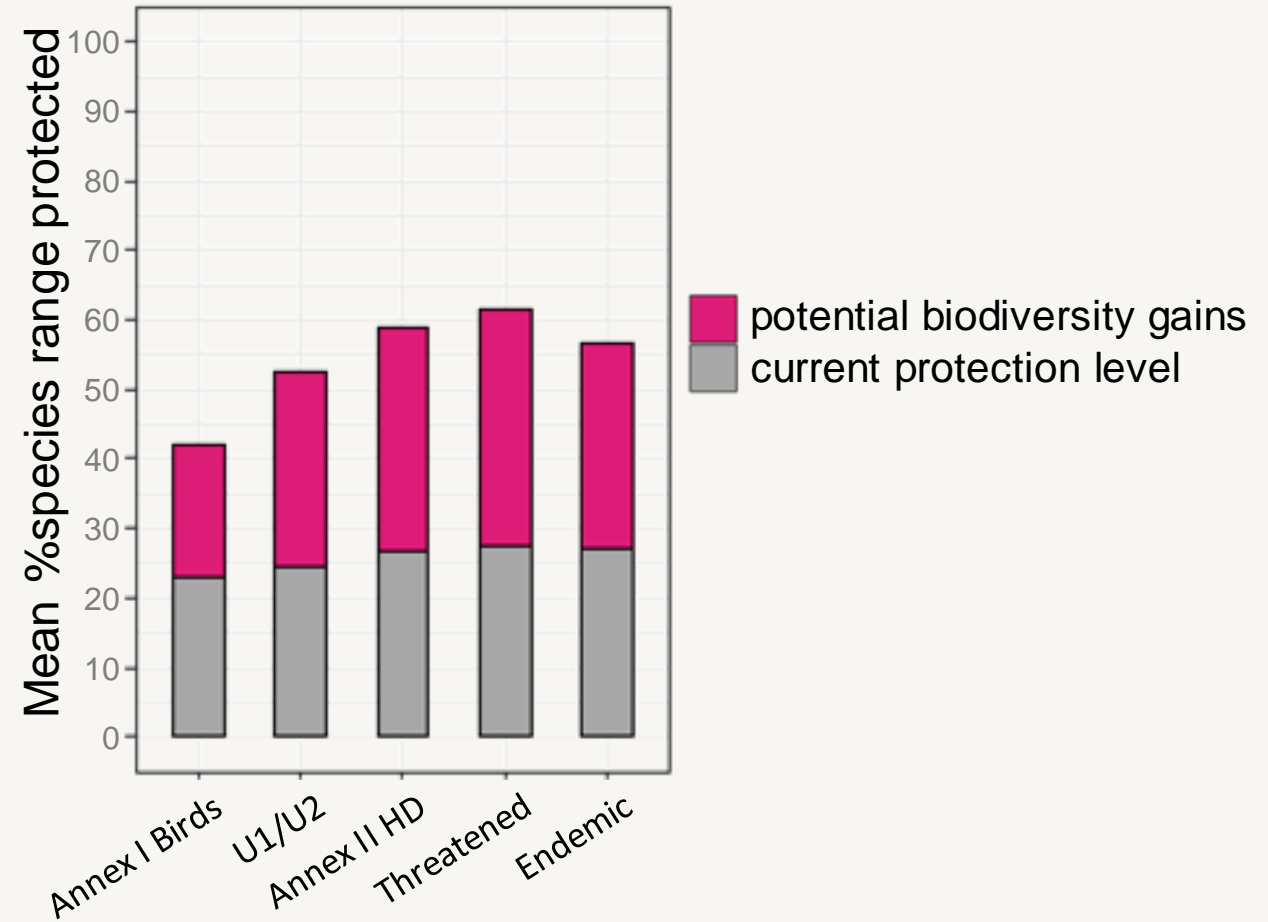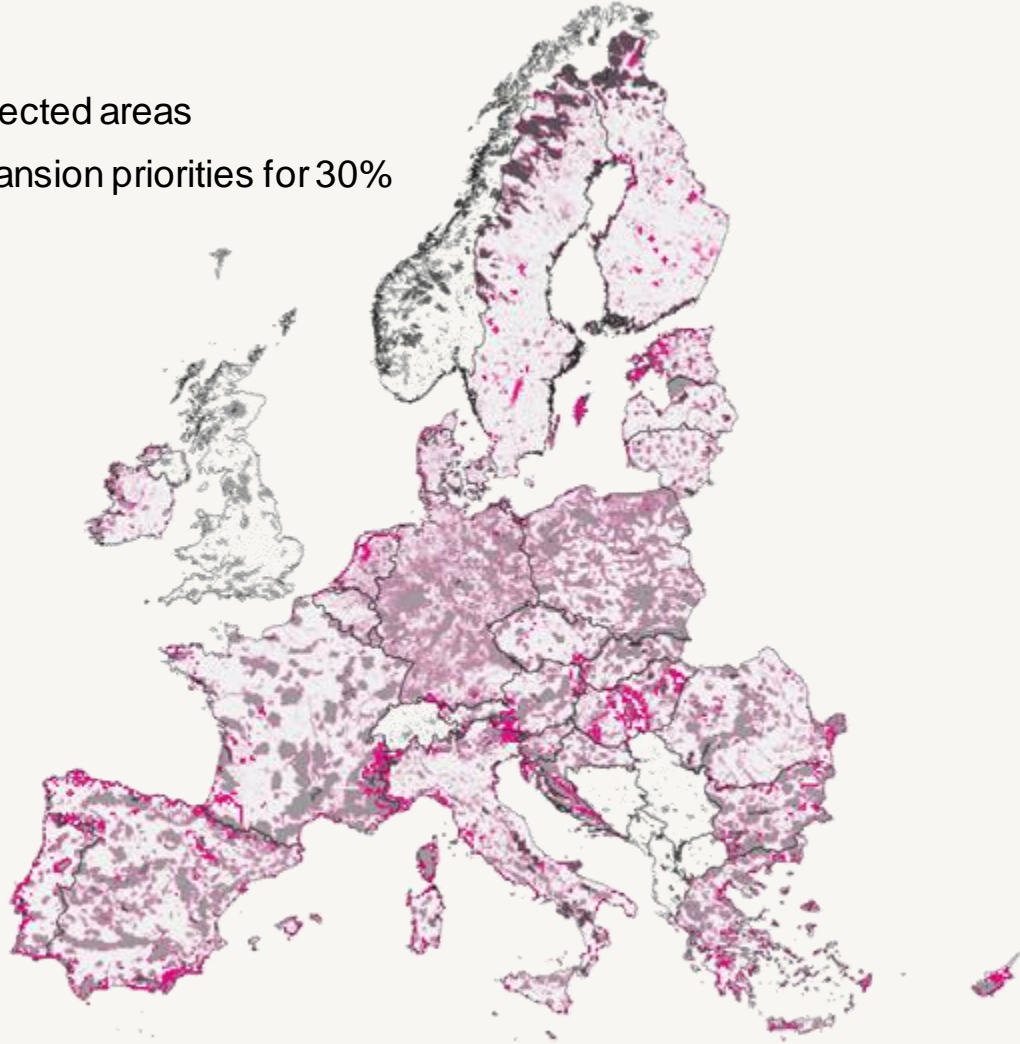
EU-wide priorities

Member State priorities

EU-wide with equal area
shares between countries

EU-wide priorities for expanding Natura 2000

EU-wide priorities for biodiversity are unevenly distributed across countries

Legend:
- Protected areas
- Expansion priorities for 30%

Chart legend:
- potential biodiversity gains
- current protection level

Y-axis: Mean %species range protected

X-axis categories: Annex I Birds, U1/U2, Annex II HD, Threatened, Endemic

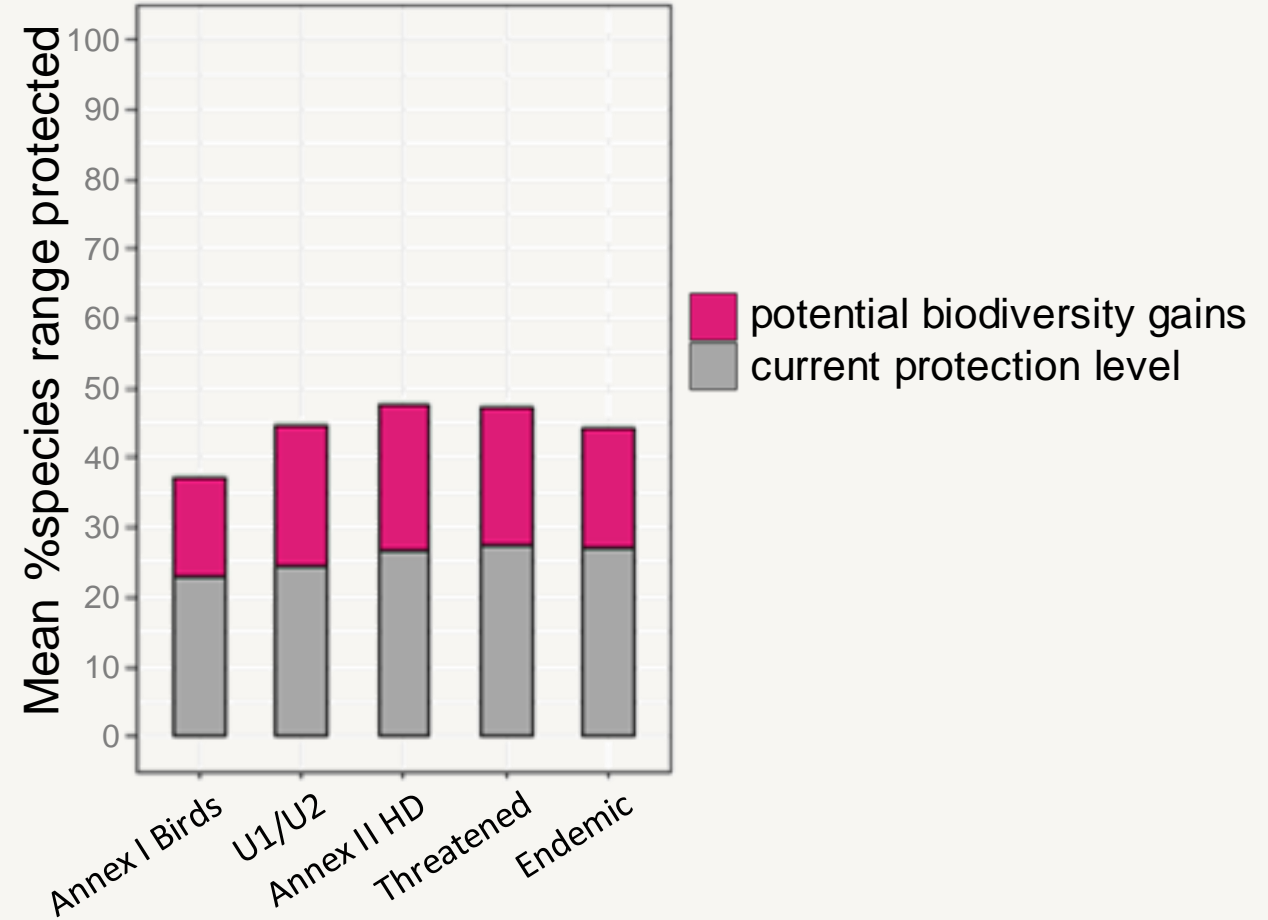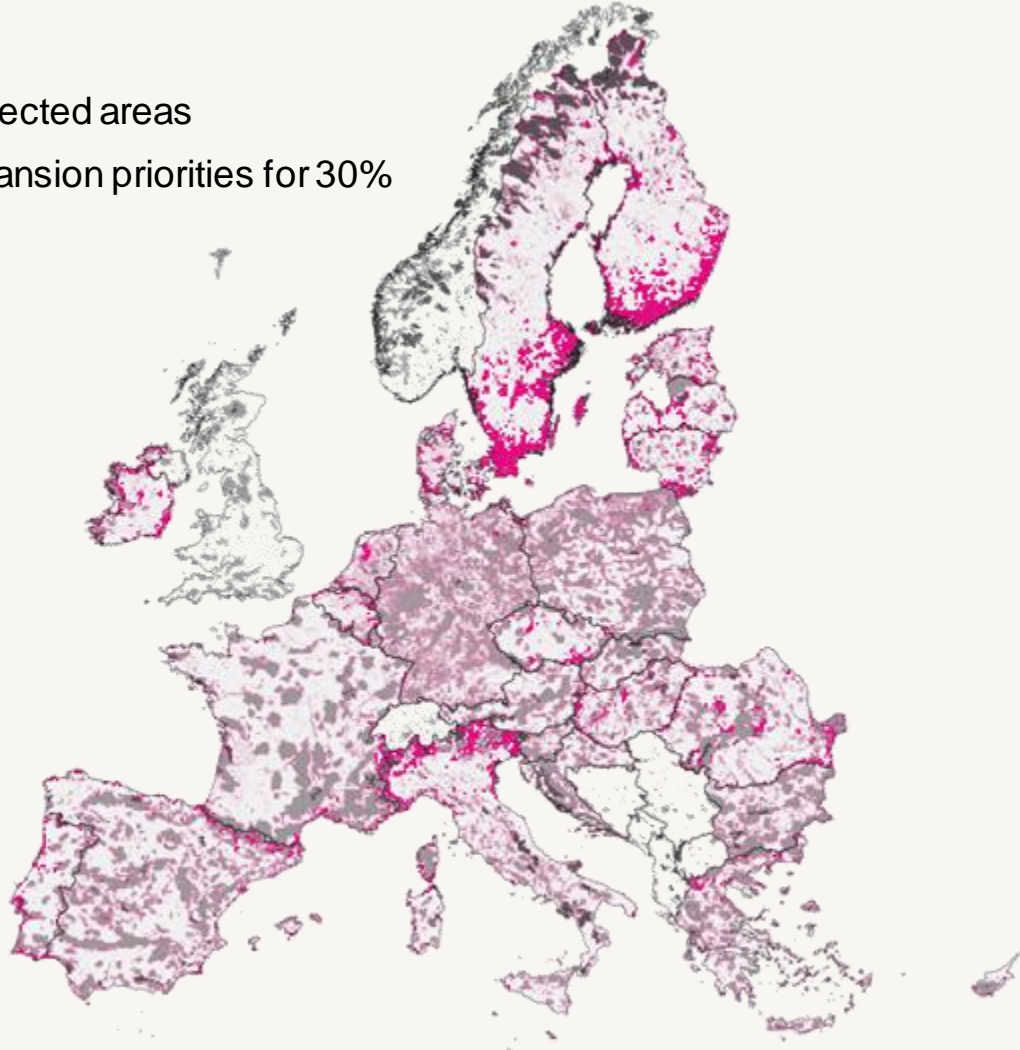# National priorities for expanding Natura 2000
Same amount of area, but lower biodiversity gains

Protected areas

Expansion priorities for 30%

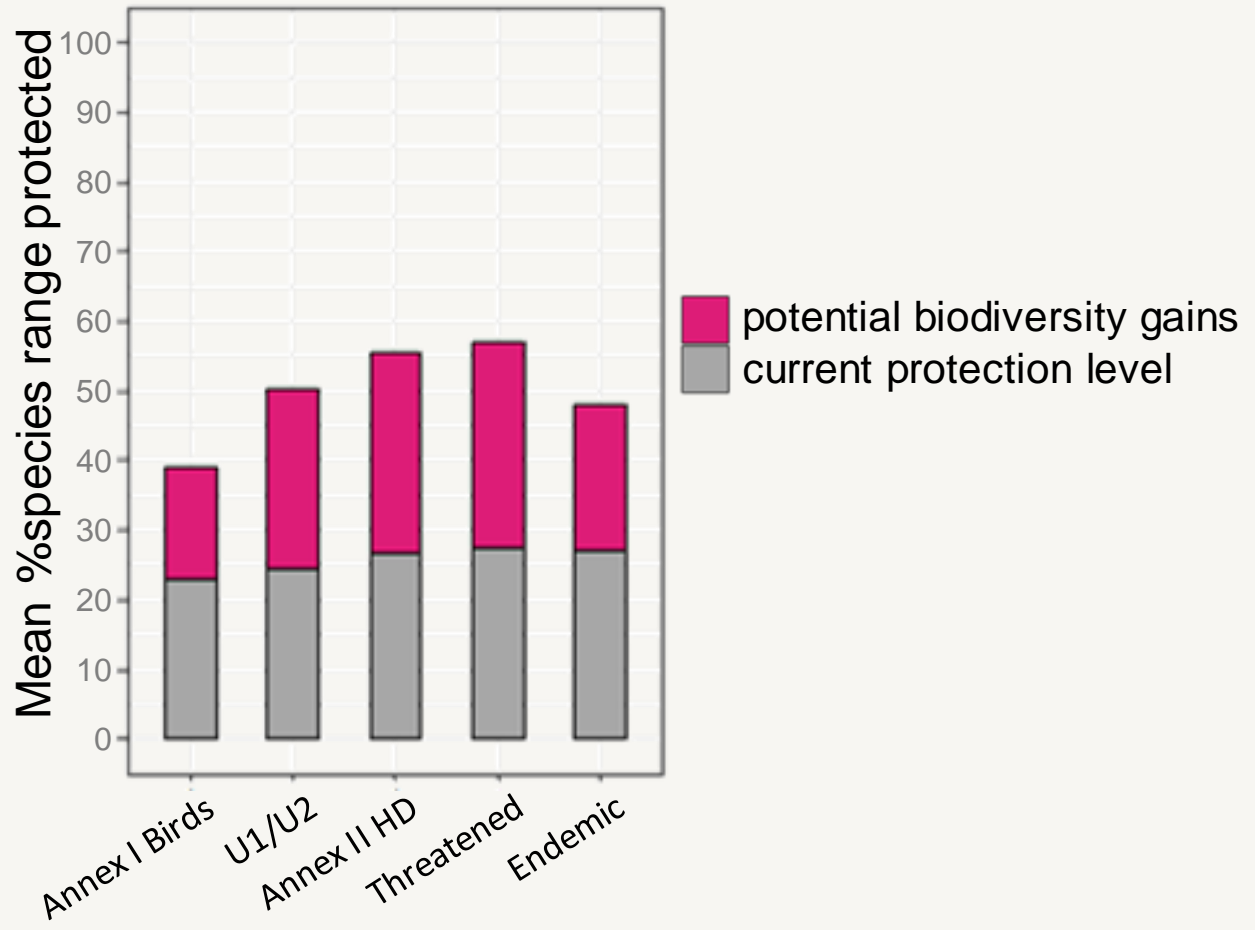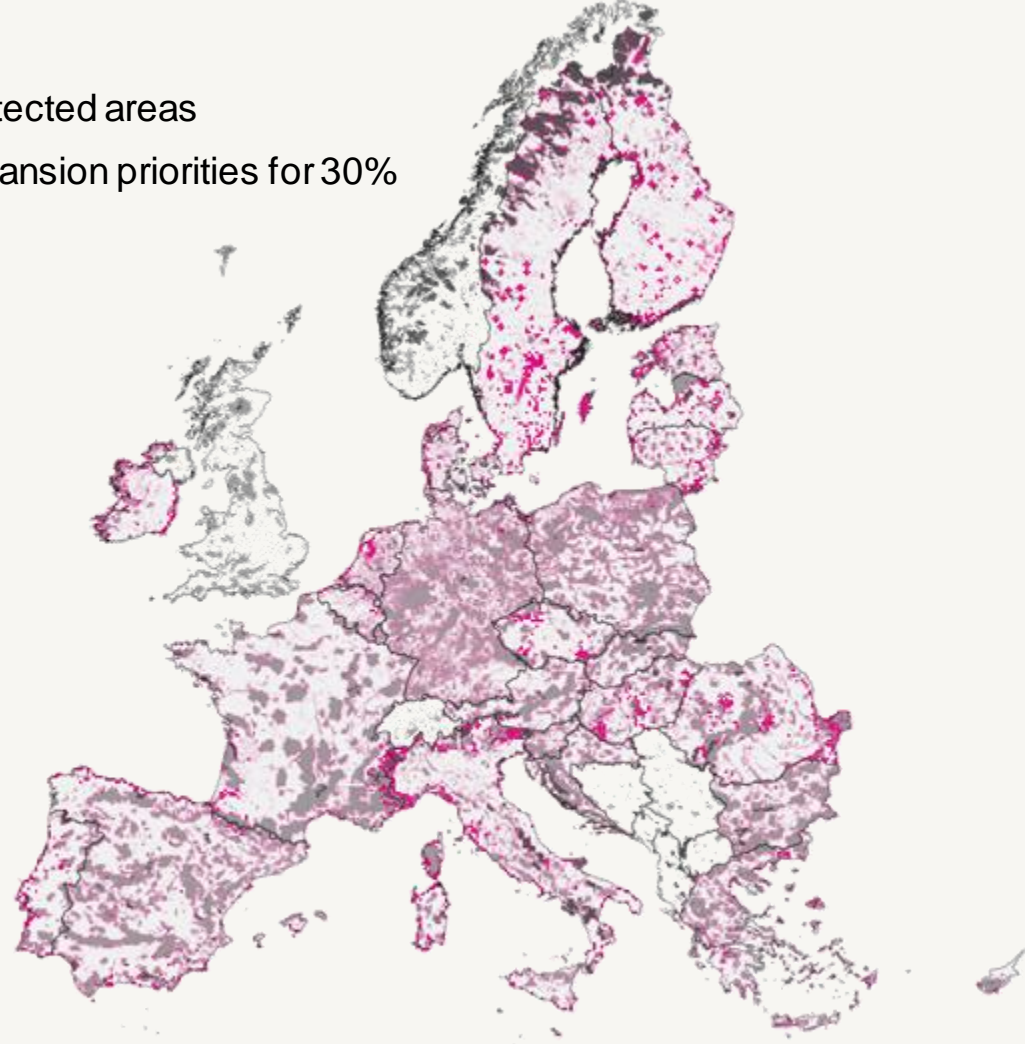

potential biodiversity gains
current protection level

EU-wide priorities with equal area shares

Maximizing biodiversity gains with equal sharing of conservation areas

Protected areas
Expansion priorities for 30%

potential biodiversity gains
current protection level

Planning at EU scale increases conservation gains

Collaboration across Member States is key to achieve best conservation outcomes
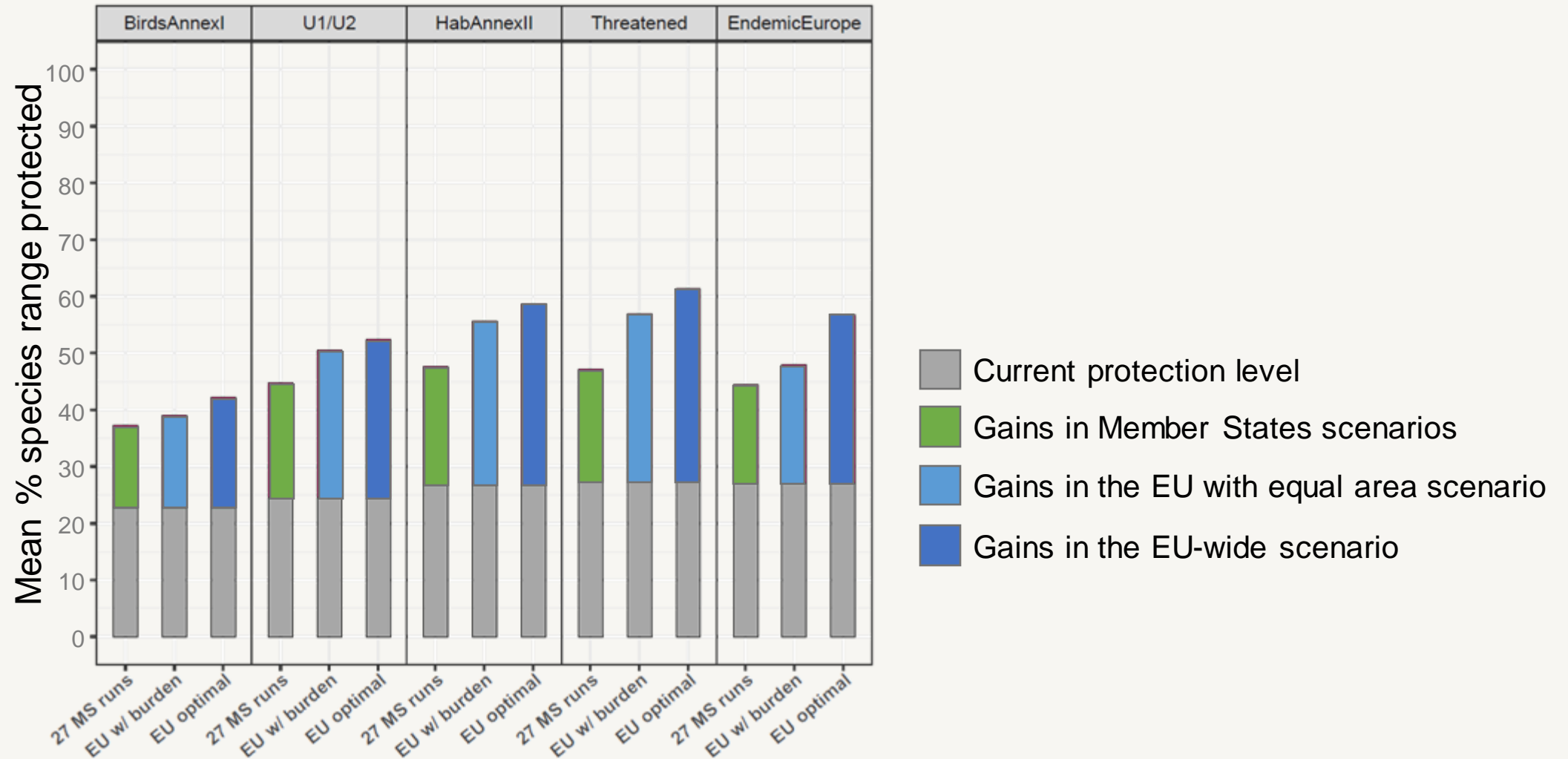
Incorporating costs and benefits to people

Costs

Nature's contributions to people

Opportunity

Cost associated with forgone (economic) opportunities from exploitation when setting aside land for conservation

Acquisition

Cost for acquiring property rights of the land

Management

Cost associated with management of conservation areas

Damage

Costs associated with damage to economic activities arising from conservation programs (e.g., livestock kill by wildlife)

Transaction

Costs associated with negotiating an economic exchange

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

Carbon sequestration

Pollination

Erosion control

Regulatory & cultural services of nature

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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?


Not final map!

Protected
Expansion
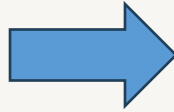
Country	Biogeographical region	Conservation priorities (ha)
PT	MED	xxxx
ES	MED	xxxx
FR	MED	xxxx
ES	ALP	xxxx
ES	ATL	xxxx

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

| Country	Biogeographical region	Pledged area (ha)
PT	MED	xxxx
ES	MED	xxxx
FR	MED	xxxx
ES	ALP	xxxx
ES	ATL	xxxx
IT	MED	xxxx

Not final map!

Protected
Expansion
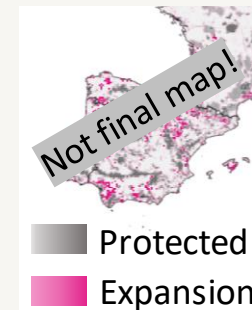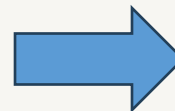
How much more area would be needed per country and biogeographic region in different scenarios?
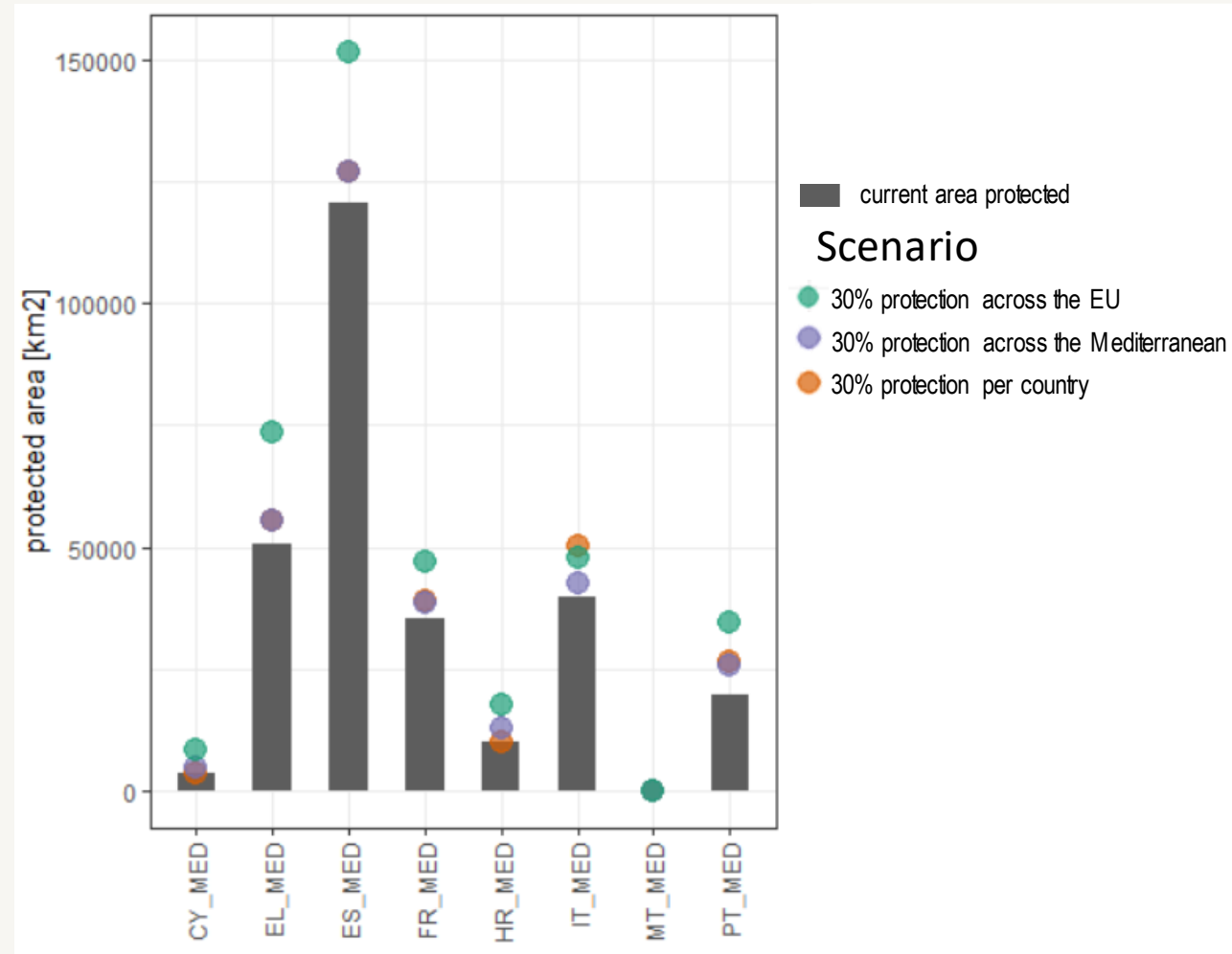
How to plan for climate change?
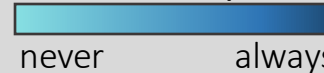

Emphasizing bioclimatic refugia

refugia

future distribution

present distribution
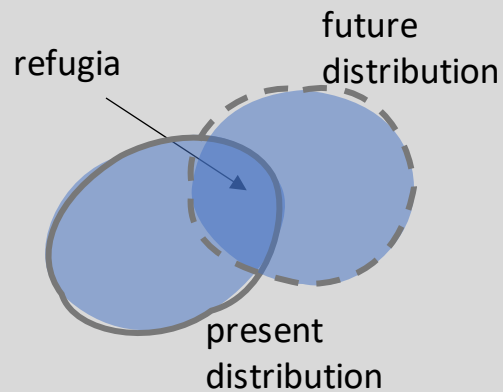
Securing areas that are good now and in the future

Finding robust solutions across alternative futures
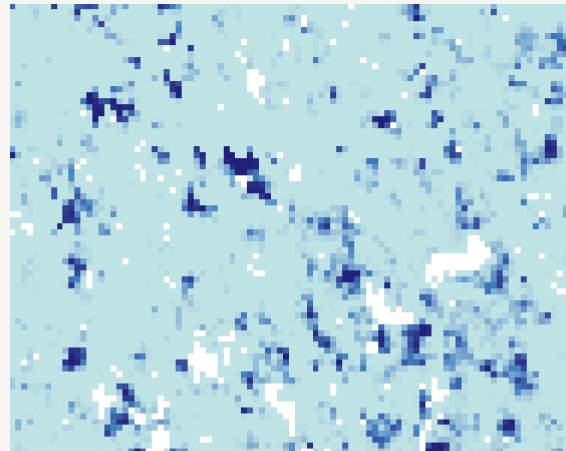
How often a priority?

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?

How can our results be the most useful?
Discussion for the Knowledge Marketplace

Targeted biodiversity features

- What habitat types, species and other aspects of biodiversity are priorities in your countries?
- What spatial design criteria (e.g. size, proximity to existing PAs) are important?

Costs and constraints

- What are the main constraints to additional designations you would like to see considered in prioritization analyses?
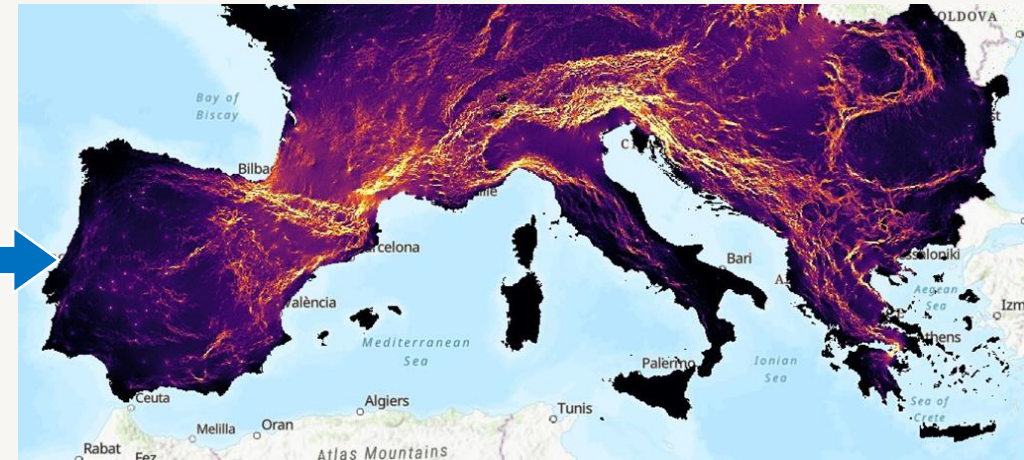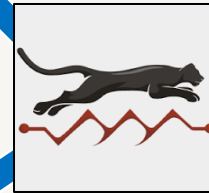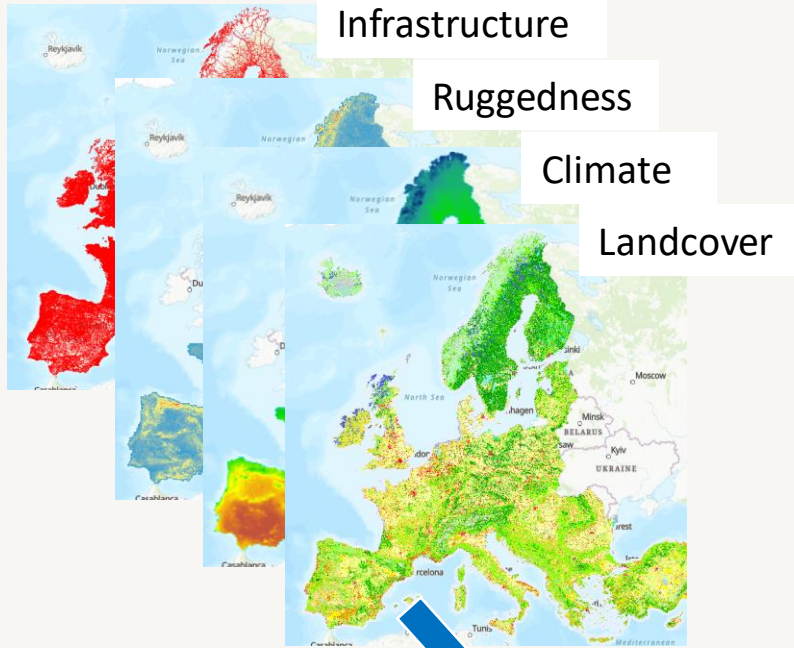
Decision support

- What data products and tools are most useful for your planning activities?

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French & Pan-European Connectivity: Preliminary Results

source: Jeremy Dertien

Connectivity Modeling

Infrastructure

Ruggedness

Climate

Landcover

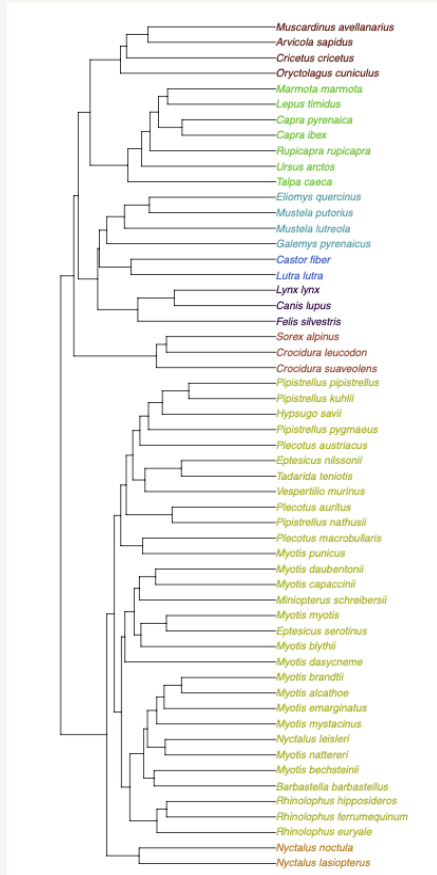Protected Areas

"Resistance Layer"
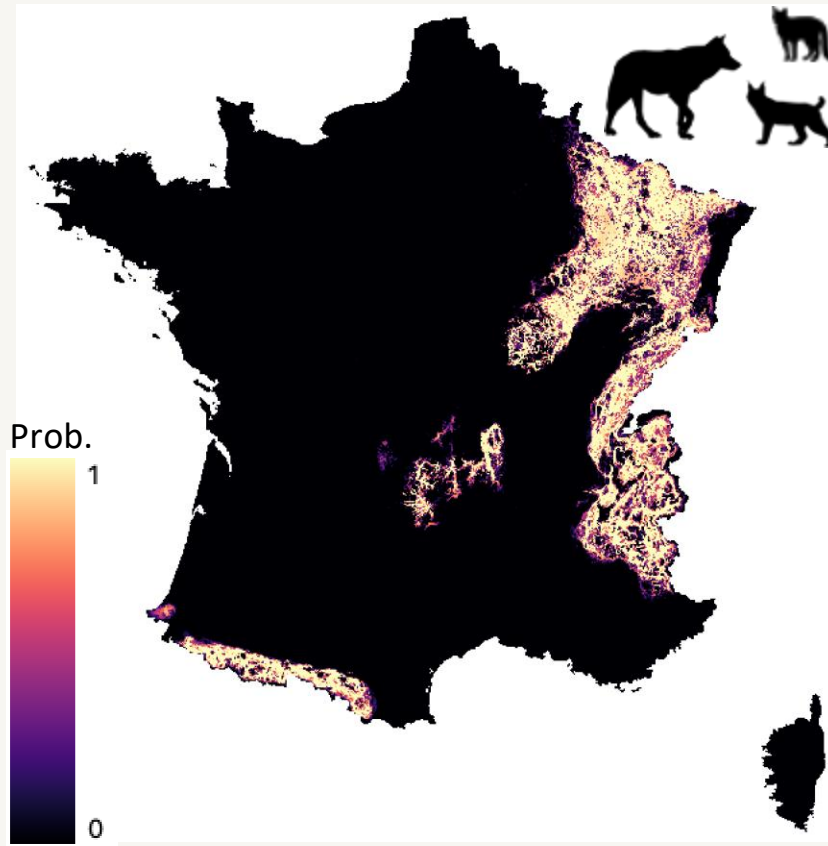
Case study France – Preliminary connectivity results

Marie-Caroline Prima and
Wilfried Thuiller (CNRS)

Functional groups for mammals

Distribution of ecological continuities (EC) per group


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# Case study France – Preliminary results

Connectivity analysis

- Low connectivity of strict protections in vertebrate species

- Different types of protections play complementary roles in landscape connectivity

- Strategic expansion of protected areas or restoration of key ecological corridors is needed

Ecological continuity current distribution for mammals

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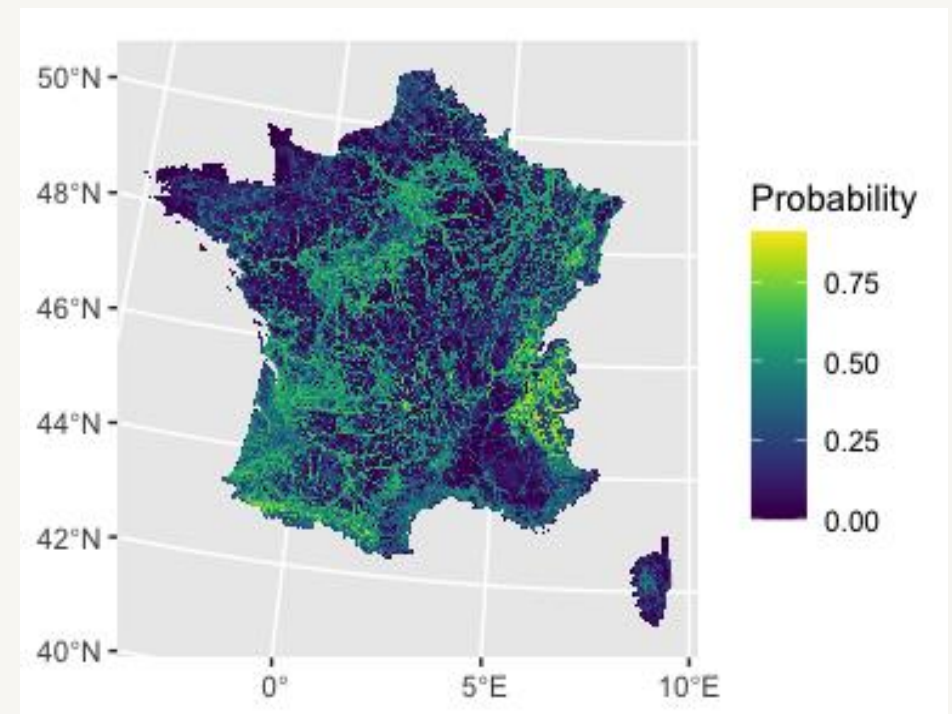
# Preliminary Circuitscape Pan-European Connectivity Results

- Wolf, brown bear, lynx and red deer
  - Similarities in pinch points of potential movement in several trans-national mountainous areas
  - Important corridors throughout the Mediterrian and Alpine bioregions
    - Carpathians, Balkans, and at the Greece/Bulgarian boundary

source: Jeremy Dertien

source: Jeremy Dertien

Brown bear
(*Ursus arctos*)

27
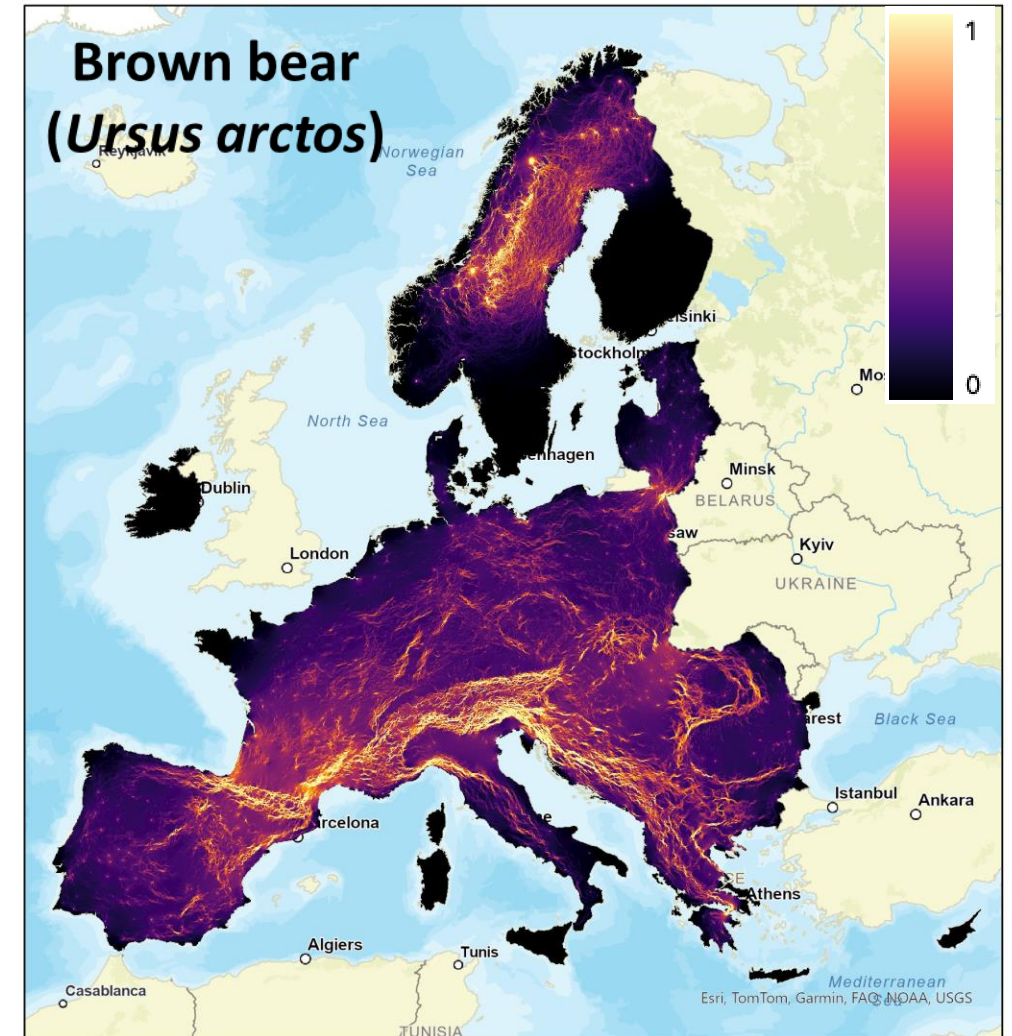
Biogeographic Preliminary Connectivity Results
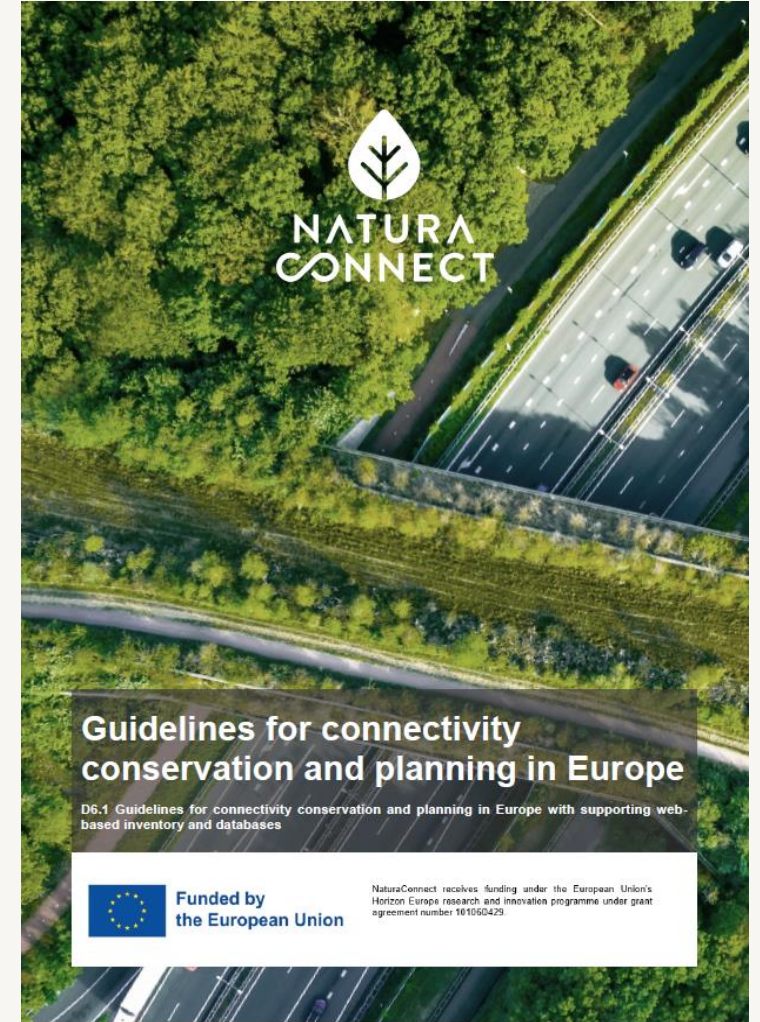
Multi-scale decision making
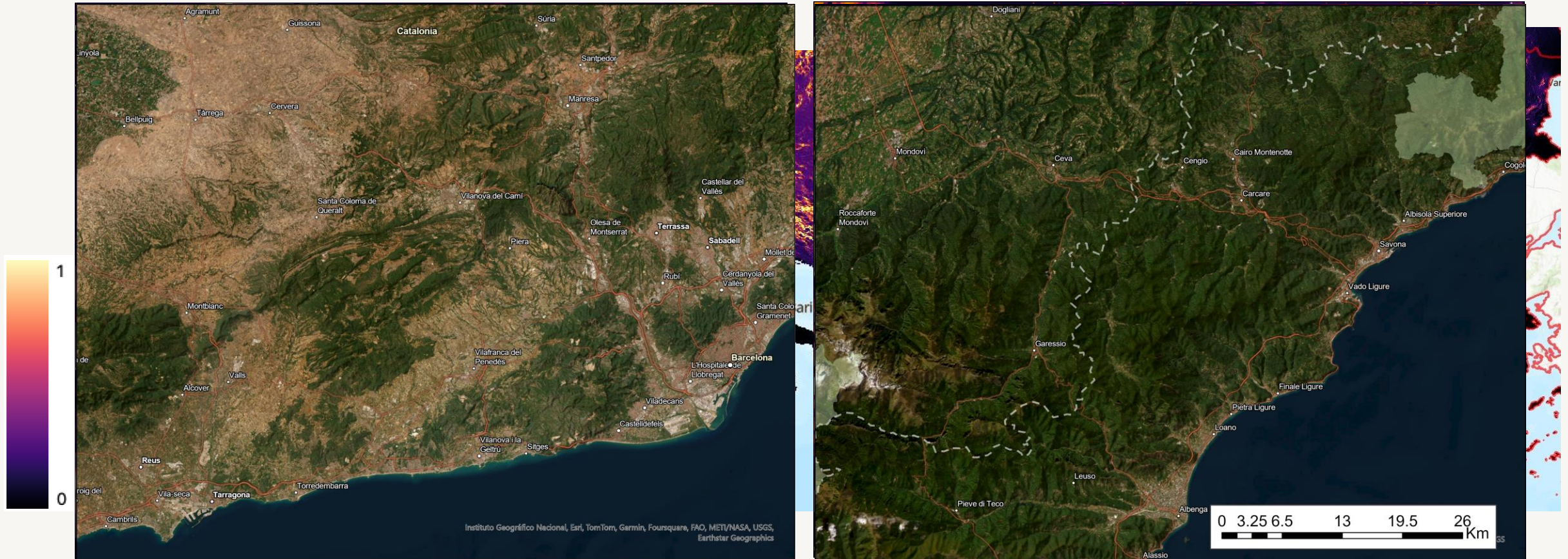
How can our results be the most useful?
Discussion for the Knowledge Marketplace

Scale and Species

- What is the spatial extent and resolution most useful for decision-making?

- What type of multi-species or multi-use priorities do you have for ecological corridors?

- What data products and tools are most useful for teaching and engagement tools?

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Guidelines for connectivity conservation and planning in Europe

D6.1 Guidelines for connectivity conservation and planning in Europe with supporting web-based inventory and databases

Funded by the European Union

NaturaConnect receives funding under the European Union's Horizon Europe research and innovation programme under grant agreement number 101060429.
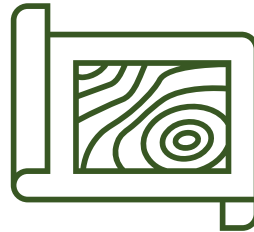
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How to get in touch

Stay informed

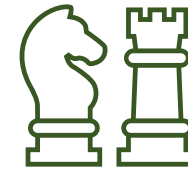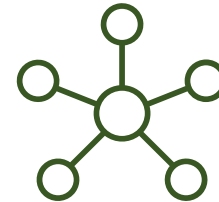Sign up to our newsletter and stakeholder community

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

Spatial data

Connectivity

Systematic Conservation Planning

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

Marketplace

Finances

Gabrielle

Discover more about our review of private, public and blended **funding for conservation**

Connectivity

Jeremy

Maps & chat
Explore connectivity maps and assist with priorities

30% and 10% details for countries

Louise

Interactive software explore priority maps from our analysis

Help us develop the tool to cater your needs by trying our prototype

Come talk to us!

We hope to collaborate with you over the next few years

contact us anytime:

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naturaconnect@iiasa.ac.at

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