

Finding space for conservation in Europe

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

Piero Visconti, Louise O'Connor

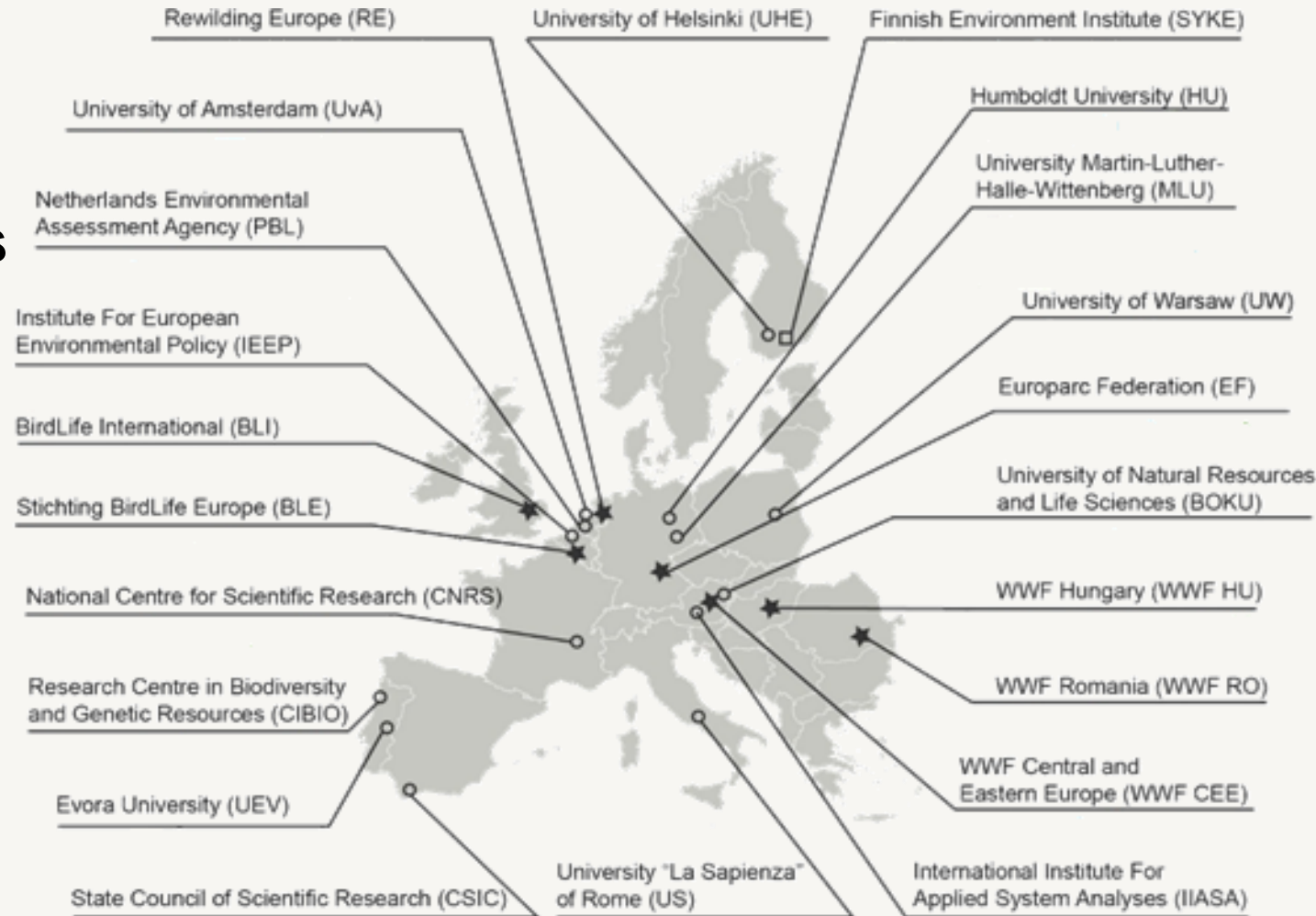
4th Boreal biogeographic seminar
October 10th, 2023

Who we are

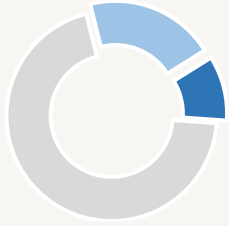
Key ambition of NaturaConnect:
co-create with key decision-makers
and stakeholders from EU Member
States **an ecologically**
representative, resilient and well-
connected network of conserved
areas

15 Research organisations

7 National agencies & conservation NGOs



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**



Include **restoration on 20%** of lands by actively or passively assisting towards **good condition**

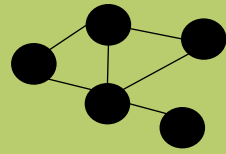


Facilitate ecological corridors and support sustainable land management, while **increasing resilience** through climate mitigation and adaptation



Natura 2000 network of protected areas

Comprehensive
Adequate
Resilient
Effective



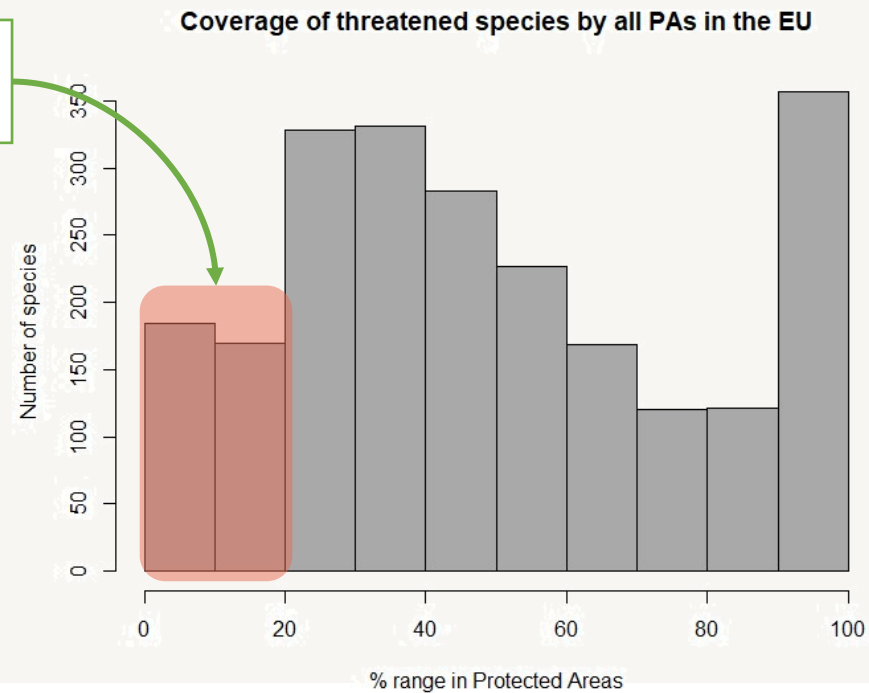
Top 5% priorities for expanding Natura 2000

O'Connor et al., 2021 (*Science*)

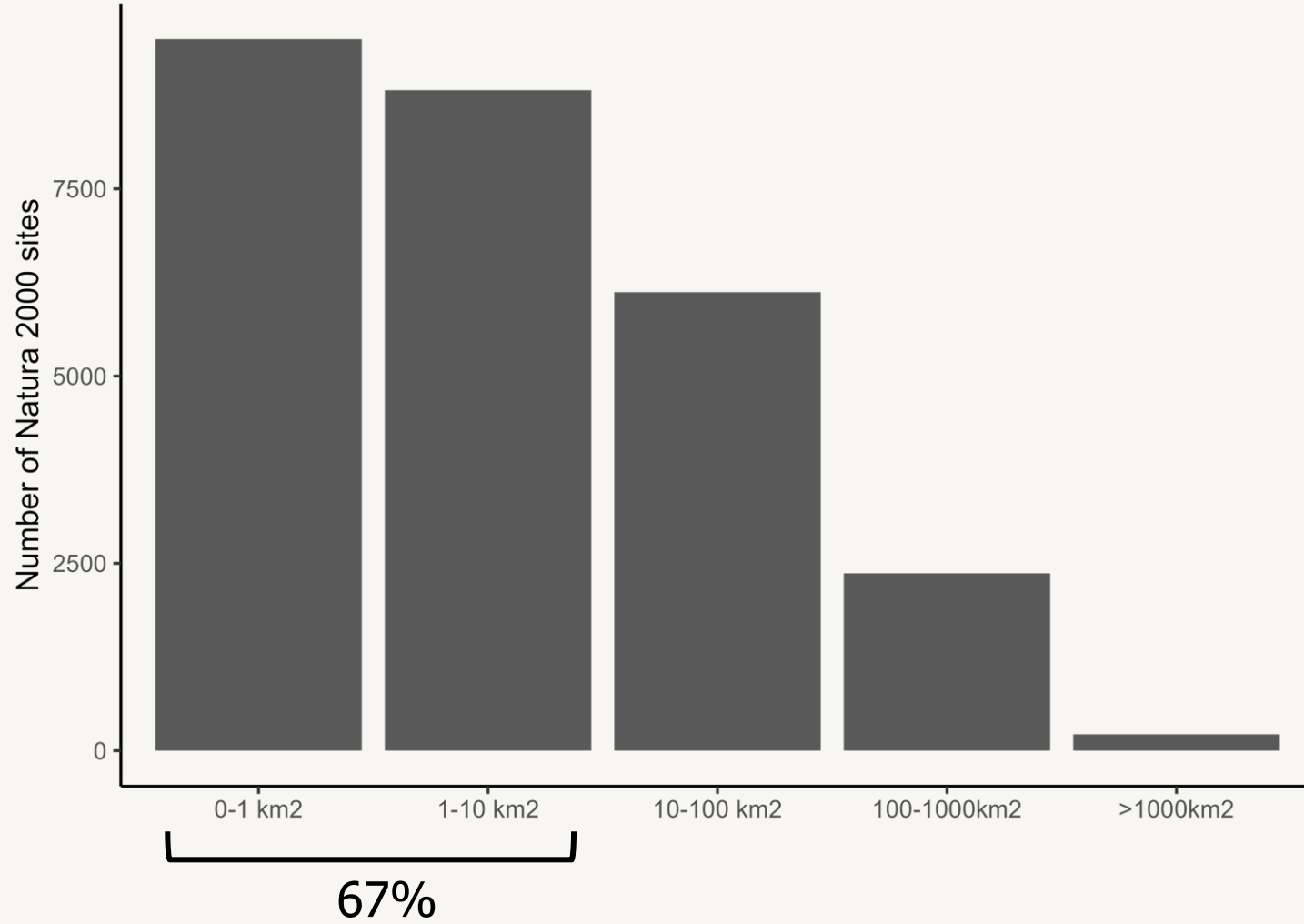
Representativeness of the EU PA network

- Protected Areas should be part of a « Truly Coherent Trans-European Nature Network »
- Having species and habitats well represented in the PA network is necessary to reach coherence
- However, the current network of PAs does not cover well all species and habitats in need of protection:

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



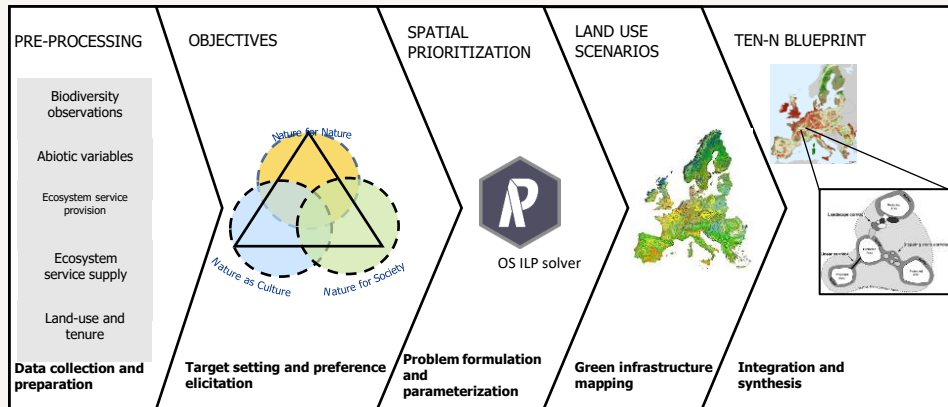
Adequacy – size and fragmentation



NaturaConnect outputs

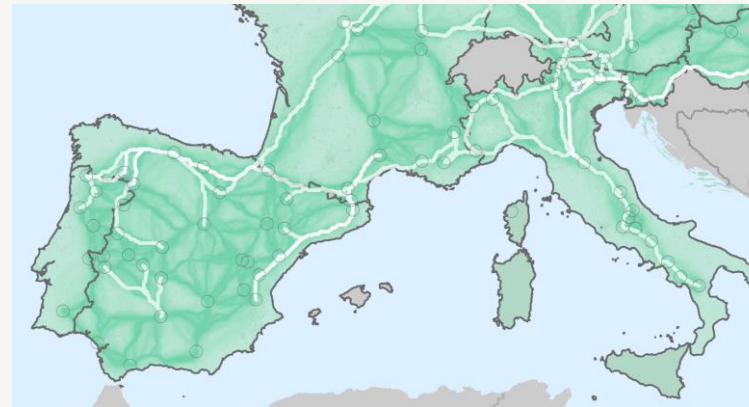
I

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



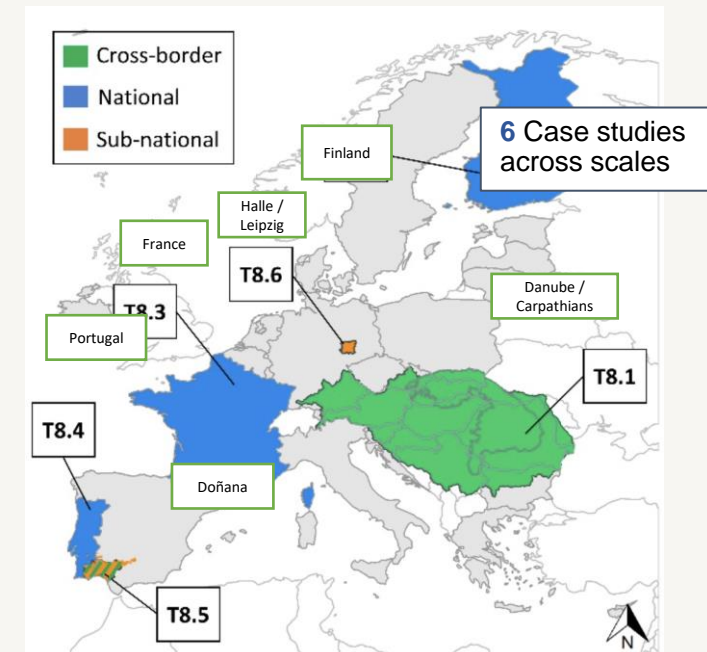
II

Support **protecting and restoring corridors, enhancing connectivity**

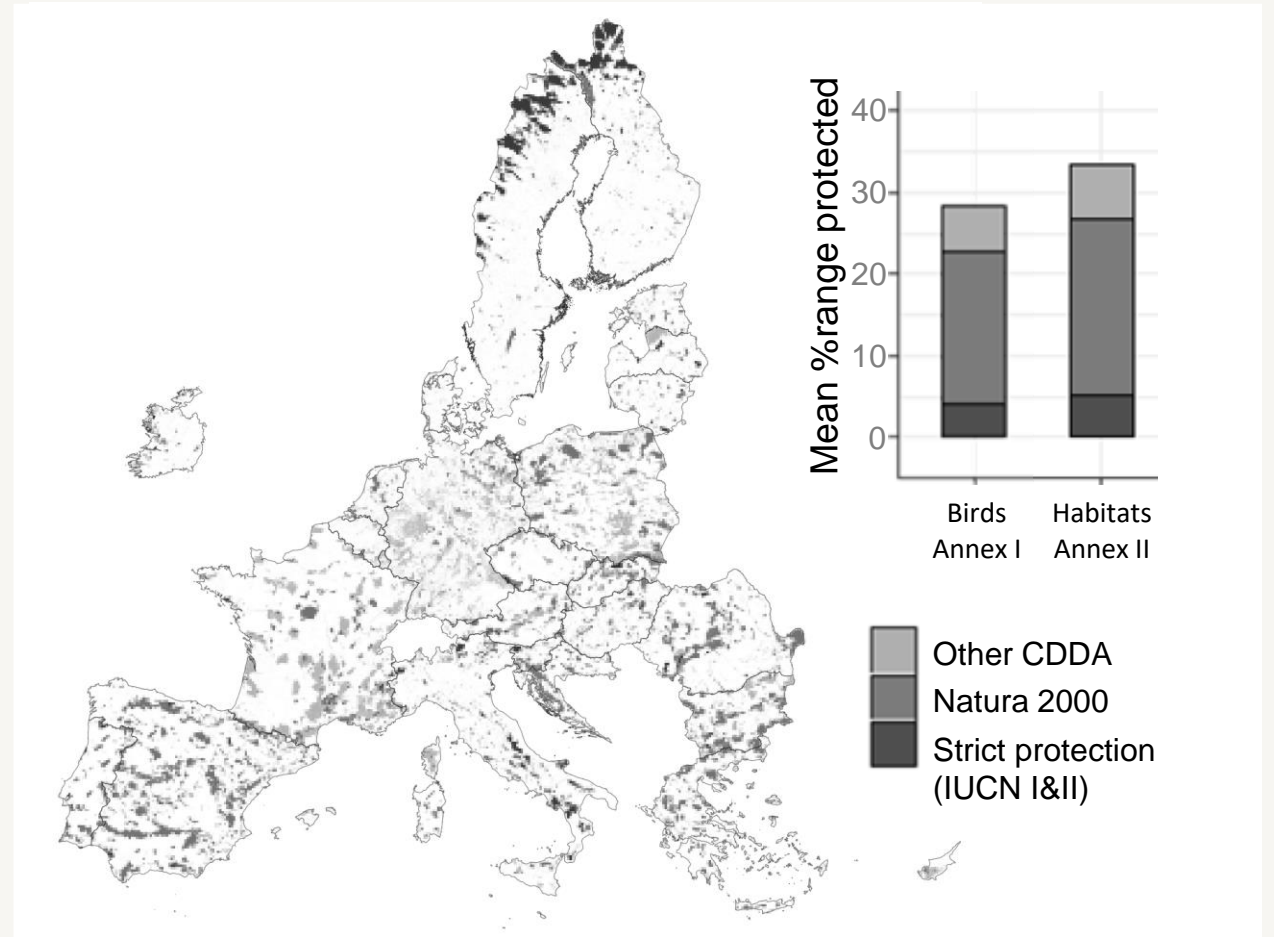


III

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







Where to conserve, restore and sustainably manage ecosystems in Europe?

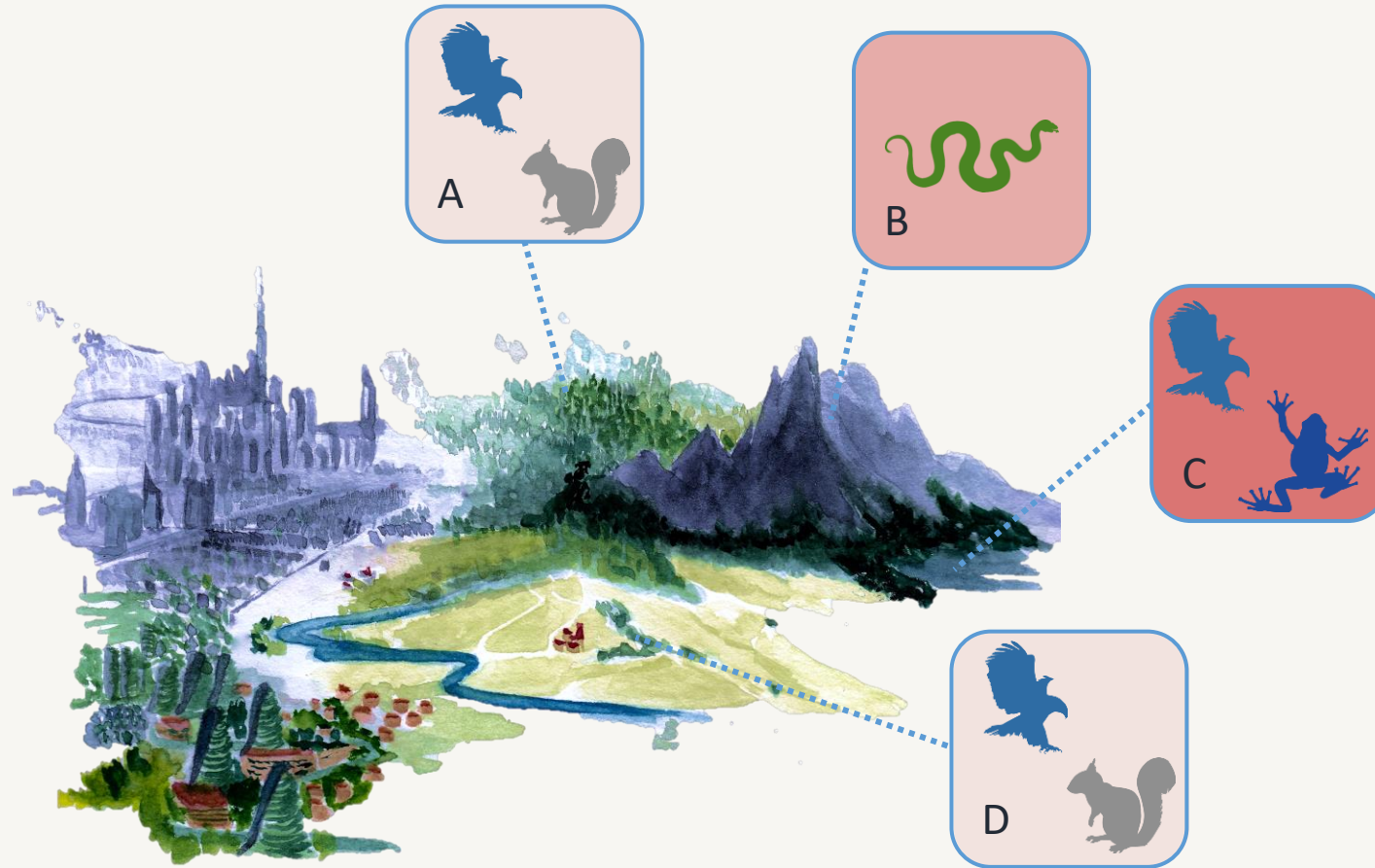


European protected areas cover ~26% of land, (including ~18% by Natura2000 sites)





How to identify priority areas for conservation?

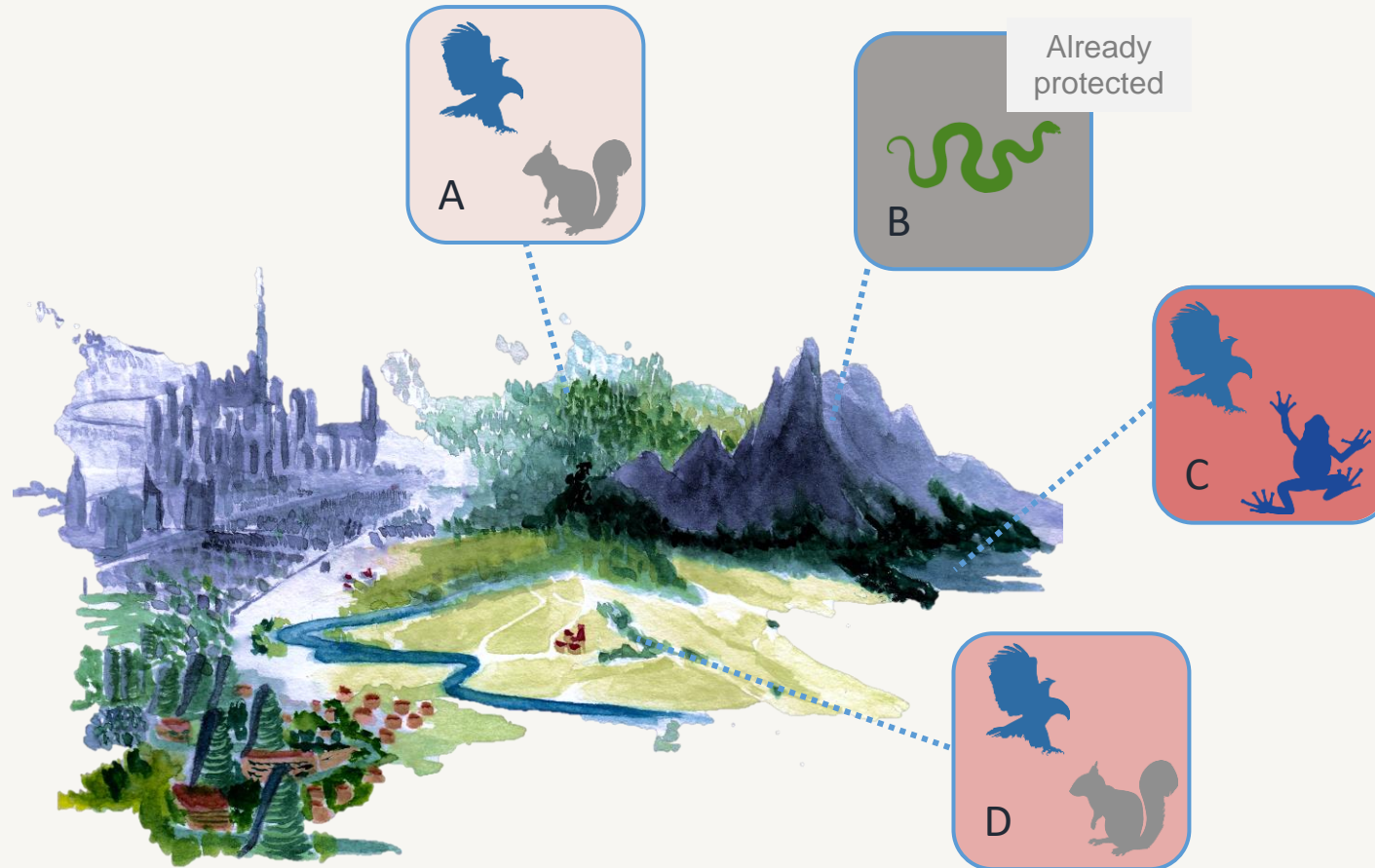
Spatial conservation prioritization: a tool to maximize gains given constrained resources

| Number of occurrences: | |
|---|---|
|  | 3 |
|  | 2 |
|  | 1 |
|  | 1 |







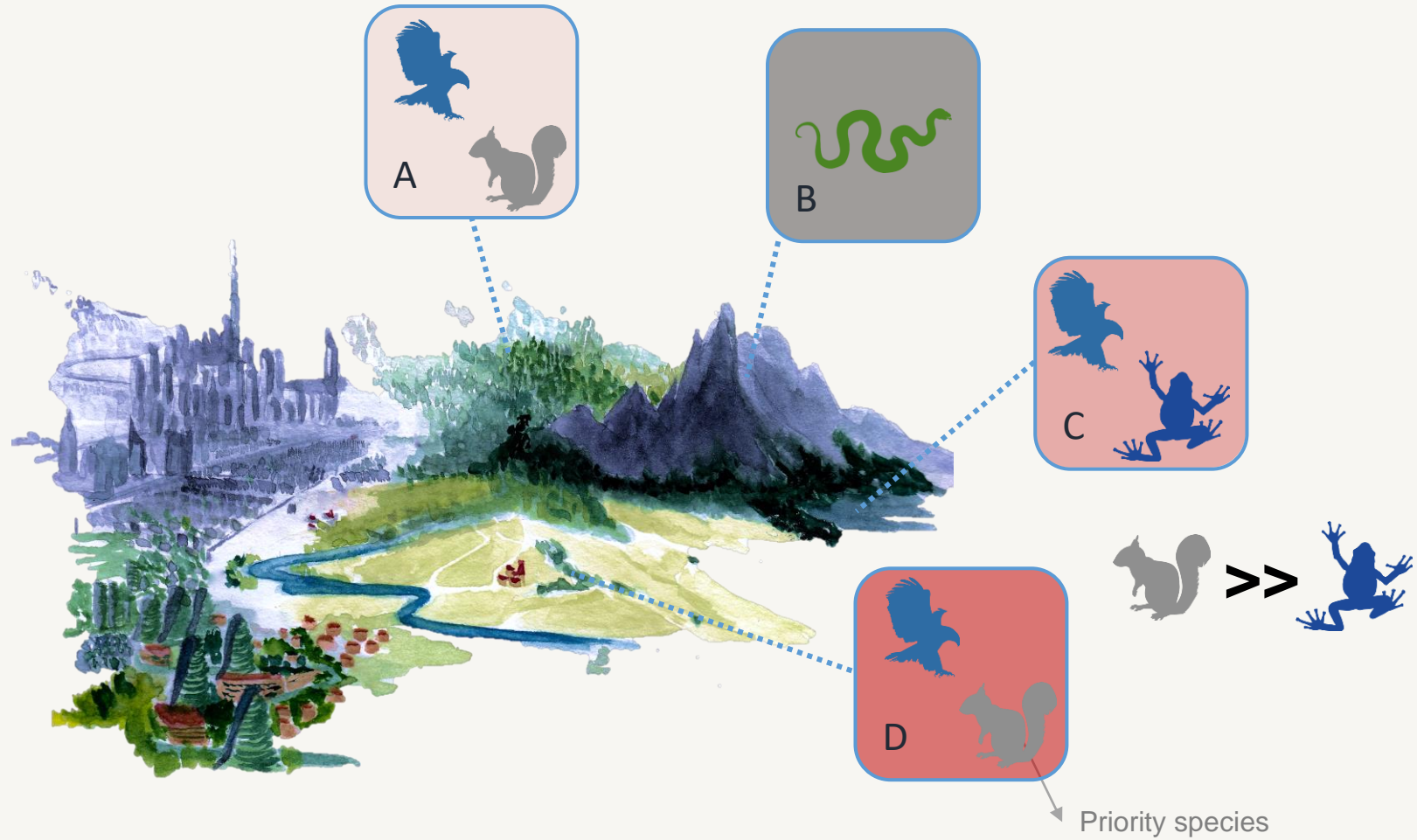
Priorities change depending on... what is protected

| Number of occurrences: | |
|---|---|
|  | 3 |
|  | 2 |
|  | 1 |
|  | 1 |






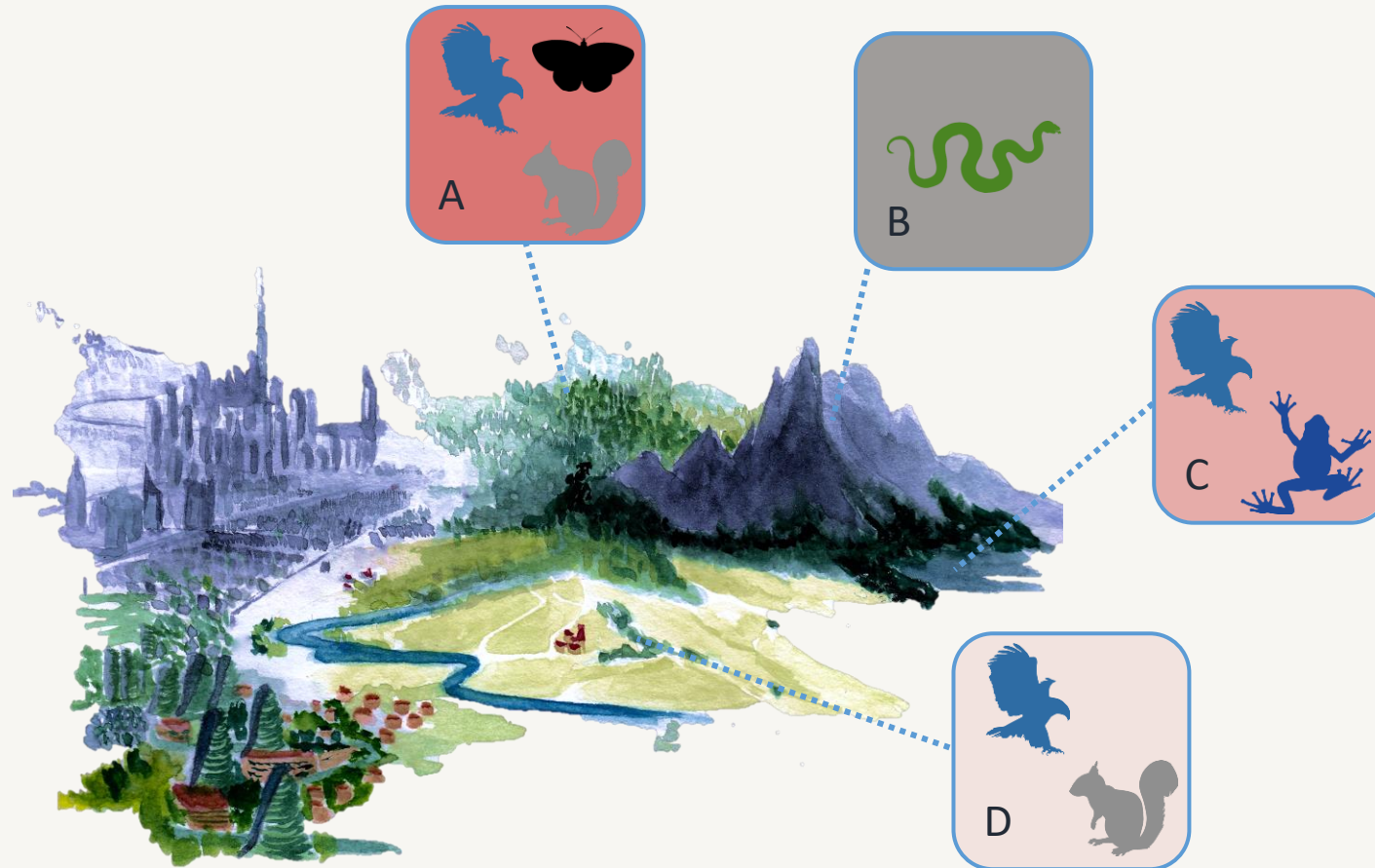
Priorities change depending on... what we value

| Number of occurrences: | |
|---|---|
|  | 3 |
|  | 2 |
|  | 1 |
|  | 1 |




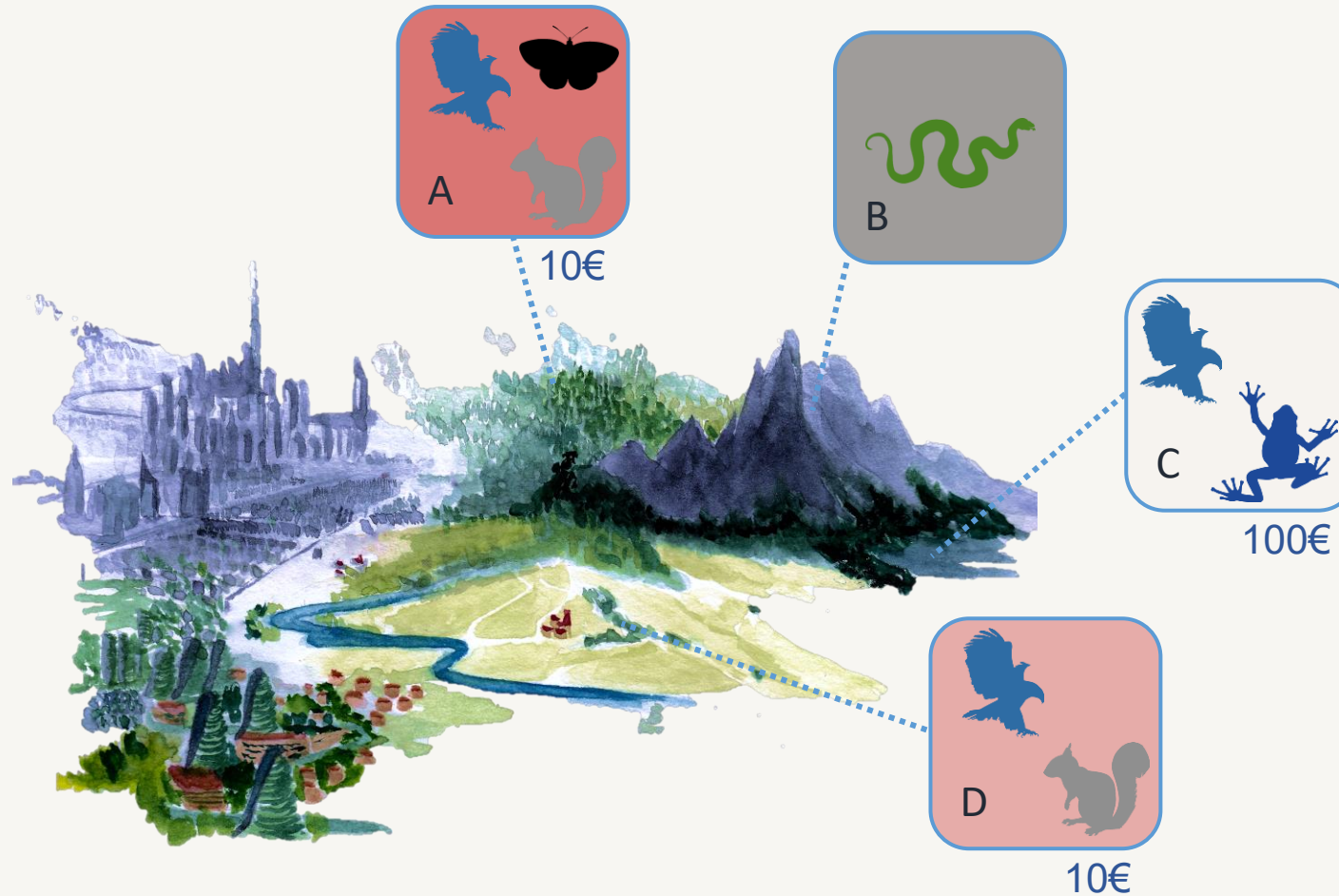
Priorities change depending on... species included

| Number of occurrences: | |
|---|---|
|  | 3 |
|  | 2 |
|  | 1 |
|  | 1 |
|  | 1 |



Priorities change depending on... costs

| Number of occurrences: | |
|---|---|
|  | 3 |
|  | 2 |
|  | 1 |
|  | 1 |
|  | 1 |



How to identify priority areas for conservation?



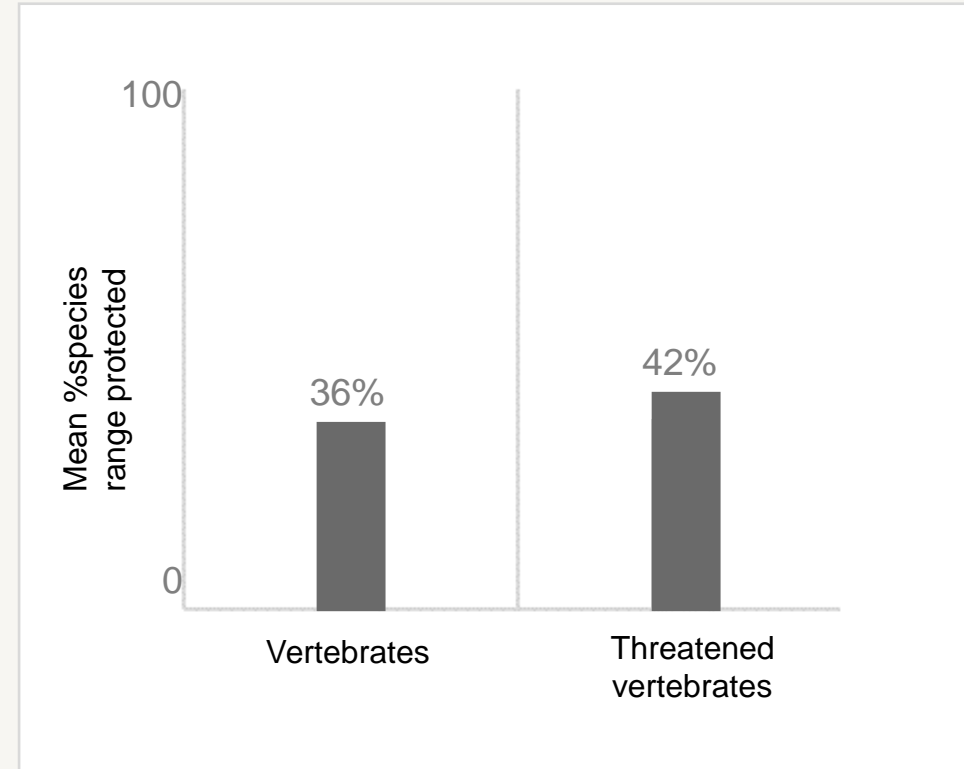
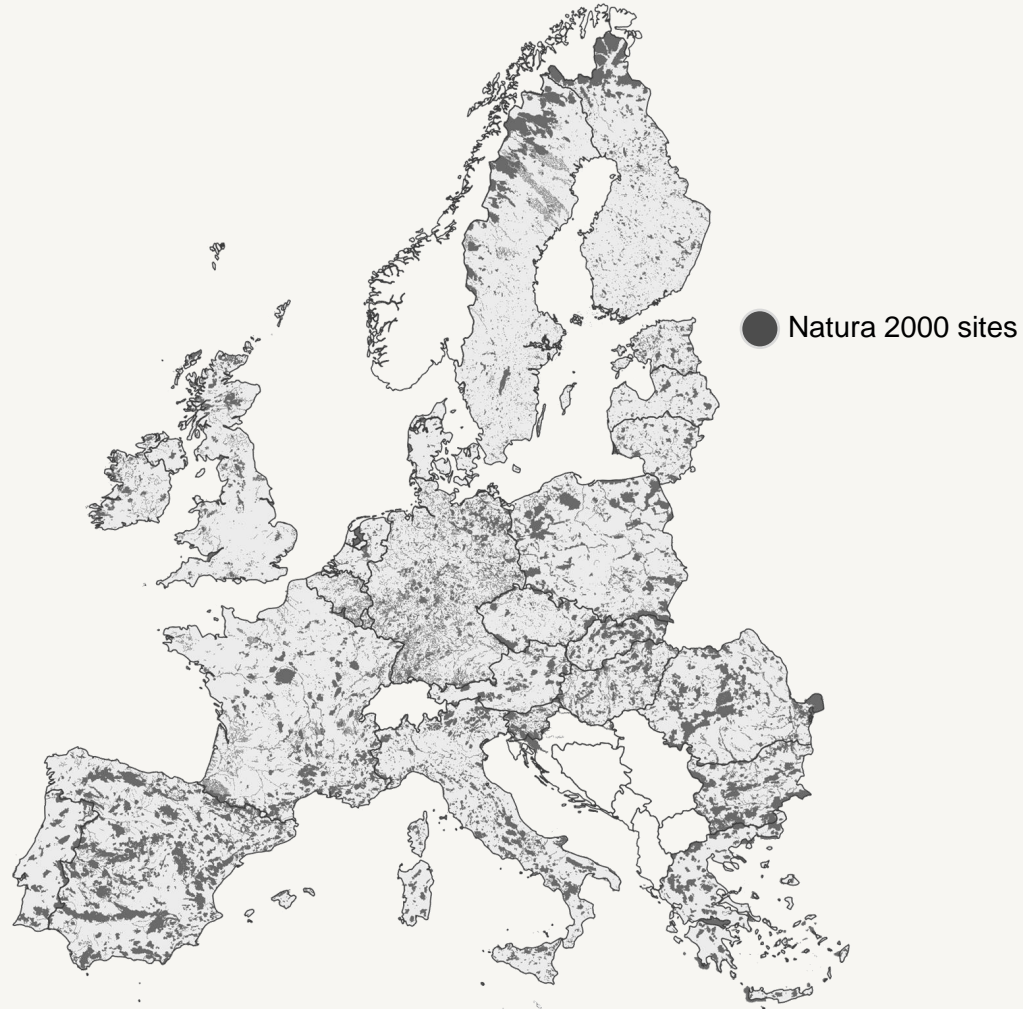
prioritizr/prioritizr

Systematic conservation prioritization in R

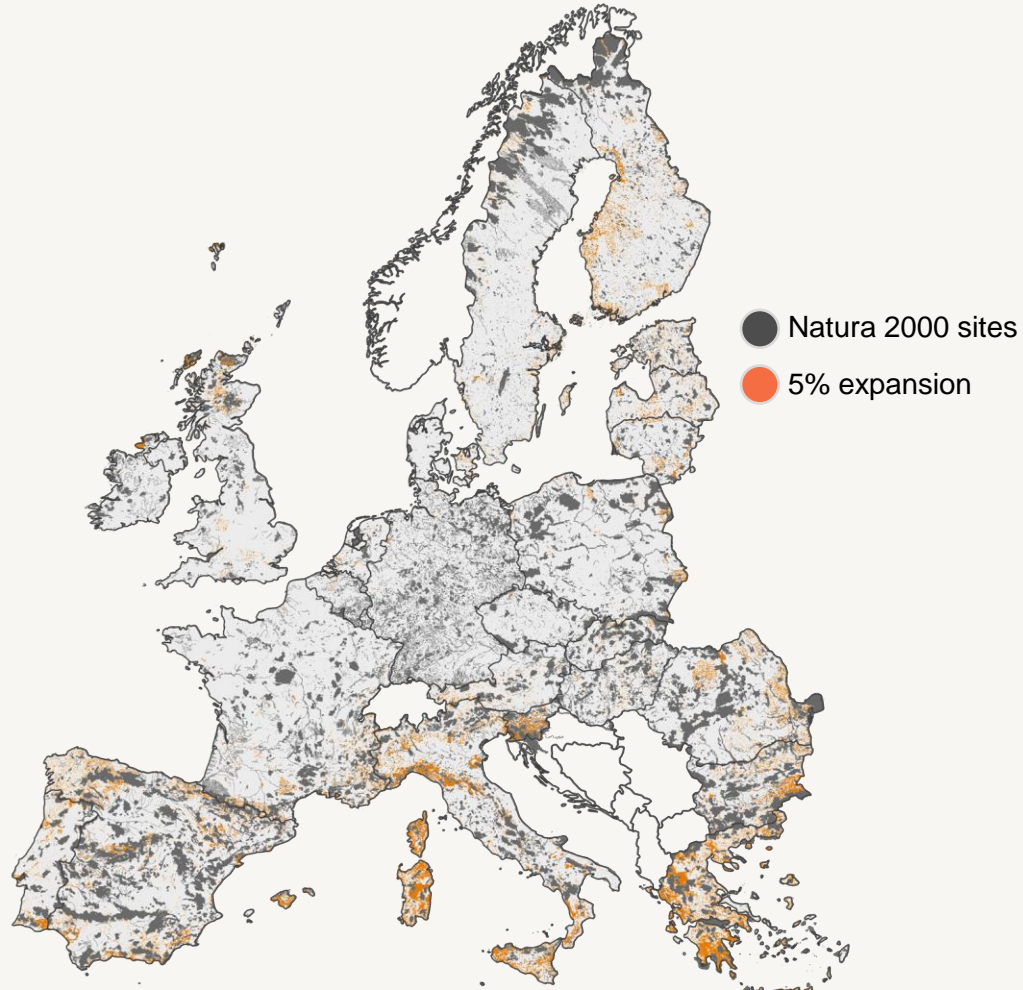


MARXAN
conservation solutions

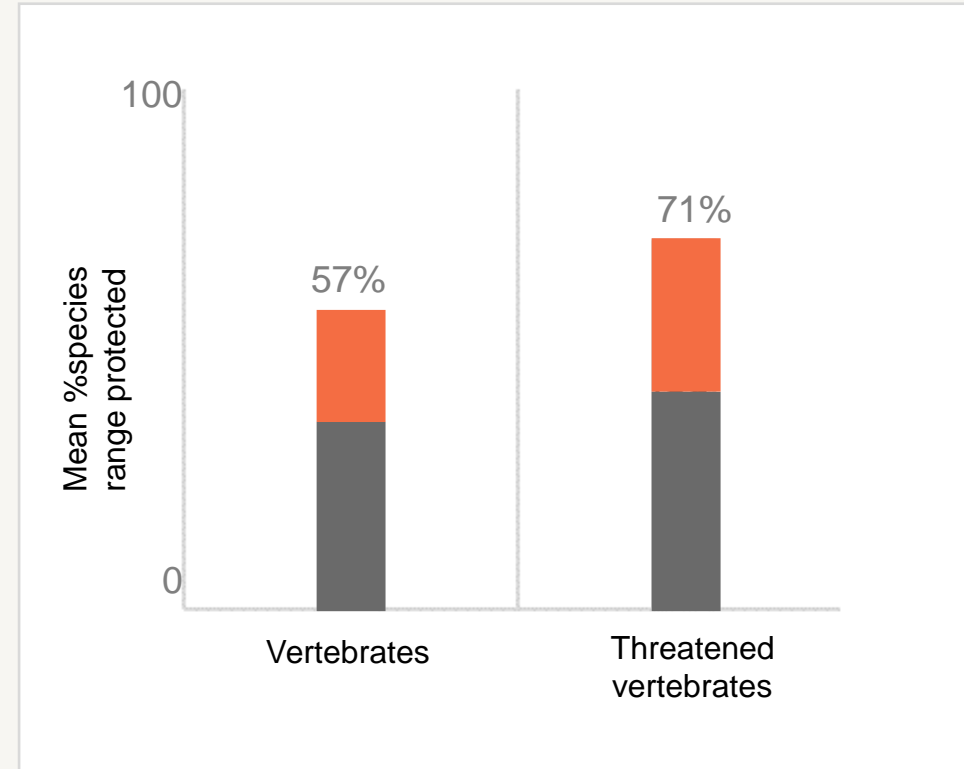
Large conservation gains are possible in few areas



Large conservation gains are possible in few areas

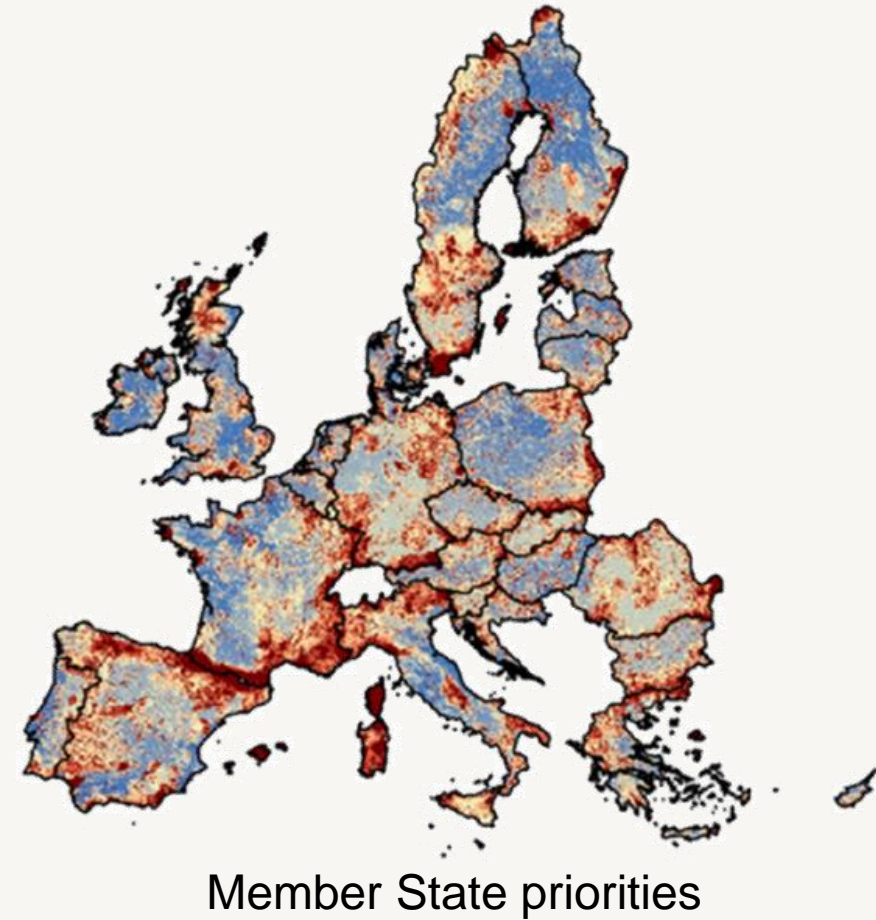
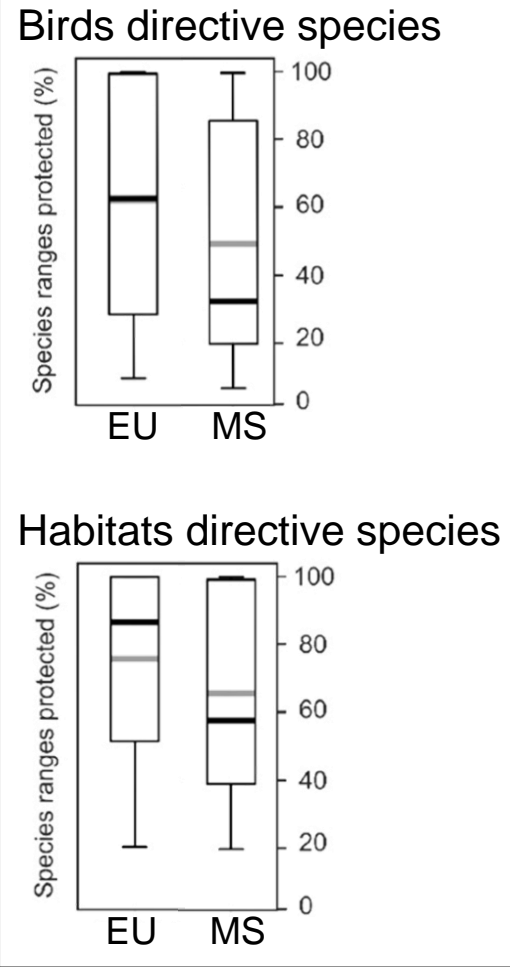
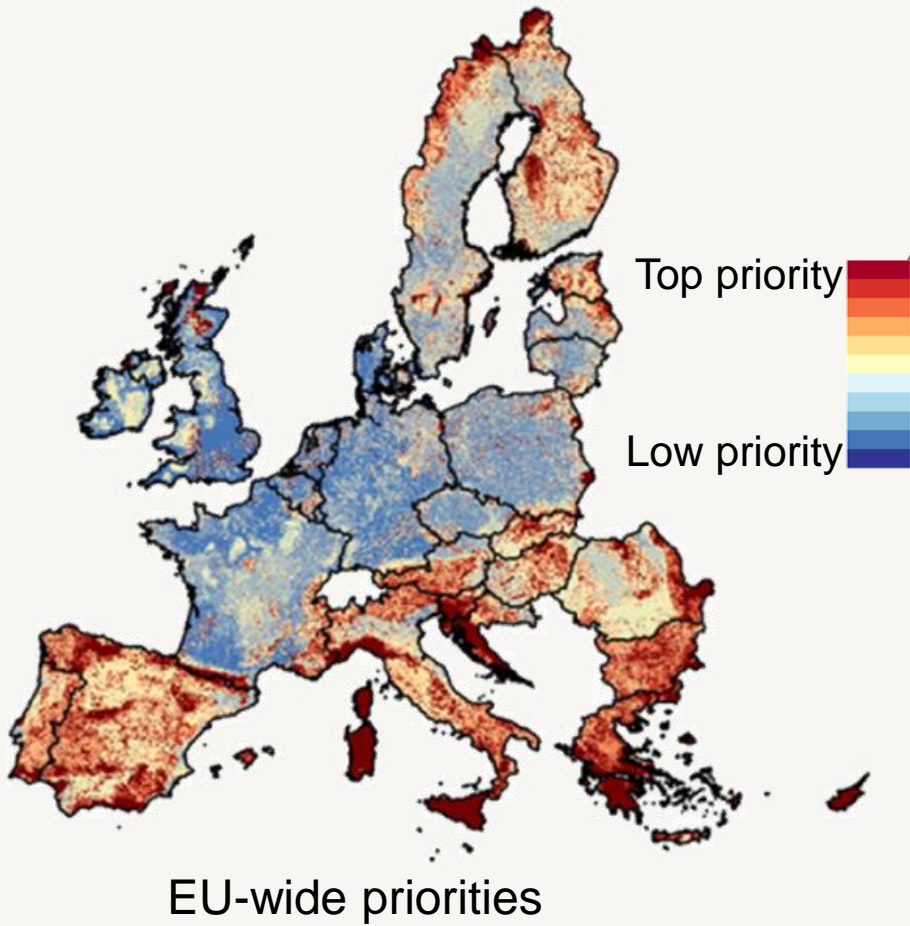


5% expansion of Natura 2000 network when focusing on terrestrial vertebrates

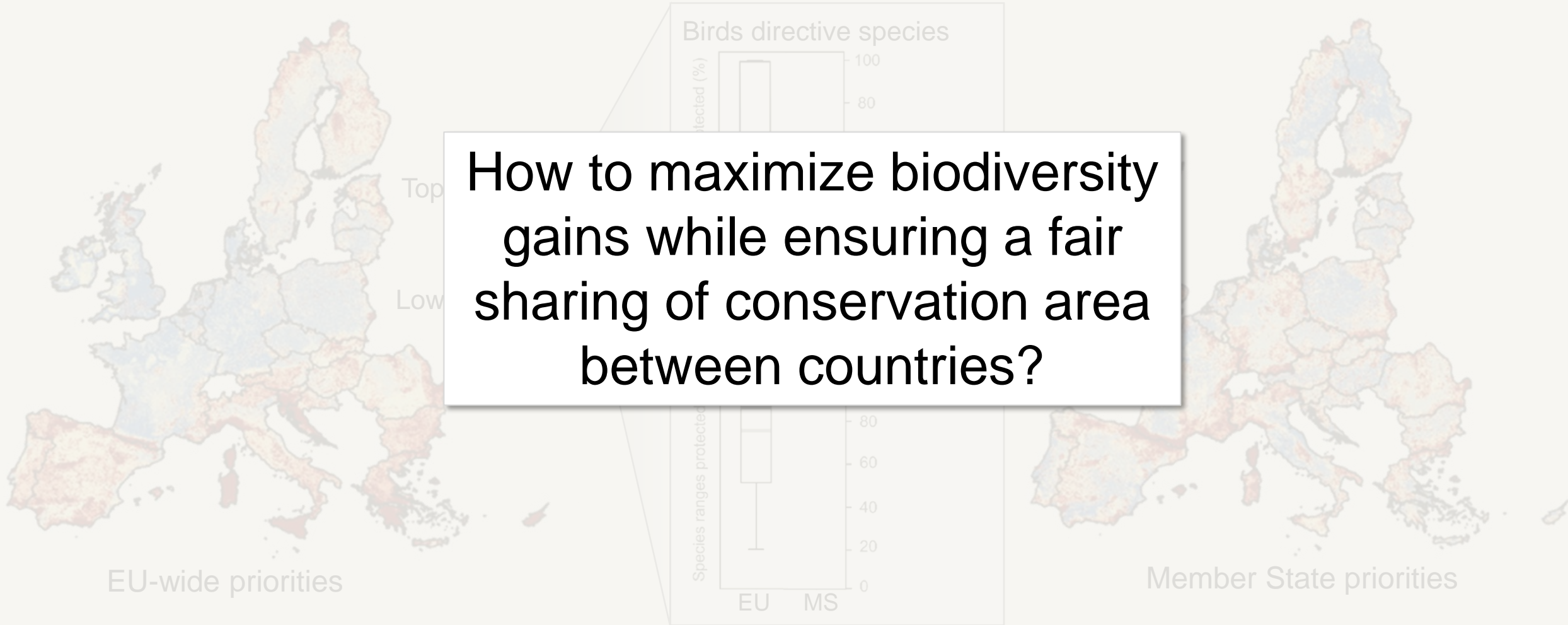


Just a small amount of protected area expansion **in the right places** can make a big difference!

Planning at the European scale is more cost-effective



Planning at the European scale is more cost-effective




What are we planning for?

Species and Habitats in Articles 12 and 17


 mammals

 birds

 reptiles

 amphibians

 plants

 arthropods



Threatened species and ecosystems




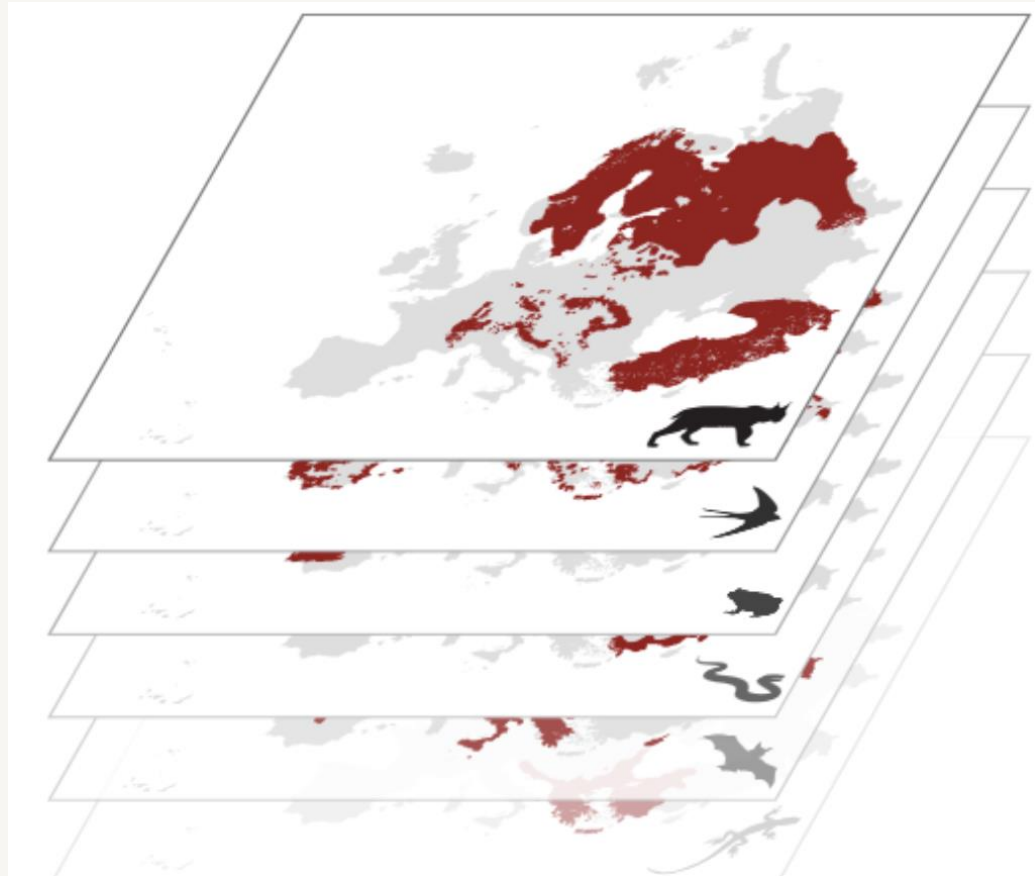
Other important ecosystems



Carbon sequestration

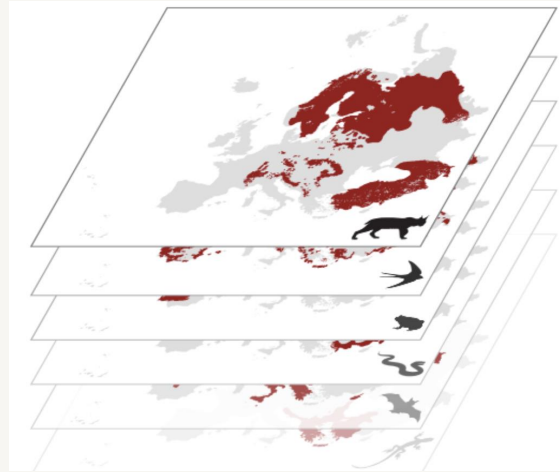
Primary and old-growth forests


Others? 

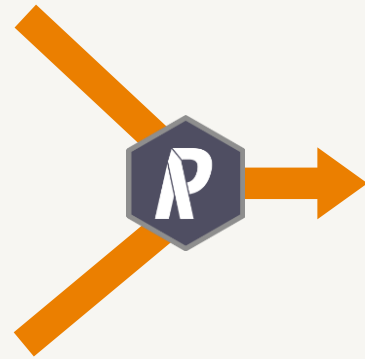


Methods for preliminary analysis

Species & Habitats of conservation concern



- + **Targets**
how much is enough?
- + **Weights**
how important is it to protect each species? 



Scenarios for protected area expansion

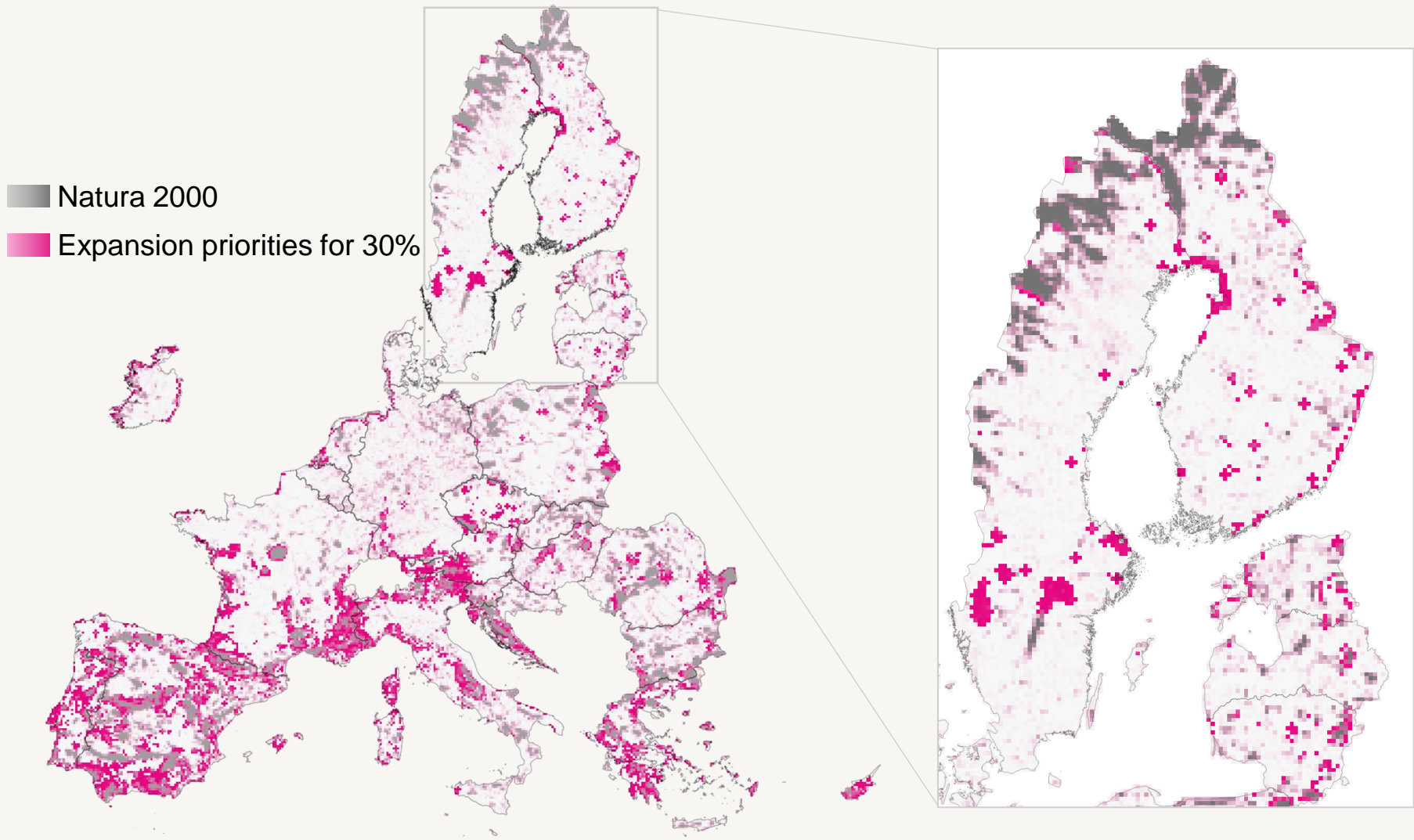


- EU-wide priorities
- Member State priorities
- EU-wide with equal area shares between countries



EU-wide priorities for expanding Natura 2000

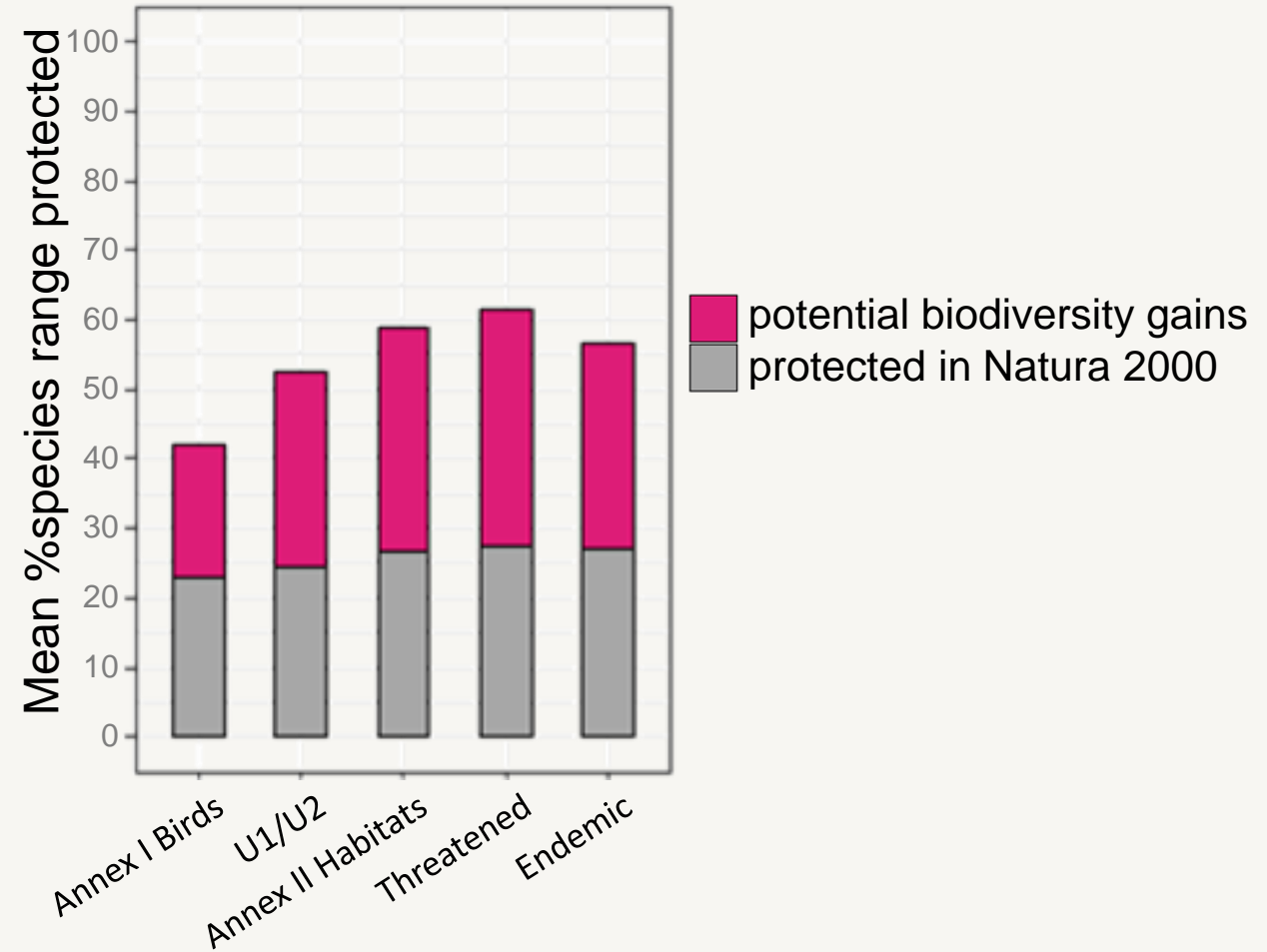
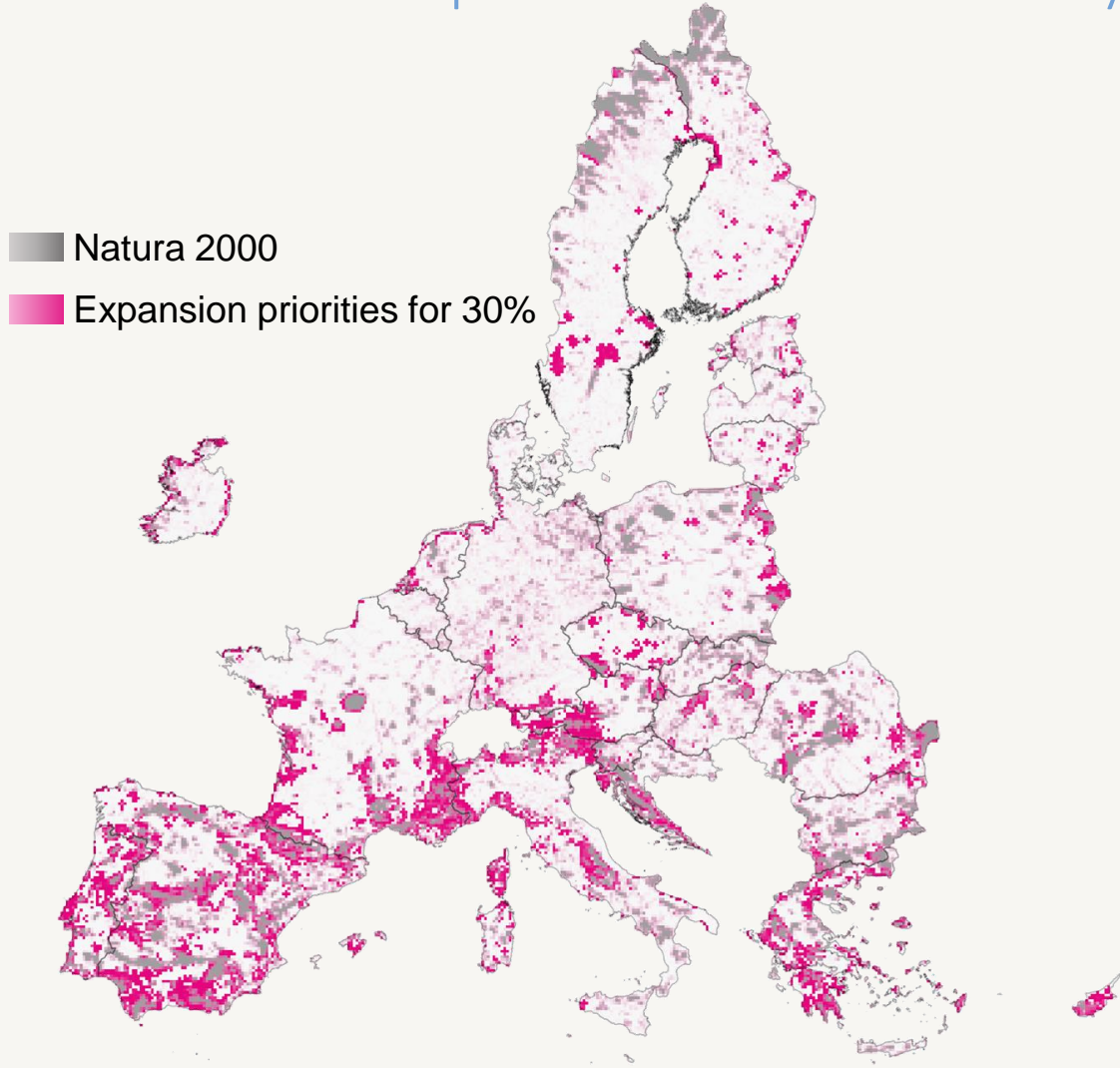
EU-wide priorities for biodiversity are unevenly distributed across countries





EU-wide priorities for expanding Natura 2000

EU-wide priorities for biodiversity are unevenly distributed across countries

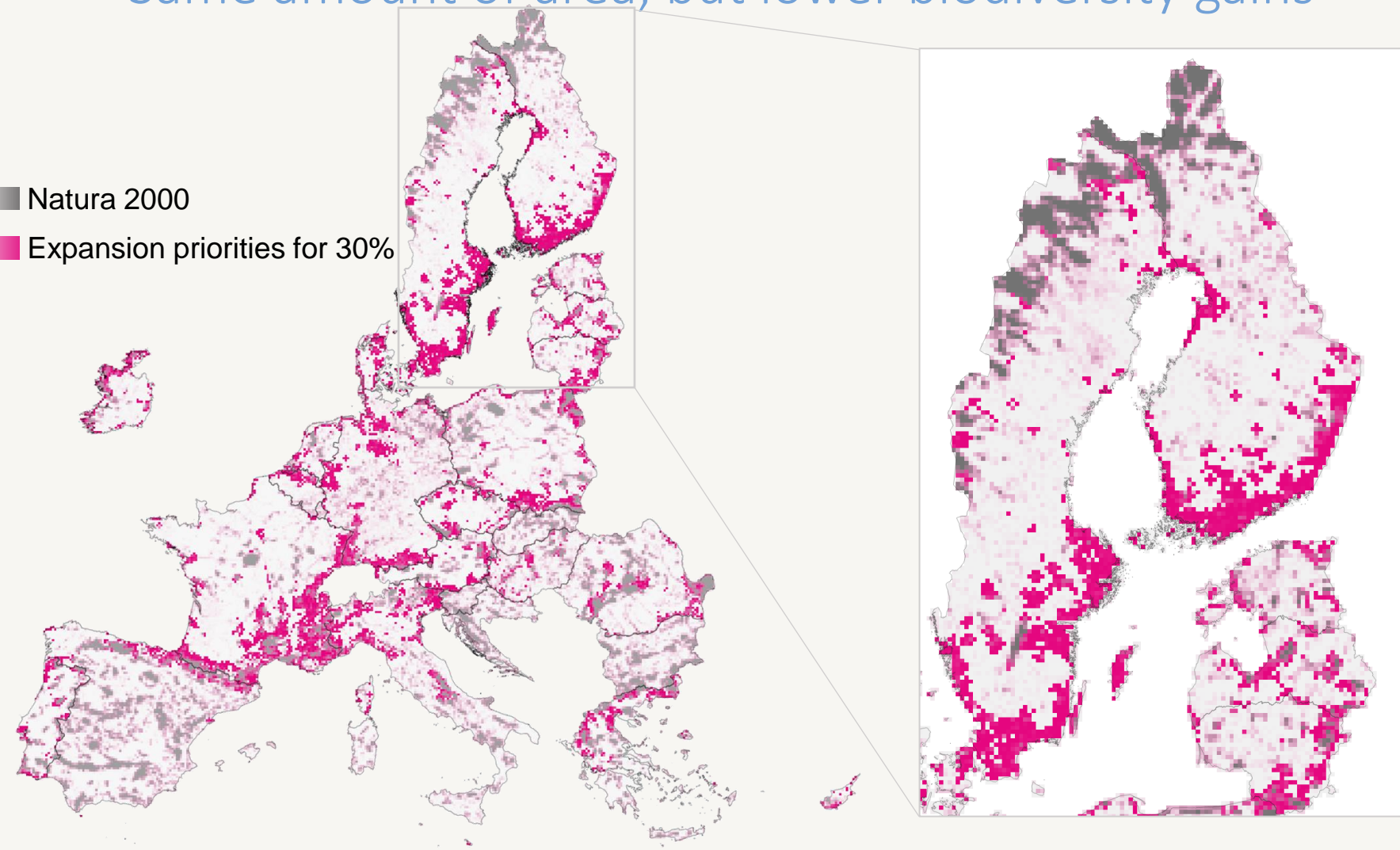




National priorities for expanding Natura 2000

Same amount of area, but lower biodiversity gains

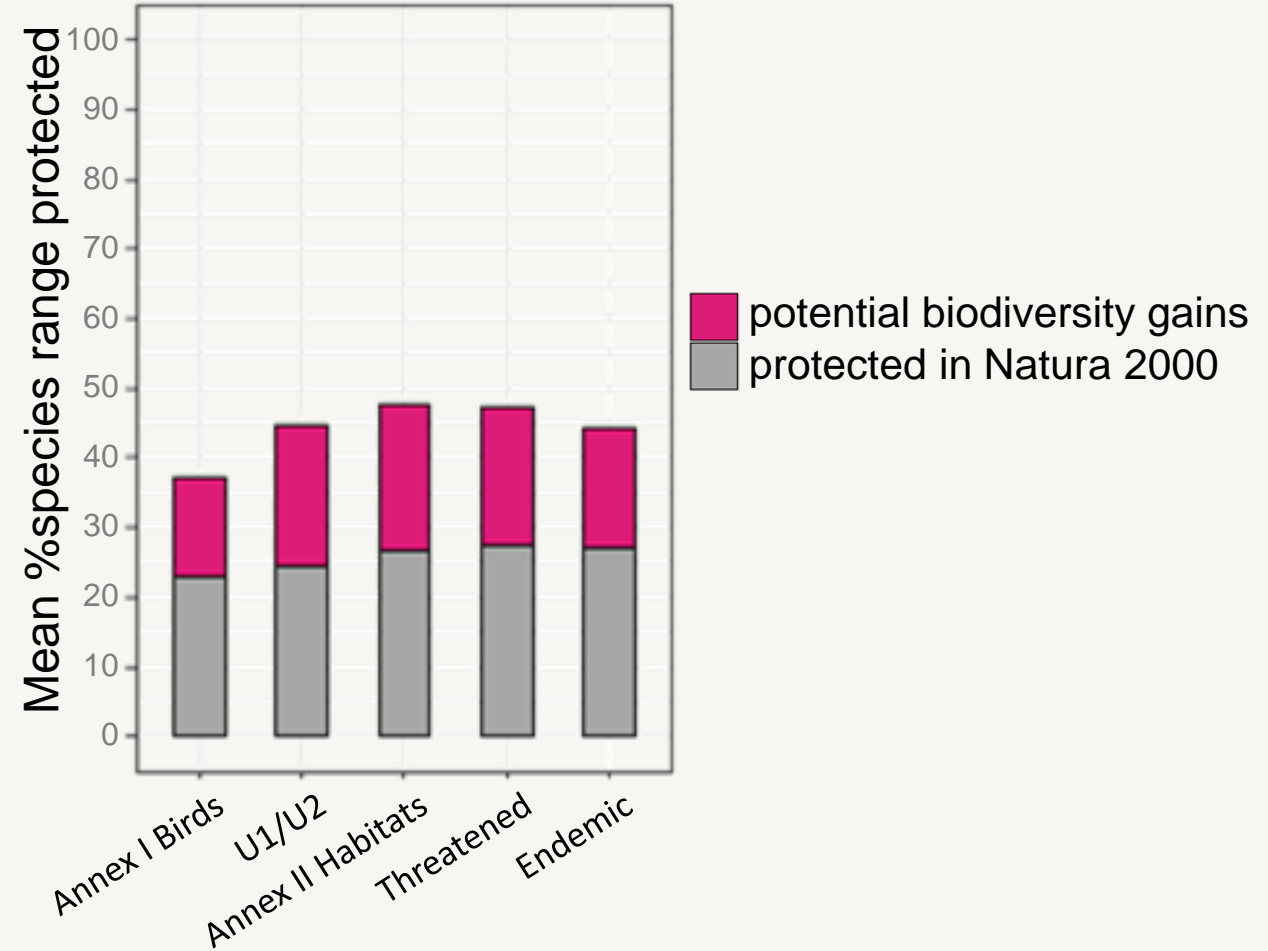
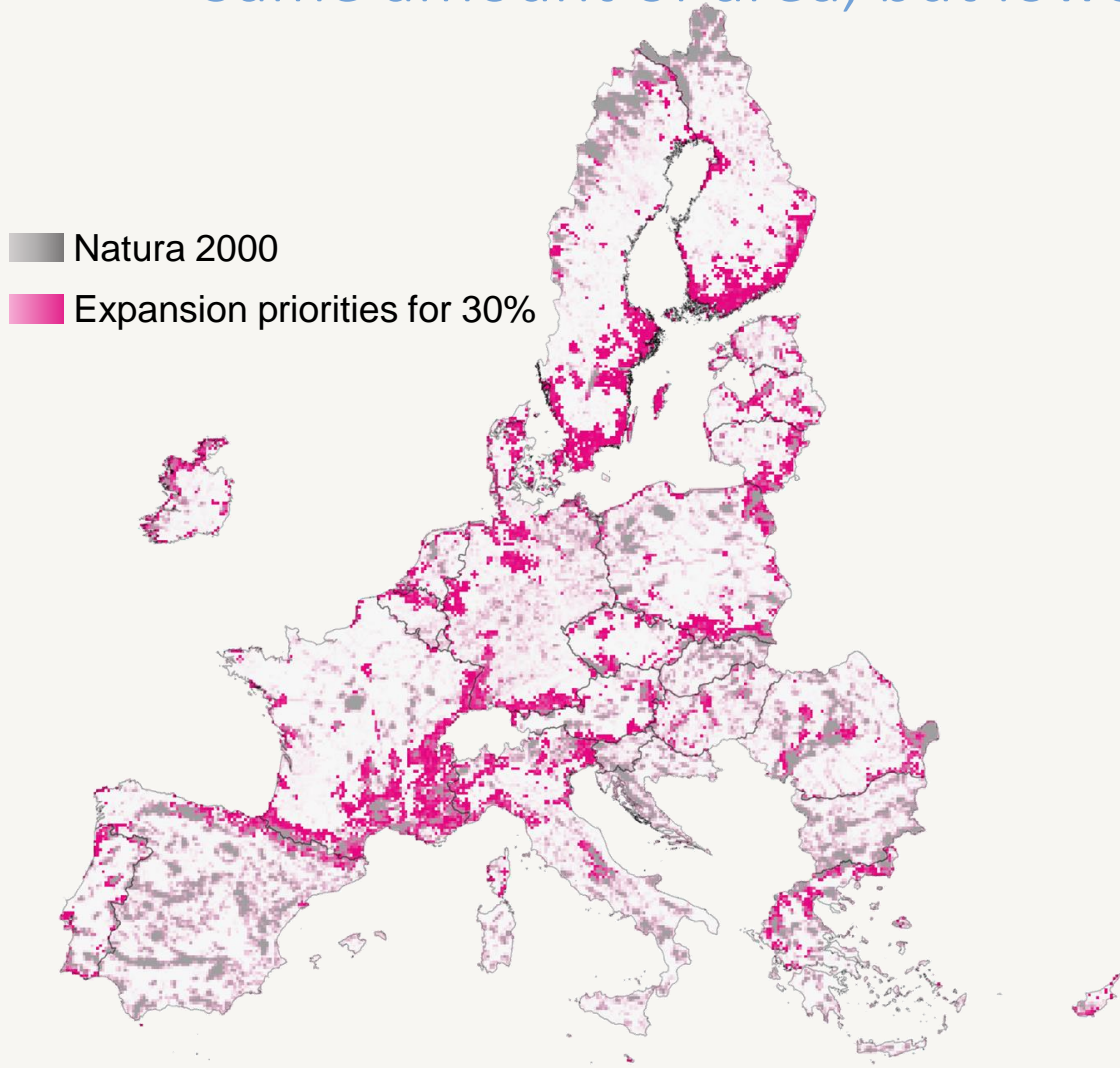
- Natura 2000
- Expansion priorities for 30%





National priorities for expanding Natura 2000

Same amount of area, but lower biodiversity gains

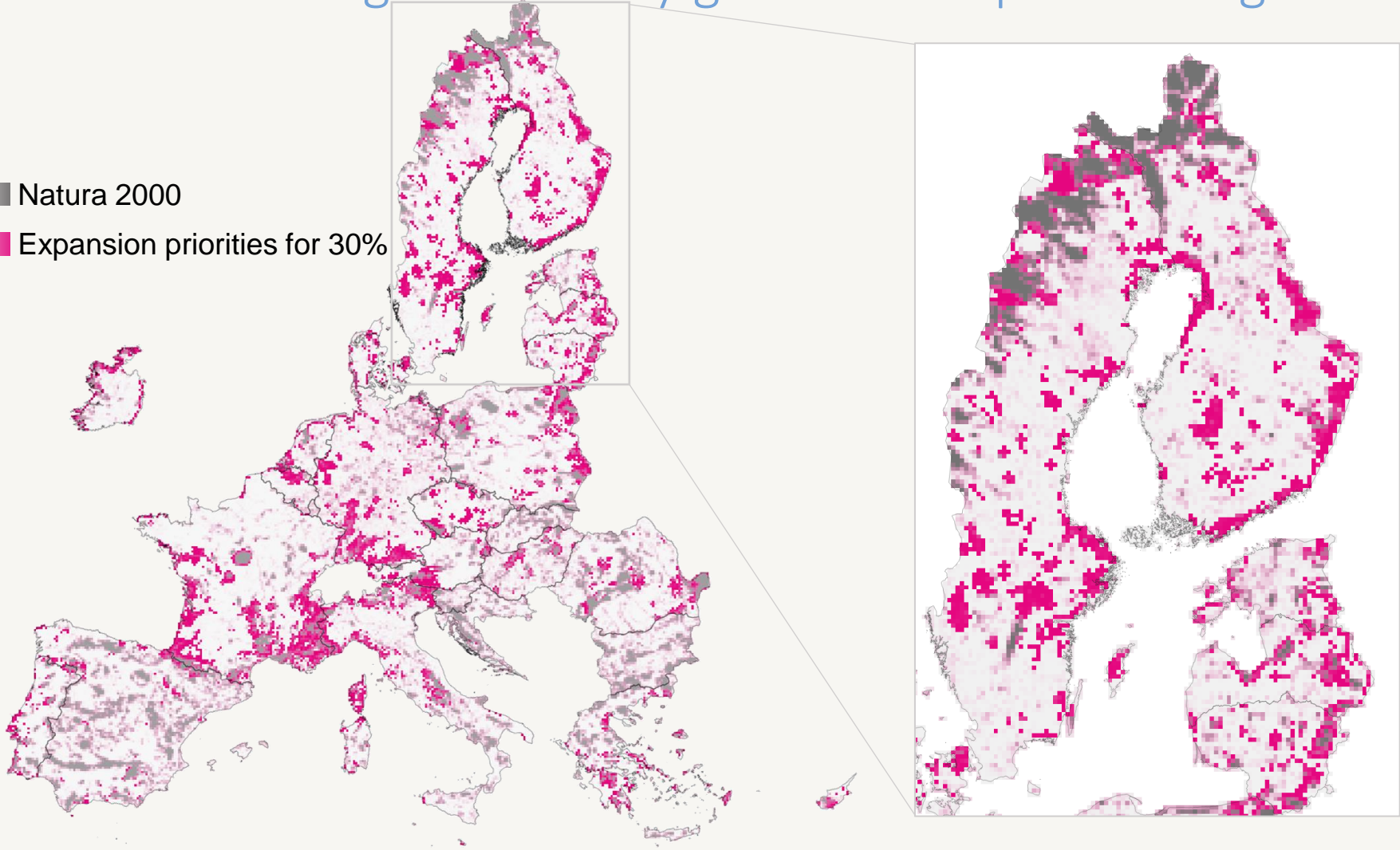




EU-wide priorities with equal area shares

Maximizing biodiversity gains with equal sharing of conservation areas

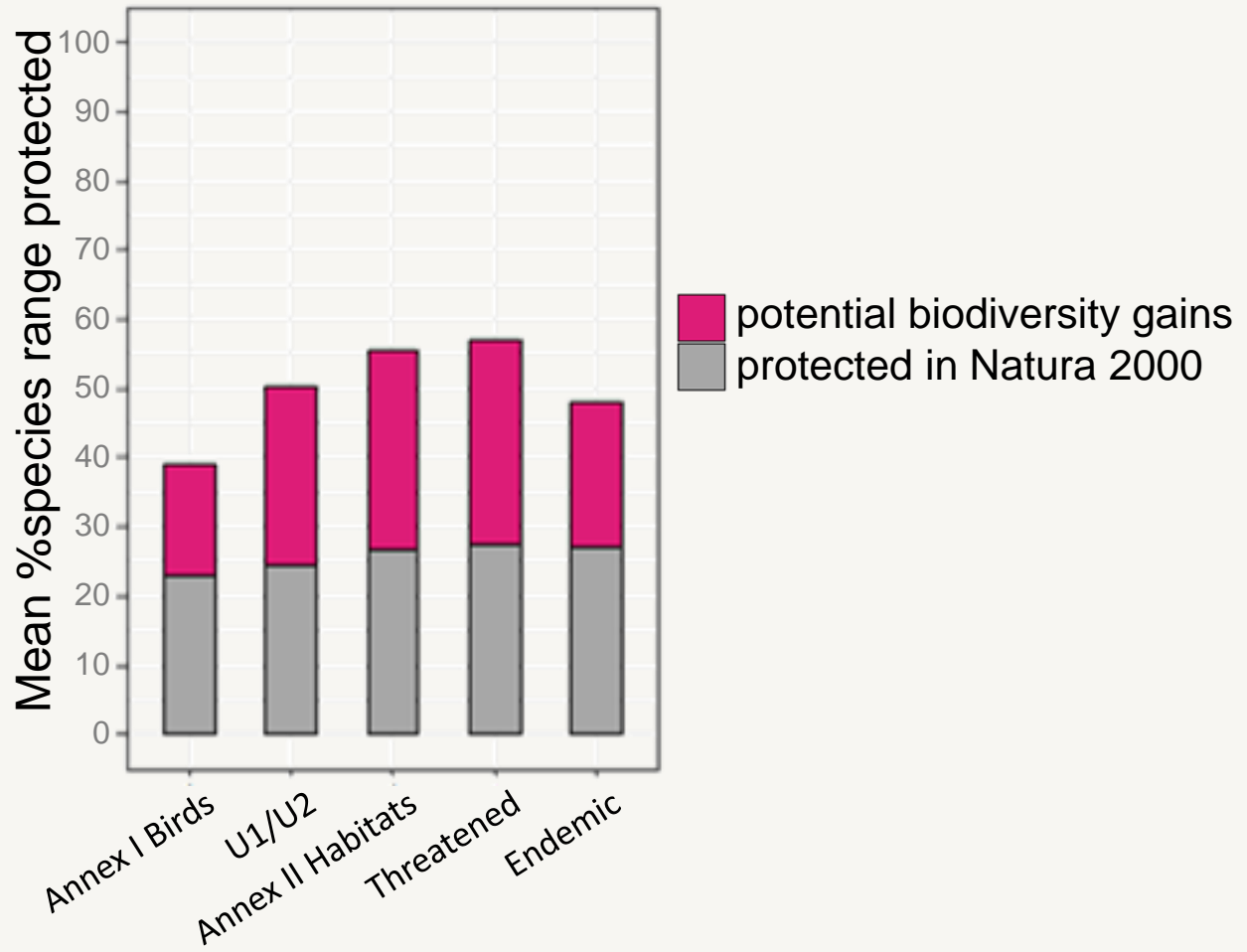
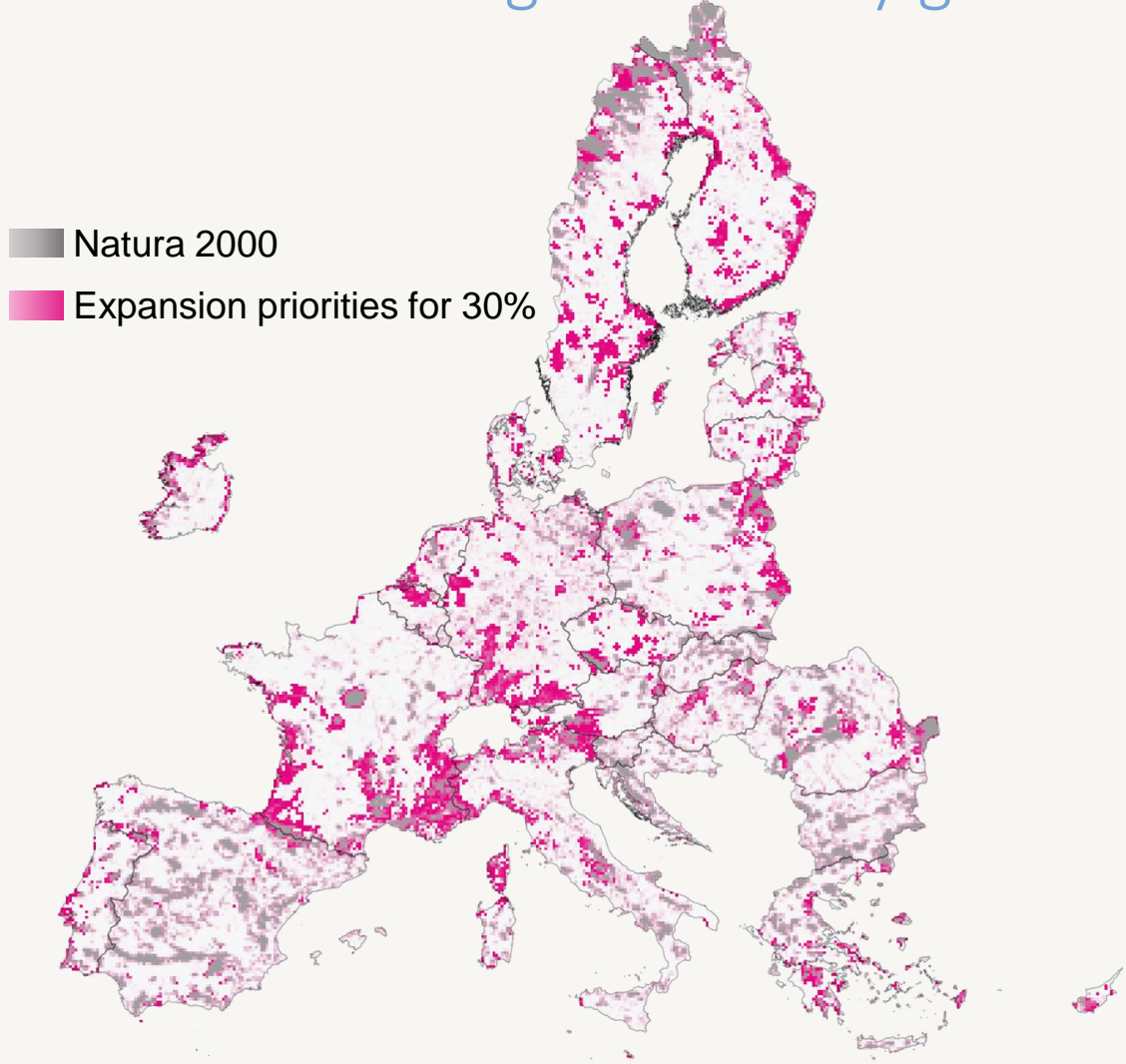
- Natura 2000
- Expansion priorities for 30%





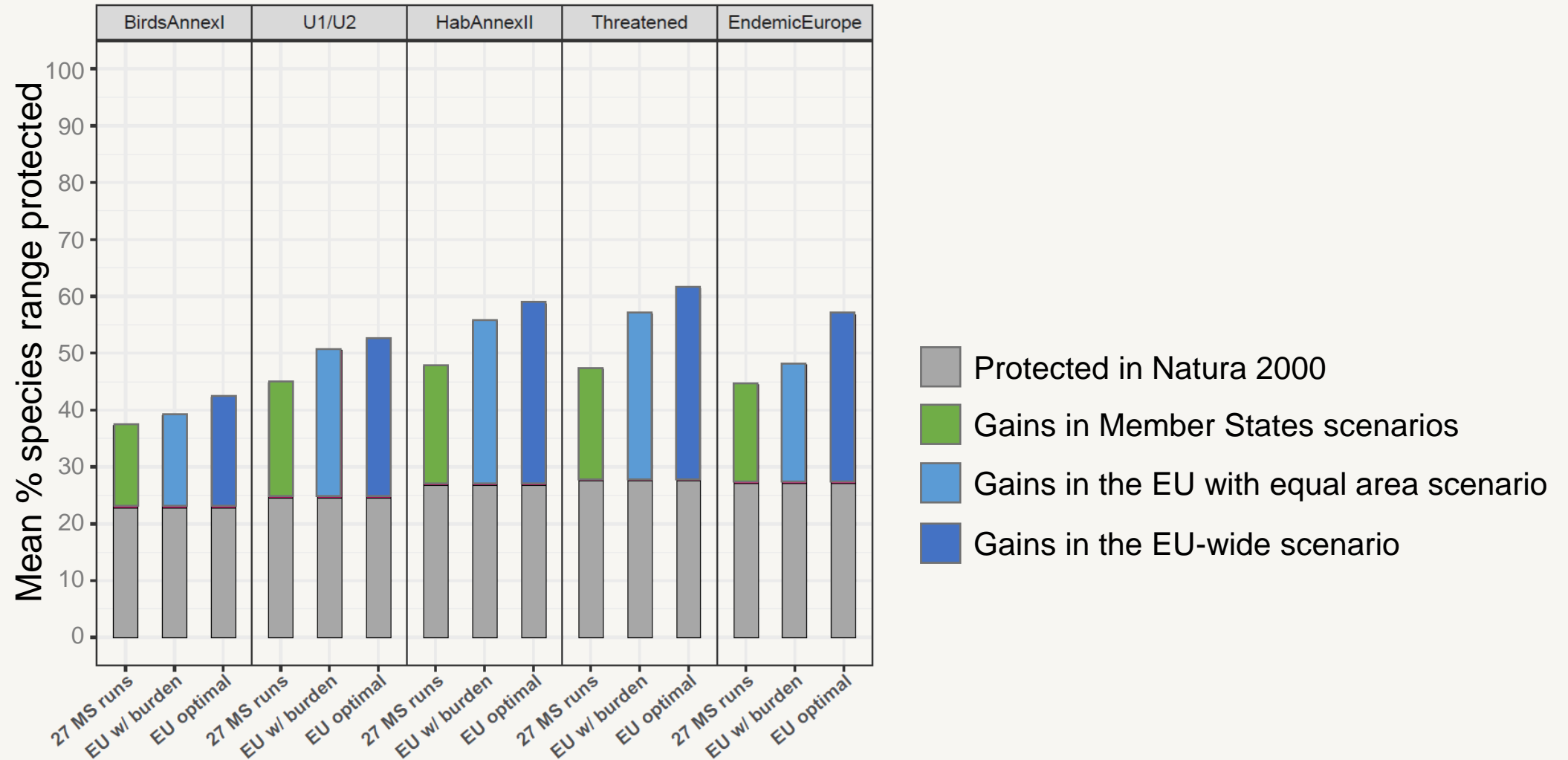
EU-wide priorities with equal area shares

Maximizing biodiversity gains with equal sharing of conservation areas



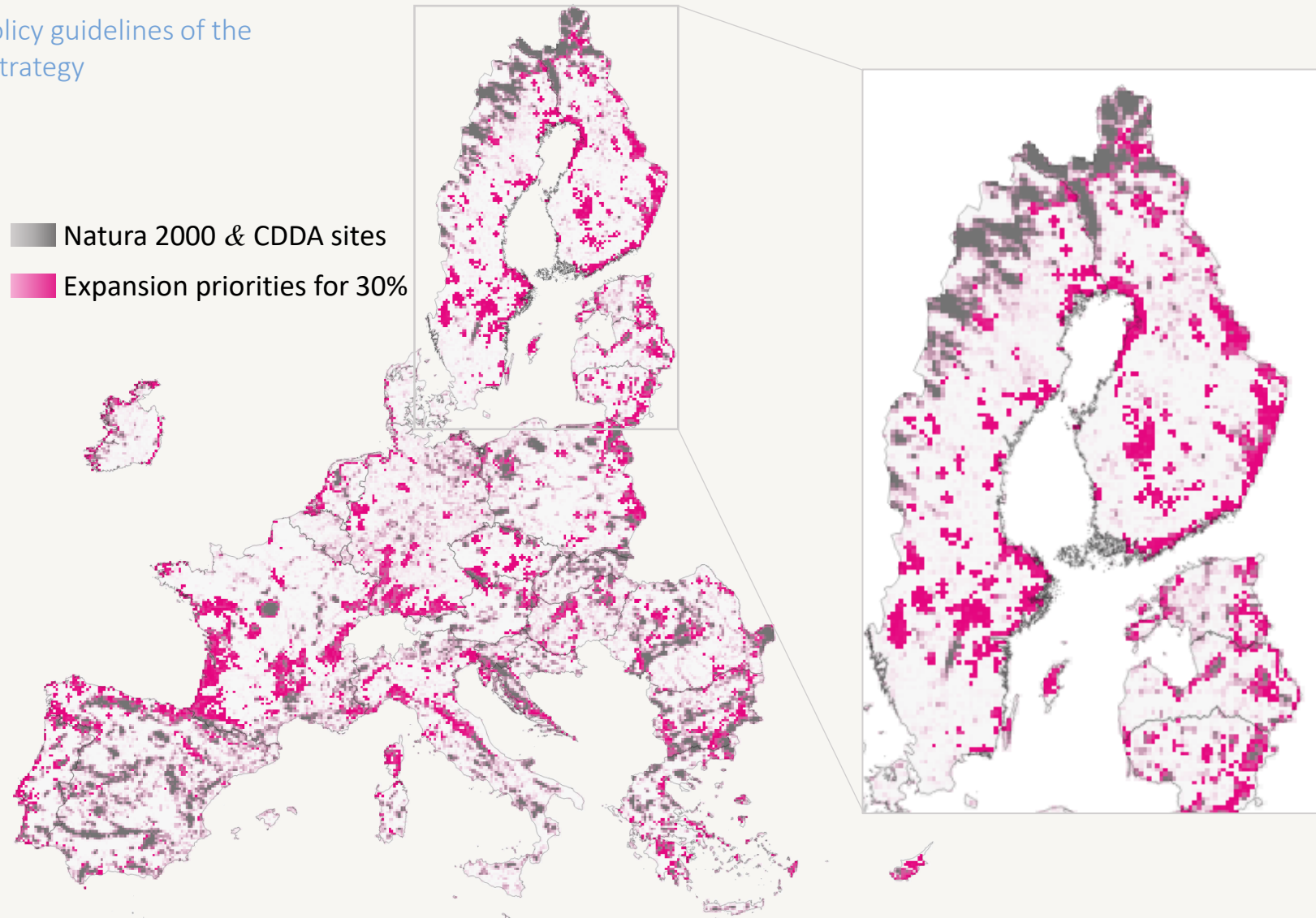
Planning at EU scale increases conservation gains

Collaboration across Member States is key to achieve best conservation outcomes!



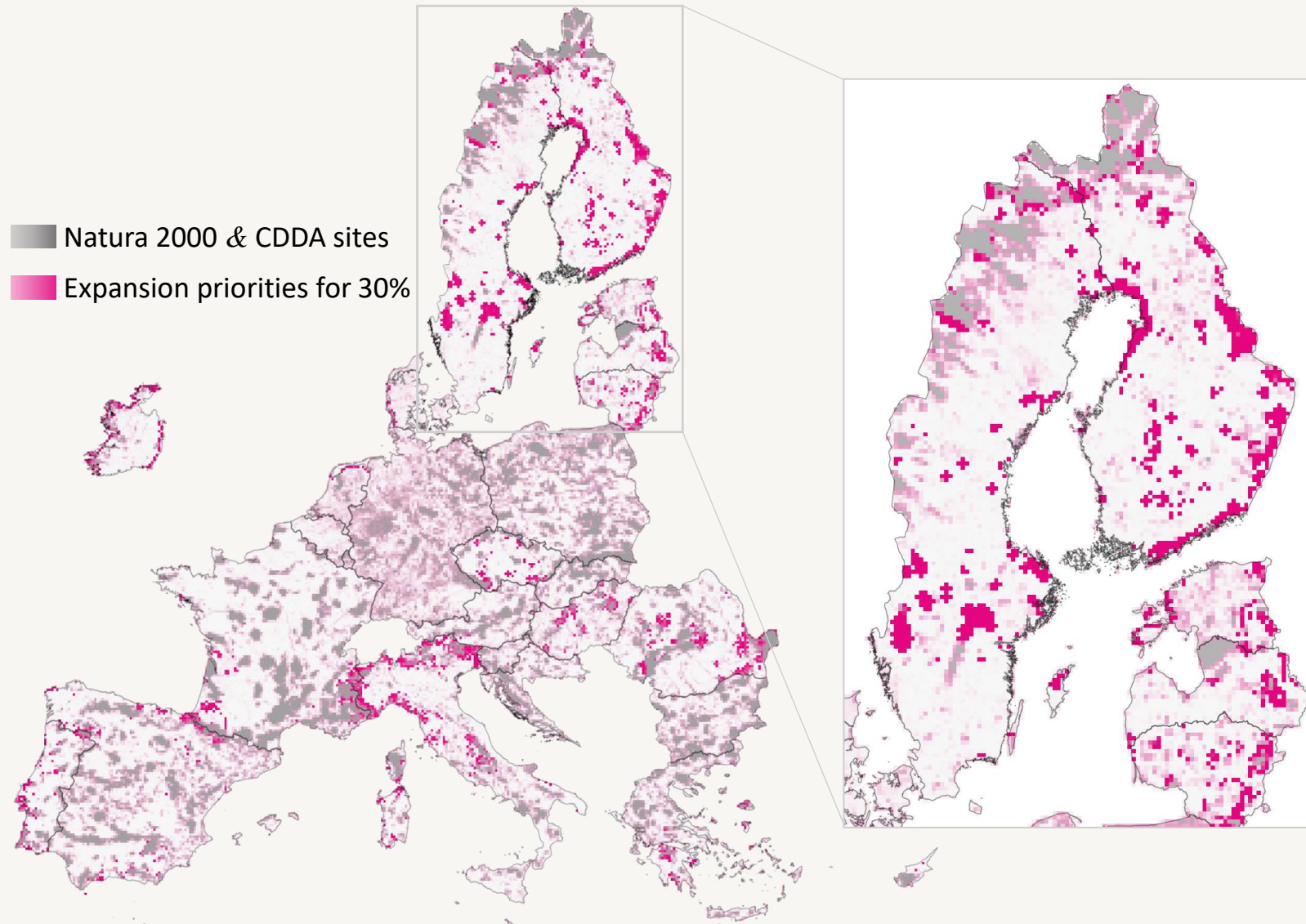
Implementing the 30% within Biogeographic Regions

e.g., following policy guidelines of the EU Biodiversity Strategy



Expansion priorities to reach 30% protected area coverage
with equal shares of area across biogeographic regions

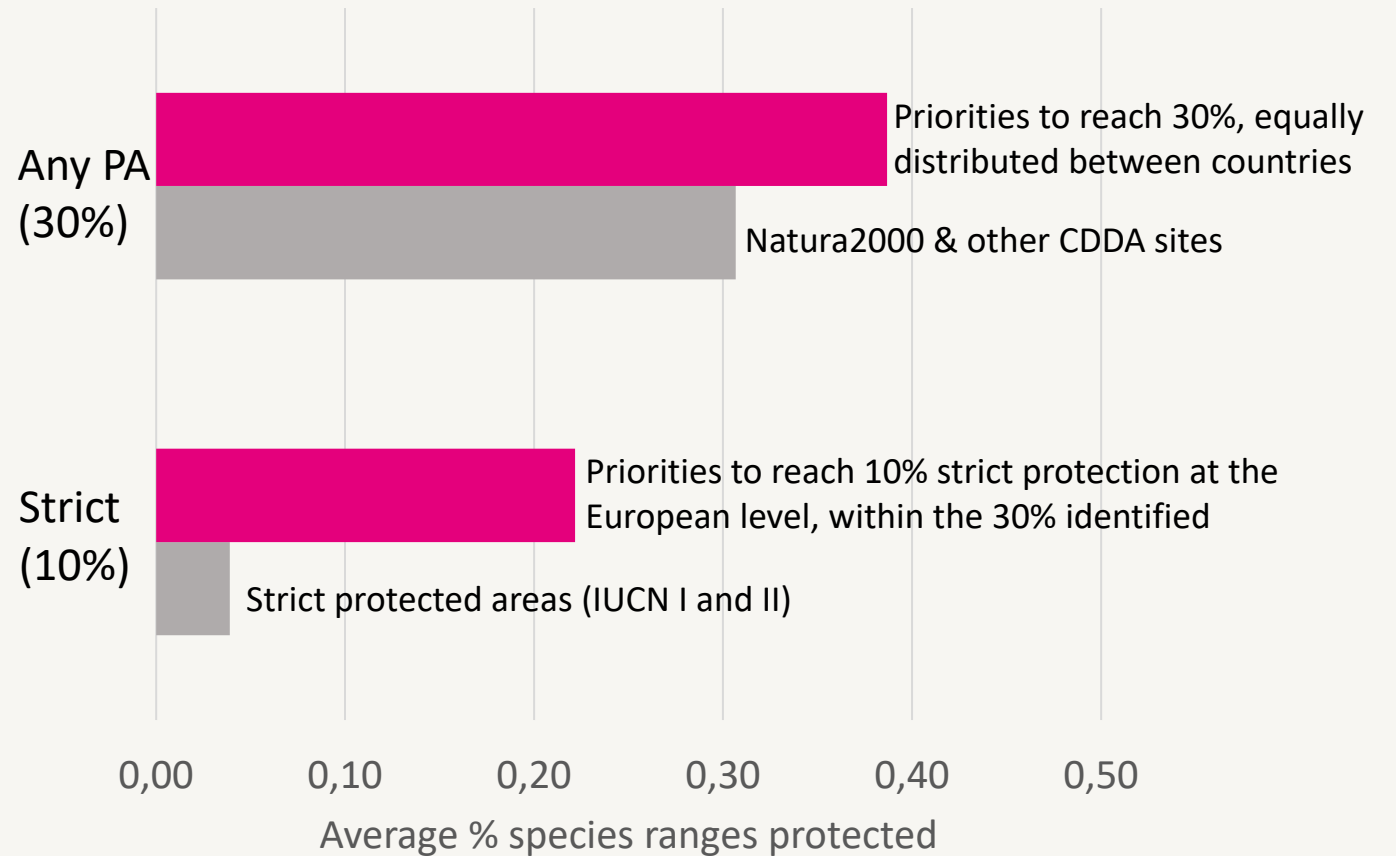
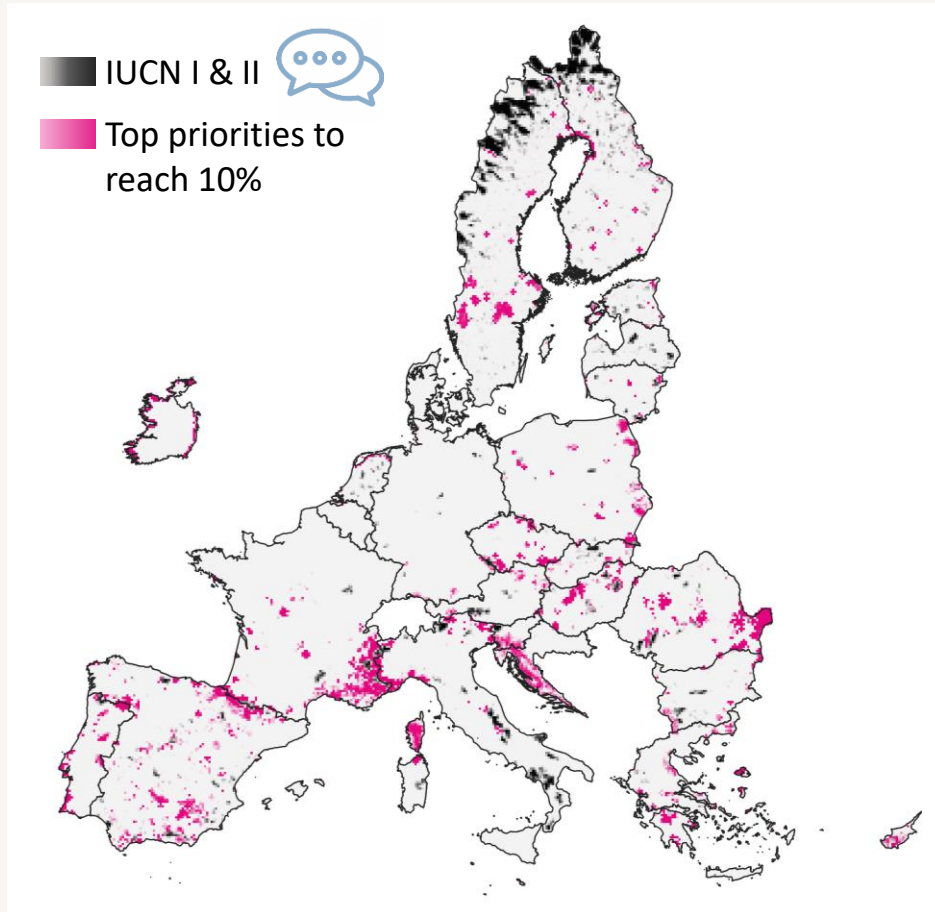
Top priorities for expanding all protected areas



Expansion priorities to reach 30% protected area coverage
considering all CDDA and Natura2000 sites

Identifying priorities for 10% strict protection

- Nested within the 30% previously identified
- For threatened species and ecosystems that require strict protection



10% priorities are nested within the 30% (in this scenario, the 30% is shared equally between Member States)

Incorporating socio-economic costs

Avoid selection of sites that are too costly



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)

Incorporating climate change

Protected areas can be better designed to limit impacts of future changes on biodiversity (climate change resilience; connectivity between shifting ranges)



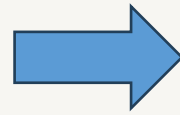
More about this on Thursday morning (Theme 4)!

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?



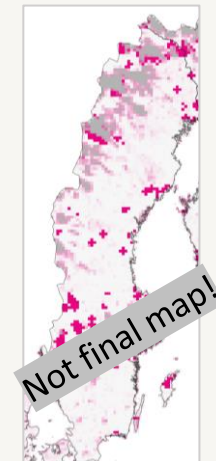
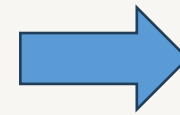
Protected
 Expansion



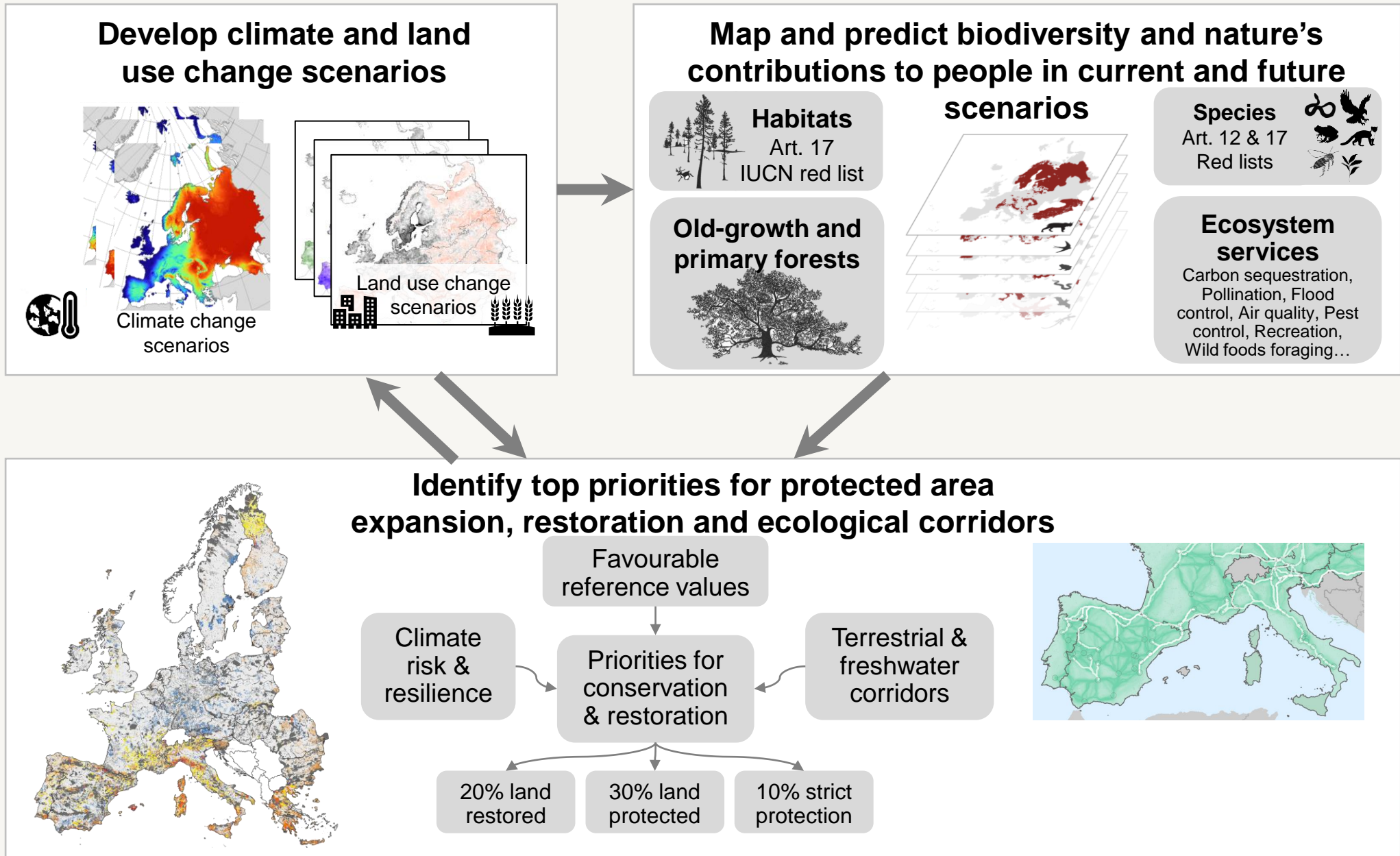
| Biogeographical region code | Current area | Amount (ha) |
|-----------------------------|--------------|-------------|
| ALP - Alpine | 4113101 | xxxxxxxx |
| BOR - Boreal | 2511091 | xxxxxxxx |
| CON - Continental | 141645 | xxxxxxxx |

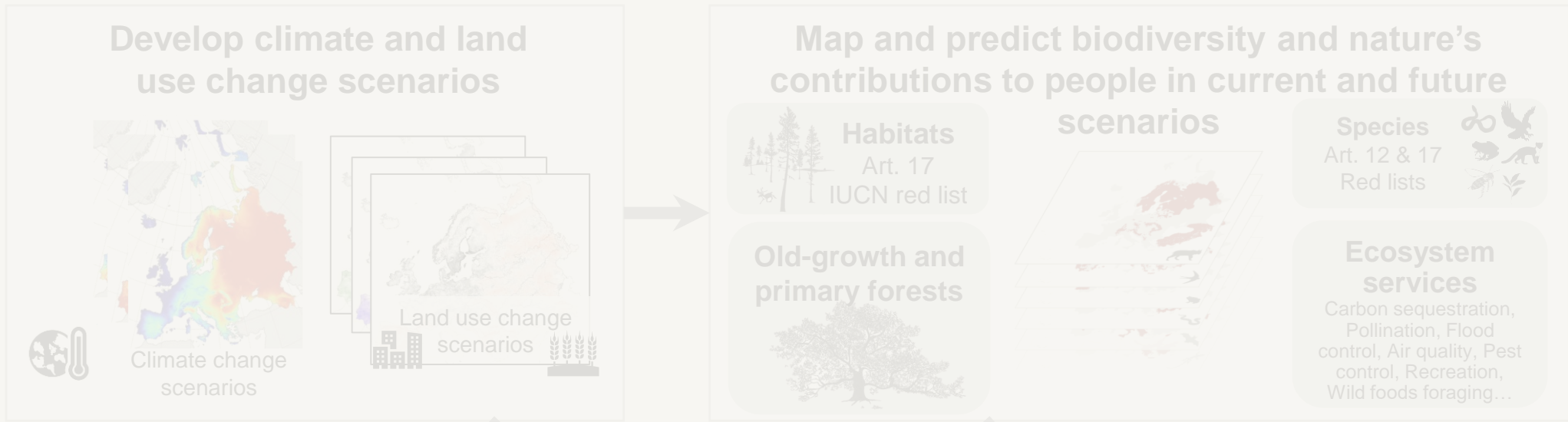
2. Where are the best areas to protect given the pledged area?

| Biogeographical region code | Current area | Expected area |
|-----------------------------|--------------|---------------|
| ALP - Alpine | 4113101 | 4443101 |
| BOR - Boreal | 2511091 | 2811091 |
| CON - Continental | 141645 | 151645 |

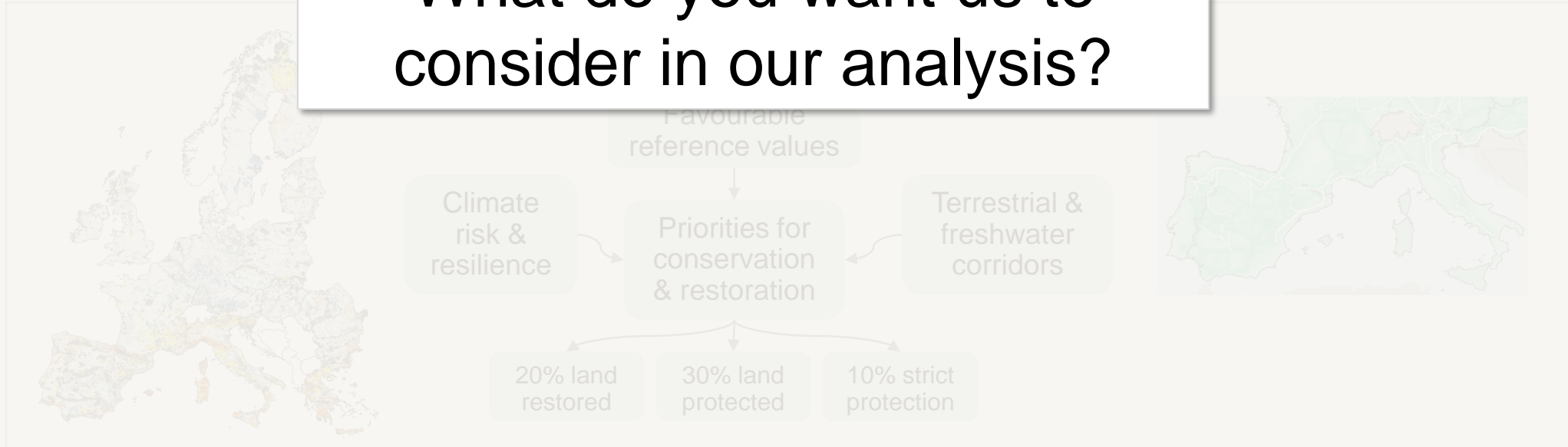


Protected
 Expansion





What do you want us to consider in our analysis?




How to get in touch

Stay informed



Sign up to our newsletter and stakeholder community!



 Sign up here

Share your thoughts



Fill in our survey!



Exchange with us and get access to materials



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



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