Mapping the Future of Europe's Protected Areas

Setting priorities for strategic expansion
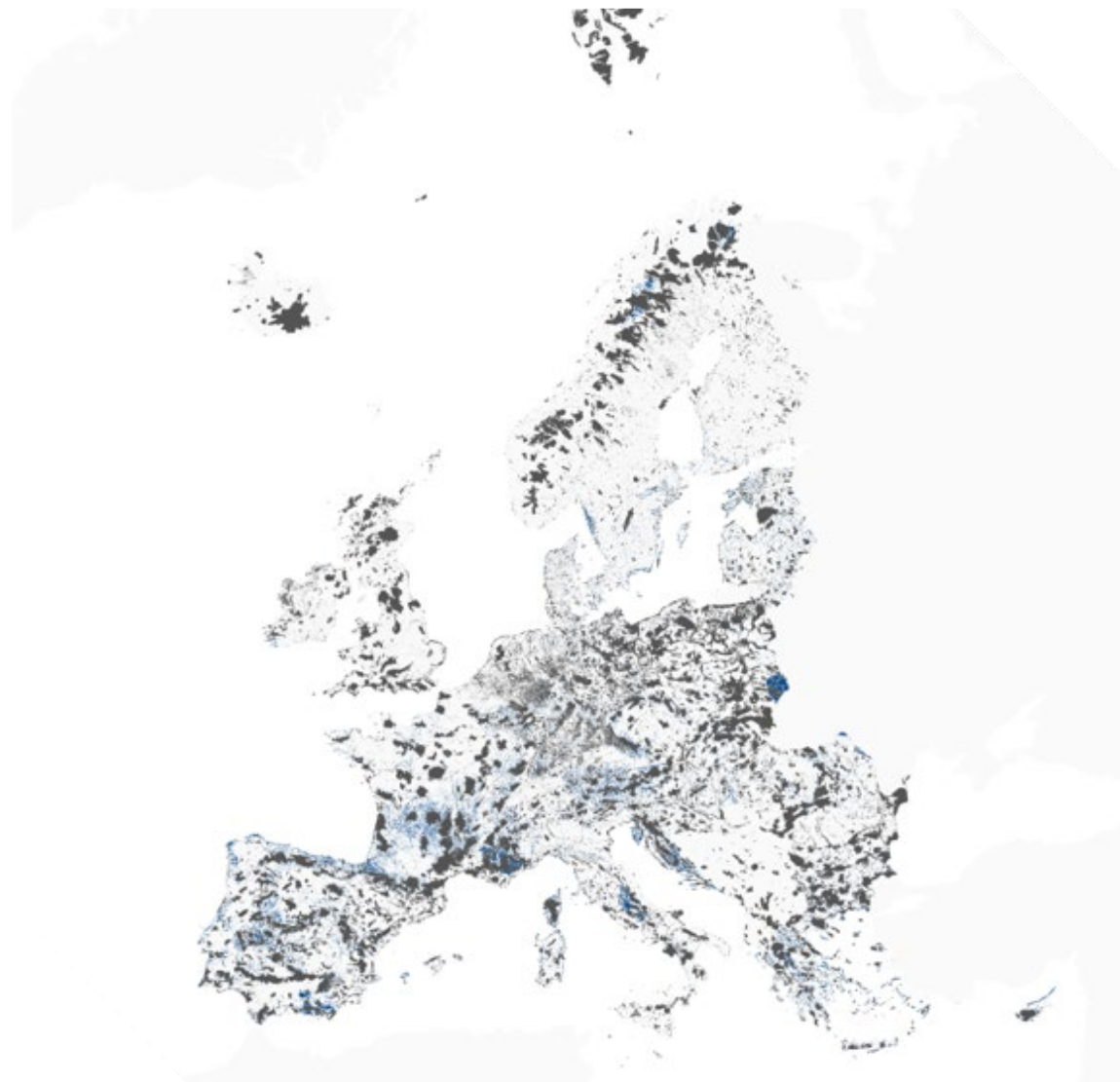
Martin Jung, Piero Visconti, Louise O'Connor, Jutta Beher

International Institute for Applied Systems Analysis (IIASA)

22 May 2025

Welcome

Basic webinar guidance

✓ The presentation part is being recorded.

✓ Write your questions and comments in the chat, indicating the speaker you address.

✓ All presentations and recordings will be available at naturaconnect.eu/past events and shared with registered participants.

✓ Feel free to rename and state your organisation by clicking on the three dots … next to your name!

✓ Please start/stop your camera at your convenience :)
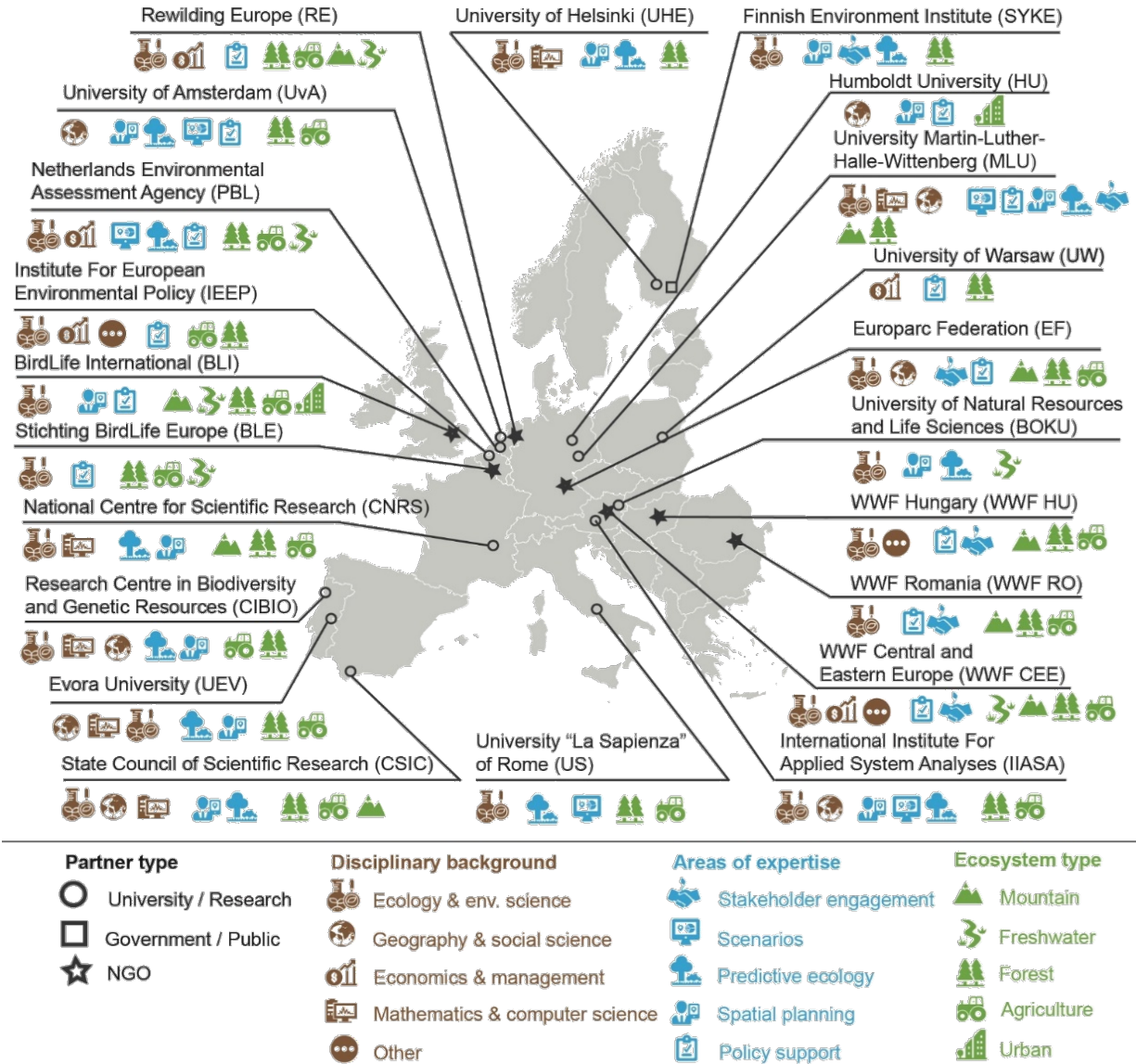
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Agenda for today

1) Welcome and introduction to NaturaConnect – *Piero Visconti*

2) Mapping priority areas for 30% and 10% protection – *Louise O'Connor*

3) Introduction to the priority check tool – *Martin Jung*

4) Breakout groups by biogeographical region

5) Next steps

Riku Lumiaro

The ambition of NaturaConnect is to co-create with key decision-makers and stakeholders, **knowledge, tools and capacity building to support EU Member States in realising an ecologically representative, resilient and well-connected network** of conserved areas that contribute to achieving the objectives of the EU Biodiversity Strategy for 2030

15 Research organizations

7 Policy and conservation organisations

6 Case studies across scales

Main objectives of NaturaConnect

✓ Define a blue-print for TEN-N (Trans-European Nature-Network) including PAs and ecological corridors

✓ Develop future scenarios incorporating existing climate and land-use projections

✓ Review, adopt & disseminate best spatial planning practices & funding mechanisms

✓ Advanced and integrated data collection to design TEN-N and a monitoring system for ecological connectivity
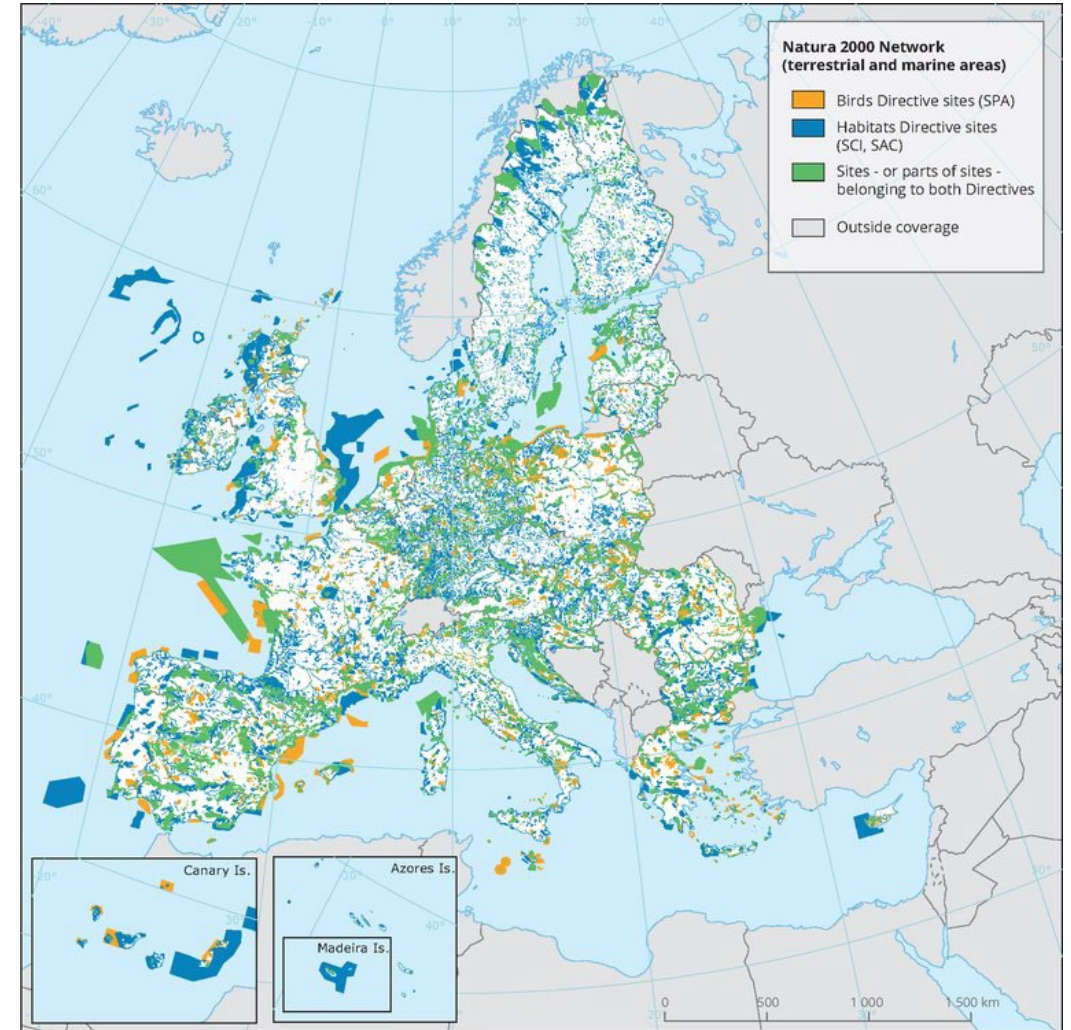
✓ Engage with stakeholders & policy makers

Djerdap National Park

The European conservation network

25.7% of land (1.06 M km2) and **11.1%** of the sea in the EU27 (556K km2)

760 000 km² (18%) are part of the Natura 2000 network on land and 440 000 km² (8%) at sea

23% of the European (38 EEA countries) terrestrial landscape and around **8%** of the marine realm

Natura 2000 Network (terrestrial and marine areas)

- Birds Directive sites (SPA)
- Habitats Directive sites (SCI, SAC)
- Sites - or parts of sites - belonging to both Directives
- Outside coverage

Canary Is. Azores Is. Madeira Is.

Reference data: ©ESRI

Representativeness of PA systems in the EU

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

Coverage of threatened species by all PAs in the EU

Number of species

% range in N2000
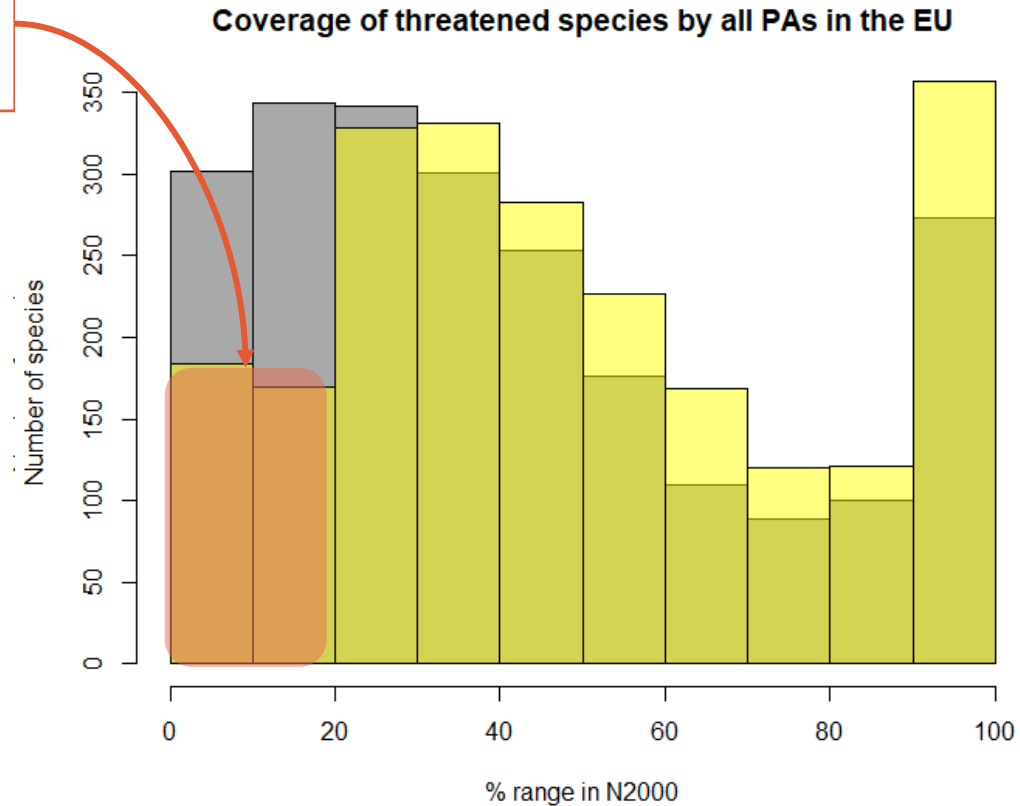
Source: data from Spiliopoulou et al. 2023, https://doi.org/10.1016/j.biocon.2023.110166 analysed by P Visconti

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European policy context by 2030

Where should European Member states expand their coverage of (strictly) protected areas?
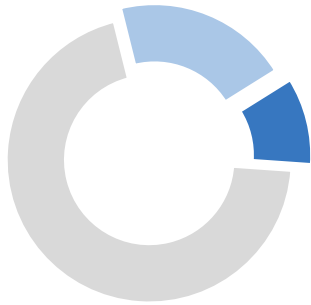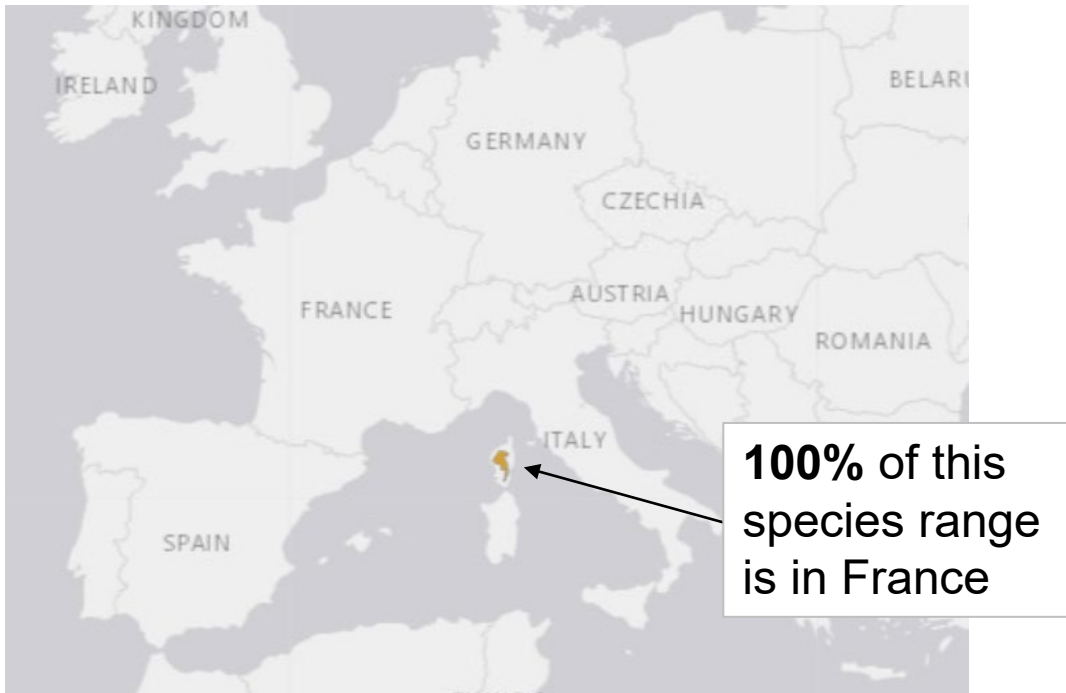
Legally protect at least 30% of the land, including inland waters, and 30% of the sea in the EU.
At least **1/3** of this should be **strictly protected.**

Priorities:
1. **Completion of the N2K network** following annex III of the HD
2. **National designations to support N2K**: connectivity, buffer
3. National designations to **support habitats and species not in the annexes**
4. Protect ecosystems providing **climate mitigation services** (peatlands, coastal wetlands, forests)
5. Protect and manage ecosystems to **increase resilience and adaptation to climate change**

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What are the benefits of pan-European planning?

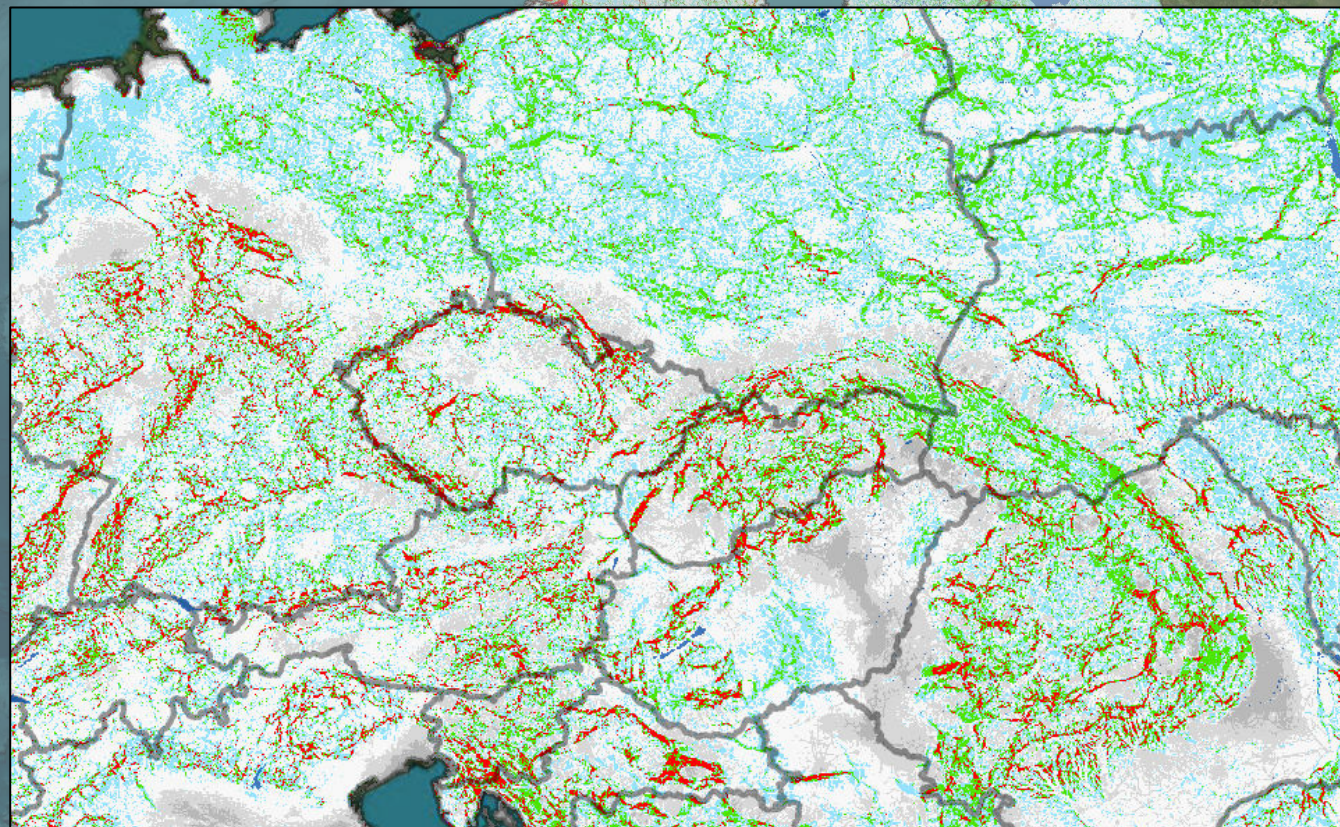European-wide planning = more efficient, higher biodiversity gains

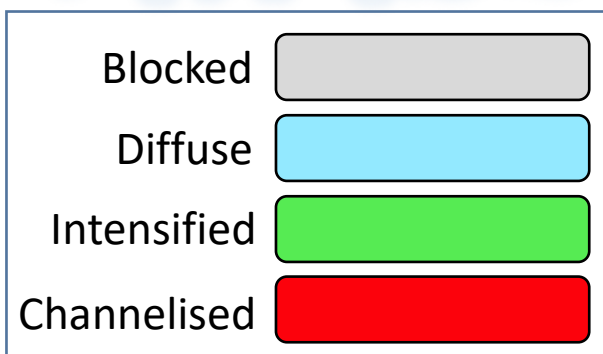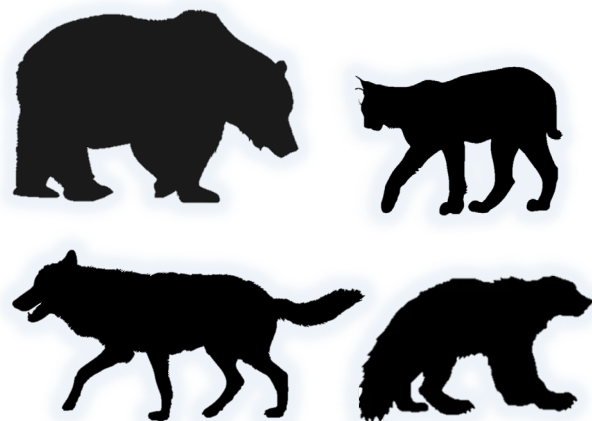**100%** of this species range is in France

Sitta whiteheadi

2% of this species range is in France

Myotis dasycneme

Transboundary connectivity

Blocked

Diffuse

Intensified

Channelised

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Credit Jeremy Dertien

Earthstar Geographics

How your input today well help us?

We have developed **maps to identify priority areas where expansion of protected areas** would provide the biggest improvement for biodiversity.

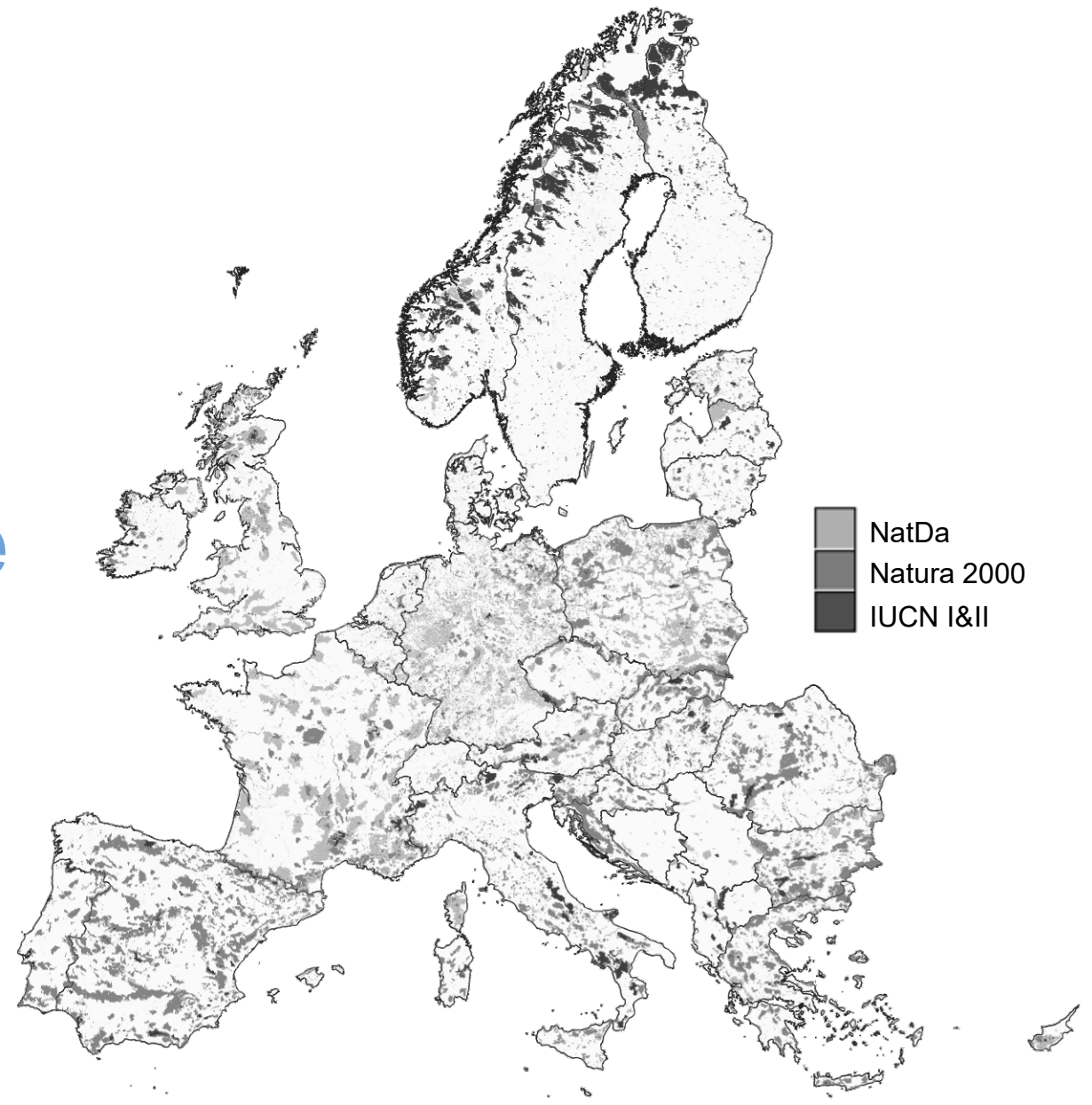We welcome

➢ General feedback on the methods, data and objectives

➢ Spatially-explicit feedback directly on the map

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Methods for identifying European conservation priorities

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

NatDa
Natura 2000
IUCN I&II

~26% of European land is protected, including
18% Natura 2000, and 3% as IUCN I & II

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Spatial conservation prioritization

Optimizes the protection of each species and habitat given limited resources.

Presences:

(eagle)	3
(squirrel)	2
(snake)	1
(frog)	1
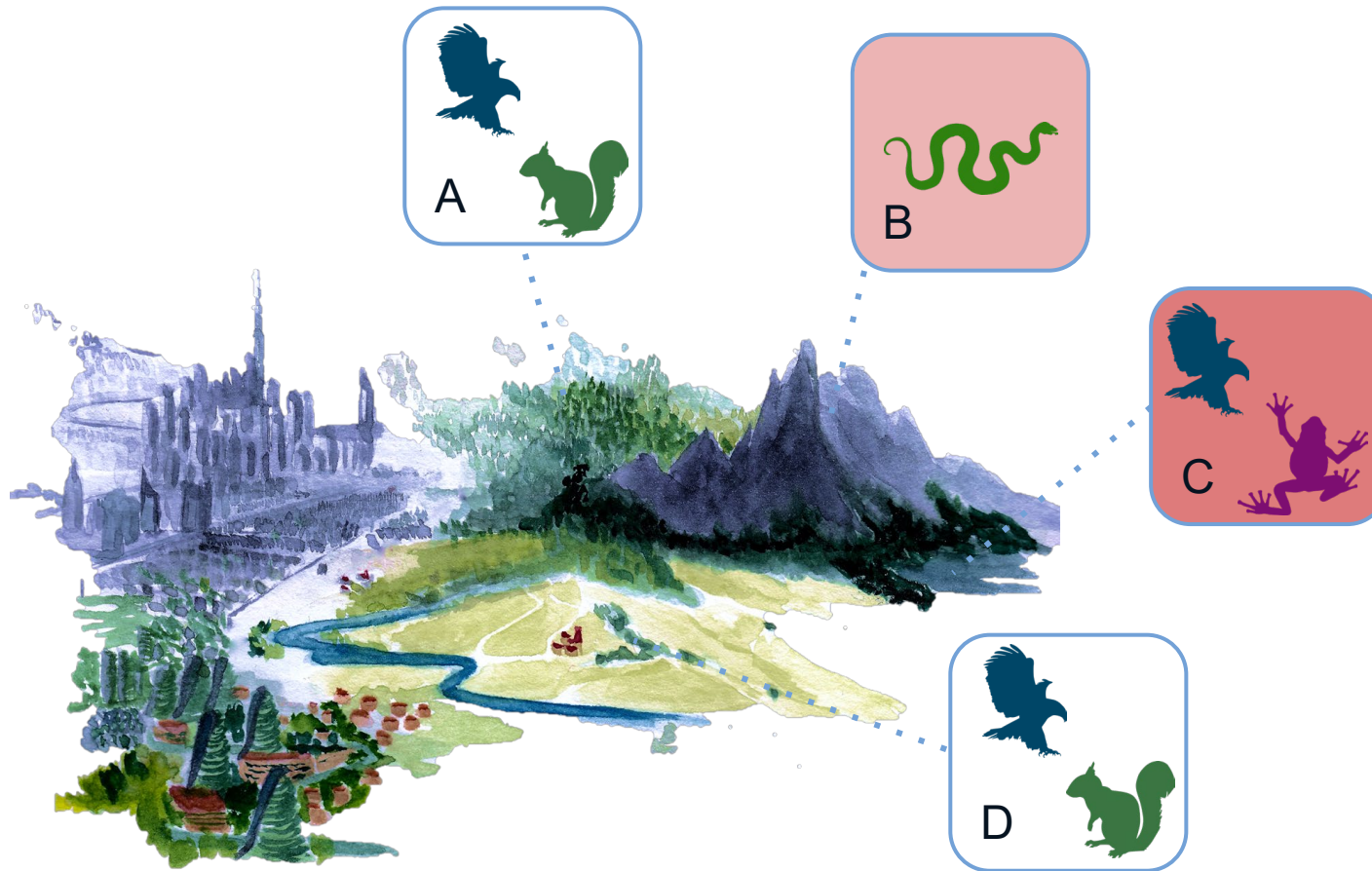
What biodiversity are we planning for?

All species and habitats in the Nature Directives and IUCN red lists.

1163 species

- Mammals
- Birds
- Reptiles
- Amphibians
- Plants
- Invertebrates

184 habitat types

- Forests
- Grasslands
- Wetlands
- Freshwater
- Coastal ecosystems
- Scrub & Tundra
- Sparsely vegetated

Other important ecosystems

- Primary and old-growth forests
- Carbon-rich ecosystems

Threatened and U1/U2 species and habitats get a higher weight:

5 for CRitically endangered & U2

4 for ENdangered

3 for VUlnerable & U1

2 for Near Threatened & Data Deficient

1 for Least Concern & FV

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Species and habitats distribution models (SDM)

Species presence data

GBIF

IUCN RED LIST

DivGrass

edapho base

EVA

SAFEGUARD

+

Environmental drivers of distributions

CLIMATE   HYDROLOGY

LAND USE   SOIL

GEOLOGY

SDM

Distribution maps (1km resolution)

Advantages:

- fine resolution (1km)
- fill gaps in sampling and monitoring
- combine multiple data sources
- distributions in future climate can be predicted

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Where to add new protected areas in Europe?

Species and Habitats

Old-growth forests & carbon-rich ecosystems

CO_2 O_2

Protected areas

Burden sharing

Example top priorities for:

30% without burden sharing
(= relevant for countries already above 30%)

30% with burden sharing
(= 30% distributed evenly per country)

10% strict protection

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Priorities for protected area expansion

30% without burden sharing

Protected areas

Expansion priorities for 30%

Priority areas are irreplaceable at the European level and complementary to existing protected areas. Here, we considered the distributions of 1408 species and habitats in the current climate.

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18

Priorities for protected area expansion

30% without burden sharing

107 species/km², including:
Epipodisma pedemontana (NT)
Aquilegia alpina
Bombus gerstaeckeri (VU)
Bombus mucidus (NT)
Pyrgus cacaliae
Capra ibex

128 species/km², including:
Soldanella villosa
Vipera seoanei
Galemys pyrenaicus (EN)
Neophron percnopterus (EN)
Picus sharpei
Triturus marmoratus (VU)
Gyps fulvus

50 species/km², including:
Spalax antiquus (EN)
Sicista trizona
Aquila heliaca (VU)
Stipa pennata
Lycaena dispar (NT)

93 species/km², including:
Apus affinis
Marmaronetta angustirostris (NT)
Porphyrio porphyrio
Lynx pardinus (VU)

Protected areas

Expansion priorities for 30%

Priority areas are irreplaceable at the European level and complementary to existing protected areas. Here, we considered the distributions of 1408 species and habitats in the current climate.

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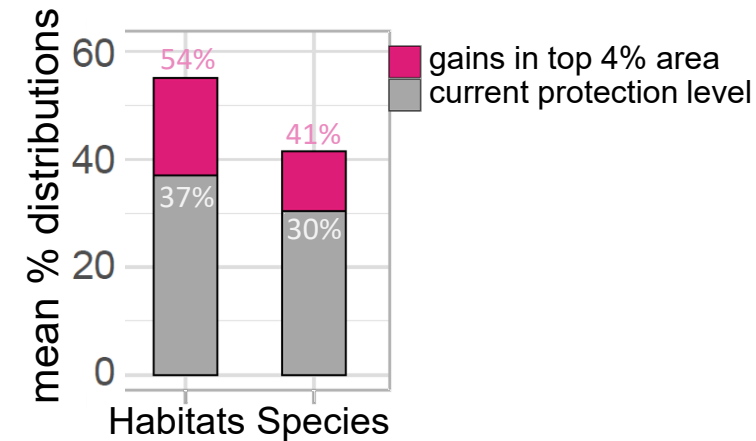
19

Priorities for protected area expansion

30% without burden sharing

Without burden sharing, priorities are unevenly distributed between member states

gains in top 4% area
current protection level

Protected areas

Expansion priorities for 30%

Priority areas are irreplaceable at the European level and complementary to existing protected areas. Here, we considered the distributions of 1408 species and habitats in the current climate.

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Priorities for protected area expansion

Burden sharing: 30% per country

With burden sharing, a maximum of 30% of each country is selected.

Just 4% of additional area **in the right places** can lead to **large gains** for species and habitats.

gains in top 4% area
current protection level

Habitats Species
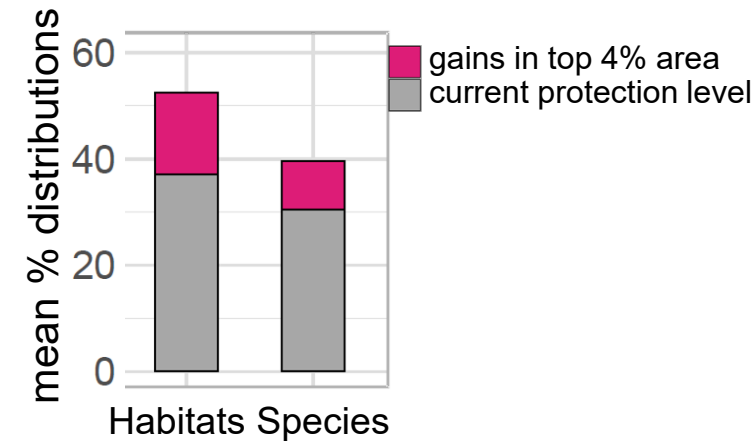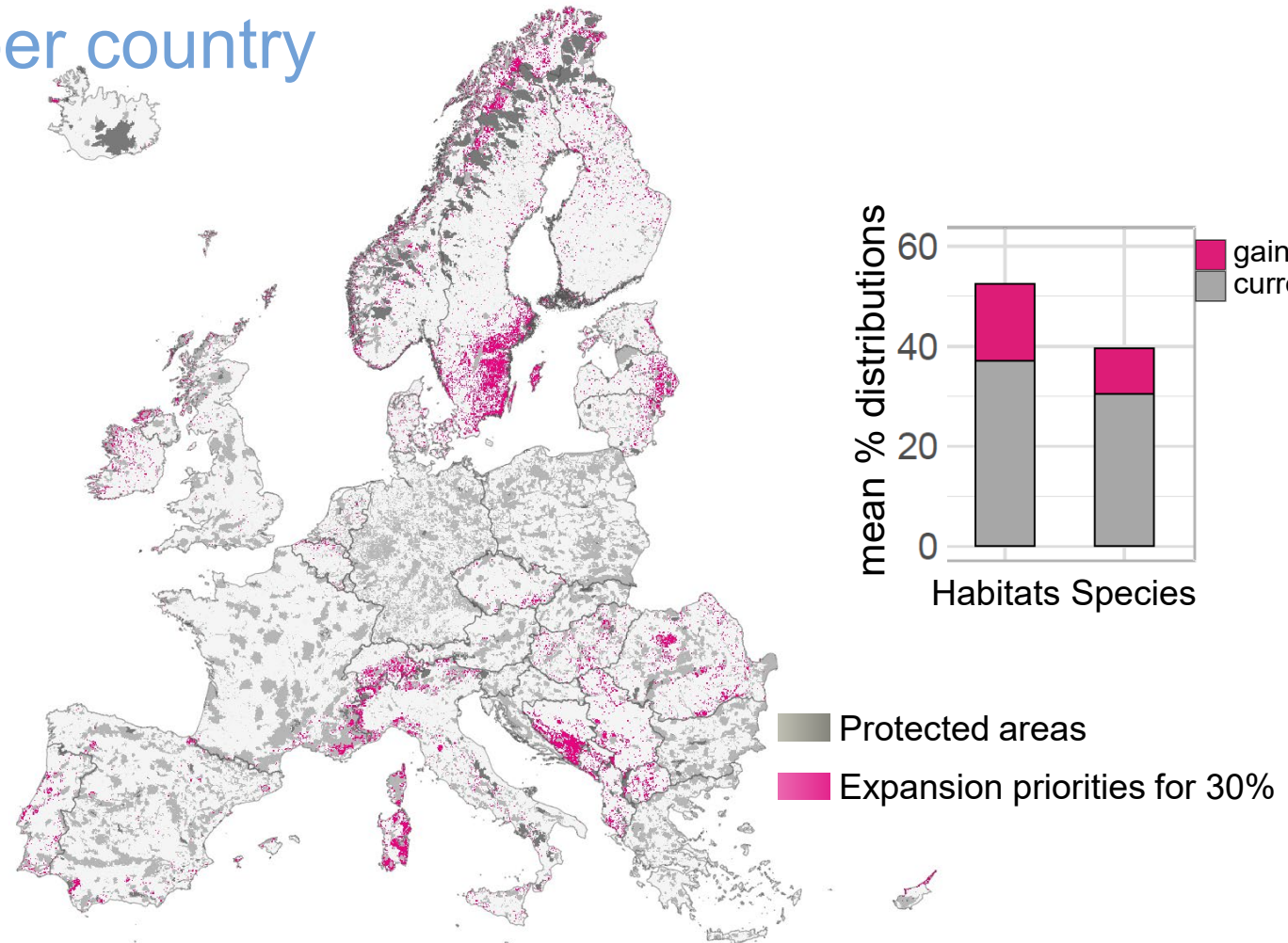
Protected areas

Expansion priorities for 30%

Priority areas are irreplaceable at the European level and complementary to existing protected areas. Here, we considered the distributions of 1408 species and habitats in the current climate.

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Possible criteria for 10% strict protection

What would be the top 10% based on species and habitats distributions?

Example criteria for 10%:

1. Top **priorities expand on reserves and national parks (IUCN I and II)**, which we use as baseline for strict protection (in absence of better data)

2. 10% includes **upgrading** of non-strict protected areas, with a core & buffer spatial structure when possible

3. Among the 30%, the 10% are the areas with the **highest biodiversity value**, for all species and habitats, including carbon-rich ecosystems (peatlands, old-growth forests) that need non-disturbance to function as carbon sinks.

4. We assume that **extractive activities are limited** in the 10%, thus we do not prioritise for 19 agriculture-dependent habitats.

Protected areas IUCN I & II
Other protected areas
Priorities for 10%
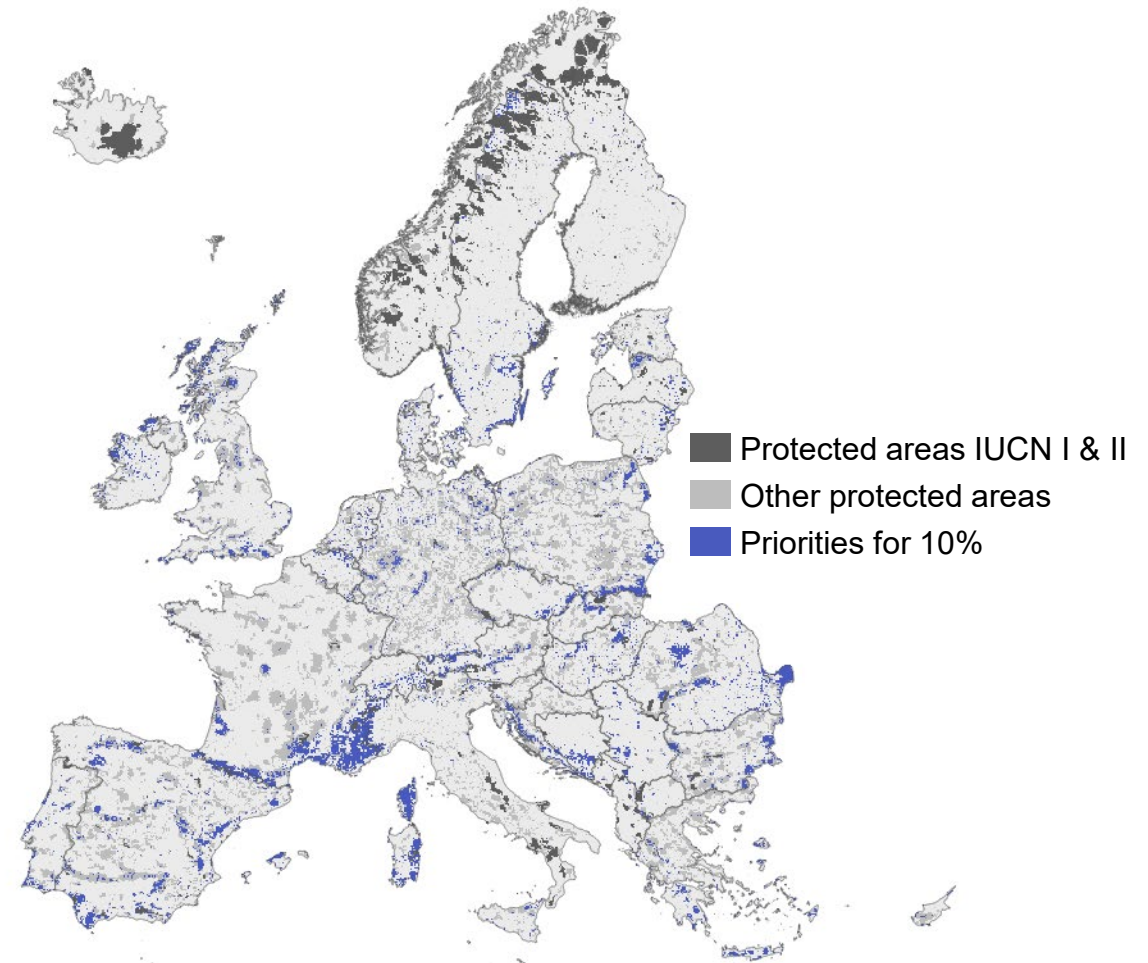
Here, priorities for 10% are areas of highest value for 1388 species and habitats in the current climate. This is one of many options for defining priorities for strict protection.
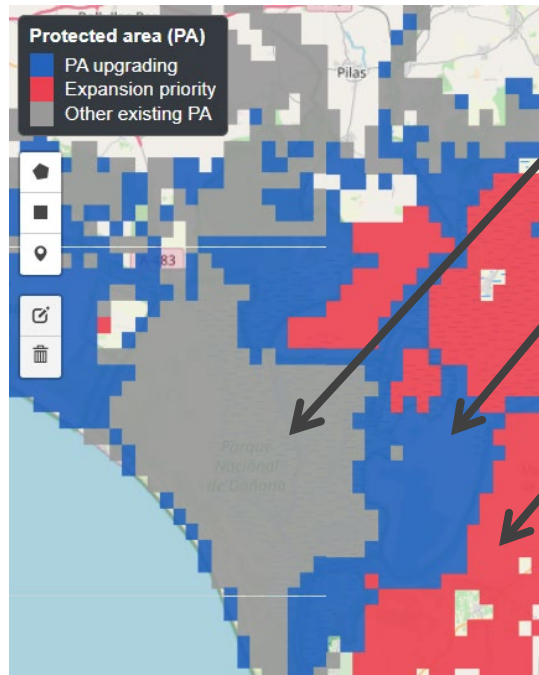
22

Alternative strict protection criteria

We are currently working on different variants for the 10%:

- Areas that most contribute to the conservation and recovery **of habitats and species that are sensitive to human disturbance** (using Article 17 pressures data, IUCN threat data).

- Areas that sustain **ecological integrity and natural processes** (e.g. unimpeded dispersal and migration, species interactions, evolutionary adaptation) where species and habitats benefit from non-intervention.

Dalmatian Pelican © Gregoire Dubois

Białowieża forest © Martin Jung

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What you will see in the online tool:

**Protected area,** including all Natura 2000 sites and other national designations

Upgrade: non-strict protected areas identified as priorities for the 10%, based on their high ecological value.

Expansion priority: Additional sites selected to reach the target for 30 % protected area coverage.

What's next in the coming months?

A connected and resilient protected area network
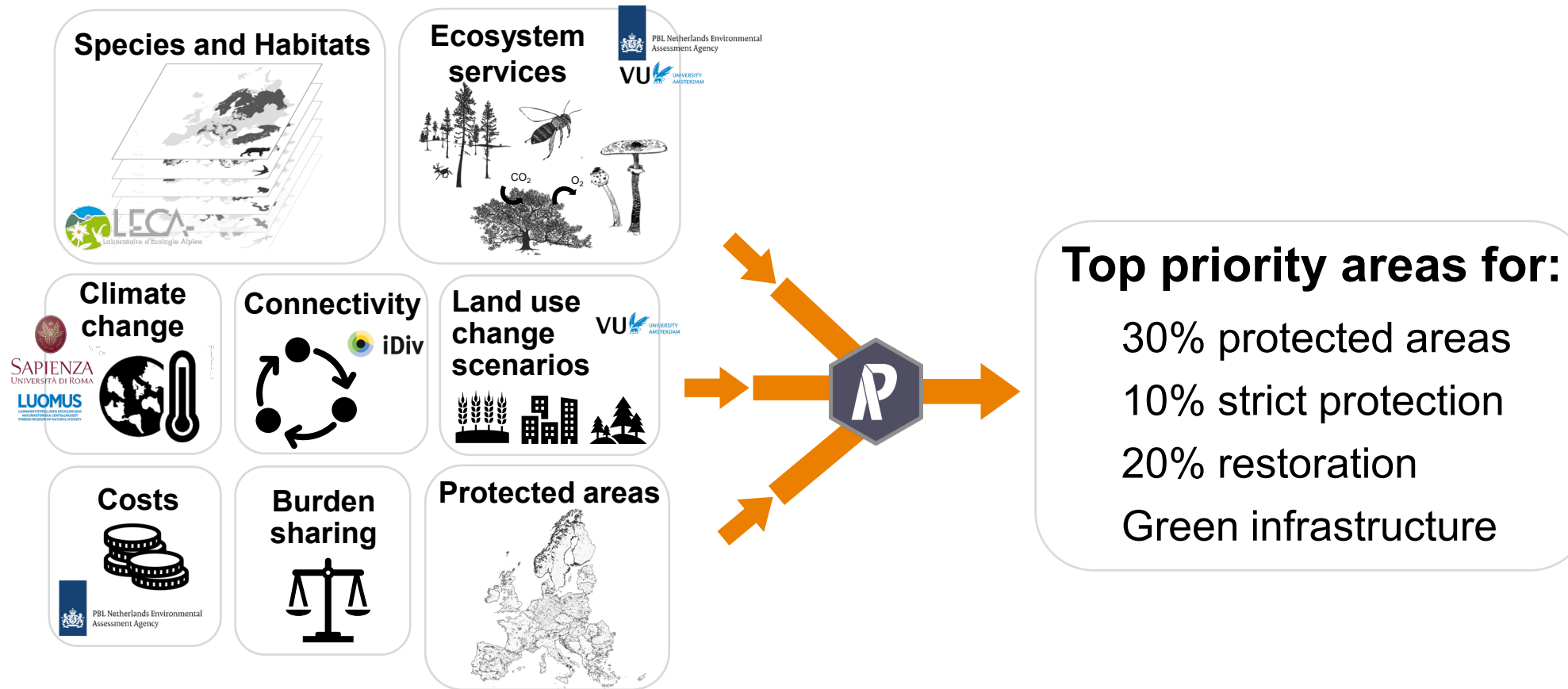
Questions so far? (Q&A)

Spatial feedback on expansion priorities

- We use a specifically developed online platform to gather your feedback.

- The platform shows one of our **preliminary** priority maps for protected area expansion.

- We encourage you to leave comments directly on the map!

> No personal data will be stored.
> Only feedback and information entered by you is being saved for the purpose of improving our maps!

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Preliminary maps to be shown today

Properties

- European-wide priorities (1km) for protected areas expansion.

- Only includes Biodiversity (species and habitat distribution data from NaturaConnect).

- Expansion of Conventional (30%) and management improvement for each EU Member State.

Louise O'Connor

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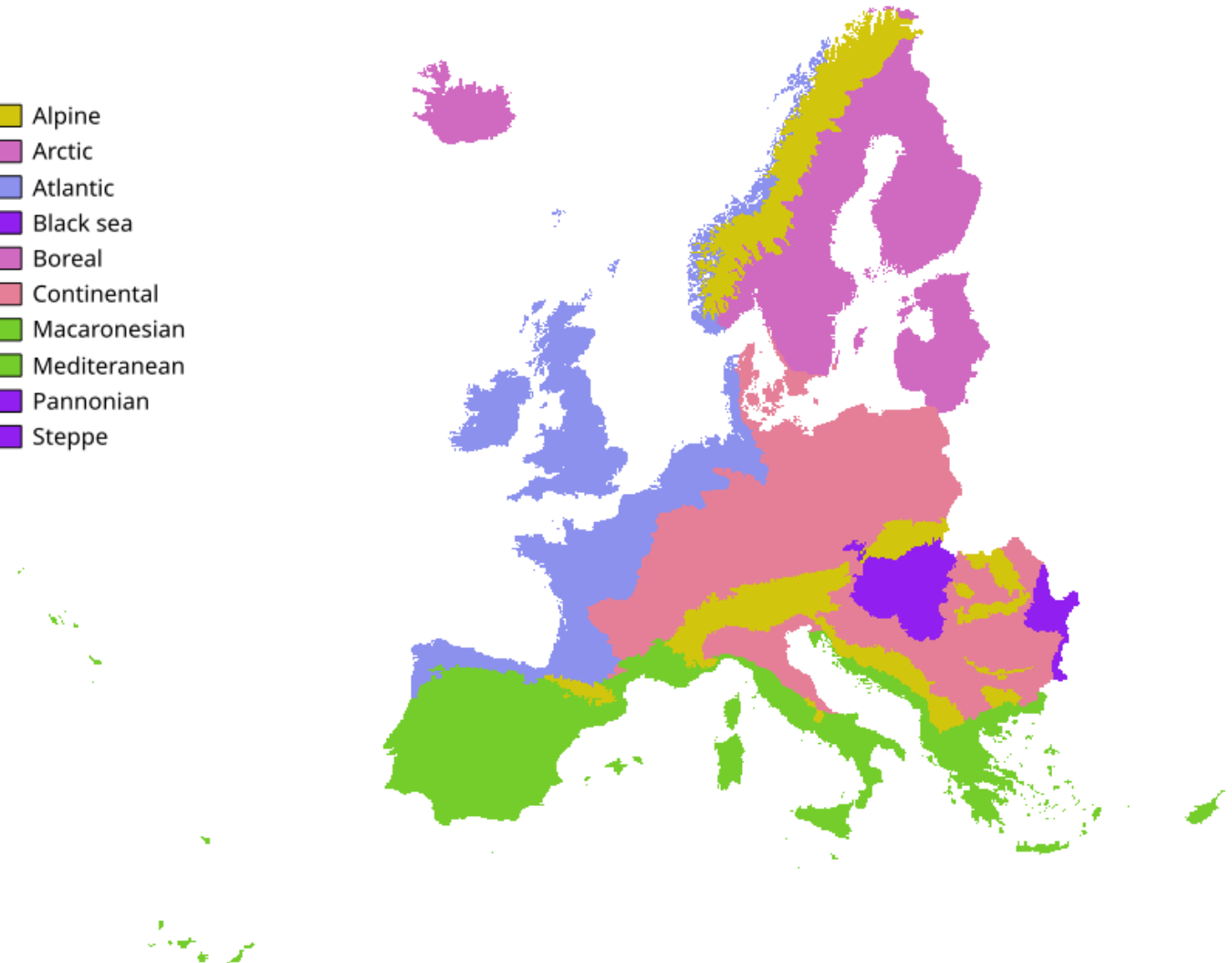
Demonstrating PriorityCheck

PriorityCheck feedback

Work in breakout groups...

✓ **We have 6 breakout groups:**

Alpine, Atlantic, Arctic & Boreal, Continental, Pannonian & Steppic & Black Sea, Mediterranean & Macaronesia

✓ Join the zoom group for your biogeographic region

✓ If you don't know or haven't decided on a group, pick the region you are most familiar with

✓ Login with a username (pw will be shared)

✓ **The feedback platform will remain accessible for 2 weeks after this webinar!**

Legend:
- Alpine
- Arctic
- Atlantic
- Black sea
- Boreal
- Continental
- Macaronesian
- Mediteranean
- Pannonian
- Steppe

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15' breakout groups

Platform:
prioritycheck.iiasa.ac.at

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1. Get familiar with the tool.
2. Navigate to your Biogeographic region.
3. Try and add some first feedback.

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Reporting back

Overall impression

- What looks good or potentially challenging?

- Any immediate red flags or issues? *

- What knowledge not presented would be relevant to you?

- Would you be interested in a follow-up webinar?

* Disclaimer: These are first, preliminary results that will change depending on your feedback and improved methods.

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How we will use your feedback

✓ Investigate areas of concerns and sources of uncertainty.

✓ Adapt our methodological approach if possible.

✓ Summarize (anonymously) your feedback thematically and spatially.

Following this webinar we will inform everyone at the end of June 2025 about next steps.

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Connect with NaturaConnect!

🌐 **www.naturaconnect.eu**

✉ **naturaconnect@iiasa.ac.at**

🔗 **facebook.com/NaturaConnectProject**

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🔗 **https://bsky.app/profile/naturaconnect.bsky.social**

**Evaluation survey for this webinar:
Share your feedback with us!**