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European Biodiversity Partnership

BiodivRestore Projects presentations

Session #3

Moderated by Metodi Sotirov (BIOCONSENT project & KH Co-chair)

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#3. How can we enhance and scale up conservation and restoration?

Exploring multi-scale approaches, uncertainty, and adaptive management

BiNatUr

Bringing nature back – biodiversity-friendly nature-based solutions in cities

By Kati Vierikko

Finnish Environment Institute (Syke)

BiNatUr consortium

Finnish Environment Institute

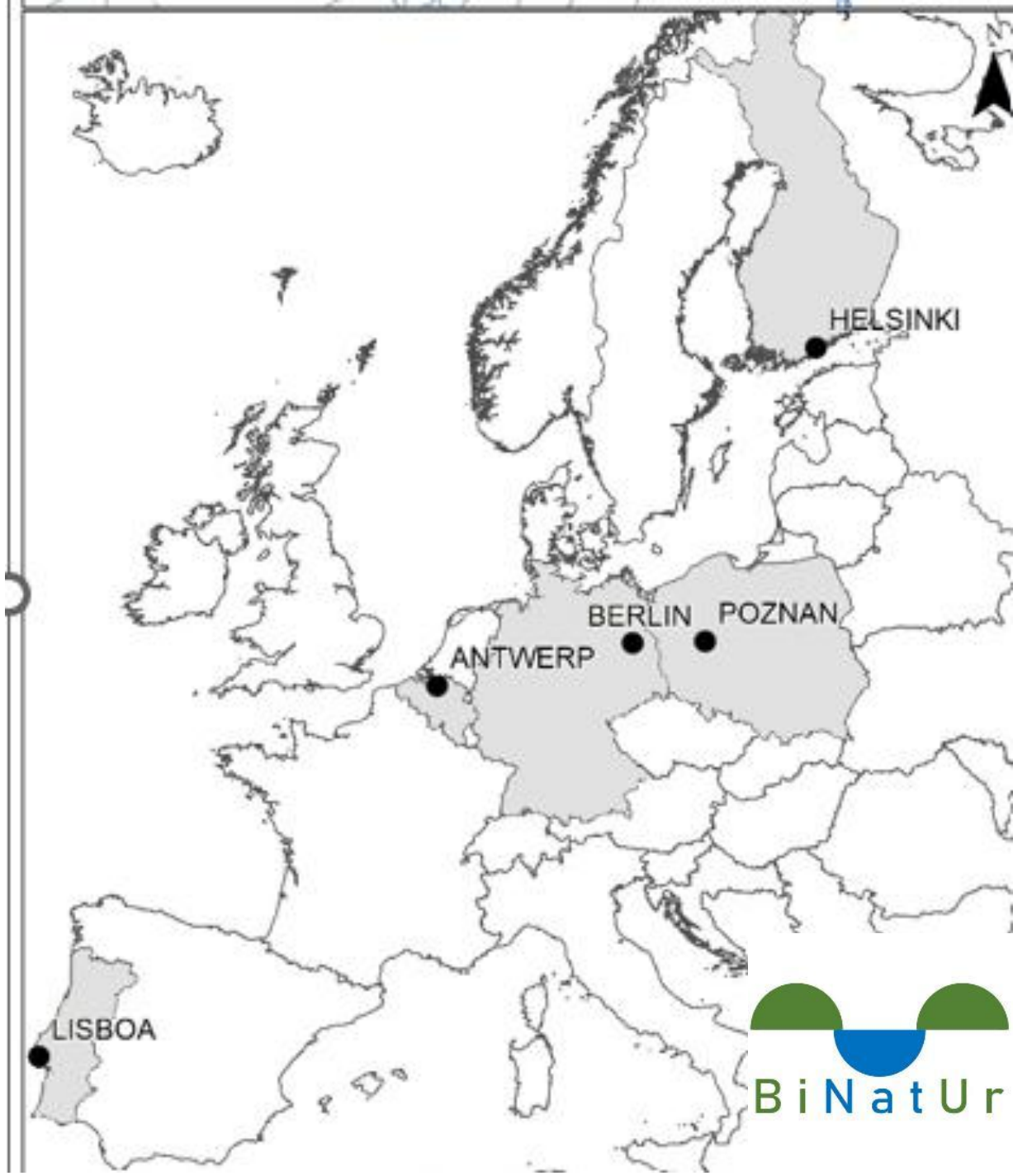
U LISBOA | UNIVERSIDADE DE LISBOA

POZNAŃ UNIVERSITY OF LIFE SCIENCES

IGB
Leibniz Institute of Freshwater Ecology and Inland Fisheries

HUMBOLDT-UNIVERSITÄT ZU BERLIN

University of Antwerp
ECOSPHERE

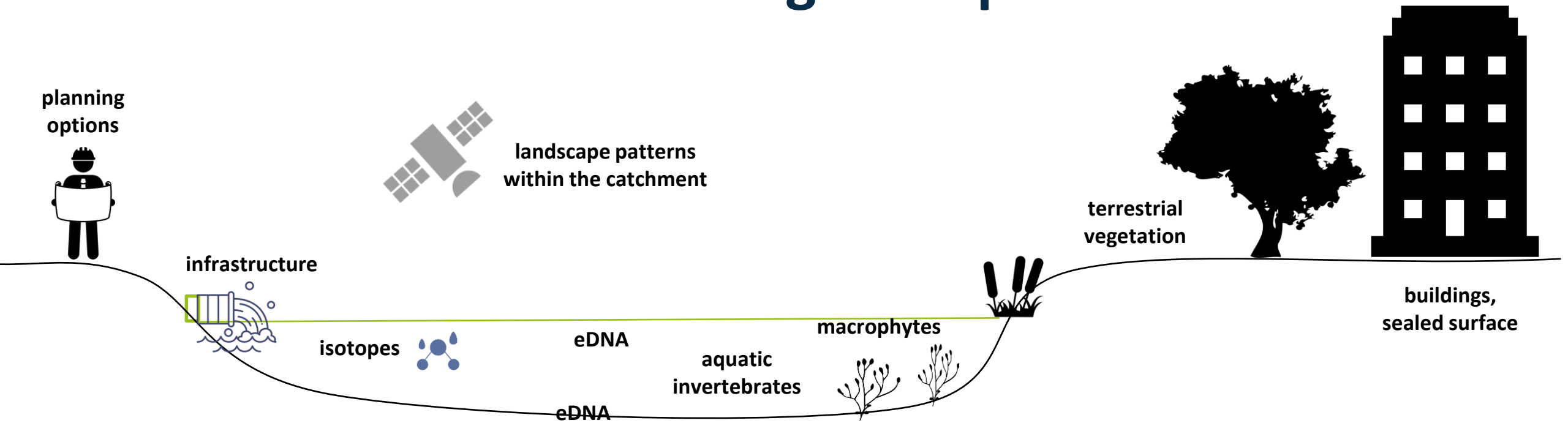


Special thanks to our excellent team

- Hanna Nieminen (Syke), Krister Karttunen (Syke), Pedro Pinho (Lisbon), **Vladimira Dekan Carreira** (Lisbon), Paula Gongalves (Lisbon), **Krzysztof Szoszkiewicz** (Poznan), Daniel Gebler (Poznan), Dörthe Tetzlaff (IGB), Michael Monaghan (IGB), **Maria Warter** (IGB), Dagmar Haase (Humboldt), Thilo Wellmann (Humboldt), Jan Staes (Antwerpen), Silvia Martin-Muñoz (Antwerpen), Lander Neuskens (Antwerpen)

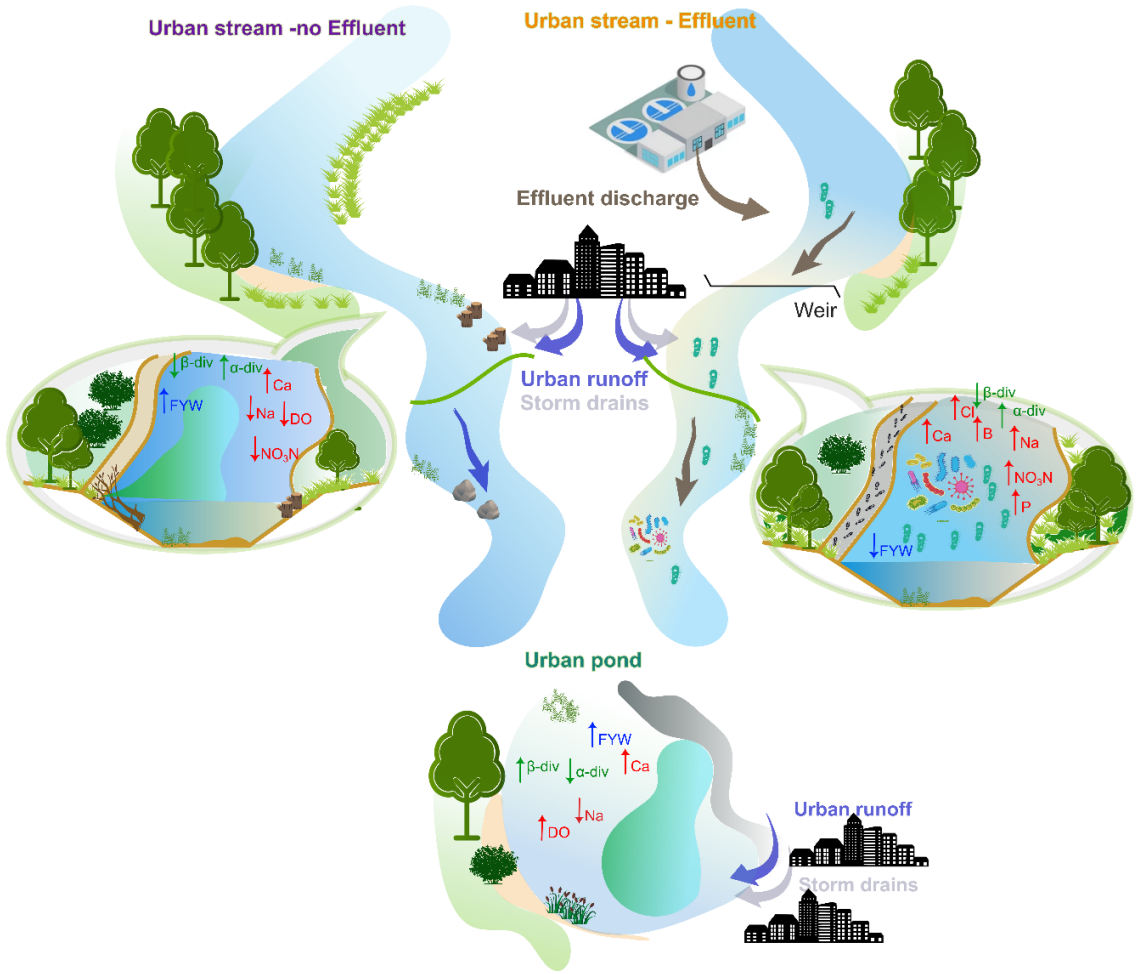
Urban small-water bodies (artificial, modified, restored) as aquatic nature-based solutions (aquaNbS) for water regulation (buffering and infiltration of runoff), recreational use, or aesthetic enhancements

SET research framing for aquaNbS



Social	Ecological	Technological
Is there a room for biodiversity in climate policies supporting NBS? What is the role of biodiversity in planning and maintaining aquaNBS?	What drivers and interlinkages there are between environmental factors and biodiversity? What kind of species richness and composition there are in aquaNBS?	How does surrounding built environment influence biodiversity and ecological quality of aquaNBS?

Main SET stressors for aquaNbS

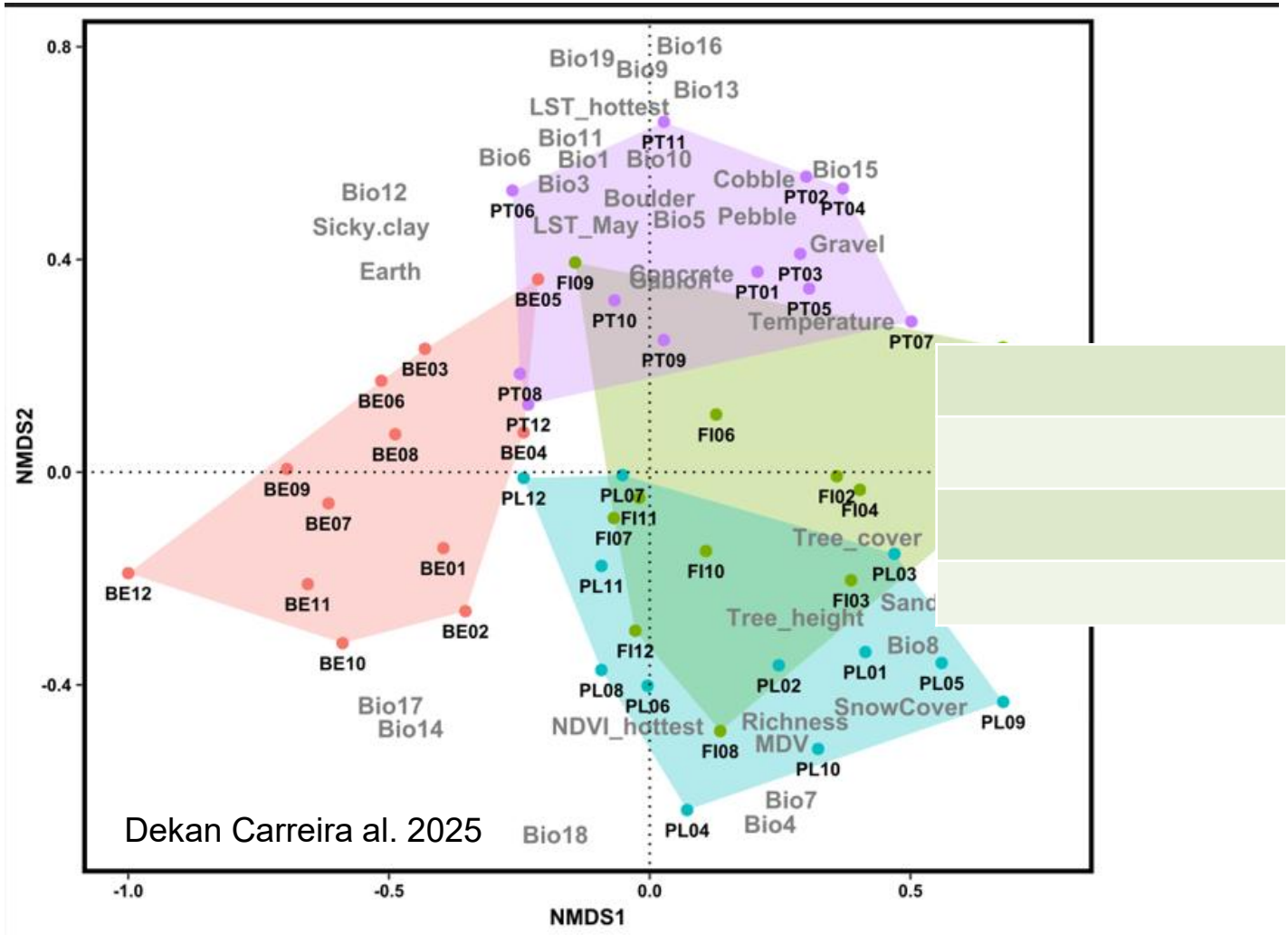


Wartet al. 2025; Szoszkiewicz et al. 2025

- There is a need to monitor effectiveness and sustainability of aquaNbS to ensure delivering benefits for nature and society
- We found integrated (*isotopes, eDNA, macrophytes*) evaluation method useful to detect ecological functions of urban aquaNbS
- Lack of natural substrates, suitable plant beds and the presence of steep concrete shorelines can limit diversity of aquatic species
- The high evaporative enrichment found in isotope analyses suggests a certain sensitivity to hydroclimate

Due to staff change and low commitment, we partly failed to collect required data in all five cities (missing data from Finland and Germany)

Main SET drivers of macroinvertebrate communities



Dekan Carreira al. 2025

NbS characteristics

- type of habitat (stream vs pond)
- Water availability (permanent vs temporary)
- bottom material
- water depth

Climate

- Bioclimatic variables
- Snow cover, Land Surface Temperature

Water parameters

- d-excess (potential evaporative effect)
- water temperature, pH
- oxygen concentration, conductivity

Surrounding vegetation

- Global Normalized Vegetation Index (NDVI), tree hight and tree cover

Selecting similar types of aquaNbS for analyses failed partly

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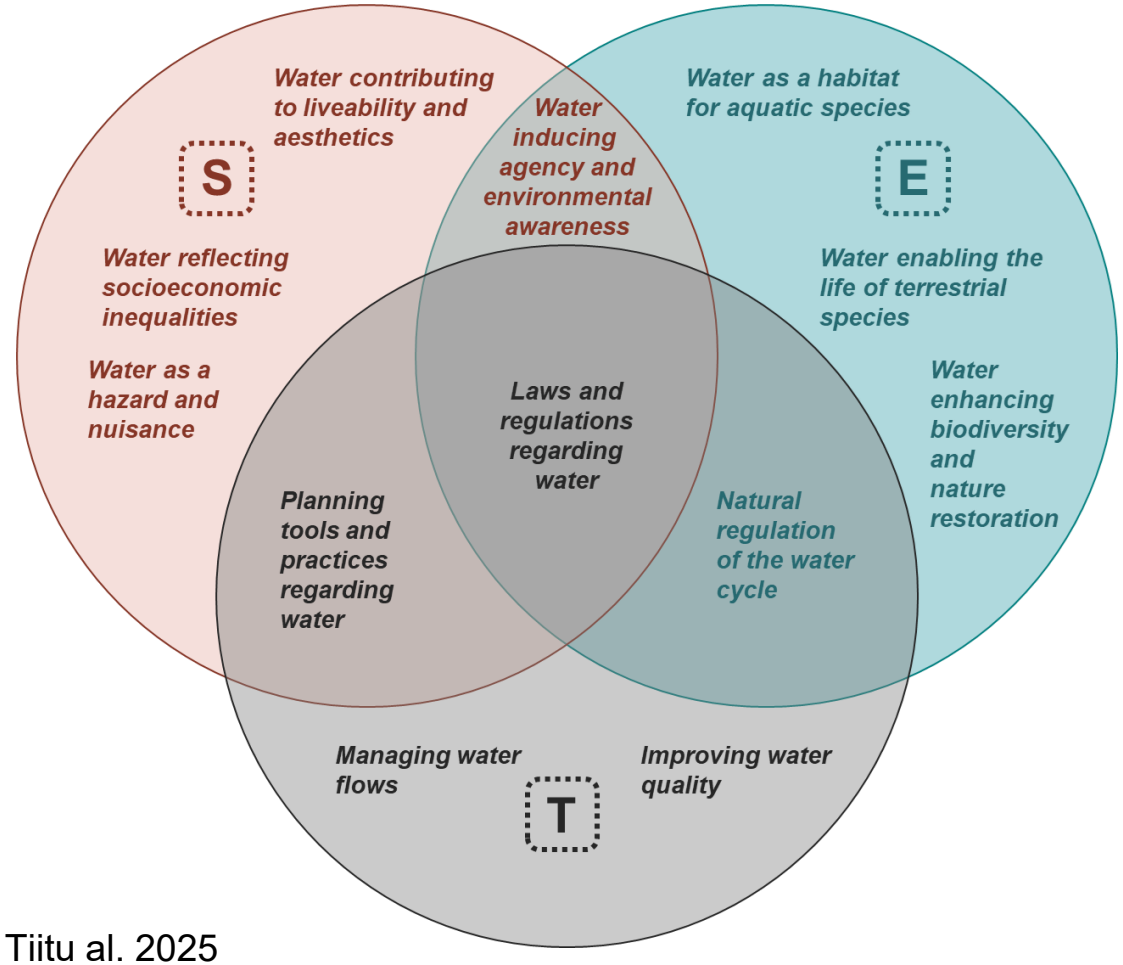
Main SET drivers for planning and maintenance



Tiitu al. 2025

- Using the SETS framework, we examined practitioners' conceptions of water in the context of aquaNbS in the Helsinki city region, Finland
- Analysis of the interview data revealed a dominance of technical (T) conceptions of water
- Increasing consideration of social (S) and ecological (E) conceptions of water likely requires a shift from viewing water infrastructures as conventional systems to sustainable systems

Group interviews were not completed in all five cities and there have been serious delay in processing comparative analyses

Policy Impacts of BiNatUr

Tiitu al. 2025

- Provided new **scientific evidence** on biodiversity and ecosystem services of aquaNBS in urban areas to support local planning, implementation and maintenance practices and
- To help urban planners, designers creating, maintaining and evaluating **biodiversity friendly aquaNbS** which are simultaneously effective in producing regulating ES
- Have raised **awareness of the role of biodiversity** in aquaNBS among planners but also among wider interested public through several local workshops, training sessions and field visits
- Developed standardized **monitoring and sampling methods** further use to better fit for urban small water bodies and small-scale aquaNbS

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Conclusions

- AquaNBS can support urban biodiversity and ecosystem services
- More strategic approach to aquaNbS planning and implementation in cities is needed
- Understanding which environmental factors impact species communities is critical to improve construction, restoration and management of aquaNbS and their biodiversity
- Take climate conditions into account - especially climate seasonality of drought and ice - important for management since extreme events increase due to climate change

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COSAR

Context-dependence of the societal and ecological outcomes from river ecosystem restoration

By Jérémy Piffady

Consortium: Alienor Jeliazkov, Céline Le Pichon, Stefan Stoll, Evelyne Tales, Ralf Verdonschot, Christine Weber and Jérôme Belliard

and young researchers Blandine Charrat, Nina Kaiser, Martin Palt and Mathieu Floury

INRAE

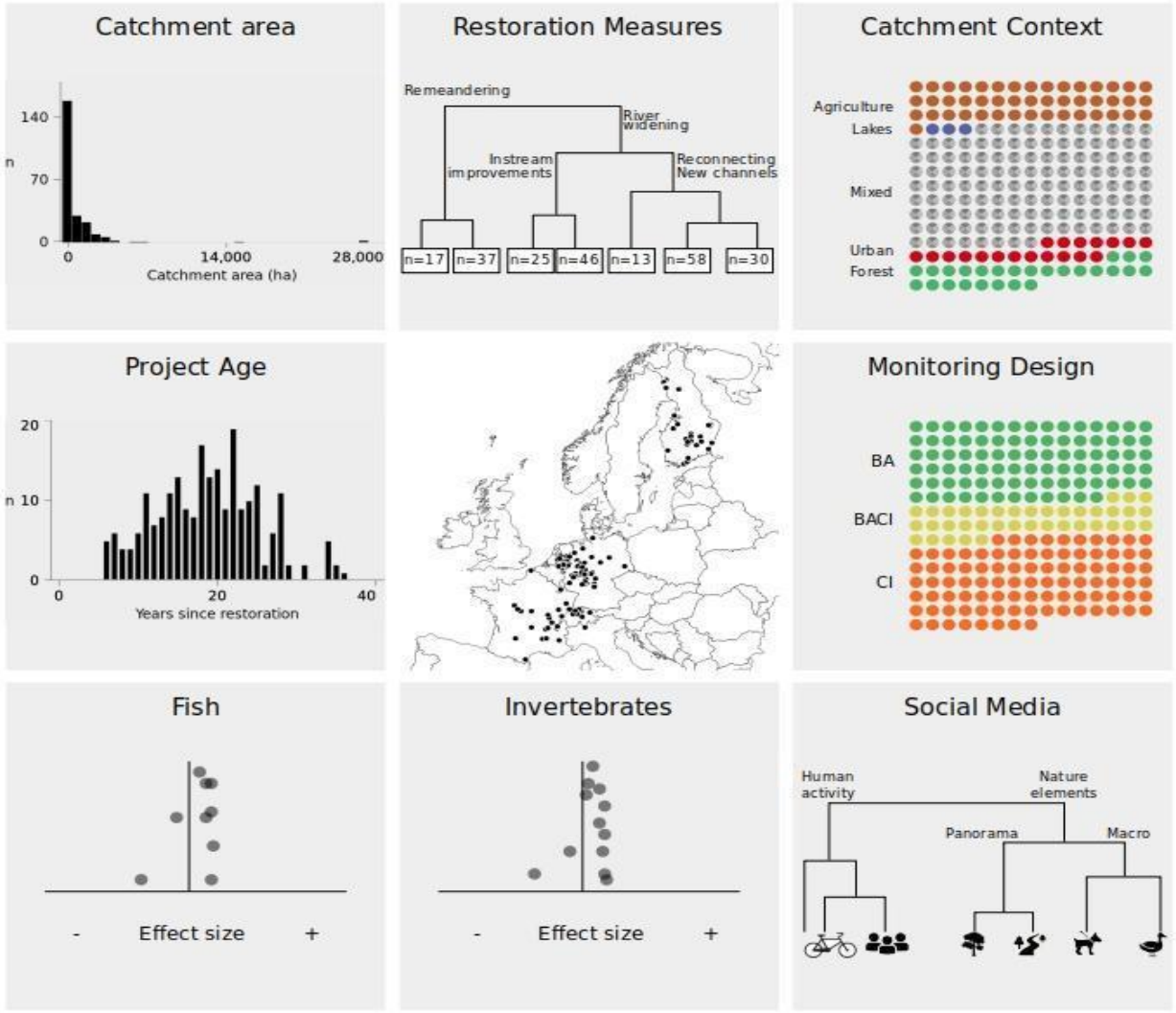
Umwelt-Campus Birkenfeld | HOCHSCHULE TRIER

WAGENINGEN UNIVERSITY & RESEARCH

eawag aquatic research

BiodivRestore ERA-NET COFUND
Conservation and restoration of degraded ecosystems and their biodiversity, including a focus on aquatic systems

COSAR - Goals and challenges



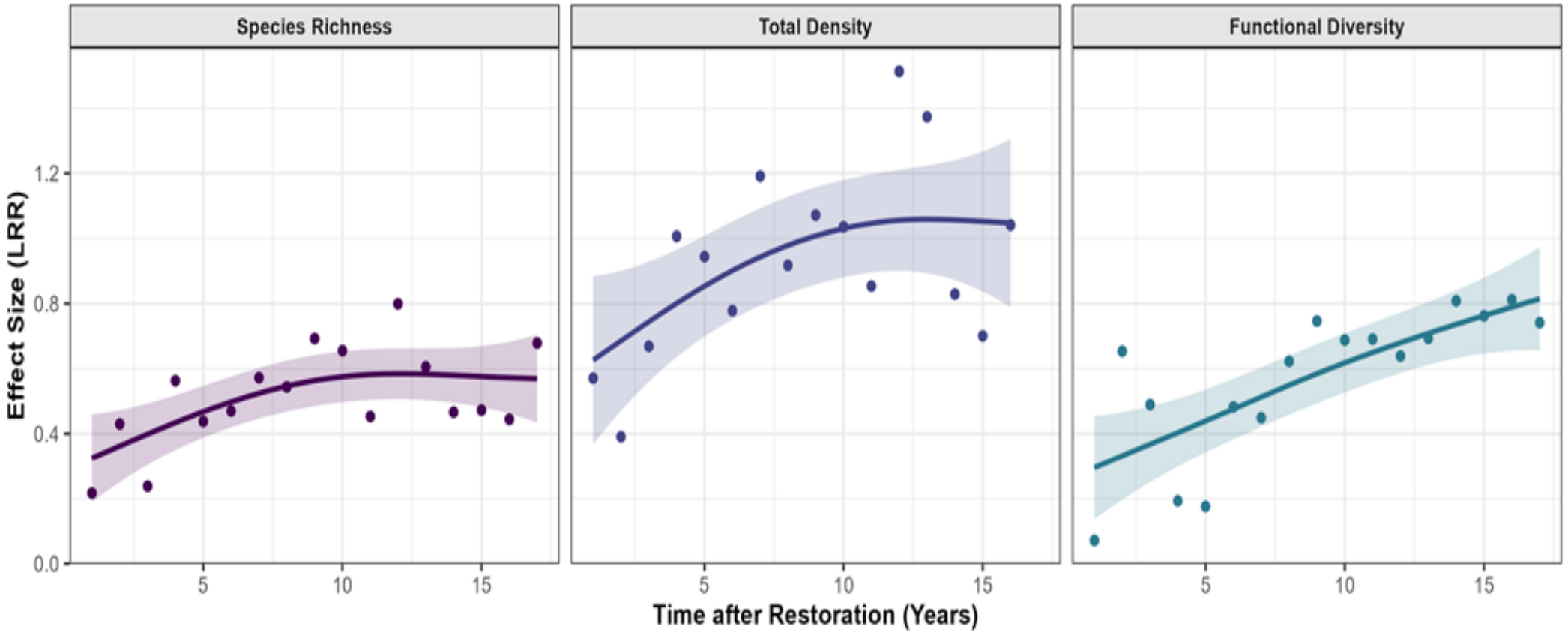
Goal: exploring the environmental context enhancing more positive ecological and societal outcomes from restoration of rivers

Harmonize a large dataset of 226 ecological survey sites

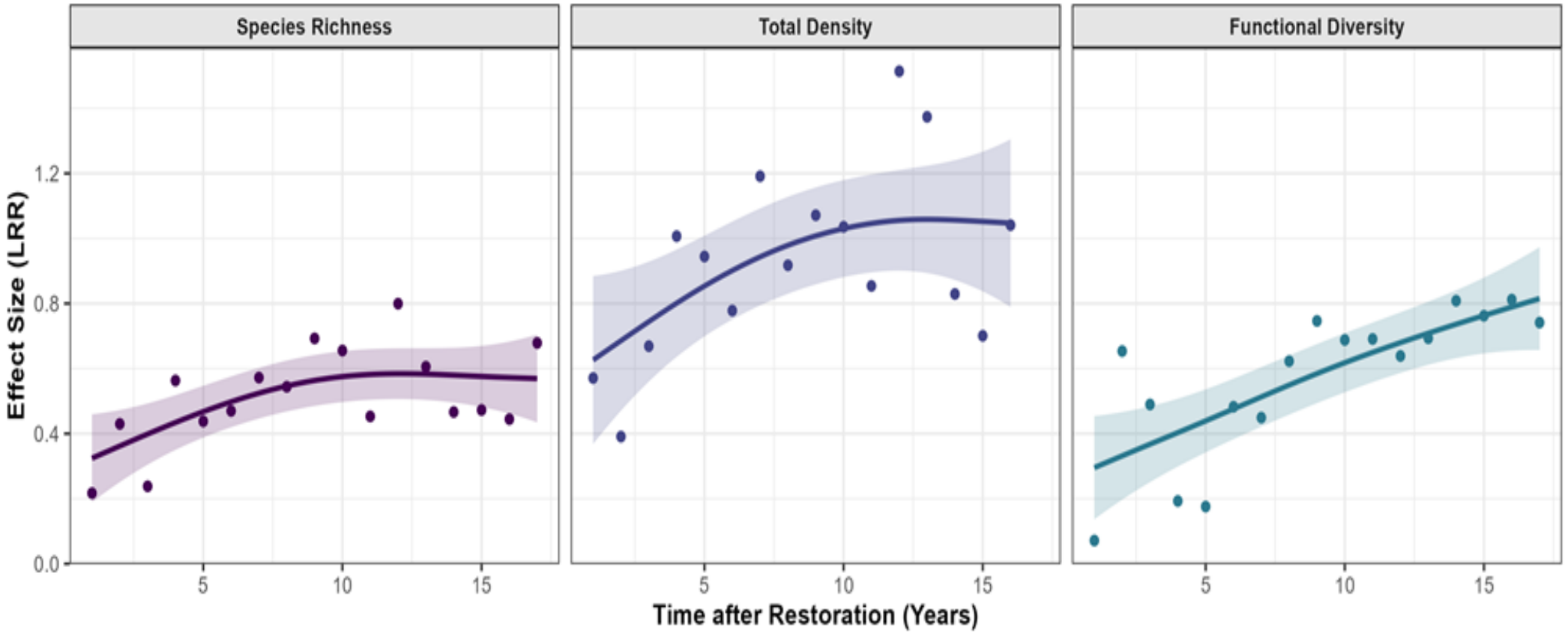
Use innovative approaches to extract information from social media networks

GIS / European data layers

Understanding ecological outcomes – the hard choice of metrics

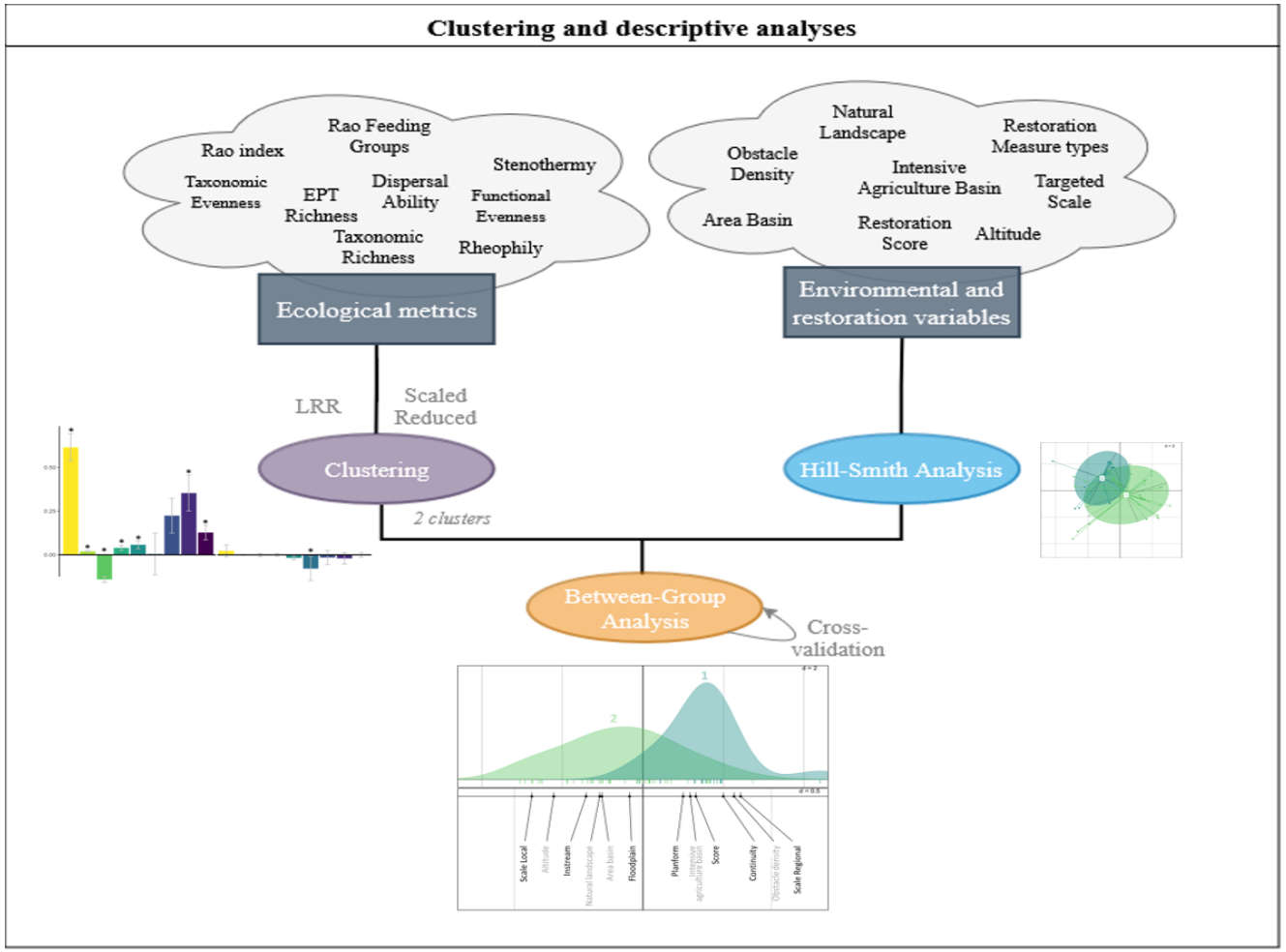


Understanding ecological outcomes – the hard choice of metrics



What if we tried to model different responses to environment all together?

Understanding ecological outcomes – towards integrative multi-metrics analysis



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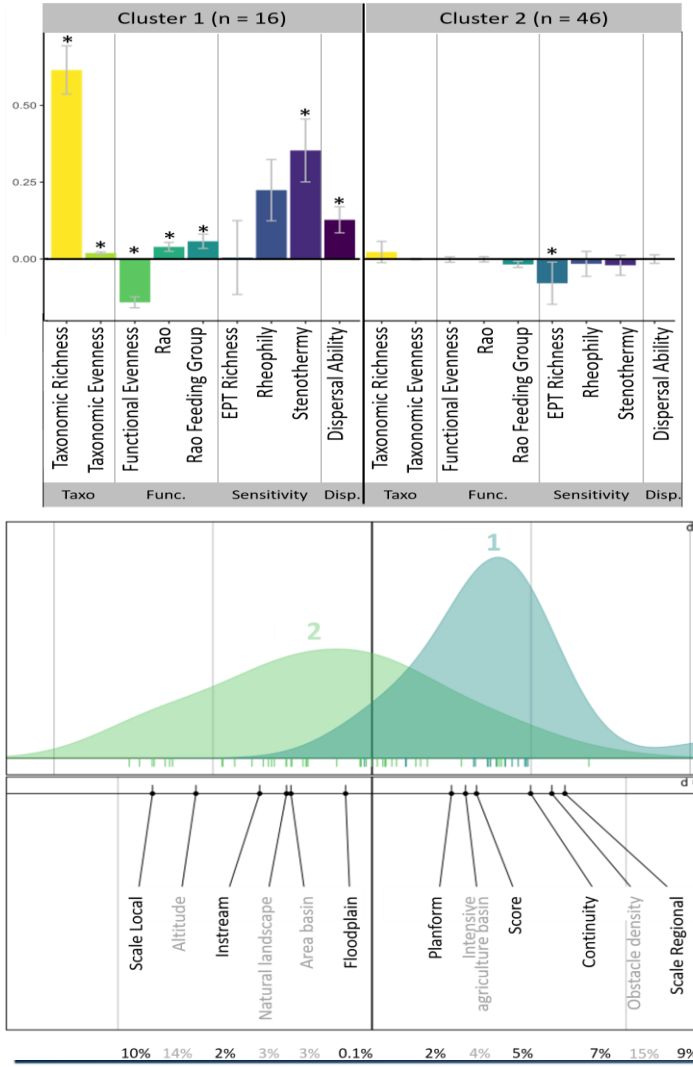
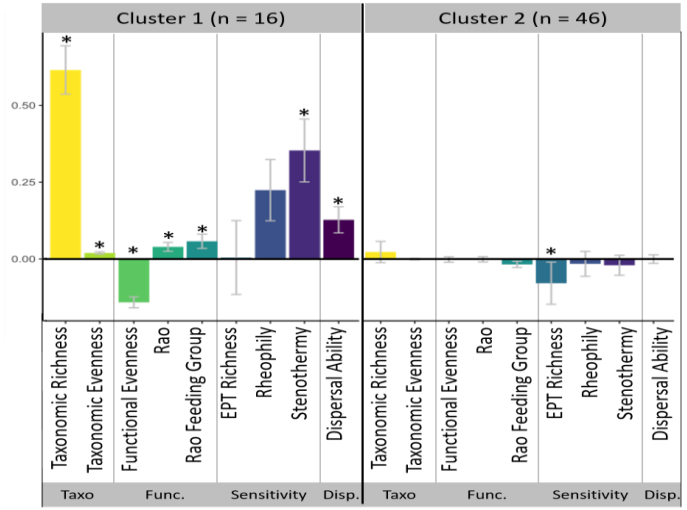
Understanding ecological outcomes – towards integrative multi-metrics analysis

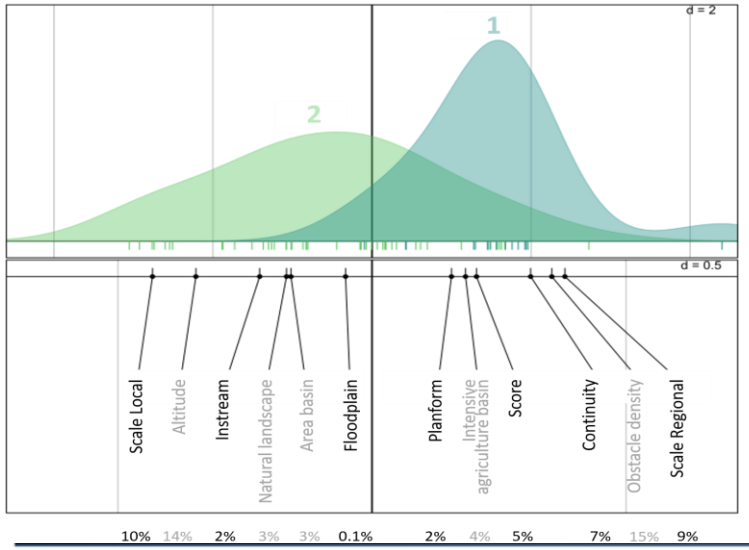


- Only 2 clusters
  - High + effects vs. No effect
  - Most of sites exhibit low effects

- Environmental factors
  - Larger effects in more degraded landscapes / large scale context
  - Larger scale projects, targetting processes and not local instream habitats

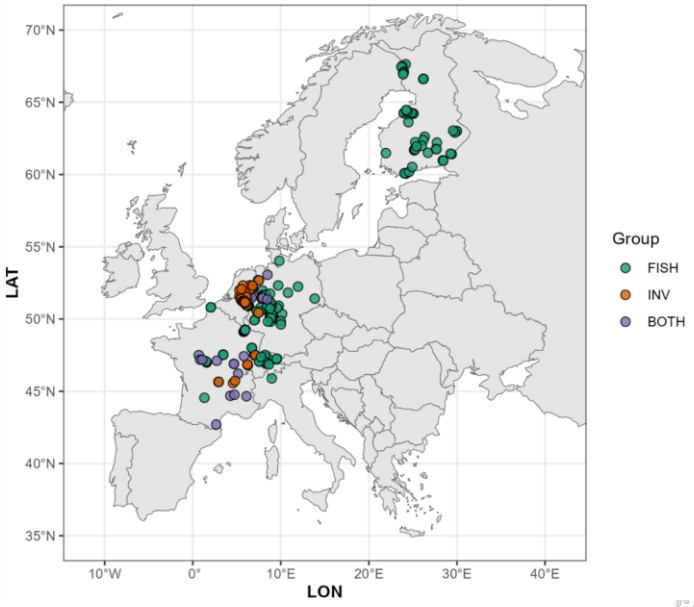
Understanding ecological outcomes – towards integrative multi-metrics analysis - Hurdles



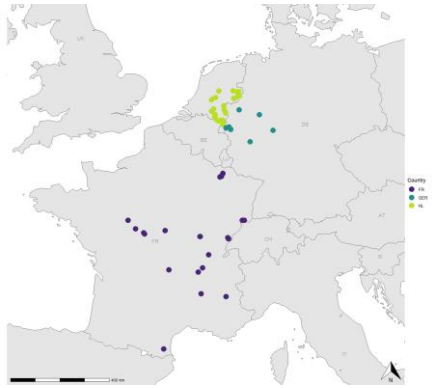


- Effect-sizes allow large scale comparisons (sites, monitoring, metrics, biological compartments) but
- Hide the starting and final states
  - Large effects, but does it mean reaching a good state?
    - How to tackle this remaining uncertainty?
  - Need for case to case checking or develop new ways to introduce potential group baselines to allow more precise conclusions

Understanding ecological outcomes – towards integrative multi-metrics analysis - Hurdles



From a 226 sites database



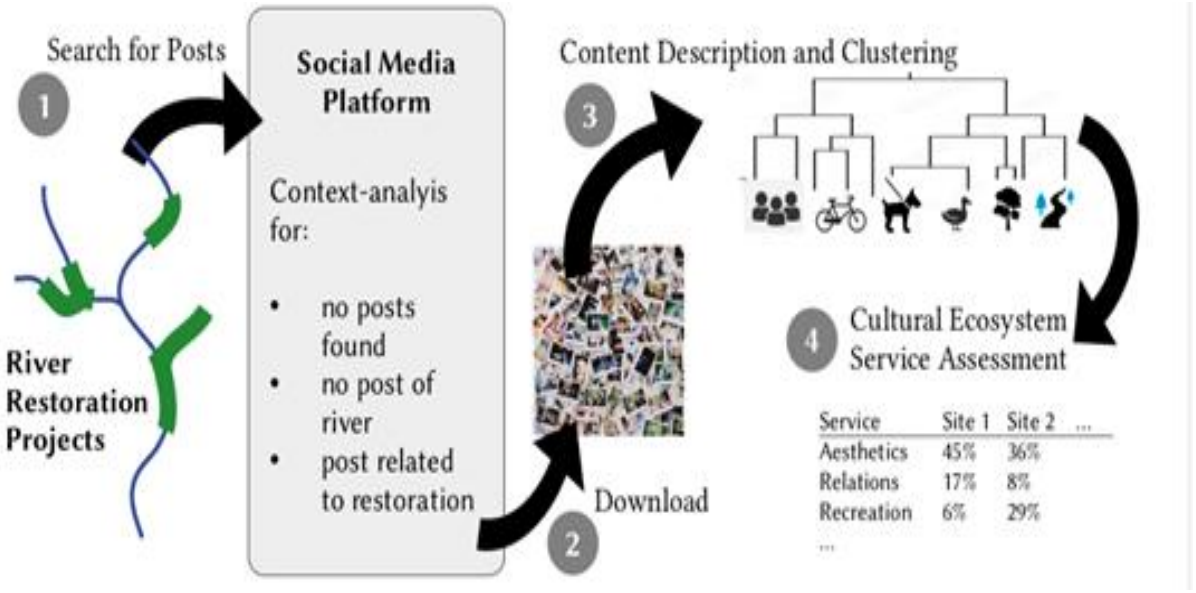
To a 62 sites analysis

- Effect-sizes allow large scale comparisons (multiple countries, metrics, biological compartments) but
- Hide the starting and final states

- Difficult to disentangle the effects
  - Need larger datasets to get finer grain typical responses patterns
  - Need for harmonised ones

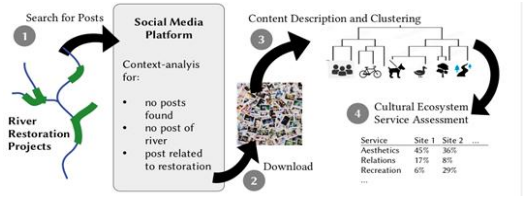
Understanding societal outcomes – Using social medias

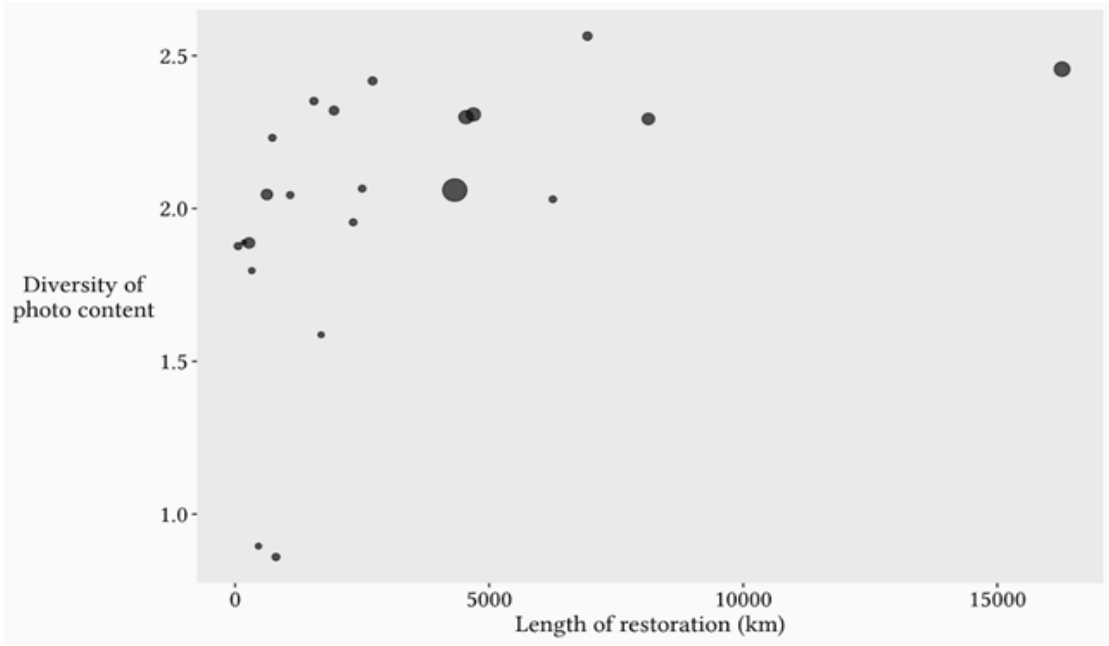




- Population reacts to restoration through social medias, making it possible to assess perception
- Opens paths for innovative indicators

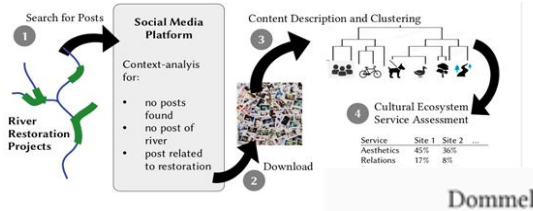
Understanding societal outcomes – Using social medias

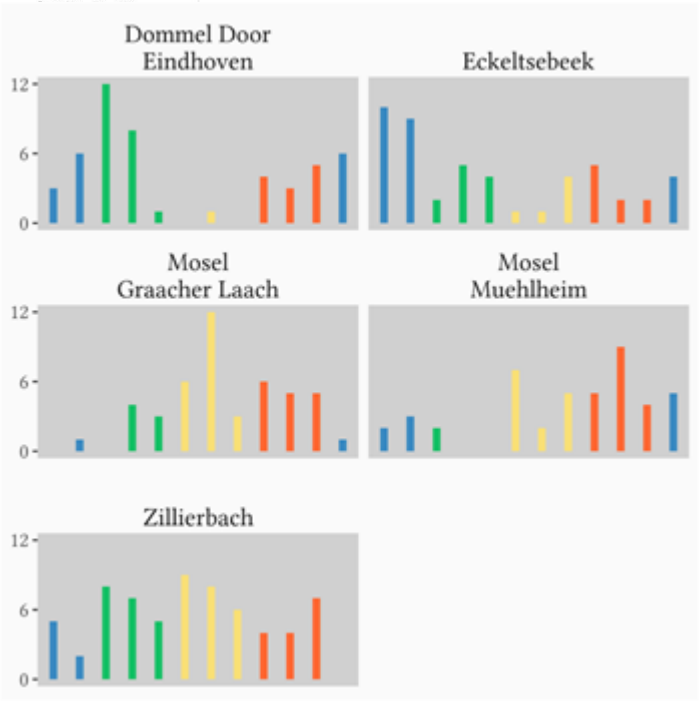




- Population reacts to restoration through social medias, making it possible to assess perception
- Opens paths for innovative indicators
- Investigate Cultural Ecosystem Services
  - Larger projects generate more CES

Understanding societal outcomes – Using social medias

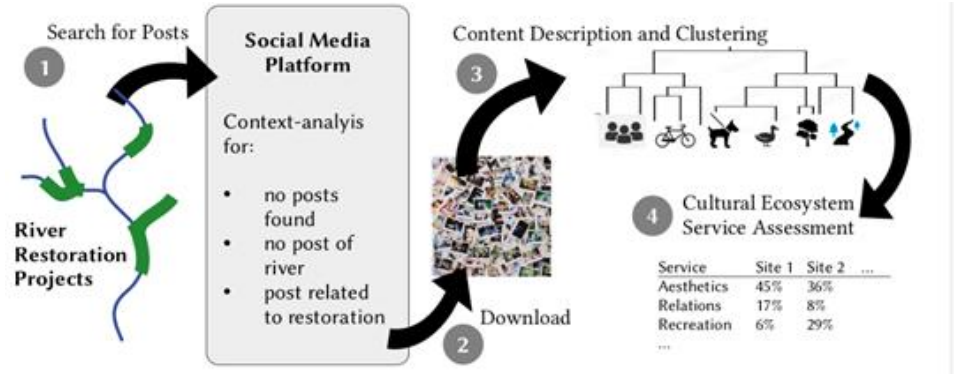




- Population reacts to restoration through social medias, making it possible to assess perception
- Opens paths for innovative indicators

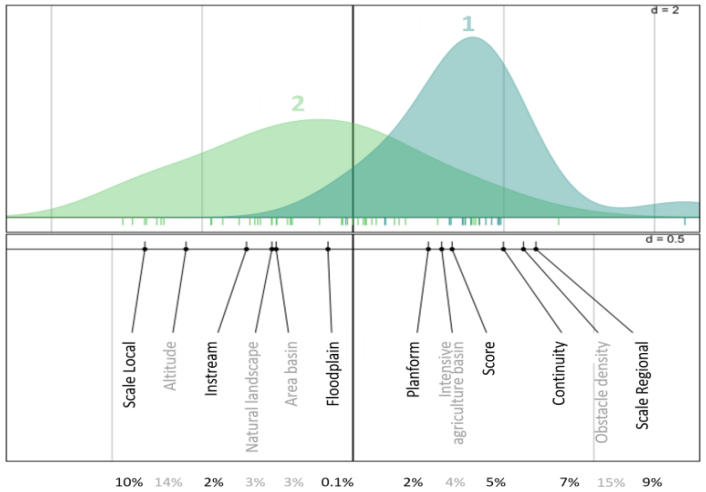
- Investigate Cultural Ecosystem Services
  - Larger projects generate more CES
  - Inter-seasonal patterns can be seen on individual sites

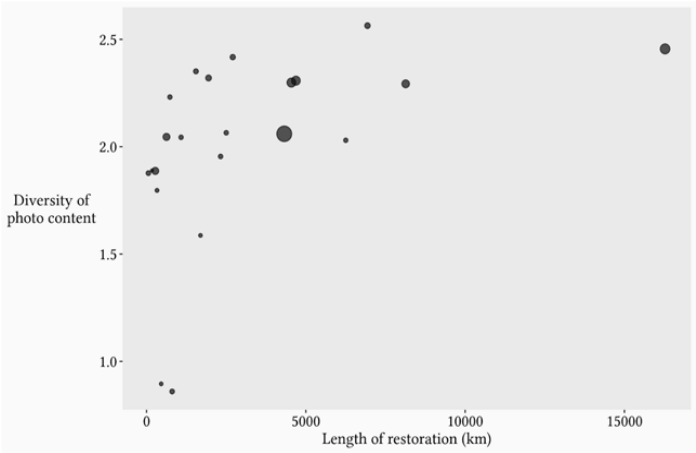
Understanding societal outcomes – hurdles



- Entire process takes long time
- Main social medias do not integrate precise location
  - Difficult to identify the available and relevant pictures
  - Work with hashtags
    - But this is possible to create dedicated hashtags

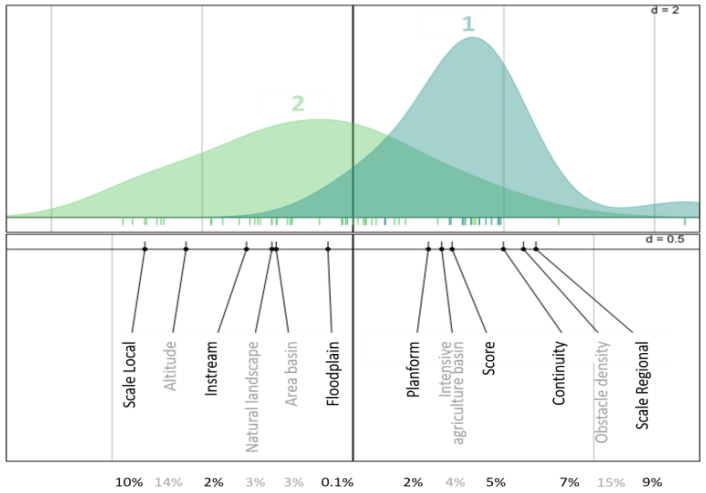
Policy impacts – take-home

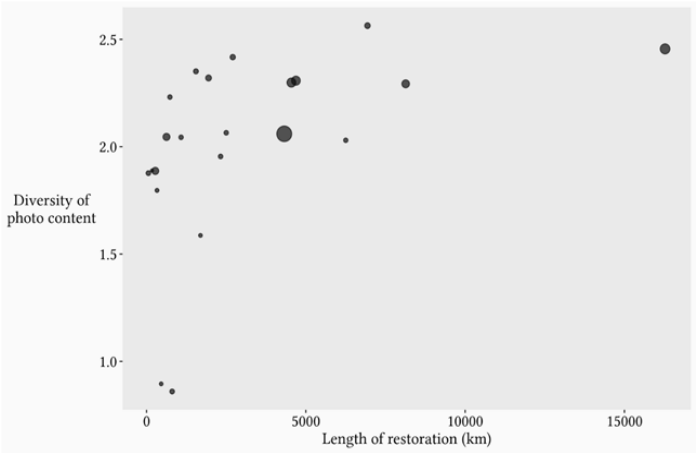




- Restoration has larger ecological and societal effects for larger projects, targetting processes and functions
  - Social media posts can be enhanced at local scale

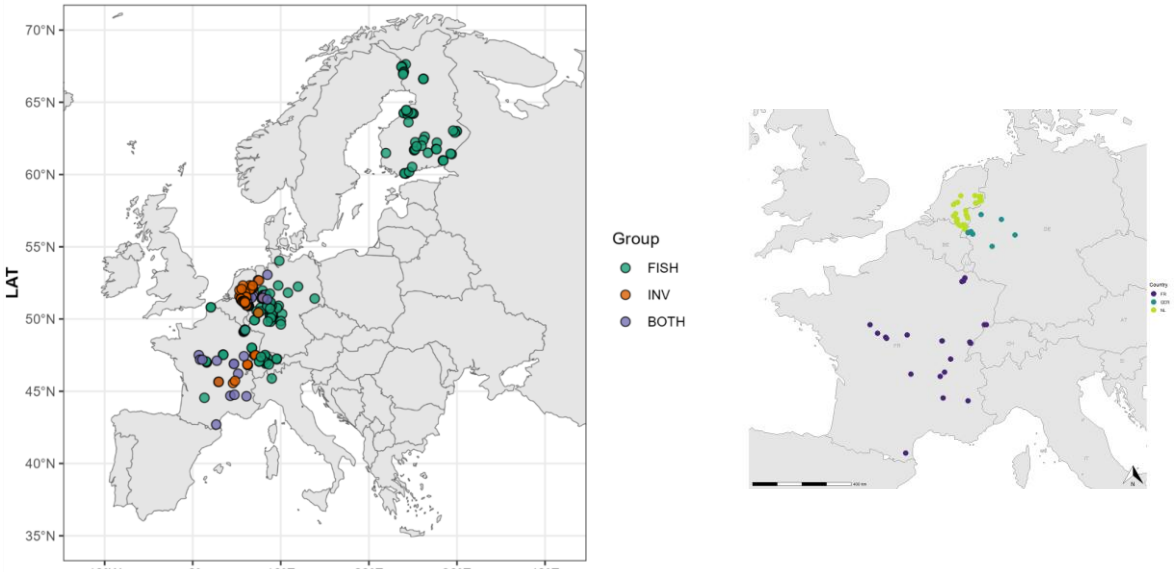
Policy impacts – take-home

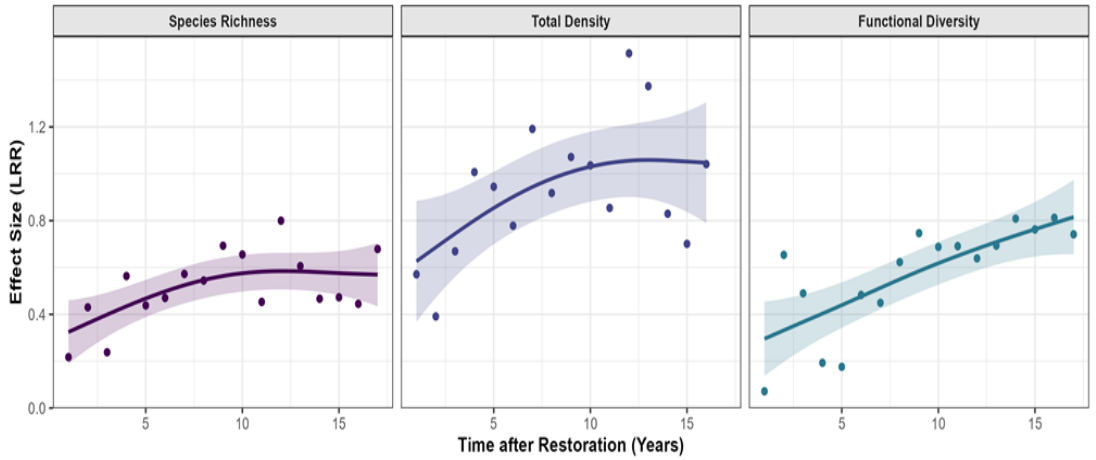




- Restoration has larger ecological and societal effects for larger projects, targetting processes and functions
- Ecological changes are higher in more degraded contexts
  - Still with the uncertainty : larger effect-size do not necessarily mean good final state

Policy impacts – take-home





- Restoration has larger ecological and societal effects for larger projects, targetting processes and functions
- Standardized monitoring would help increasing available sites for more robust large-scale analysis
  - Ecological systems need time to reach new equilibrium
  - Need long-term monitoring schemes

COSAR

Thank you for your attention

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NARROW

Narratives that Bringing Back Nature Into our Lives

Olivier Hymas , Tero Mustonen, Gretchen Walters, Jennifer Kelleher, Håkan Tunon , Marie Kvarnström , Noora Hhuusari , Kaisu Mustonen

NARRATIVES on restored water

NATUR VÅRDS VERKET

SLU SWEDISH BIODIVERSITY CENTRE

Swiss National Science Foundation

IUCN

Snowchange COOPERATIVE

SUOMALAINEN TIEDEAKATEMIA
FINNISH ACADEMY OF SCIENCE AND LETTERS | ACADEMIA SCIENTIARUM FENNICA

UNIL | Université de Lausanne
Institut de géographie et durabilité

BiodivRestore ERA-NET COFUND
Conservation and restoration of degraded ecosystems and their biodiversity, including a focus on aquatic systems

Bringing back nature into our lives

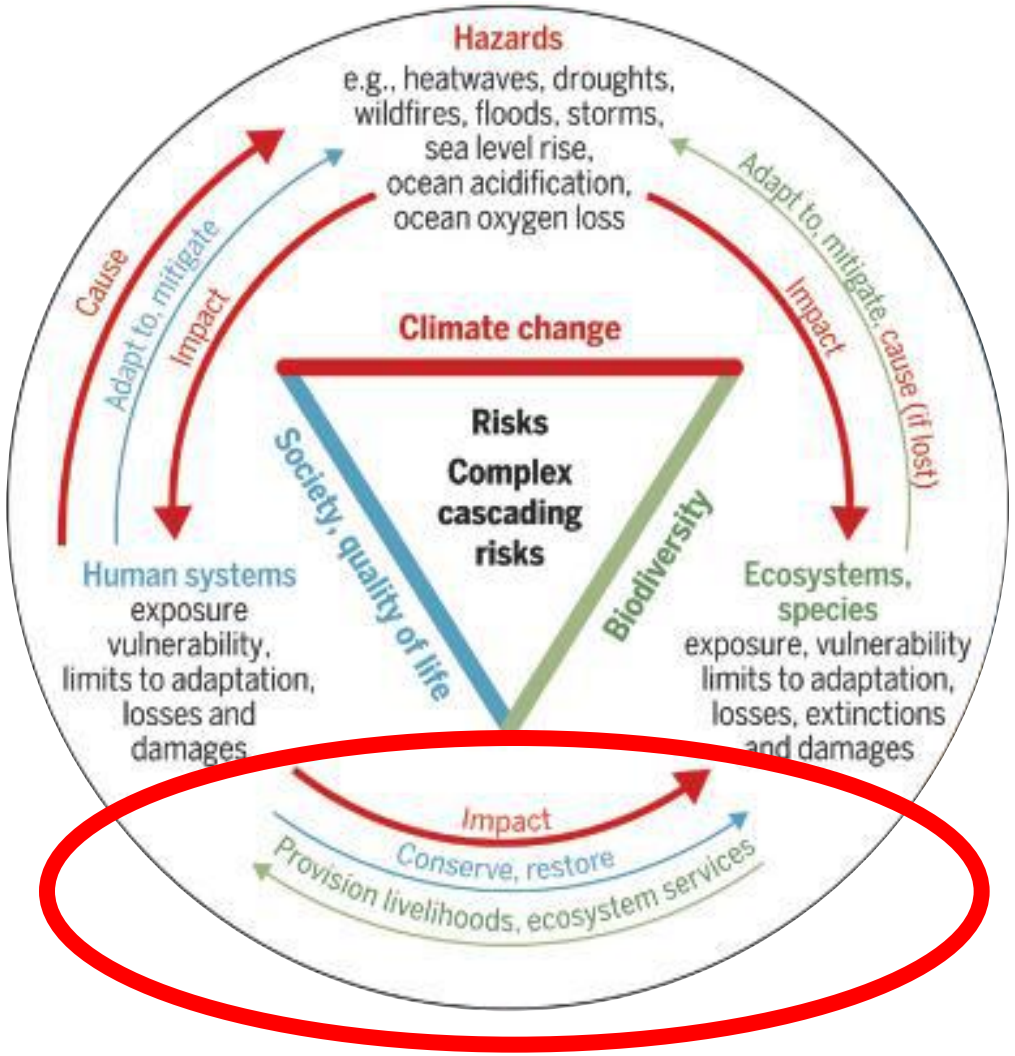
Nature without People

Nature with Conservationists, Walkers and Biologists

Where are the Rural People?

"Landscape" means an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factor"
Council of Europe Article 1

People's Contribution to Nature



Narratives

Narratives - Oral

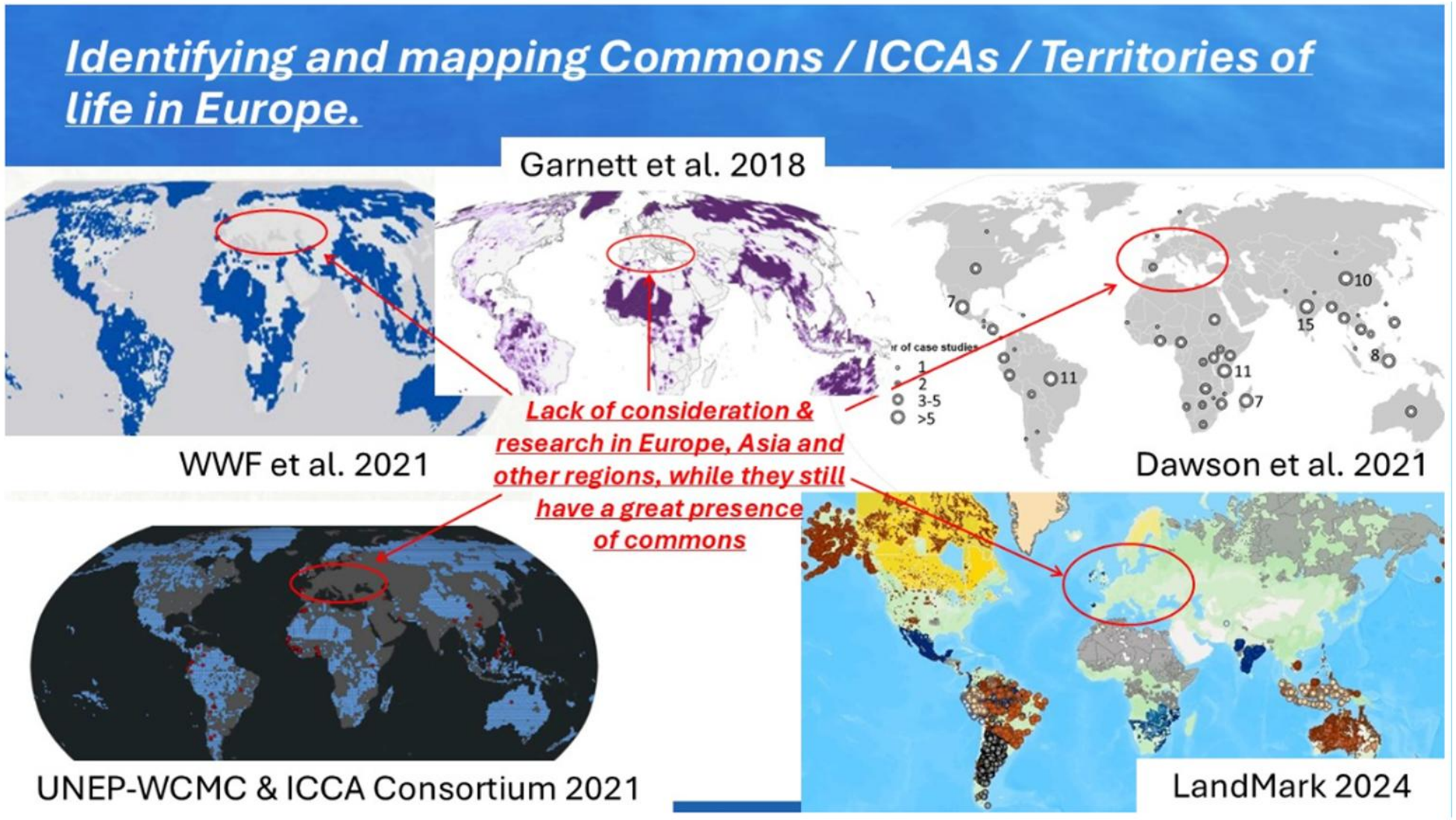
“I have a soft spot for these pastures.”

“They are similar to my childhood landscape that I remember from when I was little”

Narratives - Objects

European People are Connected with Nature

Europe Empty of Communities Connected to Nature!



Communities and Conserved Areas

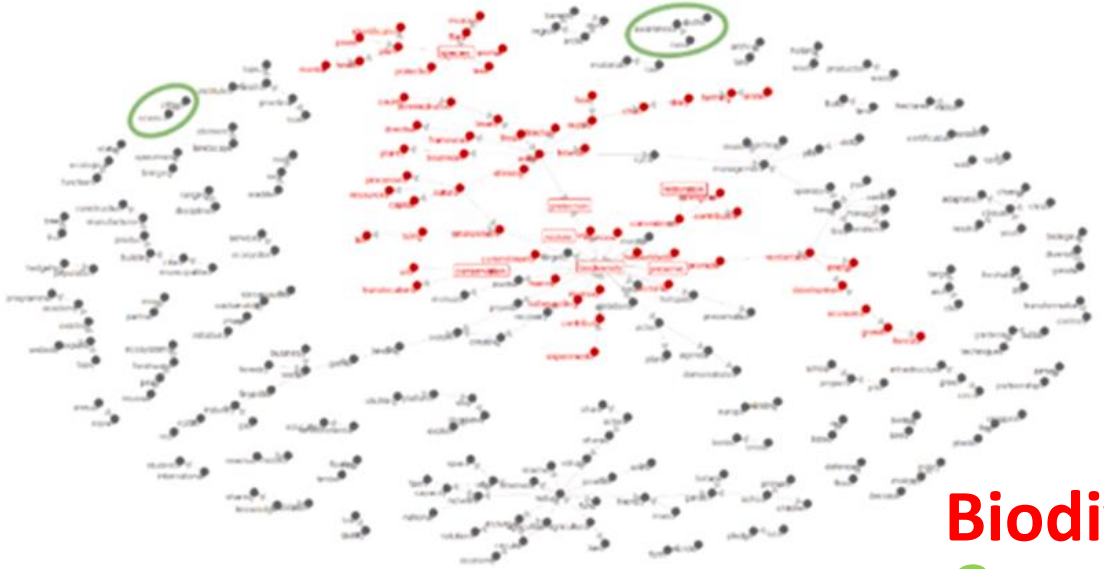
Protected Areas

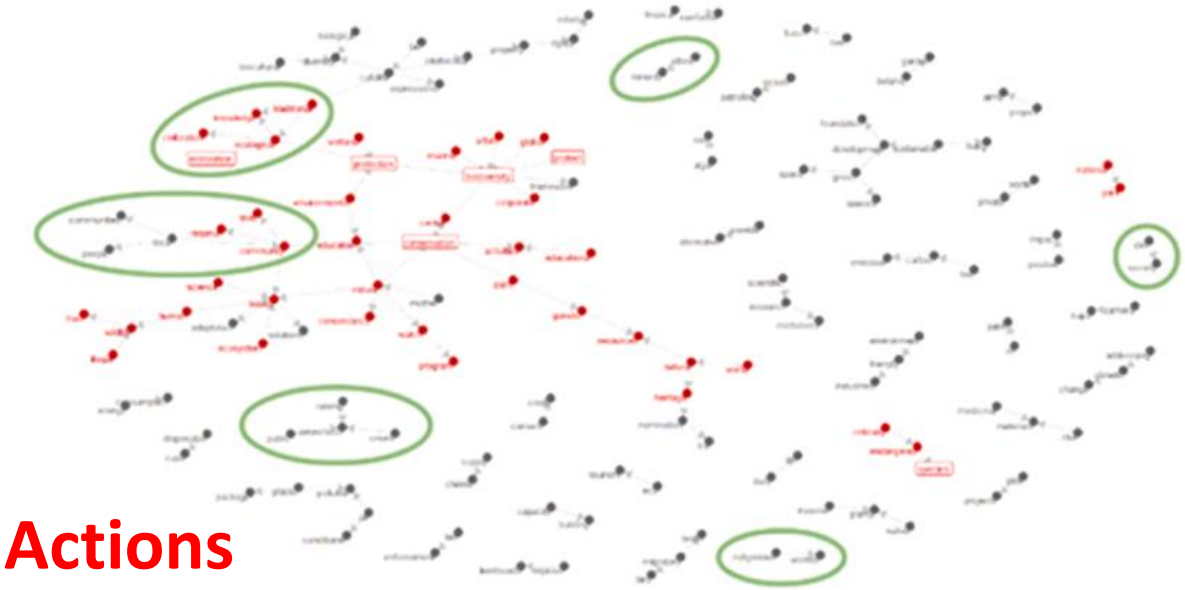
ICCAs

Community OECMs

Conclusion

Convention on Biological Diversity
Action Agenda Pledges





Europe

Biodiversity Actions

Community Actions

Asia

Source: Nguyen, et al.(2025) Local-global linkages in biodiversity governance: The regime complex of the convention on biological diversity agenda for nature pledges

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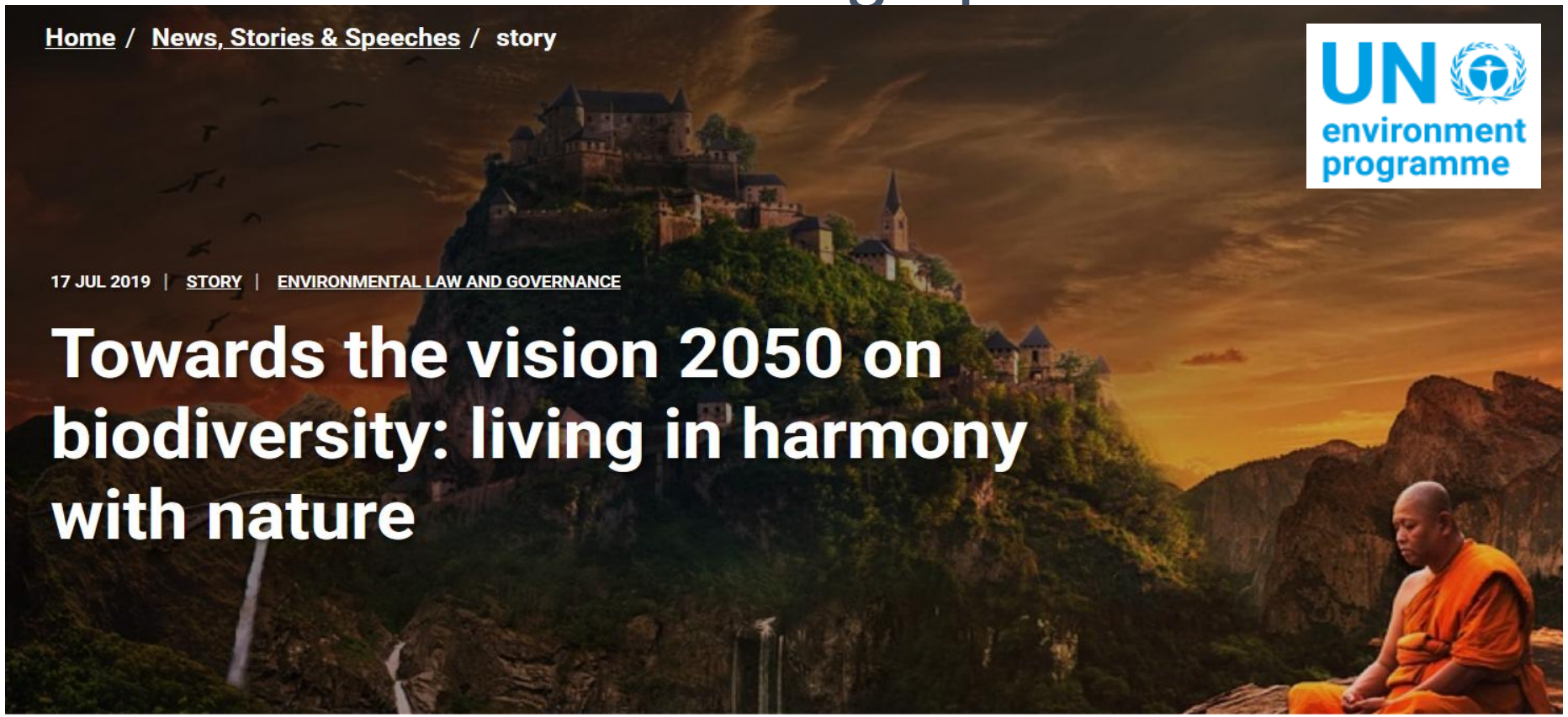
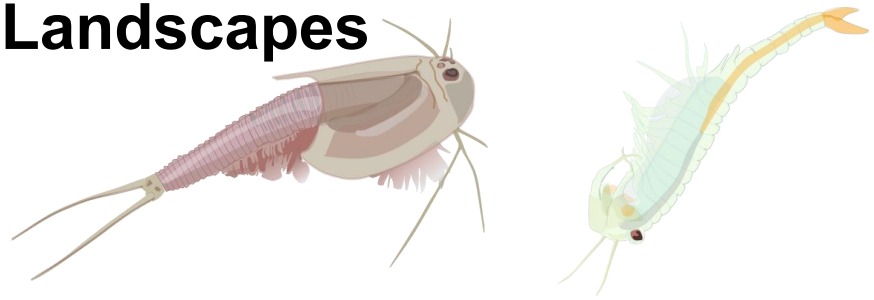
Conclusion
Inclusion Challenge post -2030



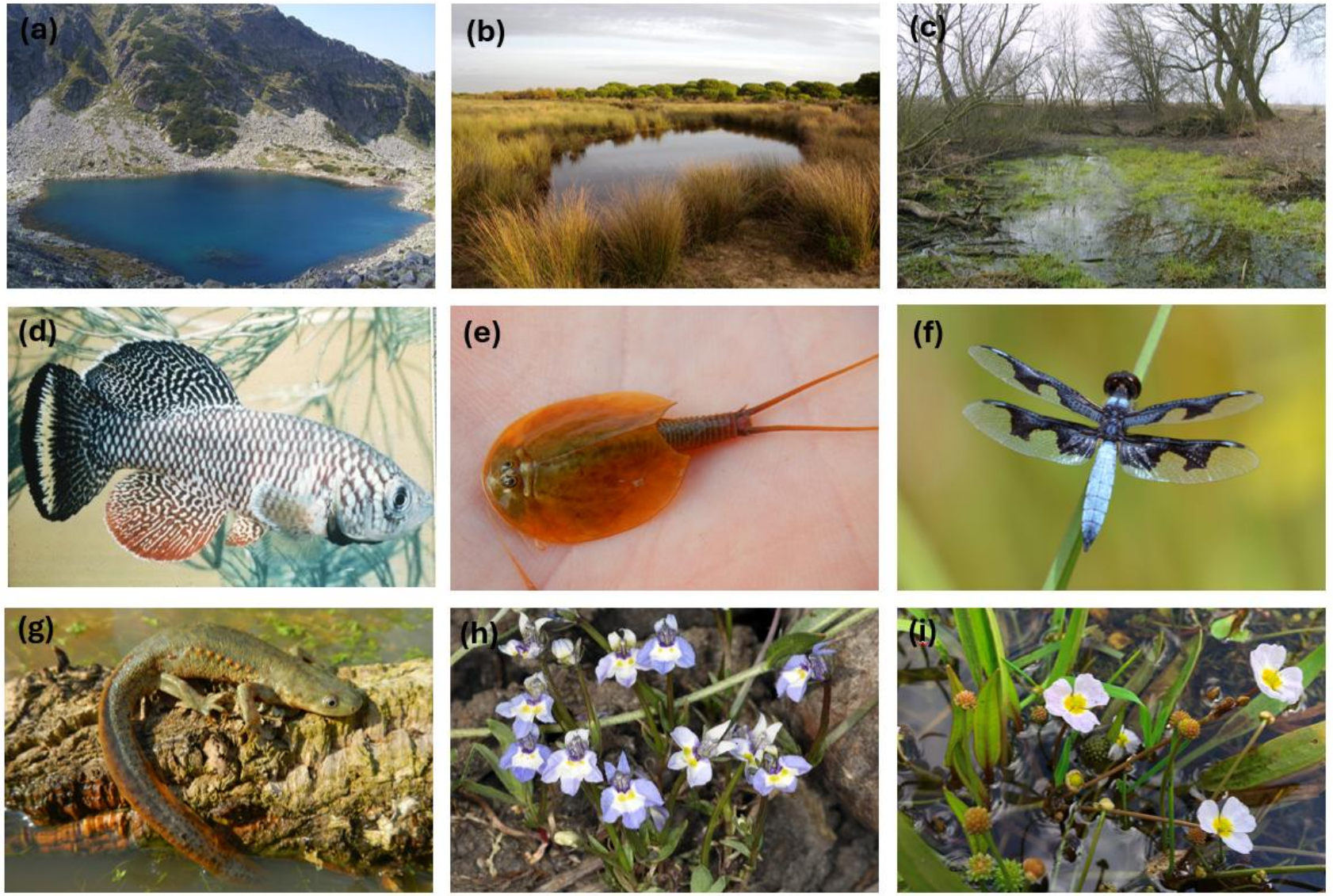
ResPond

Restoring and Managing Biodiversity and Ecosystem Services of Temporary Pond Landscapes



Bram Vanschoenwinkel, Community Ecology Lab
Vrije Universiteit Brussel, Belgium
Bram.jasper.vanschoenwinkel@vub.be, **www.insularecology.com**

Temporary pond ecosystems

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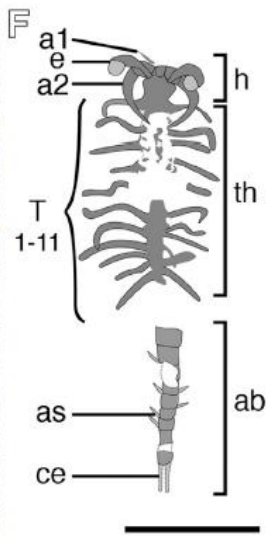
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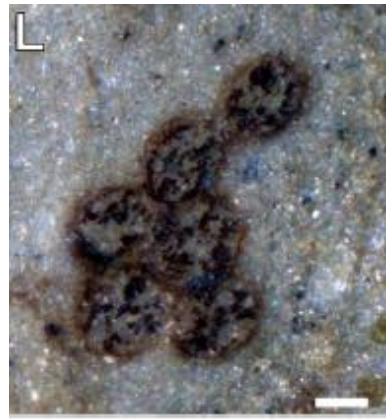
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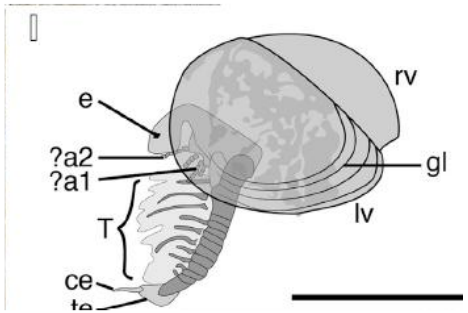
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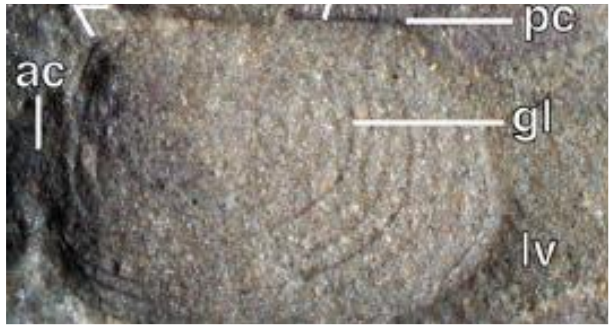
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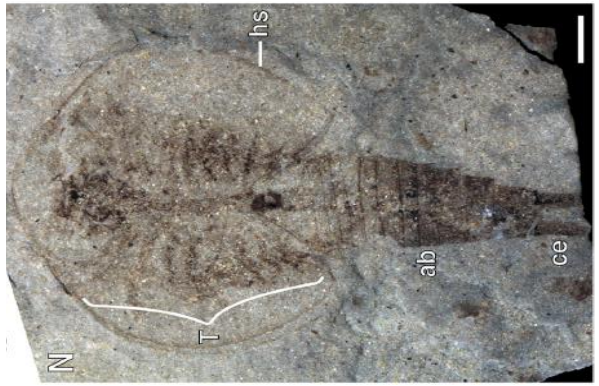
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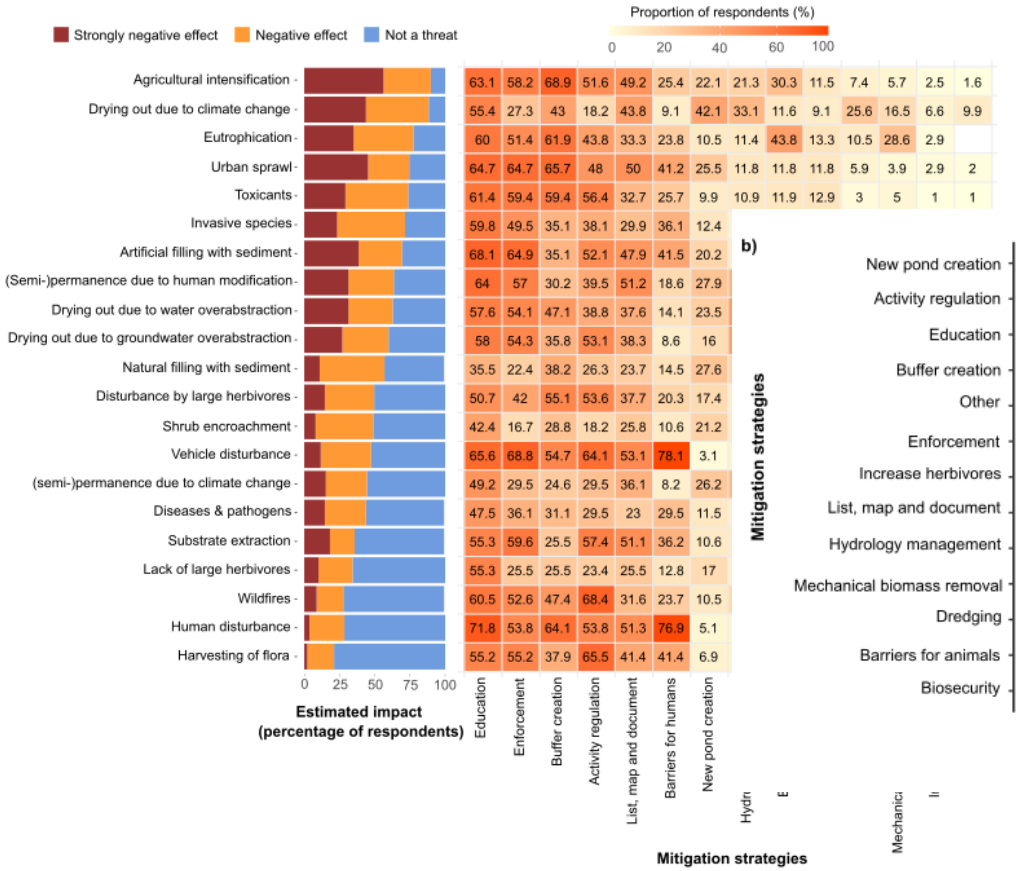
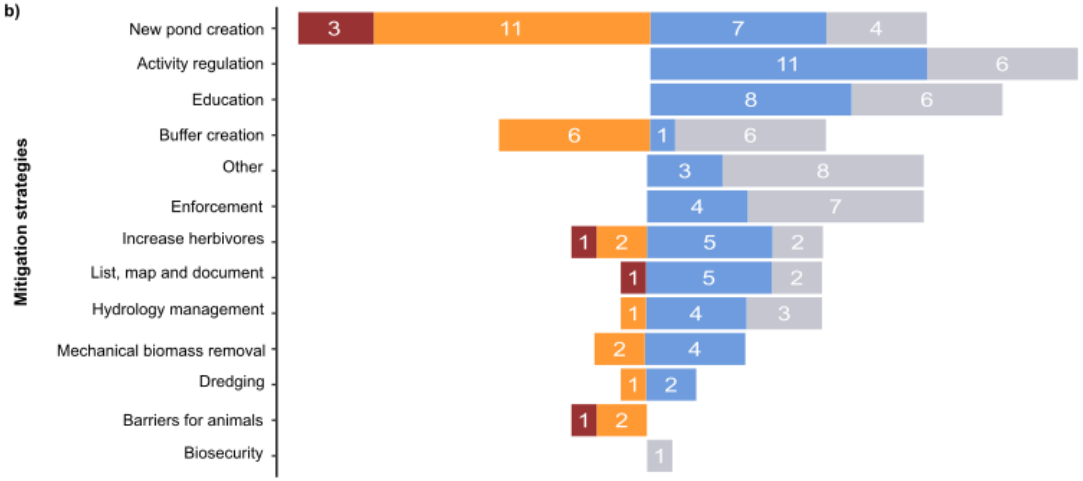
Highlights

1. Threats prioritized + mitigation measures vetted

Global Threats and Conservation Strategies for Temporary Ponds: A Synthesis of Expert Opinion and Scientific Evidence





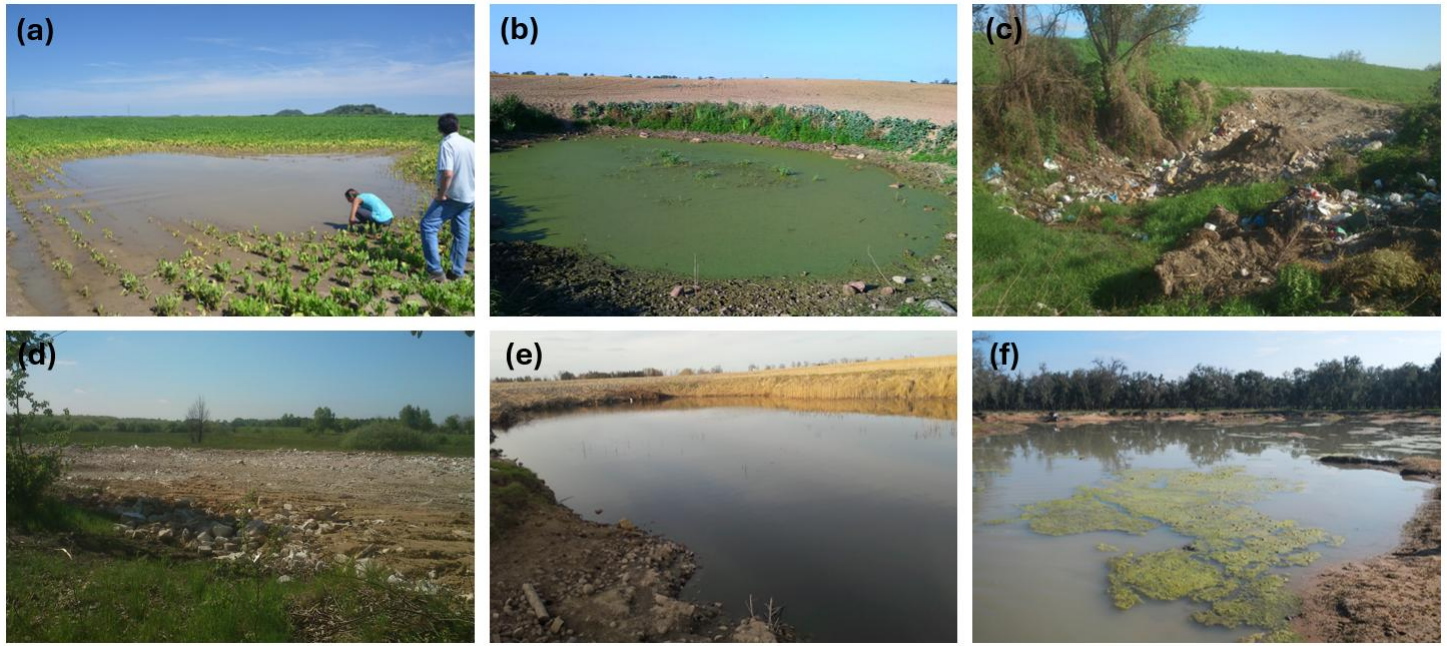
2. Good restoration practices determined

RESTORATION ECOLOGY
The Journal of the Society for Ecological Restoration
SER SOCIETY FOR ECOLOGICAL RESTORATION

RESEARCH ARTICLE

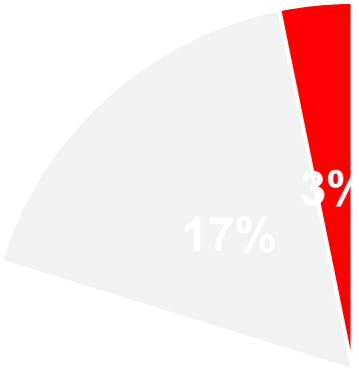
Lessons from pond creation and restoration projects in Europe

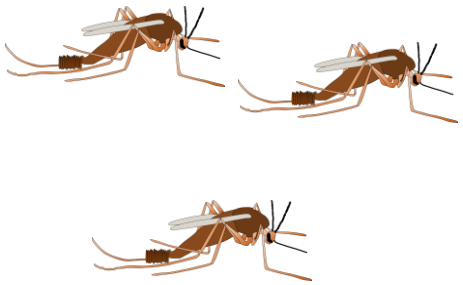
Lizaan de Necker[1], Luc Brendonck[1,2], Bram Vanschoenwinkel[3], Margarita Florencio[4,5], Laila Rhazi[6], Bartłomiej Gołdyn[7,8]

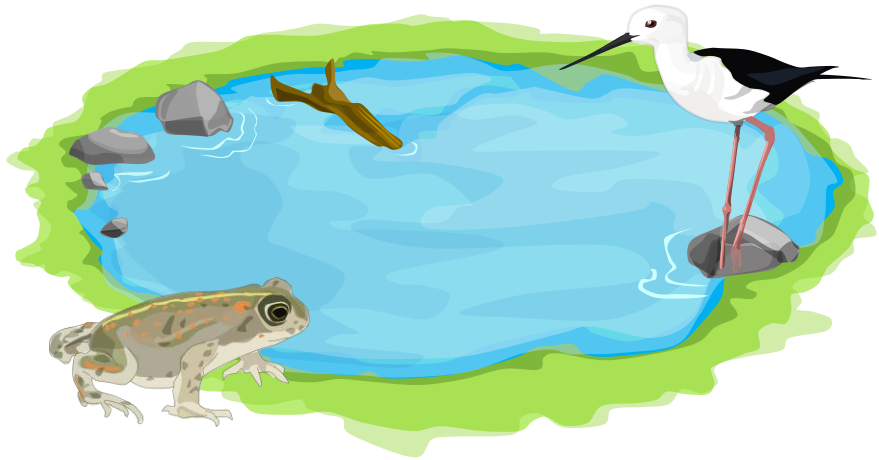


3. Stakeholder perceptions mapped

Reconstructing the Perceived Costs and Benefits of Temporary Ponds based on Stakeholder Consultation



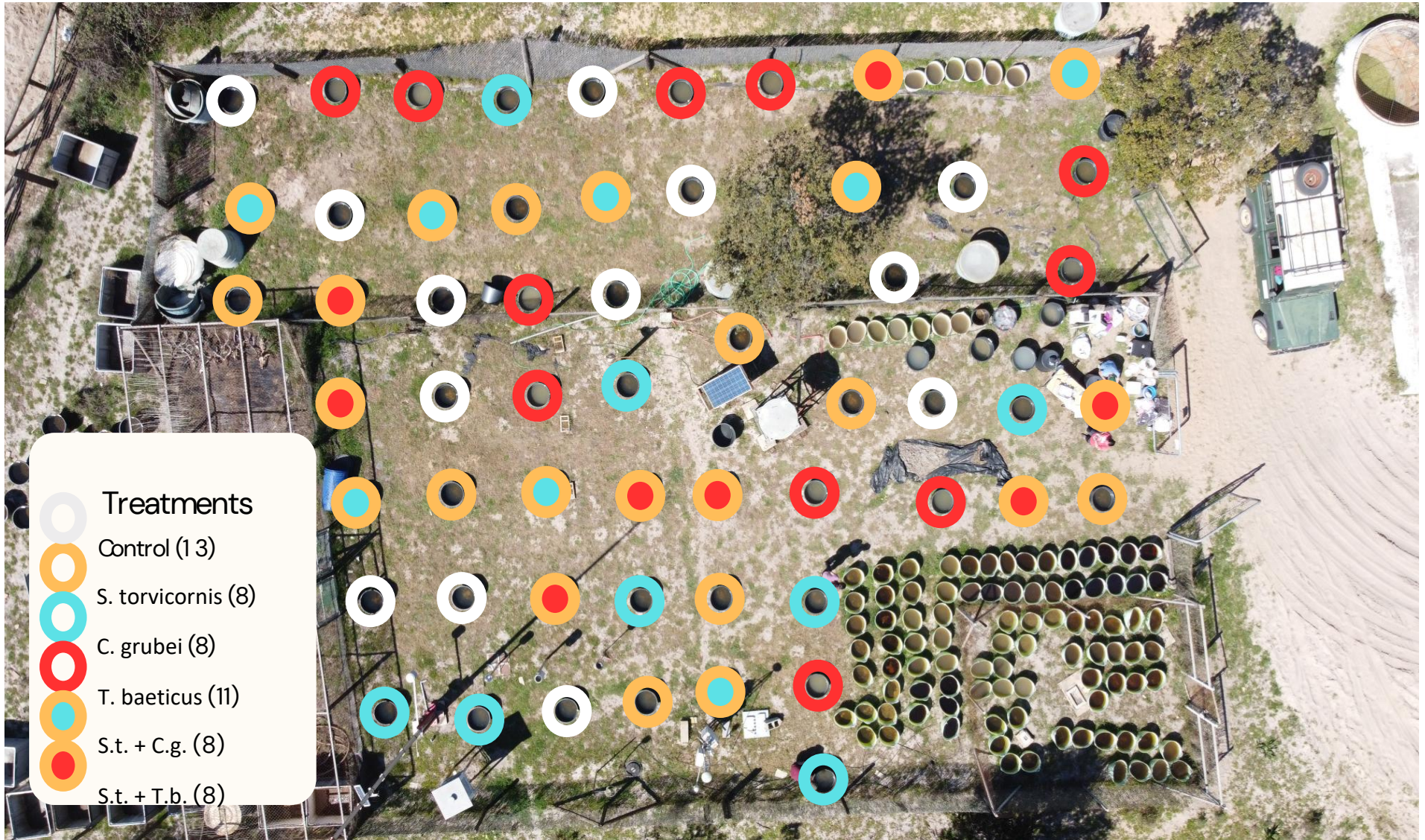




Positive Neutral Negative

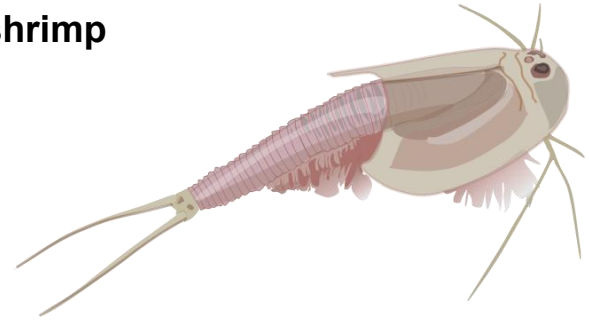
3. Ecosystem engineers identified

3. Ecosystem engineers identified

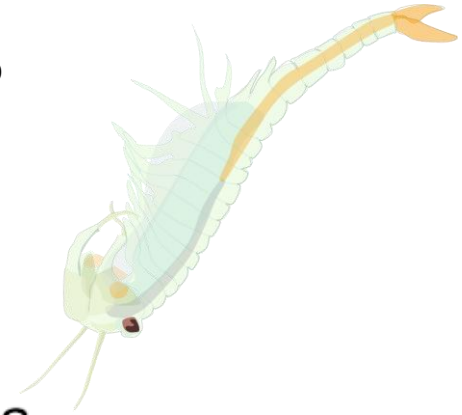


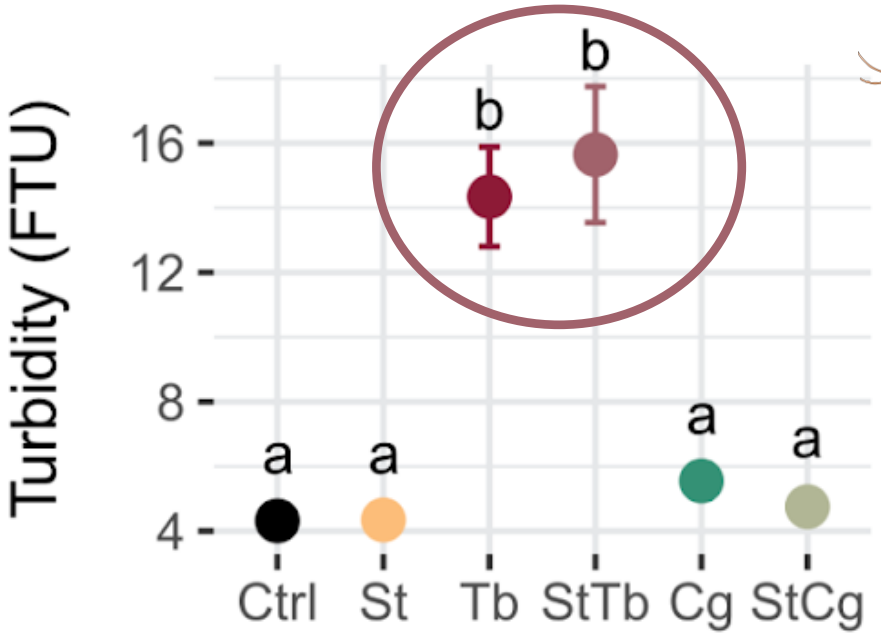
3. Ecosystem engineers identified

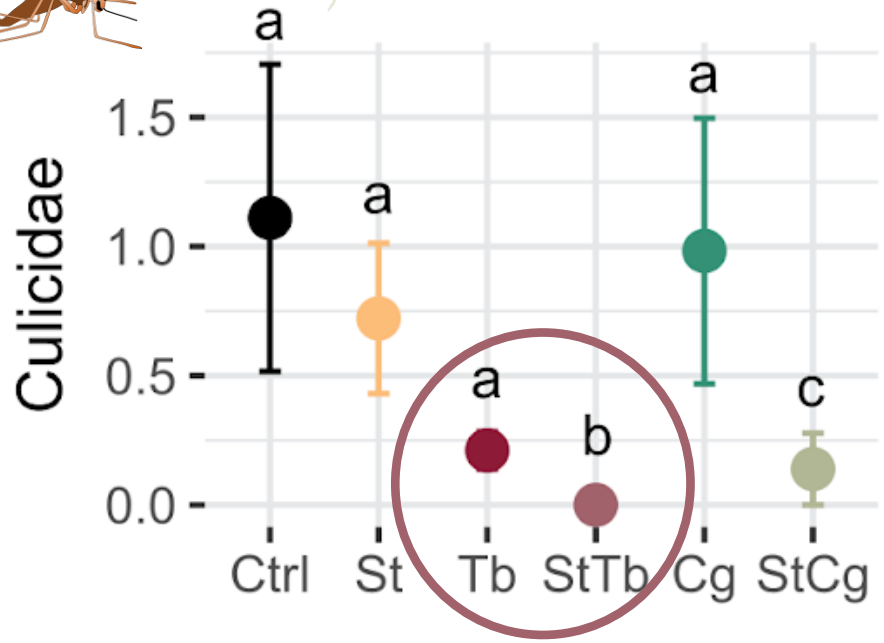
Tadpole shrimp



Fairy shrimp



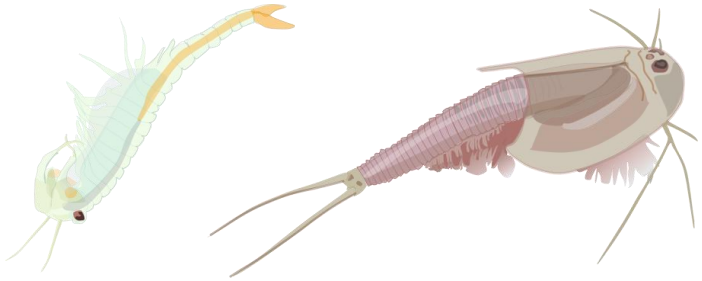


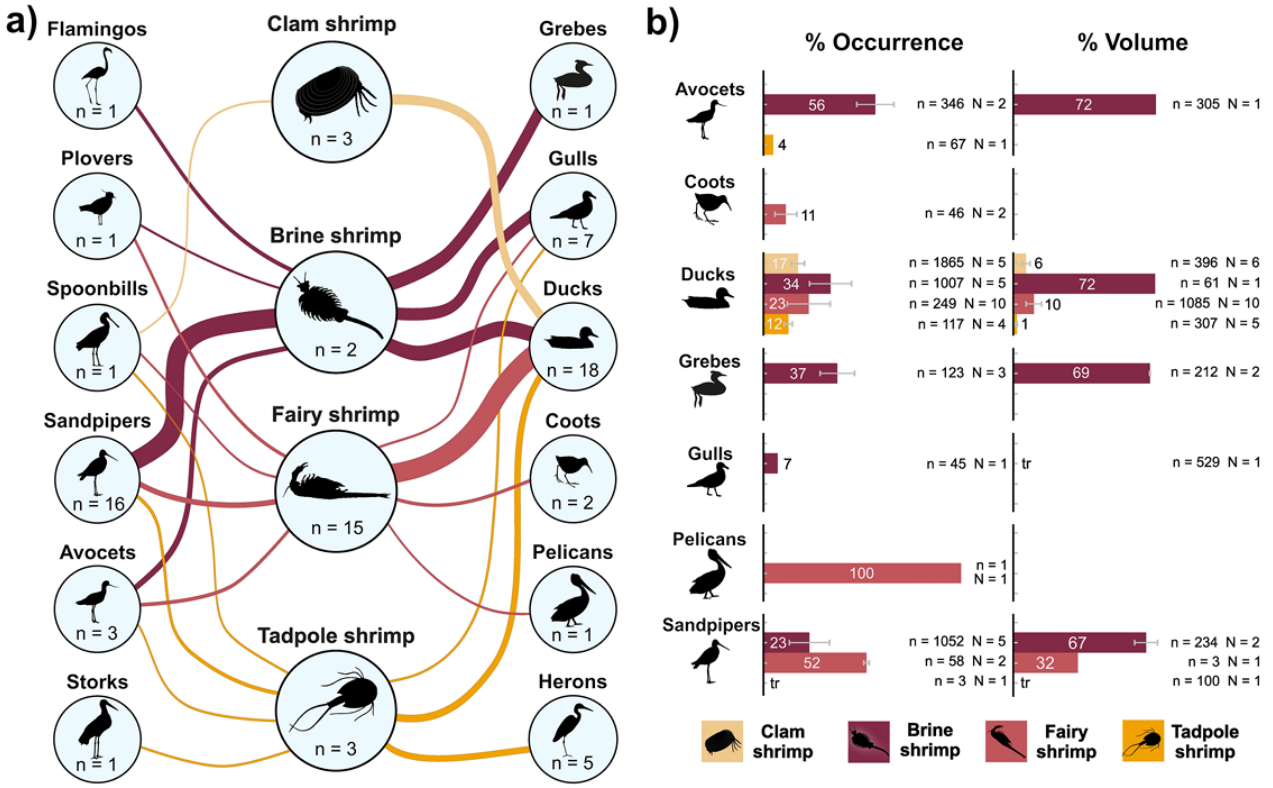


3. Ecosystem engineers identified

Dietary data suggest large branchiopods may be an underrecognised food resource for a wide range of waterbirds

Vincent Dolmans · Lisa Partoens · Evelien Deboelpaep · Zsófia Horváth · Bram Vanschoenwinkel





Challenges

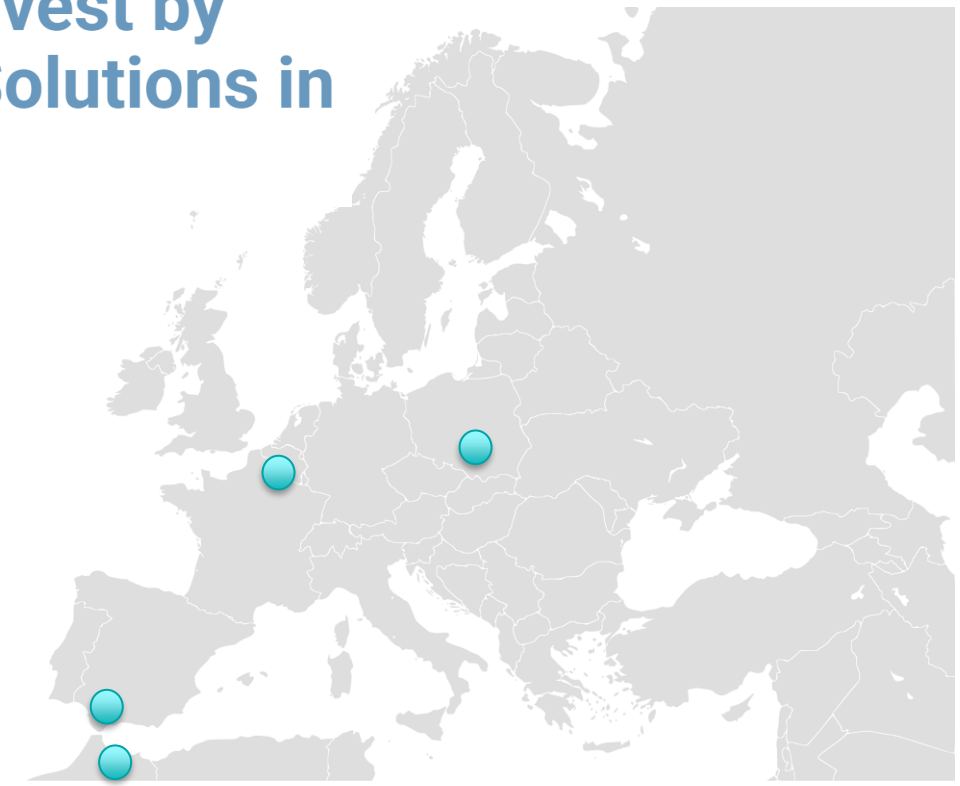
1. No rain = no experiments

United Nations
Convention to Combat Desertification

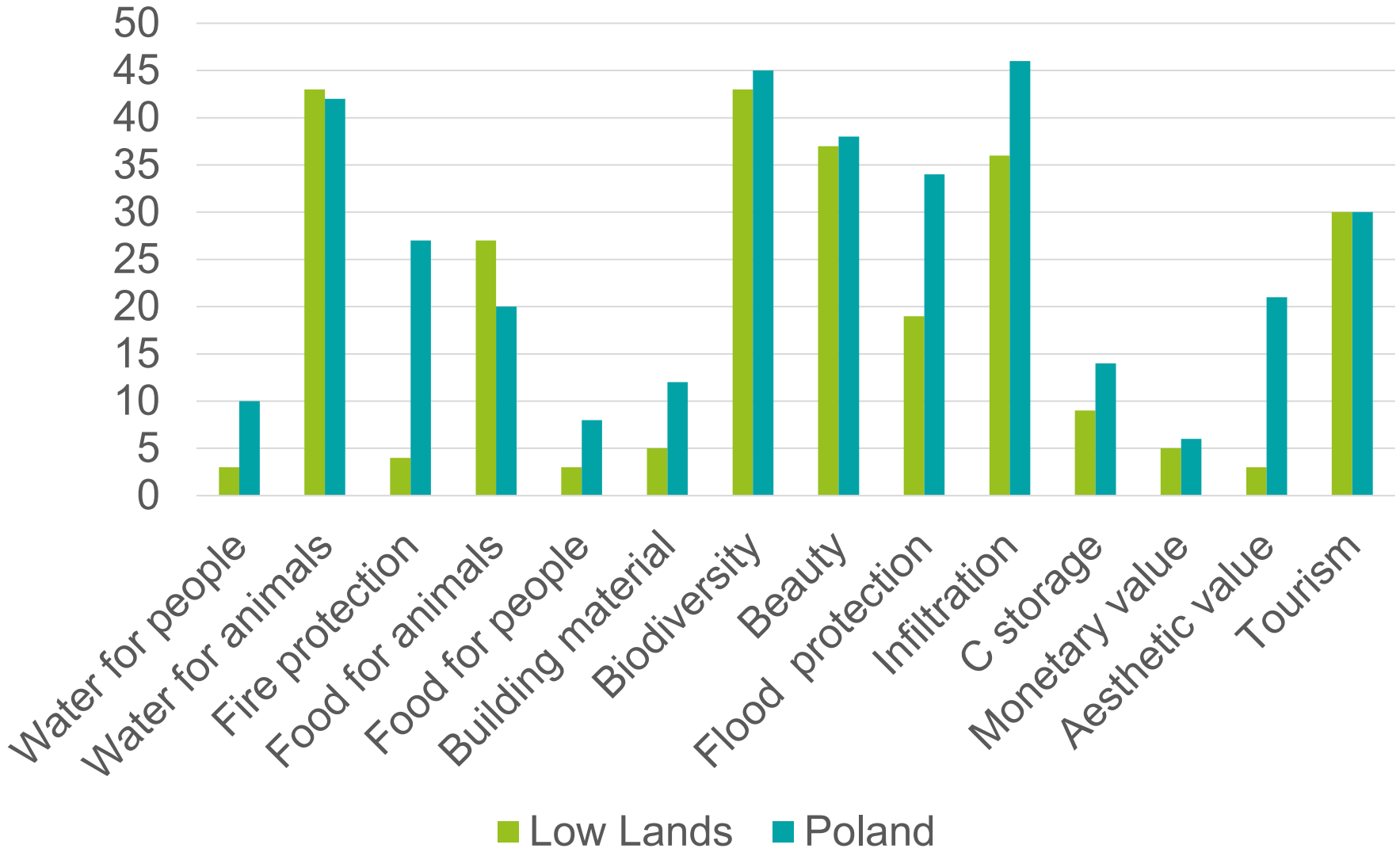
Overview ▾ Communities Drought Toolbox Cases ▾

› UNCCD Communities › Africa › Blog ›

Prolonged Drought in Morocco Slashes 2024 Wheat Harvest by Nearly 50%: Innovative Solutions in the Face of Crisis



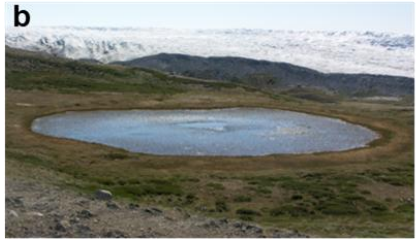
2. Perceived ESS are not actual ESS



3. A typology = a Pandora's box

Cryogenic ponds

Pingo ruin, The Netherlands



Kettle pond, Greenland

Thaw pond, Sweden

Tundra polygons, Iceland

Cirque pond, Russia

Supraglacial pond, Russia

Dissolution ponds

Daya, Morocco

Rock pool, South Africa

Fluvial ponds

Floodplain pond, Poland

Oxbow pond, Czech Republic

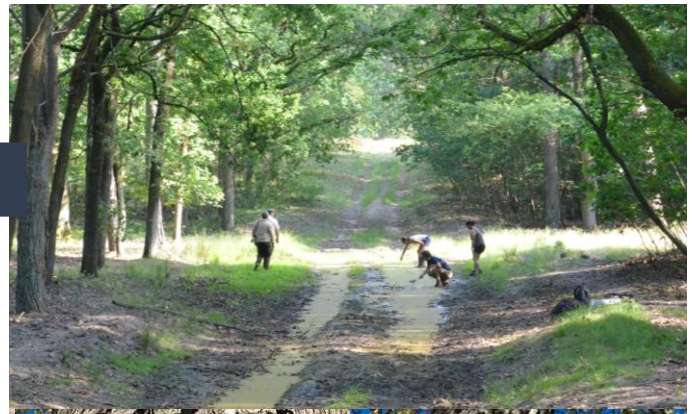
Spring ponds

Spring pond, Australia

Argilic ponds

Gilgai, Australia


N2000 9120
Annex IV

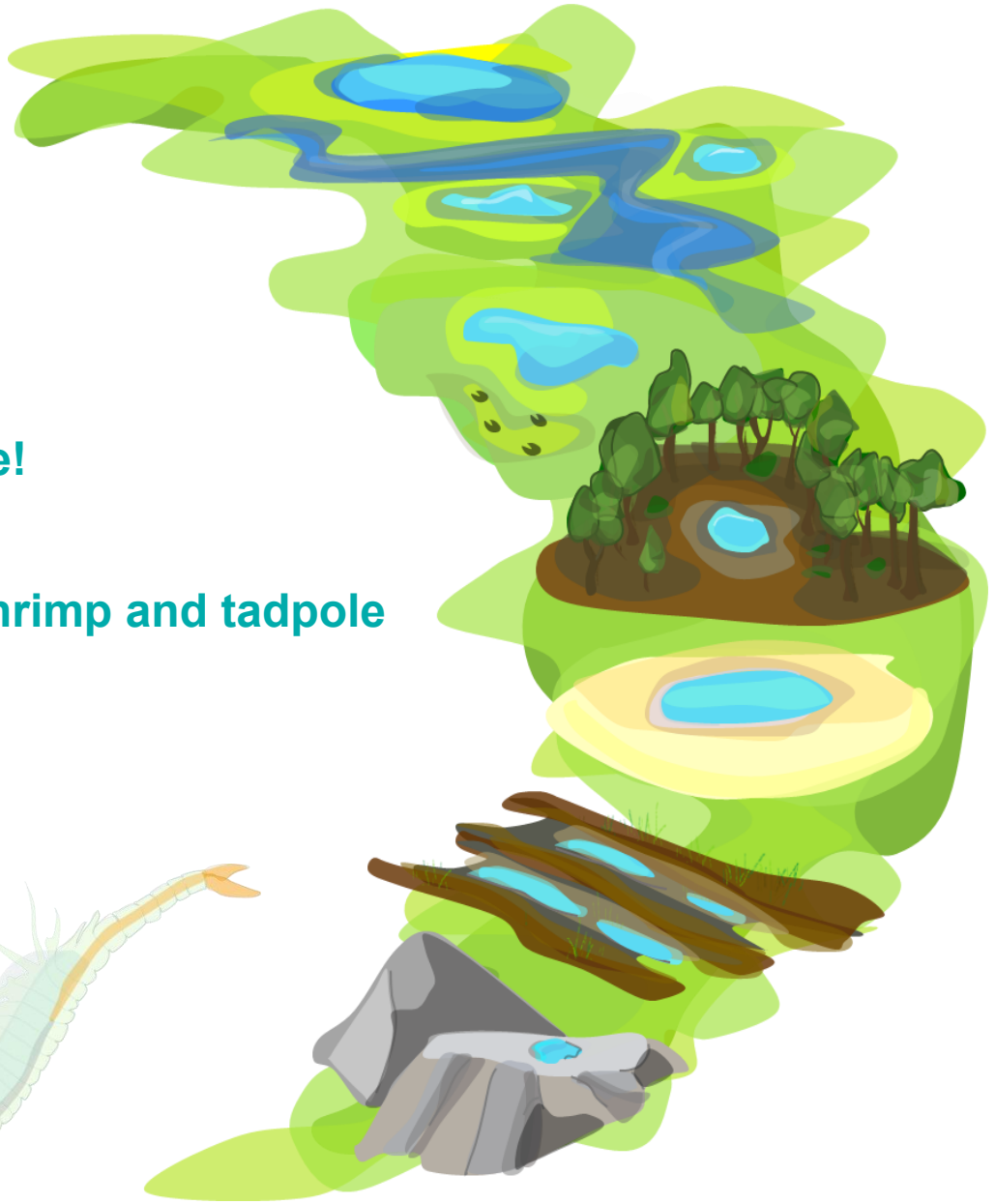


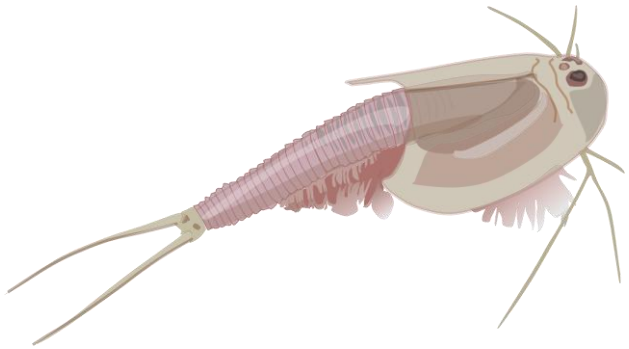
Policy advice

1. **List, inform, enforce!**

2. Valorize info outside of literature!

3. Consider re-introduction fairy shrimp and tadpole shrimp!






Tres cantos de anfibios
Charca del Parque Central
10 motivos por los que conservar humedales y charcas temporales:
¿Pasa algo si la charca se seca?
Las humedales se pierden 3 veces más rápido que los bosques
¿Qué puedo hacer para conservar las charcas?
Anfibios y reptiles
Insectos acuáticos
Crustáceos y branquiópodos
Larvas
Algas y organismos unicelulares
24/08/2025 11:09

ResPond

TEMPORARY POND ORGANISMS THREATS MANAGEMENT PROJECT GOALS TEAM
EDUCATIONAL MATERIAL

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VRIJE UNIVERSITEIT BRUSSEL

ResPond

Bram Vanschoenwinkel

Margarita Florencio

Laila Rhazi

Luc Brendonck

Bartek Goldyn

KU LEUVEN

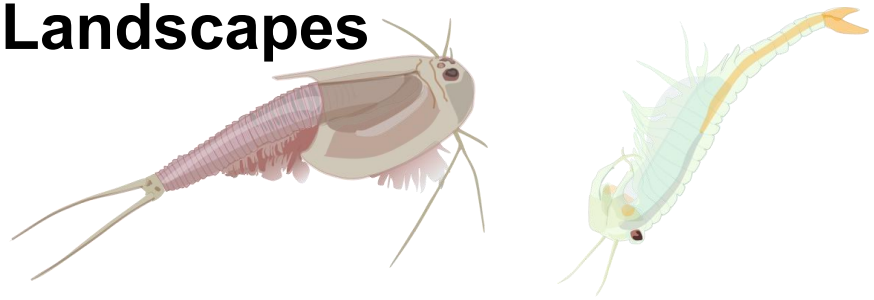
جامعة محمد الخامس بالرباط
Université Mohammed V de Rabat

UAM
Adam Mickiewicz University Poznań

Estación Biológica Doñana CSIC

ResPond

Restoring and Managing Biodiversity and Ecosystem Services of Temporary Pond Landscapes



Bram Vanschoenwinkel, Community Ecology Lab
Vrije Universiteit Brussel, Belgium
Bram.jasper.vanschoenwinkel@vub.be, **www.insularecology.com**

RESTORESEAS

Marine Forests of animals, plants and algae: nature-based tools to protect and restore biodiversity

biodiversa+
European Biodiversity Partnership

	partner	country
1	CCMAR	Portugal
2	UGENT	Belgium
3	NORCE	Norway
4	UGOT	Sweden
5	UFSC	Brazil
6	UCD	Morocco
7	MENDELU	Czech Republic
8	NHMW	Austria
9	ULPGC	Spain
10	IMAR/UAz	Portugal
11	SGN	Germany
12	UVA	The Netherlands
13	UFES	Brazil

RESTORESEAS
Nature-based tools to protect and restore biodiversity

www.biodiversa.eu

BiodivRestore ERA-NET COFUND
Conservation and restoration of degraded ecosystems and their biodiversity, including a focus on aquatic systems

define recovery baselines, integrate climate projections

Lessons learned:

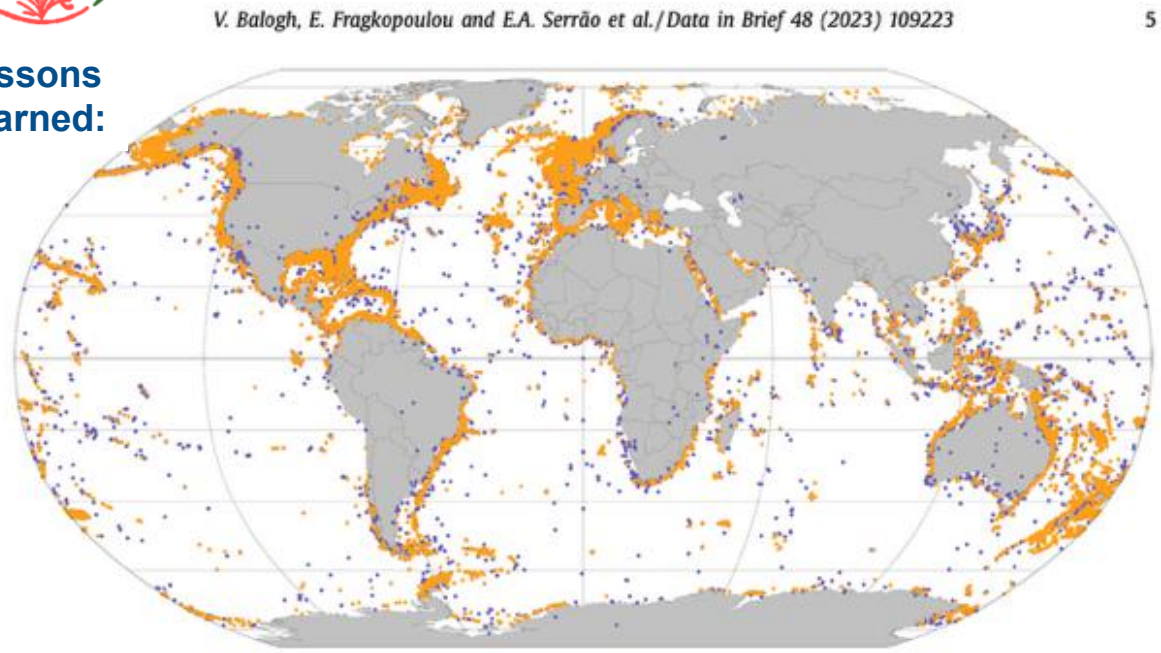
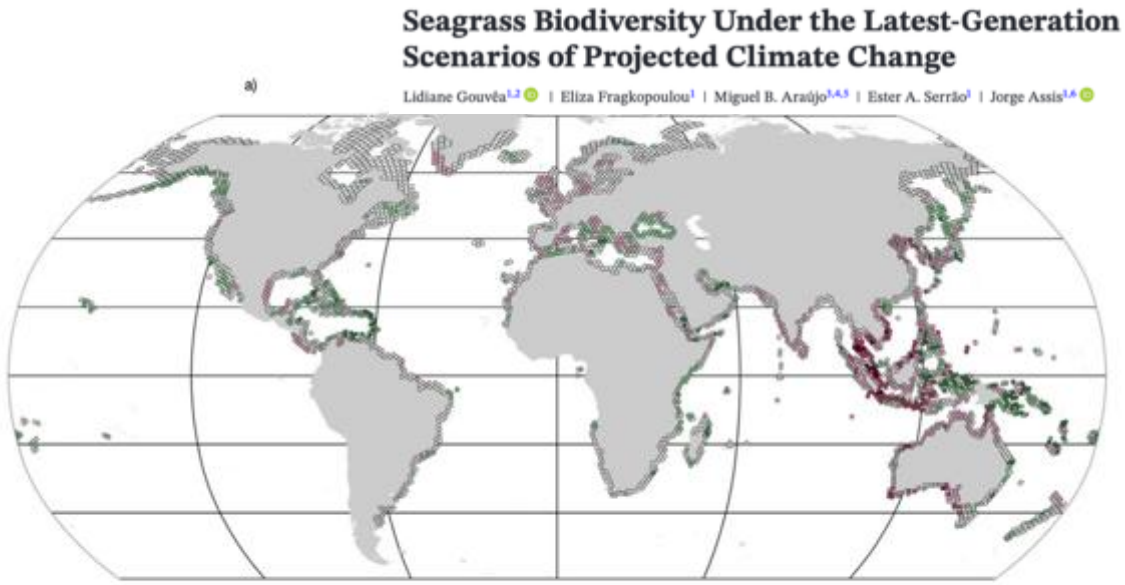


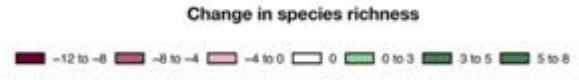
Fig. 1. Distribution records of the global dataset of cold-water coral diversity. Purple and orange circles depict flagged and unflagged records, respectively, considering records on land and outside the known geographic and depth distribution of species.

Present marine forests ranges compiled and curated corals



Future marine forests ranges predicted (~2100)

seagrass



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Lessons learned:

ancient genetic diversity hotspots save refugia – sources for recolonization

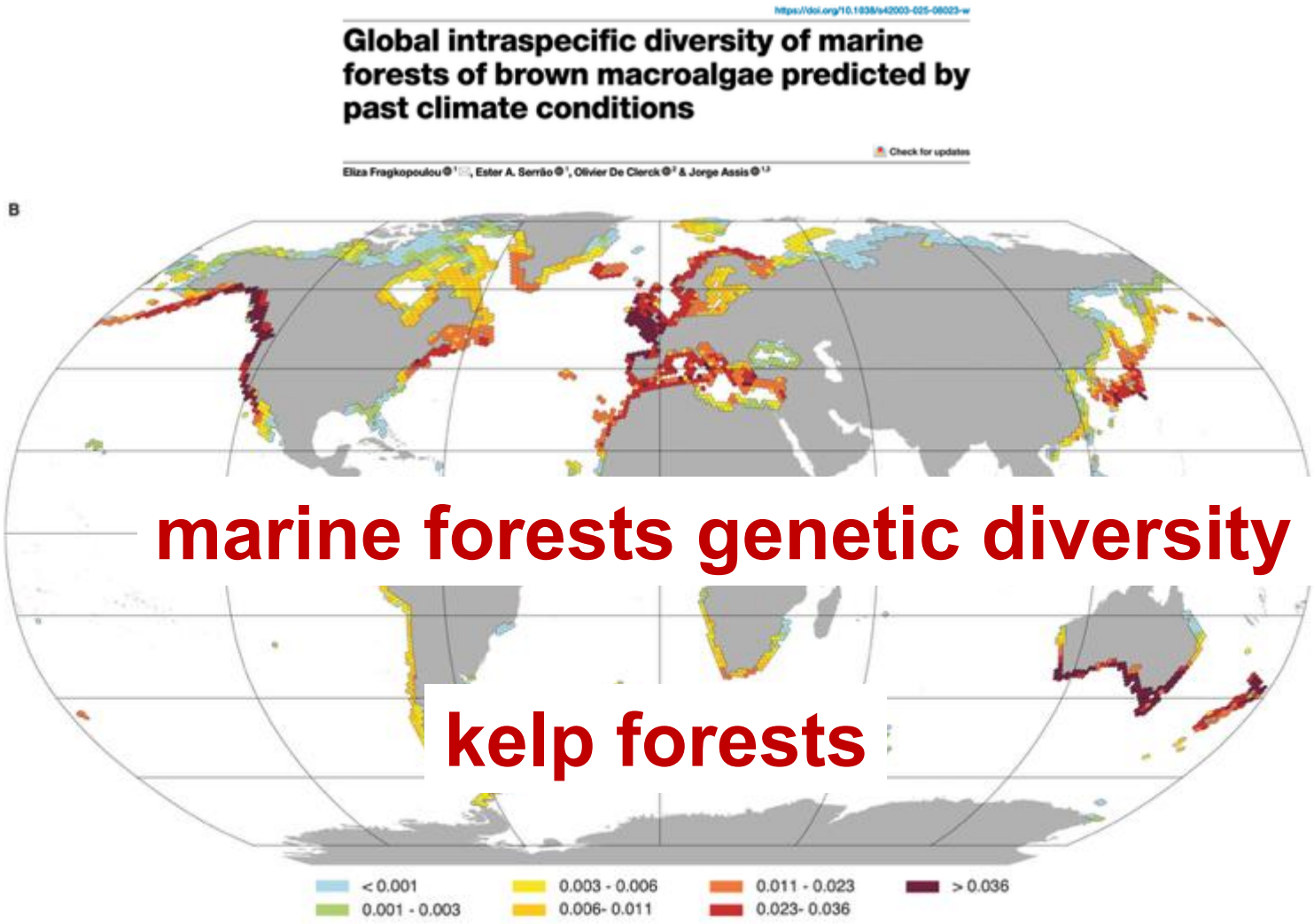

Fig. 4 | Biogeographic patterns of marine forest genetic diversity. Genetic diversity was estimated as the average **A** allelic richness and **B** expected heterozygosity per cell (0.08° resolution) for 280 cold and temperate marine forest species of brown macroalgae.

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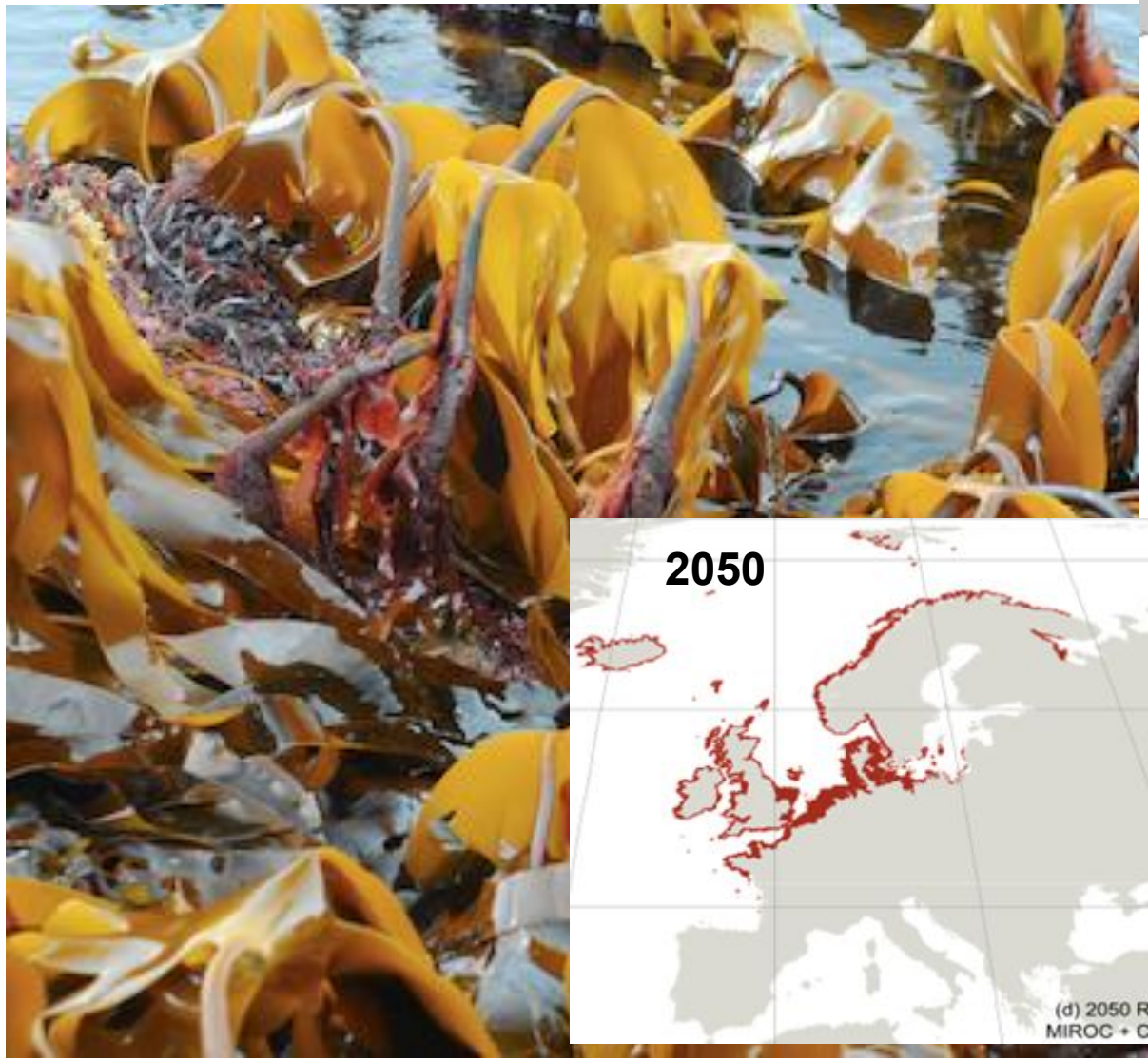
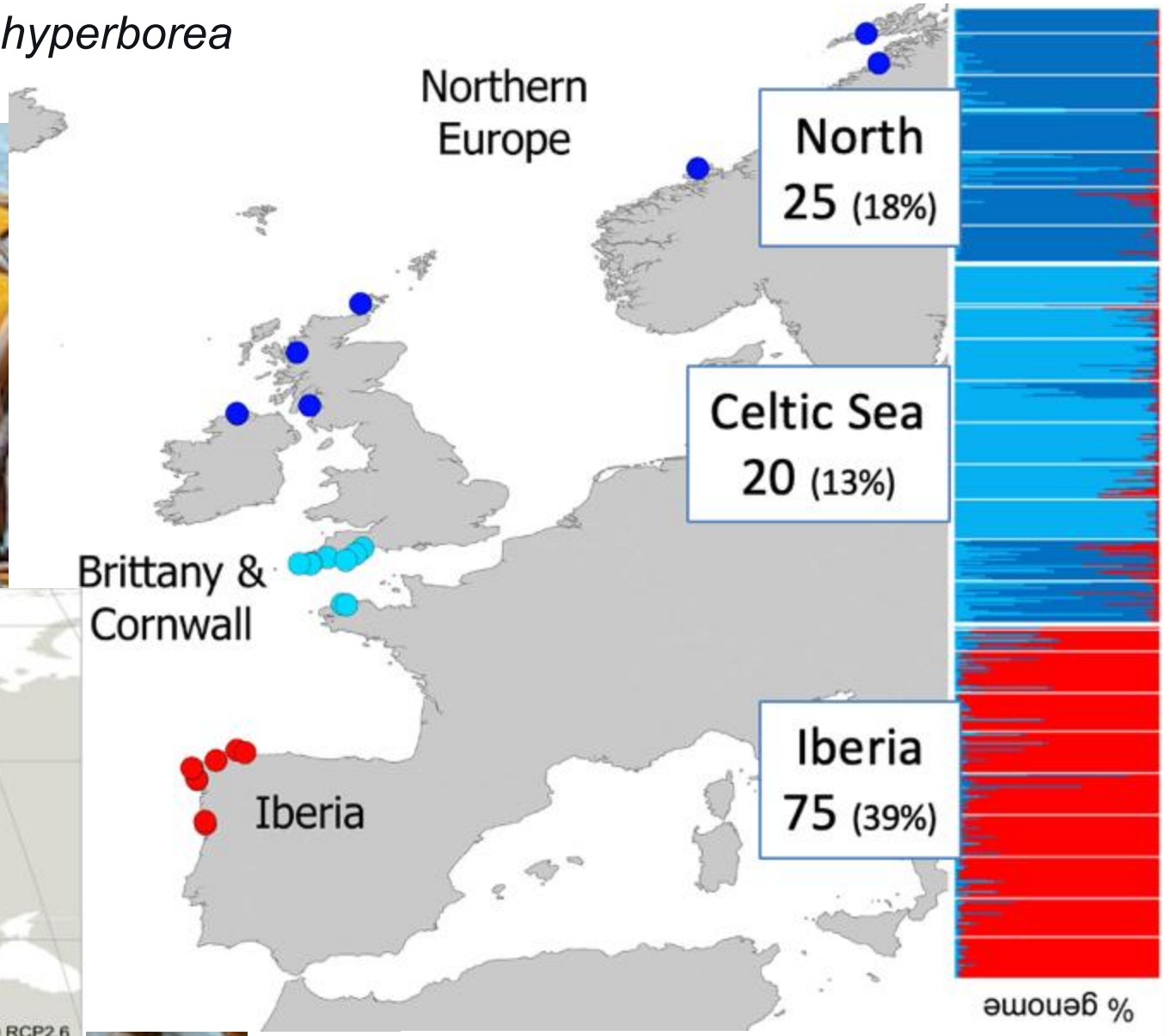
European Biodiversity Partnership

Biobanks for genetic diversity hotspots soon to be extinct

Lessons learned:

Laminaria hyperborea



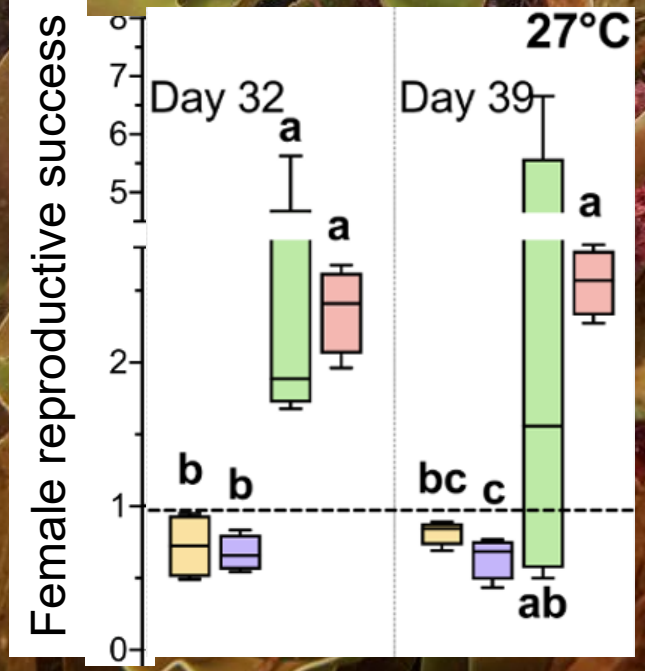


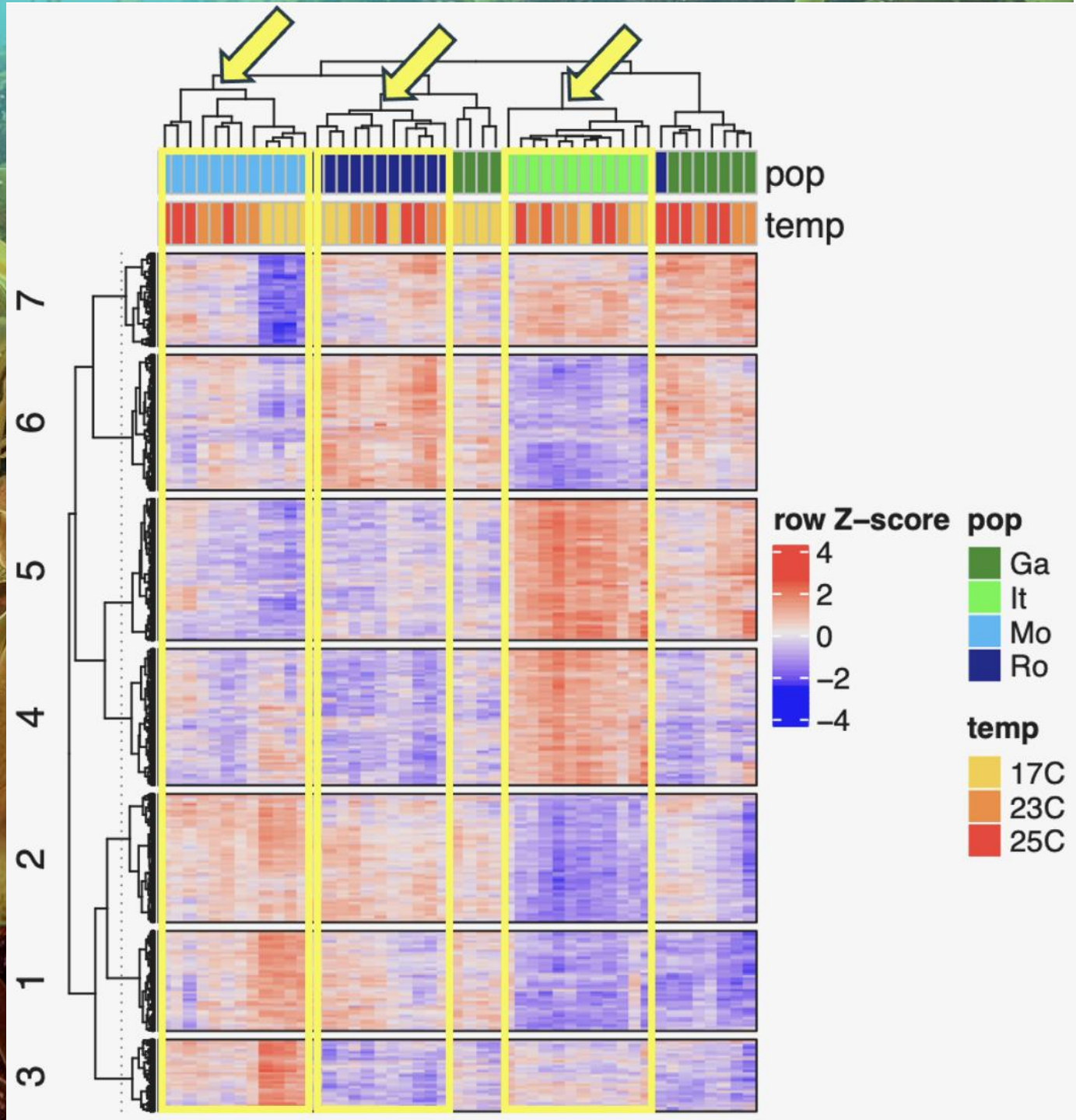
Barreto L, Pearson G, et al.

Lessons learned:

use locally adapted source populations

Laminaria ochroleuca





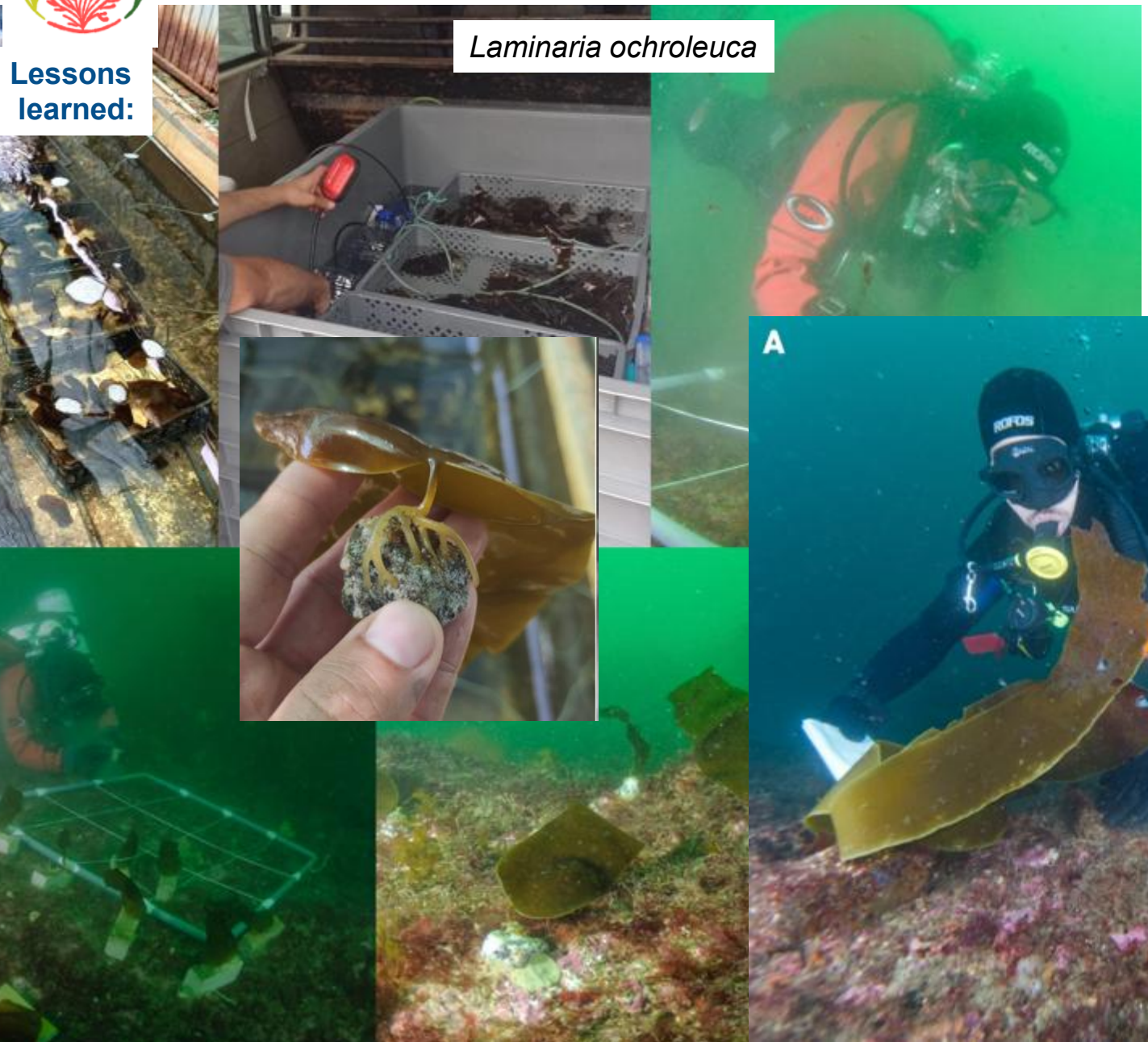
Lessons learned:

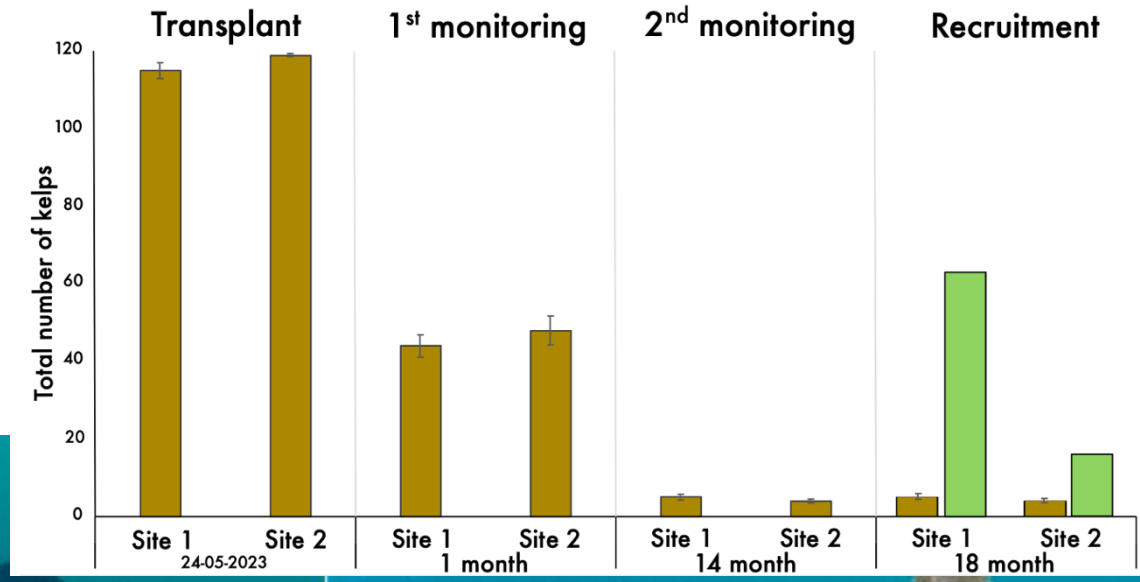
Biosecurity risk! high oomycete pathogen diversity quarantine, study ranges, avoid introductions

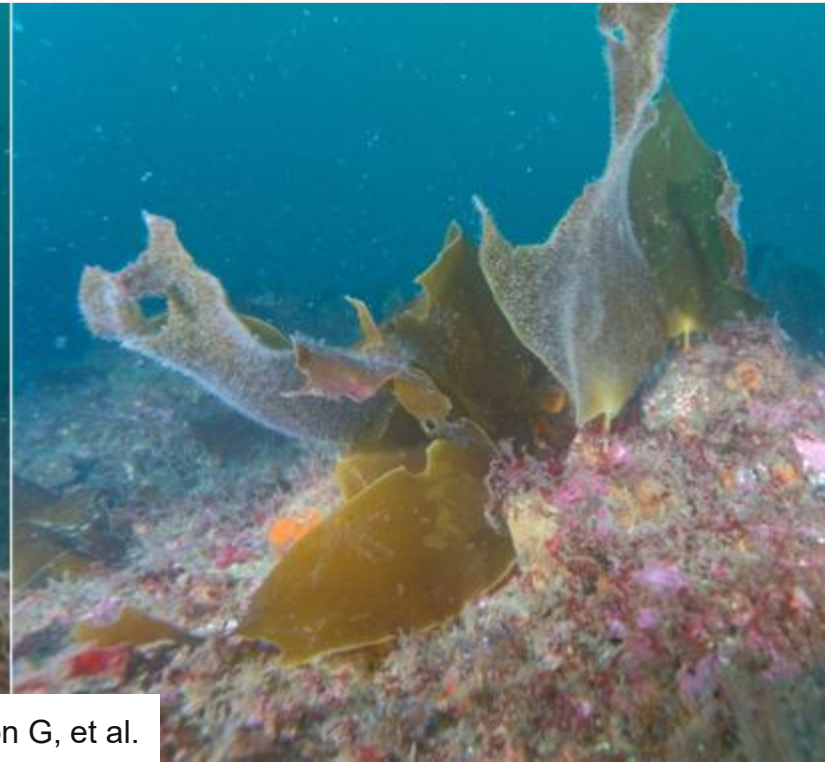
improve reproductive success in restoration

Lessons learned:

Laminaria ochroleuca



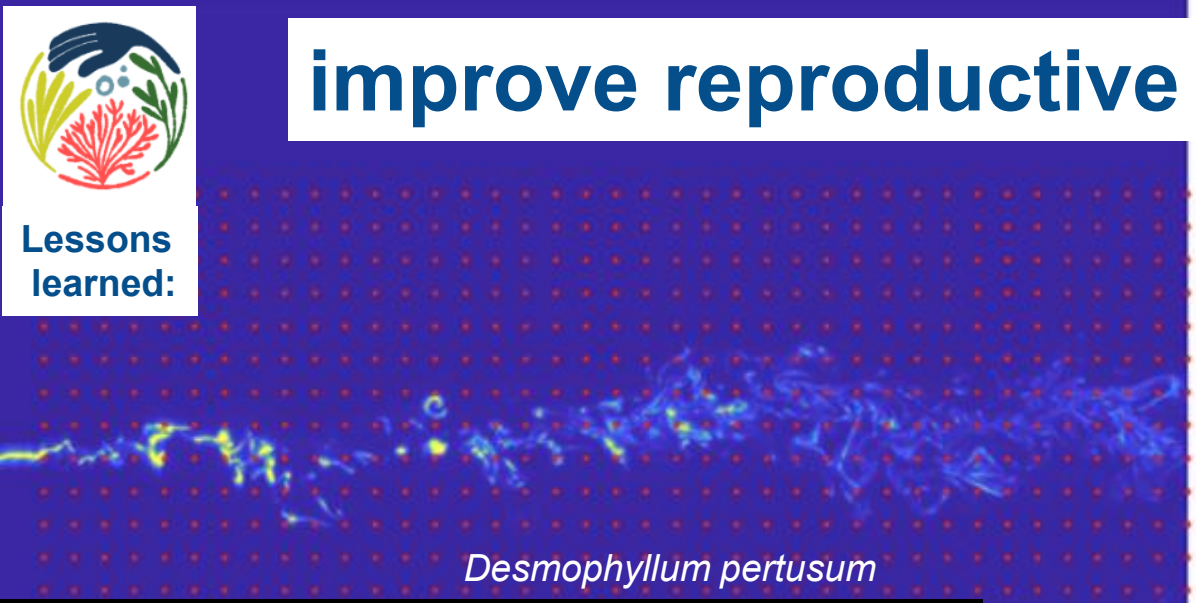




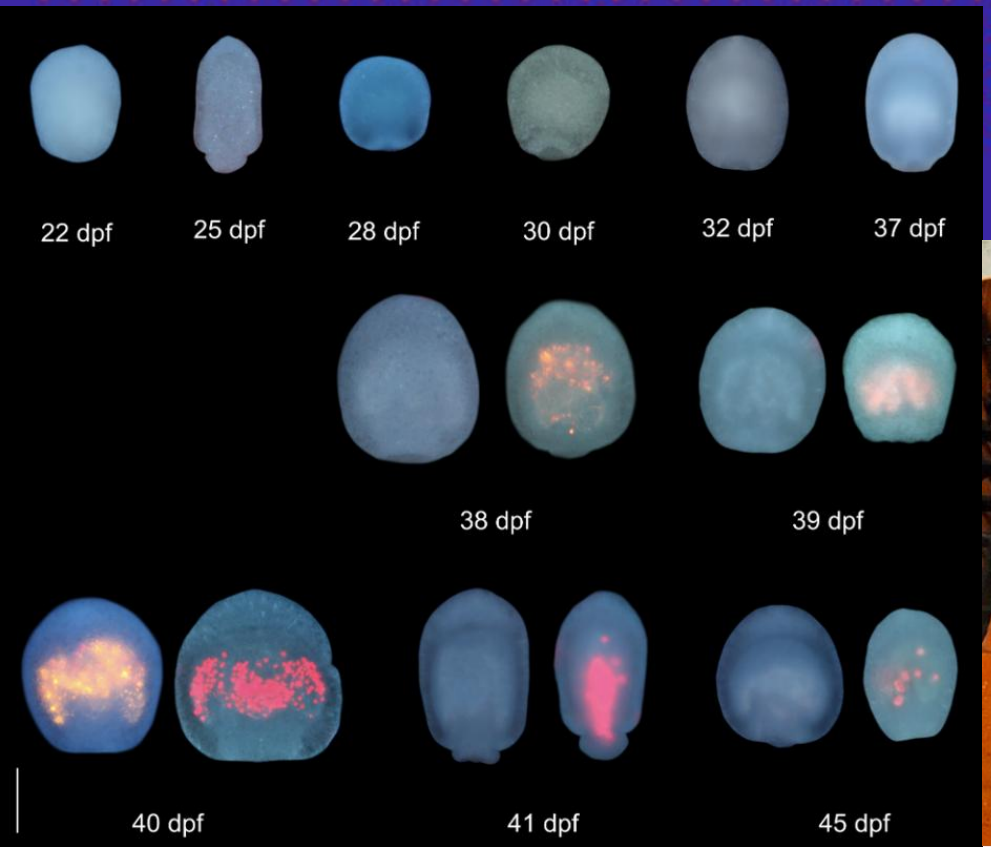
Barreto L, Pearson G, et al.

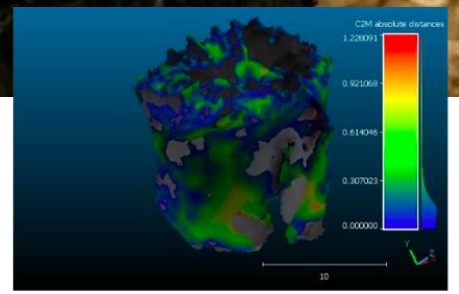
improve reproductive success in restoration

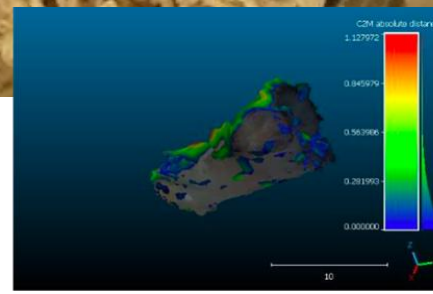
Lessons learned:

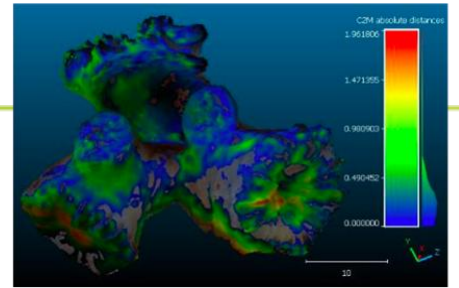


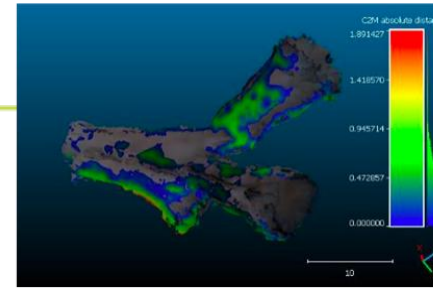
Desmophyllum pertusum







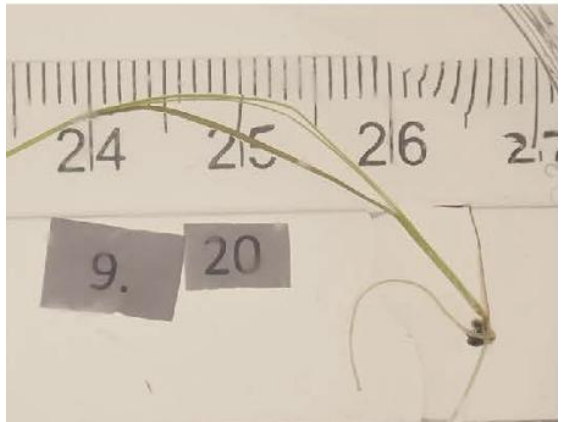


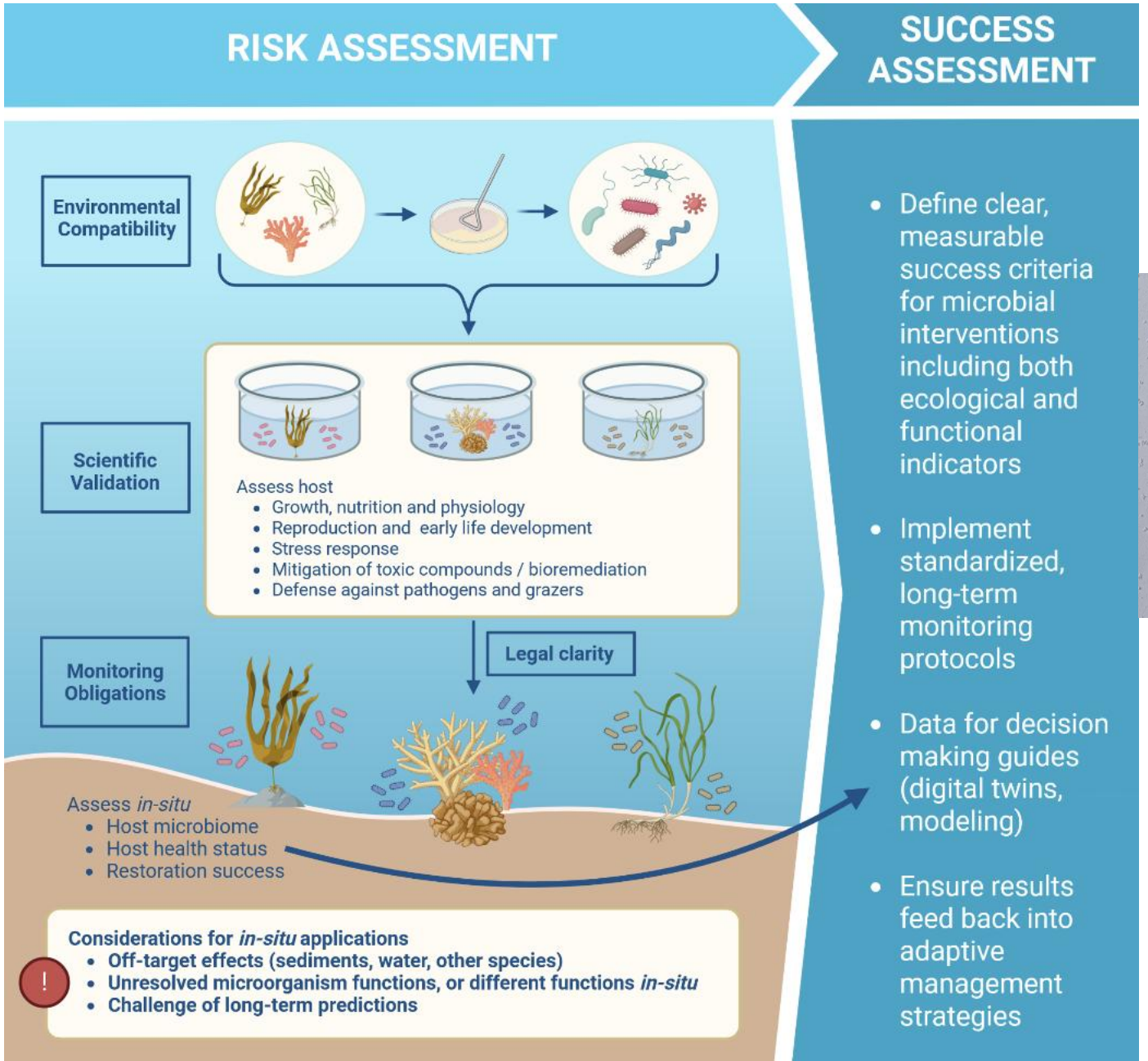


microbiome assisted restoration

Lessons learned:

seagrass seedlings

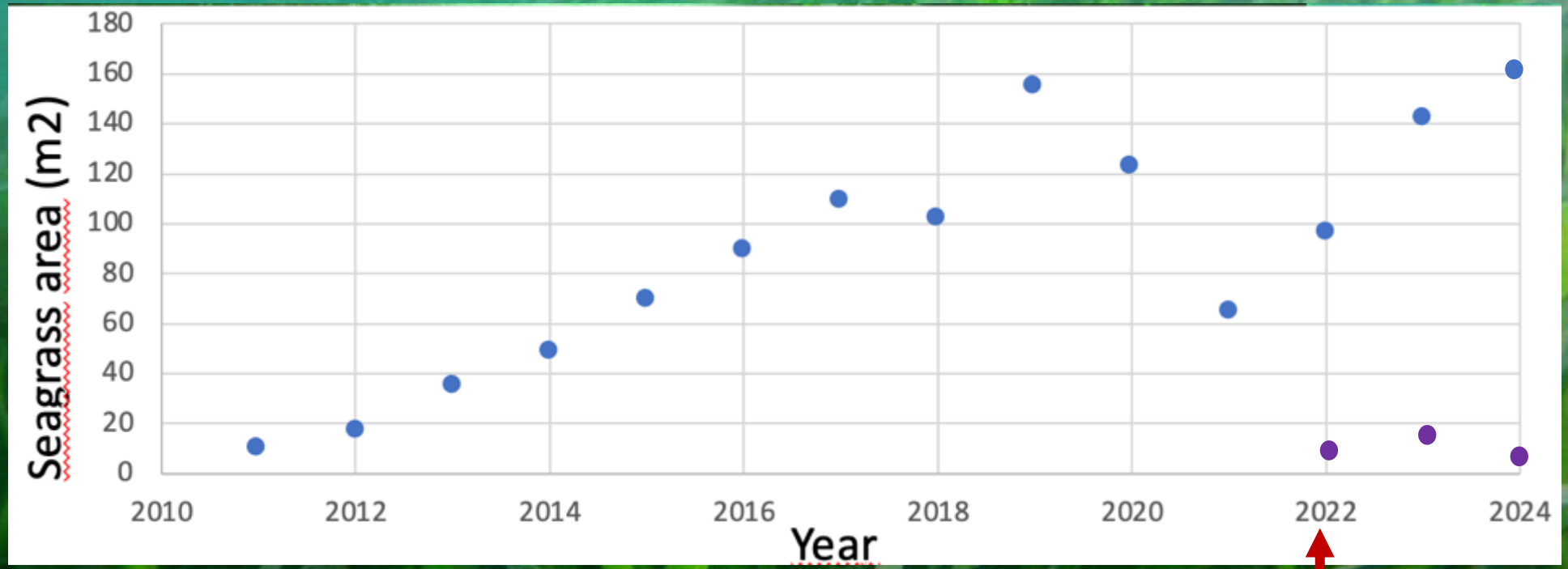




kelp embryos

Lessons learned:

monitoring regular, long-term ≥10 years



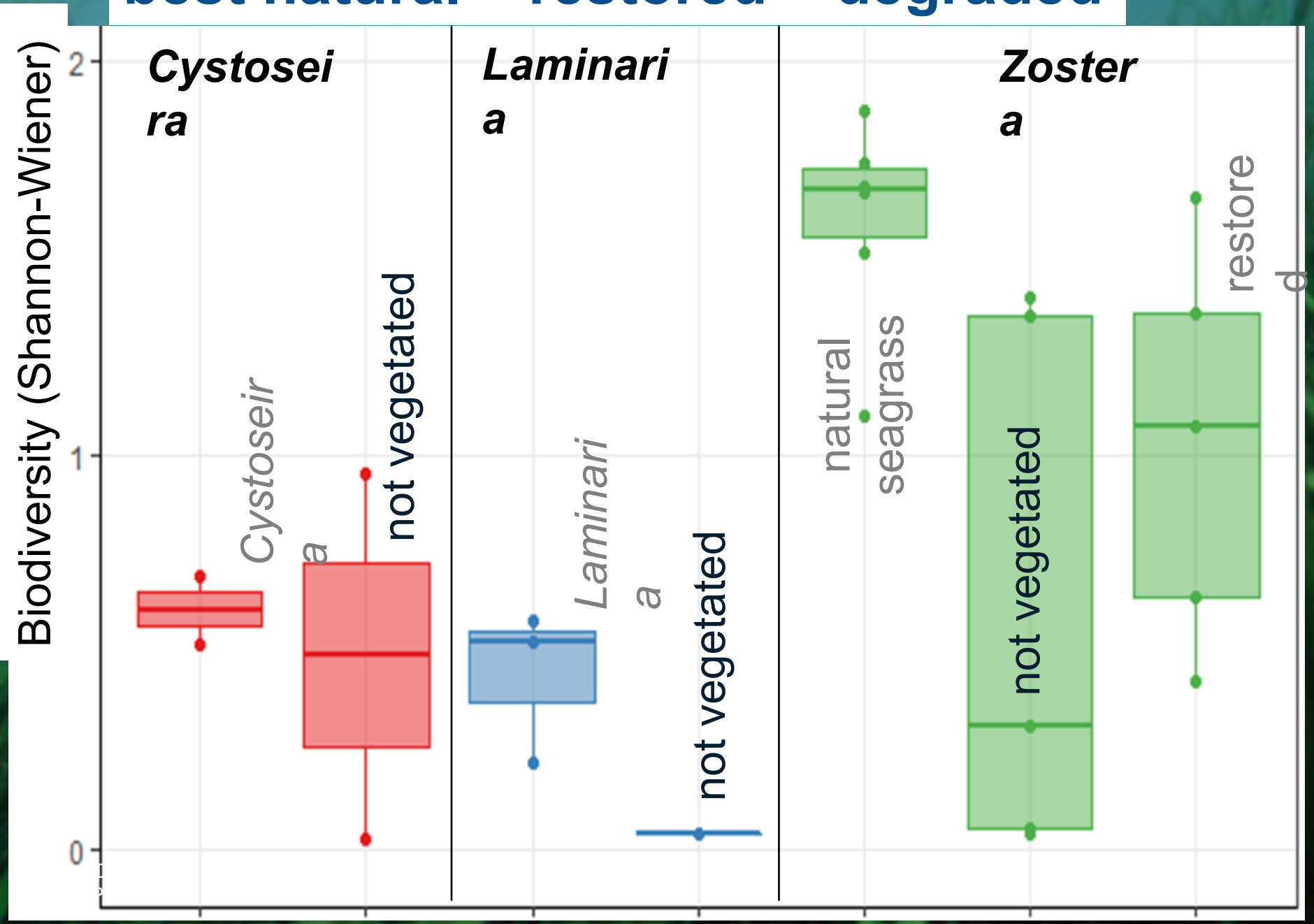
Mourato et al. 2023

Lessons learned:

best natural > restored > degraded

ecosystem functions

eDNA : more fish diversity in natural > restored > unvegetated



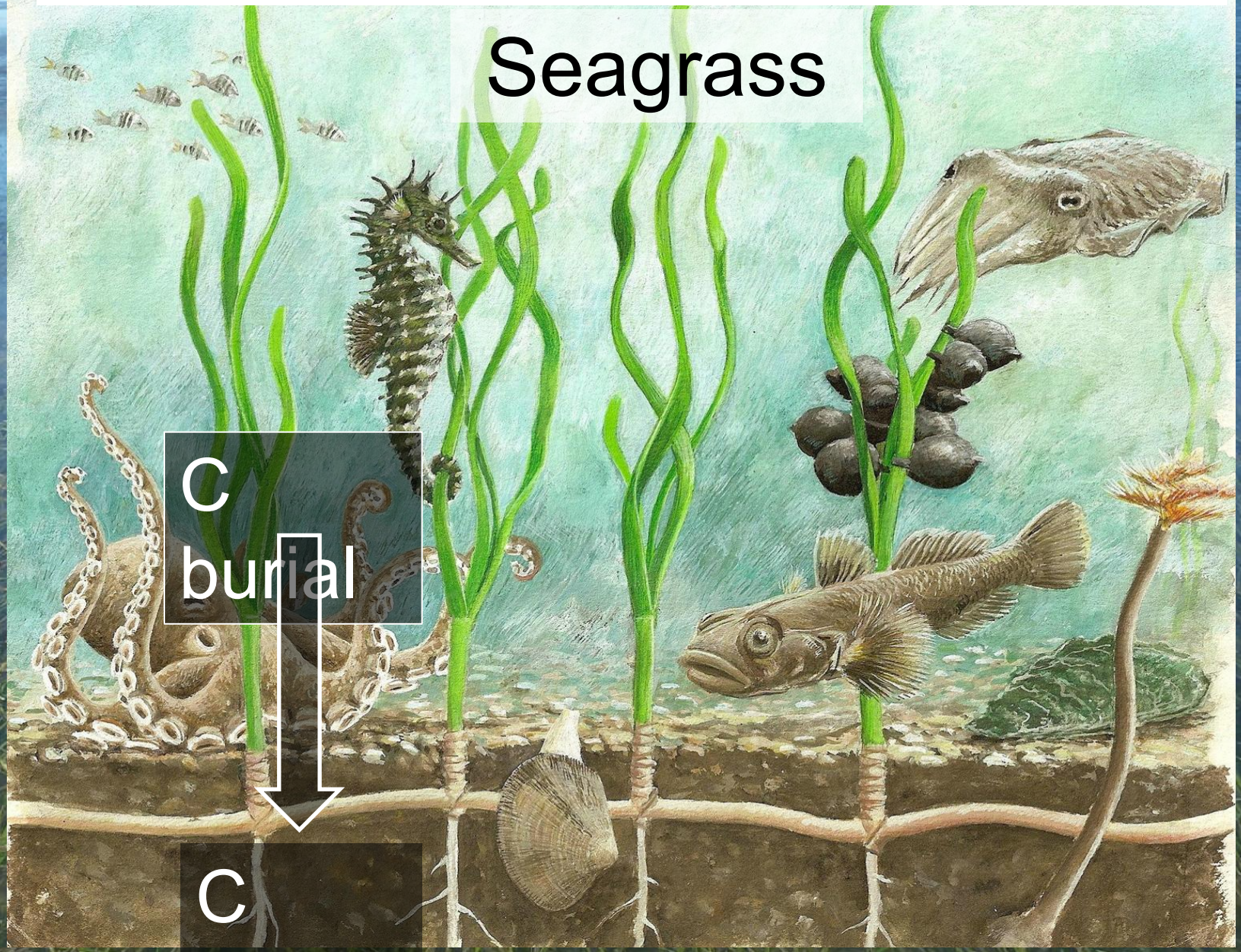
Gareth

better natural > restored > degraded

ecosystem functions

at a burial rate of 1 Mg C ha^{-1} $year^{-1}$

It would take 100 years to accumulate 100 Mg C ha^{-1}



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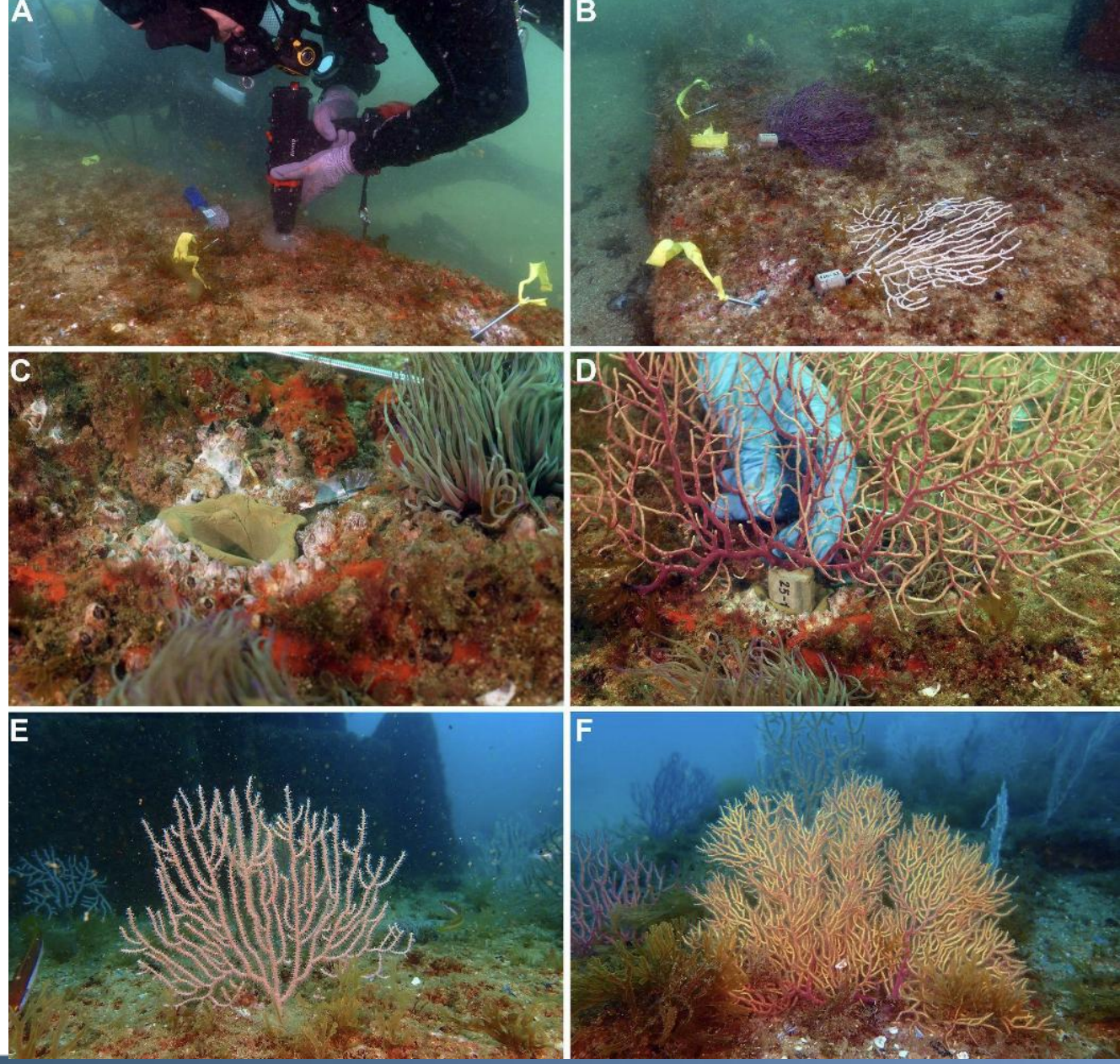
Lessons learned:

Conclusion

Restoration in the EU must follow standards – see DNSH principles of LIFE and IUCN, UNEP, SER, ICRI, FAO, NOAA

Clear assessment of aims-feasibility, impacts
Biosecurity & Risk,
Genetic integrity
Long-Term Monitoring and Transparency
Prioritize natural regeneration over endless human input
Avoid restoration that will be quickly lost, account for future environmental conditions




CORALforests

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Sagres Marine Forest Festival

Rugulopteryx okamurae

Gigartina pistillata

Oceano Atlântico

Vila do Bi

Santo António

Sagres

Overview

3,385 OBSERVATIONS

473 SPECIES

526 IDENTIFIERS

CCMAR Algarve

UAlg Universidade do Algarve

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European Biodiversity Partnership

TRANSLOC

Translocations of flora and fauna for conservation and restoration: ecological, evolutionary, and socio-economic impacts, at multiple scale

By François Sarrazin (MNHN SU)

& Carline Pitz (Uliège)

in the name of

9 Partners from 6 countries

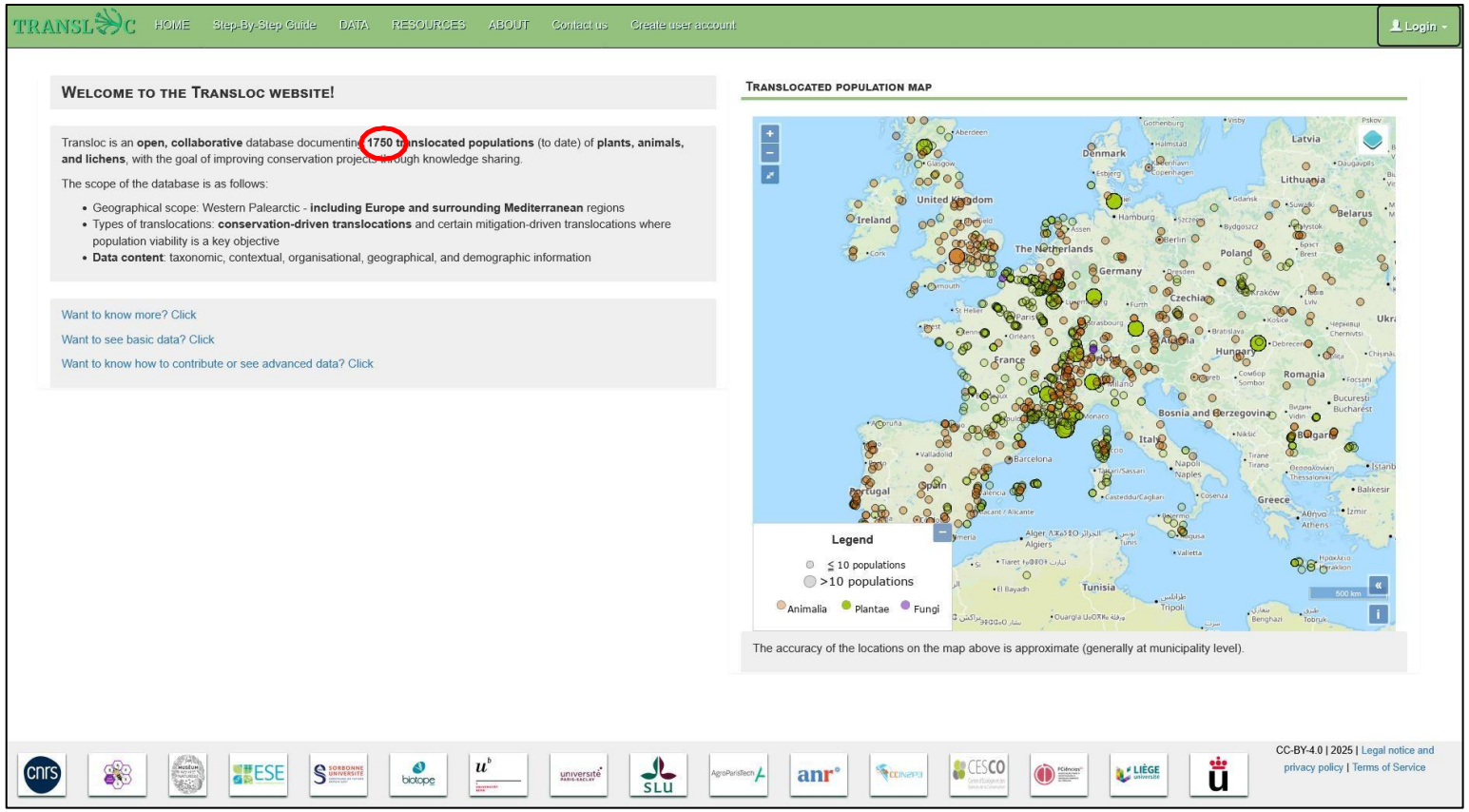
2022-2025

www.biodiversa.eu

BiodivRestore ERA-NET COFUND
Conservation and restoration of degraded ecosystems and their biodiversity, including a focus on aquatic systems

Major outcomes

➡ Development and enhancement of the ***TRANSLOC Database***

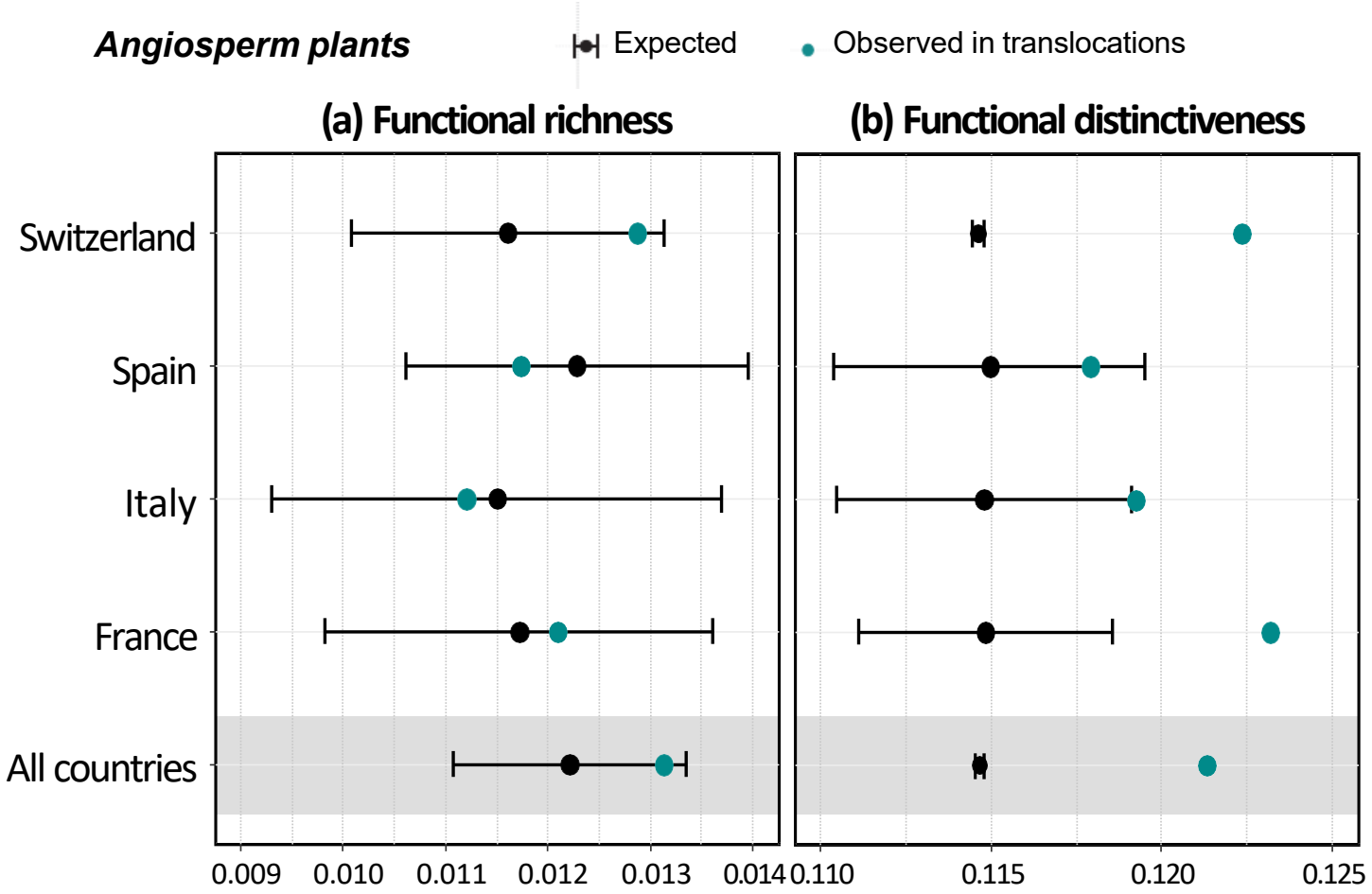


Colas et al. in prep

- https://translocations.in2p3.fr/
- **Spatial**, **temporal** & **taxonomic** coverage
- **Improved reporting** of translocation *implementation* & *outcomes*
- **Link with other initiatives** *e.g.* COST, UK database

Major outcomes

➡ Contribution of Translocations to **maintain functional traits**



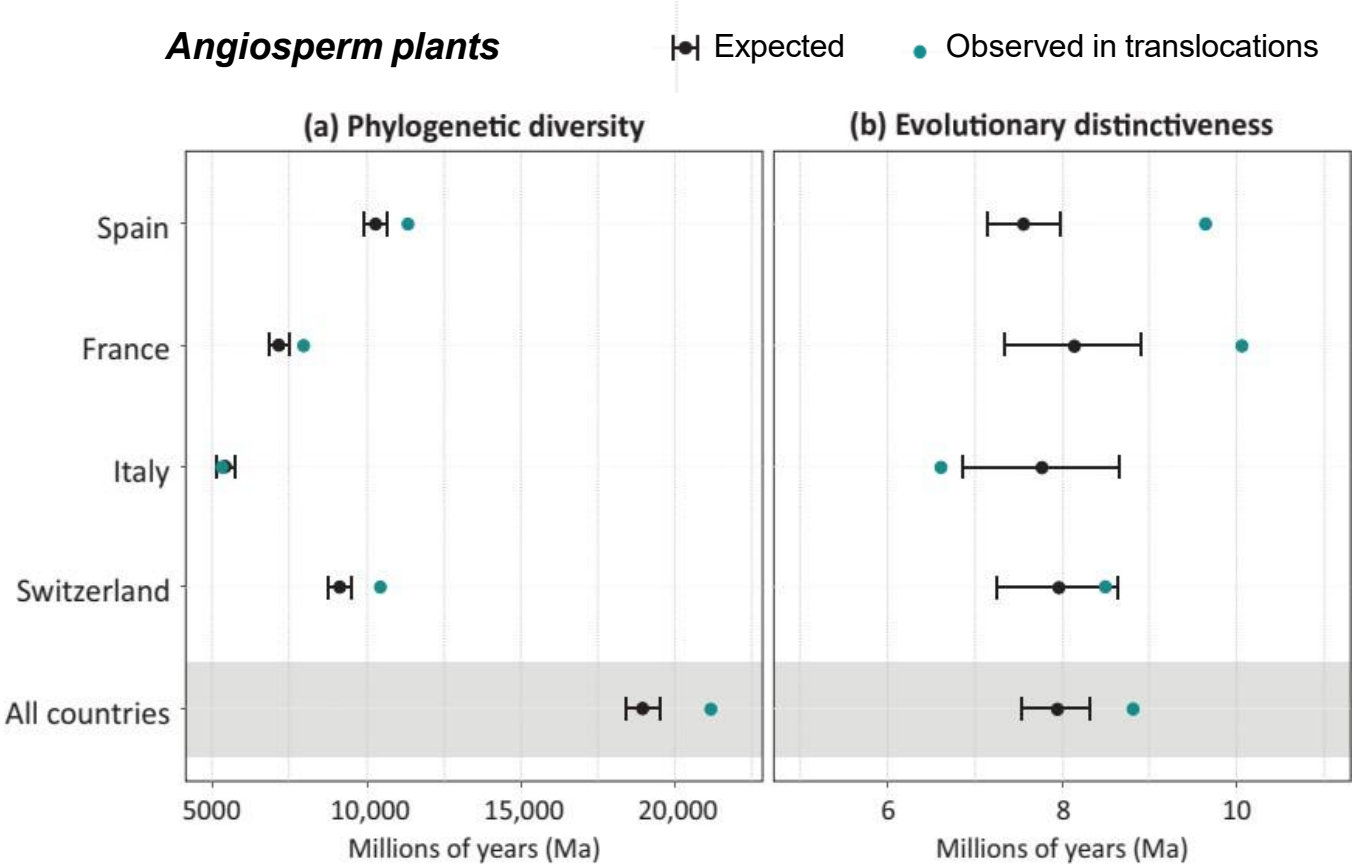
➡ ***Key challenges***

- **Lack of trait data** at global scale
- **Limited descriptions** of local communities

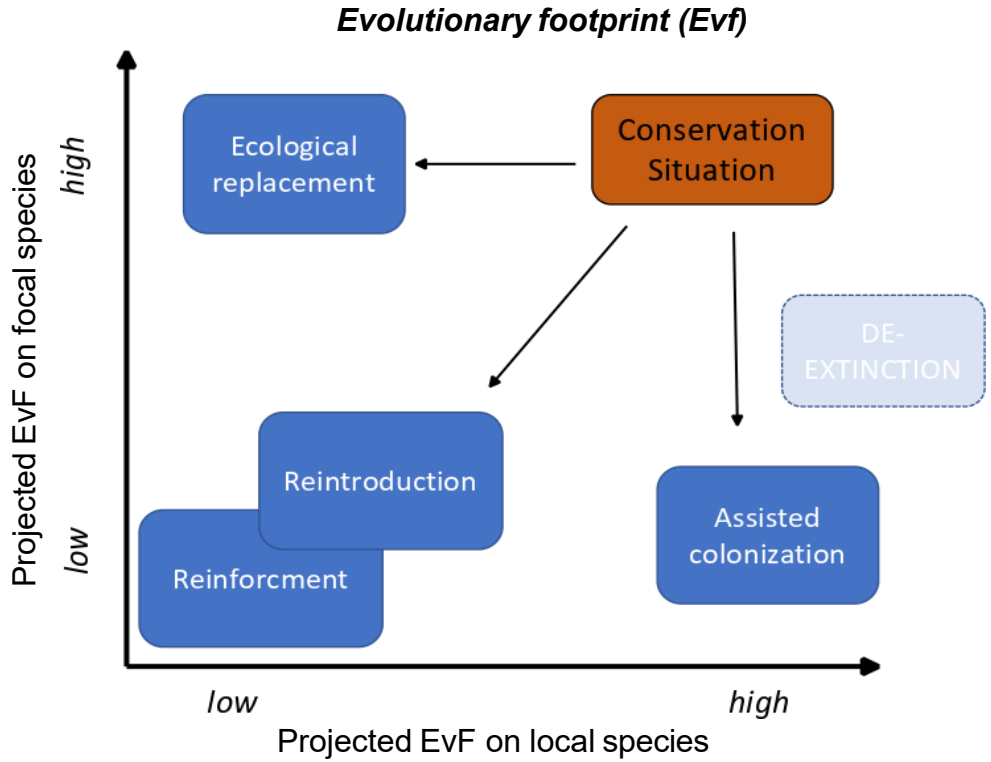
Soares et al. 2025 submitted

➡ Contribution of Translocations to **reduce human impact on evolution**

Major outcomes



Soares et al. 2025 Conserv. Biol.

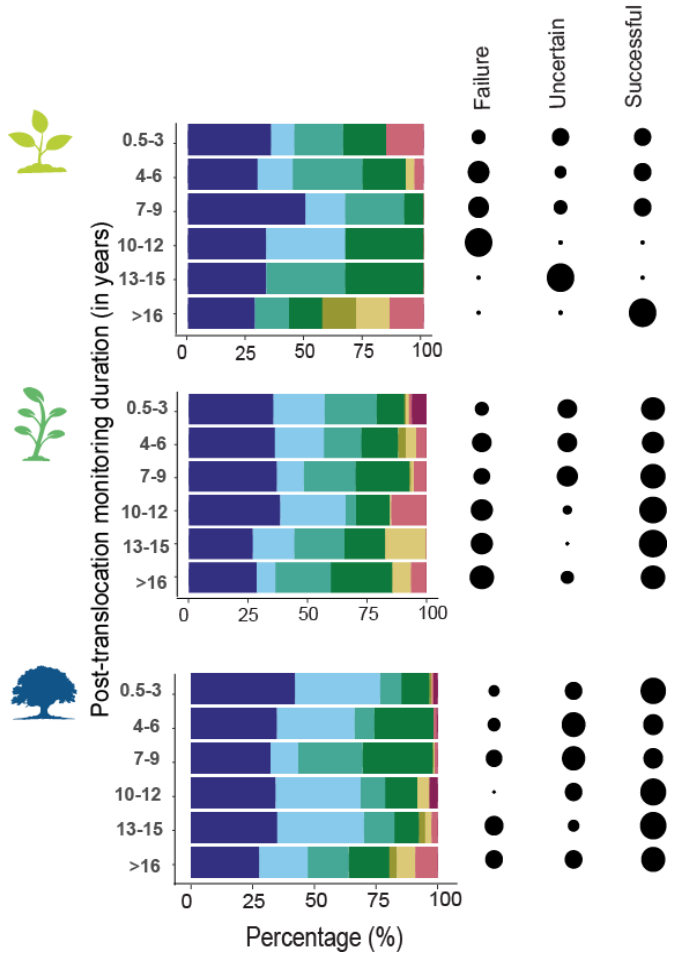


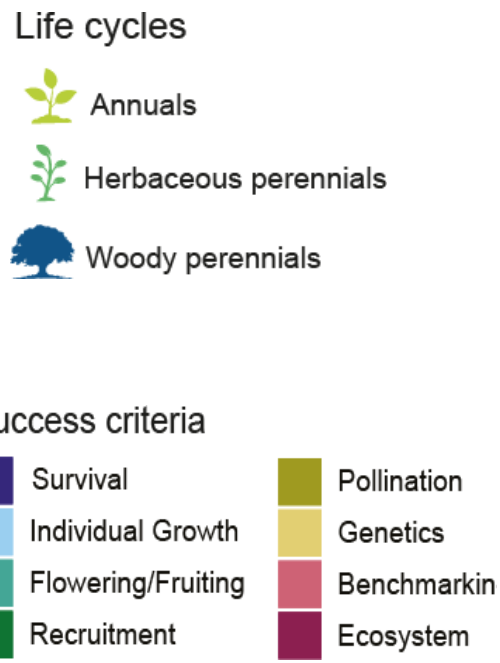
Genissel et al. in prep

Adaptive management

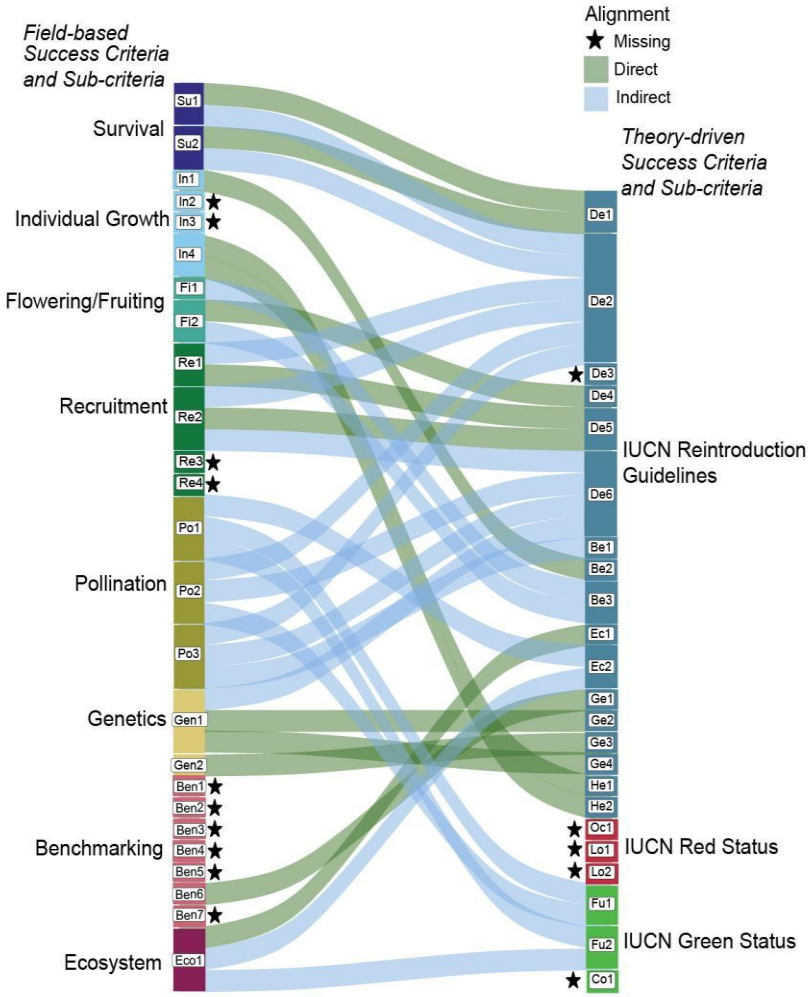
Major outcomes

➡ Comprehensive framework for **biological success criteria**





Kjelsberg et al. in prep



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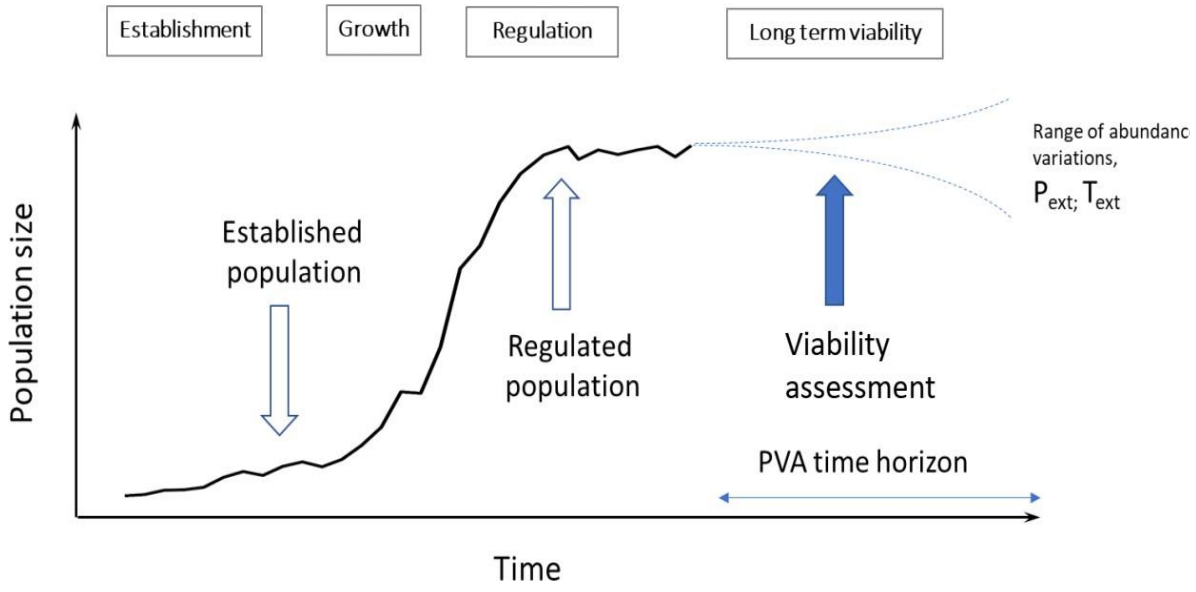
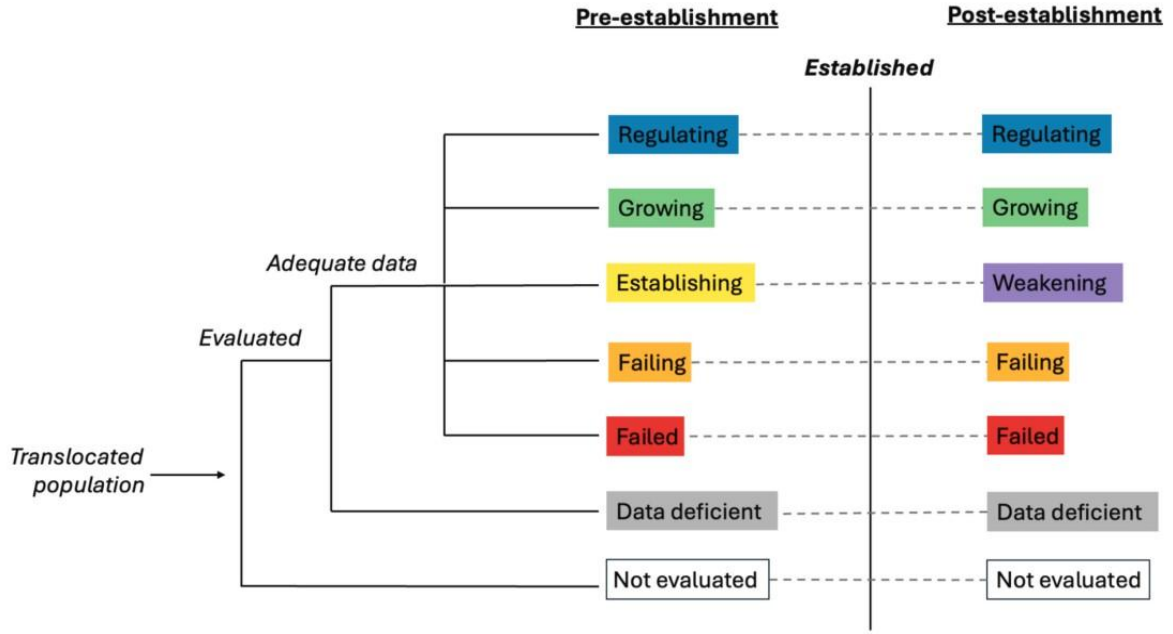
Major outcomes

Adaptive management

➡ Establishing a **unified demographic success framework for all translocation types**



Sarrazin et al. in prep



Based on qualitative and quantitative criteria :

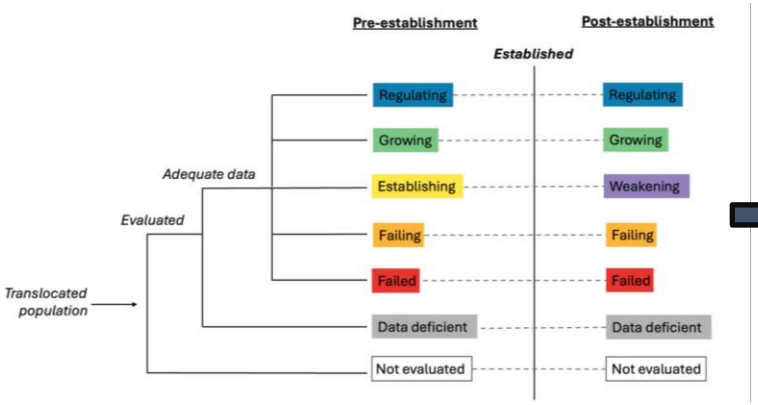
Apparent survival / Recruitment / Spatial distribution / Population dynamics

Birot et al. 2025 Biol. Cons.

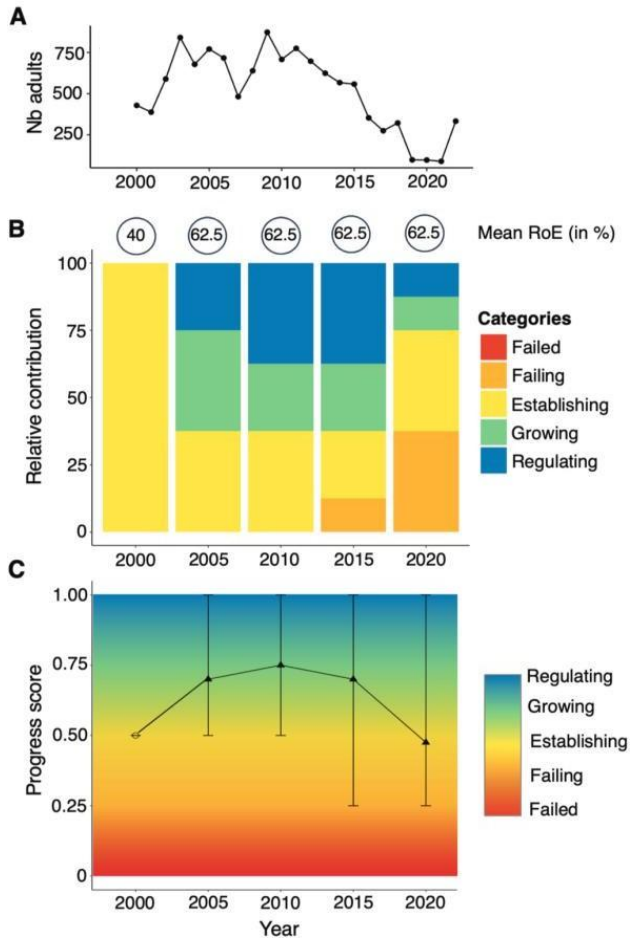
Major outcomes

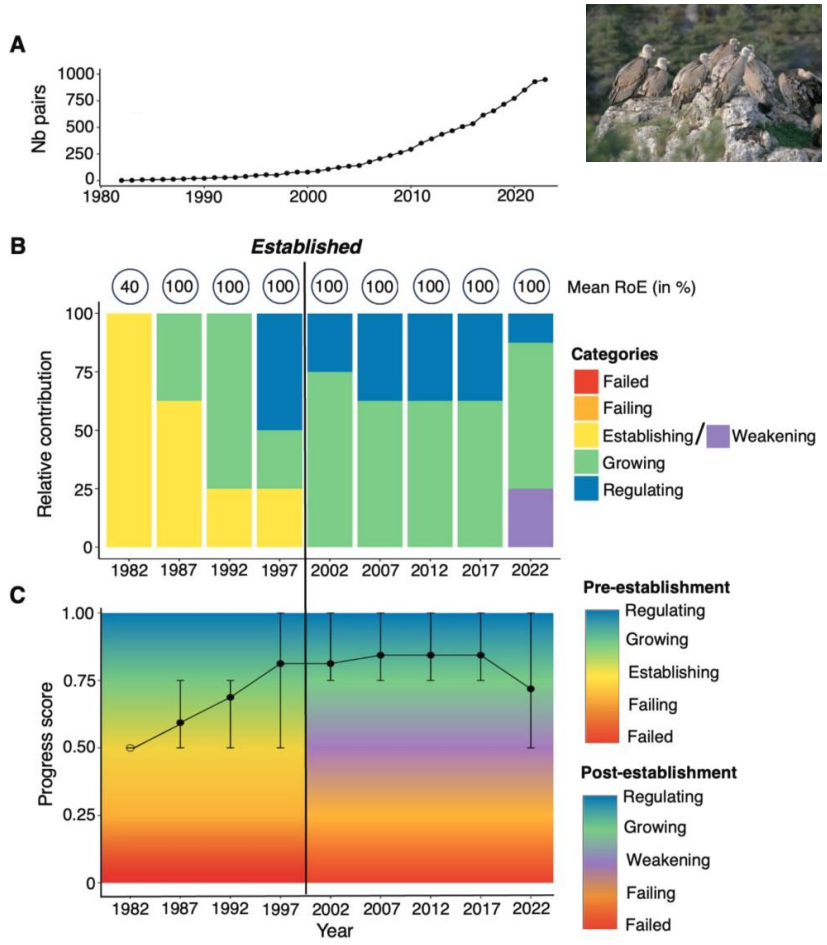
Adaptive management

➡ Establishing a **unified demographic success framework for all translocation types**



Birot et al. 2025 Biol. Cons.





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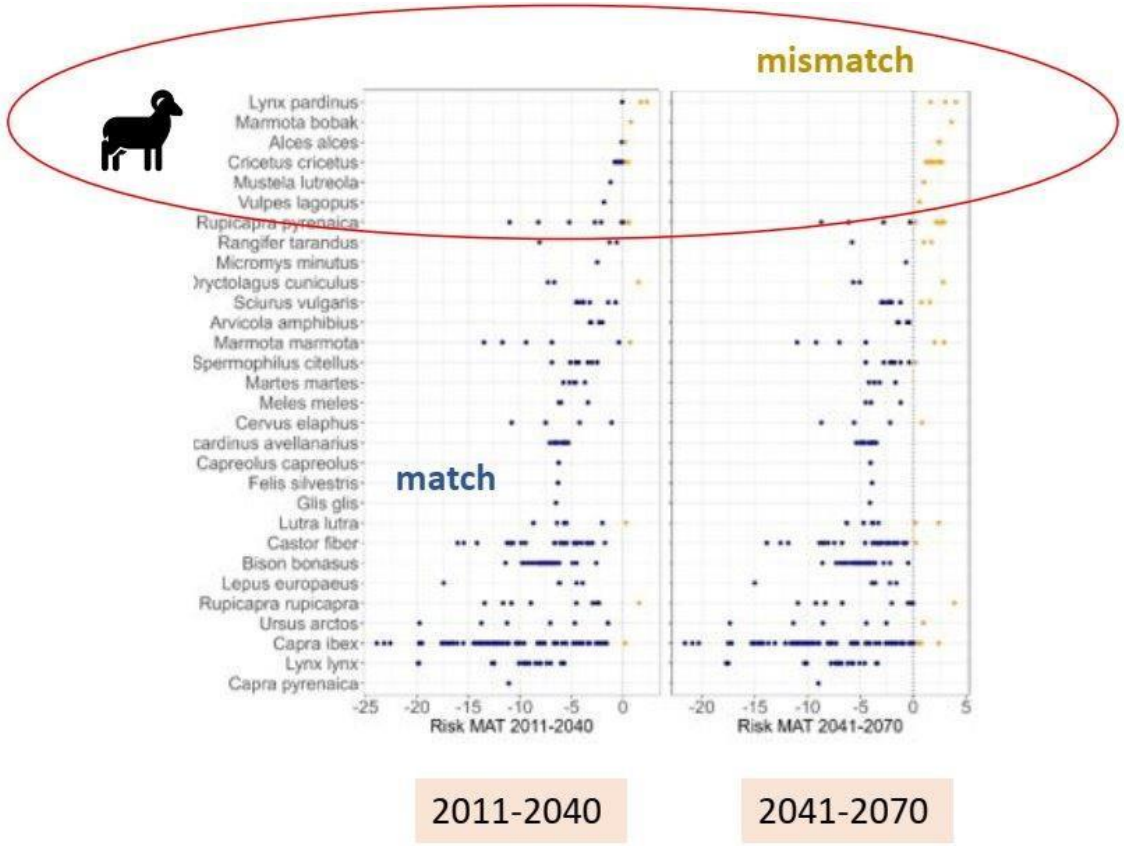
Major outcomes

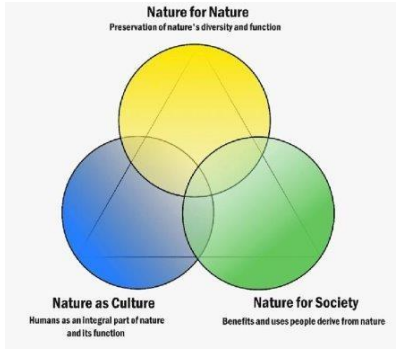
Adaptive management

➡ **Anticipating future risks & opportunities** for translocated populations *under* ...

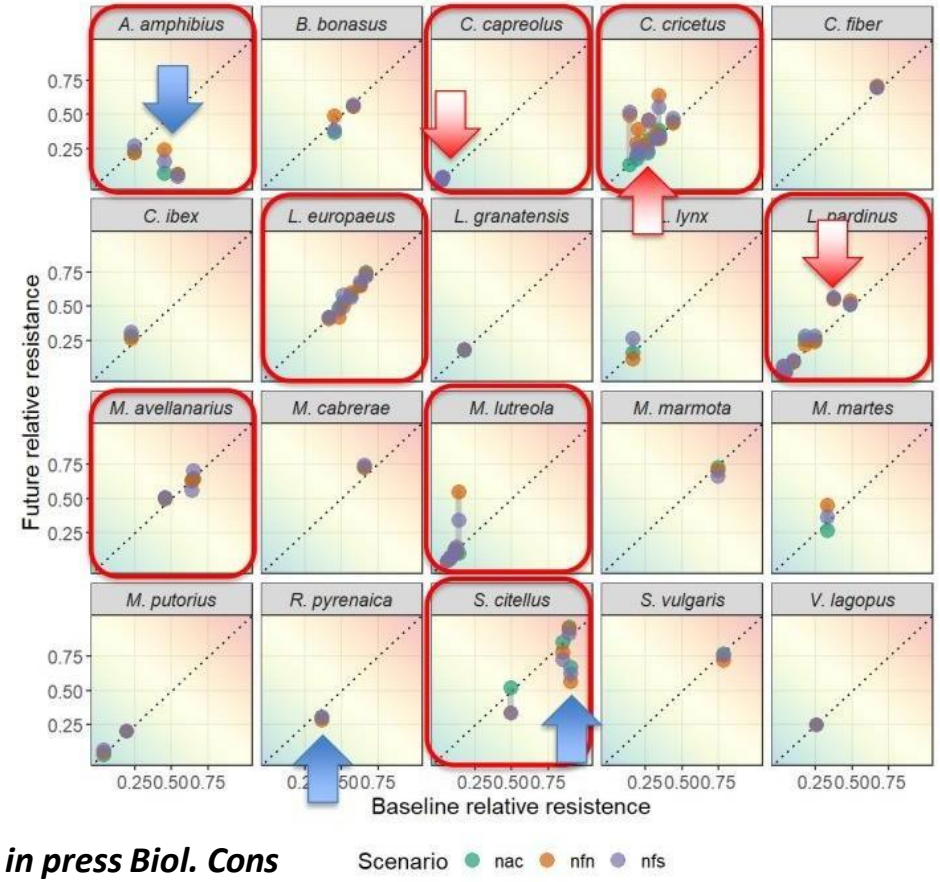
Climate Change



Monnet et al. in prep



Landscape connectivity



Ascensao et al. in press Biol. Cons

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Major challenges and hurdles

- **Data heterogeneity** & **missing information**

  → *Difficult to merge ecological, legal, and social datasets at European scale*

- Balancing **robustness** vs. **Accessibility**

  → *Need to produce outputs both scientifically solid and directly usable by practitioners.*

- **Time** and **coordination** challenges

  → *Multi-country delays affected deliverable timing but did not prevent main achievements*

- Yet… these constraints **reshaped the project** towards **stronger interdisciplinarity and cross-WP collaboration**.

Policy impacts

- **Supporting EU Nature Restoration Regulation implementation**
  → TRANSLOC provides operational evidence on species reintroductions, augmentations, and relocations contributing to restoration goals.

- **Informing national biodiversity and species strategies**
  → Evidence base for defining priorities and assessing feasibility, costs, and success

- **Bridging science, policy, and practice**
  → Structured dialogue via webinars, case studies, and practitioner engagement
  → Will continue through Biodiversa+ Knowledge Hub and open access TRANSLOC database

Conclusion

- Conservation translocations are powerful but challenging restoration tools.
- Combining ecological, evolutionary, and social data helps to explore scenarios addressing
- translocations relevance in changing environments.
- Data integration reveals trends, risks, and opportunities for translocation adaptive management.
- Standardization in translocation data collection and success assessment is crucial to improve their efficiency
- Dialogue among scientists, practitioners, and policymakers is essential to move from *“moving species”* to *“restoring systems.”*