BiodivRestore Final Conference

21-22 October 2025

University of Málaga (Spain) & Online

Welcome back

by Rainer Sodtke, BiodivRestore Coordinator & Co-chair Biodiversa+

BiodivClim ERA-NET COFUND
Biodiversity and Climate Change

#BiodivRestore

Posting about the BiodivRestore Final Conference on social media?

Don't forget to tag @BiodiversaPlus

Some general information

REC

- This meeting is being recorded

  → The recording and slides will be shared on the Biodiversa+ website 👉 biodiversa.eu

- We expect…

  > 190 participants online

  > 55 participants on site

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European Biodiversity Partnership

BiodivRestore Projects presentations

Session #2

Moderated by Dirk Schmeller (FishME project)

#2. How can we assess trade-offs and synergies between targets, benefits, and policies for conservation and restoration?

Exploring governance, objectives, costs and human impacts

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

BIO-TRADE

Protecting Biodiversity through Regulating Trade and Business Relations

By Anu LÄHTEENMÄKI-UUTELA, Finnish Environment Institute

Consortium: Environmental Policy, Finnish Environment Institute (SYKE), Helsinki, Finland

Centre for Private Governance, University of Copenhagen, København S, Denmark

Raoul Wallenberg Institute for Human Rights and Humanitarian Law, Lund, Sweden

Development and Environment, University of Bern, Bern, Switzerland

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

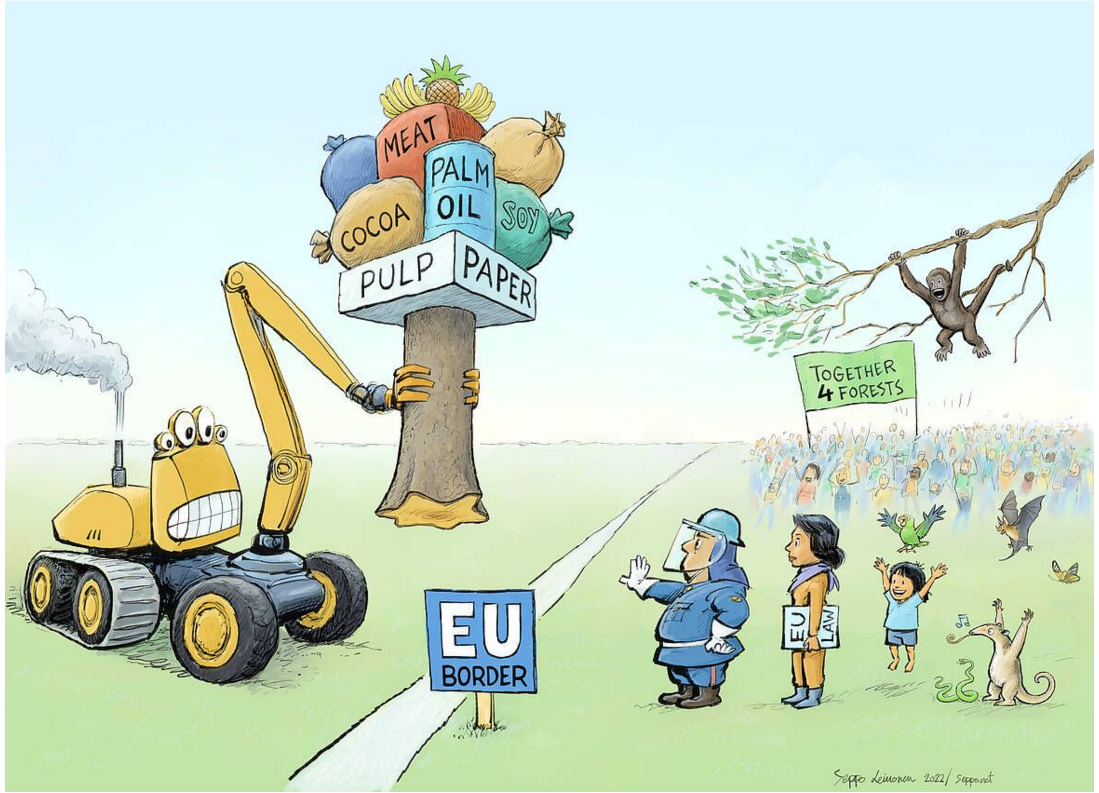
Problem

European consumption drives biodiversity loss globally

Picture: Joa Souza AOP

Response: regulatory action

*EU and European countries **prohibit** commodities and goods with negative impacts*



Picture: WWF

Anti-regulation movement in Europe

Weakening all environmental laws because it costs to comply

Picture:S&D Group in the EU parliament, vote 2024

BIO-TRADE conclusion

*Both needed: biodiversity law for **production** & biodiversity law for supply chains and **consumption***

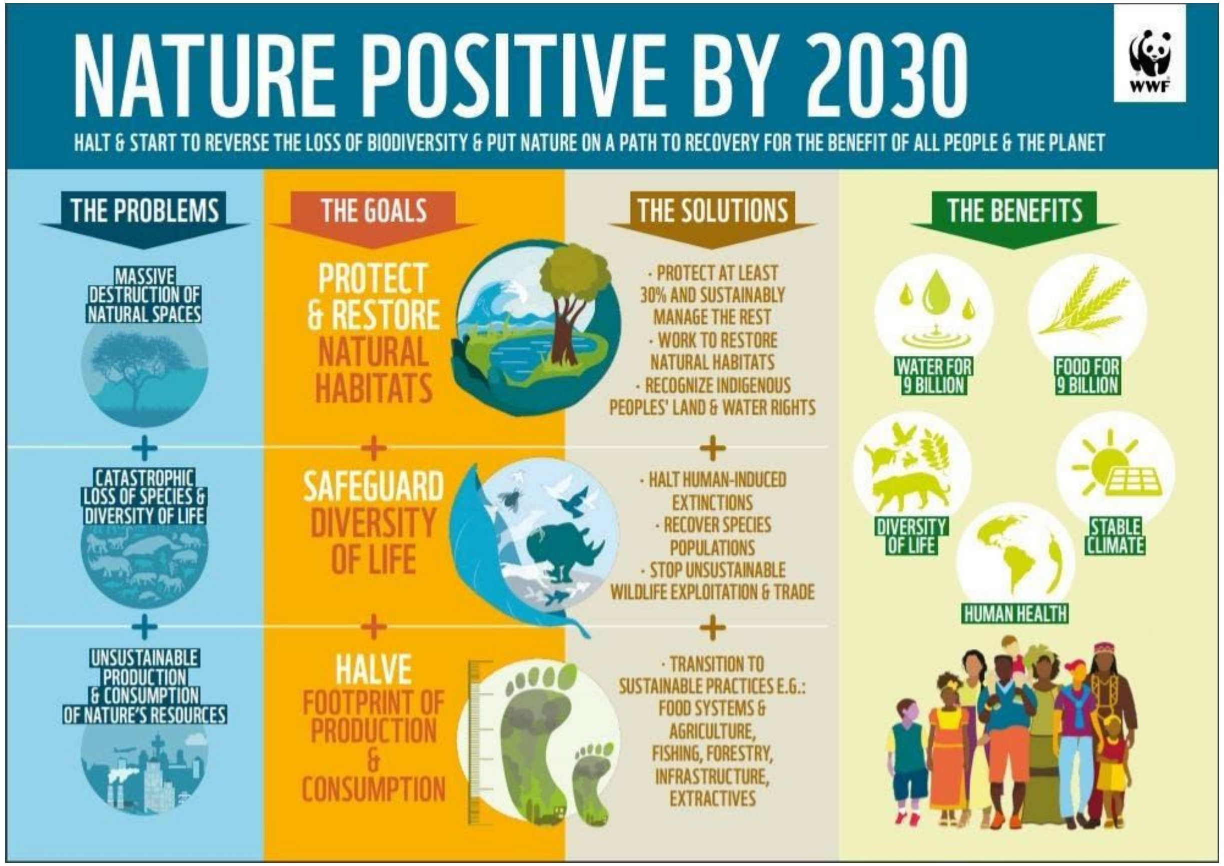


Figure: WWF

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BIOCONSENT

Forest biodiversity restoration policy and management

By . Metodi Sotirov, University of Freiburg, DE

Consortium: Forest and Environmental Policies, University of Freiburg, Freiburg, Germany

Ecosystems Services and Management, International Institute for Applied Systems Analysis, Laxenburg, Austria

Business Management, University of Forestry Sofia, Sofia, Bulgaria

Bioeconomy, European Forest Institute Joensuu, Joensuu, Finland

Resilience, European Forest Institute Bonn, Bonn, Germany

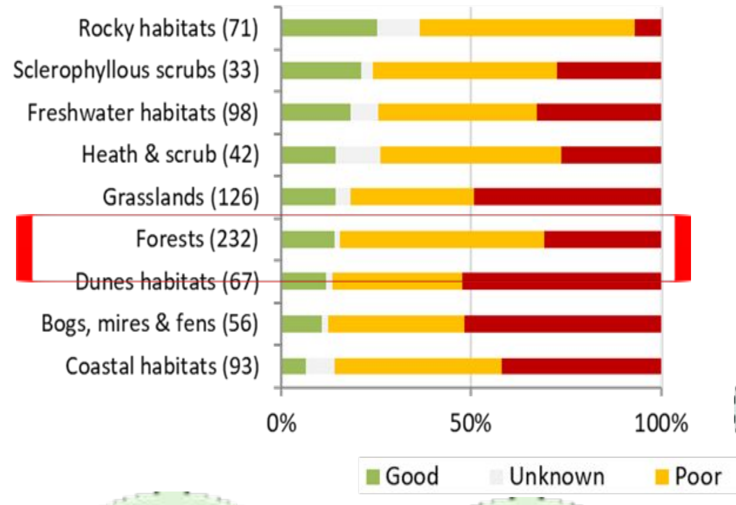
Bioeconomy and Governance & Landscape dynamics and biodiversity, Forest Sciences and Technology Centre of Catalonia, Solsona, Spain

Business Administration, Technology and Social Sciences, Luleå University of Technology, Luleå, Sweden

Forest Resource Management, Swedish University of Agricultural Sciences, Umeå, Sweden

The Puzzle: forest degradation in EU, ambitious EU policies, but what about policy effectiveness?

Figure 4b: Conservation status per habitat group at EU level



Note: T… ments per group … ntheses. Ma… coastal ha… nber o…

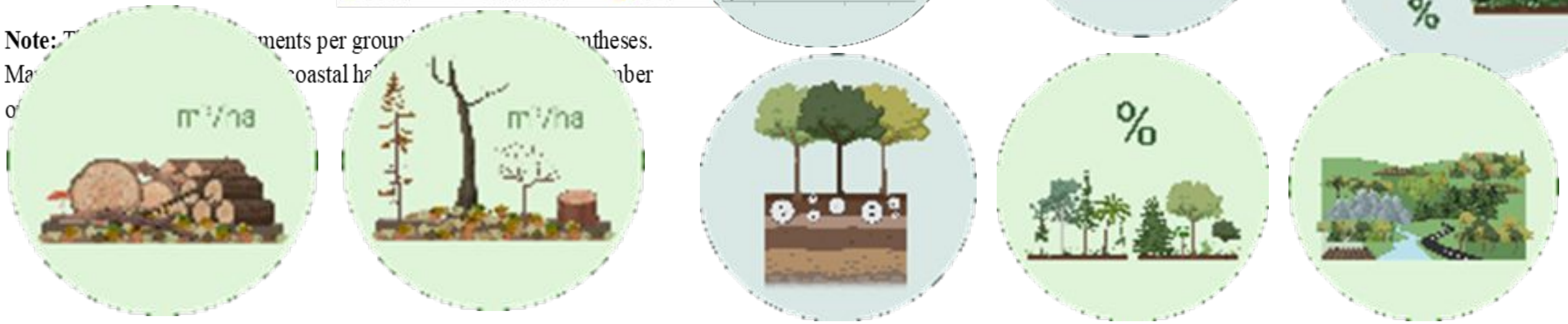
Official Journal of the European Union — EN L series

2024/1991 — 29.7.2024

REGULATION (EU) 2024/1991 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

of 24 June 2024

on nature restoration and amending Regulation (EU) 2022/869



EUROPEAN COMMISSION

Brussels, 20.5.2020
COM(2020) 380 final

COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS

EU Biodiversity Strategy for 2030

Bringing nature back into our lives

EUROPEAN COMMISSION

Brussels, 16.7.2021
COM(2021) 572 final

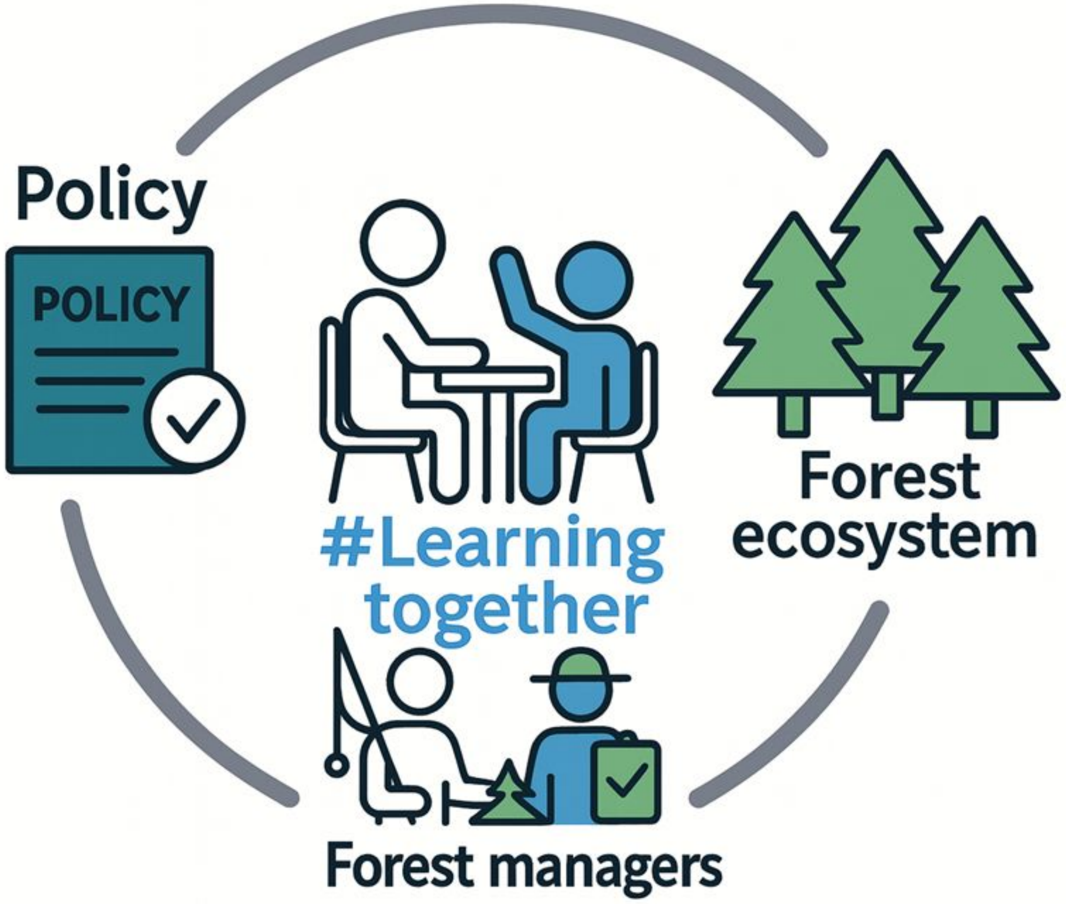
COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS

New EU Forest Strategy for 2030

Main policy relevant conclusion:
- policy responses of countries
- behavioral responses of owners to EU policy and climate change

together with
- different management strategies
- under different scenarios
- resulting trade-offs and synergies

all matter for EU biodiversity restoration, but differentially!



Lesson 1: National institutions and dominant coalitions shape positive, negative and divided responses to EU policy and climate changes

National Subsystem		Reponses to EU policy
Sweden	1 dominant *Timber Production Coalition*; *less dominant Environment Coalition*	EU Biodiversity Strategy 2030 and EU Forest Strategy 2030 **GENTLY REJECTED**
	Dominant Policy beliefs: Increased timber production for bioeconomy and climate mitigation, national authority *Synergies:* production-climate mitigation-bioeceonomy	
Germany	3 dominant *Multifunctionality, Adaptive management* and *Environment Coalitions* + *Hunting* and *Recreation coalitions*	EU Forest Strategy 2030 **NEUTRAL/DIVIDED** EU Biodiversity Strategy 2030 **SUPPORTED**
	Policy beliefs: Multifunctionality/close-to-nature forestry; production and conservation for climate mitigation/adaptation; carbon uptake + storage; divided on EU authority *Synergies:* Close to nature forestry-conservation-climate mitigation/adaptation	
Spain/ Catalonia	1 dominant *Environment Coalition, less dominant Forestry Coalition*	EU Biodiversity Strategy 2030 and EU Forest Strategy 2030 **SUPPORTED**
	Policy beliefs: Multifunctionality; conservation and sustainable use for climate mitigation/adaptation and rural development; EU authority welcome *Synergies:* conservation-sustainable use-climate mitigation/adaptation	

Lesson 2: Diversity of forest owners and managers shape positive, negative and divided responses to EU biodiversity and climate policy

Country	Forest owner type (FOT)	Objectives 1–2 (Conservation management)	Objectives 3–4 (Close-to-Nature, Resilience)	Objectives 5–6 (Sustainable Management)
Germany	Multifunctionalists	▲	▲▲	▲
	Environmentalists	▲▲	▲	►
	Optimizers	▼	►	▲
	Traditionalists	▼▼	▼▼	▼▼
Poland	Multifunctionalists	▲	▲▲	▲
	Optimizers	▼▼	▼▼	▼
Slovenia	Multifunctionalists	▲▲	▲▲	▲▲
	Environmentalists	▲	►	►
	Optimizers	▼	▼	►
	Traditionalists	▼▼	▼▼	▼▼
Sweden	Environmentalists	▲▲	▲	▼
	Multifunctionalists	►	►	►
	Optimizers	►	►	►

Active *SUPPORT*

- ‘Multi-Functionalists’ and
- ‘Environmentalists’

Passive *SUPPORT:*

- ‘Passive’ forest owners

Active *RESISTENCE:*

- ‘Traditionalists’
- ‘Optimizers’

Lesson 3: Diversity of spatial restoration strategies can support EU biodiversity and climate policy under contrasting scenarios

	BIODIVERSITY FIRST			MULTIFUNCTIONALITY		WOOD BIOECONOMY FIRST	
LANDSCAPE MANAG. APPR.	land sparing	land sparing	land sharing	TRIAD	land sharing	land sparing	land sharing
REST./ ADAPT. APPROACH	passive	active --> passive	passive	passive and active	passive and active	passive and active	active
MANAGEMENT INTENSITY	low	low	low	low/ medium/ high	medium	high/ medium	medium/ high
BULGARIA	★★	★★★★★	★★★	★★★★★	★	★★	★★★★
GERMANY	★½	★★	★★★	★★½	★★★★½	★½	★★★
POLAND	★	★★★½	★½	★★★★½	★★★	★★★★½	★★★½
SLOVENIA	★★½	★★★½	★★½	★★★½	★★½	★★½	★★½
SPAIN	★★	★★★	★★	★★★★★	★★★★	★★★★★	★★★
SWEDEN	★★½	★★★★	★★★	★★½	★★★★	★★★	★★
	STRATEGY1	STRATEGY2	STRATEGY3	STRATEGY4	STRATEGY5	STRATEGY6	STRATEGY7

Active *RESTORATION*

- Land sharing (extensive)

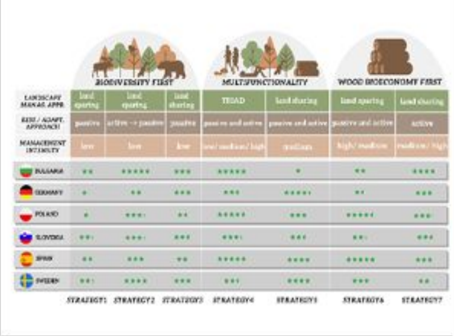
Passive *RESTORATION*

- Land sparing (intensive, strict)

Active and passive *RESTORATION*

- TRIAD (intensive, extensive, strict)

Lesson 4: Need to anticipate and manage many different trade-offs and synergies between ecological, economic and social benefits



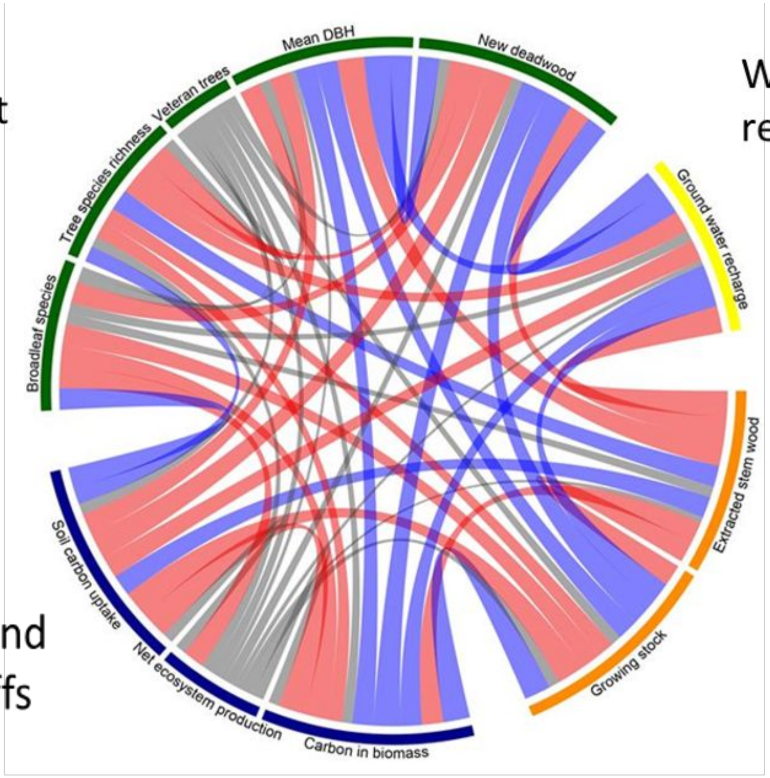
1. Implementation strategy + forest owner behavior

2. Model-based assessment of ecosystem services and biodiversity under climate change

Habitat quality

Water regulation

Synergy
Trade-off
Neither strong synergy nor trade-off



3. Analysis of ecosystem services and biodiversity synergies and trade-offs

Carbon storage

Timber production

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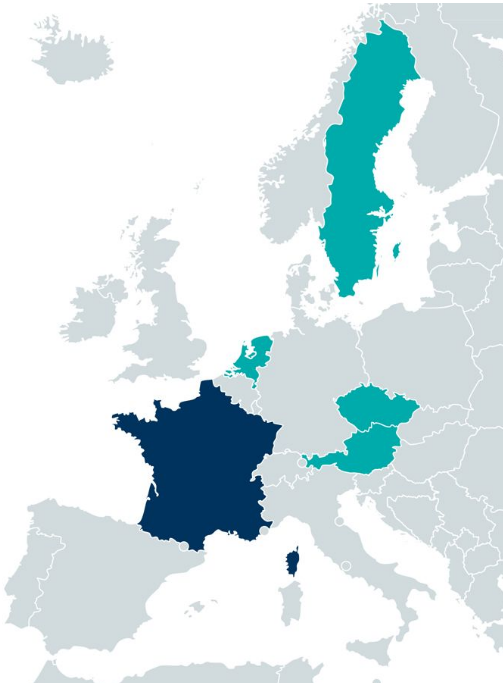


FRESHH project

Biodiversa+ BiodivRestore

Farmer acceptable REstoration of Semi-natural Habitat to limit Herbicides

Project Leader: David A. Bohan, INRAe (FR); Presented by Pavel Saska, CARC (CZ)

Project partners: WUR (NL), SLU (S), UIBK (AT), CRI (now CARC; CZ)

biodiversa | Water JPI | anr agence nationale de la recherche | FWF Der Wissenschaftsfonds. | TACR | NATURVÅRDSVERKET SWEDISH ENVIRONMENTAL PROTECTION AGENCY | Ministry of Agriculture, Nature and Food Quality of the Netherlands

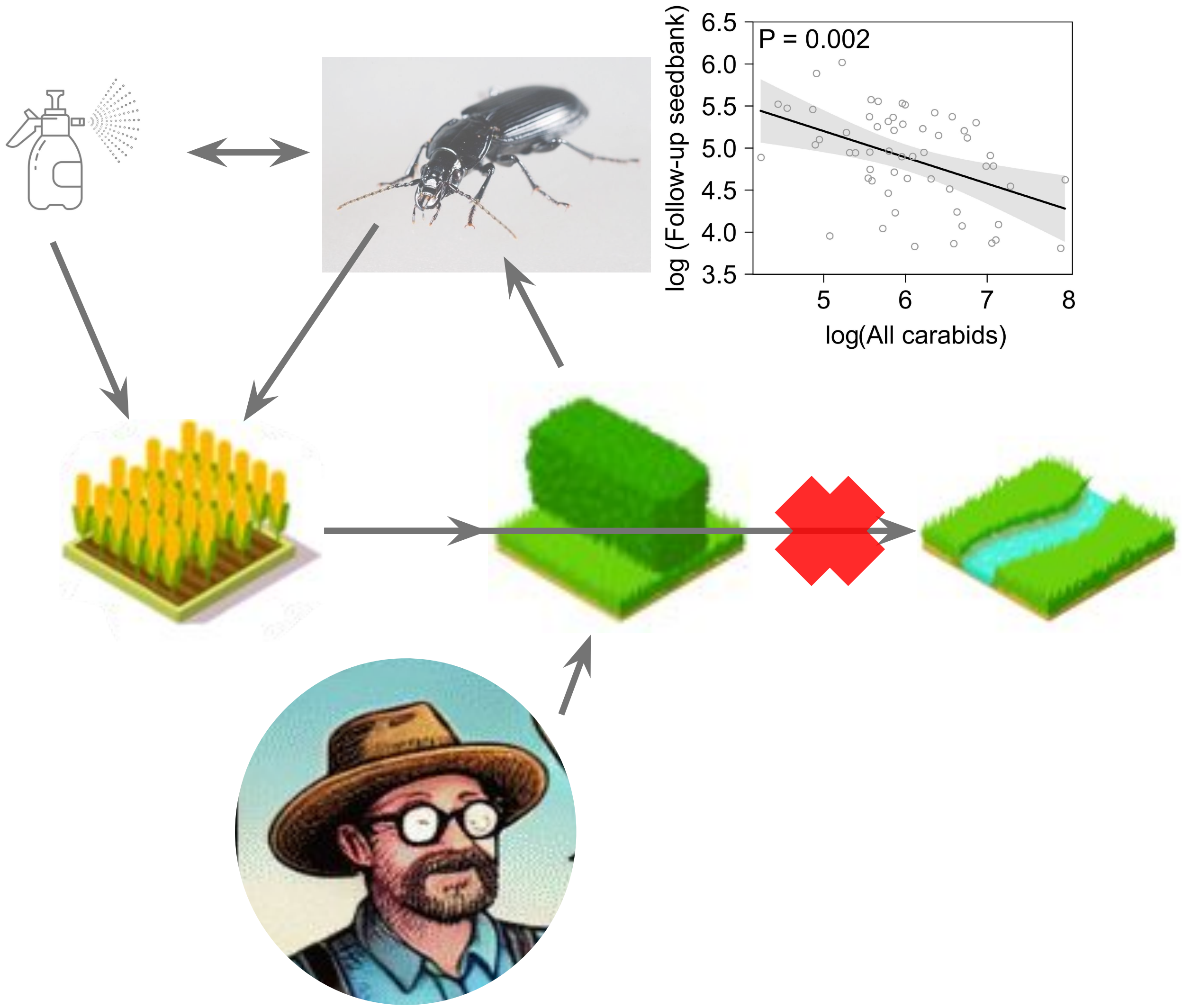
Ecological questions

- Do Semi-Natural Habitats (SNH) support carabids and natural weed regulation?

- Is biodiversity (eDNA) in freshwaters promoted by SNH presence?

Socio-economic question

- Why don't farmers adopt SNH?



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Conservation and restoration of degraded ecosystems and their biodiversity, including a focus on aquatic systems
Water JPI
www.biodiversa.eu

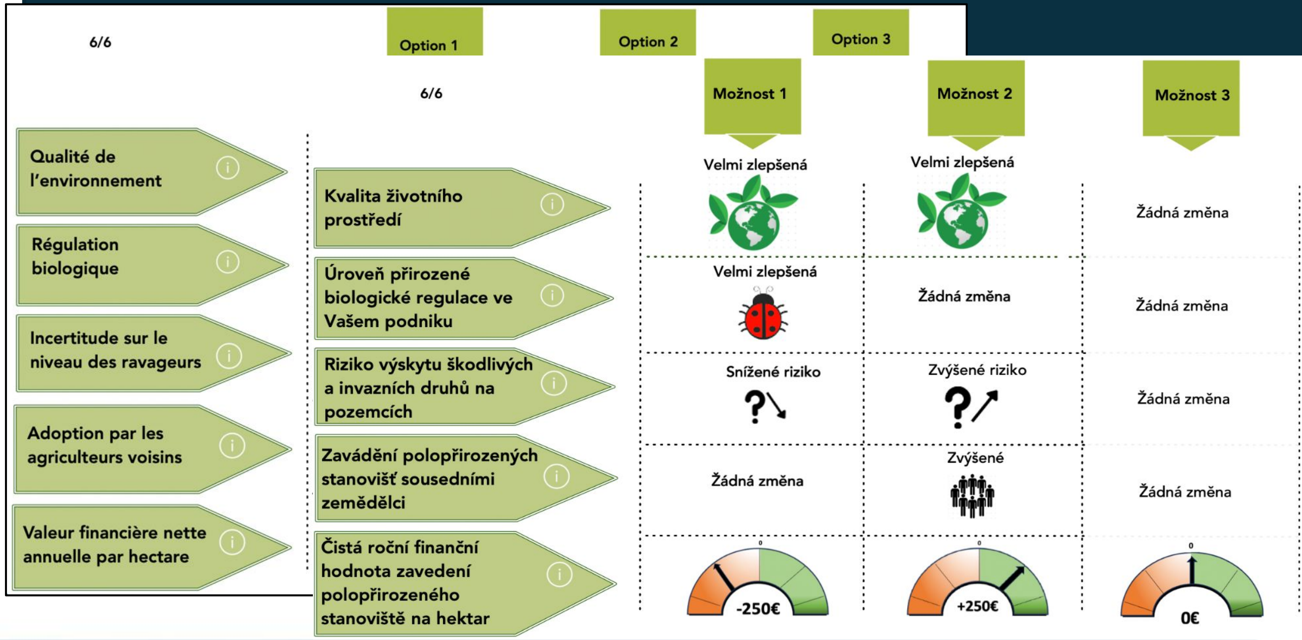
Positive outcomes

1. We learnt that trans-disciplinary working is important and potentially impactful

a) Policy and societal impacts
b) Opportunity to learn and enhance one‘s expertise

Challenges

1. Cross-domain difficulties of working together – i.e. co-creation of a DCE/questionnaire between socio-economists and ecologists; complexity of working across multiple countries (translation, language and phrasing). Small problems propagate on work and time leading to major delays.



Positive outcomes

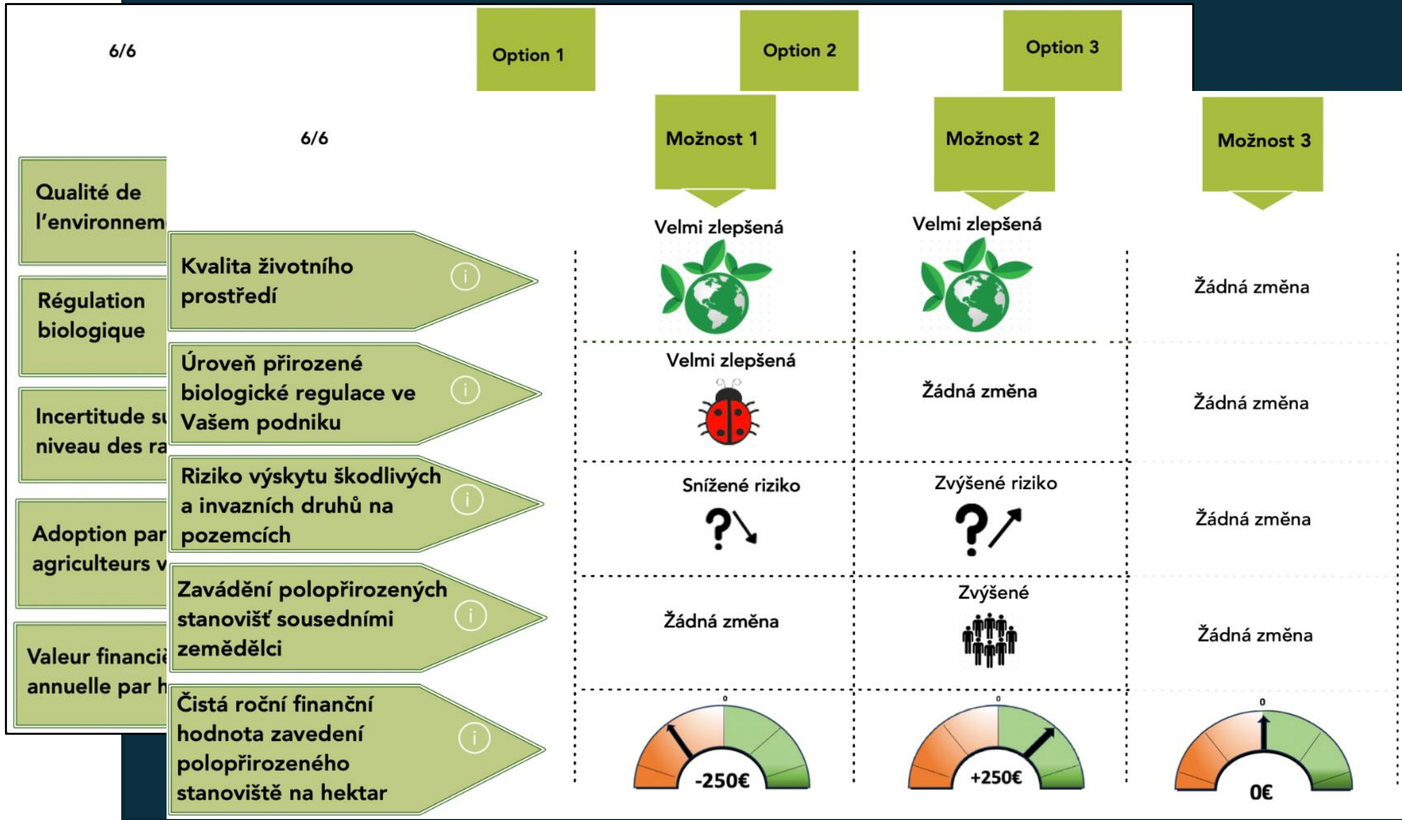
2. High contribution (~1000 farmers) to DCE / Questionnaire

64% adopters (willing to pay)
(younger farmers, smaller farms, lower income)

36% are willing to accept
(need to be paid)
(older farmers, larger farms, bigger income)

Challenges

2. Willingness to participate is declining among farmers (competition with other projects, legislation fatigue, annoyance with scientists, protests). This can include workshops, questionnaires, providing data, etc. Needs and timescales of farmers and scientists are different…



Positive outcomes

3. Better understanding of the carabid-weed seed predation association and field management effects on both carabids and redundancy/resilience of weed seed predation

Challenges

3. Underfunding (NL) – delayed field work – delayed joint outputs

a) Weed seed removal is positively associated with carabid activity density (meta-analysis)
b) Carabid densities in crop fields are usually lower than desired to achieve effective regulation
c) Carabid beetles are negatively affected by management syndromes (meta-analysis)
d) Management intensity negatively affects resilience of seed predation
e) Landscape complexity supports resilience in seed predation

→ Good papers!

Policy impacts

- Farmers‘ opinion is important: Two groups of farmers (willing to pay / willing to accept).
  - Currently all farmers are treated as equal in policy. Our work suggests that a different messaging approach and support structures will be necessary in policy if we are to achieve our aims of modifying farmer behaviour – FRESHH socioeconomic investigations allowed us to better understand the values and mentality of farmers and better adjust our science to match their needs.

- Freshwaters are intimately linked to agricultural management and are an important component part of agricultural landscapes
  - More communication of this to farmers and other stakeholders is necessary, alongside more research to explore how agricultural impacts can be minimised and aquatic biodiversity maximised.

- Solid scientific results on how carabids contribute to resilient weed regulation.

Priority areas for conservation and restoration of Amazonian forest-frugivorous fish interactions and associated fisheries
FORESTFISHER

Consortium

Financed

1. Institut de Recherche pour le Développement, France
2. Instituto Politécnico de Bragança, Portugal
3. Technical University of Munich, Germany
4. Federal University of Amazonas, Brazil
5. Universidade Estadual de Mato Grosso do Sul, Brazil

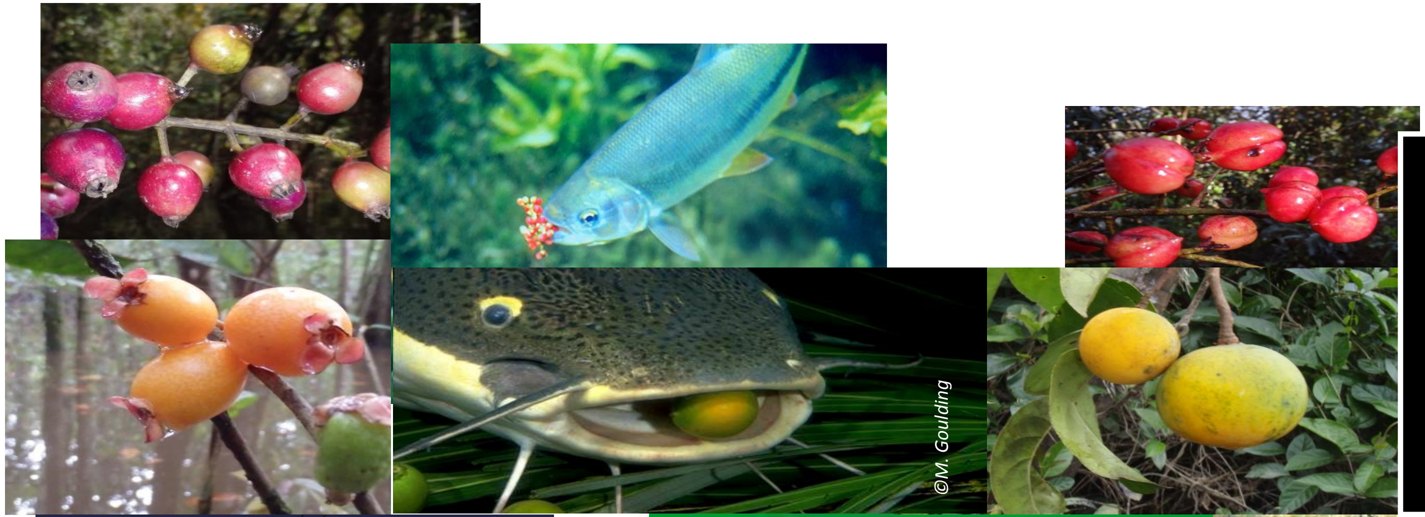
Self-financed

A. Mississippi State University, USA
B. Federal University of Rondônia, Brazil
C. State University of Maringá, Brazil
D. Universidade Federal de Goiás, Brazil
E. National Center for Monitoring and Early Warning of Natural Disasters, Brazil

Subcontracted

1ª. NGO - AÇÃO ECOLÓGICA GUAPORÉ, Brazil

BIODIVRESTORE 2020-2021 CALL

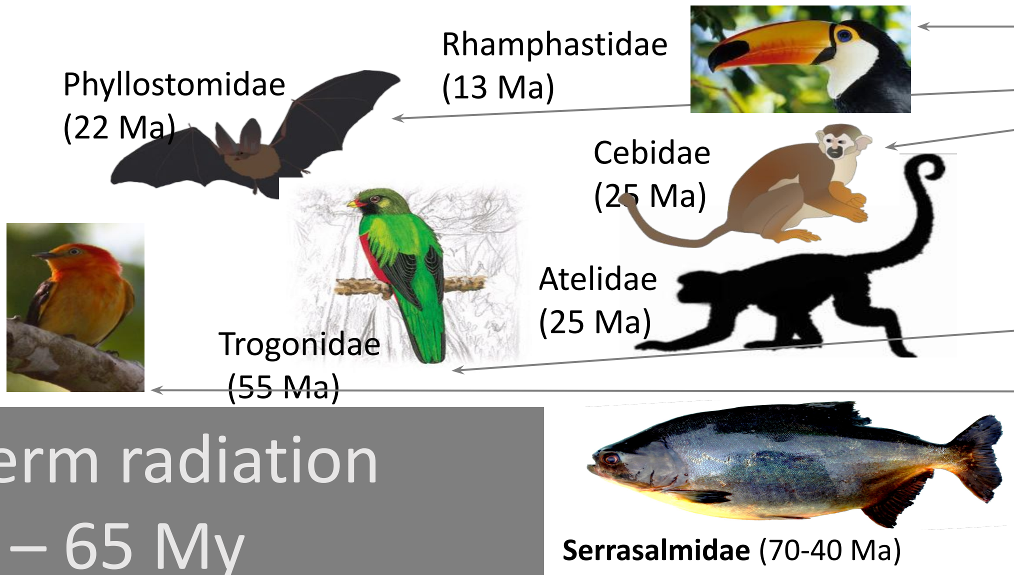


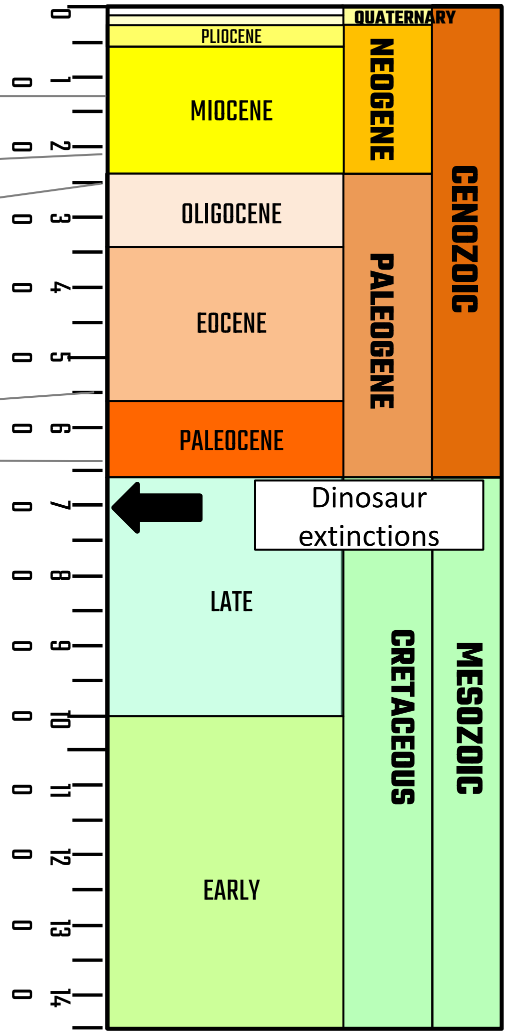
Fruit is key food for fish
in floodplains of
tropical rivers

- ≈ 275 Fish species (104 in Amazonia) eat fruits
- Consume fruits of 560 Neotropical plant species in 82 families
- Fish ≠ Water, seed dispersal patterns
- Seed **dispersers** and seed **predators**

Rodrigues et al. 2024 – *In Prep.*
Correa et al. 2016 – *Proc B.*
Correa et al. 2015 – *Biological Reviews*
Anderson et al. 2011 – *Proc B.*
Horn & Correa et al. 2011 – *Acta Oecologica*
Correa et al. 2007 – *Bioscience*

Fish: oldest frugivorous vertebrates





(Ma = millions of years ago)

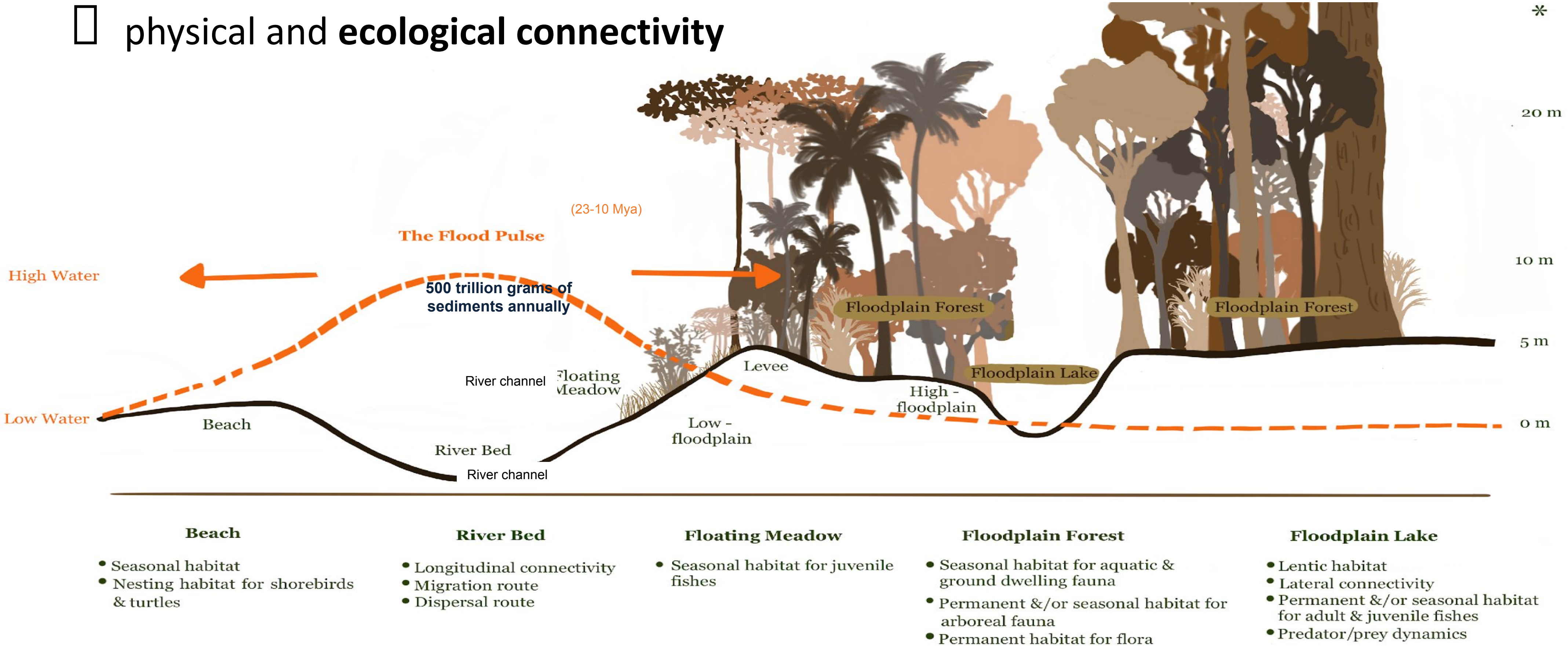
Angiosperm radiation
135 – 65 My

Correa et al. 2015 – *Biological Reviews*

Fish likely contributed to the diversification of early angiosperms

Amazonian floodplains and the flood pulse

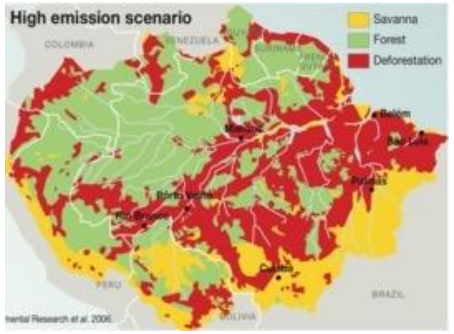
 physical and **ecological connectivity**

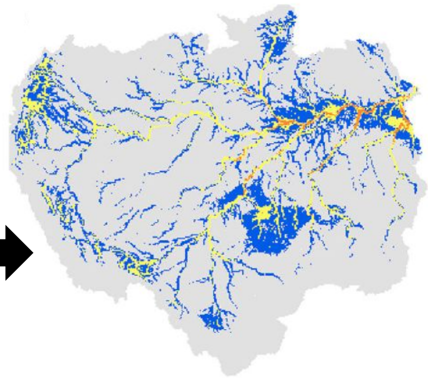


Correa et al. 2022 – *BioScience*

1. How recent land-use changes have affected the frugivorous fish diversity? (WP1)

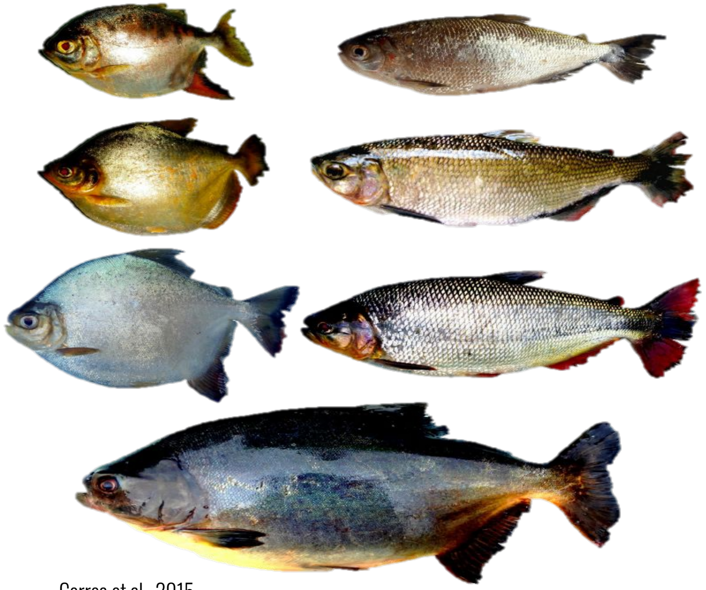
2. Will future climate, land-use, and river fragmentation changes in the Amazon affect the availability of suitable areas for frugivorous fish species? (WP2 & WP3)





3. How these expected shifts in the distribution of frugivorous fish species will affect fishing communities and their traditional fishing grounds? (WP4)

WP1 - The fundamental link between forest and frugivorous fish



Correa et al., 2015

Correa et al., 2015

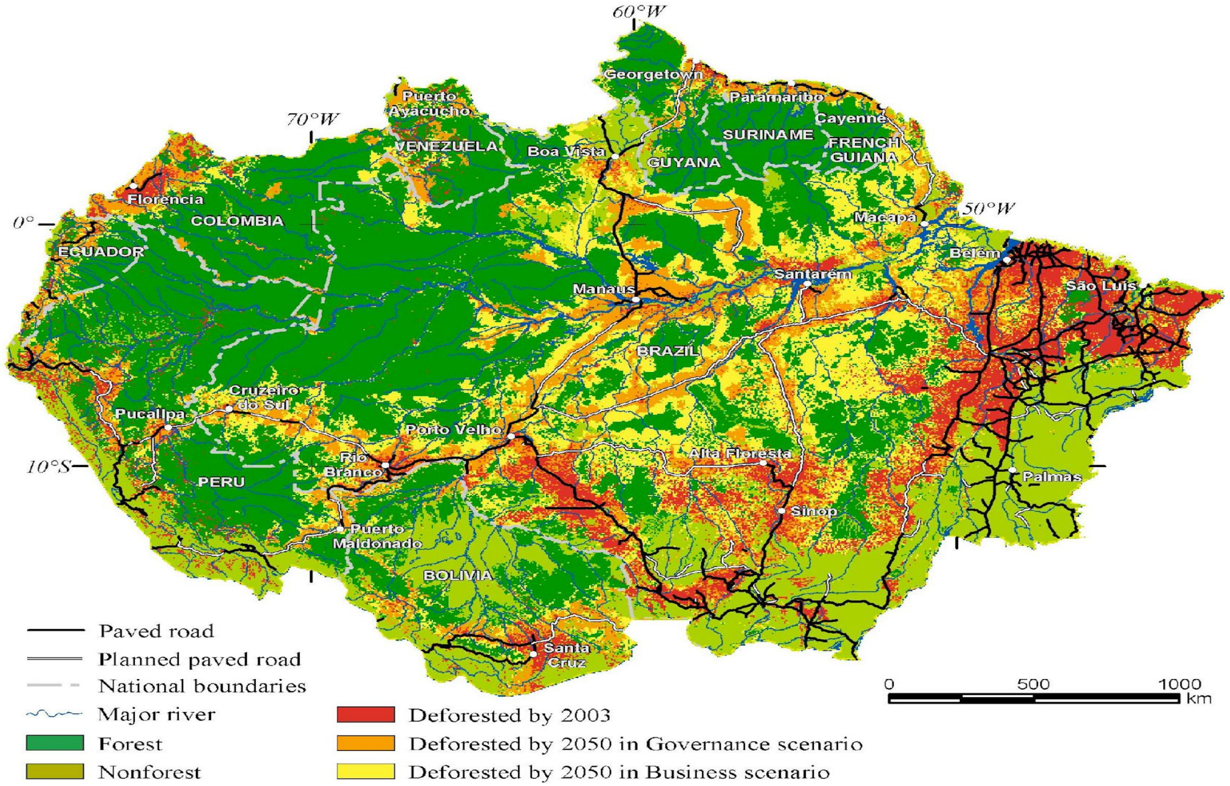
Decreased diversity

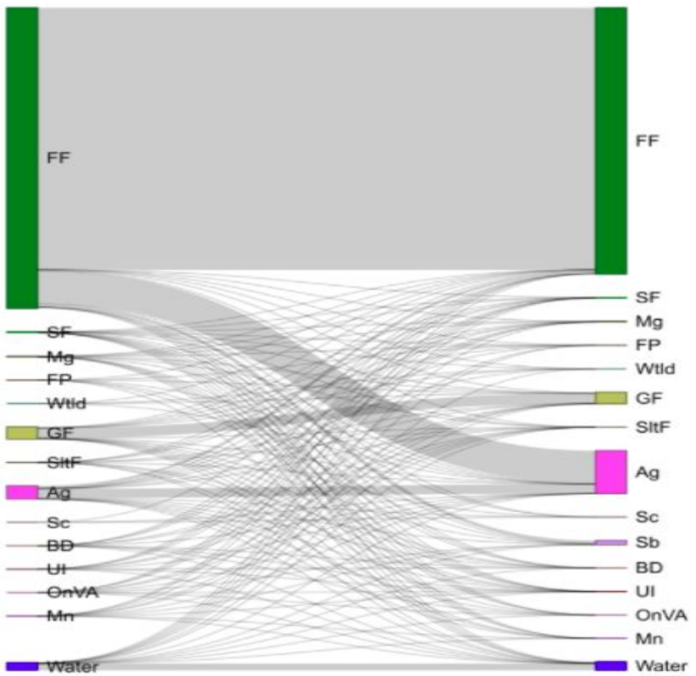
?

WP2: Future scenarios linking land-use change, landscape patterns, and ecosystem services

Amazon Land Use Land Cover Intensity Analysis

Explore land use transitions from a coupled human-environmental system to produce future quantitative and qualitative scenarios of land use

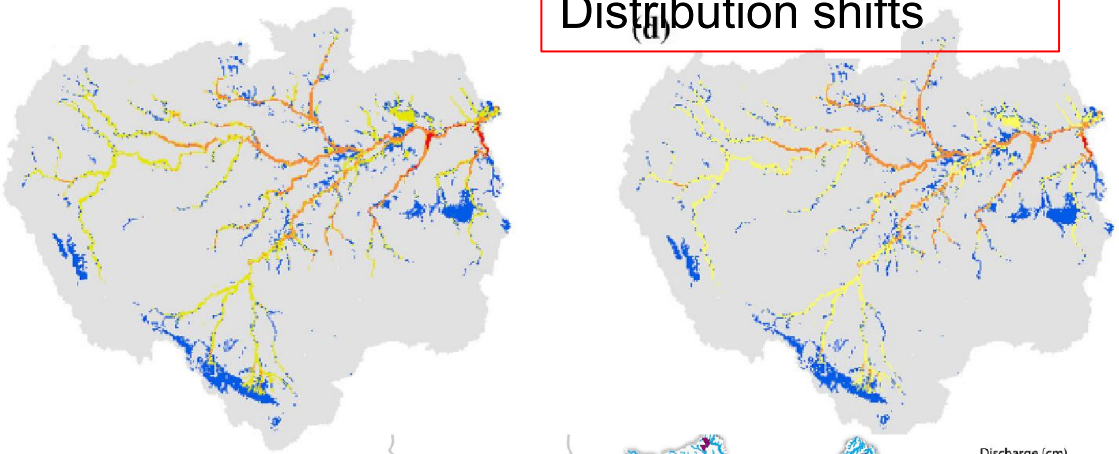




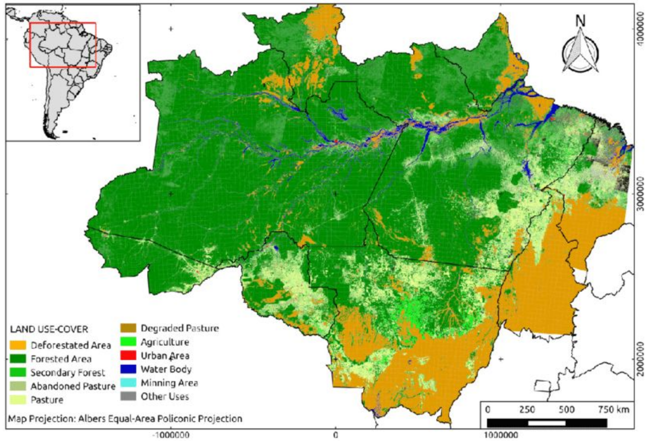
WP3: Priority areas for conservation and restoration

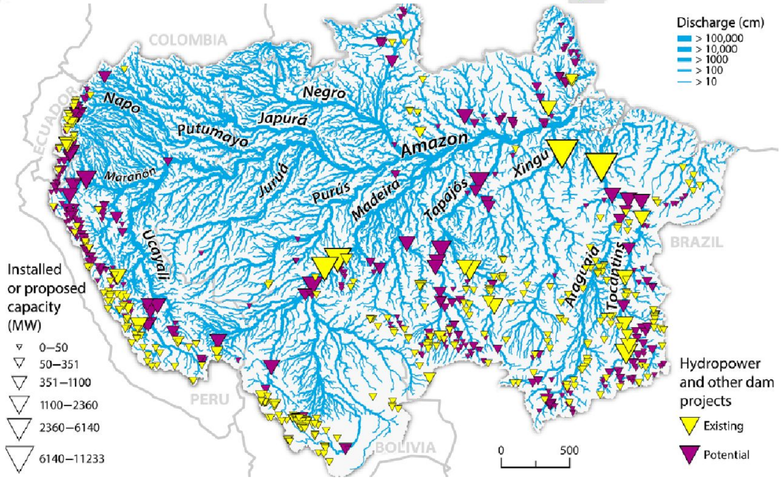
Select, map and rank priority areas for conservation of frugivorous fish species

Distribution shifts



Integrating climatically suitable conditions, with land use changes and connectivity within water/forest network





WP4 - Participatory land use planning: a protocol involving stakeholders

Main societal challenge

Contribute to a successful mitigation of the current and future changes in the fishing resource

…and policy issue

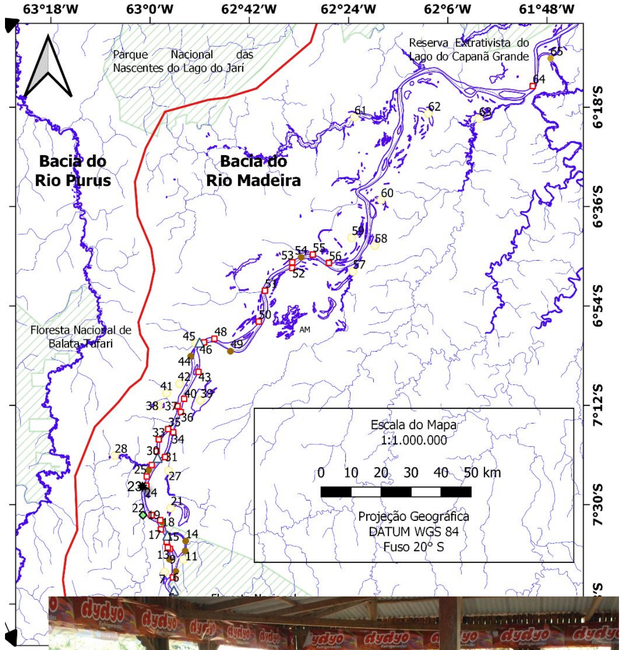
Build a protocol that guides public policy and decision makers to design **Fishery agreements and land use planning**

a participatory instrument that associates fisheries and land use in communal rules, based on scientific and traditional knowledge

Participatory workshops with identified stakeholders:

- Two Brazilian Partners as stakeholders (CEMADEN & NGO Ecoporé)
- Representatives and leaders of local communities
- State and Federal agencies, local associations and schools

A focus on The Madeira / Purus interfluvial region



FORESTFisher

Funding agencies

anr agence nationale de la recherche

Fundect
Fundação de Apoio ao Desenvolvimento do Ensino, Ciência e Tecnologia do Estado de Mato Grosso do Sul

FCT Fundação para a Ciência e a Tecnologia

FAPEAM
Fundação de Amparo à Pesquisa do Estado do Amazonas

DFG
Deutsche Forschungsgemeinschaft

Self-financed partners

UFG
UNIVERSIDADE FEDERAL DE GOIÁS

UNIR
FUNDAÇÃO UNIVERSIDADE FEDERAL DE RONDÔNIA

UEM
Universidade Estadual de Maringá

MISSISSIPPI STATE UNIVERSITY

Cemaden
Centro Nacional de Monitoramento e Alertas de Desastres Naturais

biodiversa Water JPI

FOREST Fisher

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European Biodiversity Partnership

Project mpa4sustainability
Enhancing the role of MPAs in restoring biodiversity while maintaining access to ecosystem services

By David Lusseau

P1 (DNK): Technical University of Denmark, Denmark, David Lusseau

P2 (FRA): CNRS, France, Serge Planes

P3 (SWE): Swedish University of Agricultural Sciences, Sweden, Lena Bergström

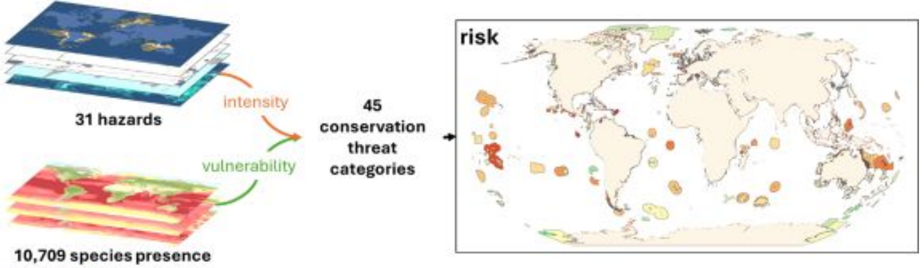
P4 (PRT): Madeira Whale Museum, Portugal, Luis Freitas

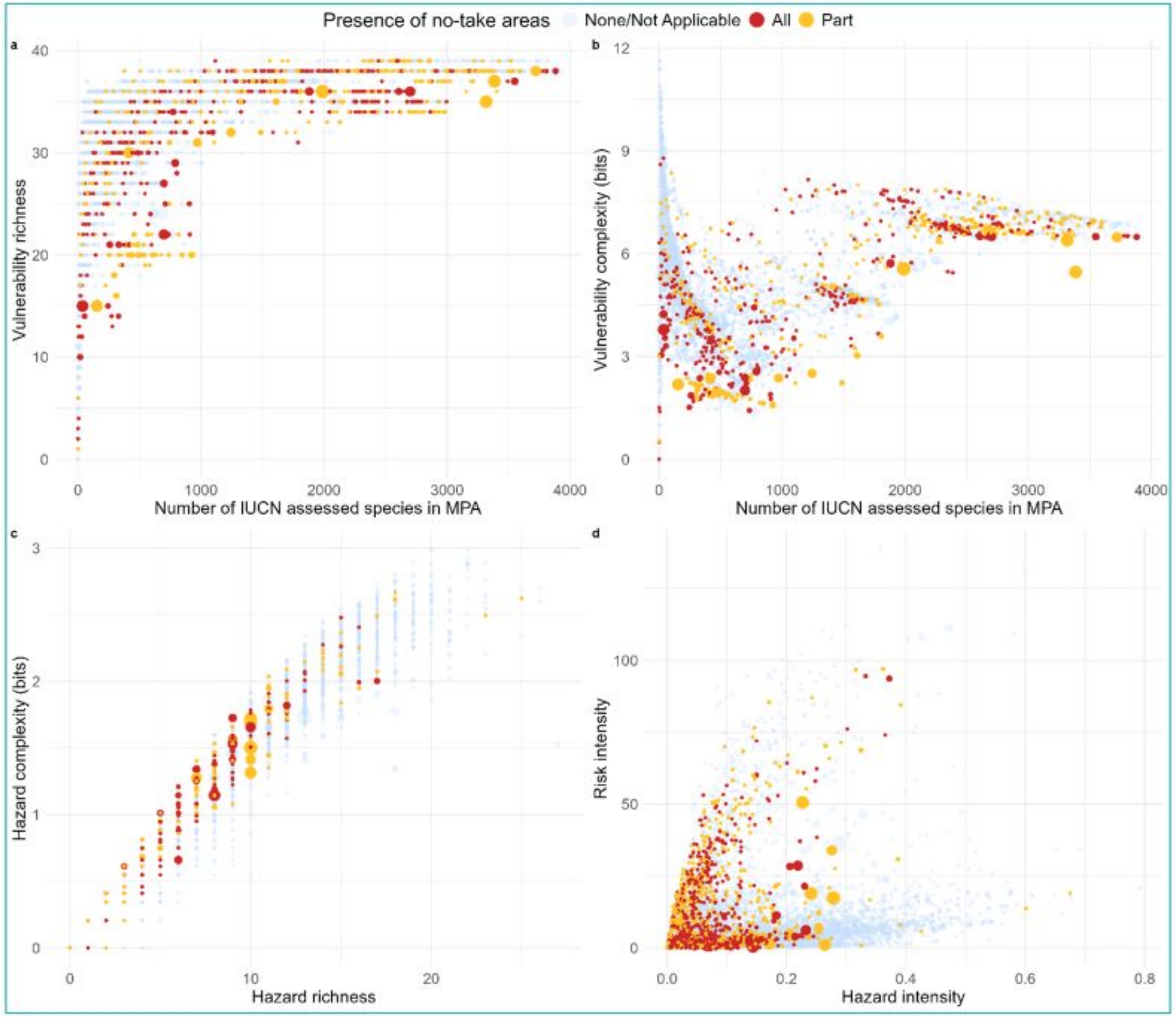
P5 (ESP): CSIC, Spain, Sergi Valverde

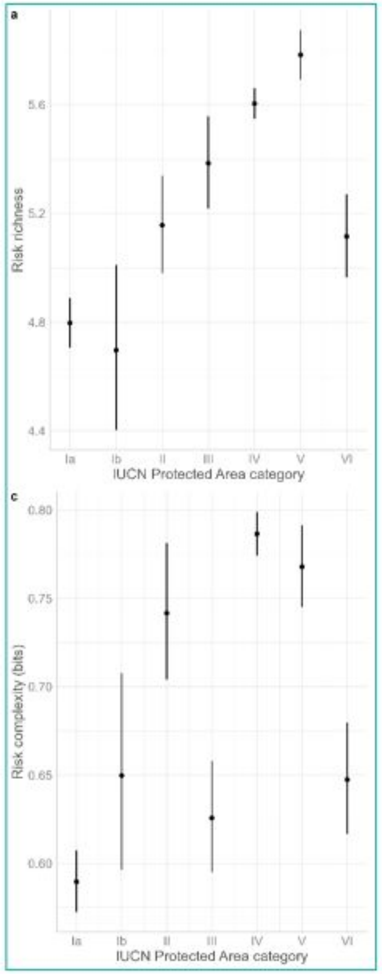
P6 (ESP): Centre de Recerca Matemàtica, Spain, Josep Sardanyés

mpa4sustainability

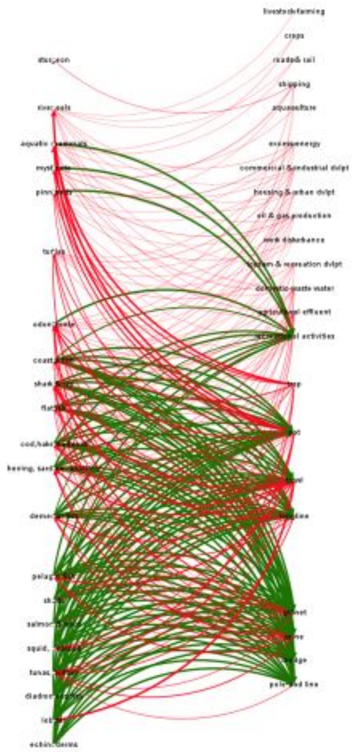
MPAs – Global insight





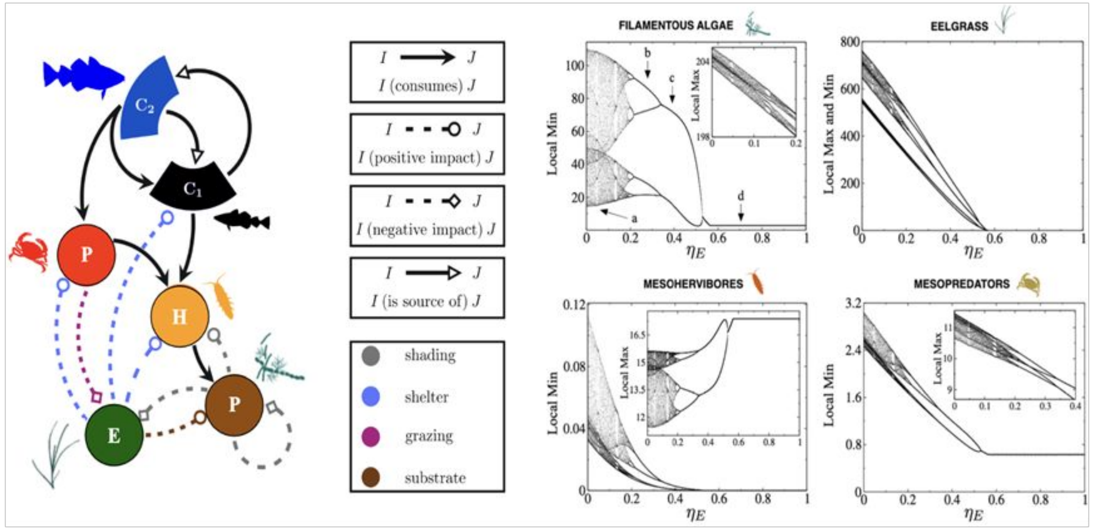


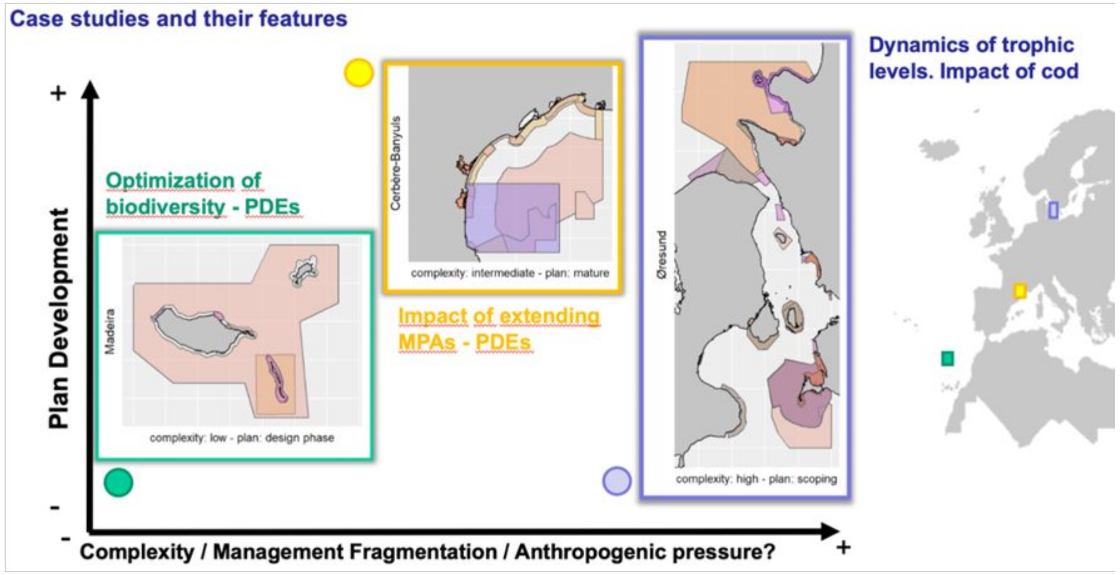
removing fishing can increase risk in socioecologically complex MPAs



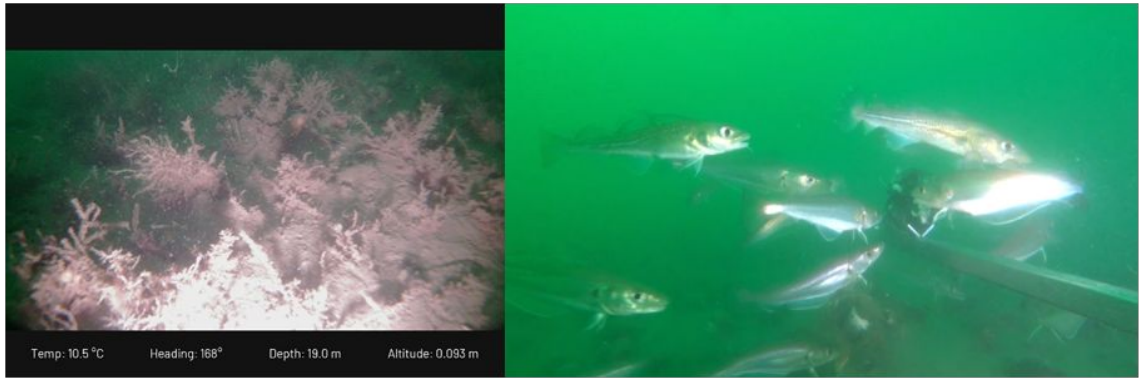
mathematicians – ecologists - managers

We can gain meaningful insights from first principles based on models co-created with managers and ecologists





Take care of habitat to recover cod

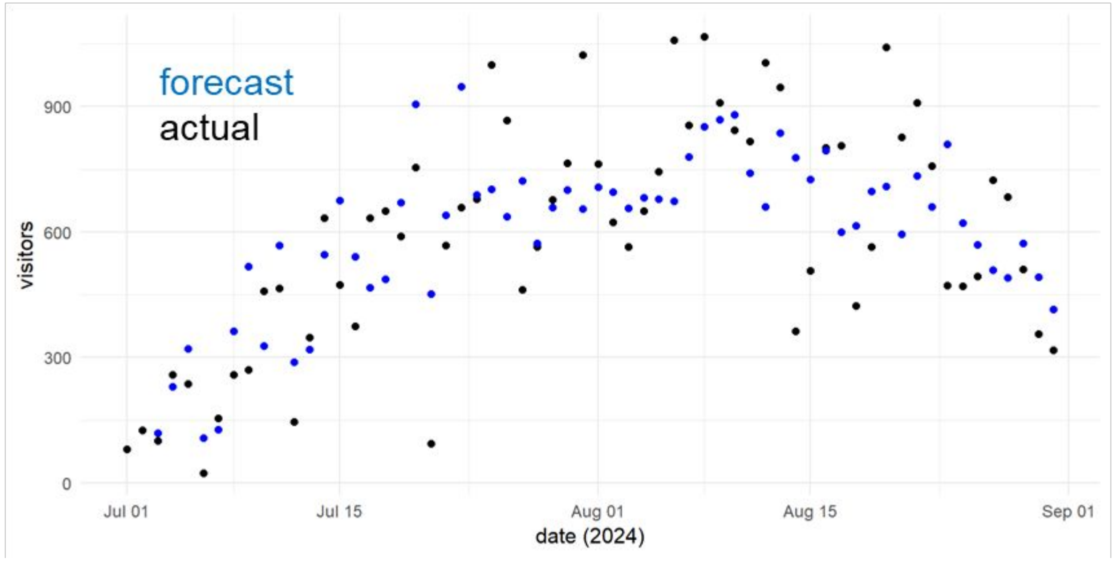


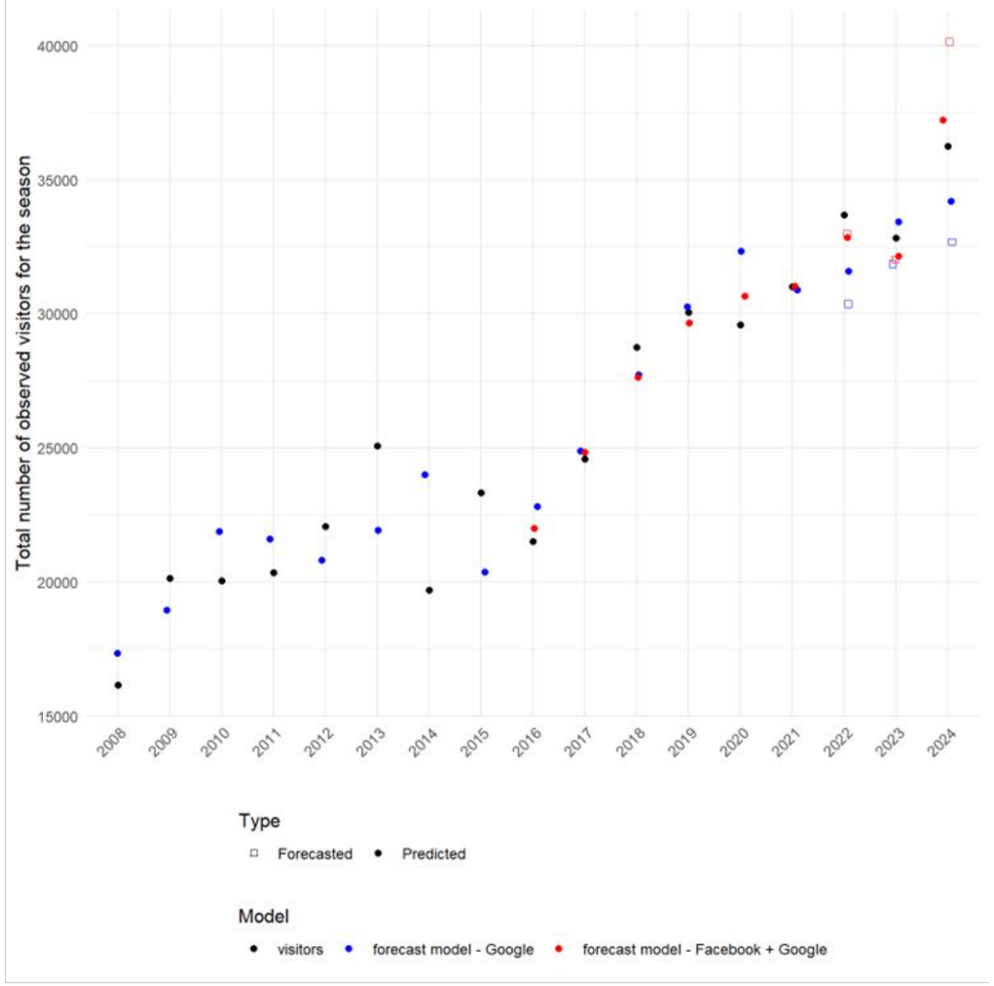
Scoping reef that MPA designation

The AI & social media rollercoaster

Google Trends + Wikipedia proving consistent informative source of tourism intentions

For the Banyuls reserve: we can forecast annual visitation before the season and have a two-day forecast for daily visitation within the season using Google Trends





Conclusion

People and nature have complex relationships – acting on one species/one activity can backfire

Consider hazards integratively

eDNA cheap and useful for monitoring, online behaviour translate in forecast for tourism management

Use Ecosystem-based biodiversity management

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

biodiversa+
European Biodiversity Partnership

REMOVE_DISEASE
Conservation and restoration of degraded insular biodiversity: removal of introduced mammals and dynamics of infectious diseases in seabirds across islands of the Southern Ocean

By **Thierry BOULINIER, CEFE CNRS Université Montpellier, France**

Consortium:

Paulo CATRY, MARE, Lisboa, Portugal

Maelle CONNAN, Nelson Mandela University, South Africa

+ 4 stakeholders (Nature Reserve managers, NGO)

anr agence nationale de la recherche

FCT Fundação para a Ciência e a Tecnologia

WATER RESEARCH COMMISSION

Objectives and main challenges

***Aim:* determine if removing introduced mammal species from islands provides indirect benefits via effects on the dynamics of infectious diseases**

Remove Disease

Context:

- ***Introduced mammal species*** *= major threat to biodiversity/seabirds on islands*
- *Restoration efforts via removal of introduced mammal species*

PROJET RECI
Restauration des écosystèmes insulaires de l'océan Indien

Brown rats

Albatross chick

Restoration plans:
- Amsterdam Island (FR)
- Marion Island (SA)

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Water JPI

www.biodiversa.eu

Objectives and main challenges

Aim: ***determine if removing introduced mammal species from islands provides indirect benefits via effects on the dynamics of infectious diseases***

Context:

- ***Introduced mammal species*** *= major threat to biodiversity/seabirds on islands*
- *Restoration efforts via removal of introduced mammal species*

- ***Infectious diseases*** *= neglected threat to densely breeding species*

  E.g., **Avian cholera** killing each year thousands of nestling albatrosses on Amsterdam Island or **High Pathogenicity Avian Influenza** in seabirds

- *Introduced species and infectious disease dynamics?*
- *Removing introduced mammals → extra benefit to biodiversity conservation via effects on disease dynamics ?*

Challenges: ***(1) Infectious diseases in space and time*** ***(2) Test of predictions / restauration plans***

Collaboration, coordination

4 academic teams
4 stakeholders
(3 regional + 1 global)

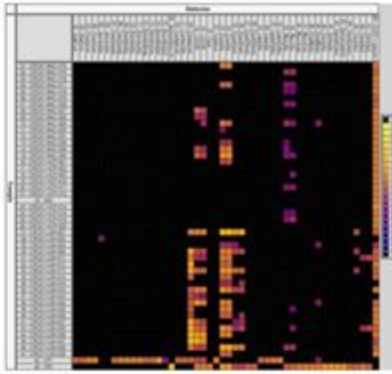
- Coordinated field sampling
  (>5 islands, >15 species)

- Coordinated laboratory analyses
- Synergies with the development of disease surveillance projects and the implementation of restauration plans

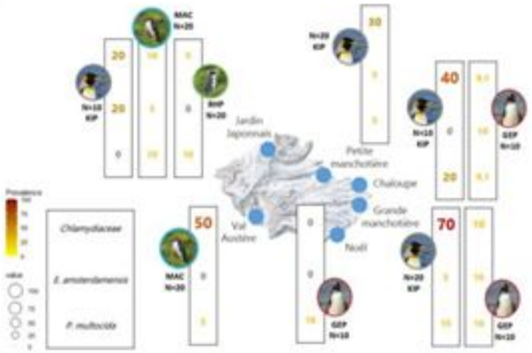
Scientific results

(1) Infectious diseases in space and time

Set up of multiplex PCR **+ serology**

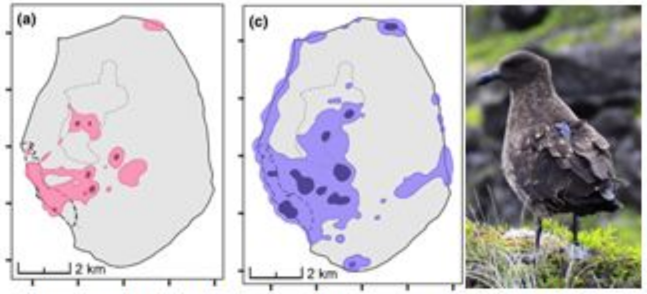


Preliminary results



Densely breeding and sentinel species + introduced species

Bralet et al. *J Anim Ecology 2025*

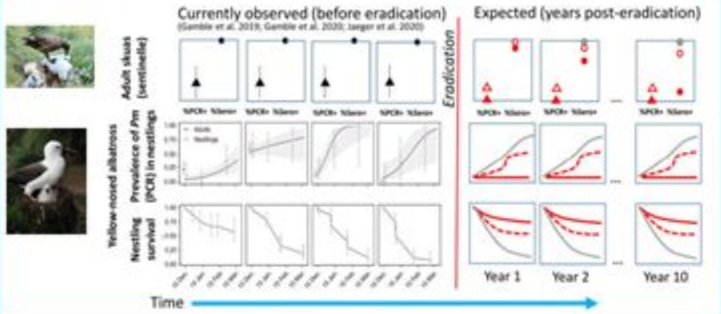


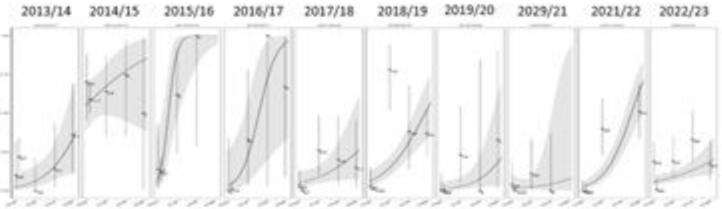
Skua GPS-UHF tracking and Pm PCR & serology of breeders & non-breeders

Lamb et al. *2023 Functional Ecology*

(2) *Test of predictions / restauration plans*

June 2024



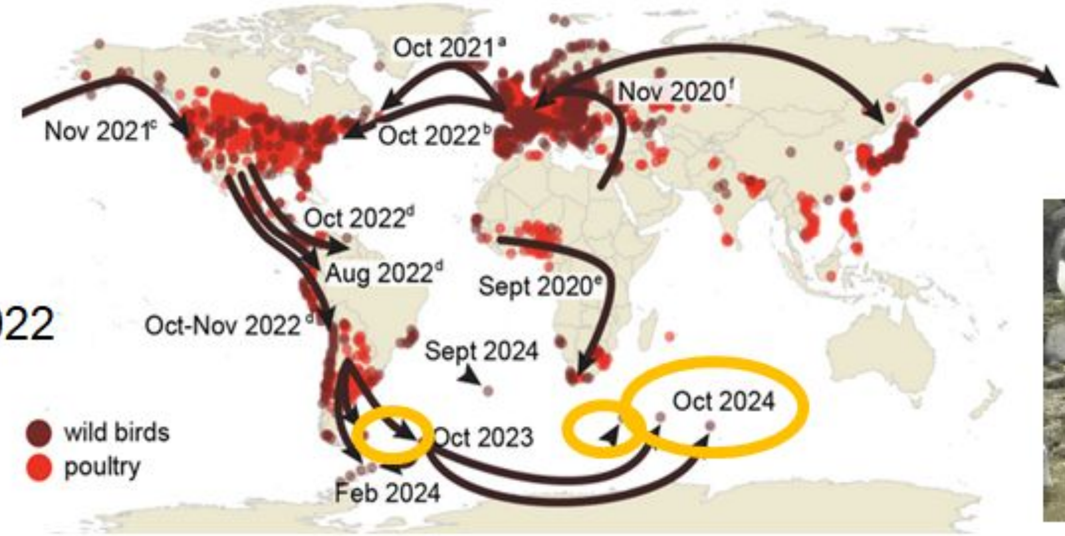


?

1st unexpected challenge

Panzootic of High Pathogenicity Avian Influenza

Since 2022

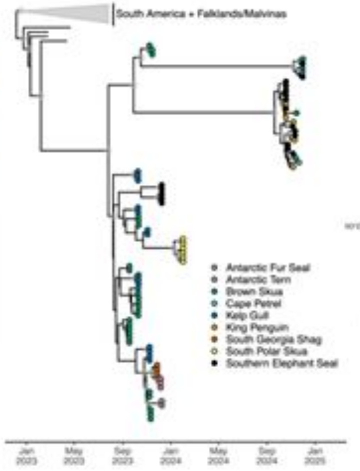


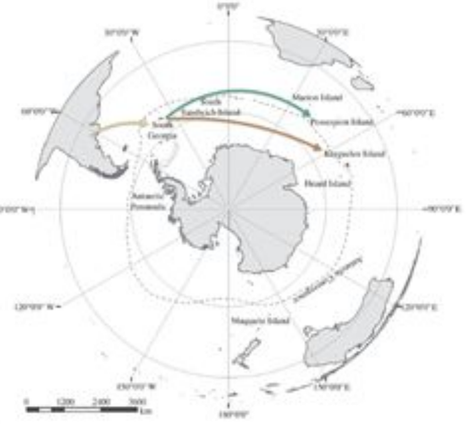
nature communications

Article | Open access | Published: 29 September 2025

Circumpolar spread of avian influenza H5N1 to southern Indian Ocean islands

Bralet, Briand… Boulinier, 2025

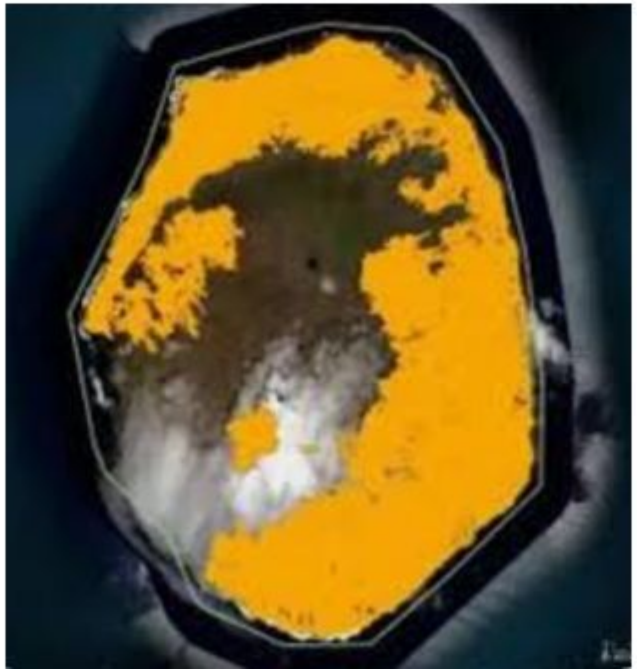




→ Threat to biodiversity, need for practical responses

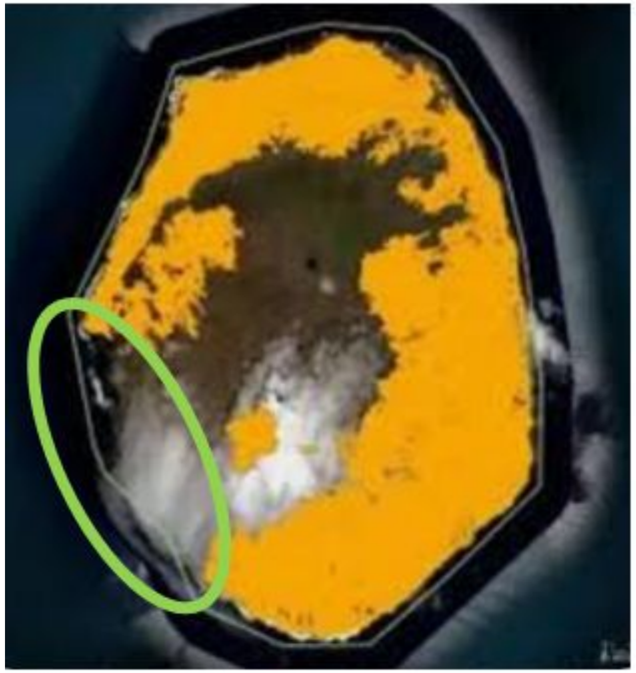
2nd unexpected challenge

Fire on Amsterdam Island in January 2025



→ Full evacuation of the island

Conclusion



- Infectious diseases are important to consider when restauring insular ecosystems

- Benefit of coordinated work (multi-sites, multi-species) at broad scales
- Final results expected soon

- Stress the benefits of integrated approaches/restauration as quasi-experiment

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Roundtable discussion with the project coordinators

Moderated by Dirk Schmeller (FishME project)

Anu Lähteenmäki-Uutela (BIO-TRADE), Metodi Sotirov (BIOCONSENT), Pavel Saska (FRESHH), Edivando Vitor do Couto (ForestFisher), David Lusseau (MPA4sustainability), Thierry Boulinier (REMOVE_DISEASE)

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Q&A session

30 min break

Please be back at 11:05