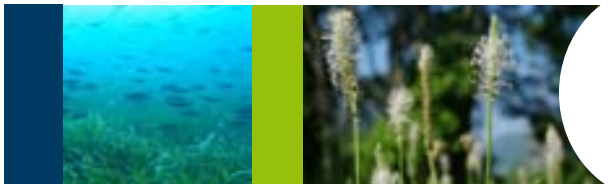
BiodivERsA 2015-2016 COFUND Call

Understanding and managing biodiversity dynamics to improve ecosystem functioning and delivery of ecosystem services in a global change context: the cases of soils and sediments, and land- river and sea-scapes (habitat connectivity, green and blue infrastructures, and naturing cities)

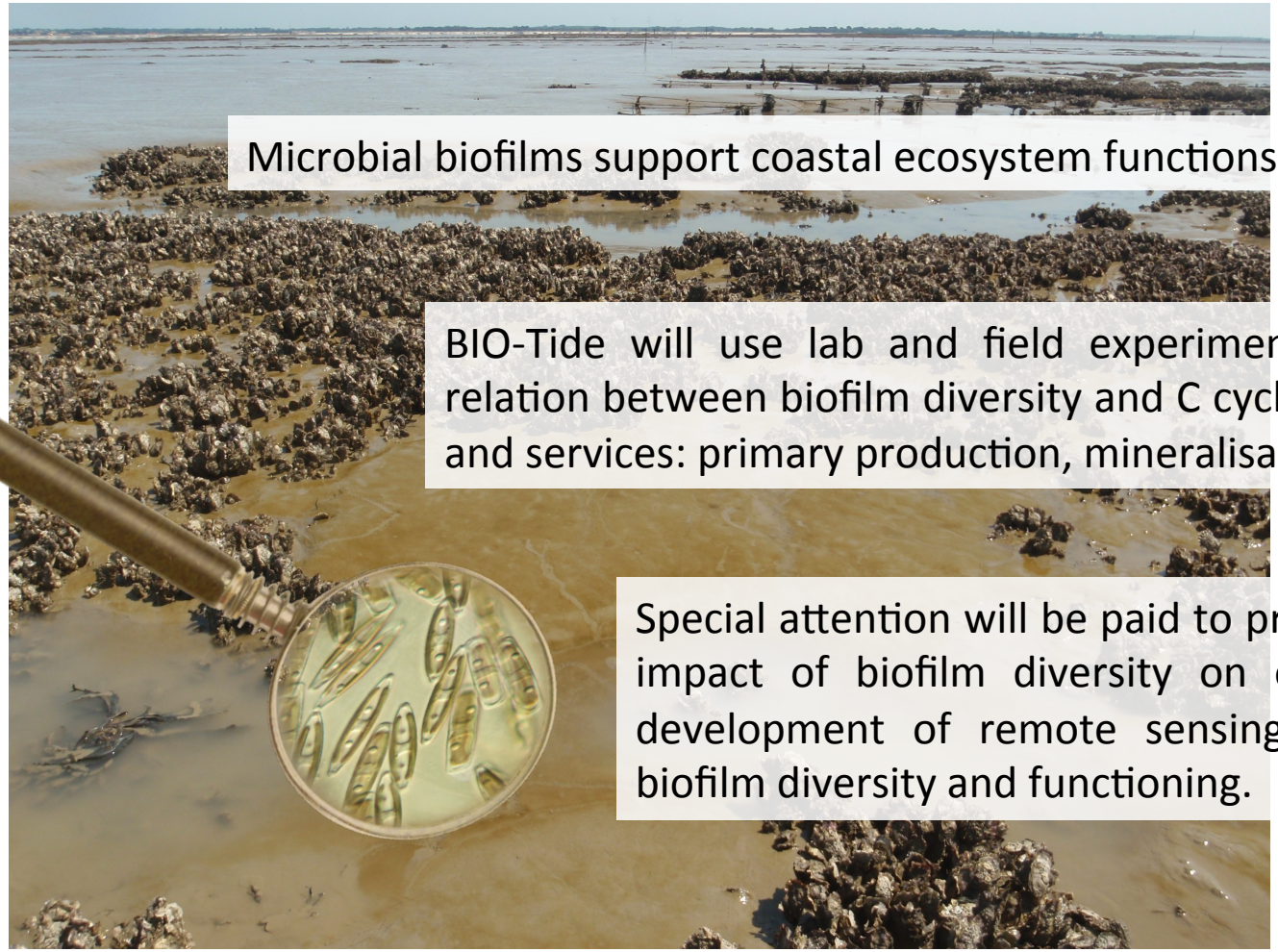
European Commission

Theme #1: Understanding and managing the biodiversity dynamics of soils and sediments to improve ecosystem functioning and delivery of ecosystem services

European Commission



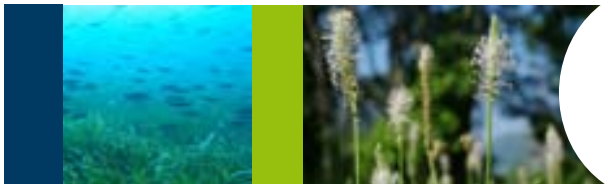
BIO-Tide



Microbial biofilms support coastal ecosystem functions and services

BIO-Tide will use lab and field experiments to unravel the relation between biofilm diversity and C cycle related functions and services: primary production, mineralisation and grazing.

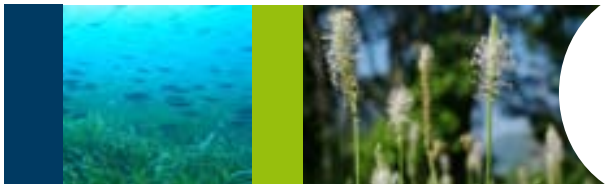
Special attention will be paid to producing BEF models, the impact of biofilm diversity on oyster grazing, and the development of remote sensing proxies for describing biofilm diversity and functioning.



BIOINVENT

Generic bio-inventory of functional soil microbial diversity in permanent grassland ecosystems across management and climate gradients

BiodivERsA 2015 COFUND call

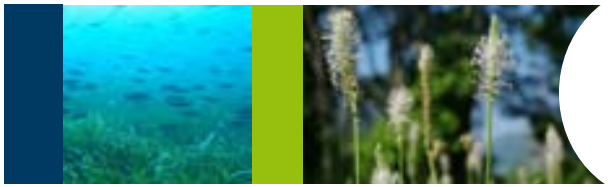


BIOINVENT

BIOINVENT closes scientific knowledge gaps on the efficiency of permanent and extensively managed grassland systems (PEGS) to enhance soil biodiversity and its functions.

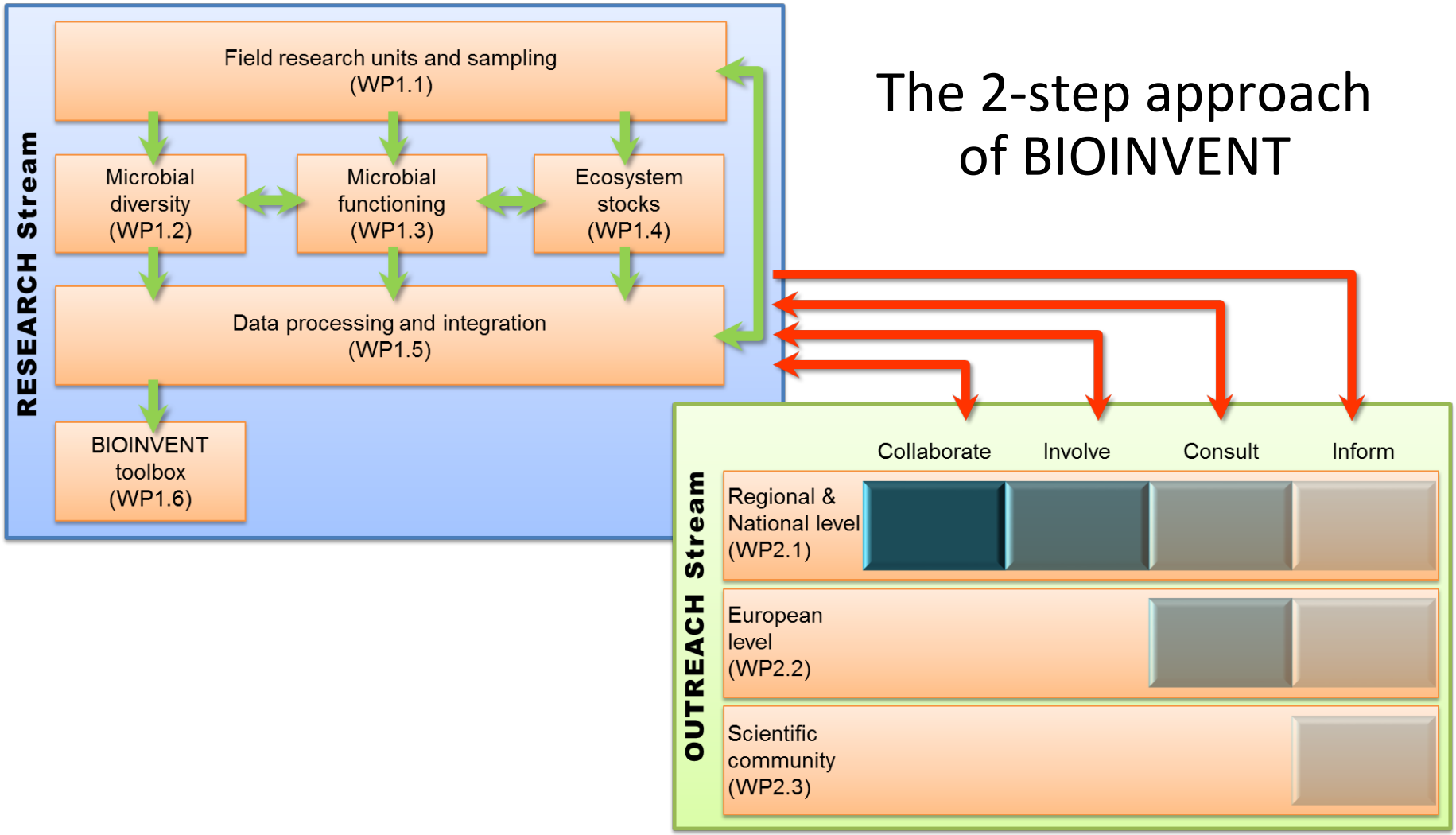
The pan-European study scale will yield profound understanding of grassland management and agro-ecological distinctions on soil biodiversity and ecosystem services.

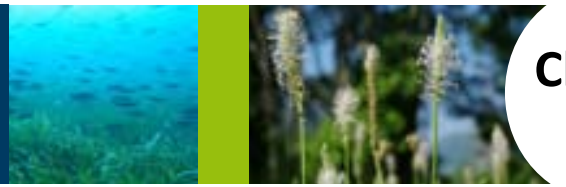
BIOINVENT contributes to EU-incentives to develop management and monitoring objectives to reach protection of soil biodiversity in permanent grassland ecosystems.



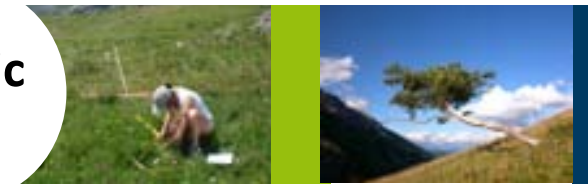
BIOINVENT

The 2-step approach of BIOINVENT





Climate Change impacts on Arctic soil and lake microbiomes



AIM: to study the effects of climate change on the microbial diversity and genetic functional attributes of Arctic soils, wetlands and lakes

1) Biodiversity and structure of dormant and active microbial communities along environmental gradients
2) Functional genes (-omics approach) and ecosystem functioning
3) Quantify source-sink dynamics of nutrients and carbon
4) Experimentally assess ecophysiological responses to climate change
5) Calculate past rates of change using a paleolimnological approach

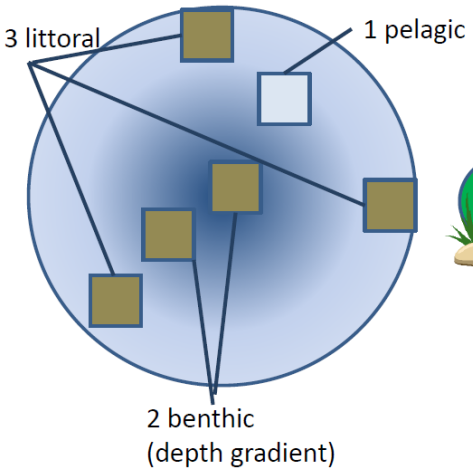
Sampling strategy

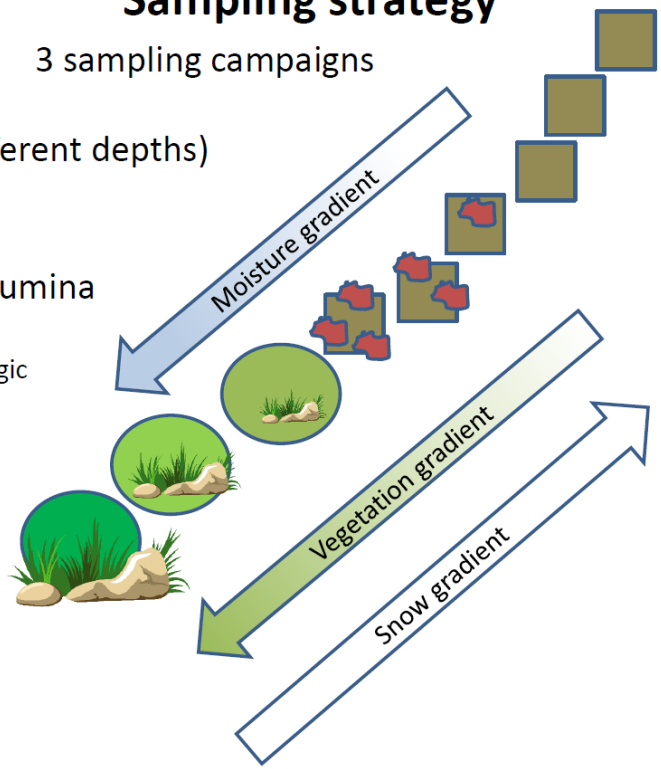
2 catchments - 1 m² plots:

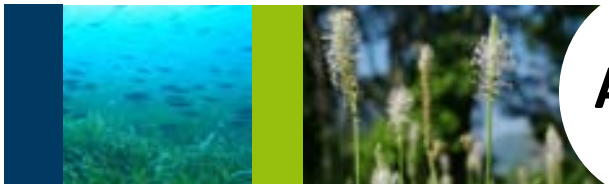
- 9 terrestrial
- 3 littoral
- 2 benthic lacustrine (different depths)
- 1 pelagic

3 replicates per plot ➔ 45x2 samples for Illumina

3 sampling campaigns



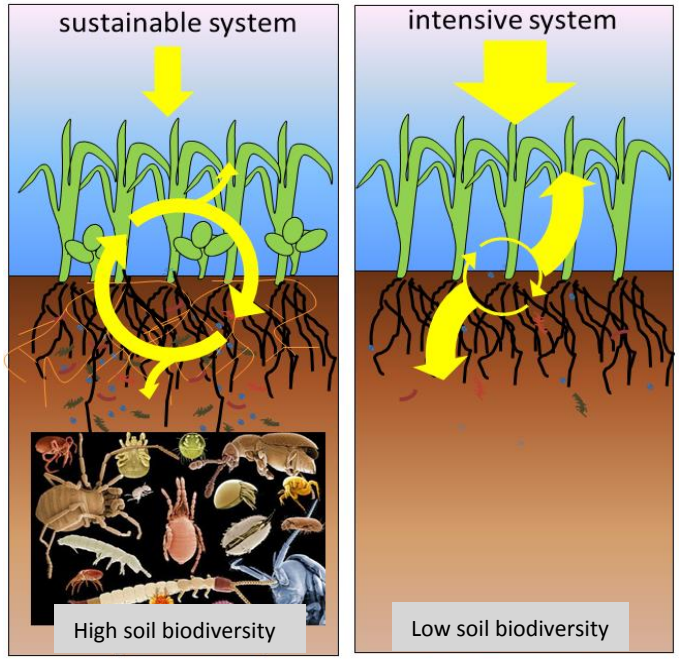




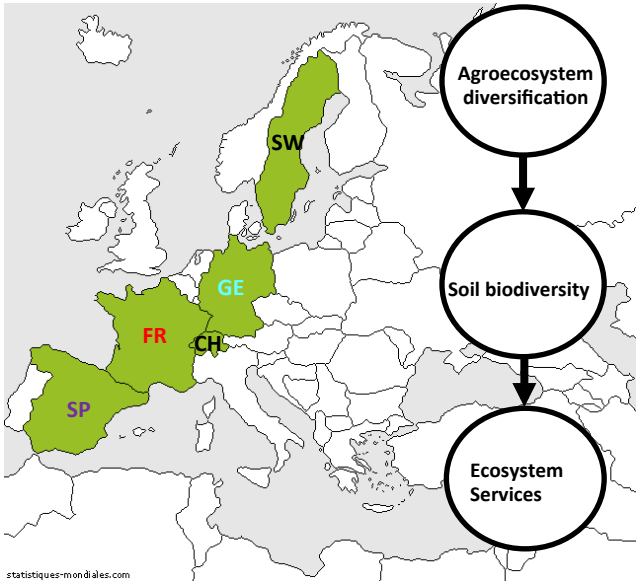
Agricultural Diversification: Digging Deeper

1. Quantify the impact of agricultural diversification and climate change on soil communities and ecosystem services across a European gradient.
2. Determine the role of soil diversity for ecosystem multifunctionality
3. Identify innovative land management practices that enhance sustainability

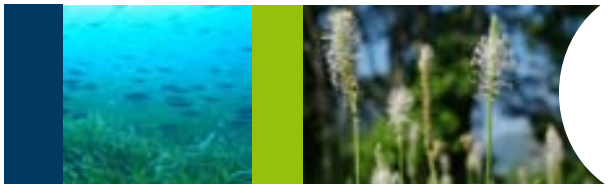
Working Hypothesis



Bender et al. 2016, TREE 31: 440-444



Partners: Marcel van der Heijden (coordinator, Agroscope, CH); Sara Hallin (SLU, SW); Fernando Maestre (URJC, SP); Laurent Philippot (INRA, France); Matthias Rillig (FUB, Germany)



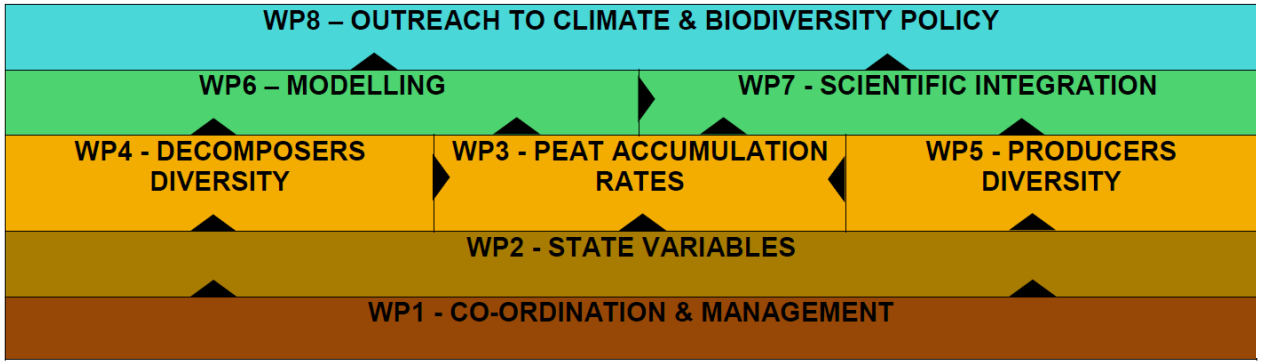
REPEAT

REstoration and prognosis of PEAT formation in fens

linking diversity in plant functional traits to soil biological and biogeochemical processes

Question: How do environmental factors and human management interact with soil biodiversity in determining rates of peat accumulation in undrained and rewetted fens?

Approach: quantification of belowground production & decomposition + role of fungal, arhaean, bacterial, plant & animal diversity in natural, drained and rewetted fens along climate gradient in Europe + mesocosm experiments



Co-ordination: Wiktor Kotowski
w.kotowski@uw.edu.pl
University of Warsaw

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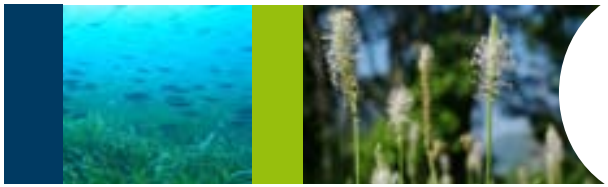


SOILCLIM

Managing soil biodiversity and ecosystem services in agroecosystems across Europe under climate change

Lund University: Klaus Birkhofer, Katarina Hedlund; **University of Tartu**: Jaak Truu; **Georg August University Göttingen**: Stefan Scheu; **Spanish National Research Council**: Jordi Moya-Laraño, Marta Montserrat; **Research Institute of Organic Agriculture**: Paul Mäder, Andreas Fließbach

Microbial diversity: PLFA, high-throughput sequencing, microbial biomass

Soil fauna diversity: micro- and macroarthropods

Microbial functions: metagenomic analysis of functional genes, ^{13}C isotope labelling experiment

Faunal functions: litter bags, C & N stable isotopes

Crop performance: biomass production, protein content

Objectives

- To determine the relationship between soil biodiversity and ecosystem services under climate change and how it depends on organic carbon content and fertilization strategy.
- To identify key components of soil biodiversity that closely relate to levels of ecosystem services in agricultural soils.
- To develop indicators that act as an early warning system for a reduction in soil ecosystem services under climate change.

SoilForEUROPE

biodiversa 2015-2016 COFUND Joint Call

Predicting European forest soil biodiversity and its functioning under climate change

S. Hättenschwiler[1], F. Buscot[2], P. Kardol[3], A. Milcu[4], M. Scherer-Lorenzen[5], K. Verheyen[6], L. Vranken[7], and the SoilForEUROPE consortium

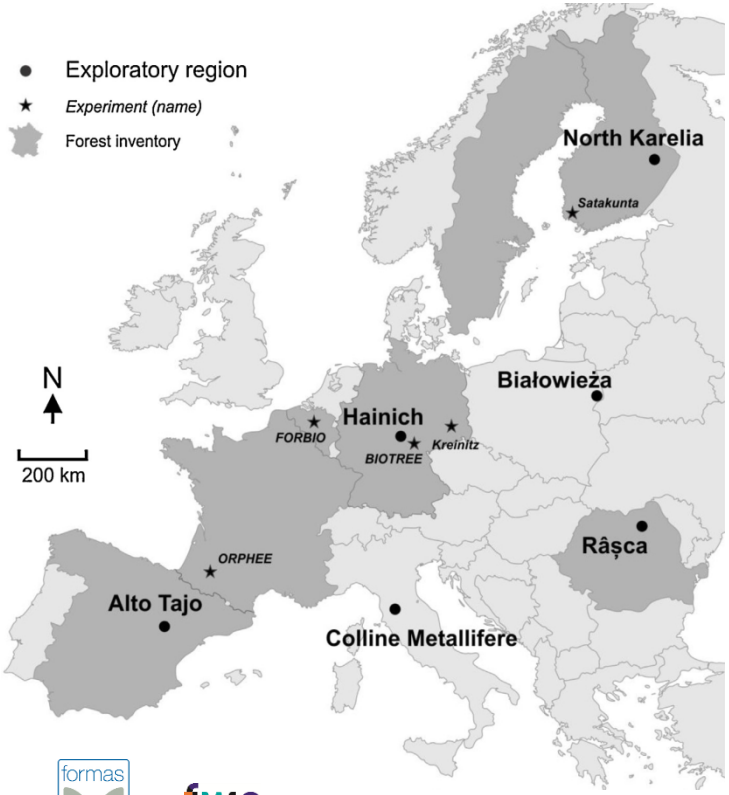
[1]CEFE Montpellier, [2]UFZ Halle / iDiv Halle-Jena-Leipzig, [3]SLU Umeå, [4]ECOTRON Montpellier,[5]U Freiburg, [6]U Gent, [7]KU Leuven

AIMS

1) Linking soil biodiversity and tree species richness

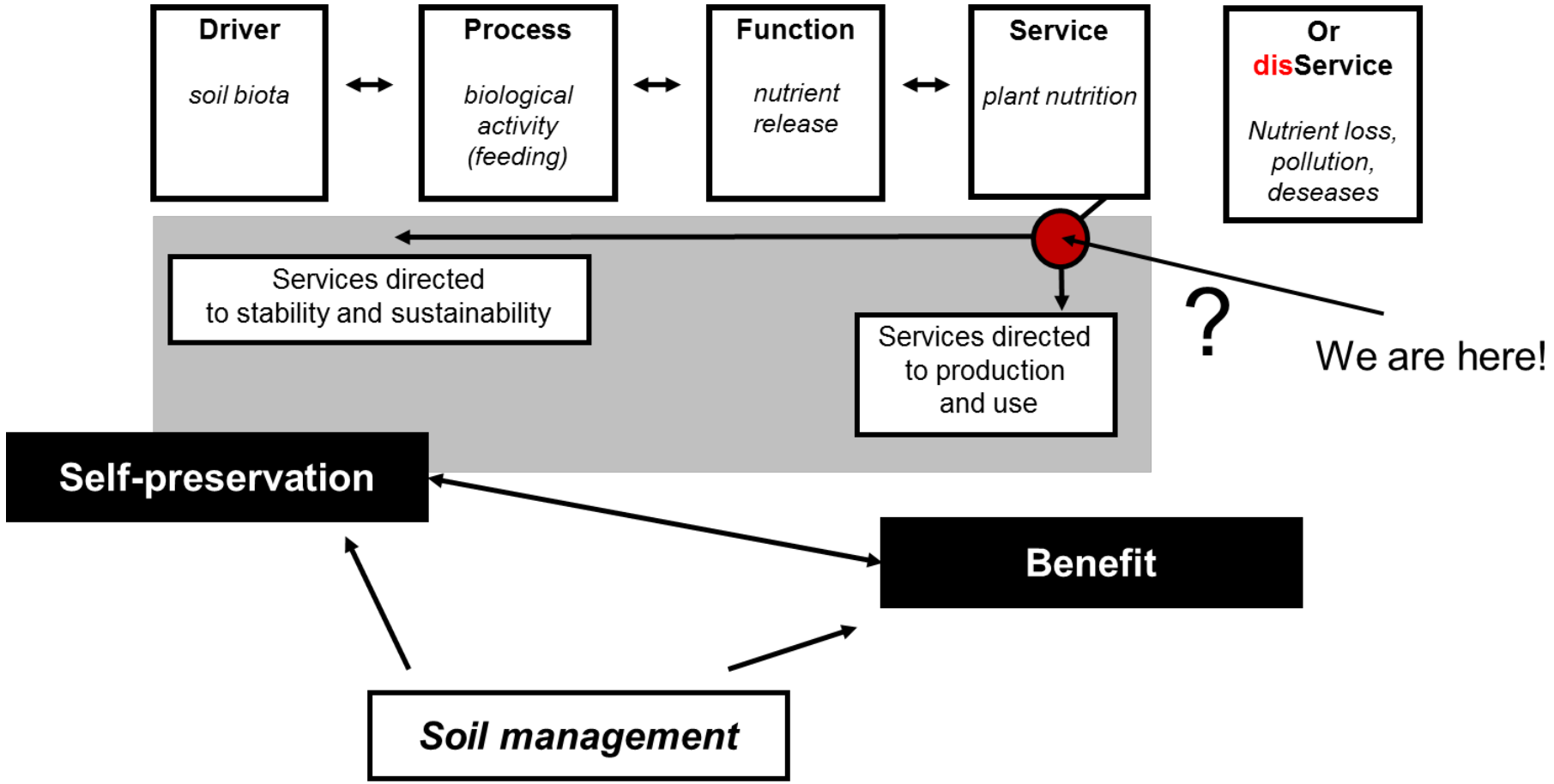
2) Role of soil biodiversity in ecosystem resistance and resilience

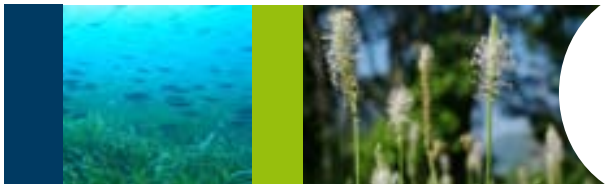
3) Socio-economic value of soil biodiversity and its impact on decision making



formas fwo Opening new horizons belspo DFG ANR

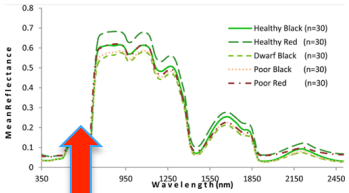
Ecosystem services driven by the diversity of soil biota – understanding and management in agriculture

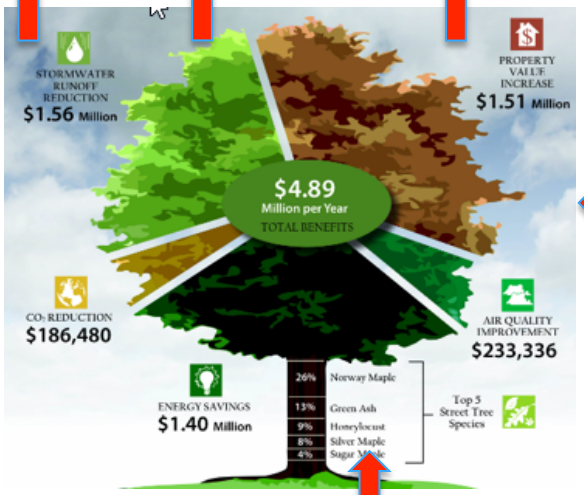




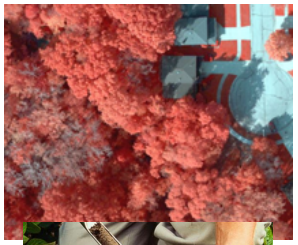
URBANMYCOSERVE

"Understanding and managing urban EcM fungal communities to increase the health and ecosystem service provisioning of urban trees."

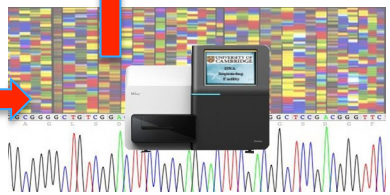




Lidar



In situ testing

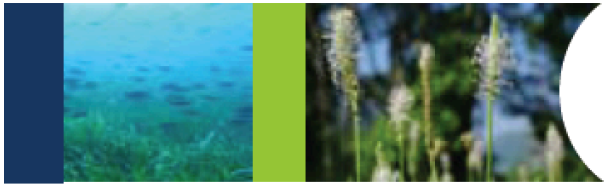


Dedicated EcM inoculum

Ex situ testing

Theme #2: Understanding and managing biodiversity dynamics in land-, river- and sea-scapes (habitat connectivity, green and blue infrastructures, and naturing cities) to improve ecosystem functioning and delivery of ecosystem services

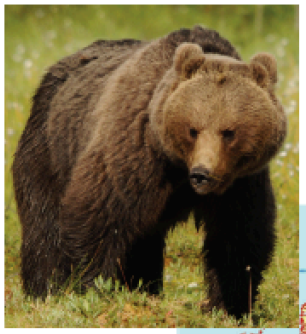
European Commission

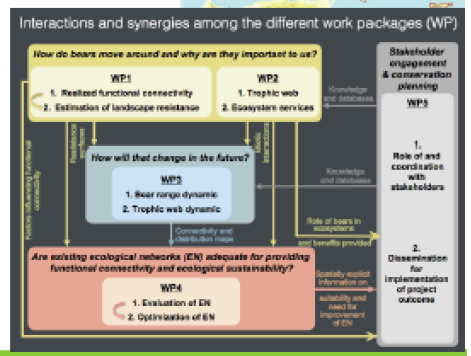


BEARCONNECT

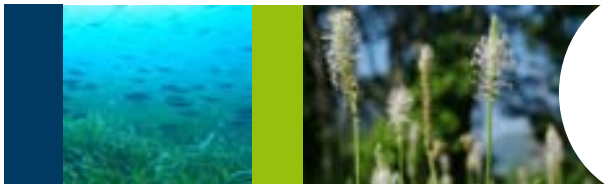
Functional connectivity and ecological sustainability of European ecological networks - A case study with the brown bear

- Evaluate functional connectivity and factors influencing bear distribution, movements, and effective dispersal in landscapes under current and future scenarios.
- Understand the role of brown bears in ecosystems, with focus on trophic interactions and associated ecosystem services.
- Assess the effectiveness of the existing system of ecological networks for supporting the resilience of brown bear populations and associated ecosystem services.
- Provide spatially explicit guidelines for improving ecological networks for brown bear conservation in Europe.





- Local, regional and European scale
- Analyze movement, genetic, demographic and diet data



BIOGEA

Main objective: examining the impacts of policy drivers (especially CAP greening) on GBI, the impact of GBI on biodiversity and ecosystem services and provide recommendations for optimising GBI provision in a variety of intensive and extensive agricultural landscapes.

What will be studied?	How?	Participatory Research and Development Network
The EU targets for GBI and greening and their translation into national law	Policy analysis through document review, interviews and workshops at EU and national level	Input on the policy timeframe, coherence with other policies, positions, definitions
The actual implementation and advice provision in six example regions	Document review and surveys, interviews and workshops with stakeholders at the local level in Germany, Bulgaria and Spain	Information on where measures are placed, why certain measures are chosen, what advice is available, how this can be improved
The impacts of GBI provision on biodiversity and ecosystem services	Literature review, modelling, testing through biological surveys	Input on elements of GBI included, usefulness of indicators, future options to be tested

Use of knowledge gained to manage resilient GBI: Refinement of indicators for GBI, policy recommendations for the reformed CAP, a toolkit for farmers and advisors in placing environmental measures in different types of setting.

Connectivity of green and blue infrastructures: living veins for biodiverse and healthy cities

Pedro Pinho
ppinho@fc.ul.pt

U LISBOA | UNIVERSIDADE DE LISBOA

Ecosystem services

crop pollination

feed for livestock

timber

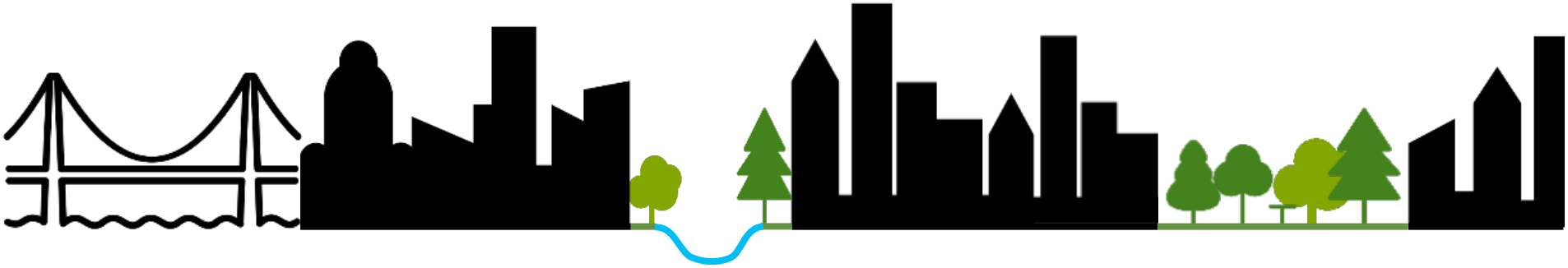
Ecosystem services

crop pollination feed for livestock timber

Ecosystem services in cities by green and blue infrastructure

microclimate regulation flood control air purification leisure

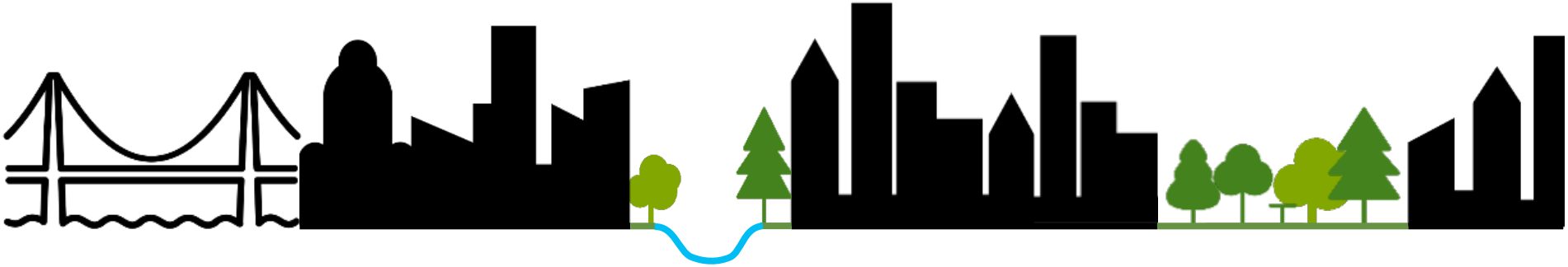
microclimate regulation flood control air purification leisure



objective

to optimize the provision of ecosystem services by cities green and blue infrastructure

microclimate regulation flood control air purification leisure



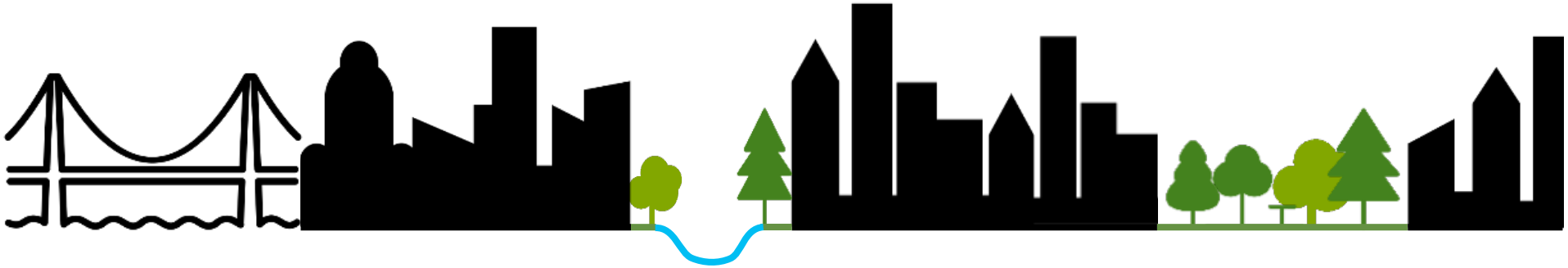
objective

to optimize the provision of ecosystem services by cities green and blue infrastructure

approach

link functional diversity to ecosystem services & co-design the scientific approach with stakeholders

microclimate regulation flood control air purification leisure



objective

to optimize the provision of ecosystem services by cities green and blue infrastructure

approach

link functional diversity to ecosystem services & co-design the scientific approach with stakeholders

outputs

provide tools, best practices, and guidelines on how to improve urban GBI and how to enhance multifunctional ESs for people and nature

Tartu, **Estonia**

Poznán, **Poland**

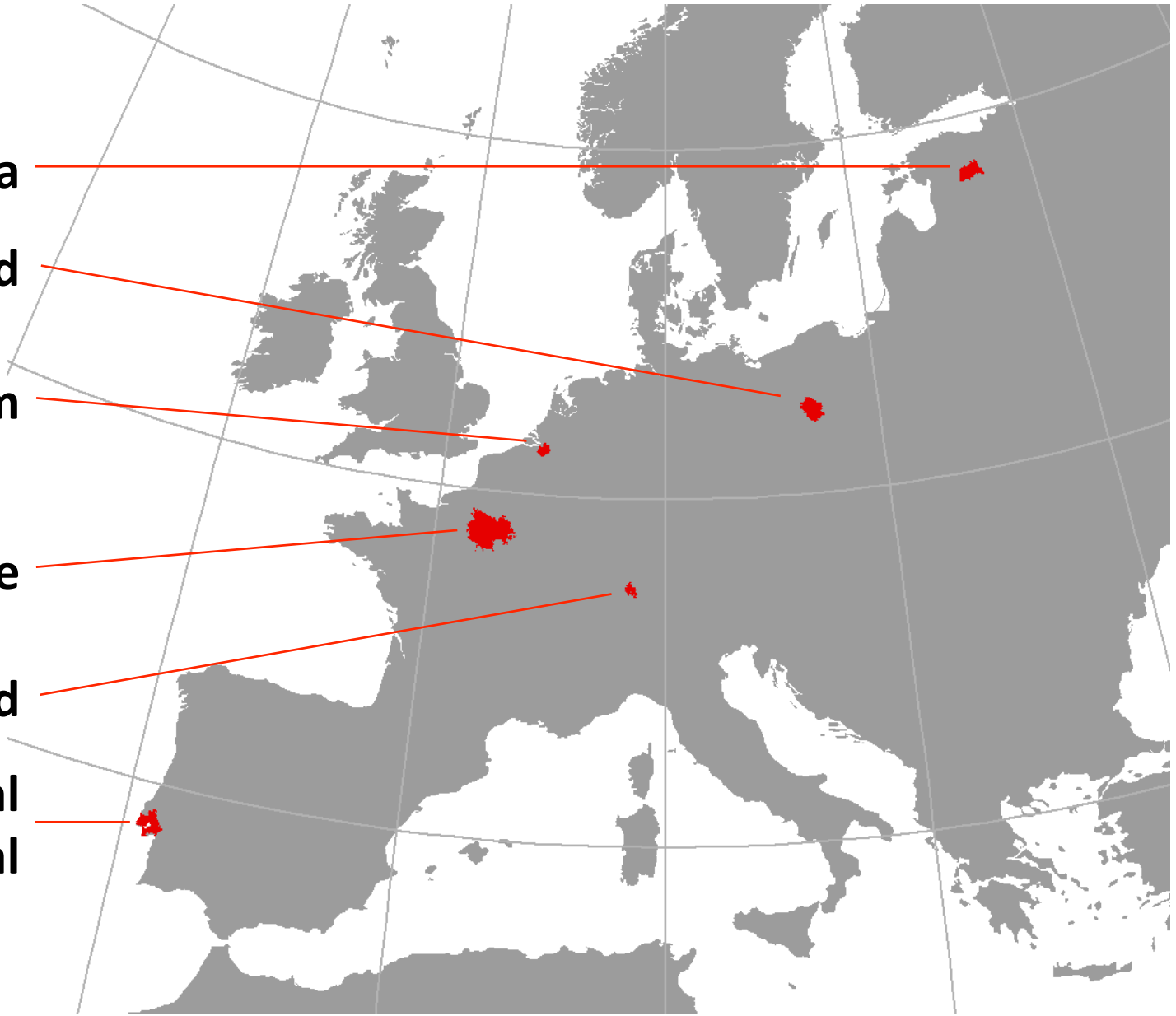
Antwerp, **Belgium**

Paris, **France**

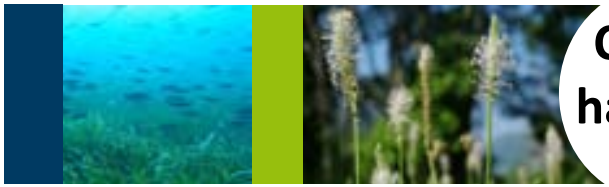
Zurich, **Switzerland**

Lisboa, **Portugal**

Almada, **Portugal**

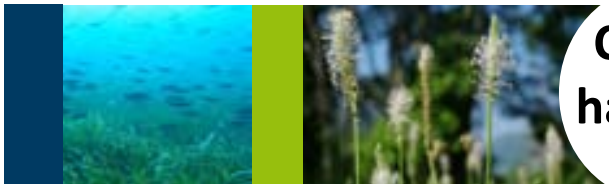


University of Antwerp, Belgium		Roeland **Samson**, Karen **Wuyts**
Universidade de Lisboa, Portugal		Pedro **Pinho**, Cristina **Branquinho**, Ana **Luz**, Sara **Magalhães**, Margarida **Santos-Reis**, Joana **Vieira**
University of Life Sciences, Tartu, Estonia		Ülo **Niinemets,** Lauri **Laanisto,** Tiit Hallikma
University of Life Sciences, Poland		Piotr **Tryjanowski,** Anna Maria **Kubicka,** Patrycja **Kwiatkowska**
Université Paris Sud, France		Carmen **Bessa-Gomes**, Francois **Chiron**
Swiss Federal Research Institute WSL, Switzerland		Marco **Moretti,** Martin K. **Obrist,** Helen **Heggenberger**



CROSSLINK: Understanding cross-habitat linkages between blue and green infrastructure…

… to optimize management of biodiversity, ecosystem services and multiple human uses



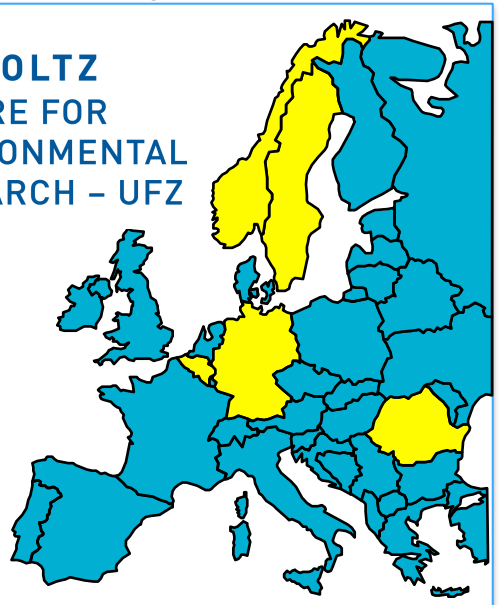
CROSSLINK: Understanding cross-habitat linkages between blue and green infrastructure…

… to optimize management of biodiversity, ecosystem services and multiple human uses

SLU
Sveriges lantbruksuniversitet
Swedish University of Agricultural Sciences

NIVA
Norwegian Institute for Water Research

HELMHOLTZ CENTRE FOR ENVIRONMENTAL RESEARCH – UFZ



UNIVERSITEIT GENT

UNIVERSITATEA DIN BUCUREȘTI
VIRTUTE ET SAPIENTIA

NATUR VÅRDS VERKET
SWEDISH ENVIRONMENTAL PROTECTION AGENCY

formas

UEFISCDI
EXECUTIVE AGENCY FOR HIGHER EDUCATION, RESEARCH, DEVELOPMENT AND INNOVATION FUNDING

Belgian Science Policy Office
belspo

Federal Ministry of Education and Research

The Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning

The Research Council of Norway

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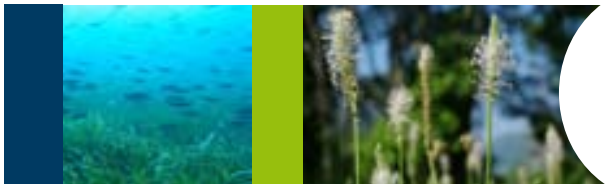


ENABLE

Green and blue infrastructure has the potential to tackle multiple environmental and social challenges, such as human wellbeing, social inequality, biodiversity loss and climate change impacts such as flooding.

However, the successful design and implementation of GBI requires careful consideration of a number of key aspects, including people's perceptions of the benefits of GBI, barriers to the equitable distribution of benefits and strategies for making the flow of benefits resilient.

What are the systemic factors and mechanisms that either enable or hinder the realisation of benefits?

ENABLE has three core objectives:

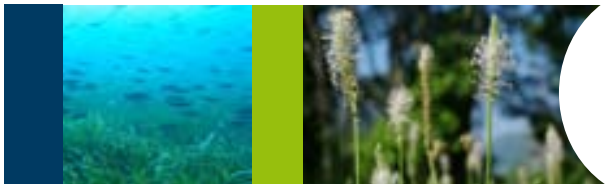
1) To advance knowledge of how to implement GBI in order to unlock its full potential

2) To identify and mainstream GBI solutions in European urban areas

3) To create an assessment framework and develop new analytical tools and approaches for evaluating the performance and resilience of GBI

ENABLE will examine three key questions related to GBI:

- How and under what conditions are the benefits provided by GBI most appreciated by people?
- How accessible are GBI benefits, and how are they distributed among urban residents?
- How can the continuation of GBI benefit-flows be secured in the long-term?




FUNgreen

Sweden
Germany
Belgium
Spain
UK



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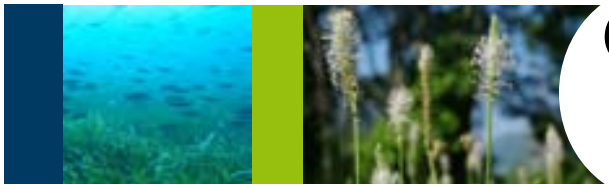


GREENFUTUREFOREST

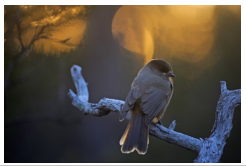
Scenarios for a sustainable future forest green infrastructure

WP1
simulate global scenarios

WP3
review insurance value (uncertainty, adaptation)

WP2
simulate landscape forest scenarios

WP8 stakeholder dialogue



WP4
modelling based on systematic field data; local cond. & GI

WP6
simulate landscape (meta)population scenarios (PVA)

WP5
modelling based on Citizen Science Data; local cond. & GI

Photo: M Krikorev

WP7
implement in forestry tools

<u>Partners:</u> SLU (Tord Snäll, SWE), IIASA (AU), NINA (NOR), TUBS (GER), TUM (GER), UoZ (CH)

BiodivERsA 2015 COFUND call

IMAGINE

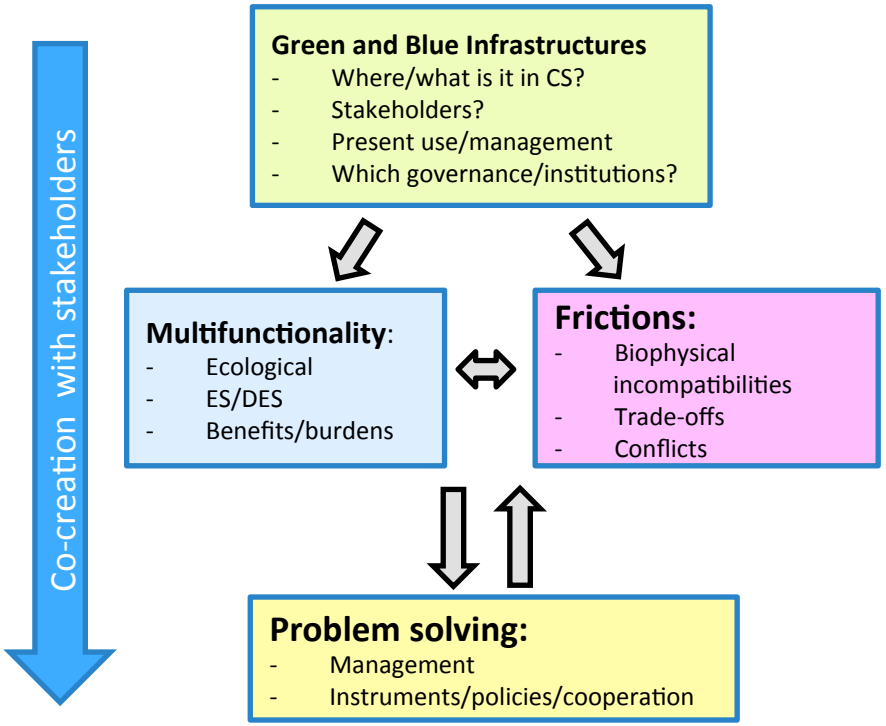
Integrative Management of Green Infrastructures Multifunctionality, Ecosystem integrity and Ecosystem Services

We aim to demonstrate **an integrative assessment of GI ecological multi-functionality and biocapacity to deliver ES** and **to propose options to manage and design GI from patch to landscape**

We will contribute to developing innovative approach to support ecosystems resilience, sustainable essential ecosystem services flows and contributing to human wellbeing to meet EU policy targets.

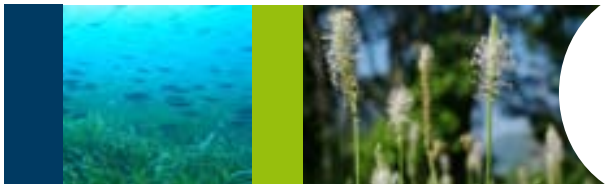
Six partners and Six Case Study Sites from 5 countries from Mediterranean to Boreal bioclimate.

Operational framework



Project Coordinator: Philip Roche
Email: philip.roche@irstea.fr

BiodivERsA 2015 COFUND call



INFRAGECO

Inference, Fragmentation, Genomics and Conservation

http://www.infrageco-biodiversa.org

G. Besnard	Evolution & Diversité Biologique, Univ. Paul Sabatier, France
L. Chikhi	Instituto Gulbenkian de Ciência, Portugal
O. Mazet	Institut de Mathématiques de Toulouse, , France
U. Radespiel	Institute of Zoology, Univ. Vet. Medecine Hanover, Germany

Madagascar as a model region (human arrival < 5000 y)

Habitat Loss and Fragmentation (10-20% area forested)

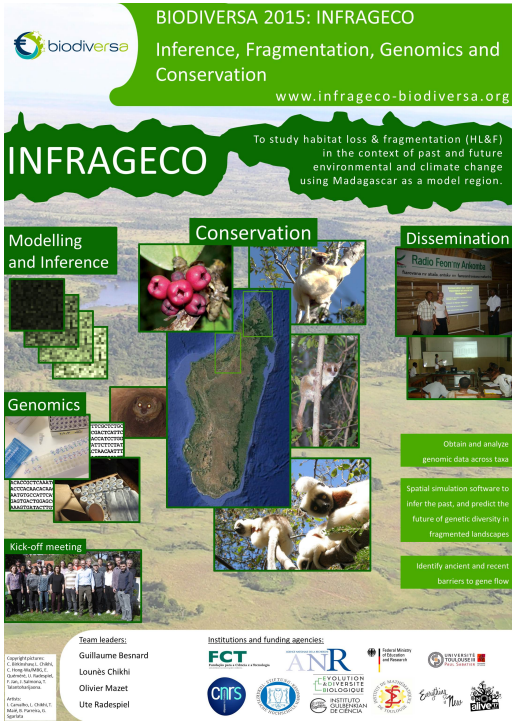
Use genetic and genomic data (RAD-seq, msats, etc.)

Comparative approach (lemurs, rodents, *Noronhia*, *Psiadia*)

Identify recent and ancient barriers to gene flow

Demographic inference integrating population structure

Spatial simulation software for inference and prediction



S. Manzi, C. Thébaud, A. Iribar-Pelozuelo, C. Hong-Wa, T. Maié, T. de Zoeten, G. Sgarlata, B. Le Pors, I. Pais , I. Carvalho, B. Parreira, R. Rasteiro, S. Grusea, W. Rodriguez, S. Boitard, E. Quéméré, J. Salmona, M. Ramsay, F. Kiene, S. Lehman, E. Rasolondraibe, T. Ralantoharijaona, A. Rakotonanahary, J. Randriamaroson, N. Andriaholinirina, F. Rakotondravony, S. Rasoloharijaona, JF. Rajaonarison, J. Zaonarivelo.

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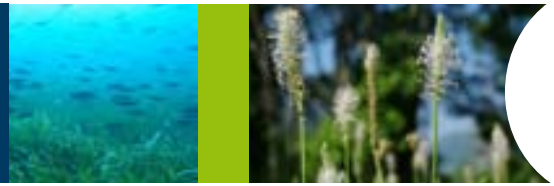


MARFOR - Functional Variability and Dynamics of Responses of Marine Forests to Global Change

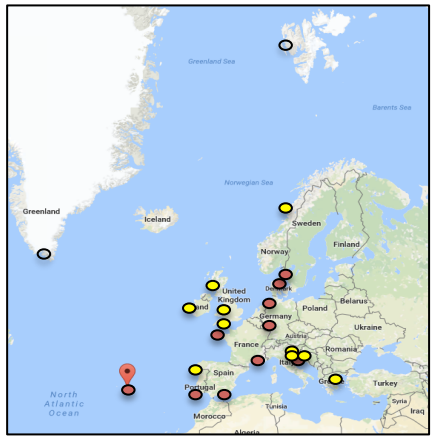

AIM: Understand and predict genetic and functional diversity and connectivity of European marine forests

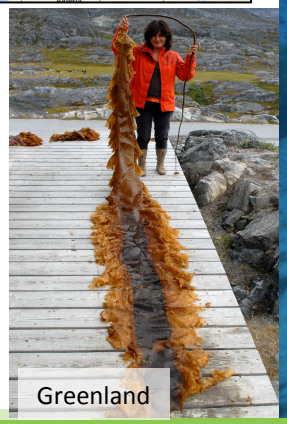
Coordinator:
CCMAR, Univ. Algarve, Portugal

Funded partners:
AWI - Alfred-Wegener I., Germany
CNRS UPMC S.B. Roscoff, France
University of Goteborg, Sweden
Aix-Marseille University, France
University of Malaga, Spain
University of Azores, Portugal
University of Cologne, Germany

Self-funded partners:
Aarhus University, Denmark
University of Bologna, Italy

Collaborative partners:
IBERS at Aberystwyth University, UK
University of Trieste, Italy
Fisheries Research Institute, Kavala, Greece
IMEDEA-Inst. Mediterraneo Estud. Avanz., Spain
NIBIO - Norwegian Inst. Bioeconomy Res., Norway
CIIMAR – Mar. Environment Res. Center, Portugal
MBA - Marine Biological Association of the UK, UK
NUIGalway, National Univ. Ireland Galway, Ireland
University of Bremen, Germany
European Commission-Joint Research Centre (JRC)

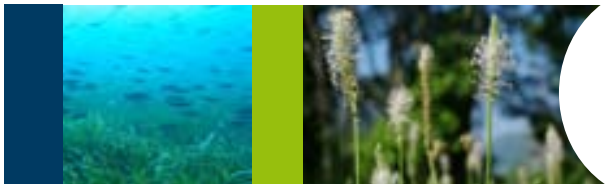



Greenland

ACTIONS/OUTCOMES: Comparison of diversity, connectivity, ecology, ecophysiology, functional genomics of populations with contrasting habitats, biogeographies and histories across European coastlines. Prediction of future trajectories. Implications for stakeholders (industry, management). Citizen science - large scale surveys and public awareness.


Tarifa (Gibraltar)

Contact: eserrao@ualg.pt



ODYSSEUS

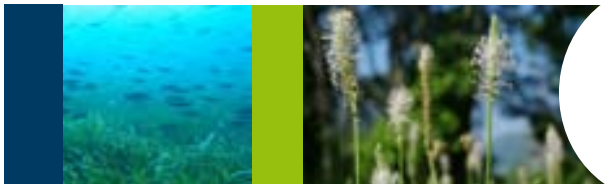
Managing freshwater connectivity

The challenge

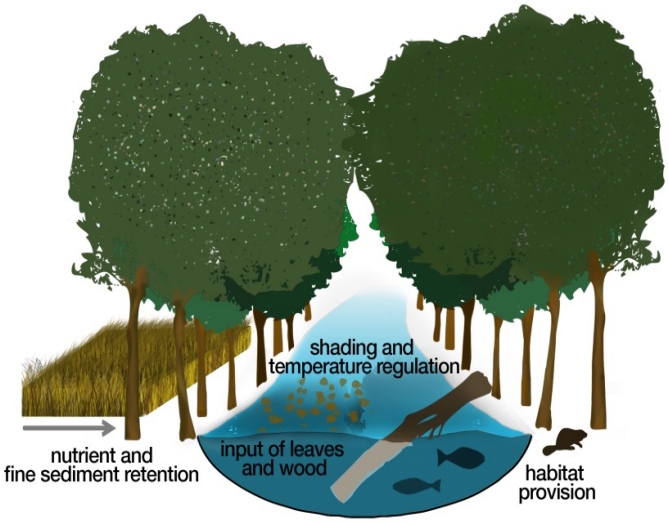
- Dams are migration barriers with many negative effects on fish communities.
- Removing barriers improve ecosystem functioning, but invite invasive species.

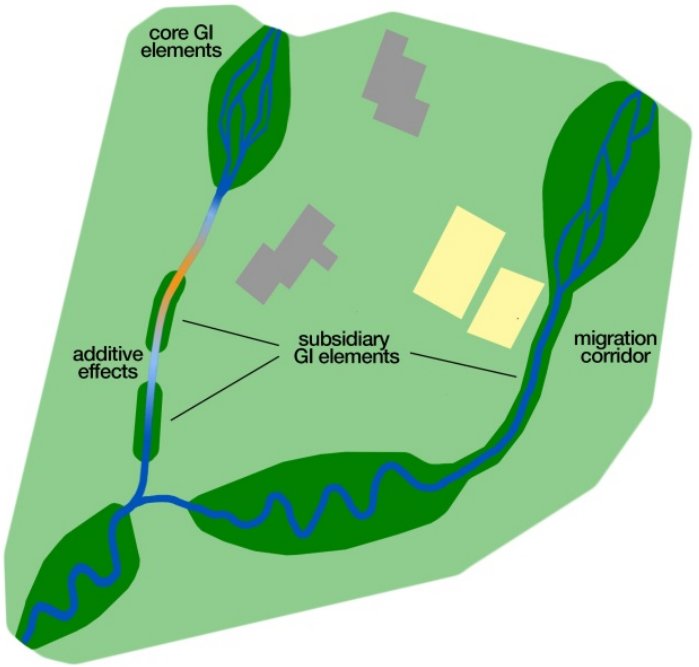
The solution

- A decision support system in the form of interactive maps of river-scapes.
- Maps will be provided as a web service and show local slopes, colonization probabilities, and extinction risks for management scenarios proposed by the user.
- The web service will be developed in dialogue with user groups



OSCAR

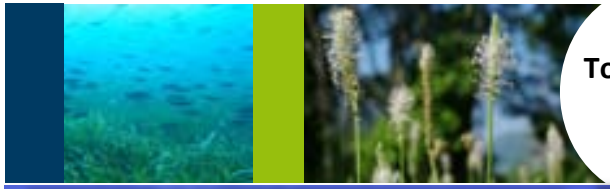


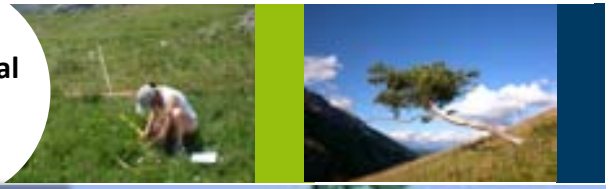


- Synthesize the effects of woody buffers
- Optimize the configuration of woody buffers
- Knowledge brokering: knowledge rules, decision analysis tool, policy recommendations

PERCEBES

Tools for the transition to spatial management of coastal resources: the stalked barnacle fishery in SW Europe





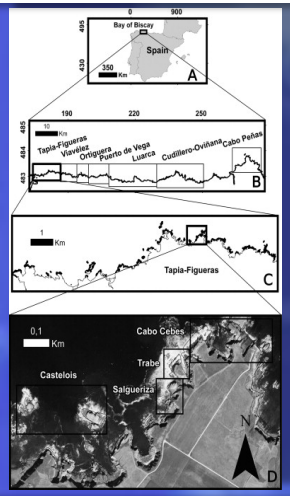
OBJECTIVE:**develop tools to forecast the implications of spatial management options on productivity, biodiversity and connectivity**, and **guide marine spatial planning of coastal resources in the EU**

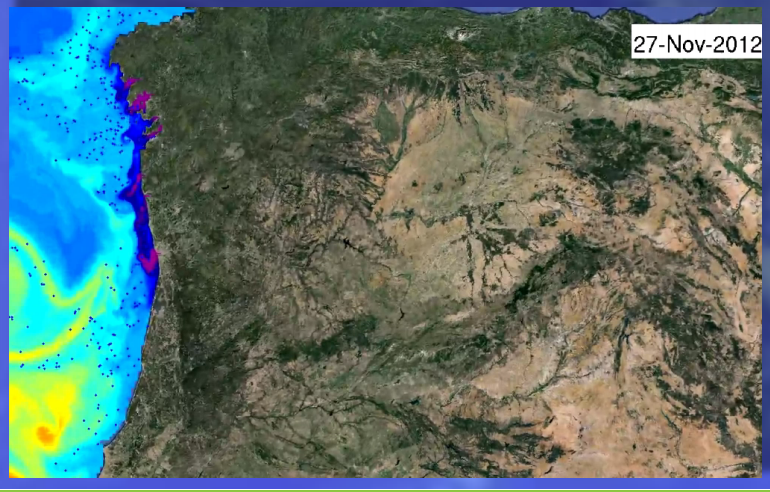
METHOD 1: continental- scale human exclusion experiment, to determine the effect of 1 and 2 year harvest bans on productivity and diversity.

METHOD 2: spatially explicit bioeconomic models, to explore optimal spatial allocation of management options

Co-managed TURFS promote cooperation among fishers

Co-managed TURFS promote fine-scale management





UPMC SORBONNE UNIVERSITÉS

CNRS UPMC INSU Station Biologique Roscoff

ENSTA Bretagne

open access

Co-managed TURF

Co-managed TURF

Universidad de Oviedo
Universidá d'Uviéu
University of Oviedo

Universidade de Vigo

universidade de aveiro

Open Access

UNIVERSIDADE DE ÉVORA

AGENCE NATIONALE DE LA RECHERCHE ANR

MINISTERIO DE ECONOMÍA Y COMPETITIVIDAD

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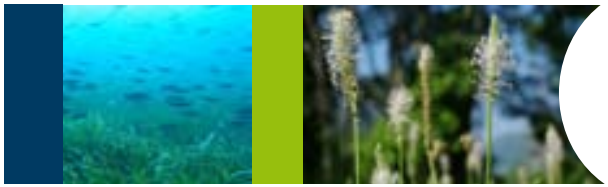
biodiversa

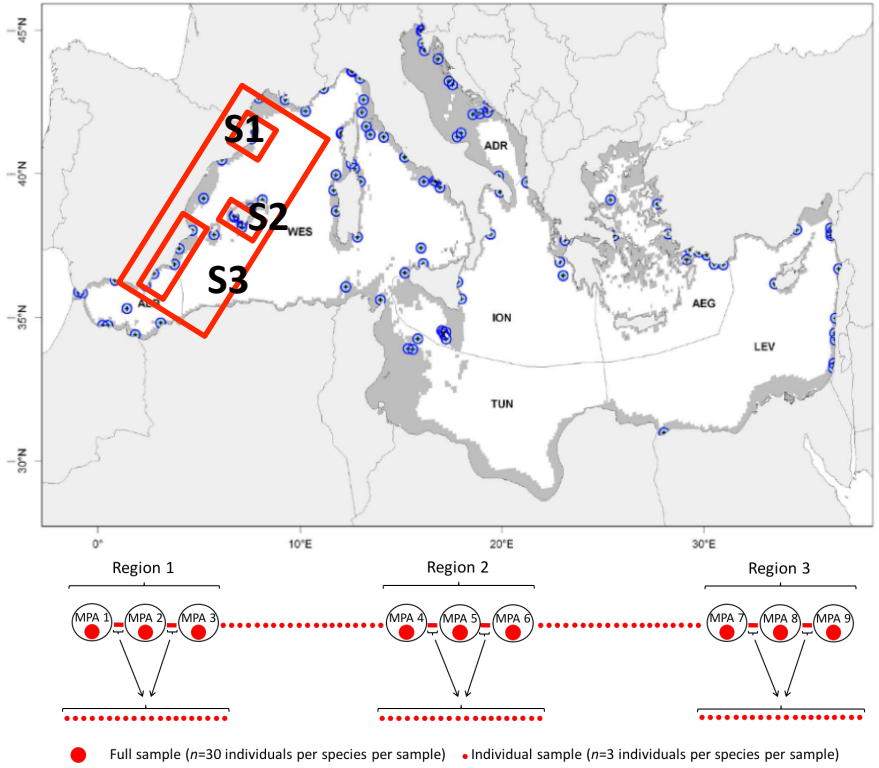
FCT Fundação para a Ciência e a Tecnologia



RESERVEBENEFIT

Evaluating and managing connectivity in a network of Marine Protected Areas to maintain genetic diversity and deliver fish beyond protected limits

EPHE – Centre d'Ecologie Fonctionnelle et Evolutive, France (Coordinator); GEOMAR Helmholtz Centre for Ocean Research Kiel (Germany); Instituto Español de Oceanografía (Spain); *CNRS-MARine Biodiversity, Exploitation and Conservation, France* (France); University of Perpignan (France); University of Stockholm (Sweden) ; University of Murcia (Spain); University of Alicante (Spain)



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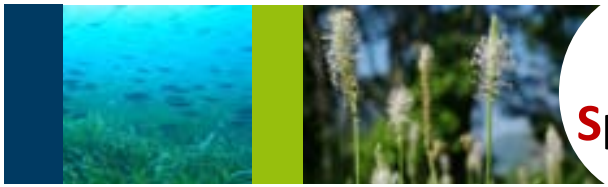
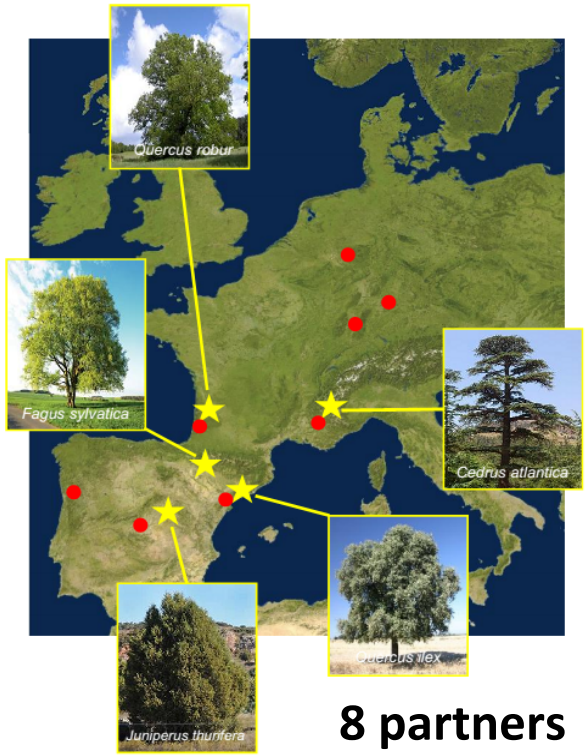


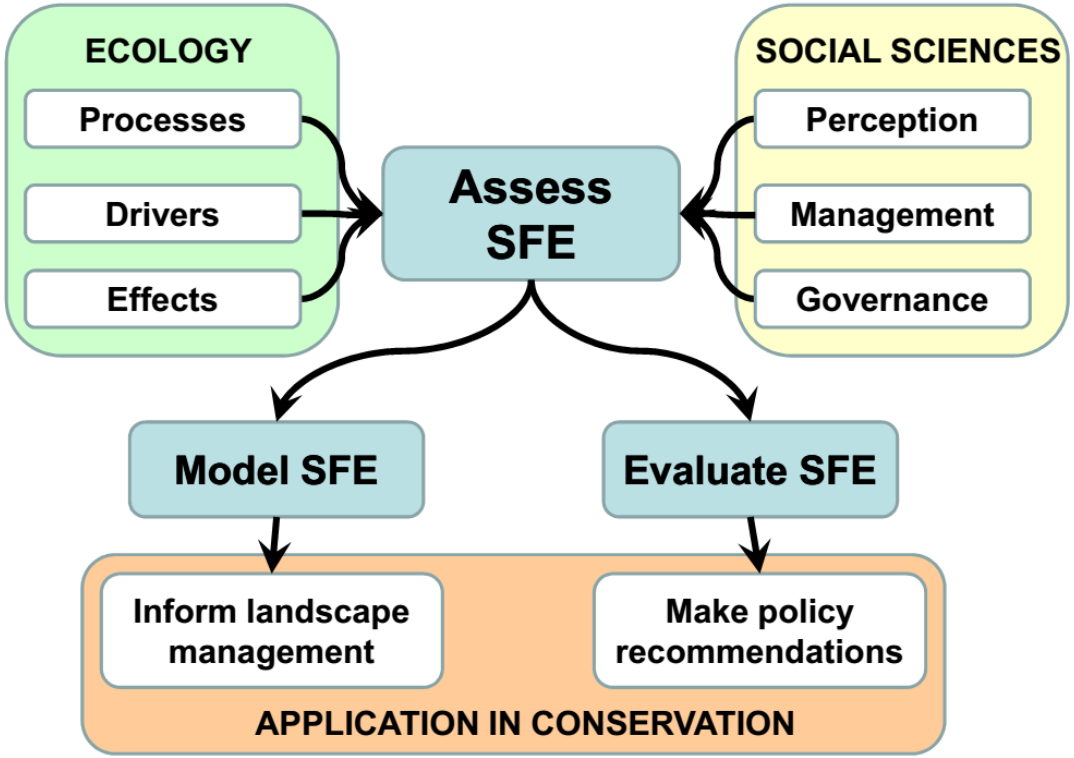
SPONFOREST

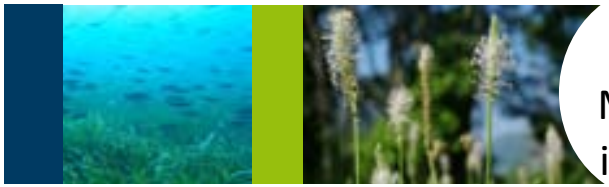
Spontaneous Forest Establishment

SFE: cost-efficient and politically feasible tool for reinforcing forest networks in fragmented rural landscapes



8 partners
5 case studies





URBANGAIA

Managing urban biodiversity and green infrastructure to increase city resilience

Objectives:

Disentangling critical features of GBIs.

Develop tools to guide their evaluation, establishment and management.

Approach:

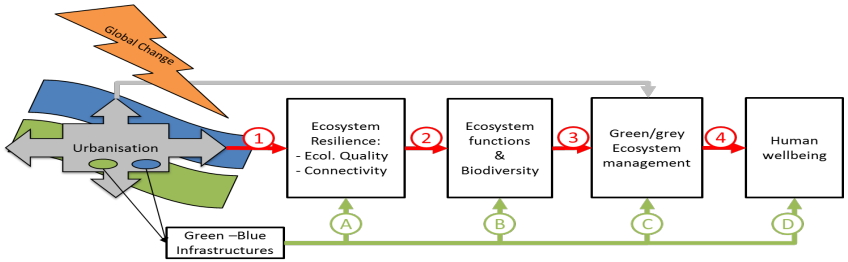
The project applies an innovative two-way approach of (i) scientific mobilization and spatial data mobilization and (ii) transdisciplinary project guidance by GBI stakeholders and supported by citizen science applications.

The project consists of three main approaches which converge in a transdisciplinary analysis of GBI performance: ecological science, political-economic analysis and stakeholder co-creation.

Land use / City	Nature reserve	Water and wetland structure	Public park	Urban Agriculture	(Urban) Forest	Private Gardens	Unmanaged green space	Green roofs	Brown fields[1]
Coimbra	X	X	X	X		X	X		X
Ghent	X	X	X	X		X	X	X	X
Leipzig	X	X	X	X	X	X	X	X	X
Vilnius	X		X	X		X			

1) Urban brownfields are a broad category comprising unmanaged green spaces, empty residential or industrial buildings or a mix of former uses.

UrbanGaia will advance the scientific frontiers concerning new insights, methodologies and actionable tools for sustainable urban landscape management and its underpinning by ecological quality and biodiversity.



Main activities:

1 - Ecological analysis of case studies, including data collection, eco-logical characterization and validation of data by stakeholders, mapping ecosystem functions and biodiversity, development of spatial indicators.

2 - Governance analysis of case studies (including survey and analysis of current policies; strategic environmental assessment; assessment of governance impact; governance performance indicators.

3 - Assessing urban U-GBIs' multiple values and ecosystem service demand, including valuation of U-GBI-ecosystem services, foci for ecological function and governance analyses, assessing ecosystem service flows from U-GBI using scientific data, participatory mapping and citizen science validation, performance indicators

4- Typology and scenarios of Nature Based Solutions, including Refinement of the U-GBI typology and analysis of policies according with stakeholders, integrating U-GBI into locally adapted scenarios for each case study, impact assessment of the U-GBI scenarios, synthesis and comparative analysis of case studies

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WOODNET: Connectivity patterns and processes along a gradient of European landscapes with woody vegetation and spatial heterogeneity

Jacques.Baudry@inra.fr

A policy question: Green Infrastructure
Objectives : impact/restore
WP5

Need more science based guidelines

Delivery of ecosystem services/ Disservices
WP3

Development of novel connectivity models
WP4

Biodiversity data collection
WP1

Need for a better landscape and landscape elements characterizations
WP1

Role of landscape legacies
WP2