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Bringing nature back

Biodiversity-friendly nature-based solutions in cities

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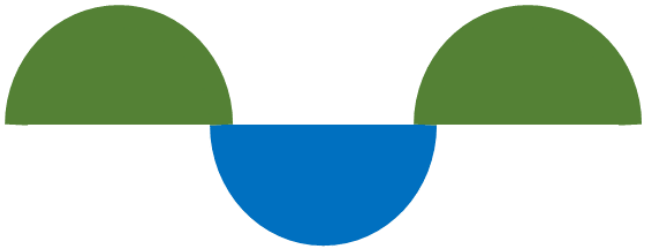

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biodiversa+
European Biodiversity Partnership

Call

< 2020 – 2021 BiodivRestore

Duration

01.03.2022 – 31.03.2025

Total Grant

€ 1,246,023

Funders
The Research Foundation – Flanders (FWO), Belgium
Academy of Finland (AKA), Finland
VDI/VDE-IT, Germany
National Science Center (NCN), Poland
Fundação para a Ciência e Tecnologia (FCT), Portugal

What is a Nature-Based Solutions?

Solutions that are inspired and supported by nature, which are cost-effective, **simultaneously provide environmental, social and economic benefits** and help build resilience

European Commission

Nature-based Solutions are actions addressing key societal challenges through the protection, sustainable management and restoration of both natural and modified ecosystems, **benefiting both biodiversity and human well-being**

IUCN *International Union for Conservation of Nature*

Nature-Based Solutions should be alternatives to technical solutions (Technology-Based Solutions)

Blue-green (sometimes blue-green-grey) infrastructure instead of **grey** infractructure

https://warszawa.wyborcza.pl/


zary.naszemiasto.pl

Nature-Based Solutions have to provide ecosystem services

Examples of ecosystem services that can be achieved with NBS

- water retention (drought and flood mitigation)
- nutrient retention
- recreation
- Air and water purification
- temperature reduction (cooling effect)
- providing near-natural habitats
- increase in biodiversity
- landscape enrichment

https://traveltomorrow.com/

Main research questions

- How are biodiversity and ES of aquaNBS mediated by social, ecological, and technological factors?
- Does this vary among cities in different regions of Europe?
- How does biodiversity influence the regulating ES provided by aquaNBS?
- How can urban planning effectively design, manage, and monitor the biodiversity and regulating ES of aquaNBS?

Spatial scales and geographical representation of the BiNatUr

WP1 SETS approach for aquaNBS

WP2 Planning and designing aquaNBS in cities

WP3 Landscape patterns of SETs of aquaNBS

WP4 Ecohydrological boundary conditions for ES of aquaNBS

WP5 Biodiversity values of aquaNBS and linkages with ES

framework & integration

planning

landscape

water

biodiversity

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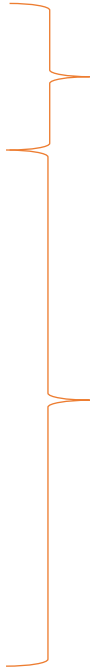


city scale

sampling sites scale

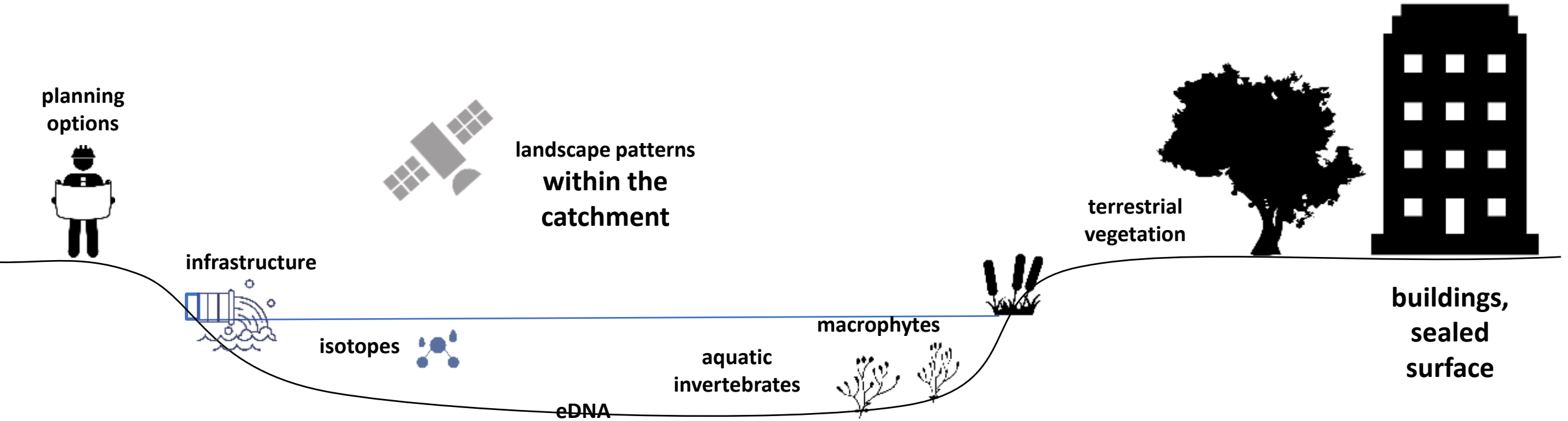
Spatial scales and geographical representation of the BiNatUr

Place-based study of aquaNBS and adjacent environment

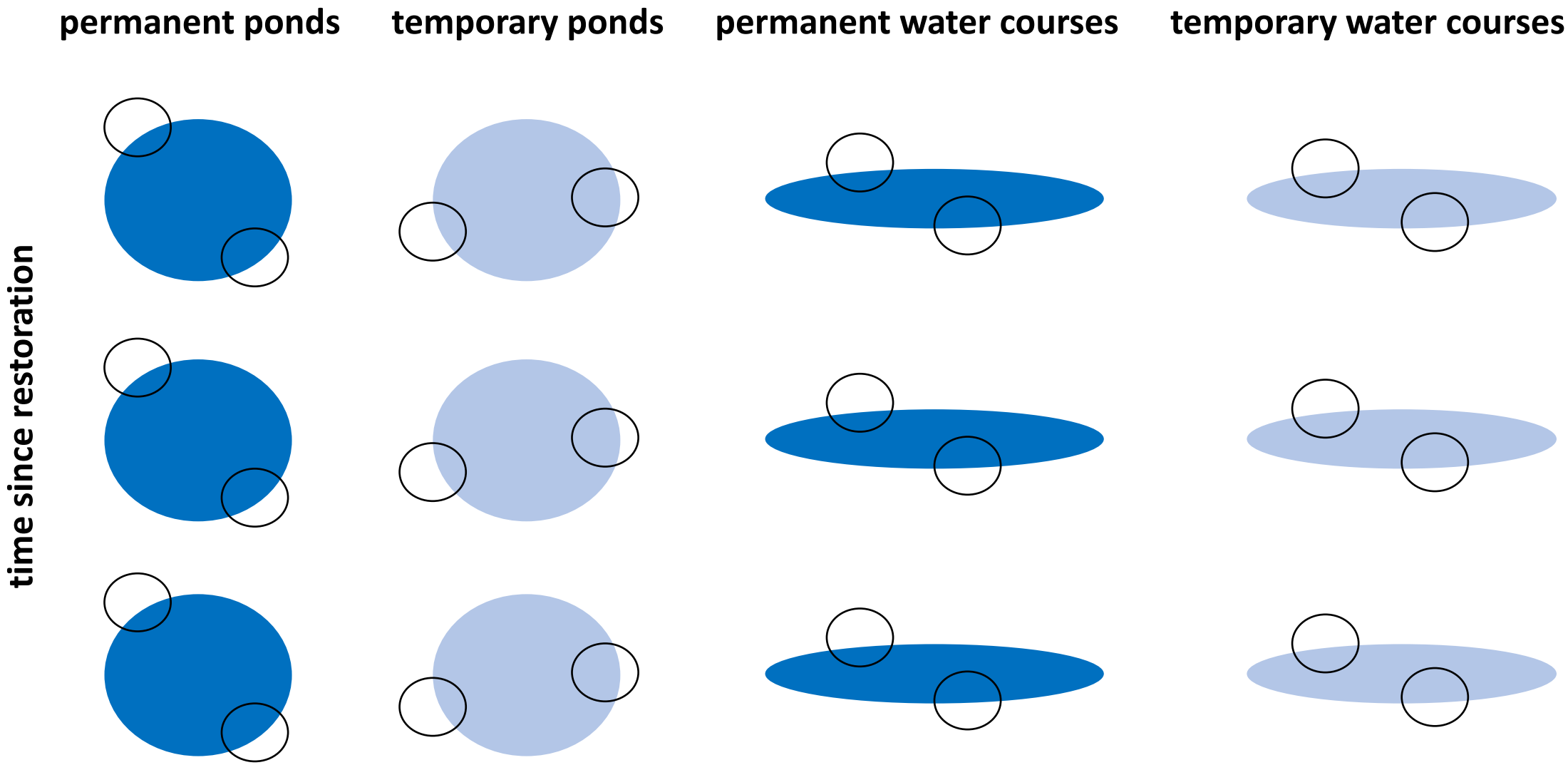
City-level holistic approach through different SET factor constellations in cities

Regional representativeness of different climate regimes in Europe

Research questions for BiNatUr research



Social	Ecological	Technological
How is BD valued among planners and practitioners? What is the role of biodiversity in planning NBS? How it can be enhanced?	What is biodiversity in aquaNBS? Are there linkages between BD and ESs? How does surrounding vegetation influence BD and ESs of aguaNBS?	How ESs and BD of aquaNBS are affected by local infrastructure and surrounding land-uses? How technology used in NBS influence BD and ESs?
Key social components for aquaNBS (WP1), expert interviews (WP2), document analyses (WP2), workshops and meetings (WP2)	Key ecological components for aquaNBS (WP1), GIS database and Remote Sensing (WP3), water isotope and eDNA sampling (WP4), sampling of vegetation, macrophytes, macroinvertebrates (WP5), habitat monitoring (WP5), landscape analyses (WP3)	Key technological components for aquaNBS (WP1), expert interviews (WP2), document analysis (WP2), GIS database and Remote Sensing (WP3), habitat monitoring (WP5)



12 study sites per city

= 4 typologies x 3 replicates x 2 “treatments”

sample (near planted and unplanted edges)

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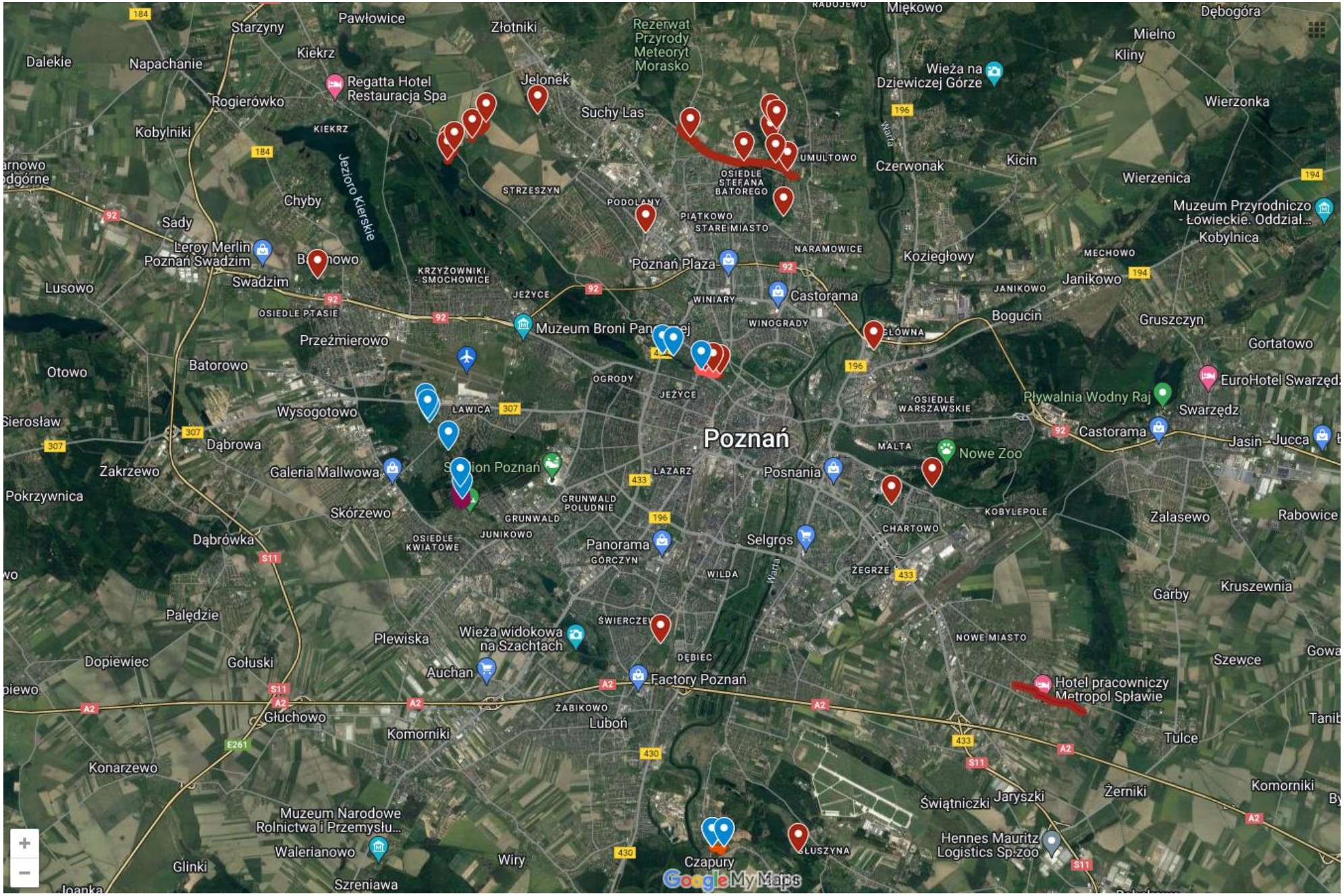
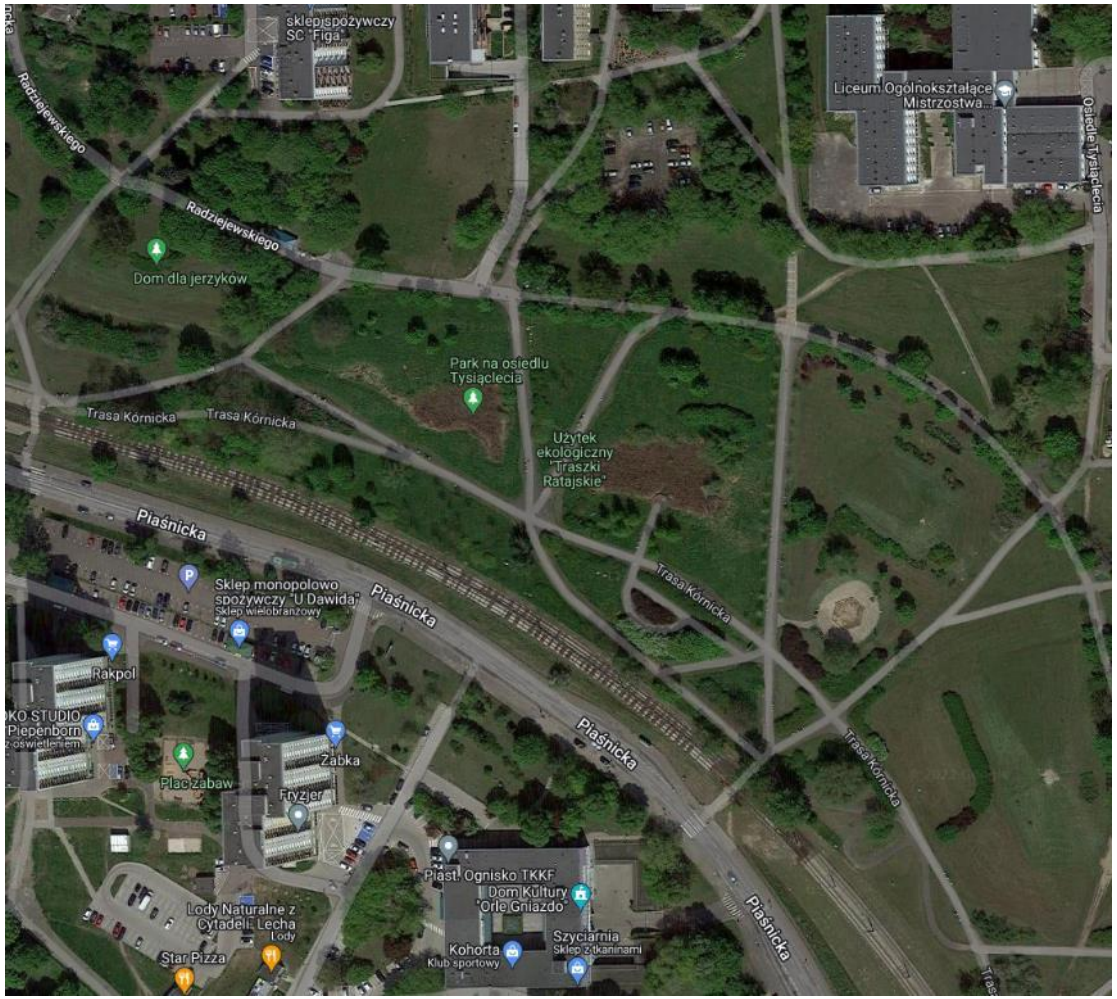
Poznań sampling sites



Nadolnik Pond

Traszki Ratajskie Pond

Sampling effort constant for all variables, for all NBS
A 10 x 10 m square for all samplings
Pairs are as close as possible



WP 5. Biodiversity values of aquaNBS and linkages with ES

Task 5.1 Vegetation in the adjacent terrestrial habitats

Task 5.2 Aquatic macrophytes

Task 5.3 Aquatic macroinvertebrates

Task 5.4 Diatoms and algae

Task 5.5 Habitat quality

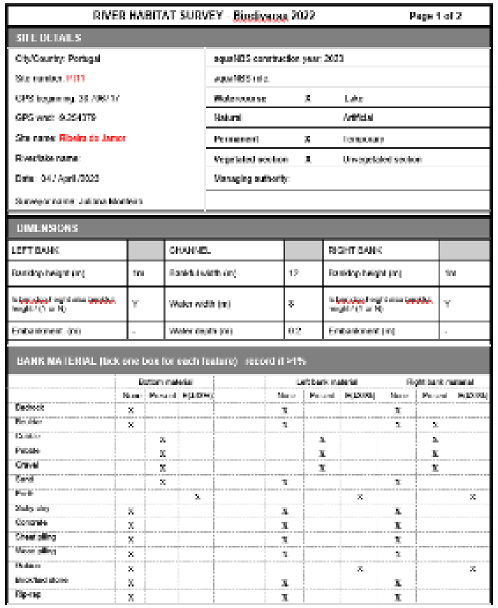
Task 5.6 Modelling local SET conditions

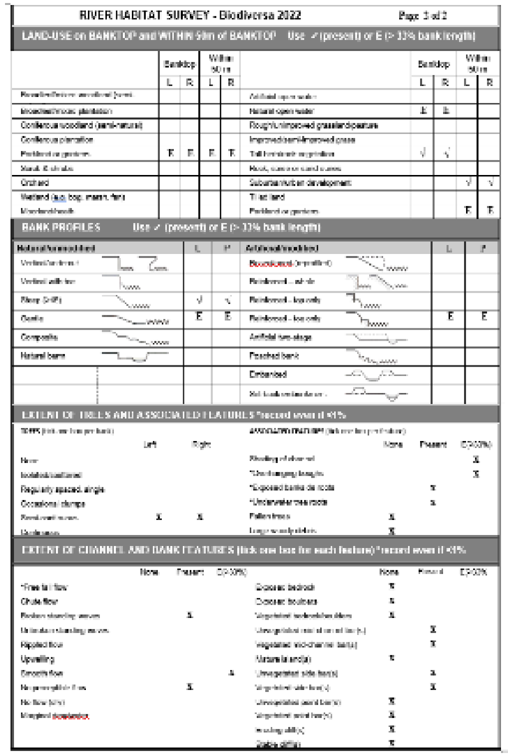
WP 5. Biodiversity values of aquaNBS and linkages with ES

Water sampling

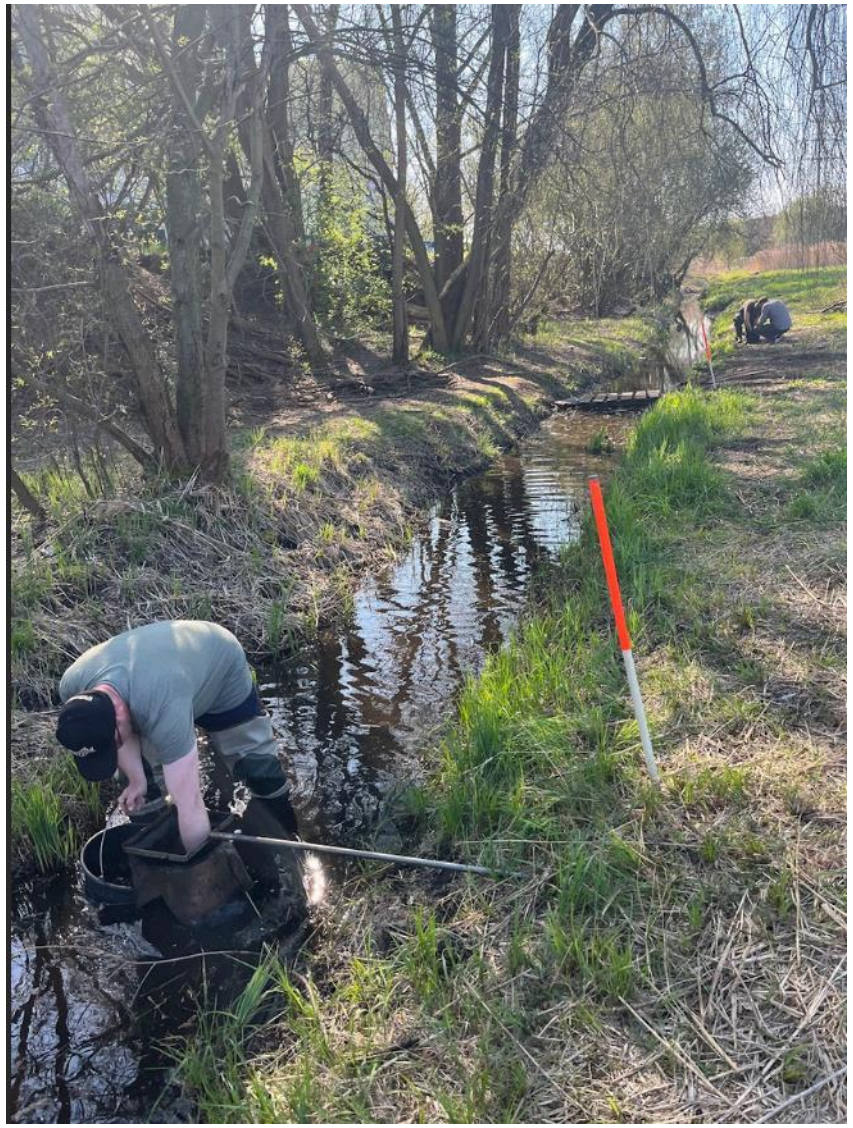
Biological survey

River Habitat Survey approach





Vegetated and unvegetated river sections



Vegetated and unvegetated pond sections

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Thank you
for your attention!