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European Biodiversity Partnership

BiodivPond kick-off

Biodiversity monitoring of ponds using novel methods

January 9th 2025

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European Biodiversity Partnership

Biodiversity **Mon**itoring of ponds using novel methods

Data collection
Recommendations
Guidelines

Ponds as biodiversity hotspots

- High **species richness**: Ponds support a diverse range of aquatic and semi-aquatic species
- High **microhabitat diversity**
- Stepping stone function in **maintaining connectivity**
- With **ambitious restoration goals** of the Regulation 2024/1991, synergies are often seek by policy-makers

LIFE Platform Meeting: Amphibian and Reptile Conservation in Europe – Challenges and Opportunities

On 22-24 May 2024 the LIFE project Steps for LIFE organised an event titled “LIFE Platform Meeting: Amphibian and Reptile Conservation in Europe – Challenges and Opportunities” in Cantabria, Spain.

Monitoring biodiversity in ponds

- Problem: ponds support a variety of groups which often require different monitoring approaches
- Aquatic insects
- Amphibians
- Bats

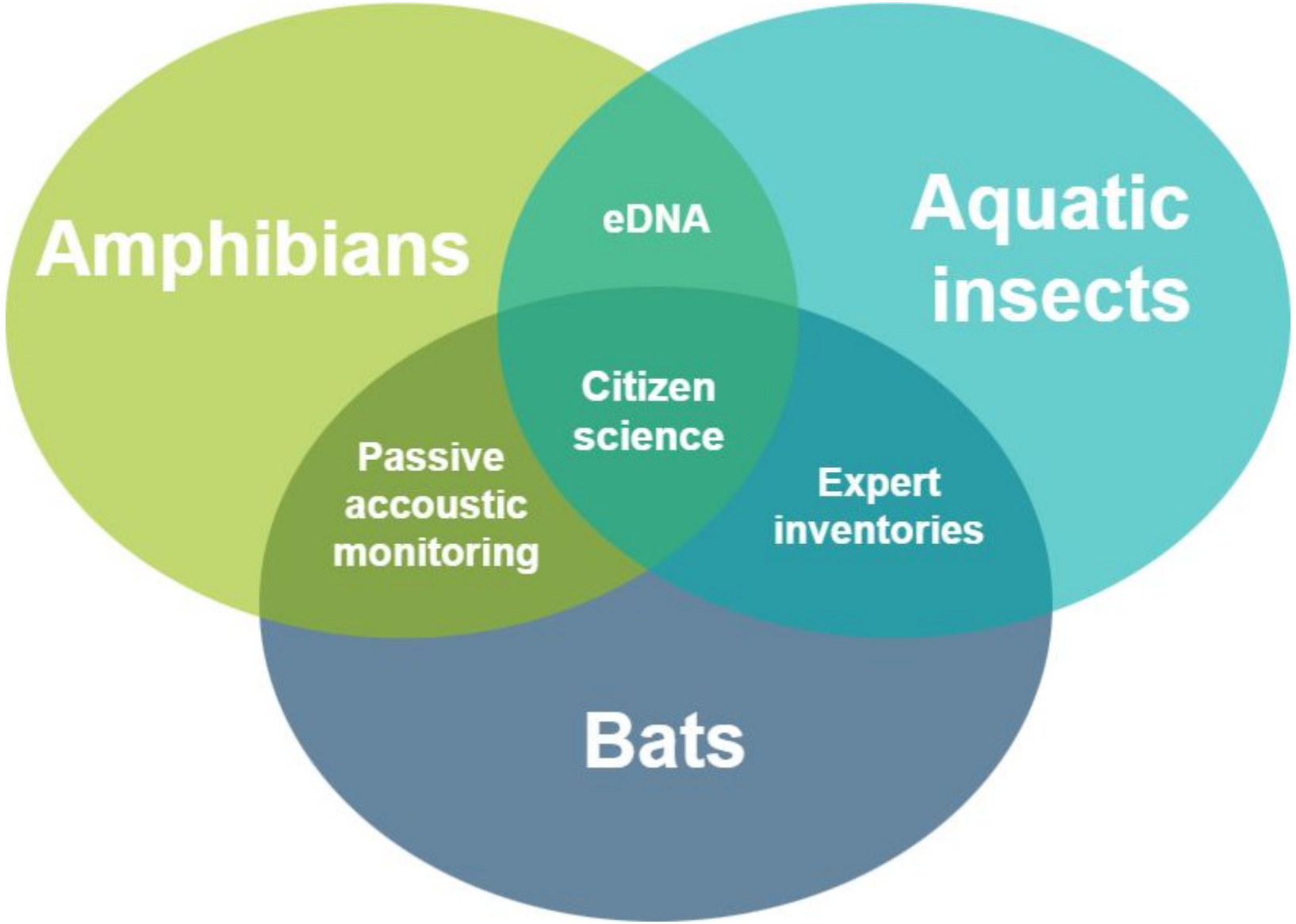
Novel methods and citizen science are often considered to be a solution

But are these a real option?

To asses the **current applicability of novel technologies** for monitoring important umbrella species and species' groups utilising **pond ecosystems**, identify **limits to a wide use** and propose steps towards removing them within the partnership geographic scope. More specifically, the sub-pilot will: a) Implement an international scheme for genetic monitoring **multiple components of pond biodiversity**, b) Improve sound recognition for **bats**. c) Map benefits and constraints of utilising novel methods for biodiversity monitoring of ponds, and d) Showcase a cost-effective workflow of sensor-based biodiversity monitoring.

Which ponds?

- Close the knowledge gaps on small-standing water bodies < 1 ha.
- Not covered by the Water Framework Directive
- Outline the key knowledge gaps
- Increase the number of ponds sampled?
- Increase the number of ponds sampled by citizen scientists (50+, dependent on the final number of partners), supplying them with a manual and organising them at national workshops.
- **Contribute to the standardisation of methods**
- Metabarcoding for the whole communities?

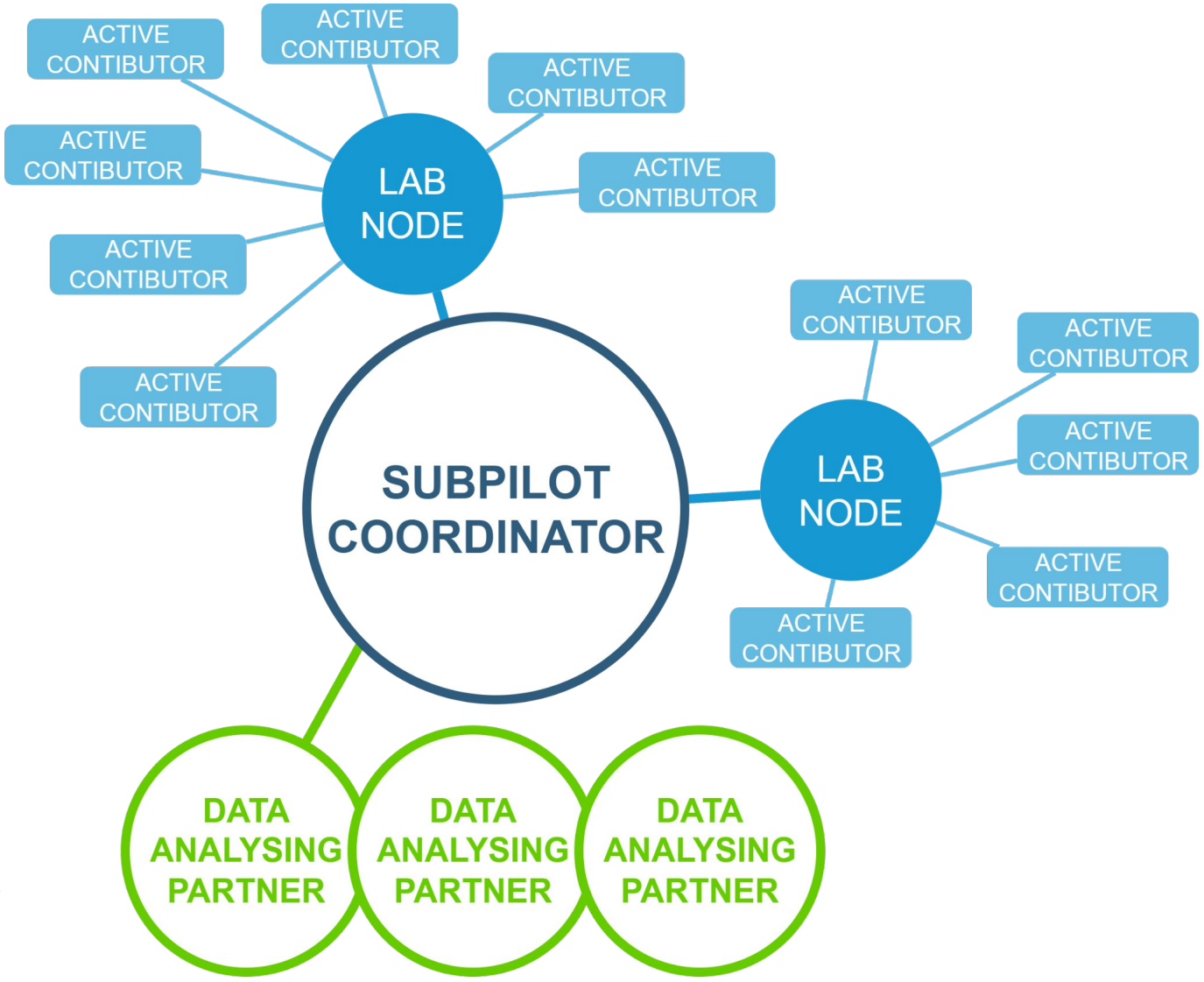

Amphibians
eDNA
Aquatic insects
Citizen science
Passive accoustic monitoring
Expert inventories
Bats

Proposed actions

- **Identification of available sites** (anthropogenic and natural) utilizing available field and remote sensing data
- **Vegetation surveys** to determine the site characteristics and selection of pilot sites
- Biodiversity monitoring using **traditional methods**
- **eDNA community inventories and monitoring of target species**
- Water characteristic (eg. ECELS index)
- Assessment of **automated acoustic monitoring** in contrast to traditional site visits
- Development of a **citizen science** scheme

Pilot structure

- **Pilot coordinator:** NCA CR
- **Lab nodes:** NCA CR & INBO (VLO)
- **Acoustic analysis:** Aarhus Uni (SGAV)
- **Taxonomic analysis:** NCA CR
- **Active contributors:** BOZEN (IT), ExEA (BG), FRCT (PT), MEPGT (HR, formerly MESD), MoE_FI (FI), MoEP (IL), NCA CR (CZ), NWO (NL), SAS (SK), SEPA (SW), SGAV (DK), VL O (BE)



Active contributor role 1/2

- **Providing feedback** on the action plan of the pilot.
- Actively contributing to co-developing and **co-implementing the activities** of the pilot
- Reporting on the advancement of the activities to the pilot coordinator and the OT
- **Selecting sites** for detailed sampling and coordinating the selection of ponds sampled by the stakeholders.
- Attending webinars to learn the m**ethodologies for data collection**.
- **Providing input to the sampling design** for data collection and the target species
- **Deployment, service, and collection of data from bat ARUs.**
- **Sampling the 6 core ponds**
- **Collecting metadata** at sensor deployment sites (vegetation survey, crown cover and microclimate measurements);

Active contributor role 2/2

- Attending **webinars and physical meetings** to learn how to use acoustics recognisers for bat identification and in data interpretation;
- Involve **bat species experts** in the annotation of sounds collected and identified as target species for determining the optimal confidence score threshold of each species;
- **Sending sound data** to the pilot coordinator for analysis;
- Interpreting outcomes of monitoring campaigns and giving feedback on the reports;
- **Coordinating the citizen science pond sampling in their country, storing the samples and sending them to the respective lab nodes;**
- **Organising the national workshops for the stakeholders** involved in the citizen science scheme.

Working groups

- **Acoustic (bats & frogs) WG**
- **eDNA sampling protocol WG**
- **Traditional sampling WG**
- **Data management WG**

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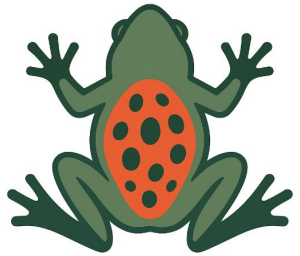
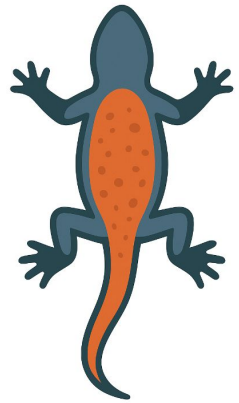
2026 Field Season Roadmap

- **The goal is to sample 80 ponds (6 per partner)**
- Pond selection criteria (January)
- Permits and MTAs (January/February)
- Pond selection (February/March)
- **Sampling** (April - August)
  - eDNA
  - Invertebrate sampling
  - Vertebrate monitoring
  - Pond characteristics (+vegetation surveys)
- **Shipment of samples and data upload** (September)

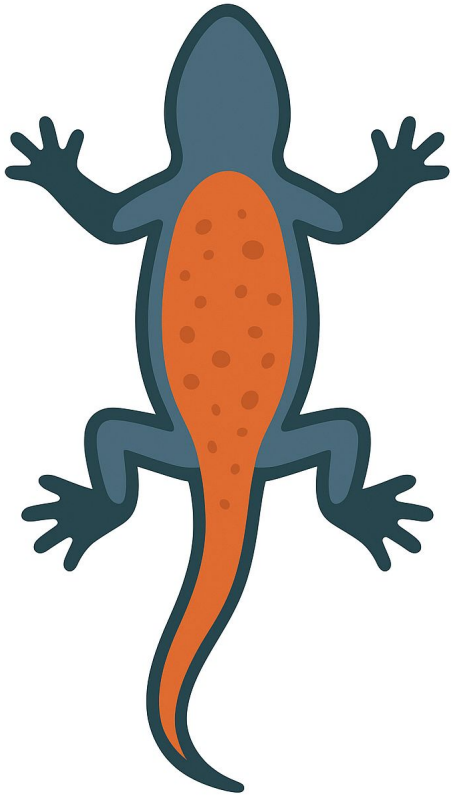




Working document link:
https://docs.google.com/document/d/12JP-Mtq1zRC3hXMCr5ZHPaGtqyNy6vCToVe08UIAzoI/

Core pond selection criteria

- Natura 2000 (or national designation if N2K is non-applicable) protection status
- Area (thresholds:
- Managed to promote biodiversity
- Urban and peri-urban sites
- Part of an international river basin (Danube, Rhine)



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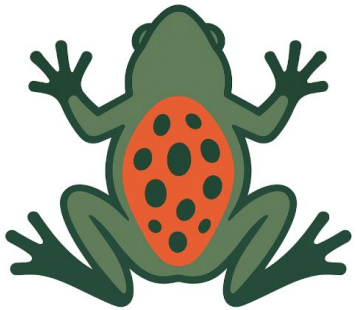
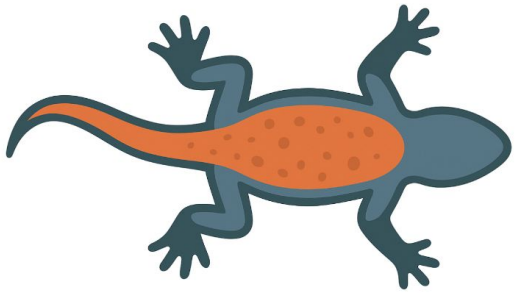
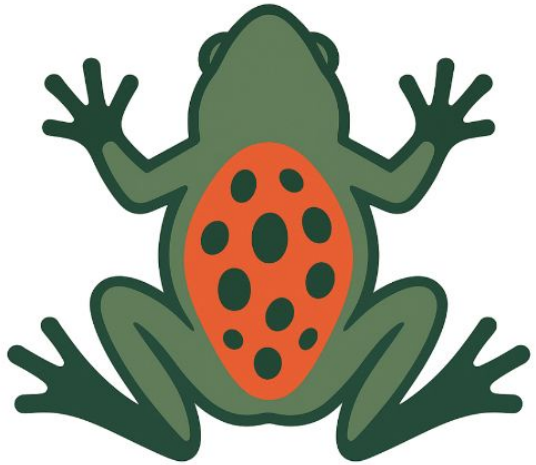
Pilot GitHub and website

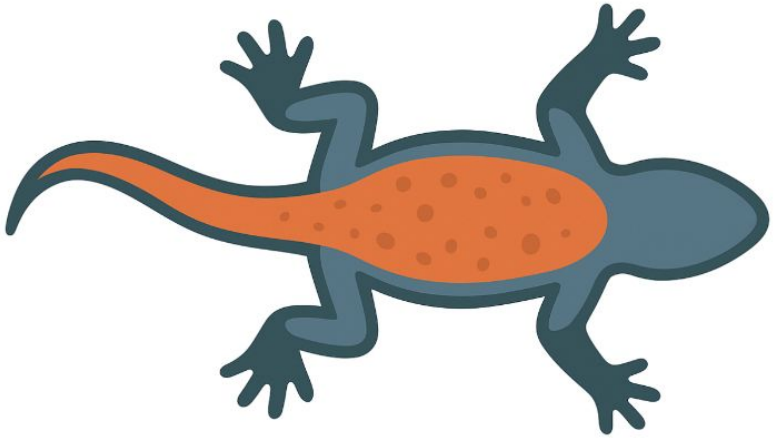
- GitHub organisation for shared data analysis repositories
- Follow BiodivPpond on GitHubg id you have an account::https://github.com/BiodivPond/
- Email Jonáš, if you want to join
- biodivpond.github.io website to share information among partners and relevant stakeholders
- Propose ways to present data on the website





Discussion





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Thank you!

To download the accompanying resource files

for this presentation, please visit:
www.biodivpond.github.io/meetings

www.biodiversa.org

contact@biodiversa.org

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