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BACKGROUND

There are thousands of ponds across Europe, from Lapland to Mediterranean islands and from remote areas to densely populated cities. Most of them provide habitats for animals like aquatic insects and others, even rare species. Ponds also contribute to habitat connectivity and enable organisms to cross the landscape in their function as “blue stepping stones”. Insects emerging from such ponds can be rich in both biodiversity and dietary energy. They provide food and essential fatty acids for terrestrial and avian consumers (bats, birds, spiders, lizards) and thus, important ecosystem services. However, the knowledge about the ecological role of emerging insects from ponds, and their contribution to biodiversity and dietary energy transfer to consumers of adjacent ecosystems is limited.

Aims EUROPONDS will investigate:

- a) The taxonomy and biomass ('biodiversity'), and
- a) The energy content and dietary quality, as measured by total lipids and their fatty acids ('nutritional value for subsequent consumers') of emerging insects from ponds across Europe.

HYPOTHESIS

The biodiversity and nutritional value of emerging insects will be higher in ponds with lower trophic status, yet the biomass of insects will be higher in ponds with higher trophic status.

METHODS AND ORGANIZATION

All participants of EUROPONDS should measure the same parameters, following established protocols:

1. **Trophic state** of ponds will be assessed by Chl-a and phosphorus measurements. Physical and chemical parameters (turbidity, conductivity, temperature, oxygen, Secchi depth) will be recorded at every sampling event when possible.
2. **Taxonomy of insects:** using emergence trap and pond-netting, the taxonomy of these invertebrates and their biomass leaving the ponds will be assessed.
3. **Nutritional value** of emerged insects will be determined as total lipids and their fatty acids analyzed in selected laboratories.



Figure 1. Distribution of all sampling points across Europe.

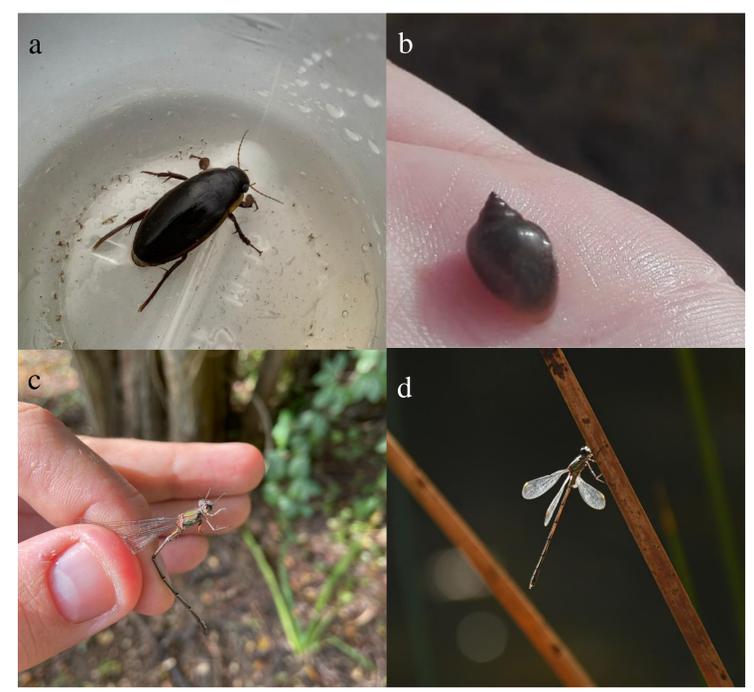


Figure 3. Benthic macroinvertebrates are sampled: a) Dytiscidae, b) Physidae. Odonata are observed and identified, but not captured (c, d).



Figure 2. Teams are now engaged in the autumn sampling, which will be repeated each season during project duration (2020-2021).

EXPECTED RESULTS

This project will provide unprecedented insights into the species richness of ponds as providers of dietary energy and shed light on these frequently underestimated waterbodies which are ubiquitous.

Acknowledgements

This project is funded by **European Federation of Freshwater Sciences (EFFS)**.