Adaptive divergence in *Asellus aquaticus*

Moritz Lürig*, 1, Rebecca J. Best*, 1, Marek Svitok*, Jukka Jokela*, 1, Blake Matthews*

* Swiss Federal Institute of Aquatic Science and Technology - Eawag, Aquatic Ecology;  
† ETH Zürich, Center for Adaptation to a Changing Environment - ACE

Previous research in Swedish lakes shows rapid phenotypic evolution (size and pigmentation) of the freshwater isopod *Asellus aquaticus* from 1987 to 2000. Ecotype formation appears to have a genetic basis, and has been documented across different lakes.

We have documented phenotypic divergence between Swiss lake and stream populations.

But what ecological factors might be causing this divergence?

**Experimental test:** Interactive effects of macrophytes and fish on survival and pigmentation of *A. Aquaticus*

Experimental design:

- i) Survival
  - Fish presence reduces survival of *A. aquaticus*.
  - Macrophytes increase survival at high fish density.

- ii) Pigmentation
  - At high fish density, the relationship between size and pigmentation is less steep in the absence than in the presence of macrophytes.

**Future experiments:** Does phenotypic plasticity explain variability in pigmentation?

i): Diet manipulation in common garden

- Rear offspring of one phenotype under different diets and measure pigmentation as a function valued trait.
- Factorial design with high and low food quality and amino acid supplement.

ii): Common garden with UV light, background and fish kairomones as factors

- Quantitative genetics design with 50 - 60 families
- Microcosm experiments with high phenotypic resolution and replication

---

Moritz Lürig
Doctoral student @ ETH Zürich / Eawag
Group: Eco-Evo Dynamics
Supervisors: Blake Matthews, Jukka Jokela

moritz.luerig@eawag.ch