Adaptive divergence in *Asellus aquaticus*

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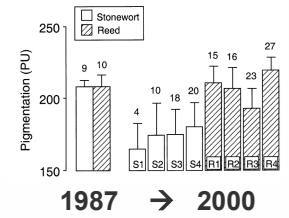
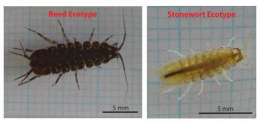
Previous research in Swedish lakes shows **rapid phenotypic evolution (size and pigmentation)** of the freshwater isopod *Asellus aquaticus*



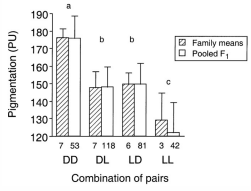
1987 → 2000

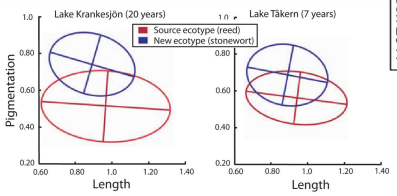


Reed → Chara tomentosa

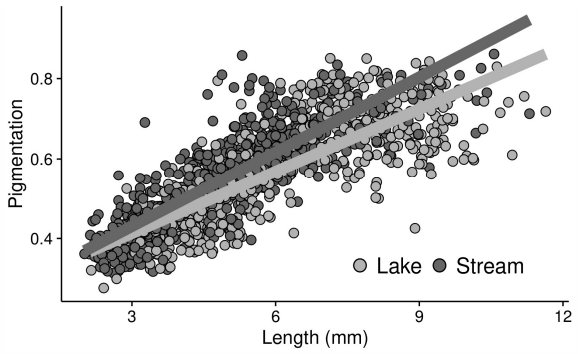
Hargeby 2004, Eroukhmanoff and Svensson 2011

Ecotype formation appears to have a **genetic basis**, and has been documented across **different lakes**.





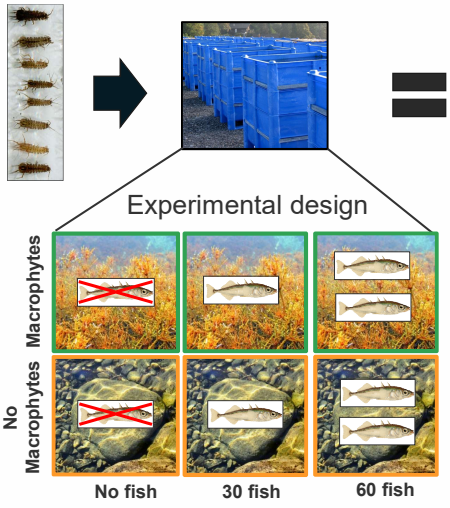
We have documented **phenotypic divergence between Swiss lake and stream populations**

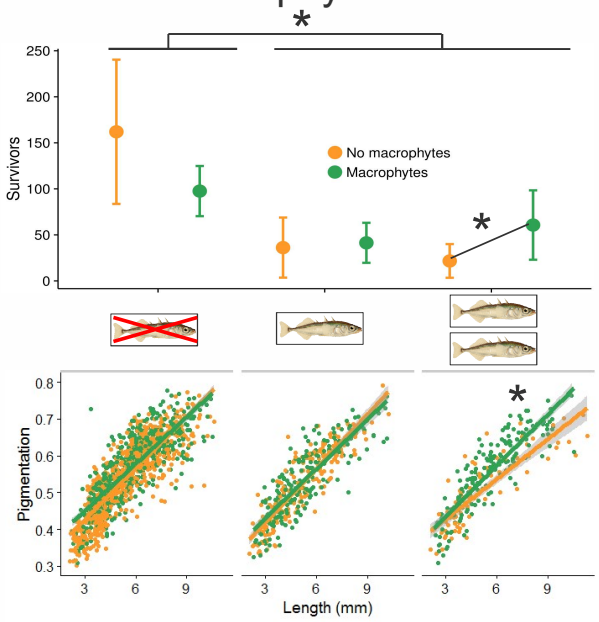


Swiss specimens of *A. aquaticus*

But what ecological factors might be causing this divergence?

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





i) Survival
Fish presence reduces survival of *A. aquaticus.*

Macrophytes increase survival at high fish density.

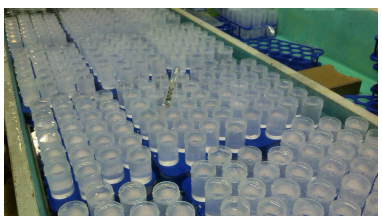
ii) Pigmentation
At high fish density, the relationship between size and pigmentation is less steep in the absence than in the presence of macrophytes.

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

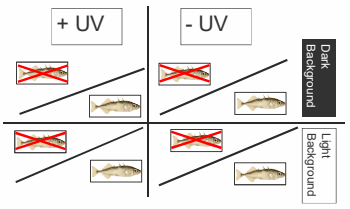
Low C:P	Low C:P
- Tryptophan	+ Tryptophan
High C:P	High C:P
- Tryptophan	+ Tryptophan



Microcosm experiments with high phenotypic resolution and replication

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

Quantitative genetics design with 50 - 60 families



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