

The impact of multiple environmental stressors

We do not find every type of organism in every location in the world. This might seem like an obvious fact, but tolerance of differing physiological conditions is a key part of what determines the geographical range of a species. The interaction among different stressors in the environment (pollution, salinity, pH, O₂ availability,) is an important component of what shapes range. Some stressors may magnify the impact of others, while others may ameliorate their effects.

Myosotella is a genus of euryhaline snails that are invasive around the world and native to coastal Europe. Throughout their range, they encounter a wide range of salinities, but we have no idea how they tolerate frequent changes in this physiological stressor. In addition to this, these snails occur in areas of Europe that experience cold conditions.

To understand the genomic basis of stress response in *Myosotella*, this project will use transcriptomic sequencing (RNAseq) coupled with different salinity and temperature exposures. No genetic work has been done with *Myosotella* before, so this will offer great insight into the molecular basis of adaptation in this genus.

This project will give students experience in a diverse skill set that includes:

- Field collections
- Molecular lab work including RNA extractions
- Next generation (Illumina) sequencing
- Bioinformatic analysis with the support of the professor



Low salinity
(5ppT)

Medium
salinity
(20ppT)

High salinity
(35 ppT)

Control

Cold shock