

Speciation dynamics and ecosystem feedbacks

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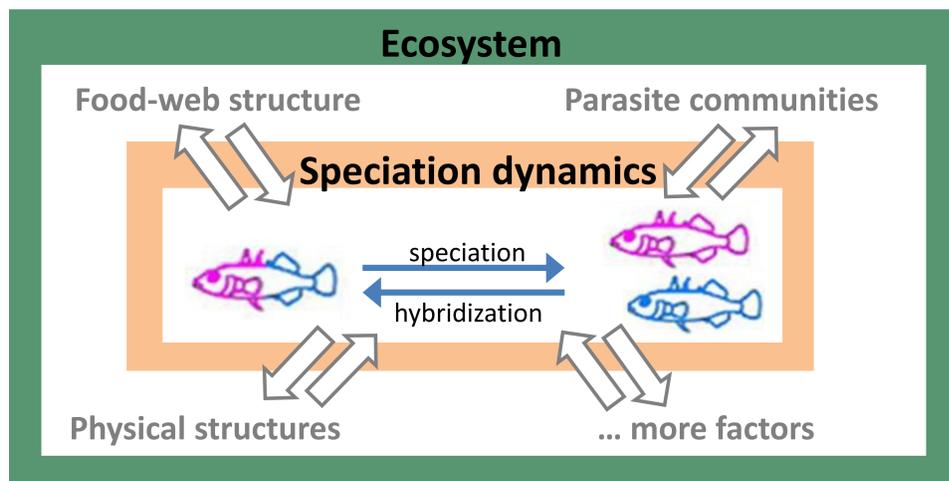


Integrating ecology and evolution

It is now clear that evolutionary dynamics can strongly interact with ecological dynamics in their influence on ecosystem functions and biodiversity levels. Integrative studies in semi / natural systems are indispensable to make predictions on ecosystem stability under (anthropogenic) environmental change.

Here, we will test the role of environmental change (eutrophication) within the context of further selection pressures (parasites) in species evolution (Q 1 & 2). The transgenerational setup will allow us to test for feedback effects of these speciation / hybridization dynamics at the same time (Q 3 & 4). Three-spined sticklebacks are a suitable model system for these questions as they are known to show fast speciation and reverse speciation patterns as well as affecting their environment differentially, depending on ecotype diversity and specializations.

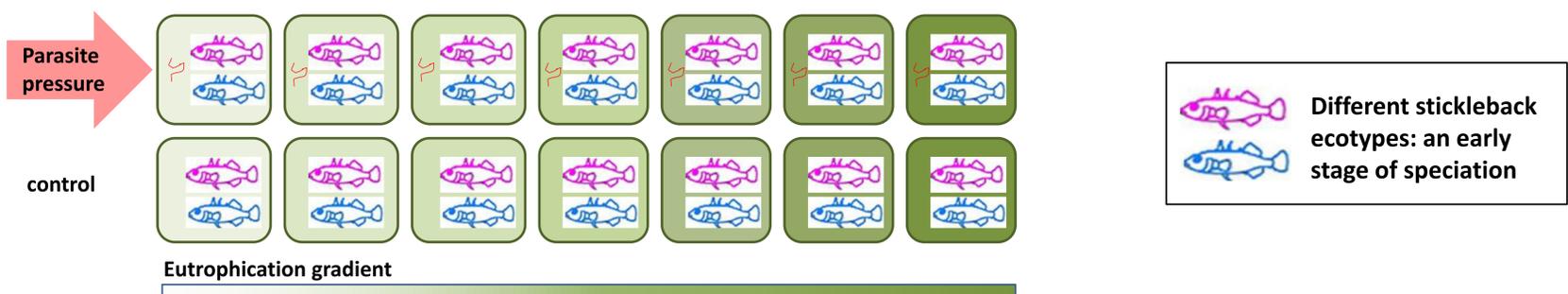
The big picture



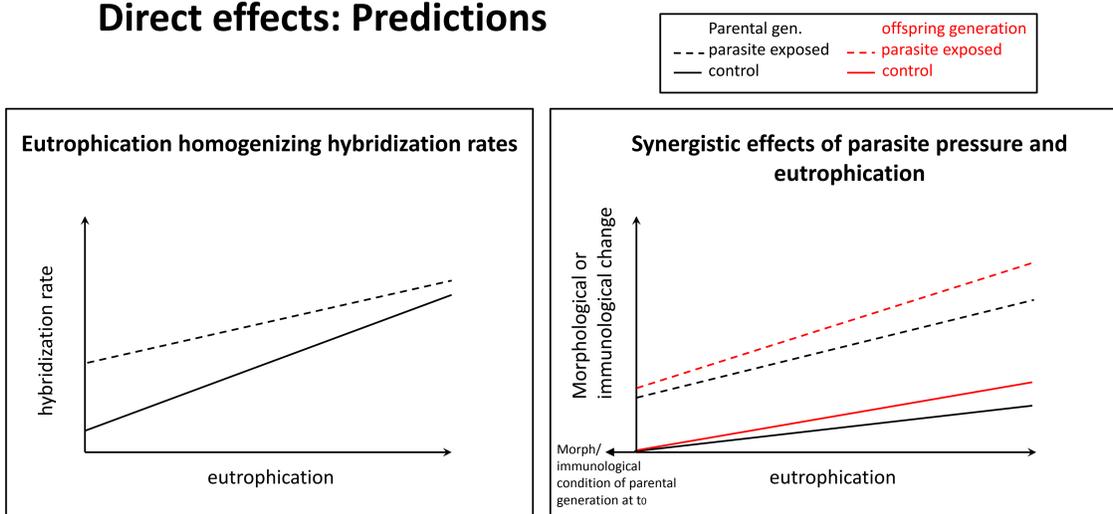
The big questions

- Q1 How do diversifying, diverging and homogenizing forces interact in their influence on speciation dynamics in semi/natural settings?
- Q2 How does eutrophication disrupt or support parasite mediated speciation?
- Q3 How do multilevel interactions affect evolutionary and ecological properties of the system through subsequent feedback cycles?
- Q4 Which factors dominate long-term dynamics and evolutionary outcomes?

A way forward : integrating different selection pressures and ecosystem feedbacks



Direct effects: Predictions



Feedback effects: what to expect?

