Conclusions

There is no functional difference between chara and reed ecotypes of *Asellus aquaticus*.

Reed ecotype of *A. aquaticus*

Phragmites australis

Chara spp.

Chara ecotype of *A. aquaticus*

Gammarus pulex

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Does an evolutionary change in the water sowbug *Asellus aquaticus* L. alters its functional role?

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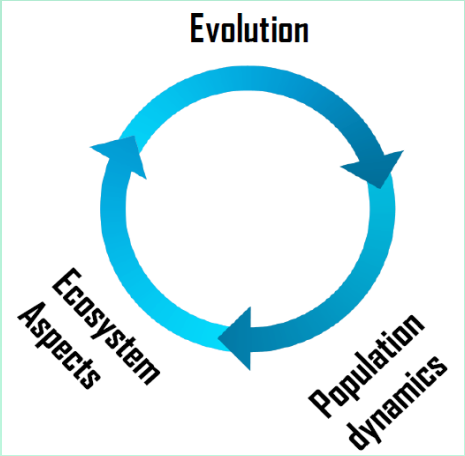
Background

Evolutionary biology mainly focus on ecological explanation of evolution. However, the evolutionary change in a population can directly or indirectly effect the ecosystem processes. Eco-evolutionary dynamics shows how change in species traits(e.g. color) effect the ecological role (e.g. grazing, leaf decomposition) through change in population dynamics (e.g. survival, growth).



Asellus aquaticus is a common freshwater isopod mainly living in reed (*Phragmites australis*) habitat in lakes or ponds. In last two decades a new ecotype (chara) of *A. aquaticus* emerged in stonewort (*Chara spp.*) habitat in some Swedish lakes. Besides, habitat differentiation, chara ecotype has lighter pigmentation than reed ecotype.

This laboratory study examined :

The functional difference between two ecotypes (Chara & Reed) of *Asellus aquaticus.*

Results

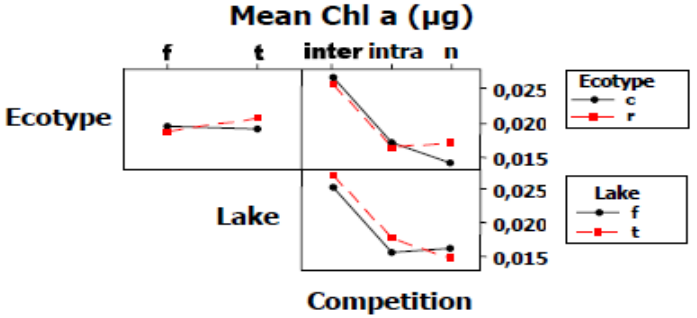


Fig .1 Interaction plot of algae biomass (Chl a) after 4-week of experiment ((C=chara ecotype, r= reed ecotype, inter= inter-specific competiton between the ecotype and *G. pulex*(6 indv.)from each, intra= intra-specific competition among the individuals of a ecotype (18 indv.) , n= no competition (6 indv.), t= Lake Tåkern, f= Lake Fardume)).

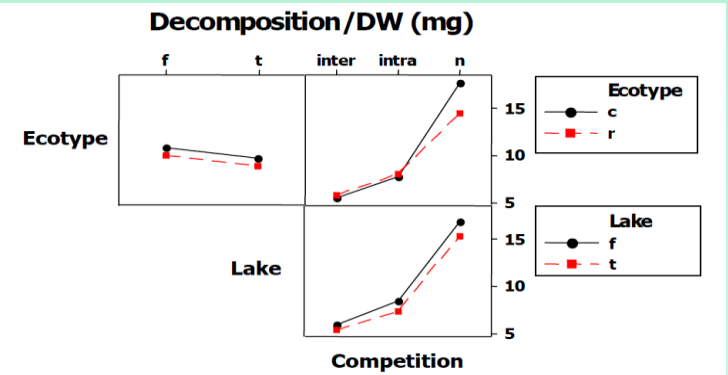


Fig. 2 Interaction plot of leaf decomposition (mg) per DW (mg) consumer (abbreviations according to fig. 1).

✓Reed and chara ecotypes showed no significant difference in laef consumption & impact on algae biomass.

✓The presence of *Gammarus pulex* facilitated algae biomass and reduced leaf consumption.

Methods

Two ecotypes of *Asellus aquaticus* were collected from two Swedish lakes: Lake Tåkern and Lake Fardume. Reed ecotype was collected from *Phragmites australis* (reed) habitat and chara ecotype was collected from adjecent *Chara spp.* (stonewort) habitat.

The experimental design consisted of 100 aerated plastic aquaria (2-L), each providing alder leaves *(Alnus glutinosa)*, oak leaves (*Quercus roburleaves)* and periphyton as food sources.

Six treatments were applied for each lake

in 3- categories:

1)Single ecotype in low density (6 indv.)

2) Single ecotype in high density (18 indv.)

3) A combination of one ecotype and

Gammarus pulex (6 indv. from each)

All the treatments were replicated 5 times.

Functional role such as leaf decomposition and impact on algae biomass were examined for two ecotypes from both lakes.