

# Does An Evolutionary Change in the Water Sowbug *Asellus aquaticus* L. Alter Its Functional Role?

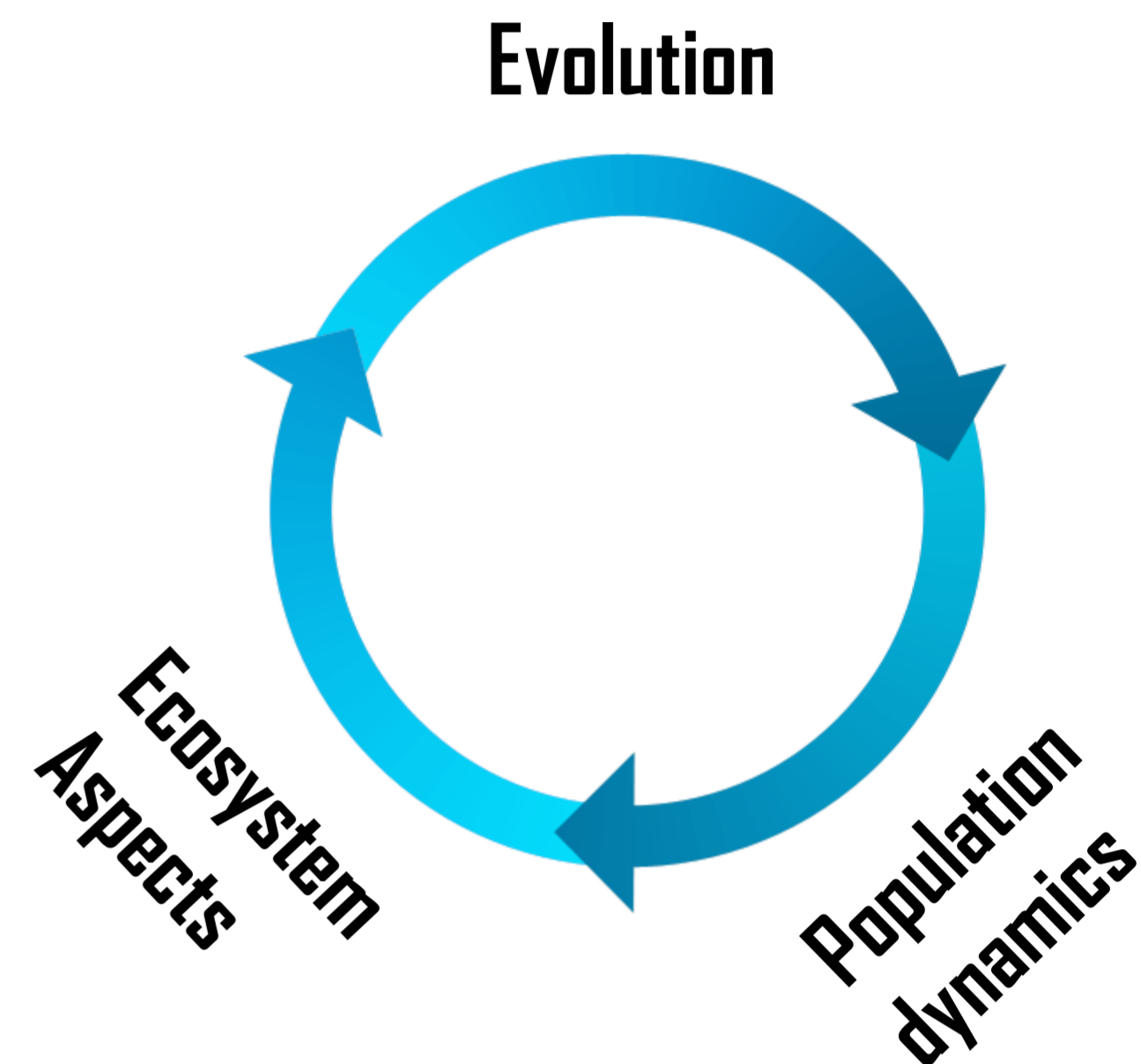
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## Background & Aim

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*.



Reed ecotype



Chara ecotype

## Methods

- A) Functional role such as leaf decomposition & impact on algae biomass were examined for the two ecotypes from Lake Tåkern & Fardume along with *Gammarus pulex*.
- B) Six treatments were applied for each lake in 3 categories:
  - 1) Single ecotype in low density (6 indiv.);
  - 2) Single ecotype in high density (18 indiv.) ;
  - 3) A combination of one ecotype and *Gammarus pulex* (6 indiv. from each) .

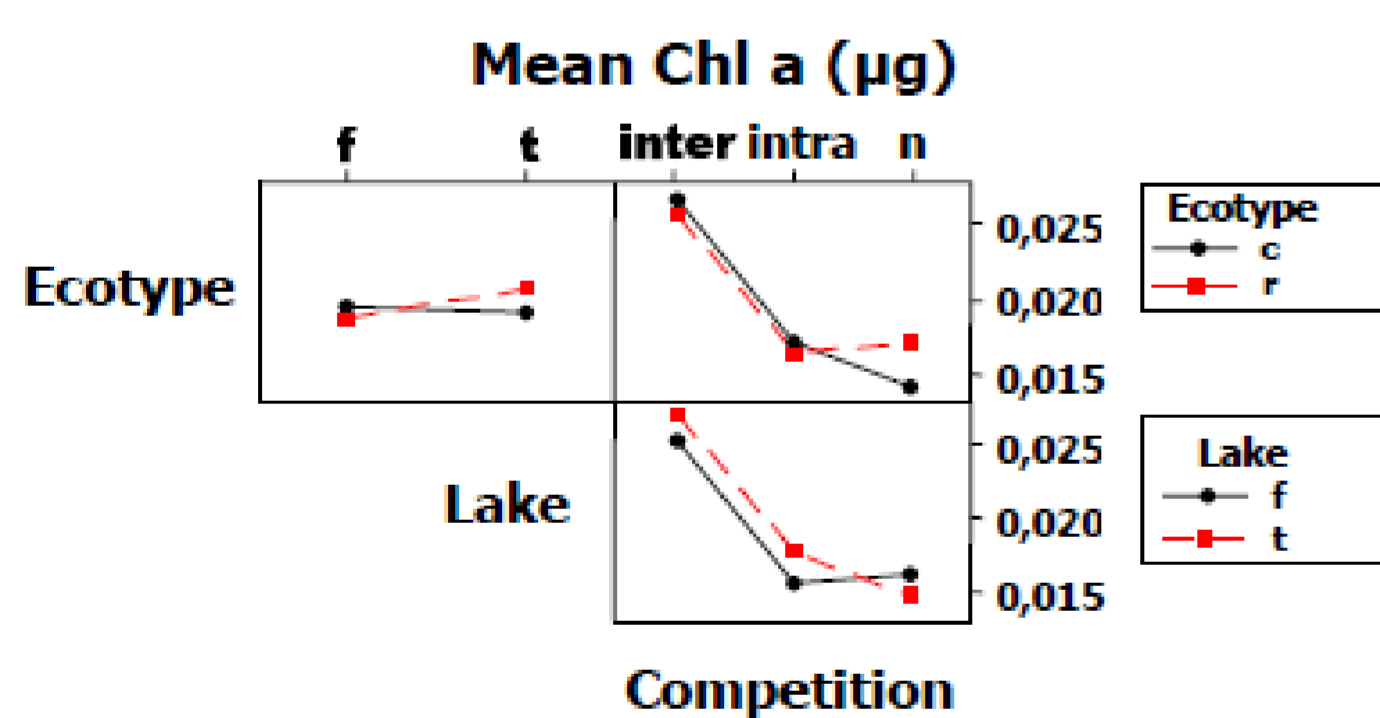


Fig .1 Interaction plot of algae biomass (Chl a) after 4-week of experiment ((C=chara ecotype, r= reed ecotype, inter= inter-specific competition between the ecotype and *G. pulex*(6 indiv. )from each, intra= intra-specific competition among the individuals of a ecotype (18 indiv.) , n= no competition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

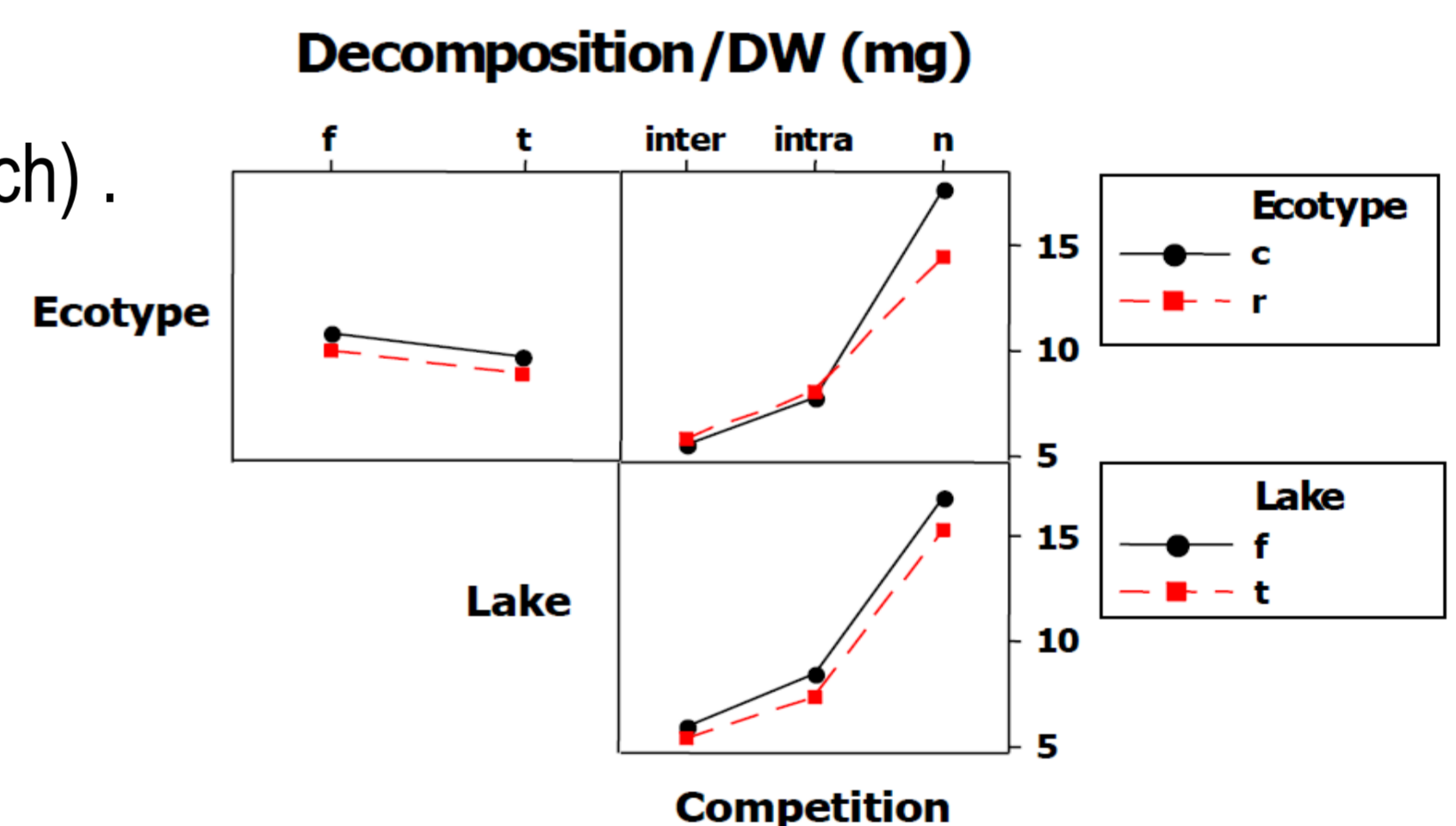


Fig. 2 Interaction plot of leaf decomposition (mg) per DW (mg) consumer (abbreviations according to fig. 1).

## Results

- ✓ Reed and chara ecotypes showed no significant difference in leaf consumption and impact on algae biomass.
- ✓ Presence of *Gammarus* facilitated algae biomass and reduced leaf consumption.

## Conclusion

Reed and chara ecotypes are not functionally different.

