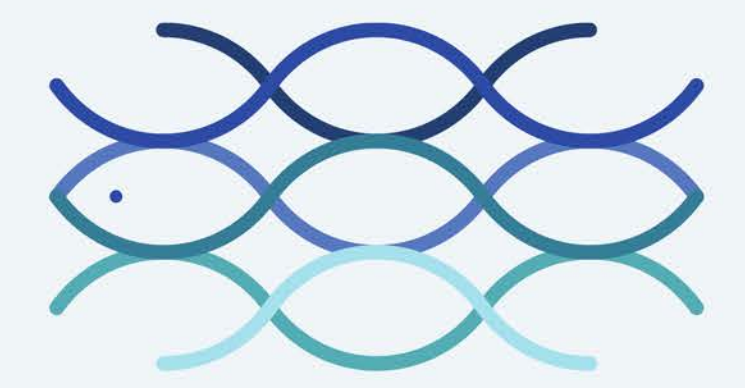


# P5 *Daphnia* Resilience



SeeWandel

Leben im Bodensee –  
gestern, heute und morgen

## Genomic and functional resilience of water flea populations under eu- and oligotrophication in Lake Constance, Zurich, and Walen

### Project Description

- Water fleas in the genus *Daphnia* are keystone species in aquatic food webs linking algal biomass production with fish and invertebrate predators
- Drastic trophic changes during the last century have facilitated the invasion of *Daphnia galeata* and, in some cases, *D. cucullata* into peri-alpine lakes
- These species have hybridized, back-crossed with, and partly replaced the native *D. longispina* (syn. *D. hyalina*)
- As a consequence of lake restoration the abundance of individuals that we identify as *D. longispina* has increased again
- It is unclear whether today's populations are genetically and functionally the same as the populations present before trophic changes and gene flow events or whether the admixture and exchange of genetic material has affected the integrity of species

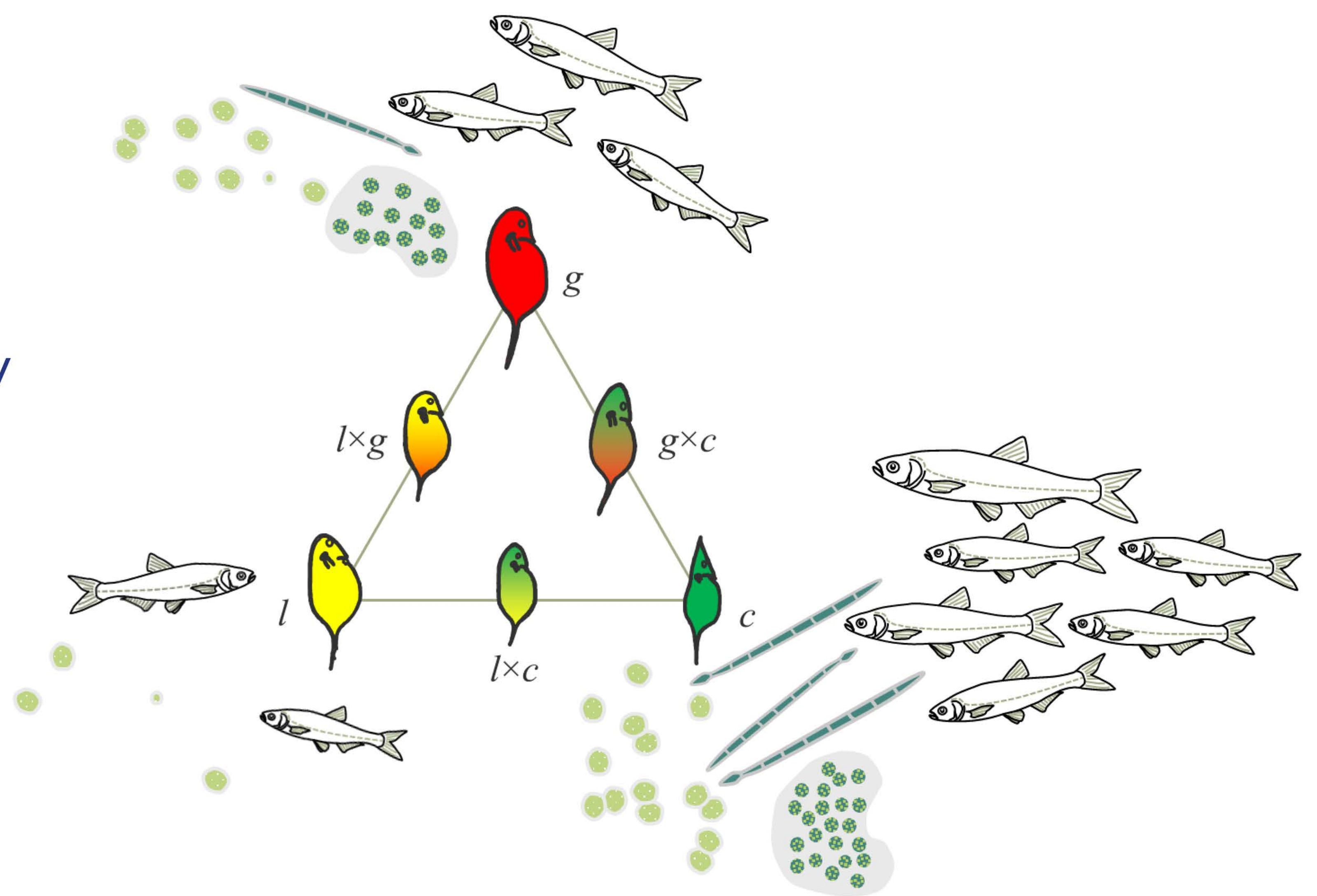


Fig. 1.: All three members of the *Daphnia longispina* – *galeata* – *cucullata* species complex and their interspecific hybrids. Ecological differences and preferences regarding fish predation and food quantity and quality are depicted. (*l*...*D. longispina*; *g*...*D. galeata*; *c*...*D. cucullata*)

### Project Goals

Using decades-old resting eggs from sediment cores and recent populations of all three species from Lake Constance, Zurich, and Walen we will:

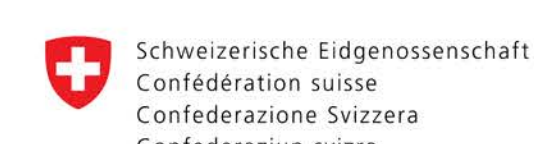
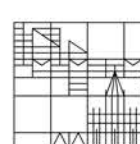
- apply genomic technologies to investigate the genomic and evolutionary consequences of extensive hybridization during eutrophication for today's *Daphnia* populations
- perform life-history, competition, and fitness assays to assess potential functional and fitness effects of gene flow events

### People

- Dr. Markus Möst,  
University of Innsbruck,  
Institute of Ecology  
[Markus.Moest@uibk.ac.at](mailto:Markus.Moest@uibk.ac.at)
- PhD student *position to be filled soon*



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