

## **Role of dispersal for maintenance of diversity in experimental plankton communities**

An increasing number of observational studies report regional patterns in communities of aquatic protists and zooplankton, pointing at the existence of dispersal limitation in the microscopic world. Moreover, recent studies also show that natural phytoplankton communities exhibit diversity functioning relationships comparable to those known from vascular plants and other higher organisms.

The existence of such patterns is in stark contrast to the conventional assumption that communities of microscopic organisms are constantly saturated. Given the importance of diversity for ecosystem functioning, a better understanding on the controls of local and regional factors on plankton diversity is mandatory. Yet, in spite of finding spatial patterns which are in qualitative agreement with metacommunity theory, we are lacking a mechanistic understanding how local and regional factors interactively control diversity in plankton communities.

The proposed study aims at studying the role of dispersal for maintenance of diversity in experimental communities. To this end, mesocosms will be connected to a species rich source pool in a gradient design. Diversity and community turnover of bacterio-, phyto-, and zooplankton will be monitored, employing both microscopic as well as molecular analyses. Measurements of resource use efficiency will be performed for all functional groups. The project will closely collaborate with mathematical ecologists who will use the data for parameterizing a dynamic model on the maintenance of diversity through dispersal.