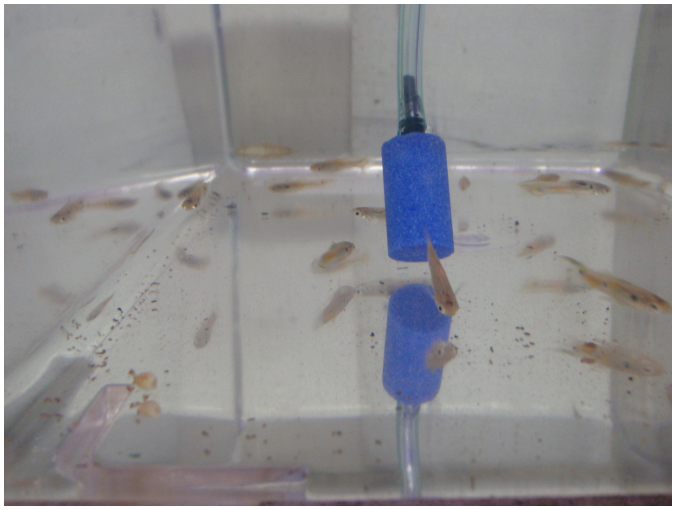
Effect of oxygen of guppy behaviour

Juvenile development under different oxygen concentrations leads to changes in life history traits (maturation and growth). We want to test whether oxygen concentrations affects also fish behaviour.



Background

Dissolved oxygen is one of the most critical limiting factors for life in aquatic ecosystems, but its effect on life history parameters such as growth and reproductive traits has been little studied.

Dissolved oxygen could sometimes be an important factor driving phenotypic trends in fish populations, confounding phenotypic trends caused by other drivers such as fisheries-induced selection. Oxygen concentrations seem to have an effect of maturation schedules and growth in guppies. We wanton selected life history parameters of guppies under controlled laboratory conditions. Guppy is a widely-used model organism in evolutionary biology, and its life-history evolution has been subject to numerous studies, both in the lab and in the wild.

This project will be part of the guppy activity at EvoFish (read more http://www.uib.no/en/rg/evofish/53201/experimental-evolution-guppies and http://www.uib.no/persons/Beatriz.Diaz-Pauli#prosjekt).

Objective: Test whether different concentration of ambient dissolved oxygen has significant effects on behavioural traits of guppies (*Poecilia reticulata*).

Hypothesis: Reduced oxygen levels lead to stunted adult body size and this might be associated with personality traits, such as reduced boldness.

Methods: Juvenile guppies are raised under controlled conditions, subject to different levels of dissolved oxygen. Once matured males and females guppies will be tested for differences in behavioural traits such as boldness, predator avoidance, etc.

Supervision: Beatriz Diaz Pauli, and Mikko Heino from EvoFish

Further reading:

Kolding, J., Haug, L., and Stefansson, S. 2008. Effect of ambient oxygen on growth and reproduction in Nile tilapia (*Oreochromis niloticus*). Canadian Journal of Fisheries and Aquatic Sciences, 65: 1413-1424.

Pauly, D. 2010. Gasping Fish and Panting Squids: Oxygen, Temperature and the Growth of Water-Breathing Animals (O Kinne, Ed.). Excellence in Ecology 22. International Ecology Institute, Oldendorf/Luhe. 216 pp.