

# NEMO

## Sustainable Food from Marine Organisms

The contribution of IFM-GEOMAR to the Centre of Competence of Mariculture in Schleswig-Holstein

In seven Work Packages NEMO accomplishes Research Projects on Fish Nutrition, Growth, Technology, Information Management and Animal Welfare.

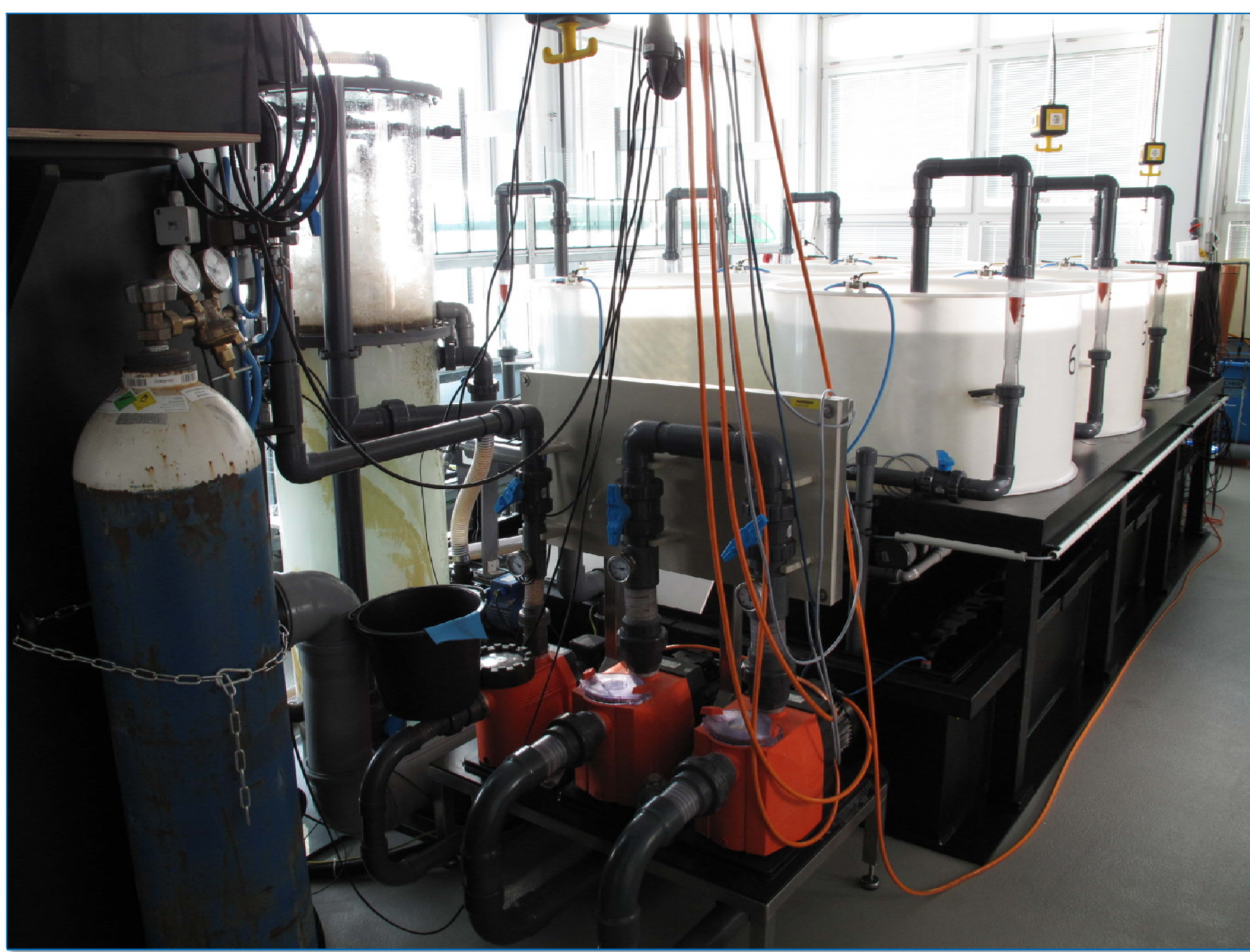


Fig. 1: Recirculation components for Work Packages 1 & 6

**Recirculation System:** In **WP 1** a recirculating system for experiments on animal welfare of turbot has been set up.  
Contact: *Helmut Thetmeyer*

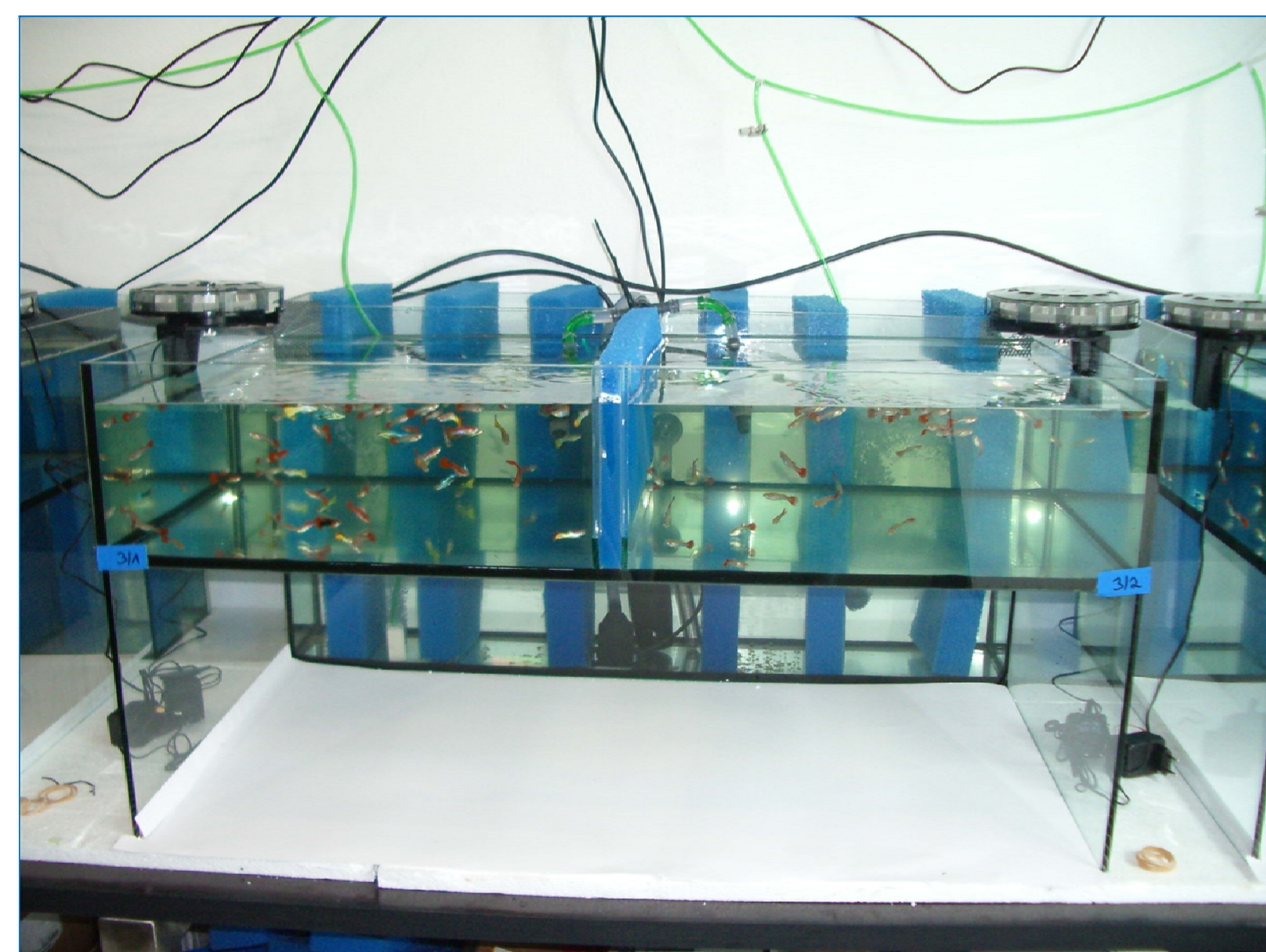


Fig. 7: Experimental setup with guppies (*P. reticulata*)

**Growth:** **WP 7** tests two hypotheses concerning the asymptotic characteristics of the fish growth curve using guppies (*Poecilia reticulata*) as model organisms. In the first experiment we examine the cost of reproduction. In following trials we will analyze the influence of oxygen limitation on growth.  
Contact: *Rainer Froese & Kristina Neef*

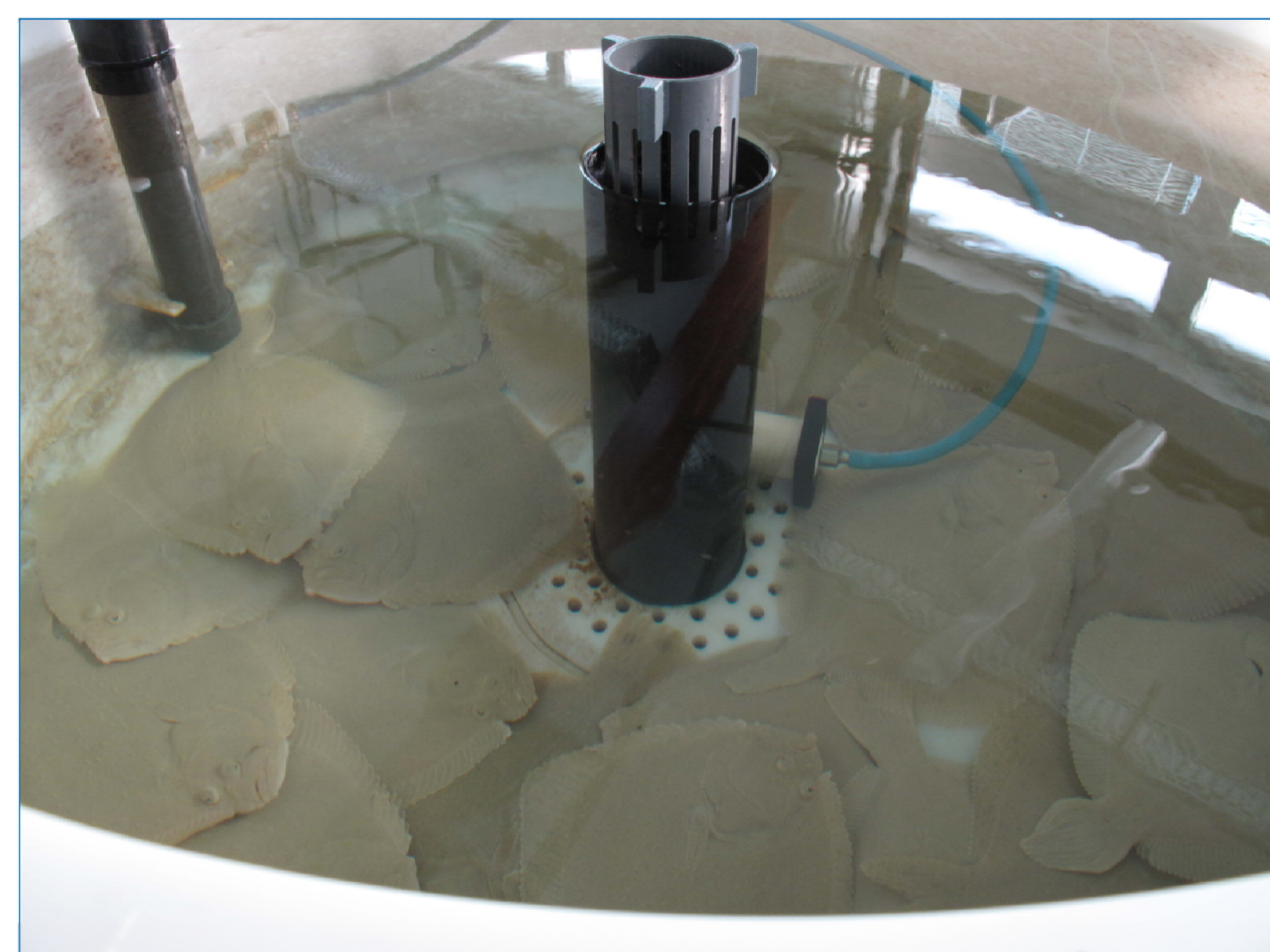


Fig. 6: Turbot (*P. maxima*) used for stress experiments

**Animal welfare:** **WP 6** investigates whether the excretion of the stress hormone cortisol into the rearing water is a suitable indicator for animal welfare in turbot.  
Contact: *Helmut Thetmeyer*



The **NEMO facilities** allow a wide range of experimental set-up, such as experiments in recirculation units, larval rearing and observations in small scale aquaria trials.

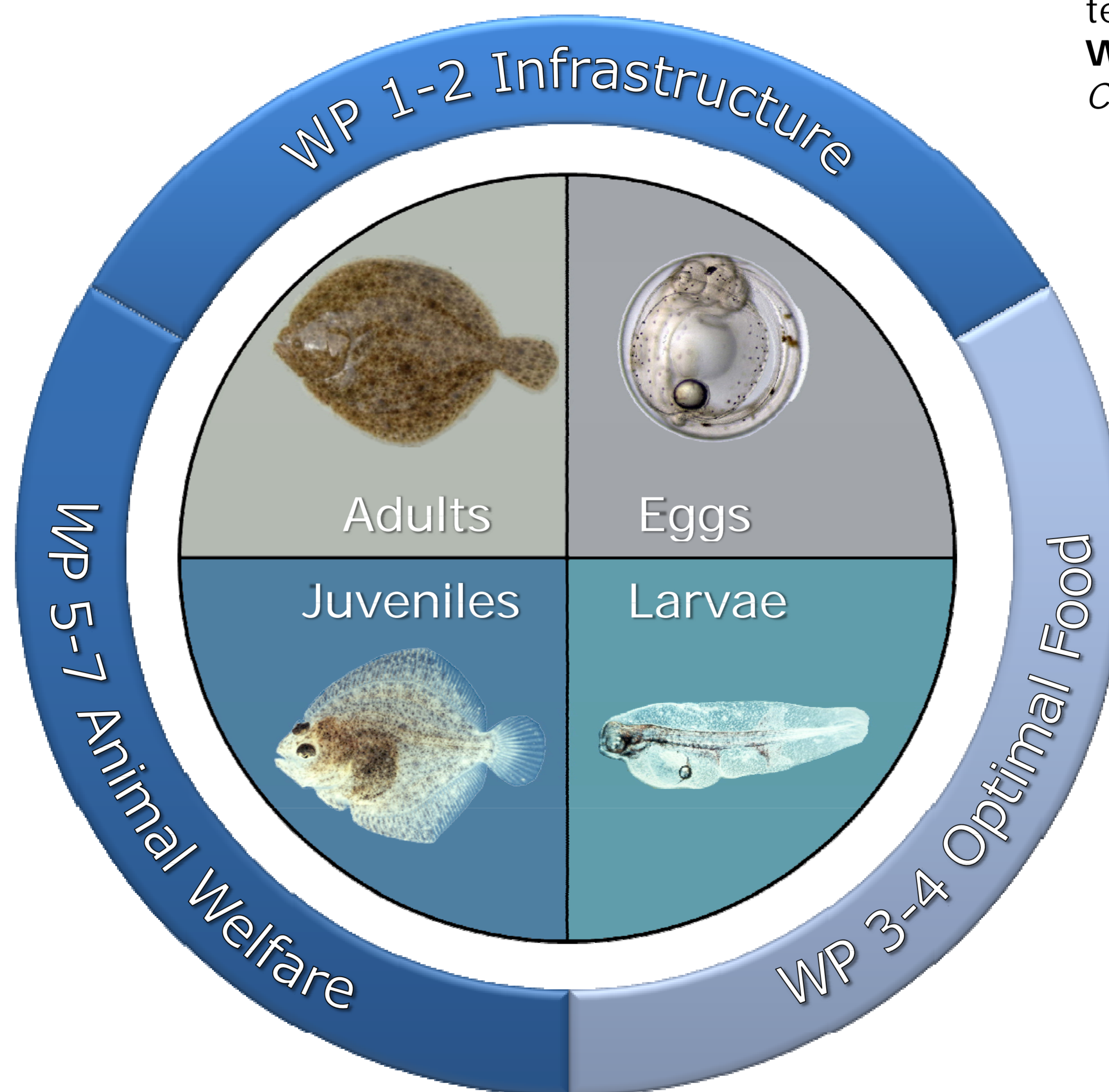


Fig. 5: Rearing facility for juvenile turbot (*P. maxima*)

**Stressless:** A reliable indicator for stress of aquaculture fish species is required to optimize rearing conditions and thereby improve animal welfare. **WP 5** examines the response of turbot and other species to stressors on a molecular level using differential gene expression analyses. In addition, comparisons between different aquaculture populations may imply interesting cues for adaptation by differential gene expression and artificial selection.  
Contact: *Reinhold Hanel, Thorsten Reusch & Bernd Hermann*

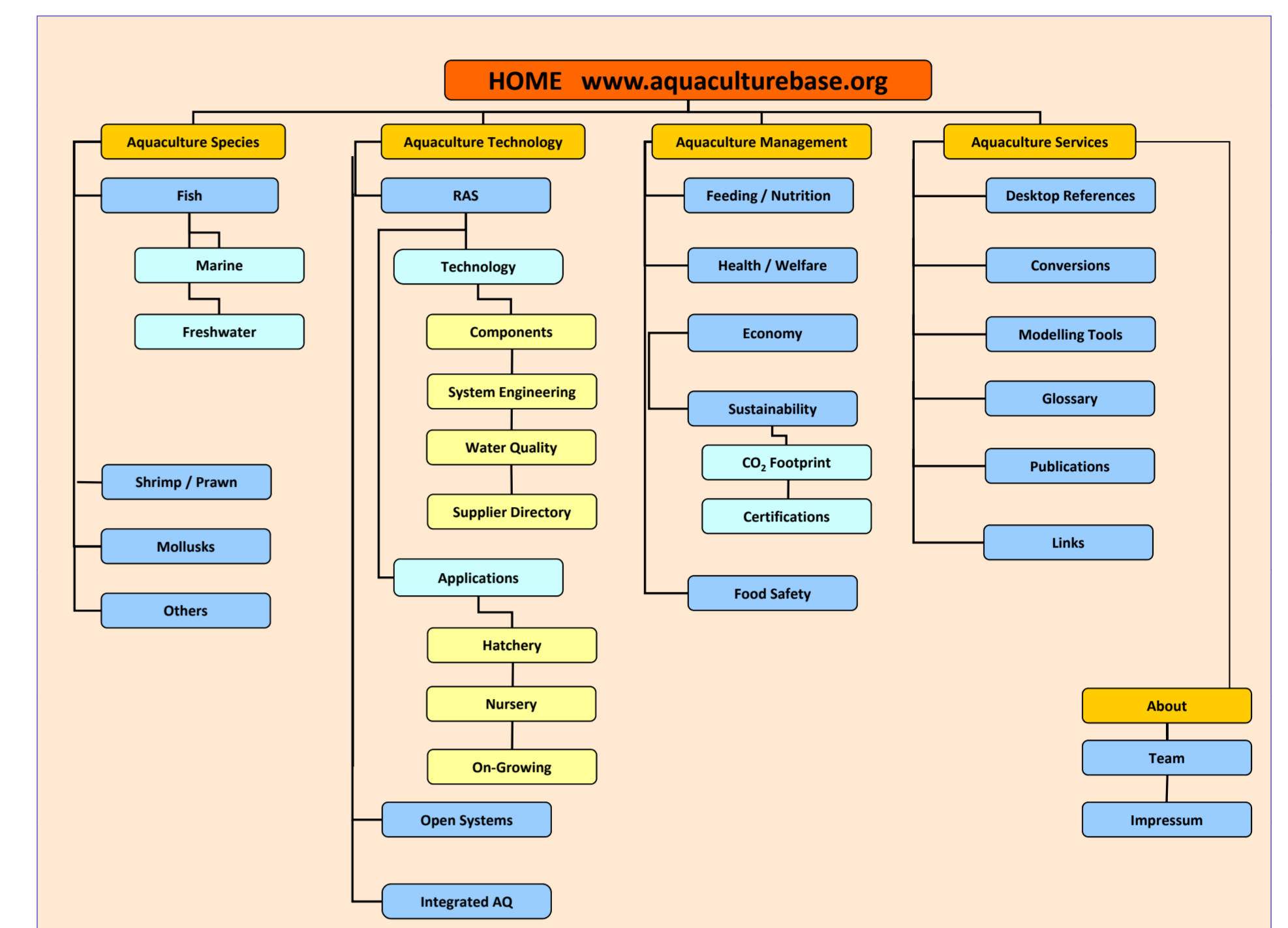


Fig. 2: Overview of the AquacultureBase sitemap

**AquacultureBase:** an online database and an expert system for the centre of competence in mariculture will be established by **WP 2**.

Contact: *Bernd Ueberschär & Gerrit Quantz*

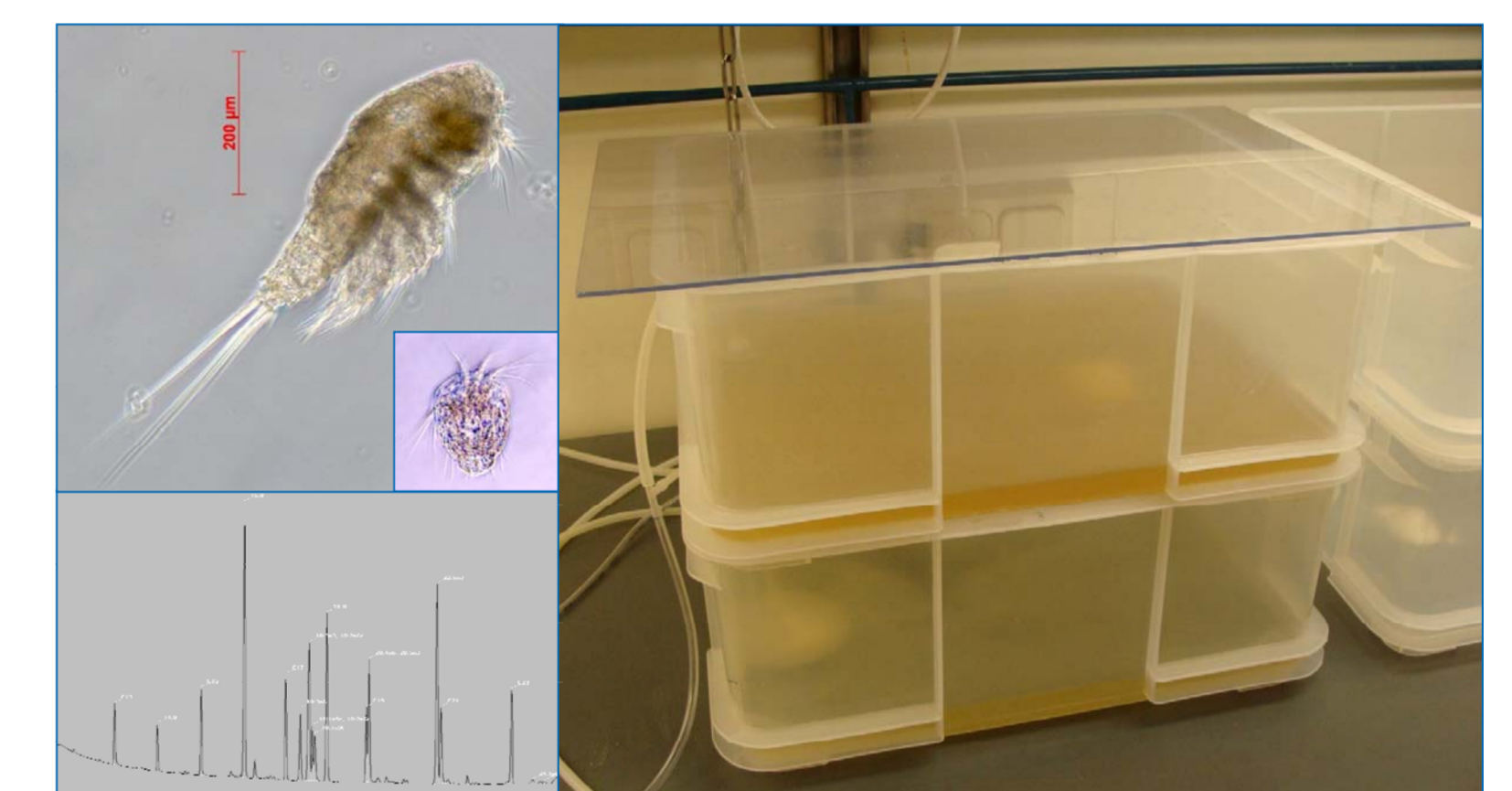


Fig. 3: Rearing of benthic copepods and a corresponding fatty acid-chromatogram of a copepod species

**Copepods:** The aim of **WP 3** is to optimize the rearing of harpacticoid copepods as live food for marine fish larvae. This includes the screening of different copepod species, the testing of different food sources, and the mass cultivation of a suitable copepod.  
Contact: *Ulrich Sommer & Carmen Arndt*

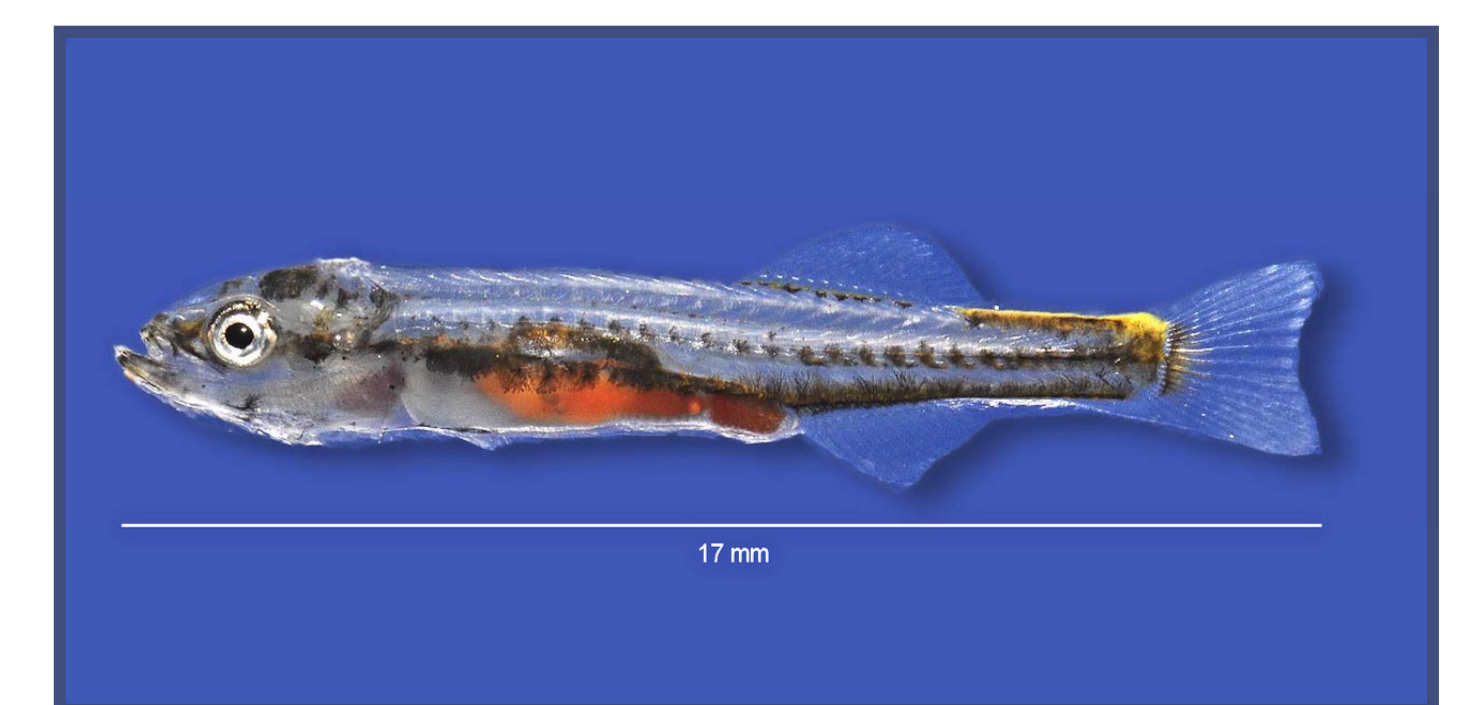


Fig. 4: 50 days old larva of European seabass (*D. labrax*)

**Microdiets:** Recent research activities in larval nutrition focused on the development of artificial diets to replace live feeds, but the emphasis of many studies has been on the quality of artificial diets itself but not on physiological deficiencies in early live stages. **WP 4** focuses on the identification of substances which trigger the digestion process and will be later on incorporated into artificial diets.

Contact: *Bernd Ueberschär, Catriona Clemmesen & Robert Tillner*