Improving Pikeperch farming in RAS through polyculture with European Catfish

Colson D., Sabbe J., Gennotte V., Prignon C., Rougeot C.
Management of Aquatic Resources and Aquaculture Unit, University of Liège
d.colson@uliege.be

Introduction

This study is part of the POLYRAS project (Interreg GR), which aims to optimize the sustainable production of locally important fish species, such as pikeperch (*Sander lucioperca*), through polyculture in recirculating aquaculture systems (RAS).

Polyculture, a traditional practice in pond aquaculture, aim to exploit species complementarity to improve feed utilization and overall productivity. Applied in RAS, polyculture may enhance feed efficiency, increase production, reduce labour and support animal welfare

Objectives (Ob) :

This study evaluates, in a RAS, whether polyculturing pikeperch (*Sander lucioperca*) with European catfish (*Silurus glanis*), a fast-growing bottom-feeding species, compared to monoculture of each species, can :

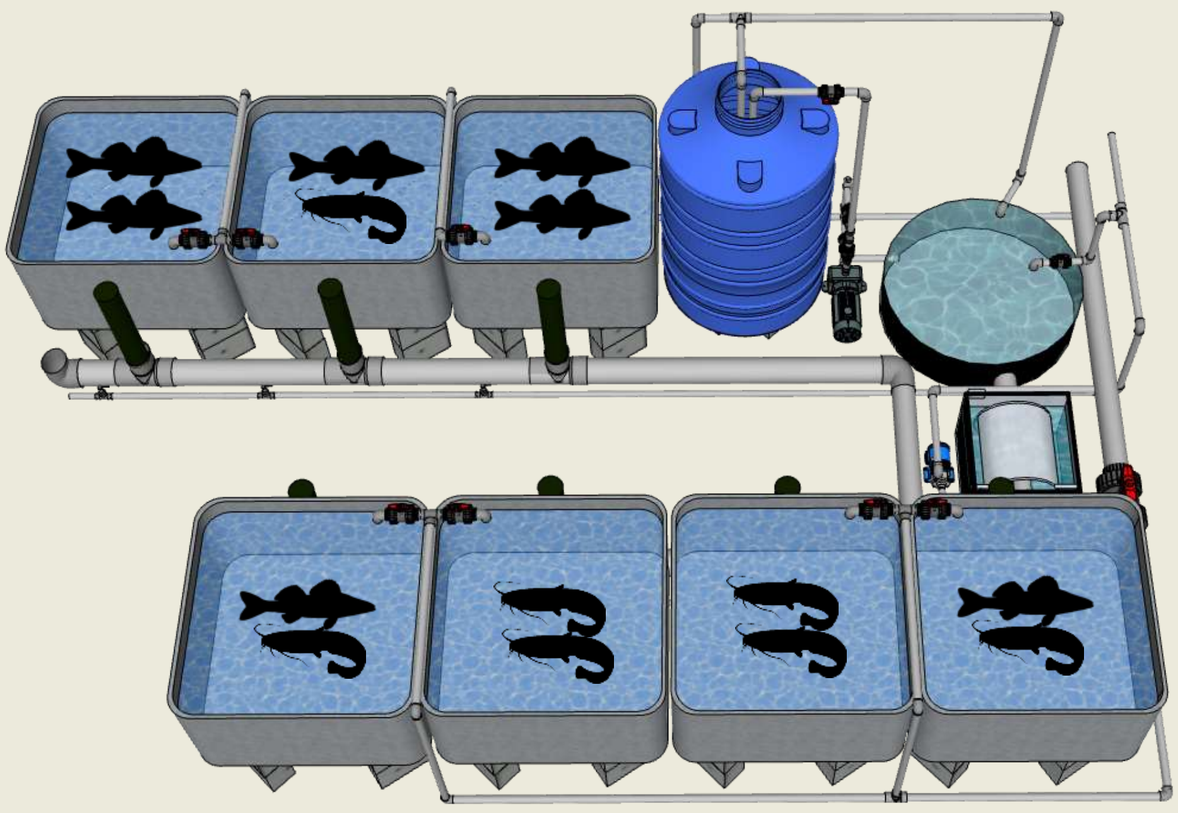
- **Ob1** : Maintain or enhance the growth of pikeperch and catfish
- **Ob2** : Improve overall tank productivity

Current poster

- **Ob3** : Valorise uneaten feed
- **Ob4** : Support pikeperch welfare without compromising catfish welfare

Next steps

Experimental design



Experimental production period = 134 days (d)

Stocking parameters

Stocking density :
- 8 kg.m^{-3}
- Ratio in biculture = 1 : 1

Initial mean body weight :
- Pikeperch = 166.6g
- Catfish = 181.8g

Feeding strategy

Pikeperch:
- *Le Gouessant* percid grower ®
- Floating
- Protein : 52%, Lipids : 15%
- Maximal feeding rate (FR)

European Catfish :
- *Coppens* silurus pro ®
- Sinking
- Protein : 46%, Lipids : 19%
- Restricted FR of 1.5% of biomass

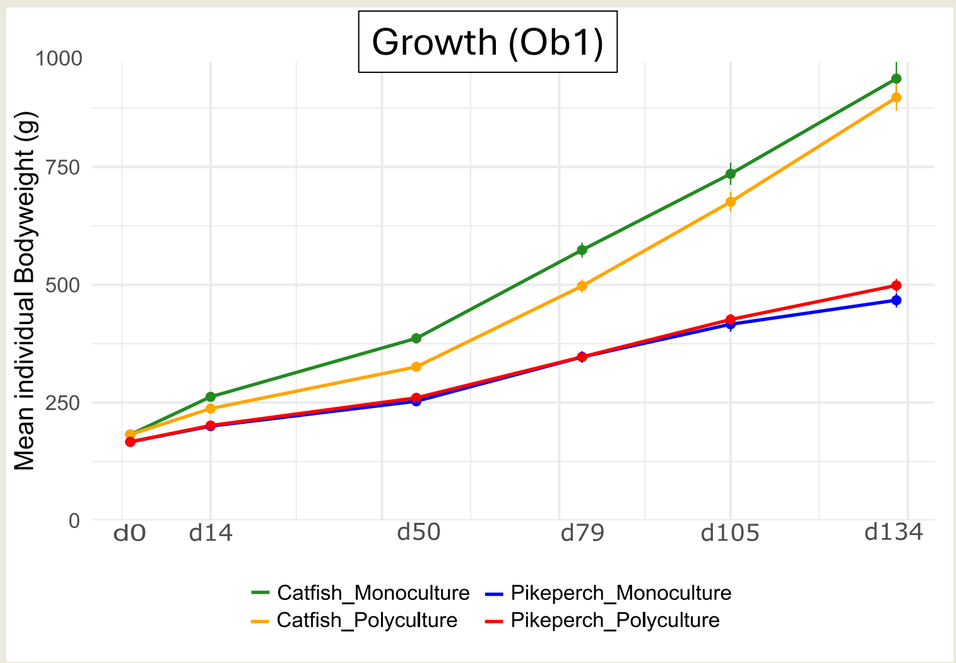
Growth assessment (Ob1- Ob2)

One sampling per month
- 20 fish per species per tank
- Individual body weight (g)

Control of total biomass
- Start, mid, end of experiment

Preliminary results

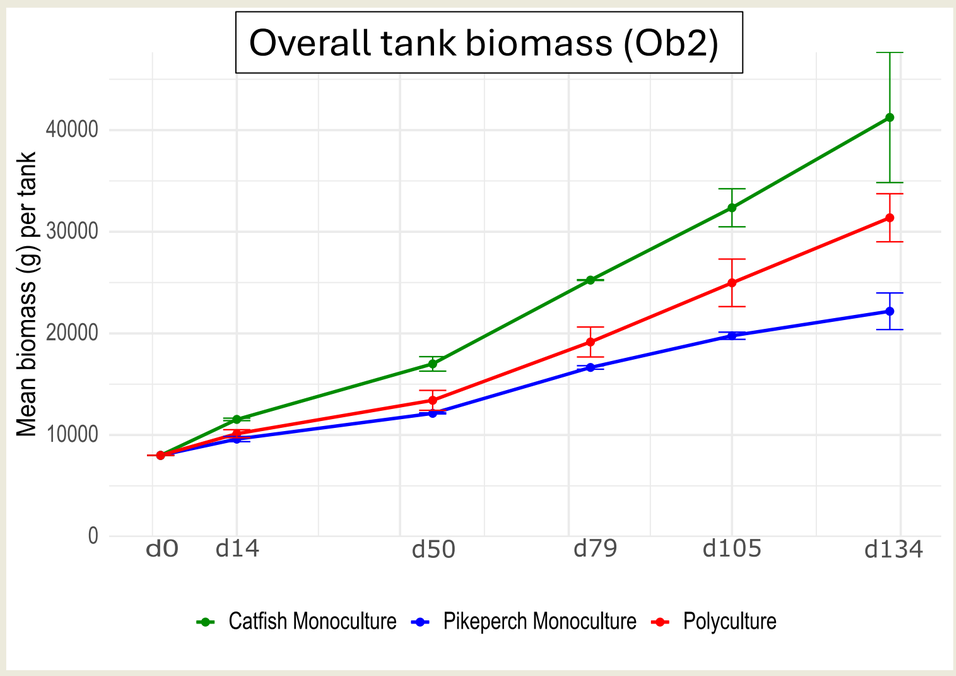
All batches exhibited survival rates of at least 97%.



*SGR
1,22
1,19
0,82
0,77

*Specific Growth Rate (% / day)

Ob1 : Polycultured Pikeperch and European catfish showed growth rates similar to those observed in their respective monocultures.



*FCR
0,82
0,92
1,05

*Food Conversion Ratio

Ob2 : FCR & final biomass (productivity) in polyculture are intermediates between pikeperch and catfish monocultures.

Conclusions and perspectives

Current results indicate that pikeperch–catfish polyculture in RAS can sustain favorable growth performance for both species. The last 40 days of production will be critical to confirm these performances and to validate the system's potential for enhancing feed utilization while maintaining fish welfare.

Under analyses

Valorisation of uneaten feed (Ob3)

Identification of ingested feed trough isotopic analysis

Assessment of fish welfare (Ob4)

a) Condition of fins and barbels *Adapted from Policar et al. (2016)*

b) Cortisol levels in pikeperch scales *Adapted from Carbajal et al. (2018)*