

# Pilot 2 NEMATIC

## AquaLoop Kick-off meeting



Rostock | 7-9 November 2023  
Speaker



#AquaLoop

<https://southbaltic.eu/>

# Pilot 2 - NEMATIC

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## **NEMATIC - Increasing the Nutrient Efficiency of coMmmercial Aquaculture Through Increased application of Circular economy concepts**

University of Rostock

Faculty of Agricultural and Environmental Sciences

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## Team Rostock

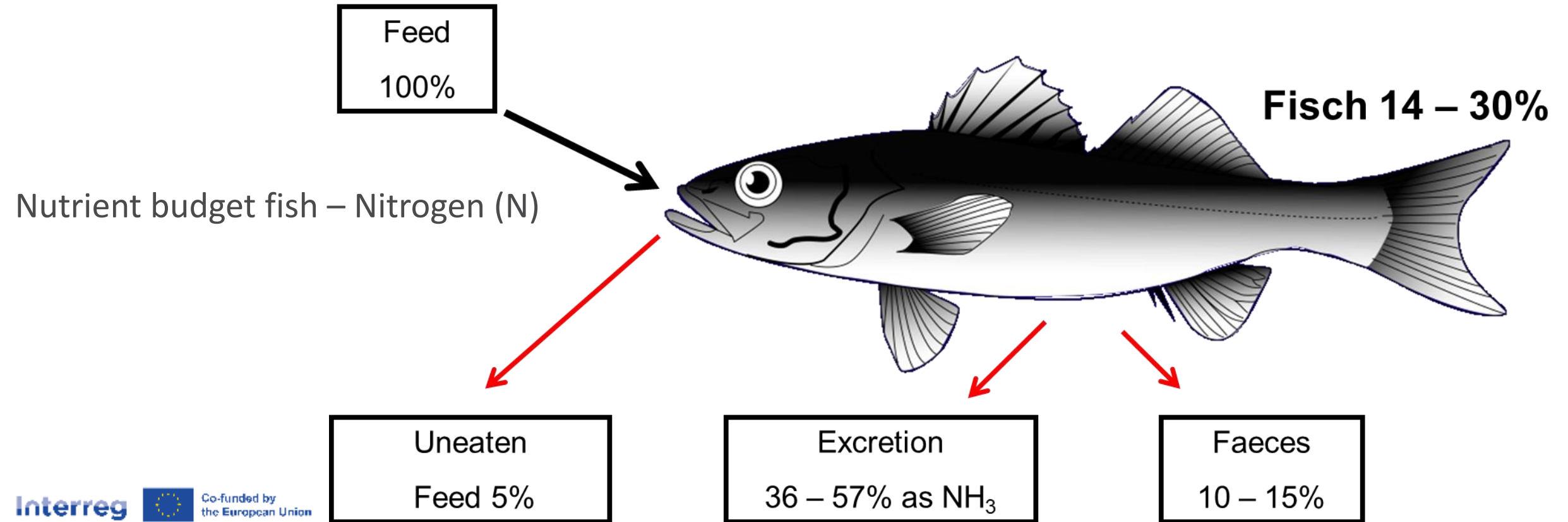
- Prof. Dr. Harry W. Palm
- M.Sc. Laura Ballesteros-Redondo (Project coordinator)
- Dr. Adrian Bischoff-Lang (Project leader)

Pilot site: FishGlassHouse Rostock



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## Why circular economy in aquaculture?

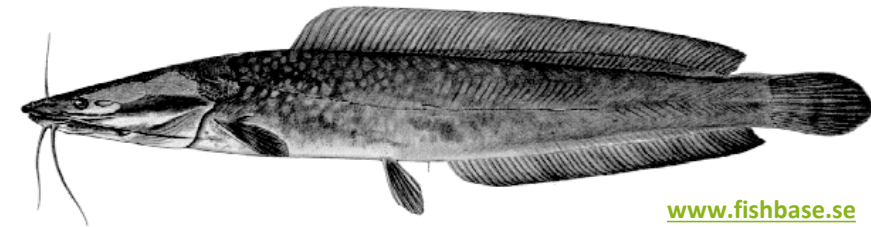


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## Why circular economy in aquaculture?

Filet yield:

- African catfish (*Clarias gariepinus*): around 40% of the bodyweight



[www.fishbase.se](http://www.fishbase.se)

- Atlantic salmon (*Salmo salar*): around 60% of the bodyweight



[www.fishbase.se](http://www.fishbase.se)

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Why circular economy in aquaculture?

*And what happens to the rest?*



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## Unused residues from fish production – so far...

Gonads:

- up to 14% of the bodyweight for female African catfish

Liver:

- up to 3% of the bodyweight for African catfish

Skin:

- so far, no reliable data available on the ratio of fish skin to bodyweight can be found

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## Idea of the pilot – application of the *Nose-to-tail concept*

Based on Björnsdóttir et al. (2018):

- the biochemical composition of the gonads, livers and skins of African catfish (*Clarias gariepinus*), Rainbow trout (*Oncorhynchus mykiss*) and Pikeperch (*Sander lucioperca*) should be investigated
- and which potential paths of utilization would be possible and practical



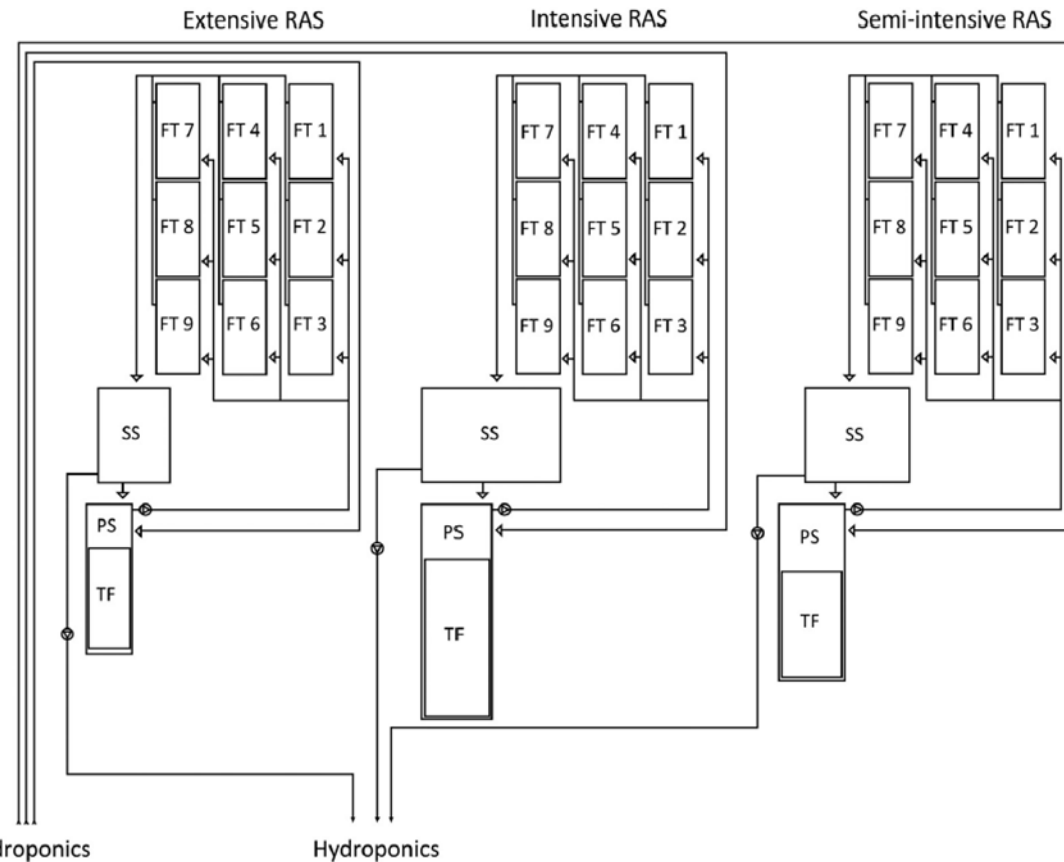


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## Pilot site: FishGlassHouse (FGH) Rostock



- The FGH is registered as a fish production company
- The growth experiment with the African catfish will take place under production conditions



Palm et al. 2018

Fig. 1. Schematic illustration of the water flow in the research facility "FishGlassHouse" at University of Rostock with the three used aquaculture units extensive, semi-intensive and intensive RAS connected to different hydroponic subunits.

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## Growth experiment African catfish

- 3 x 3 approach (3 replicates per age group, three age groups – small, medium, large)
- Complete grow out from stocking up to a harvest weight of 2.5 kg
- Sampling intervals of 21 days, sampling of 10 or 11 individuals per tank
- Data collection
  - total weight and length
  - weight of the gonads, livers, skin as well as the length and width of the skin (area)
- Data analysis
  - Growth – weight gain, SGR, FCR
  - HSI – Hepatosomatic Index, fatty acid composition, biochemical composition
  - GSI – Gonadosomatic Index, fatty acid composition, biochemical composition
  - Skin - fatty acid composition, biochemical composition

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## Growth experiment fish

- Comparable approach for rainbow trout and pikeperch

## Potential paths of utilization

- Nutrient extraction for further use as raw materials, such as Liver oil or fatty acids for feeds
- Pet food (cats and dogs or aquaria)
- Pharmaceuticals (e.g. collagen)
- Medical purposes (burn bandage)

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## School project Aquaponics

- 6<sup>th</sup> grade of a local school that already has previous experience at the FGH
- February – June 2024
- 4 groups with 2 fish and 2 plant species

## Consumer awareness of food

- Fish as living creatures vs. food
- Production of plants - labour input, nutrient requirements, yield, success/failure
- Modern food production in the context of urbanisation and climate change

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## Transfer of data and knowledge within all PPs

What can be applied where and how?

- AquaSupport (WP )
  - AquaTraining (WP )
- Development and application of protocols, training courses, for example as on-site events or as videos
- And whatever else we can think of along the way...



## Contacts

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