

# NEW EXPERIENCES ON BURBOT (*LOTA LOTA*) REARING



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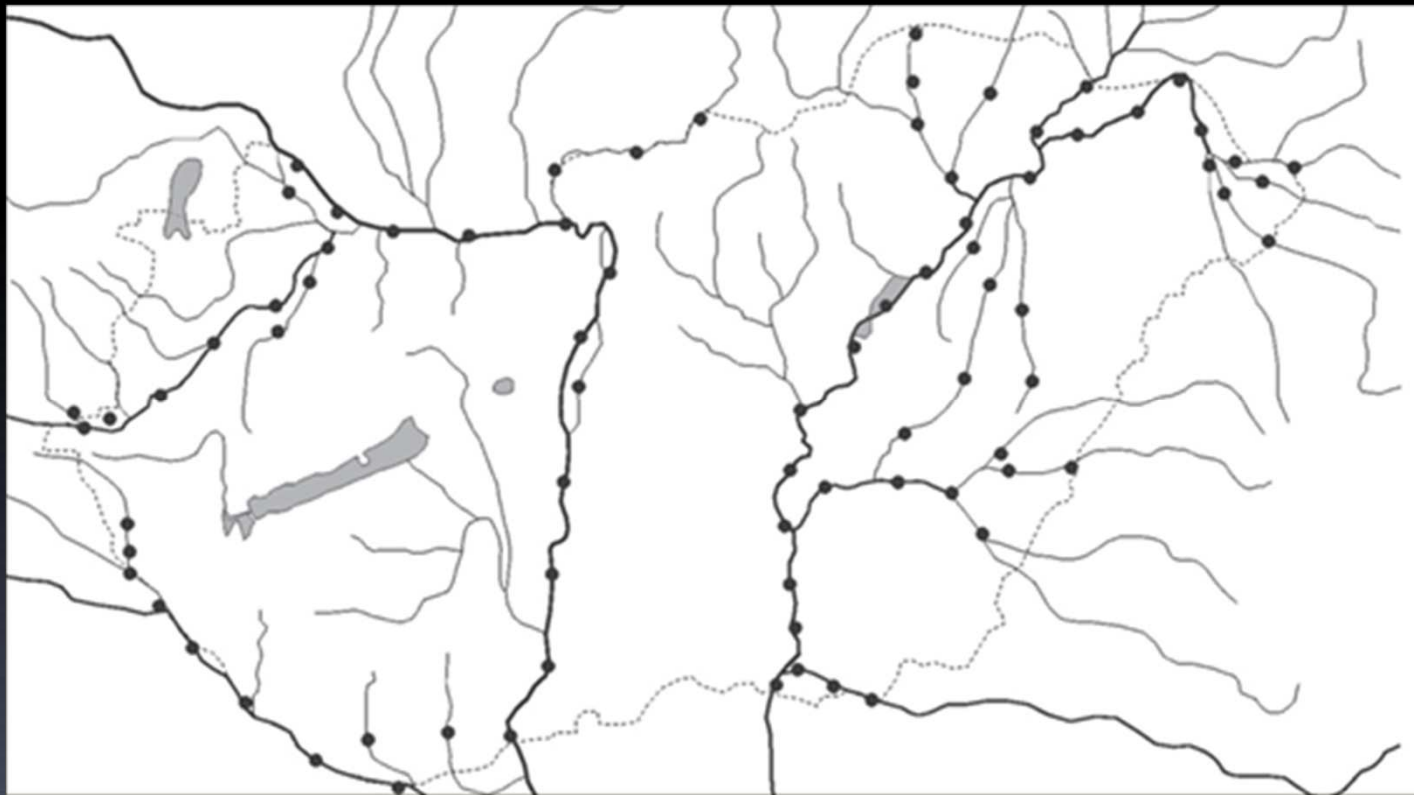
DEPARTMENT OF AQUACULTURE

# Introduction

Present spreading area

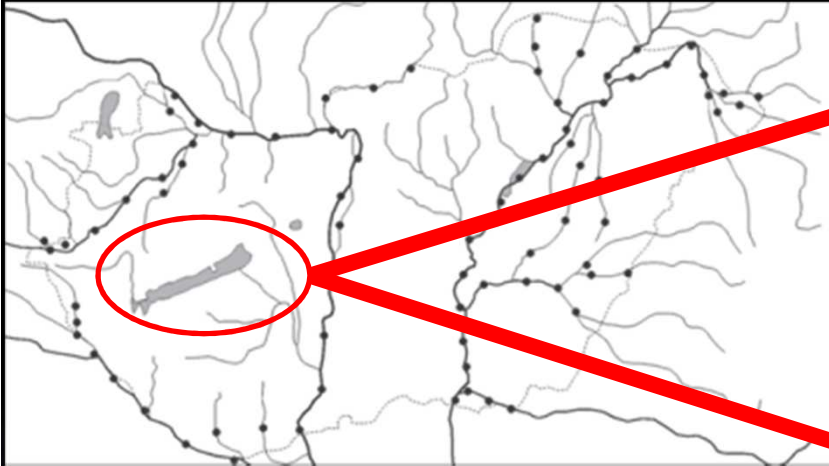


Harka & Sallai, 2007



# Introduction

Spreading area in the past:  
Lake Balaton



**1942:** strong population (Herman 1887; Daday 1897; Vutskits 1897; Unger 1925; Hankó 1931, Lukács 1932, Entz és Sebestyén 1942)



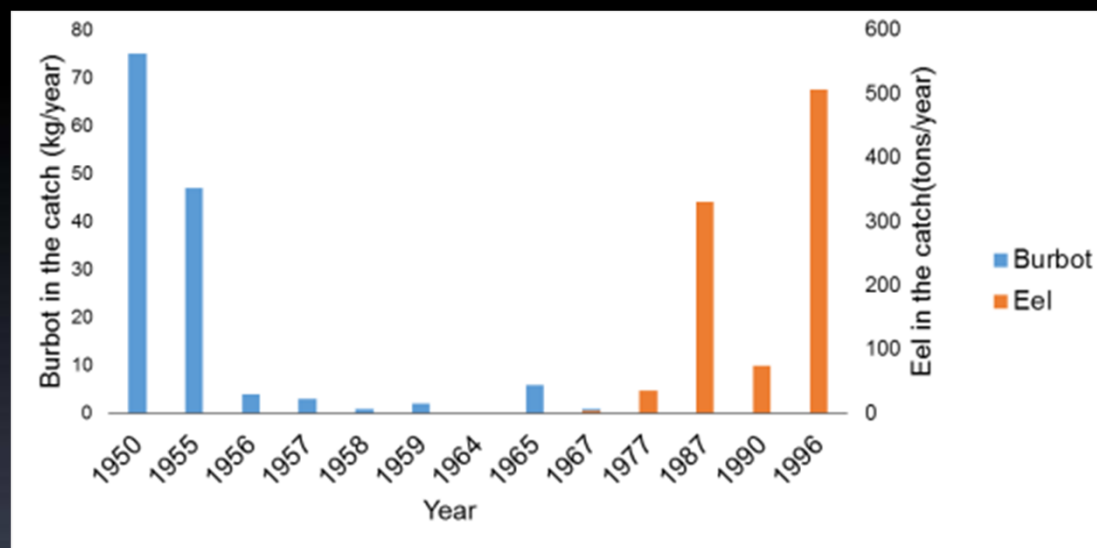


# Introduction

**1961:** eel introduction started  
**2002:** a book is still refers (Pintér, 2002)  
**2010:** totally disappeared and should be reintroduced (Speciár, 2010)



A hypothesis on a negative correlation between eel and burbot population size are proved by the catch statistics of Balatoni Halgazdálkodási ZRt (Balaton Fish Management Non-Profit Ltd) and its predecessors in title.



Eel and burbot catches in the past

# Aims of our work

Reintroduction of burbot  
to Lake Balaton

Develop hatching  
technology

Develop rearing  
technology

Research on process technology  
and meat quality

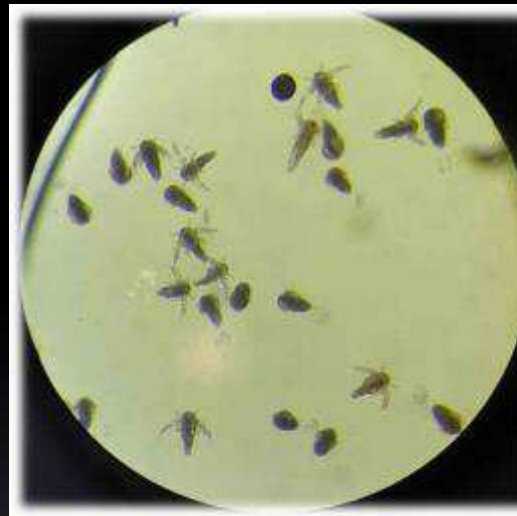
Increasing  
consumption  
demand



Develop a new product  
on the market

# Hatching and rearing 2016.

- 19.02.2016 – fertilized eggs
- 01.03.2016. swim-up and start of feeding



Feeding: Ad libitum *Artemia (Artemia salina)* was used as feed after swim-up and start of feeding, three times a day until day 21, and twice a day afterwards (in the morning and in the evening). Frozen chironomidae larvae (from 70. day)

# Hatching and rearing 2016.

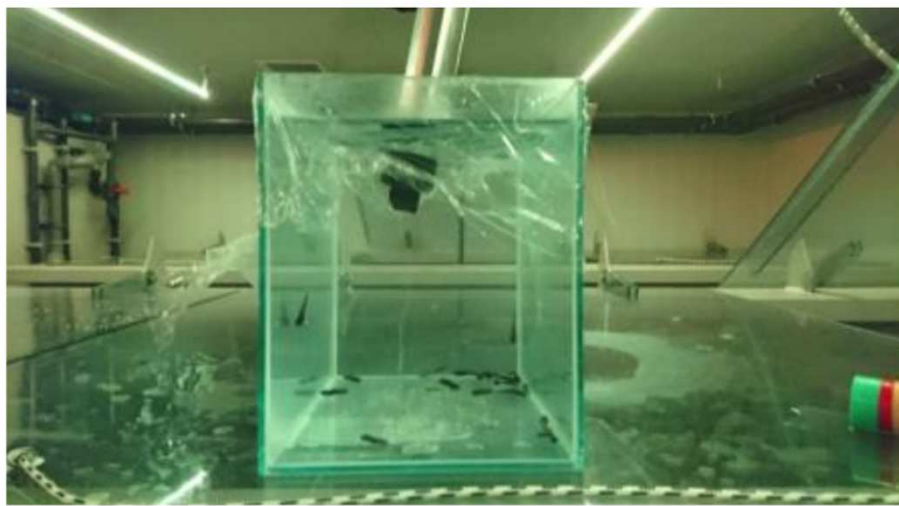


Rearing: One third of the fish were reared in a **large Zug jar** (1000 ind./60l), the other two third in a **larvae rearing tank** (2000 ind./500 l) from day 22. Body weight data was registered on days 50, 70 and 90 after the start of feeding, thus, on days 28, 48 and 69 after the introduction of the two different rearing environments (large Zug jar and tank).



# Hatching and rearing 2016.

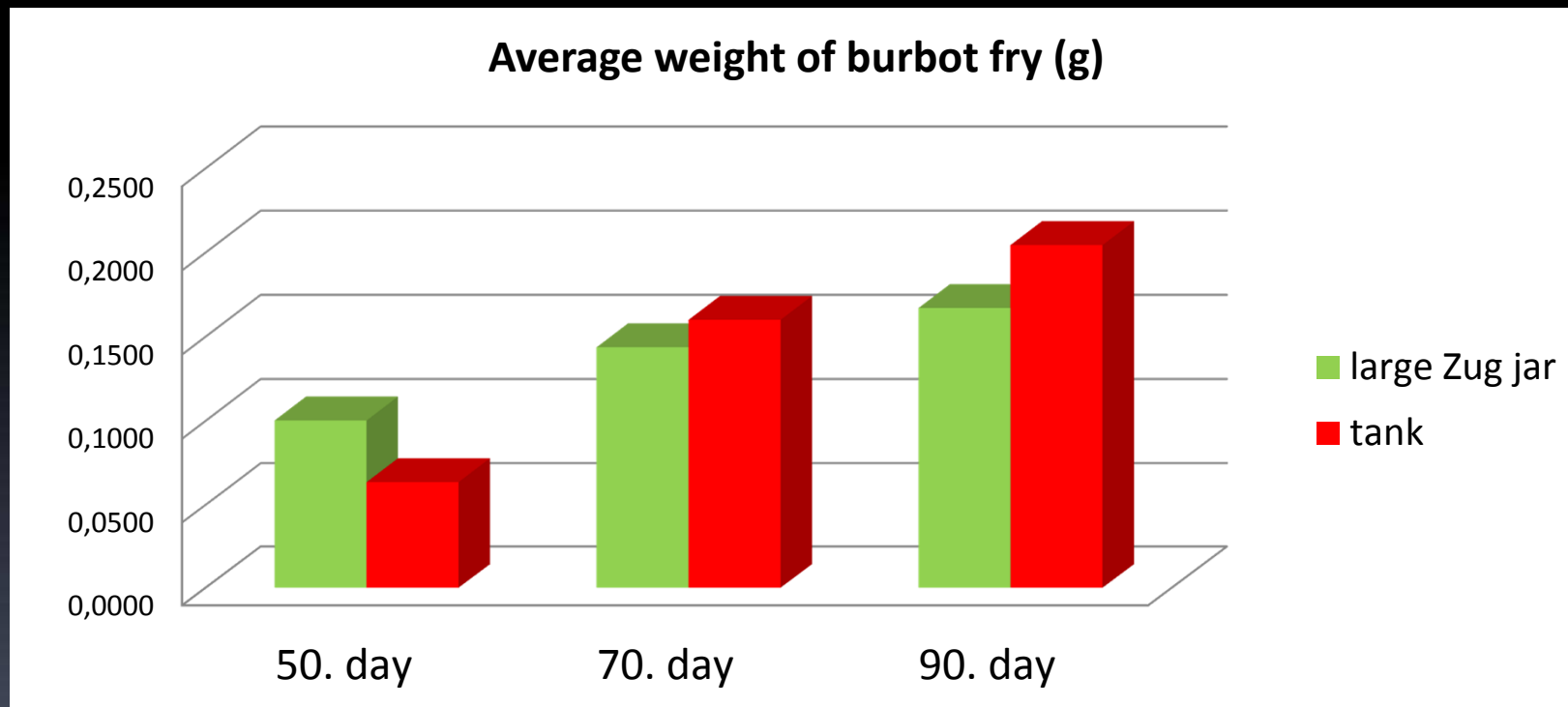
Determination of LC50 value: We have supplemented our research with the examination of oxygen demand of the offspring, where 20 fish (average body weight:  $0.1 \text{ g} \pm 0.02$ ) were kept in a hermetically isolated system (in 10 l water) in 3 replicates, and the changes of the level of oxygen and the ratio of mortality was continuously registered.





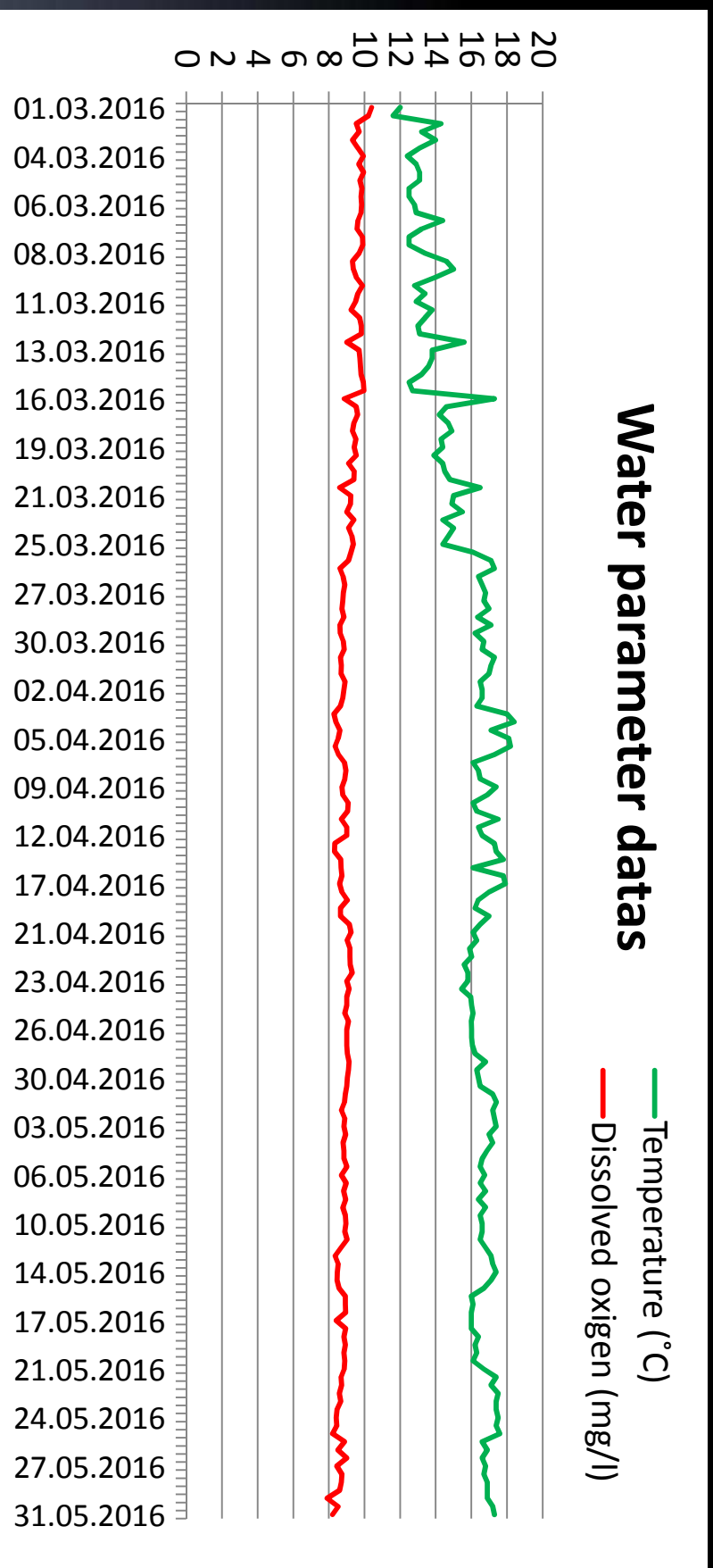
# Results – Hatching and rearing 2016.

The average body weight was  $0.1003 \pm 0.0286$  g;  $0.1437 \pm 0.0201$  g;  $0.1670 \pm 0.0253$  g in the large Zug jar,  $0.0636 \pm 0.0205$  g;  $0.1600 \pm 0,0338$  g;  $0.2044 \pm 0,0470$  g in the rearing tanks at the three measurement times (day 50; 70; 90 from the start of feeding, day 28; 48; 69 from the separation).



# Results – Hatching and rearing 2016.

The average water temperature was 15.82±1.57 °C, the dissolved oxygen level was 9.04±0.46 mg/l during the experiment.



# Results – Hatching and rearing 2016.

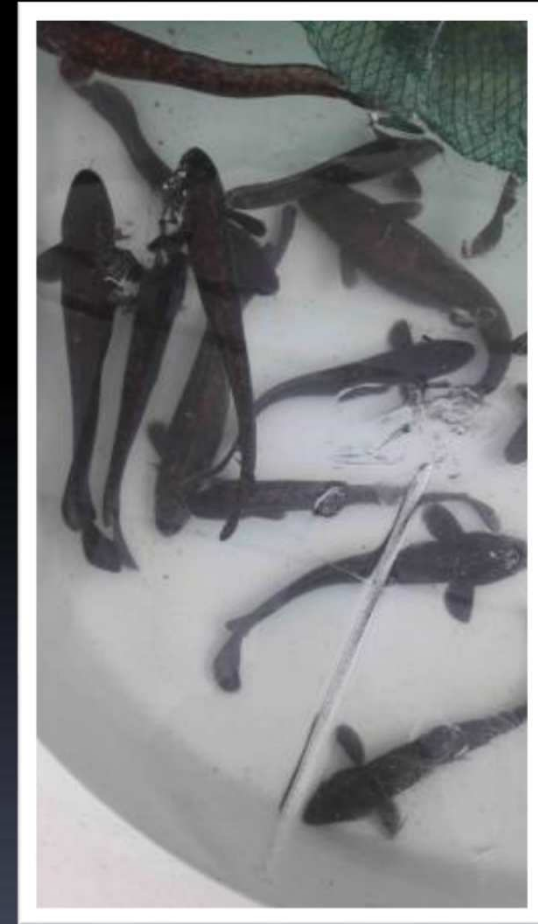
A dissolved oxygen concentration of  $1.02 \pm 0.43$  mg/l resulted in mortality of 50% of the experimental stock. Temperature during the experiment was  $19.11 \pm 0.82$  °C. No mortalities were observed in the control (temperature  $19.93 \pm 1.12$  °C, dissolved oxygen concentration  $8.56 \pm 0.17$  mg/l).





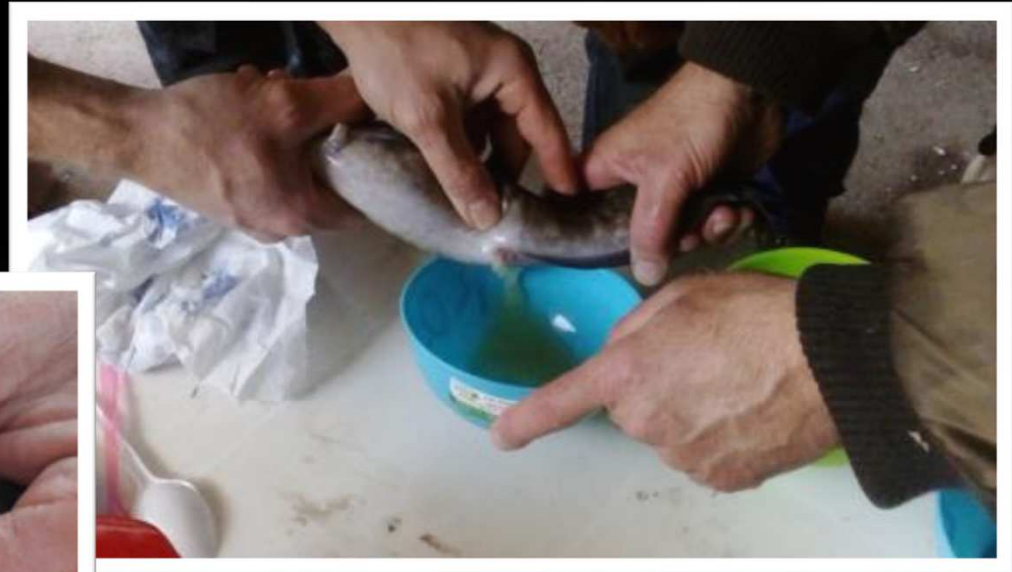
# Hatching and rearing 2017.

- 12.2016-01.2017 Collecting broodstock (2 female-10 males) from river Danube
- Water temperature (keeping):  $4\pm 1$  °C;
- Water temperature (treatment):  $2\pm 1$  °C



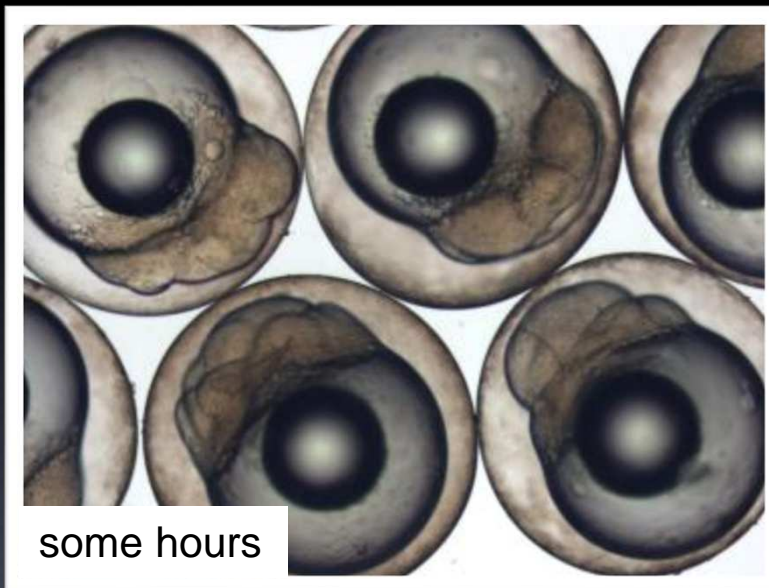
# Hatching and rearing 2017.

- Hormonal treatment: 1 piece/fbw Ovopel (Interfish Ltd.; 25  $\mu$ g GnRH $\alpha$  – 20 mg metaclopramid), 2 injections: 10+90 % (12h)
- 01.12.2017 – stripping: 3 days later, 50% ovulated, 100 g eggs: 250.000 egg (Katarzyna Palińska-Żarska, 2013)



# Hatching and rearing 2017.

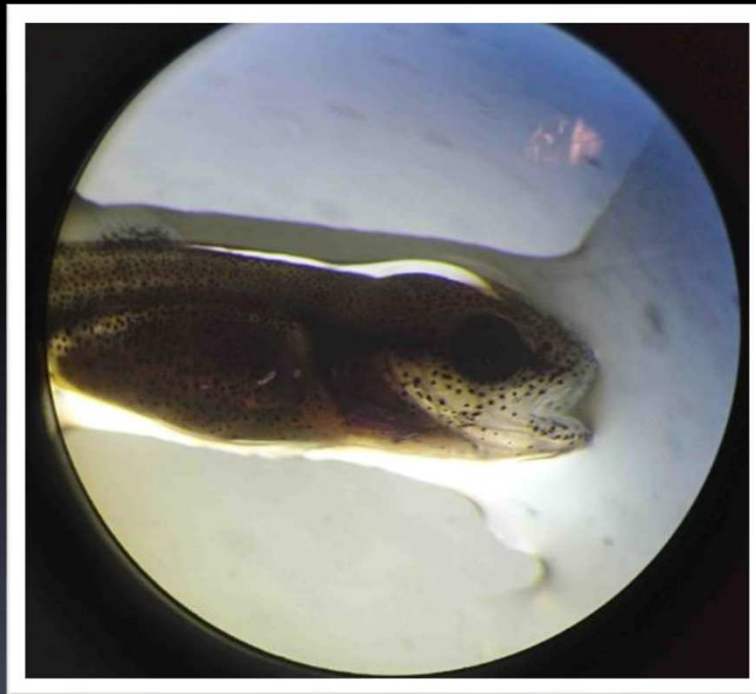
- Fertilization rate: 90%
- Incubation of eggs in 1 McDonald jar
- Water temperature:  $1,5 \pm 0,5$  °C
- Incubation time: 53 days
- Hatching rate: 80 % ( $8 \pm 0,5$  °C)





# Hatching and rearing 2017.

- non feeding larvae period:  
10 days (14 °C, O<sub>2</sub>: 10 ± 0,2 mg/l)
- feeding: 1st week: 3/day, 2nd week: 2/day  
19 °C, O<sub>2</sub>: 9 ± 0,5 mg/l
- 0,2-0,3 g weight



# Reintroduction to Lake Balaton I.

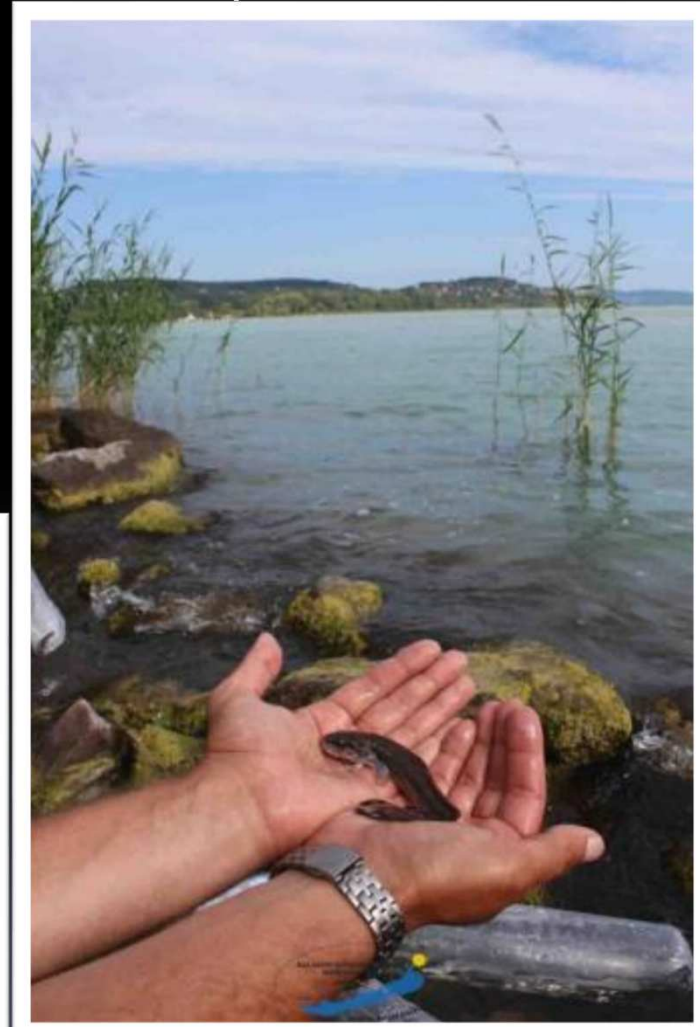
09.06.2016 – 1.000 ind. big fingerlings (4 locations)





# Reintroduction to Lake Balaton II.

30.08.2016 – 400 ind. summerlings (1 location)





# Reintroduction to Lake Balaton III.

31.03.2017 – 40.000 ind. fry (2 locations)

150 ind. one year old fish (1 location)



# Reintroduction plan 2017

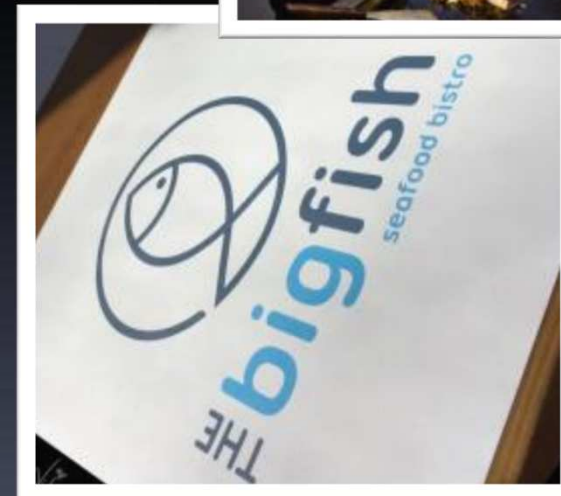
- 2.000-3.000 ind. fingerlings
- 300-500 ind. summerlings





# Preliminary fish processing experiment

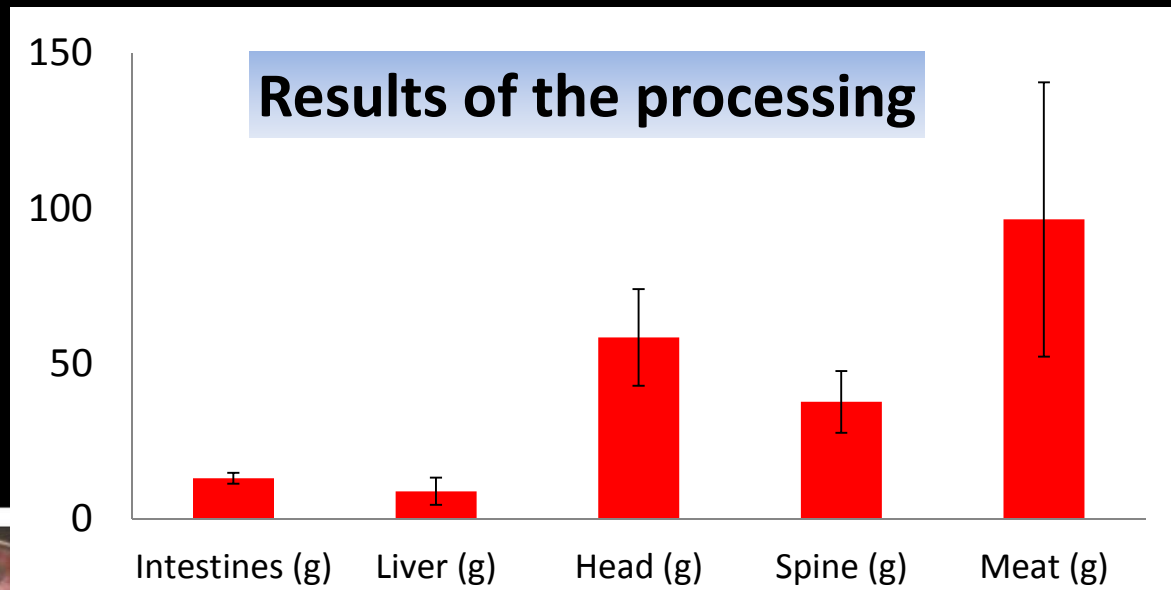
We tested the following parameters: weight of intestines, liver, head, spine, and meat, the characteristics of the fish meat, reactions during kitchen preparation and taste after preparation.



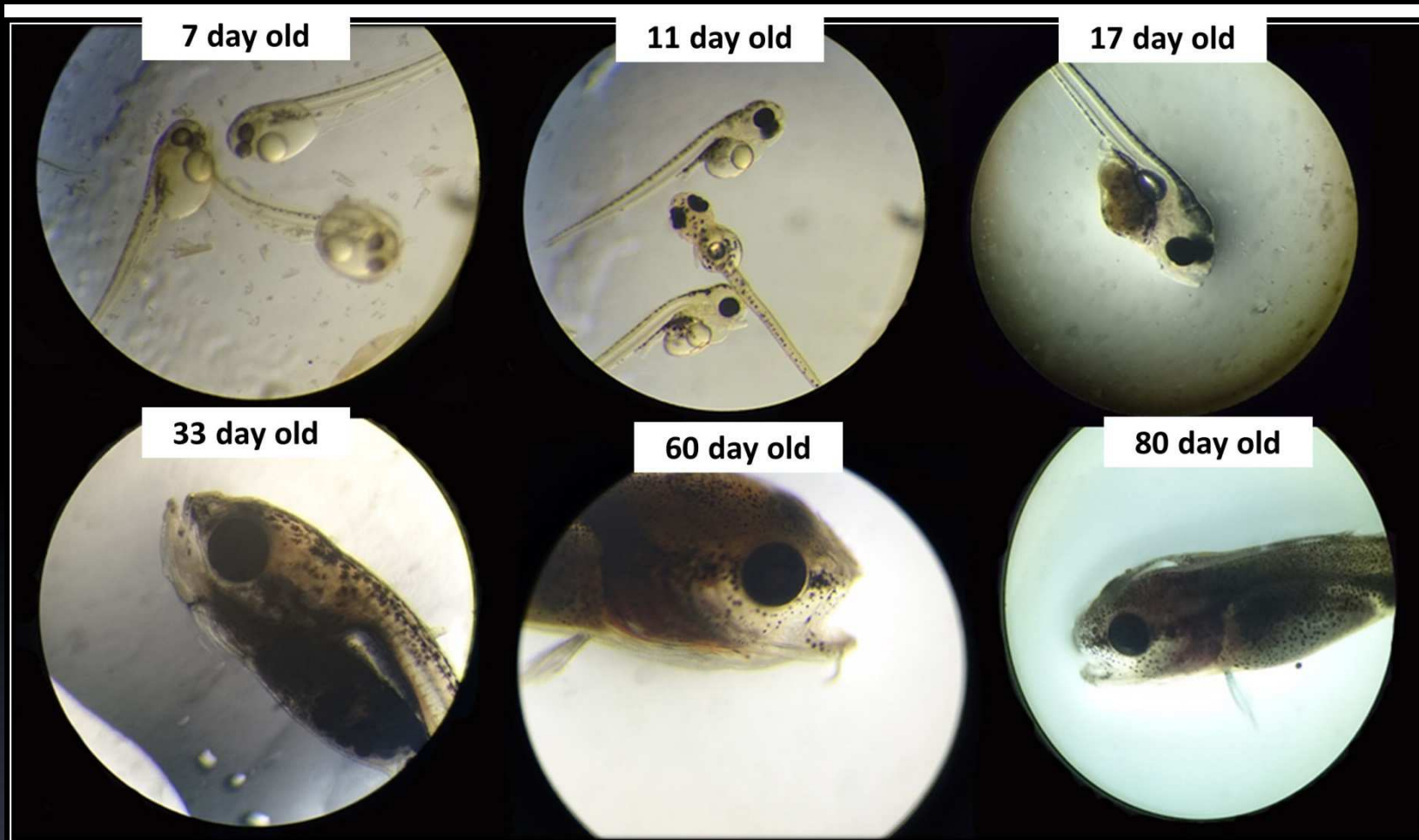


# Results of prelim. fish processing experiment

- 5 individuals
- Body weight:  
 $225 \pm 71$  g



# Thank you for your kind attention!



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