

# AQUACULTURE IN SERBIA

State, Problems, Potential and Scientific Support to  
the Improvement of Freshwater Aquaculture

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# Aquaculture in Serbia

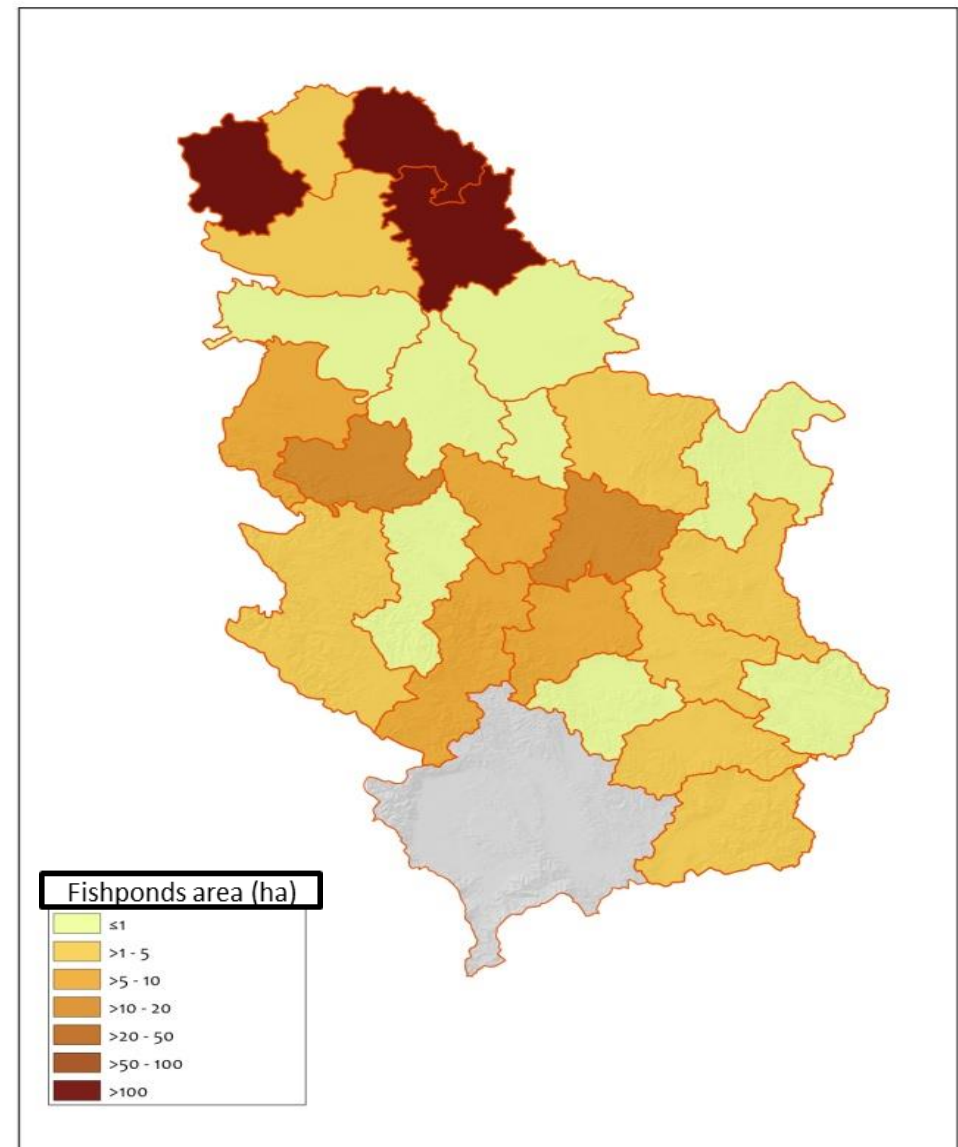
## Fish production

- Carp fish farms (most in quantity)
- Trout fish farms (2-3 times less than the amount of carp produced)
- Cage systems (small number of cage systems)
- RAS systems (several smaller-capacity RAS)
- Aquaponic systems (only a few small capacity)

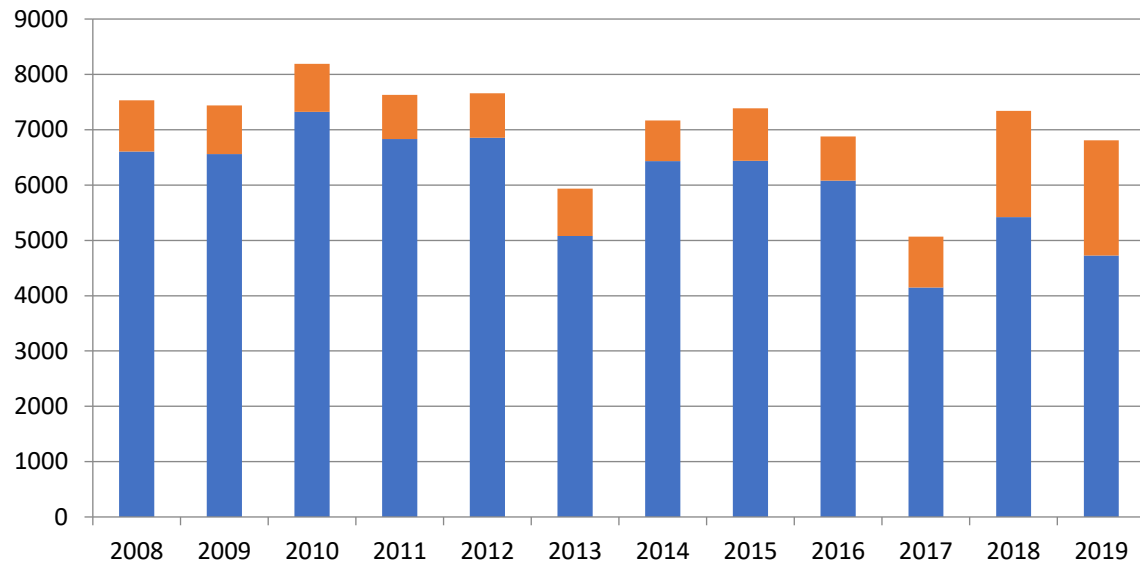
# Location of fish farms

Trout fish farms in the hilly and mountainous parts of Serbia

Carp fish farms in AP Vojvodina

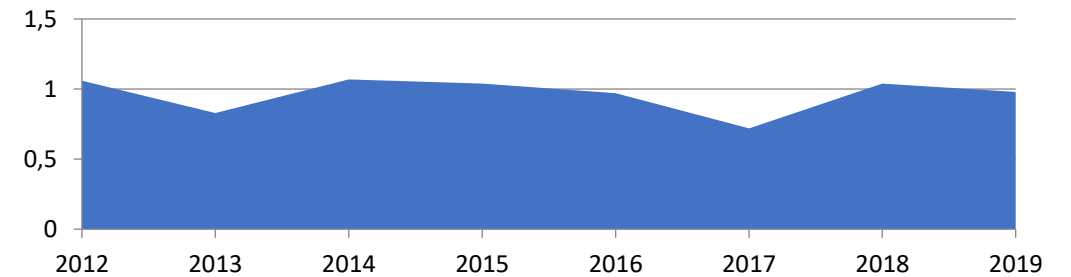


# Fish production

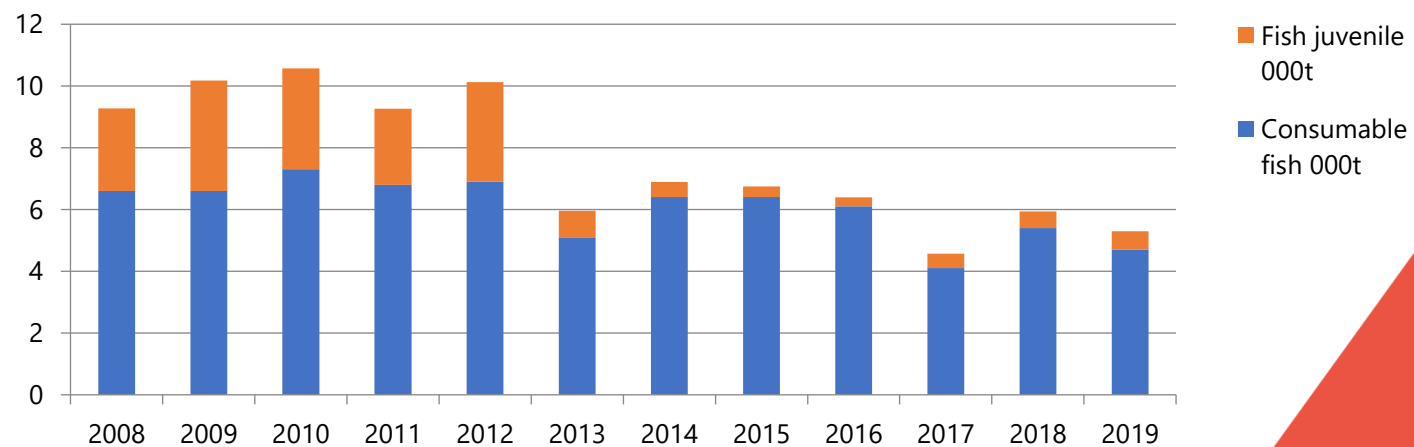
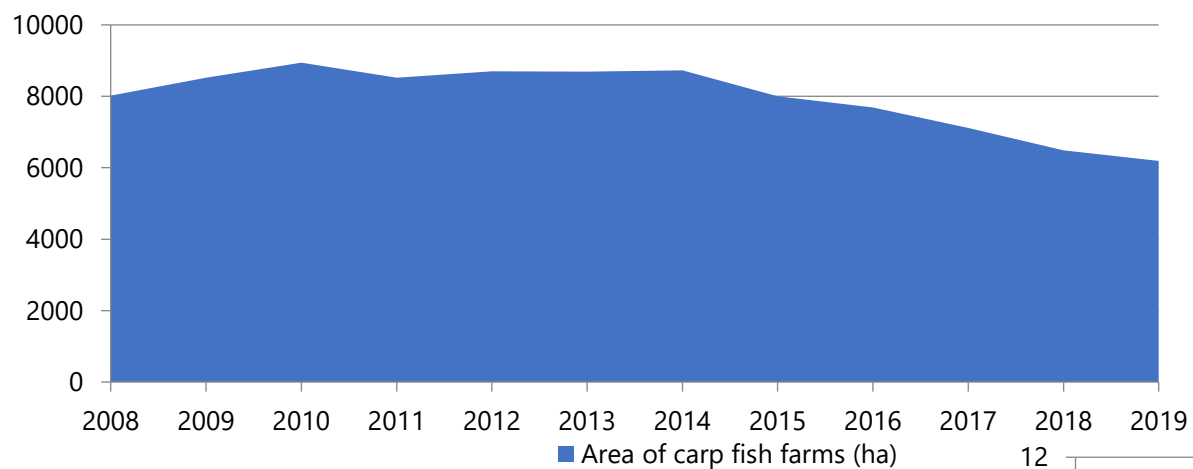


Trout t  
Carp t

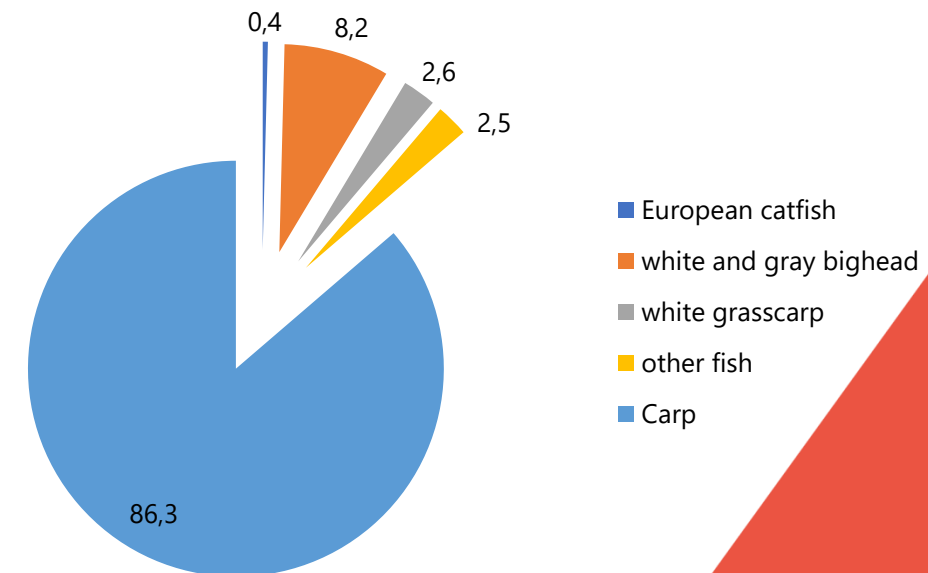
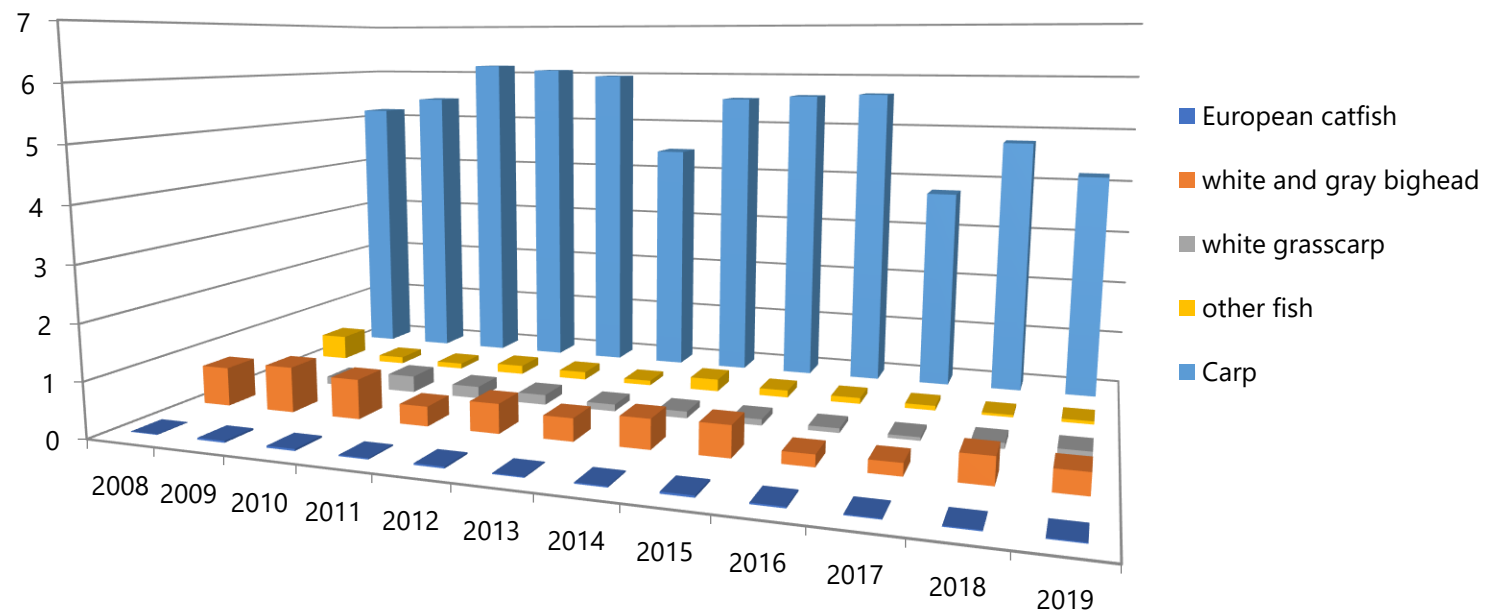
## Amount of fish produced in aquaculture per capita



# Production of warm-water (carp) fish species



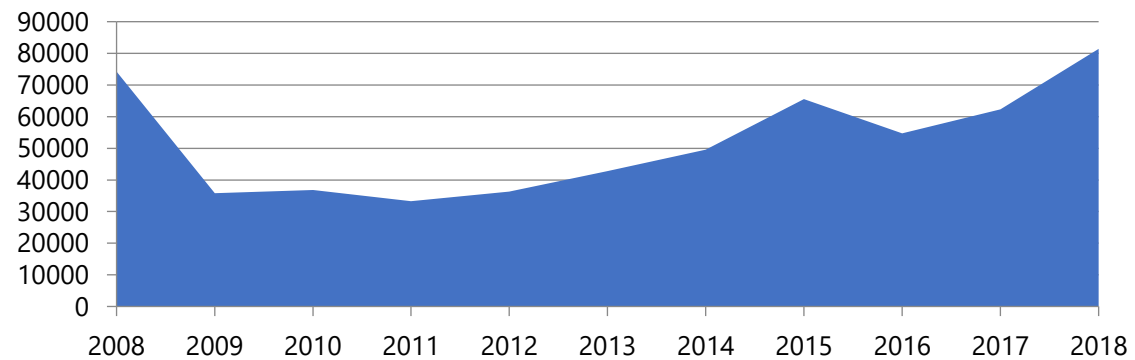
# Production of warm-water fish farms per species 000 t



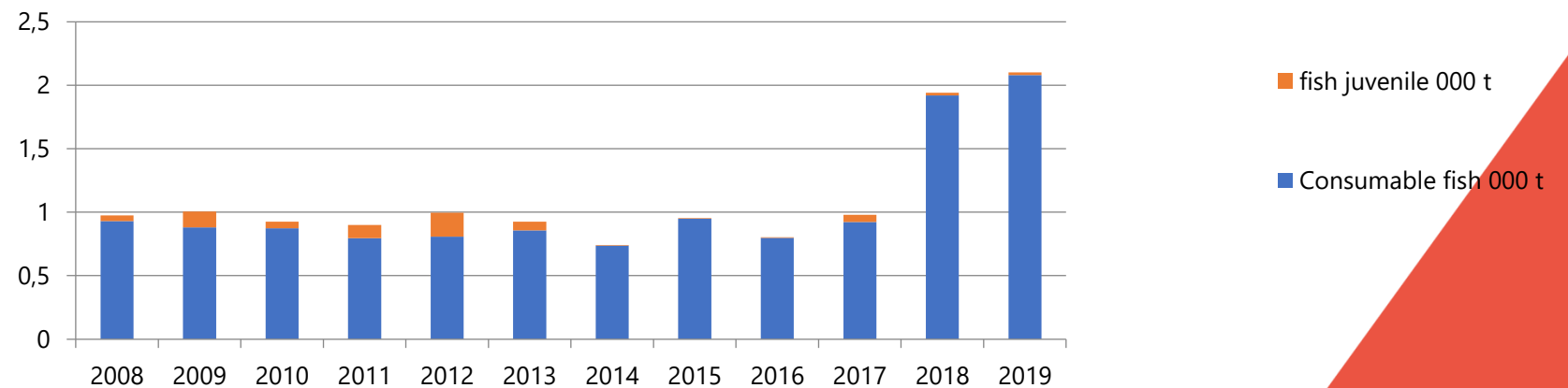


# Production of trout

Areas under trout ponds in m<sup>2</sup> in the period 2008-2019



Quantity of trout produced in 000 t in the period 2008-2019



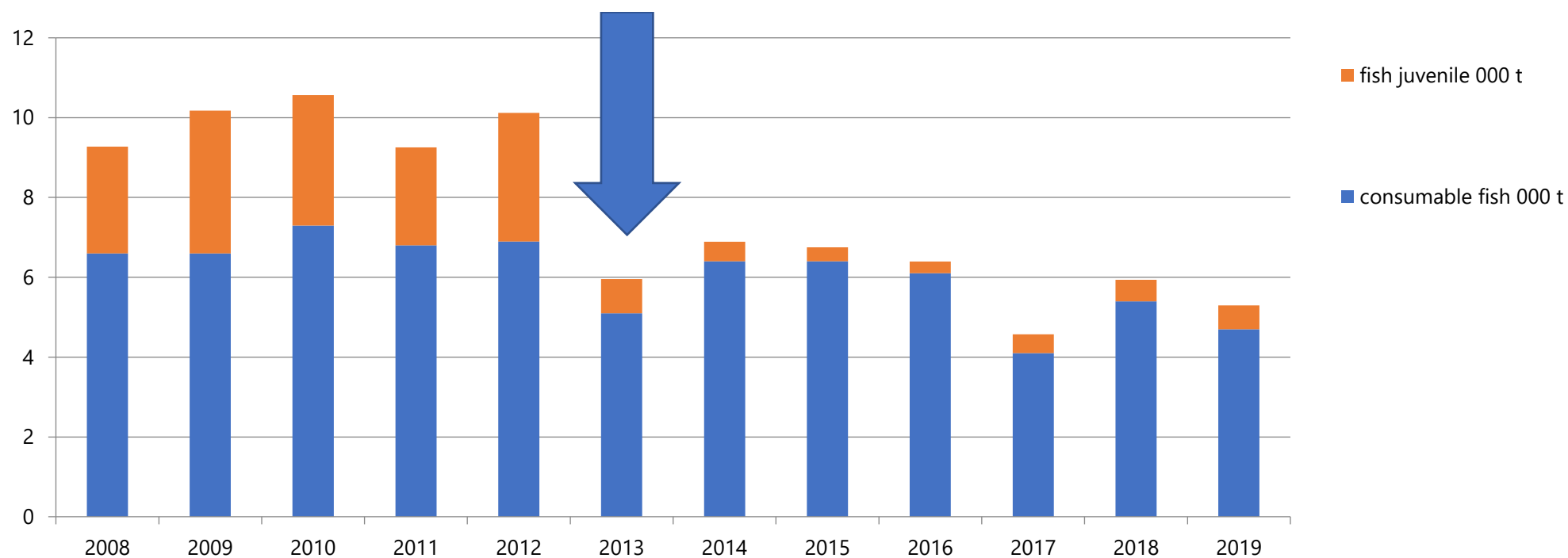


**PROBLEMS?**



## In carp aquaculture

koi herpes virus – KHV (Cyprinid herpesvirus 2 – CyHV-2) +  
Carp edema virus - CEV



- **In trout aquaculture**

**Climate changes - less and less water at springs!**

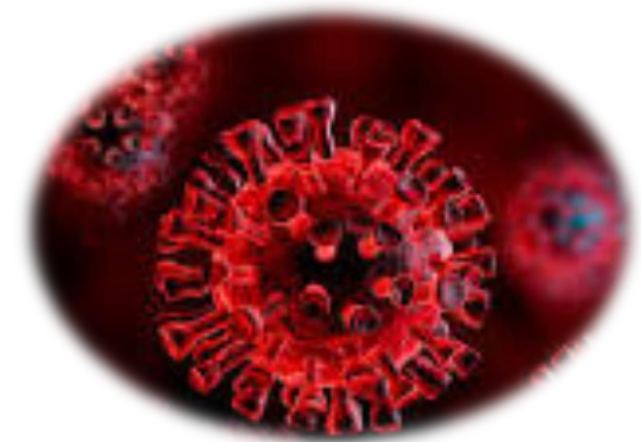


# PROBLEMS caused by Covid-19

- Closed farmers markets during the spring period!
- Prohibition of gatherings (shortened restaurant opening hours, ban on gatherings at celebrations ...) during the entire Covid period

## Consequences:

- Decrease in sales of freshwater - fresh fish (by 30%)
- The fall in prices due to reduced demand (carp by 30% , trout by 10%)
- Reduced financial potential of fish farmers
- Discontinuation of pond production (mainly carp)



# POTENTIAL and CHANCES

Very large areas (over 100,000 ha) of low fertility land in Vojvodina (Banat) next to watercourses and canals on which new carp fishponds can be built

Available water resources

Domestic raw materials (excluding fishmeal) for fish feed, Large capacity for production of extruded fish feed

Existence of modern breeding programs for carp and trout

Rising processing capacities

Deficit of fish on the domestic and European markets

Constant growth of fish consumption in Europe and the world



Examples of support to the aquaculture sector  
through scientific results and gaining practical  
experience !

**SCIENCE ↔ PRODUCTION!**



Every 3 years (past 2 decades) at the Faculty of Agriculture in Belgrade are organized international conferences with small fairs and workshops for producers



**WATER & FISH** 



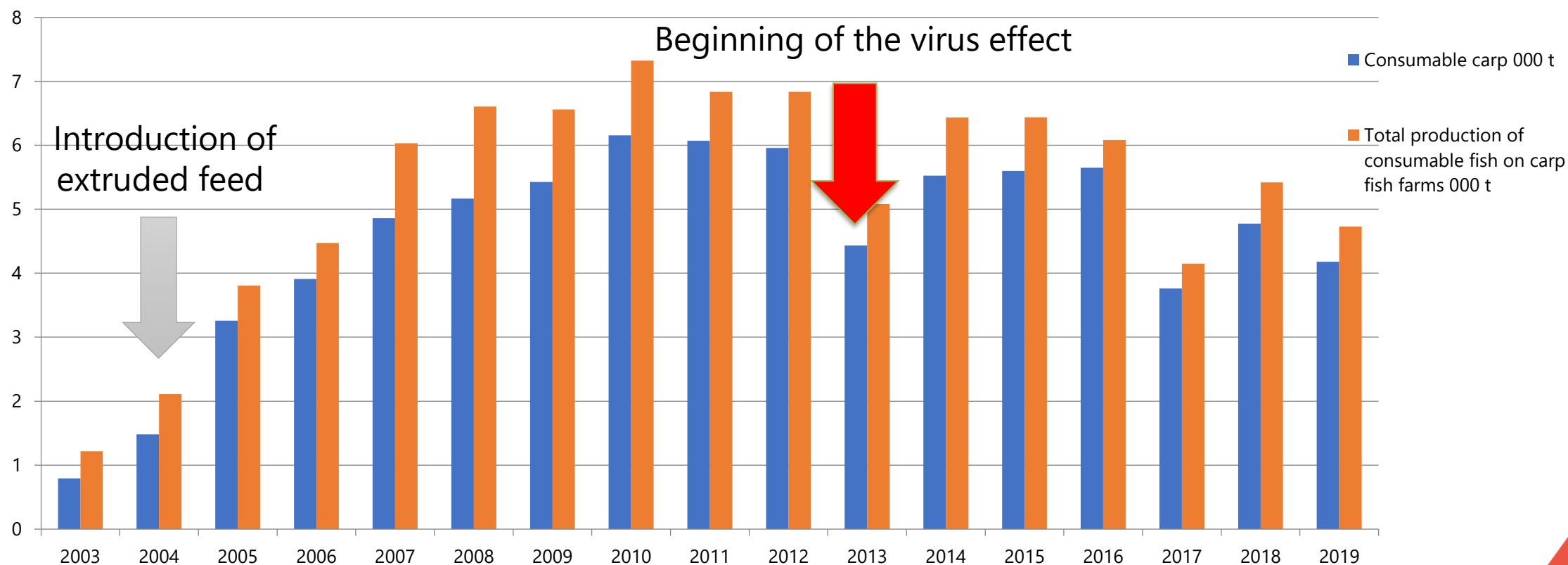
In 2009, the Center for fisheries and applied hydrobiology "*Little Danube*" was established, as a part of Experimental property of Faculty of Agriculture in Belgrade





# Thanks to the scientific results and cooperation of scientists and producers

Carp farming technology based on extruded feed has been introduced in Serbia since 2005, which has resulted in a multiple increase in carp production, as well as improved quality of carp meat



**In the past few years, a dozen small carp ponds that produce carp in an intensive system in a two-year cycle have been established**

**Results:**

- Shortened production period from 3 to 2 years
- Increased production per ha (5 - 10 t)
- Fishponds are supplied with water from the aquifer, thereby providing a better quality of the water, and which has a positive impact on the quality of meat of carp
- The production is based exclusively on extruded feed, which additionally enables improvement of the quality of carp meat

## Effects in aquaculture are expected soon from the obtained scientific results in:

- Production of **Omega 3** carp (with increased content of polyunsaturated fatty acids and improved ratio of  **$\Omega$  3 and  $\Omega$  6** fatty acids )
- The use of selected juvenile carp on increased production results on carp fish farms
- The use of selected juvenile trout on increased production results on trout fish farms

# Thank You.

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