

Quo vadis pond aquaculture? An example story of the current state

(CZE, POL, HUN, GER, ROM, CRO, FRA)

Michal Kratochvíl
Czech Fish Farmers' Association
Freshwater commission, FEAP



Pond aquaculture in the Czech Republic – cultural and historical heritage – almost one thousand years

POND = man-made, shallow, historical waterbodies (NOT A LAKE!)

Aquaculture: ~ 20-21,000 tons fish

- ▶ **aquaculture** - 42,000 ha ponds
~ 96.4 % of production
- ▶ **special systems** (RAS, raceways)
~ 3.4 % of production

90 % of production = common carp

Angling (open waters) – recreational activity

- ▶ two angling unions with 350,000 members
- ▶ 2,000 fishing grounds (app. 42,000 ha)
- ▶ **common carp = species for anglers (80 % of catch)**

Preservation of unique pond systems (rural areas)

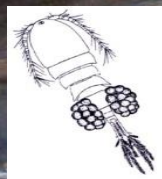
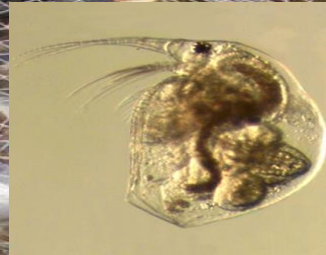
Non-productive pond functions (ponds providing environmental services)

- **Water accumulation, impact on microclimate**
accumulation and retention of surface water (groundwater), water storage in landscape
- **Secondary wastewater treatment**
improvement of water quality passing through a pond - nutrient retention, transformation or elimination (particularly P, N), reduction of micropolutants
- **Energetic utilization** - small hydroelectric power stations
- **Ecological functions** - unique ecosystems with high biodiversity of fauna and flora
- **Socioeconomic development of rural areas (employment, tourism, etc.)**

Dominant fish species in pond aquaculture - common CARP

- marketable size 1.5 - 3 kg (3 - 4 year-old fish)
- efficient utilization of natural food resources (often supported by manuring and artificial feeds (cereals) supply)

80 % of carp - sold during December as a traditional Christmas Eve dish





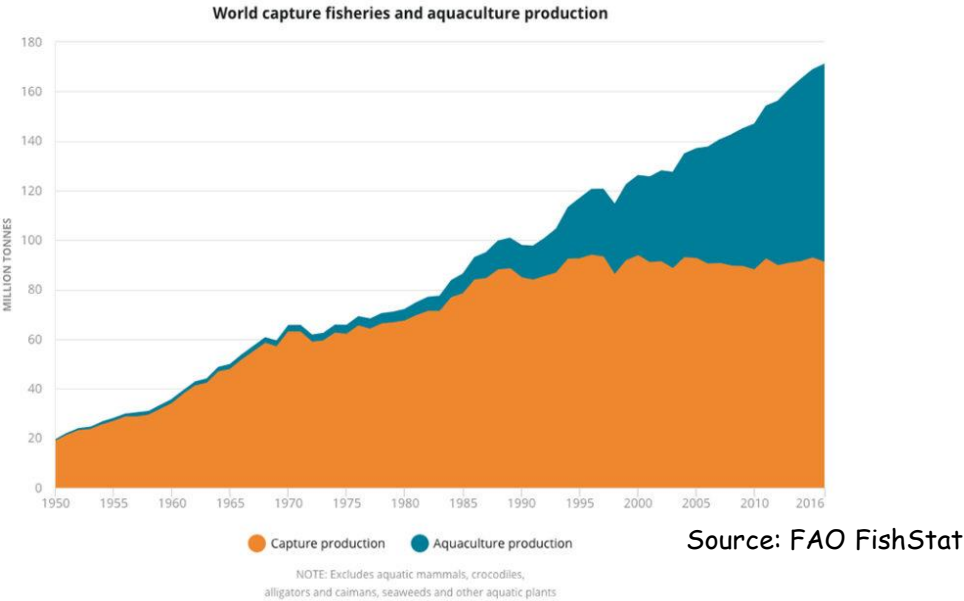
Aquaculture

Aquaculture is the farming of aquatic organisms in both coastal and inland areas involving interventions in the rearing process to enhance production.

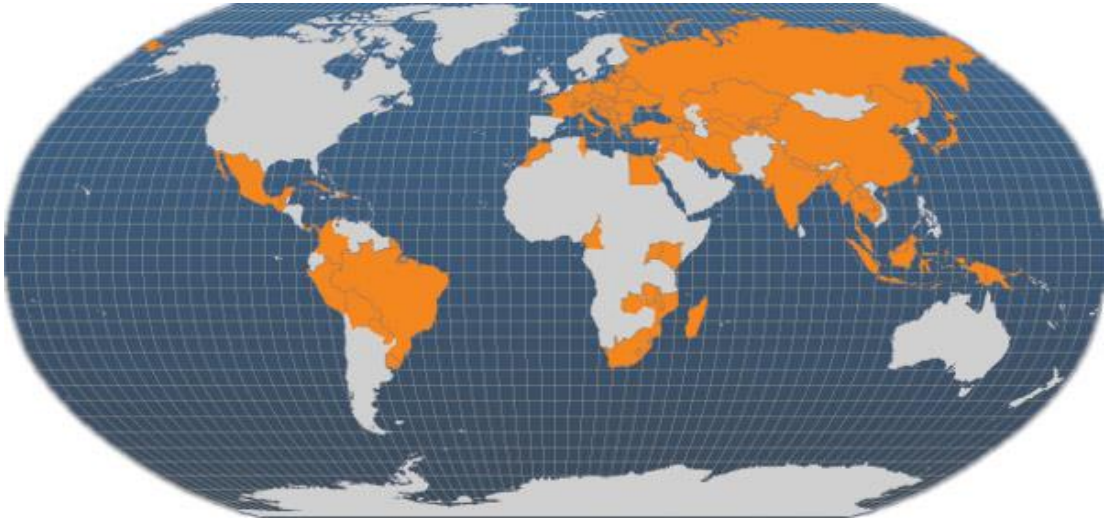
It is probably the fastest growing food-producing sector and now accounts for 50 percent of the world's fish that is used for food.



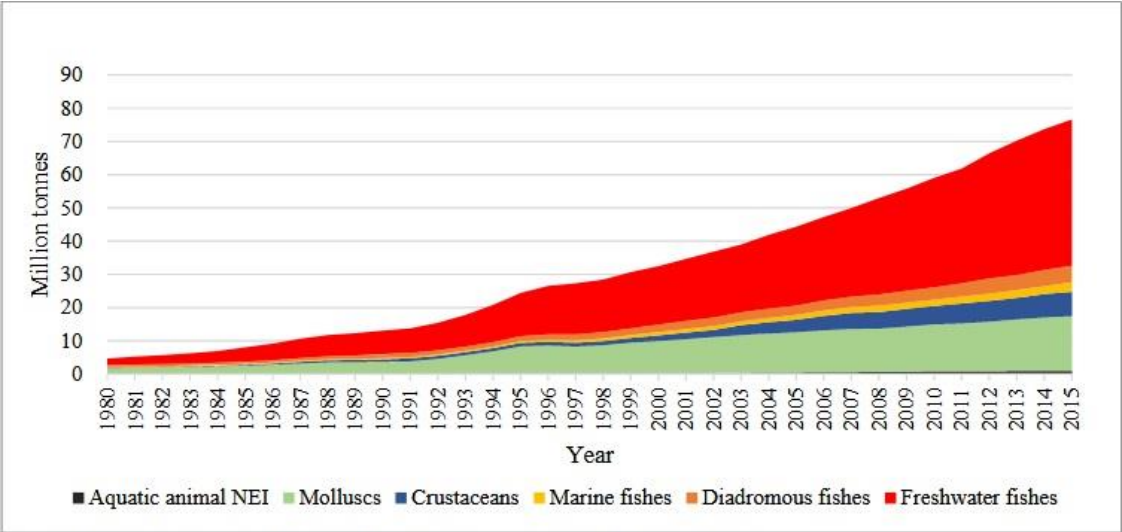
Aquaculture in the WORLD



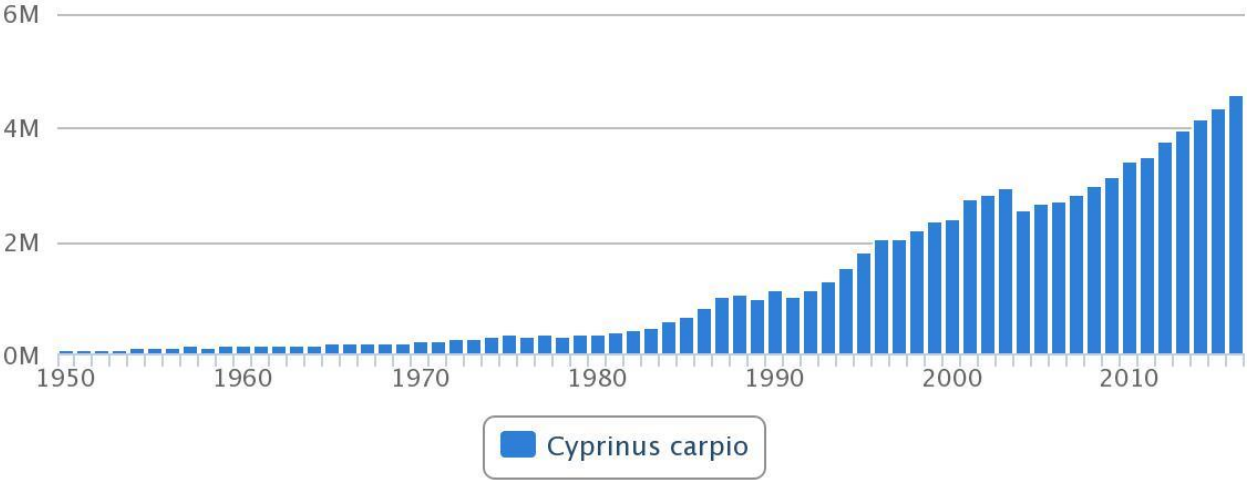
CARP in the WORLD



2016 – 4 556 621 tons (FAO)

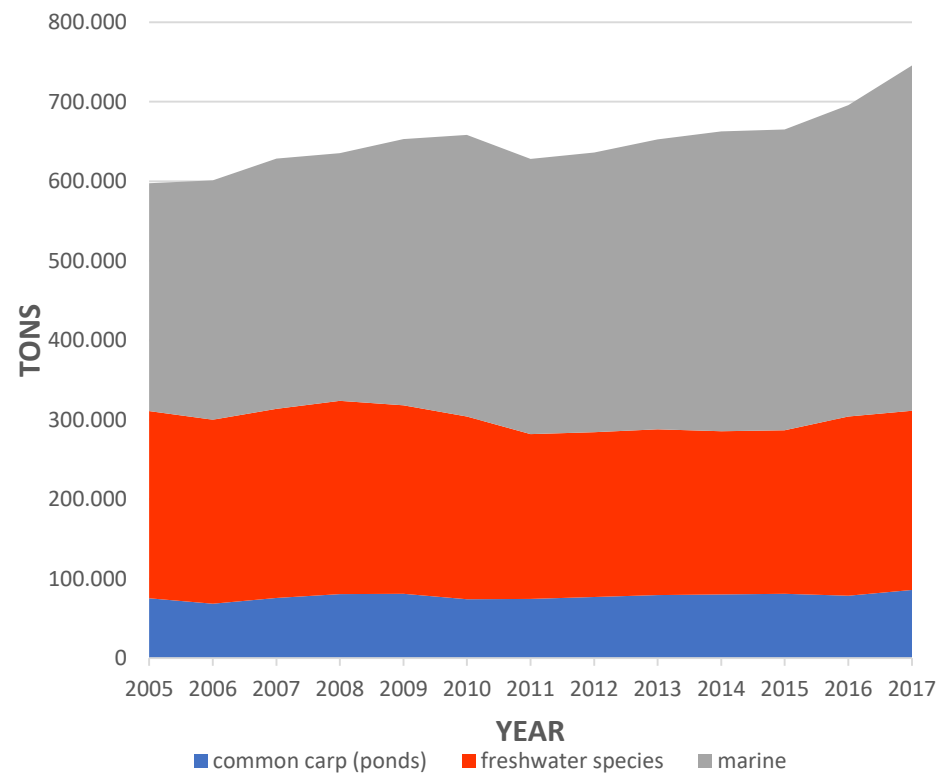


Global Aquaculture Production for species (tonnes)
Source: FAO FishStat



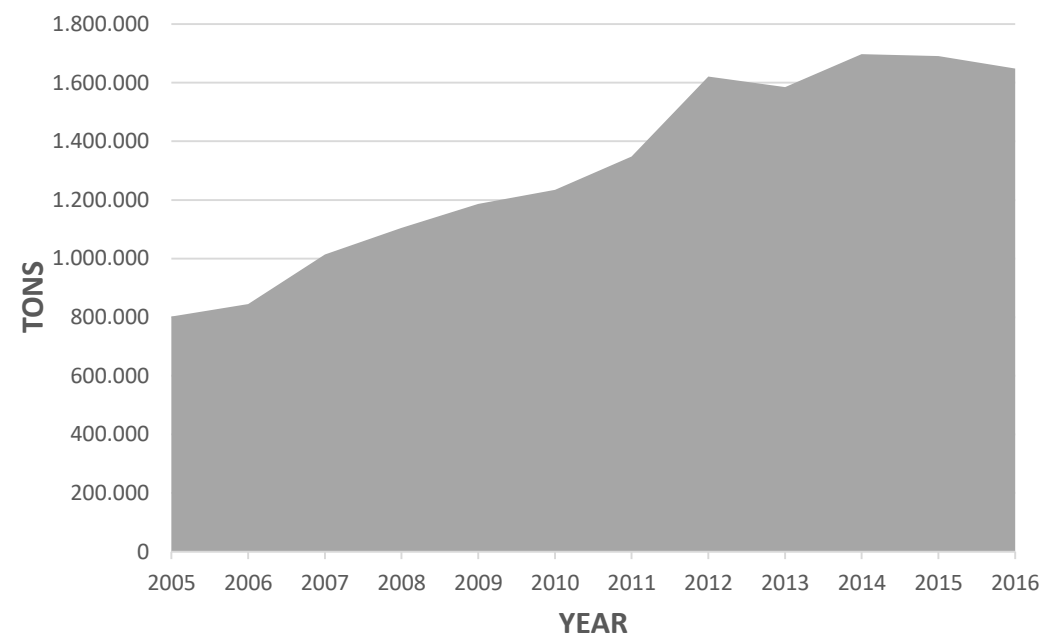
(FIN)FISH in EUROPE

EU COUNTRIES



Source: EUMOFA sourced by EUROSTAT

NON-EU COUNTRIES (Norway, Turkey, Faroe Islands, Iceland)



Source: FEAP report

Main factors affecting the pond aquaculture stagnation

Nature protection

- POND = „significant landscape element“ (according to Czech legislation)
- NATURA 2000 network:
 - Special protection areas (bird areas)
 - Special areas of conservation (habitats, species)

Restrictions (low fish stocking, no feeding and manuring, indirect restrictions (water manipulation, vegetation maintenance)) = loss of production, loss of income

Main factors affecting the pond aquaculture stagnation

EU protection of overpopulated fish predators

The great cormorant (*Phalacrocorax carbo sinensis*) issue

pan-European (40 years) problem - today: 2 mil. birds; 1,000 tons of fish /day

- definition of invasive species, but protected (The birds directive)

European parliament - resolution 2008

FEAP - resolution 2019 - call for cormorant to be a huntable species (Annex II, The birds directive 2009/147/EC)

- for shooting or scaring - derogation needed, administrative burdens (local/regional authorities)
- no change in numbers and damage (hard to shoot, egg oiling efficiency)

Czech Republic

- 10-20 ths. overwintering birds
- Direct losses = 1,500-2,000 tons/year; 3-5 mil. EUR/year
- Indirect losses = difficult to calculate



Main factors affecting the pond aquaculture stagnation

EU protection of overpopulated fish predators

The European otter (*Lutra lutra*) issue

Czech Republic

- highly protected (The habitats directive 92/43/EC, no derogation)
- high increase of the population
- direct losses = cca 1,500 tons/year (> 3 mil. EUR/year)
- partial compensation for damages, loss of breeding fish (invaluable)



Main factors affecting the pond aquaculture stagnation

Decrease of production volume/area caused by enormous input of soil material to ponds (siltation)

- ~ 200 mil. m³ of 600 mil. m³ of pond capacity - filled with sediments
- origin of sediments: soil erosion, primarily from agriculture areas (fields) - foremost corn planting on steep field slopes close to streams and ponds
- Desiltation of ponds - expensive and can not be financed from fish production profit
 - Average costs (40 cm thick layer of mud) per hectar of pond area = app. 50-70 ths EUR



highly dependent on state aid



Courtesy of VÚMOP, v.v.i.



Courtesy of L. Vacek



Main factors affecting the pond aquaculture stagnation

DROUGHT IS and WILL BE A BIG PROBLEM FOR FRESHWATER AQUACULTURE!!!

- no existence of fish stock commercial insurance in MS
- state aid (*de minimis*) only in PL and BE
- EC - preparation of new guidelines of state aid to the fishery and aquaculture sectors following the new EMFAF, drought should be included

Summary

- European freshwater (inland) aquaculture - stagnation of the sector over decades
- Pond farming - not only fish products supply, but also providing positive externalities (environmental services, landscape formation, socioeconomic development in rural areas)
- Measures to improve sustainable pond farming and the potential for growth exist, but...
under attacks of fish predators, nature protection restrictions, administrative burdens (bureaucracy), high siltation, climate change (drought) and others
... pond farming will be hardly profitable, not allowing the further development of the sector.
- EU and MS decisions - POND FARMING → fish production OR open-air museum?

A close-up, high-angle shot of a large group of fish, likely carp, swimming in water. The fish are densely packed, with their scales and fins visible. The water is dark and rippled. The text "Thank you for attention" is overlaid in the center in a white, sans-serif font.

Thank you for attention