STATE, BIOLOGICAL EFFECT AND FUTURE OF EUROPEAN EEL IN LAKE BALATON, HUNGARY

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European eel had been intensively fished during the last century but by now it has become critically endangered (see the IUCN Red List). Abundance of the European eel decreased drastically from the 1980's due to overfishing of glass eels and adults, persistent pollutants, new parasite, climate changes etc. Contrary to majority of other farmed fish species, we are still not able to artificially propagate the European eel. The production of eel farms in Europe is exclusively based on captured nature-born glass eels in river mouths.

The eel in Lake Balaton (Hungary) -the biggest lake of Central Europe – form a unique stock. It had occurred only sporadically in Lake Balaton before glass eels were introduced between 1961 and 1991. In 1991, there was a dramatic eel die off induced by *Anguillicoloides crassus* infection; and afterwards, the Hungarian Government prohibited further stockings. Lake Balaton has only one outflow, which however is regulated by a sluice equipped by a very effective fish trap; thence no eel emigration/migration is possible. Accordingly, the eel stock of Lake Balaton is isolated and comprised of very old individuals.

Main aim of this study was to investigate the silvering processes and maturation state in this landlocked eel stock by monitoring seasonal and among years variations in external (eye- and pectoral fin indexes, body length and mass, and condition factor) and internal signs (GSI, HSI, swimbladder index) and by artificial induction of maturation tests. Additionally, the diet composition of eel was examined.

The main results are:

- According to the literature data, the mean age (24 years old) of eel in Lake Balaton is much higher than that of any other stocks.
- Silvering parameters correlated less with each other in older fish (collections in 2010-2011) compared to younger ones (collections in 2002-2003).
- Silver eel has larger swimbladder index indicating its higher sensitivity to *A. crassus* parasite.
- In Lake Balaton, eel is omnivore, and can adapt to variable food sources.
- Artificial induction of maturation experiments showed that the reproduction potential of these old fish is very low compared to younger ones.

In conclusion, our results suggest that the landlocked and "over-aged" eel stock of Lake Balaton has low reproduction potential, and hence, unfortunately has low species conservation value.

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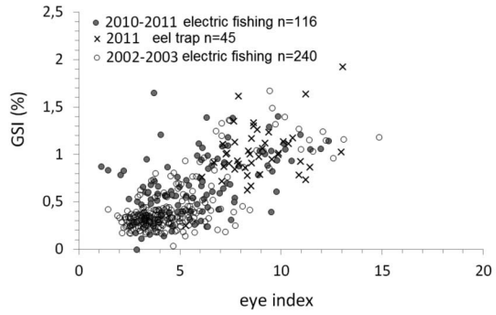

Figure 1. Relationship between the eye index and GSI of eels originating from Lake Balaton