

HEAVY METALS IN THE COMMON CARP (*CYPRINUS CARPIO L.*) FROM TWO LOCATIONS IN THE CZECH REPUBLIC

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INTRODUCTION

Fish, generally accumulate contaminants from aquatic environment and during food chain can transfer toxic metals to humans. Fish are widely consumed and from this reason determination of heavy metals in their tissue is very important for human health. The aim of our work was to determine heavy metals (Cd, Hg, Pb) in muscle and liver of common carp (*Cyprinus Carpio L.*).

MATERIALS AND METHODS

Fish were caught in the period from April to August 2013 in two locations of Czech-Moravian highland (Pilska (Fig. 1) and Domanin (Fig. 2) reservoirs). Firstly the samples were lyophilized (Power Dry LL 3000, Thermo Scientific) and after they were mineralized (MW ETHOS SEL, Milestone) with nitric acid and hydrogen peroxide. Atomic absorption spectrometry was used for the determination of total metal content in liver and muscle. Spectrometer ContrAA 700 (Analytik Jena) (Fig. 3) was used for cadmium and lead determination and spectrometer AMA 254 (Altec) was used for determination of total mercury content.

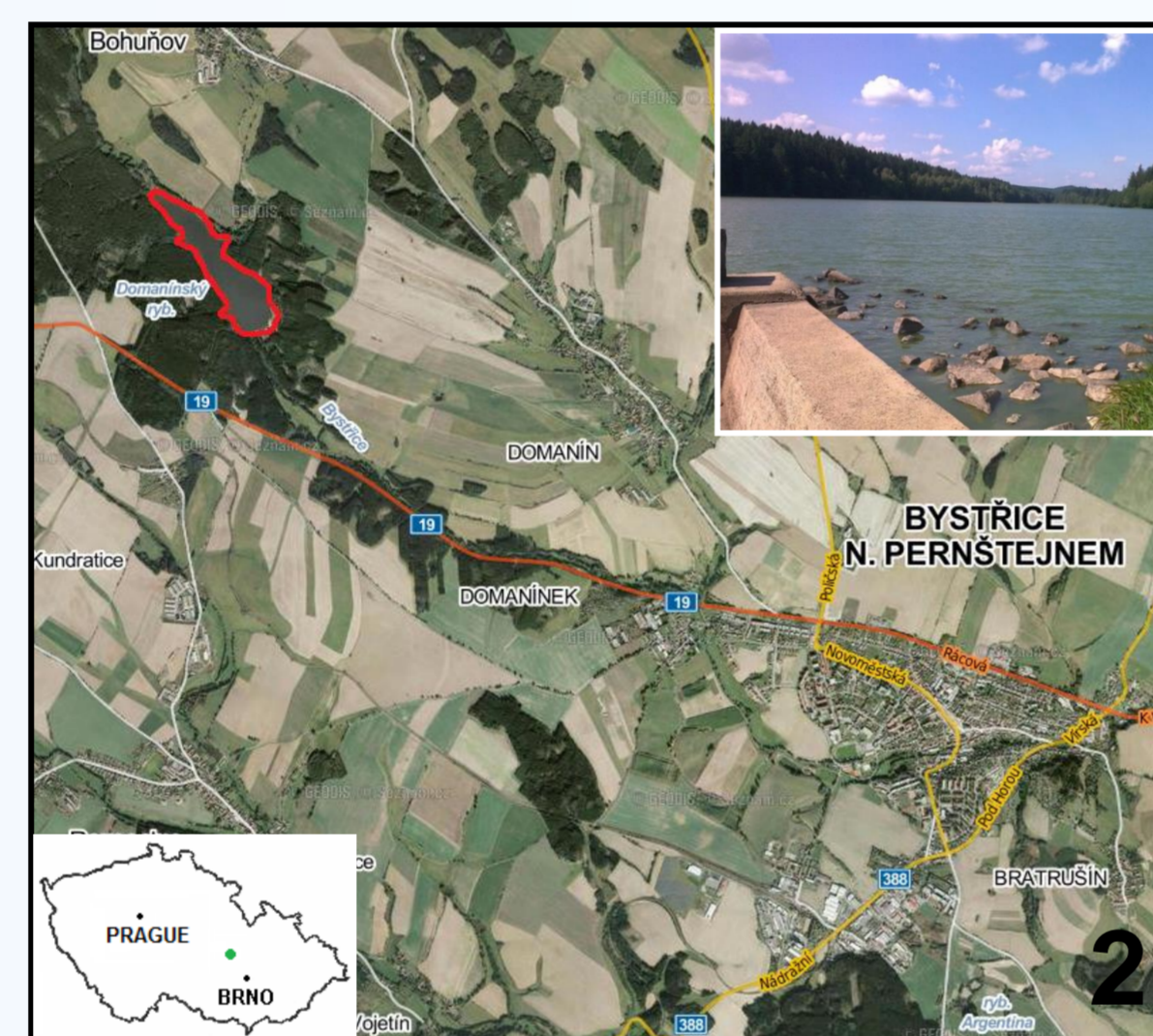
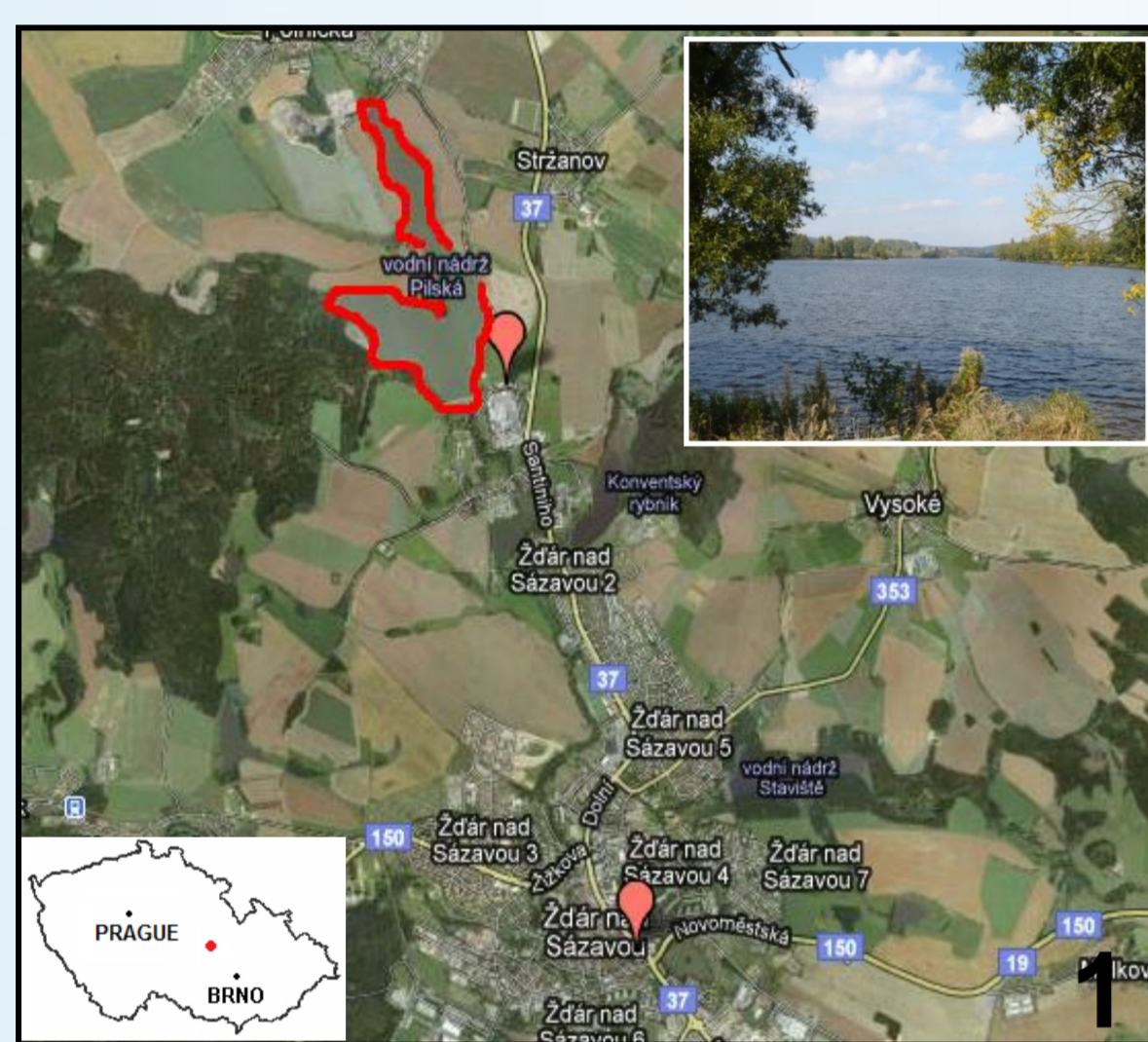


Figure 1 - 4:

1. Pilska reservoir
2. Domanin reservoir
3. ContrAA 700
4. AMA 254

RESULTS AND DISCUSSION

Significant difference was found in metal content between locations (Pilska and Domanin reservoir). The determined content of heavy metals (mercury, cadmium and lead) was higher in Domanin reservoir than in Pilska reservoir. The cause of contamination can be recent dredging of Skalsky reservoir, which is the main tributary of the Domanin reservoir. Near this reservoir is one of the main roads. Furthermore there was found the difference in mercury concentrations in analyzed tissues, the concentration was three times higher in tail muscle than in liver (Fig. 5). The cadmium content in liver was higher than in muscle (Fig. 6). The lead content was comparable in both studied tissues (Fig. 7). Differences were only between individuals.

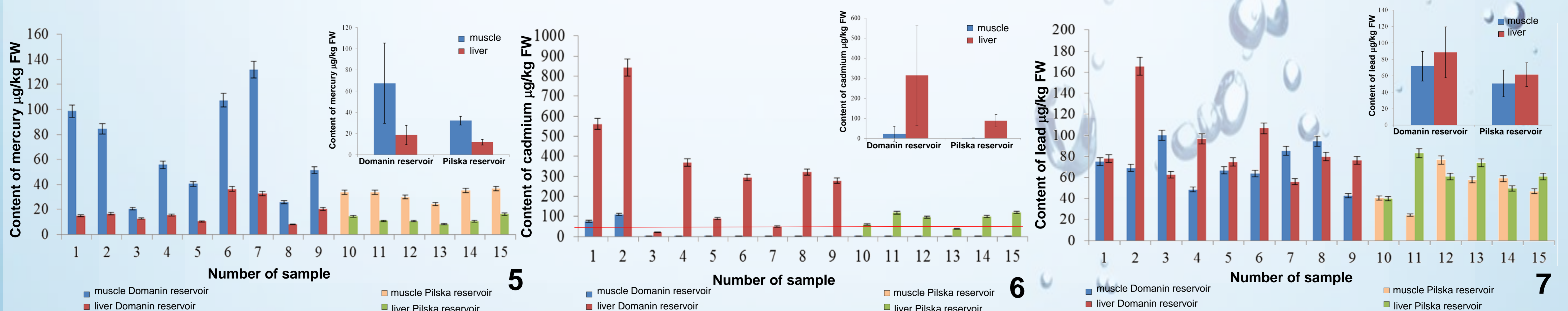


Figure 5. – 7. Contents of mercury, cadmium and lead in muscle and liver and comparison of two locations

CONCLUSION

Measured data were in all cases (except for cadmium) in accordance with legislative standards (Commission Regulation (EC) No. 1881/2006, supplemented by the Commission Regulation (EC) No. 420/2011).

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