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**Czech Journal of Animal Science**

**Assessment of metal contamination in the upper reaches of the Tichá Orlice River**

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The aim of the present study was to assess metal contamination in the same reaches of the river, and thus to help explain unsatisfactory reproduction results in the reproduction of salmonoid

fish. The contamination assessment was based on measuring metal concentrations in the brown trout (*Salmo trutta morpha fario*) and some bottom sediment samples. The samples were collected in June 2000 and 2001 at two collection sites from the Tichá Orlice River (Červená Voda – 103rd river km; Lichkov – 93rd river km) and its tributary Kralický Brook (100th river km). At each of the sites, 14 brown trouts were collected in each of the periods of monitoring. The AAS method was used to determine the total mercury, arsenic, cadmium, lead, copper, zinc, chromium and nickel contents in the muscle tissue of the fish and in aquatic sediments. The Kralický Brook is an important anthropogenic source of metal contamination (particularly of mercury and copper) for the Tichá Orlice River. The highest concentrations of mercury in muscles of brown trout were found at the Kralický Brook ( $0.37 \pm 0.08$  and  $0.40 \pm 0.08$  mg/kg) and Lichkov ( $0.41 \pm 0.10$  and  $0.34 \pm 0.07$  mg/kg) in 2000 and 2001 and the lowest concentration at Červená Voda ( $0.017 \pm 0.02$  mg/kg in the same years). Significantly higher concentrations of arsenic (in 2000:  $0.30 \pm 0.08$  mg/kg; in 2001:  $0.38 \pm 0.07$  mg/kg) were found in

the muscle tissue of the brown trout collected at Červená Voda than at the downstream site Lichkov (in 2000:  $0.18 \pm 0.09$  mg/kg; in 2001:  $0.14 \pm 0.07$  mg/kg). The authors hypothesize that the difference was due to different conditions (principally water temperature). It seems reasonable to assume that unsatisfactory results in the reproduction of fish from the upper reaches of the Tichá Orlice River are due not only to organic pollutants but also to mercury compounds that are classified among suspect endocrine disruptors.

### Keywords:

Elbe tributary; *Salmo trutta* morpha *fario*; brown trout; muscle; mercury; arsenic; AAS

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