44TH IAD CONFERENCE
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Tackling Present & Future Environmental Challenges of a European Riverscape

CONFERENCE BOOK

Austrian Committee Danube Research

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CONFERENCE MISSION

The 44th IAD conference* is held under the patronage of the Austrian committee of the IAD at the Karl Landsteiner University of Health Sciences in Krems, situated in the beautiful landscape of the Wachau, next to the Danube River. This young university (founded in 2013) has a strong research focus on water quality and health, being a key player in this research field in the Danube River Basin. Here, health is considered in a holistic, transdisciplinary way under the "One Health" concept of the WHO, combining human, animal and environmental health in an ecological context. Thus the conference shall bring together scientists and experts from different disciplines for discussing the present and future environmental challenges of our Danube riverscape.

*This conference was originally planned to be organized by our Ukrainian colleagues at the Institute of Hydrobiology of the National Academy of Sciences in Kyiv, but due to the Russian aggression this became unfortunately impossible. We wish our esteemed colleagues all the best for their future.

TOPICS

- Pollution and health under the "One Health" concept
- Climate change and land-use change impacts on aquatic ecosystems
- Integrated water management – from environmental monitoring to sustainable solutions
- Status and future trends of aquatic species and habitats
- Protected areas and biodiversity conservation
- Floodplain ecology and restoration – constraints and perspectives
- The Human Dimension – rivers as socio-ecological systems
- Riverine landscapes and wetlands
- The Danube River delta and coastal ecosystems

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DIFFERENCE IN ELEMENT ACCUMULATION AND HISTOPATHOLOGY OF PONTIC SHAD (*ALOSA IMMACULATA*) MIGRANTS CAUGHT IN THE DANUBE RIVER IN INTERVAL OF ONE DECADE

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Pontic shad (*Alosa immaculata*) is an anadromous species that lives in the Black Sea and Sea of Azov and migrates into the Danube, Don and other rivers to spawn. It is still economically important fish species in the Danube River. As the North-Western part of the Black Sea is heavily polluted investigation was performed to determine heavy metal and element accumulation in muscle tissue of Pontic shad as well as to record the level of histopathological changes. Pontic shad specimens were caught on 863 river kilometer of the Danube and the first investigation was performed during 2007 and repeated one decade later in the period 2017-2019.

Element analysis was performed by inductively-coupled plasma – optic emission spectroscopy (ICP-OES). In both sampling periods, only concentrations of arsenic (As), copper (Cu), iron (Fe), magnesium (Mg), strontium (Sr), and zinc (Zn) were above detection limit. Higher concentrations of As, Cu, and Zn were detected in 2007, while higher concentrations of Fe, Mg, and Sr were measured in 2019. Differences in concentrations of these elements, between sampling periods, were statistically significant.

The gills of sampled fish were assessed using histopathology as a marker of general fish health state, using semi-quantitative scoring system. The histopathological results revealed different pattern of histopathological alterations in the gills of fish sampled during two distinct time periods. According to the method used, there were no difference in total gill histopathological index, but alterations were specific for fish sampled at two time points. Hyperemia and hyperplasia of respiratory epithelium dominated in fish sampled at the year 2007, while necrosis of branchial tissue prevailed in fish sampled a decade later.