



# **43<sup>rd</sup> IAD Conference**

Rivers and Floodplains in the Anthropocene:  
Upcoming Challenges in the Danube River Basin

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**– Proceedings –**

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## Preface

Dear Participants of the 43<sup>rd</sup> IAD Conference,

Living in pandemic times, it is not easy to organize an international conference. However, such conferences are very important for the scientific community, especially if this community is so diverse regarding countries and topics as IAD is.

This year, IAD celebrates a special event. Since 65 years since it is continuously present in limnological research in the Danube River Basin. For many decades, IAD was among the very few scientific fora ensuring connectivity between the Western and Eastern research teams, facilitating knowledge exchange, as well as joint projects and publications in the region.

The IAD Conference always was a 'jour fixe' to meet colleagues of the IAD family from the entire Danube Basin. However, this year we have to celebrate this IAD anniversary in a virtual way, as unfortunately, it is still not possible to meet personally due to the particular situation of our countries, with lockdowns and travel restrictions still in place.

Our hope is that the upcoming event – carried out as an online conference – can at least partly substitute the usual way of meeting and foster active exchanges between the participants.

The number of registered participants, around 80 persons, makes us hopeful! Furthermore, there are 41 presentations (39 oral and 3 posters) which show the wide thematic range on the one hand, and the interest of the scientists working within IAD to present their work on the other hand. Additionally it proves the interest of all of us to listen to the latest scientific developments in aquatic ecology research in the Danube Region.

We hope that this 'special' conference will be successful and interesting for IAD and will represent the transition to normal times in the future!



Cristina Sandu (President of IAD)



Bernd Cyffka (Head of Conference)

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# Genotoxicity assessment of Danube River: *in situ* and *in vitro* methods

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Water quality in the Danube River Basin is largely influenced by the inputs of pollutants - particularly excessive nutrients, organic material, and hazardous substances, which affects the whole ecosystem at various levels. The major goal of this study was to evaluate the level of genotoxic potential at the site at Danube River, Novi Banovci, which is under significant anthropogenic pressure of untreated municipal and industrial waste waters.

DNA damage *in situ* was assessed in 5 specimens of white bream (*Blicca bjoerkna*) erythrocytes, liver and gills cells with comet assay and in erythrocytes with micronucleus test. Additionally, genotoxicity of native water samples collected from the site and upstream and downstream of the site was evaluated by the comet assay on HepG2 cells. Microscopic images of comets were scored using Comet IV Computer Software (Perceptive Instruments, UK) and tail intensity was chosen as parameters to assess the DNA damage.

Comet assay on white bream showed that gills were the most affected tissue, while liver showed the smallest values. Micronuclei frequency was low in general, with mean of 1 micronuclei in 5000 scored erythrocytes, with no significant correlation to the values of comet assay in erythrocytes. Comet assay on HepG2 cells showed significant difference between values of negative control samples and samples of water from effluent site and downstream of wastewater discharge. There was no significant difference between negative control and upstream samples of water.

Our results showed that great impact of municipal and industrial wastewaters on the river ecosystem. The application of *in vitro* and *in situ* tests gives a better insight into genotoxic effects. More importantly, because Serbia still doesn't have waste water treatment plants, this kind of research points out the imperative for implementation of this facilities.