



43rd IAD Conference

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

June 9 – 11, 2021

– Proceedings –

Edited by:

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Preface

Dear Participants of the 43rd IAD Conference,

Living in pandemic time 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: 65 years since its establishment and its continuous presence 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 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, over 100 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)

Scientific Committee

- Grigore Baboianu, Romania
- Florian Betz, Germany
- Bernd Cyffka, Germany
- Edith Durisch-Kaiser, Switzerland
- Marion Gelhaus, Germany
- Gertrud Haidvogel, Austria
- Thomas Hein, Austria
- Vera Istvánovics, Hungary
- Georg Janauer, Österreich
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- Tim Borgs, Aueninstitut Neuburg/ CU Eichstaett-Ingolstadt
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- Marion Gelhaus, Aueninstitut Neuburg/ CU Eichstaett-Ingolstadt
- Thomas Hein, IAD Vice President, Vienna
- Cristina Sandu, IAD President, Bucharest
- Barbara Stammel, Aueninstitut Neuburg/ CU Eichstaett-Ingolstadt
- Katrin Teubner, IAD General Secretary, Vienna
- Michaela Walter-Rückel, Aueninstitut Neuburg/ CU Eichstaett-Ingolstadt

Detailed Conference Programme

Pre-conference events, 8 June 2021 (Tuesday)	
13:00 h	IAD Board Meeting (board members only)
16:00 h	Technical consultation session (testing presentations etc.) (until about 18:00 h)
Conference, 9 June 2021 (Wednesday)	
09:00 h	Welcome speeches: <ul style="list-style-type: none"> – PROF. DR. BERND CYFFKA (Head of Conference) – DR. CRISTINA SANDU (IAD President) – PROF. DR. GABRIELE GIEN (President of CU Eichstaett-Ingolstadt) – PETER VON DER GRÜN (Head of District Neuburg-Schrobenhausen) – PROF. DR. MARTIN GRAMBOW (Bavarian State Ministry of the Environment and Consumer Protection)
09:55 h	<i>Zoom rules / technical arrangements</i>
10:00 h	Keynote speech: Back to the wilderness – a vision? , Prof. Dr. GREGORY EGGER, Karlsruhe Institute of Technology
10:45 h	<i>Coffee break</i>
11:00 h	Anthropocene/Strategies – Convenor: Bernd Cyffka <ul style="list-style-type: none"> – BLOESCH J. & JANAUER G.: Expert debate: Floodplains and Oxbow Lakes in the context of science, politics and law – IONITA M. et al.: Danube River discharge under climate changes – trends and future projections – KORCK J. et al.: River basin management in transition: The new Bavarian integrated strategy for river development – SCHWARZ U. & LAZOWSKI W.: The Alpine Carpathian River Corridor
12:20 h	<i>Lunch break – break filler presentation</i>
13:05 h	Floodplain and Floodplain Restoration – Convenor: Barbara Stammel <ul style="list-style-type: none"> – KÜGEL B.: River and Floodplain Restoration on the upper Danube by re-establishing river continuum and ecological flooding – TAMÁS E. et al.: Hydrological indicators of the riverbed incision along the free-flowing Danube River reach from Budapest to Slankamen relevant for the lateral connectivity between the river channel and floodplains – TÓTH P.: Floodplain evaluation matrix (FEM) application for Hungarian section of the Tisza River – ZAMFIR A.G.: Human impact on the Lower Sector of Jiu River Floodplain
14:25 h	<i>Coffee break</i>
14:40 h	Ecosystem Services – Convenor: Thomas Hein <ul style="list-style-type: none"> – TSCHIKOF M. et al.: Can multi-functionality of floodplains be restored? An analysis of regulative and cultural ecosystem service synergies and trade-offs – PUSCH M.: Ecosystem services of an impounded navigable river (Lahn, Germany) – PEROSA F. et al.: The role of floodplains for flood mitigation and enhancement of ecosystem services in the Danube – NATHO S. et al.: Nutrient retention in the Danube Floodplain National Park – how much lateral connectivity is needed for an observable reduction of nutrient loads?
16:00 h	<i>Coffee break – Gather Town Instructions</i>
16:15 h	Miscellaneous – Convenor: Florian Betz <ul style="list-style-type: none"> – MOUSAZADEH H.: Content analysis challenges of Danube river basin in the perspective of Anthropocene: A qualitative study – IVANOVA-RADOVANOVA P.: Determining high quality landscapes in support of environmental planning at local and community level
17:00 h	Gather Town – movies & discussions

Conference, 10 June 2021 (Thursday)	
09:00 h	Keynote speech: The Rhône, a transdisciplinary laboratory of integrative riverine sciences, Prof. Dr. HERVÉ PIÉGAY , University of Lyon
09:45 h	Water Quality – <i>Convenor: Cristina Sandu</i> <ul style="list-style-type: none"> – TEUBNER K. et al.: New Emphasis on Water Clarity as Socio-Ecological Indicator for Urban Water – ĐORĐEVIĆ J. et al.: Genotoxicity assessment of Danube River: in situ and in vitro methods – JOVANOVIĆ MARIĆ J. et al.: Mapping of the microbiological water quality of surface waters in Serbia overlooked by the National monitoring programme – KIRSCHNER A. et al.: Occurrence and spread of human-induced antimicrobial resistance in a large river water system: developing a holistic picture based on the Joint Danube Survey 4 activities
11:05 h	<i>Coffee break</i>
11:20 h	Makrophytes and Wetland Plants – <i>Convenor: Katrin Teubner</i> <ul style="list-style-type: none"> – OZIMEC S. & ROŽAC V.: A retrospective of ten years of the botanical exploration in Nature Park Kopački Rit (Croatia) – GERM M. et al.: Distribution and abundance of macrophytes in the Ižica River in the years 1996, 2000 and 2016 – NOVKOVIĆ M. et al.: Relationship Between Water Quality and Macrophyte Assemblages in Seasonal Wetlands along the Danube River in Serbia – DOROFTEI M. et al.: An alternative in monitoring invasive plant species in wetlands – CVIJANOVIĆ D. et al.: A role of habitat complexity generated by macrophytes and hydromorphological attributes for the recovery of commercial fish stock in the free-flooding Middle Danube wetlands (Serbia)
13:00 h	<i>Lunch break – break filler presentation</i>
13:45 h	Flood and Flood Risk I – <i>Convenor: Attila Lovas</i> <ul style="list-style-type: none"> – DOBÓ K.: Developments on the protected side – DROBOT R. et al.: Best Operation rules of Stanca-Costesti reservoir on Prut River during exceptional floods – MIHALJEVIĆ M. et al.: Extreme floods of the Danube in 2013 – track changes of the ecological state of the river applying the phytoplankton assemblage index
14:45 h	<i>Coffee break – Gather Town Instructions</i>
15:00 h	Poster presentation via Gather Town – <i>Convenor: Florian Betz; (10 minutes per poster plus short discussion)</i> <ul style="list-style-type: none"> – KOLLER M. et al.: Non-wild type antibiotic resistant <i>Escherichia coli</i> in the River Danube: a six-year-comparison – LEOPOLD M. et al.: A comprehensive, quantitative study concept on the occurrence and spread of human-induced antibiotic resistance in Lower Austrian rivers – SCHACHNER I. et al.: Extent and origin of fecal pollution in water and biofilms along the Danube River
16:00 h	General Assembly of IAD, Chair: Cristina Sandu (IAD President) (seperate Zoom link!)

Conference, 11 June 2021 (Friday)	
09:00 h	Flood and Flood Risk II – Convenor: Georg Janauer <ul style="list-style-type: none"> – PRÁVETZ T. et al.: Problems with the water conveyance capacity and the possibilities of improving it along the Hungarian Middle Tisza River section based on a pilot area – VIZI D.B.: Floodplain restoration with dyke relocations in the Middle Tisza District, Hungary – KEVE G.: Useful method in fluvial ice monitoring
10:00 h	<i>Coffee break</i>
10:15 h	Aquatic Biota I – Convenor: Teodora Trichkova <ul style="list-style-type: none"> – EVTIMOVA V. & FRUMENTO P.: Characterisation of water levels in the Lower Danube River and their association with primary production – EVTIMOVA V. et al.: Mayflies, stoneflies and caddisflies (Arthropoda: Insecta) from the Lower Danube River – MEULENBROEK P. et al.: Fish eDNA survey on the major tributaries of River Danube – PENGAL P. et al.: In search of elusive sterlet (<i>Acipenser ruthenus</i>) in Slovenia
11:35 h	<i>Coffee break</i>
11:50 h	Aquatic Biota II – Convenor: Georg Janauer <ul style="list-style-type: none"> – TRICHKOVA T. et al.: Invasive alien species in the Danube River Basin: Results of the JDS4 – HROMOVA Y.: Zooplankton of different types of water bodies in the Danube delta – EGRI A. et al.: Beacon lights for the protection of night-swarming mayflies
12:50 h	Wrap-up of Conference and closing remarks: Cristina Sandu & Bernd Cyffka
13:00 h	End of Conference

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Hydrological indicators of the riverbed incision along the free-flowing Danube River reach from Budapest to Slankamen relevant for the lateral connectivity between the river channel and floodplains

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Hydrological regime plays a primary role in the sustainable management of floodplains, as floodplain ecosystem dynamics and balance are largely based on the dynamics of the flow regime of rivers. In the 1980's a drying process of the floodplains on the lower Danube reach in Hungary became evident. The first statistical analyses were made for the Hungarian reach in 1992, because foresters noticed an alarming drying process of the floodplain forests. Analyses indicated the lowering of the riverbed of the Danube River. It is considered that the river training works were the main reason for the incision of the riverbed.

To the authors' knowledge, no comprehensive analysis of the changes in the water regime for the whole alluvial reach of the middle Danube has been made to date.

To fill this gap, authors analyse available time series of the waterlevel and discharge data for the free-flowing alluvial reach of the Danube River, downstream of Budapest, Hungary to the confluence of the Tisa River, in Slankamen, Serbia. This analysis aims at: 1) recognising hydrological indicators of the incision and/or aggradation of the riverbed, 2) estimating the extent of the two processes and the rate of change of the riverbed in time based on these indicators, as well as 3) estimating possible consequent changes in the frequency of extremities (low flows and high flows).

According to the Water Framework Directive (WFD) the „good status” of the Danube River reach must be achieved. As the river and its floodplains constitute a complex ecological system, this can only be done through the harmonisation of the nature protection aspect reconstruction projects, WFD programmes of measures, flood management measures and navigation development.

If traditional river training activities continue, riverbed erosion will persist or increase in the future, resulting in slow, but continuous drying of floodplains, that are very important nature conservation areas. Consequently, the majority of floodplain reconstruction works' effects might become negligible, while navigation problems will remain unsolved.

In the EU Floods Directive, natural flood management is an important issue, with a focus on increasing water retention capacities by e.g. the re-connection of rivers with their floodplains and restoration of wetlands which can store flood water and help “slow the flow” of flood waters. In this respect, lateral connectivity is one of the most essential issues, as it is for the species inhabiting floodplains and rivers. However, floodplain lateral connectivity is already severed by the decreasing frequency and extent of inundation. The studied hydrological regime is the most important determinant of floodplain habitats.