



SECOND  
ANNOUNCEMENT

INTERNATIONAL CONFERENCE

# Waters in Sensitive and Protected Areas

10 – 13 April 2024, PULA, Croatia

[www.wspa2024.org](http://www.wspa2024.org)

ORGANIZED BY

- Croatian Water Pollution Control Society (CWPCS)



- European Water Association (EWA)



SUPPORTED BY

- International Water Association (IWA)



CO-ORGANIZED BY

- University of Zagreb, Faculty of Civil Engineering
- University of Zagreb, Faculty of Mining, Geology and Petroleum Engineering
- Department of Natural Sciences of the Croatian Academy of Sciences and Arts
- Croatian Waters
- Josip Juraj Strossmayer Water Institute
- Croatian Hydrological Society
- Croatian Society for Drainage and Irrigation
- Croatian Water and Wastewater Association

UNDER THE AUSPICES OF

- Ministry of Economy and Sustainable Development of the Republic of Croatia
- Ministry of Agriculture of the Republic of Croatia
- Ministry of Physical Planning, Construction and State Assets of the Republic of Croatia
- Croatian Academy of Engineering
- University of Zagreb
- University of Rijeka
- Josip Juraj Strossmayer University in Osijek
- University of Split
- Juraj Dobrila University of Pula
- University of Zadar
- University of Dubrovnik
- University North
- University of Slavonski Brod
- Region of Istria
- City of Pula
- Public Institution Natura Histrica
- Brijuni National Park

### Dear colleagues,

We are pleased to invite you to the 4<sup>th</sup> International Conference WATERS IN SENSITIVE AND PROTECTED AREAS (4<sup>th</sup> WSPA Conference), which will be held in the city of Pula in Croatia from 10-13 April 2024. The 4<sup>th</sup> WSPA Conference is organised by the European Water Association (EWA) and the Croatian Water Pollution Control Society (CWPCS). It is a continuation of the EWA project on waters in sensitive and protected areas, which aims to bring together the best scientists, experts, entrepreneurs and public administration representatives to present the latest research results and exchange ideas on scientific, technical, socio-economic, legal and educational aspects of protection and rational use of valuable sensitive water resources and ecosystem services. It is a great honour for us to continue the tradition that started in 1996 with the 1<sup>st</sup> WSPA Conference in Primošten and continued with the 2<sup>nd</sup> WSPA Conference in 2007 in Dubrovnik and the 3<sup>rd</sup> WSPA Conference in 2013 in Zagreb.

The city of Pula, with its impressive ancient Roman buildings and magnificent amphitheatre, is known for its mild climate and unspoiled nature. Situated on the southern tip of the Istrian peninsula, below seven hills and overlooking the crystal-clear waters of the Adriatic Sea, the city offers conference participants a beautiful and inspiring environment.

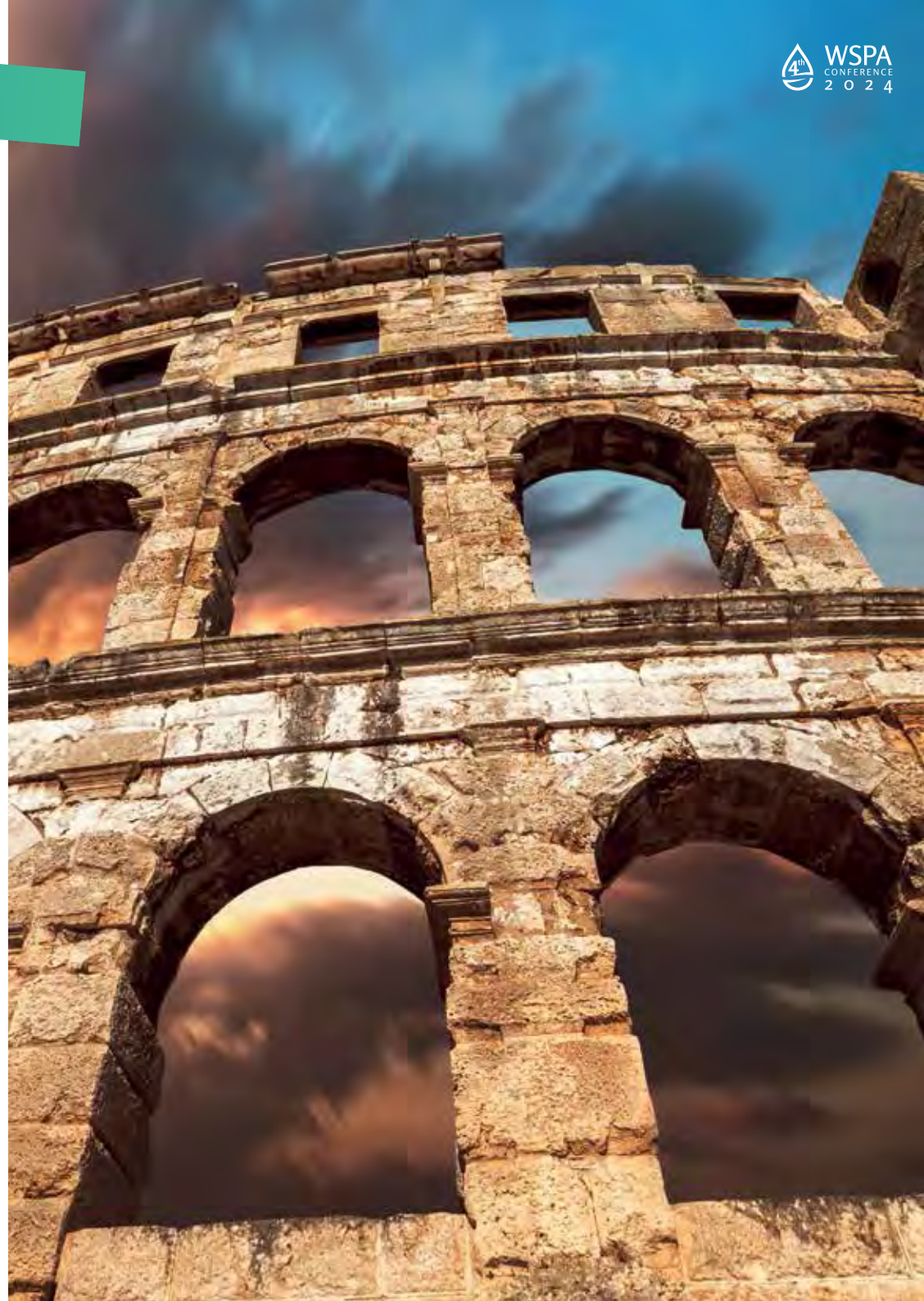
The submission of abstracts and registration of participants are done online. The conference is divided into five thematic areas with 54 themes covering all the aspects of protection of water and biodiversity in sensitive and protected areas. The event will also include the workshop “Integrated wastewater management - from the household to the watershed level” and a round table on the legal framework related to the protection of water and biodiversity in sensitive and protected areas. Participants and people in their company can choose between post-conference excursions to the Brijuni National Park and to the interior of the Istrian peninsula.

All conference-related information is available at the Conference web site:

[www.wspa2024.org](http://www.wspa2024.org).

We look forward to seeing you in Pula!

Chairman of the Organizing Committee  
Prof. **Zoran Nakić**





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## Important dates

1 March 2023	Abstract submission opens
1 May 2023	Early Bird registration opens
30 September 2023	Abstract submission deadline
15 October 2023	Formal notification of acceptance for abstract
1 December 2023	Early Bird registration closes, Regular registration opens
1 December 2023	Field excursion registration closes
31 January 2024	Full paper submission deadline
15 February 2024	Deadline for presenting authors to finalize their payment, to be included, or be deleted, from the final program
15 March 2024	Third Announcement: Final Program
5 April 2024	Regular registration closes
9 April 2024	Onsite workshop registration opens
10 April 2024	Onsite conference registration opens

## Conference objectives

Sensitive and protected areas are important not only for the protection of nature and its biodiversity, but also for the preservation of their values for various human needs. We see every day that human activities and dramatic population growth are greatly exacerbating the impacts of climate and land use change on the physical environment. This leads to degradation of human health and ecosystem services, pollution of water, soil, and air, imbalance of biogeochemical cycles, and tremendous waste production. Over the last decades, sensitive and vulnerable areas, like fertile soils around rivers prone to flooding, karst aquifers influenced by salinization or overexploitation or coasts vulnerable to tropical cyclones, were regularly affected by extreme events, having large socio-economic and environmental impacts affecting many sectors.

Many groundwater and surface water systems are under significant pressure due to overuse or pollution, and demand for water resources is increasing dramatically. Better knowledge of how to identify and mitigate human-induced environmental problems, and how to help land-use planners and policymakers balance water resource needs with their availability, is central to sustainable development. New knowledge and approaches that enable decision makers and development policy makers to balance water resource needs and availability are key to achieving global and national sustainable development goals.

Although significant scientific progress has been made in recent decades in the management of water resources and biodiversity under climate change, there are still research gaps in this area that need to be addressed. The aim of this conference is to contribute to the expansion of scientific knowledge aimed at new innovative and cost-effective solutions for the protection of water and biodiversity, as well as changes in the regulatory framework for sensitive and protected areas.

## ORGANIZING COMMITTEE

**Zoran Nakić**, Chairman / CWPCS Council member / University of Zagreb, Faculty of Mining, Geology and Petroleum Engineering

**Arthur Guischet**, EWA Water Policy Officer

**Bojana Hajduk Černeha**, CWPCS Supervisory Board president / IVS Istrian Water Protection System

**Domagoj Nakić**, University of Zagreb, Faculty of Civil Engineering

**Mara Pavelić**, EWA Management Committee member / CWPCS President / Croatian Waters

**Josip Rubeša**, CWPCS Secretary, Croatian Waters

**Iva Vidaković Maoduš**, CWPCS Council member / EWA European Technical Scientific Committee member / Elektroprojekt Consulting Engineers

**Dražen Vouk**, CWPCS Vice-President / University of Zagreb, Faculty of Civil Engineering

## SCIENTIFIC COMMITTEE

**Dražen Vouk**, Chairman / University of Zagreb, Faculty of Civil Engineering, HR

**Danko Biondić**, University of Zagreb, Faculty of Geotechnical Engineering / Croatian Waters, HR

**Ranko Biondić**, University of Zagreb, Faculty of Geotechnical Engineering, HR

**Tomislav Bolanča**, University of Zagreb, Faculty of Chemical Engineering and Technology, HR

**Damir Brđanović**, IHE Delft Institute for Water Education, NL / Global Sanitation Graduate School, UNESCO

**Tamara Brleković**, Josip Juraj Strossmayer University in Osijek, Faculty of Civil Engineering and Architecture Osijek, HR

**Peter Goethals**, Ghent University, Faculty of Bioscience Engineering / EWA European Technical and Scientific Committee (ETSC), BE

**Ivan Halkijević**, University of Zagreb, Faculty of Civil Engineering, HR

**Klaus Hinsby**, Geological Survey of Denmark and Greenland, Co-chair of the Water Resources Expert Group, EuroGeoSurveys, DK

**Danko Holjević**, University of Rijeka, Faculty of Medicine / Croatian Waters, HR

**Barbara Karleuša**, University of Rijeka, Faculty of Civil Engineering, HR

**Zoran Kovač**, University of Zagreb, Faculty of Mining, Geology and Petroleum Engineering, HR

**Dajana Kučić Grgić**, University of Zagreb, Faculty of Chemical Engineering and Technology, HR

**Jörg Londong**, Bauhaus-Universität Weimar, Department Urban Water Management and Sanitation, DE

**Robert Lütke-meier**, Institute for Social-Ecological Research (ISOE) Frankfurt, DE

**Tamara Marković**, Croatian Geological Survey, HR

**Marin Matošić**, University of Zagreb, Faculty of Food Technology and Biotechnology, HR

**Zlatko Mihaljević**, University of Zagreb, Faculty of Science, HR

**Krunoslav Minažek**, Josip Juraj Strossmayer University in Osijek, Faculty of Civil Engineering and Architecture Osijek, HR

**Domagoj Nakić**, University of Zagreb, Faculty of Civil Engineering, HR

**Zoran Nakić**, University of Zagreb, Faculty of Mining, Geology and Petroleum Engineering, HR

**Nevenka Ožanić**, University of Rijeka, Faculty of Civil Engineering, HR

**Paolo Paliaga**, Juraj Dobrila University of Pula, Faculty of Natural Sciences in Pula, HR

**Mara Pavelić**, EWA Management Committee / Croatian Waters, HR

**Harsha Ratnaweera**, Norwegian University of Life Sciences / EWA Management Committee / IWA Director of the Board, NO

**Emanuele Romano**, National Research Council of Italy - Water Research Institute, IT

**Amra Serdarević**, University of Sarajevo, Faculty of Civil Engineering, BA

**Zoran Stevanović**, University of Belgrade, Faculty of Mining and Geology, RS

**Mario Šiljeg**, University North / Josip Juraj Strossmayer Water Institute, HR

**Siniša Širac**, University of Zagreb, Faculty of Geotechnical Engineering / Croatian Waters, HR

**Lidija Tadić**, Josip Juraj Strossmayer University in Osijek, Faculty of Civil Engineering and Architecture Osijek, HR

**Fabio Tatano**, University of Urbino "Carlo Bo", Sanitary-Environmental Engineering / chairman of the EWA European Technical and Scientific Committee (ETSC), IT

**Gorazd Urbanič**, University of Ljubljana / Urbanzero Institute, SI

**Jiri Wanner**, University of chemistry and technology Prague, Department of Water Technology and Environmental Engineering / EWA European Technical and Scientific Committee (ETSC), CZ

**Patrick Willems**, KU Leuven, Department of Civil Engineering, Hydraulics and Geotechnics unit / EWA European Technical and Scientific Committee (ETSC), BE

The programme will take place over three days. The **workshop** “Integrated wastewater management - from the household to the watershed level” will be held on Wednesday, April 10. The Conference **icebreaker party** will begin in the late afternoon on Wednesday, April 10. The **Opening ceremony** will be held in the morning and the **round table** on the legal framework related to sensitive and protected areas will be held in the early afternoon on Thursday, April 11. The **Closing ceremony** will be held in the late afternoon on Friday, April 12. The Conference will include **two post-conference excursions**, on Saturday, April 13, to Brijuni National Park (Excursion A1) and to the interior of the Istria peninsula (Excursion A2).

10 <sup>th</sup> April Wednesday	11 <sup>th</sup> April Thursday	12 <sup>th</sup> April Friday	13 <sup>th</sup> April Saturday
	4 <sup>th</sup> WSPA Conference		
Workshop			
	Opening ceremony		Excursion A1
			Excursion A2
	Round table		
Icebreaker party	Gala dinner	Closing word	



## THEMATIC AREA 1.

### *Inter- and transdisciplinary research in sensitive and protected areas*

- Telecoupling frameworks for studying distant socio-ecological systems
- Integrated (socio-hydroeconomic-climatic) modelling for selecting sustainable, cost-effective actions and management strategies
- Physical and socioeconomic characterization of sensitive areas and vulnerable zones to identify key factors influencing pressures and water use
- Drought and/or flood risk and vulnerability assessment
- New aspects in hydrological analyses under the influence of climate change
- Studies on the interaction between groundwater and surface water
- Characterization and remediation of contaminated soil and groundwater
- Environmental and socio-economic impacts of natural or man-made hazards
- Assessment of the combined effects of toxic and/or persistent contaminants on sensitive soils and groundwater
- Assessment of the environmental and potential health impacts of pharmaceutical residue pollution
- Assessment of environmental and potential health effects of pollution from antiviral treatment agents COVID -19
- Environmental and potential health impact assessment of pollution from micro- and nanoplastics

#### INVITED SPEAKER:

**Fanny Frick-Trzebitzky** (*Institute for Social-Ecological Research, ISOE, Germany*)

## THEMATIC AREA 2.

### *Effective water and wastewater management in sensitive and protected areas under climate change*

- Development of early warning systems to deal with extreme climate conditions
- Drought and/or flood preparedness and mitigation options
- Nature-based solutions for flood and drought management
- Development and implementation of drought policies and plans at various levels
- Functional aquatic ecosystems in the fight against climate change
- Water and/or wastewater management under extreme climatic conditions
- Impact of climate change on pathogens in drinking water
- Treatment and disposal of by-products from water disinfection processes
- Water loss management
- Wastewater collection and treatment
- Sewage sludge management
- Science-policy interfacing to cope with extreme climate conditions

#### INVITED SPEAKER:

**Damir Brđanović** (*IHE Delft Institute for Water Education, Delft University of Technology, Netherlands*)



### THEMATIC AREA 3.

#### *Biodiversity and aquatic ecosystems – Bringing nature back into our life*

- Integrated biodiversity and ecosystem services assessments
- Integrated modelling tools to support decision making on biodiversity, ecosystem services, and sustainable development
- Restoration of freshwater ecosystems in sensitive and protected areas
- Natura 2000 and aquatic species protection
- Ecological indicators and monitoring of aquatic ecosystems
- Ecological assessment as a basis for sustainable freshwater management
- Disentangling the multiple stressors in the aquatic environment
- Enabling nature-based solutions for healthy freshwater ecosystems and water security
- Free-flowing rivers with functional floodplains and wetlands
- Impacts of invasive alien species on freshwater ecosystems
- Application of the "One Health approach"
- Net gain in biodiversity and biodiversity protection measures

#### **INVITED SPEAKER:**

**Nicole Silk** (*The Nature Conservancy, Global Director of Freshwater Outcomes, Boulder – Colorado, USA*)

### THEMATIC AREA 4.

#### *Waters in sensitive coastal areas*

- Seawater intrusion studies
- Groundwater protection concepts and strategies
- Risk reduction strategies for natural or man-made hazards
- Multilevel governance of protected areas
- Integrated coastal zone management

#### **INVITED SPEAKER:**

**Zoran Stevanović** (*Centre for Karst Hydrogeology, Department of Hydrogeology, University of Belgrade - Faculty of Mining & Geology, Serbia*)

### THEMATIC AREA 5.

#### *Contributions to amendment of legal framework related to sensitive and protected areas*

- Development of strategies for the conservation and management of ecosystems and ecosystem services
- EU 2030 Biodiversity Strategy/Kunming-Montreal Global Biodiversity Framework (GBF) objectives: mainstreaming the framework's architecture into country-level policies
- Application of managed groundwater recharge
- Incentives for more efficient management of water losses

- Water reuse
- Use of sewage sludge
- Contributions to amendments of "watch lists" for surface and groundwater
- Chemical monitoring to assess the combined effects of toxic and/or persistent pollutants, taking into account seasonal variations
- Removal of micropollutants in wastewater treatment plants
- Innovative solutions for the removal of persistent chemicals, PFAS, micropollutants, nanopollutants, and pharmaceuticals in wastewaters
- Measures for the removal of emissions at the source
- Measures to address pollution from large industrial facilities
- Application of the 'user pays' and 'polluter pays' principle to prevent and eliminate environmental damage



### OFFICIAL LANGUAGE

English

### SUBMISSION OF ABSTRACTS

The Organizing Committee of the 4<sup>th</sup> International Conference WATERS IN SENSITIVE AND PROTECTED AREAS invites authors to submit their abstracts for oral or poster presentation. The abstracts will be reviewed by the international Scientific Committee, which will make the final decision on how each paper will be presented.

When preparing your abstracts, please use the Abstract Guidelines available at the Conference web site [www.wspa2024.org](http://www.wspa2024.org). Please use the online abstract submission system via the Conference web site. The abstract submission deadline is 30 September 2023.

Please select the scientific area and the scientific topic of your paper. Each Conference participant can be the author or co-author of one or several papers and can present one paper through oral presentation and one paper through poster presentation or two papers through poster presentation. All the authors or co-authors who present their papers at the Conference have to pay the registration fee. In case of unforeseen or exceptional circumstances, the change of the author/s or co-author/s presenting their papers can be reported by e-mail to [petra@spektar-holidays.hr](mailto:petra@spektar-holidays.hr).

### SUBMISSION OF FULL PAPERS

All the authors who receive a positive review of their abstracts are invited to submit full papers which will be published in the Proceedings. The Guidelines for Full Papers will be available at the Conference web site [www.wspa2024.org](http://www.wspa2024.org) from 15 October 2023. The deadline for the submission of full papers is 31 January 2024. The authors are kindly asked to have in mind that the abstracts and papers in the English language will be included in the Book of Abstracts and the Proceedings only once the registration fee has been paid.

### PUBLICATION OF FULL PAPERS IN INTERNATIONAL JOURNALS

The Scientific Committee of the Conference will, having reviewed all the submitted full papers, propose to the editorial boards of the selected scientific journals of the International Water Association (IWA) with a high impact factor (IF) to consider the publication of full high-quality papers submitted for the conference, possibly also in a special issue of a specific journal, depending on the number and quality of submitted papers.

The authors from Croatia who wish to publish their full papers in a special issue of the international interdisciplinary journal Hrvatske vode have the possibility to publish their full papers in the Croatian language in a special issue of this journal. The decision on accepting the papers for publication in the special issue of the Hrvatske vode journal will be made by the Croatian members of the international Scientific Committee of the Conference.

## Registration and fees

Registration is done using the online registration system at the Conference web site [www.wspa2024.org](http://www.wspa2024.org). Please follow the registration instructions and fully complete an online registration form. All conference participants, including people in their company, have to register using the online registration form.

Participants at the workshop “Integrated wastewater management - from the household to the watershed level” (10 April 2024) pay the workshop registration fee. The conference participants pay the conference registration fee (11-12 April 2024).

Details about the methods of payment are available at the conference web site [www.wspa2024.org](http://www.wspa2024.org).

## REGISTRATION FEE FOR THE CONFERENCE (11-12 April 2024)

Registration fee	Till 1 Dec 2023	From 2 Dec 2023 and onsite
Participant non-member	400,00 EUR (≈3013,80 HRK)	450,00 EUR (≈3390,53 HRK)
Participant Member*	300,00 EUR (≈2260,35 HRK)	350,00 EUR (≈2637,08 HRK)
Retired	250,00 EUR (≈1883,63 HRK)	300,00 EUR (≈2260,35 HRK)
Student**	200,00 EUR (≈1506,90 HRK)	250,00 EUR (≈1883,63 HRK)
Accompanying person	150,00 EUR (≈1130,18 HRK)	150,00 EUR (≈1130,18 HRK)
Daily fee (11 April 2024)	150,00 EUR (≈1130,18 HRK)	150,00 EUR (≈1130,18 HRK)
Daily fee (12 April 2024)	150,00 EUR (≈1130,18 HRK)	150,00 EUR (≈1130,18 HRK)

### \*Member:

- International Water Association (IWA)
- National associations of the European Water Association (EWA)
- Croatian Water Pollution Control Society (CWPCS)
- Croatian Hydrological Society (CHS)
- Croatian Society for Drainage and Irrigation (CSDI)

### \*\*PhD students included

**The registration fee includes:** • Conference attendance • Certificate of attendance • Certificate of 14-hour training in construction • Conference bag • Book of abstracts (in digital format) • Proceedings (in digital format) • Welcome drink / Icebreaker party • Coffee breaks • Gala dinner with music.

## REGISTRATION FEES FOR THE WORKSHOP (10 April 2024)

Registration fee	Till 1 Dec 2023	From 2 Dec 2023 and onsite
Participant non-member	190,00 EUR (≈1431,56 HRK)	220,00 EUR (≈1657,59 HRK)
Participant Member*	170,00 EUR (≈1280,87 HRK)	200,00 EUR (≈1506,90 HRK)
Young professionals under the age of 30	150,00 EUR (≈1130,18 HRK)	180,00 EUR (≈1356,21 HRK)
Student**	140,00 EUR (≈1054,83 HRK)	170,00 EUR (≈1280,87 HRK)

### \*Member:

- International Water Association (IWA)
- National associations of the European Water Association (EWA)
- Croatian Water Pollution Control Society (CWPCS)
- Croatian Hydrological Society (CHS)
- Croatian Society for Drainage and Irrigation (CSDI)

### \*\*PhD students included

**The registration fee includes:** • Workshop attendance • Certificate of attendance • Certificate of 8-hour training in construction • Printed workshop documents • Presentations and other workshop documents in digital format • Coffee break.

## CANCELLATION CONDITIONS

All the cancellations have to be sent by e-mail to [petra@spektar-holidays.hr](mailto:petra@spektar-holidays.hr).  
Cancellations before March 01, 2024 – full refund deducting handling fee of EUR 30.  
Cancellations from March 01, 2024 to March 15, 2024 – refund of 50% deducting handling fee of EUR 30. Cancellations after March 15, 2024 – no refund.

## VISA AND LETTER OF INVITATION

We will provide a personal Letter of invitation for the purposes of obtaining visa to attend the 4<sup>th</sup> International Conference WATERS IN SENSITIVE AND PROTECTED AREAS. The Letter of invitation can be issued only to those who have completed the registration and paid the registration fee.

## INTEGRATED WASTEWATER MANAGEMENT - FROM THE HOUSEHOLD TO THE WATERSHED LEVEL

Integrated wastewater management from the individual household level to the watershed level is an indispensable segment for the long-term and sustainable maintenance of the natural biological balance and the protection of human health through the maintenance of a minimum good ecological and chemical status of surface water and groundwater bodies respectively. The goal of the workshop is to provide participants with new knowledge that is directly applicable to professional practice through a carefully designed, comprehensive, and interdisciplinary approach. The workshop provides participants with professional training in the field of technical sciences, in the branches of civil engineering, chemical engineering, and mining, petroleum and geological engineering, and in the field of natural sciences, in the branch of interdisciplinary natural sciences.

**Moderated by:** Prof. Dražen Vouk, Prof. Zoran Nakić

**Date:** 10 April 2024

**Duration of the workshop:** 8 school hours

### LEARNING OUTCOMES

- Determination of relevant hydraulic load and waste load (COD, BOD<sub>5</sub>, TSS, TN, TP) in raw and treated wastewater (from household level to watershed level)
- Determination of relevant flow in surface water bodies as recipients of raw and treated wastewater
- Determination of boundaries of the watershed in which integrated wastewater management will be implemented
- Understanding the “effluent criteria” and “recipient criteria” when discharging treated wastewater into surface water bodies
- Adoption of a combined approach methodology for a single discharge of treated wastewater into surface water body: calculation of waste concentrations at the mixing point, analysis of organic matter transfer and oxygen balance in surface water bodies
- Adoption of a combined approach methodology for a larger number of discharges of treated wastewater discharges into surface water bodies at the watershed level

- Determination of the maximum daily load in receiving surface water bodies at the watershed level
- Hydrogeological characterization of receiving groundwater bodies as recipients of raw and treated wastewater
- Application of methodology to determine natural and specific vulnerability using the examples of receiving groundwater bodies
- Understand the importance of conceptual models to qualitatively or quantitatively determine the degree of interaction between groundwater and terrestrial and aquatic ecosystems and the actual or potential use or function of groundwater
- Application of methodology to determine the ambient background concentrations of characteristic substances that may occur in groundwater due to natural or anthropogenic processes
- Determination of Reference Quality Standards or Criteria Values of substances that may contribute to the risk of not achieving environmental goals for receiving groundwater bodies
- Application of a tiered approach to determine threshold values for substances that may contribute to the risk of not achieving environmental goals for receiving groundwater bodies
- Application of the methodology for risk assessment of non-attainment of environmental objectives for groundwater using the examples of receiving groundwater bodies
- Determination of the maximum daily load in receiving groundwater bodies at the watershed level
- Adoption of a strategy to determine the required efficiency of wastewater treatment plants in the watershed, taking into account the carrying capacity of receiving surface water and groundwater bodies

### CHANGES IN WATER LEGISLATION WITHIN THE FRAMEWORK OF THE EU GREEN DEAL - CHALLENGES AND OPEN QUESTIONS

On Thursday, 11 April 2024, during the first day of the 4th International Conference WATERS IN SENSITIVE AND PROTECTED AREAS, a round table is planned about the legal framework related to the protection of water and biodiversity in sensitive and protected areas. The objective of the round table is to have a panel discussion about the key strategies of the European Green Deal, with a special focus on: the recast of the Directive concerning urban wastewater treatment; the future revision of the environmental quality and groundwater quality standards; biodiversity and ecosystem services; Regulation on water reuse; the future Commission proposal on sewage sludge directive; environmental aspects of the Common Agricultural Policy for the 2023-2027 period; amendments to the Directive on the sustainable use of pesticides, etc.

Opening statements as an introduction to the panel discussion within the round table will be given by: a representative of the European Commission (Directorate General for Environment); Ms Wendy Francken, EWA President; a representative of the World Bank; and a representative of the Croatian Ministry of Economy and Sustainable Development. They will present the interested expert and general public with strategic provisions and plans for the implementation of environmental EU-level regulations and guidelines in the coming period.

**Post-conference  
excursions**



Participants and people in their company can choose between two post-conference excursions on April 13, 2024: to the Brijuni National Park (Excursion A1) and to the interior of the Istrian peninsula (Excursion A2). As the number of places for both excursions is limited, we invite you to register on time. Both excursions include lunch in one of Istrian restaurants offering traditional food.

Registration for one of the excursions is made using the online registration system at the Conference web site [www.wspa2024.org](http://www.wspa2024.org). Excursion details will be e-mailed to everyone who has registered several weeks before the excursion. Additional information about administrative issues on organizing the excursions can be requested by sending an e-mail to [petra@spektar-holidays.hr](mailto:petra@spektar-holidays.hr).

### EXCURSION A1: Brijuni National Park

**Excursion guides:** Alena Sprčić, Zoran Nakić

**Contact:** [zoran.nakic@rgn.unizg.hr](mailto:zoran.nakic@rgn.unizg.hr)

**Transport:** Bus

**Preliminary number of participants:** Max. 120

**Price:** EUR 110

Brijuni National Park (NP) consists of 14 islands, islets and rocks located along the western coast of Istria, not far from the city of Pula. Today's boundaries of Brijuni National Park include the islands, the surrounding sea and the underwater, making the total area of the national park 33.95 km<sup>2</sup>. The Park was named after the largest islands within the archipelago, Veliki and Mali B.

Brijuni National Park is one of eight national parks in the Republic of Croatia. It is designated as one of the most biologically valuable marine areas in Croatia. In addition to biological characteristics, Brijuni also has unique cultural-historical and geological-paleontological values.

Participants of the excursion will have the opportunity to visit the island of Veliki Brijun. After a one-hour ride on the visitor train, during which they will see numerous natural and

cultural-historical sights, they will continue their tour with expert guidance. They will learn about the challenges and solutions related to the supply and use of water on the island and about the management of the marine part of the protected area. Information will be given about the results of numerous projects and activities that adapt this protected area to the impact of climate change.

There are also several wetland habitats on Veliki Brijun. The largest such area, called Saline, has great importance for the overall flora and fauna. As a source of water, they are a necessary habitat for organisms, which spend part of their lives next to water bodies, such as dragonflies, bats, and especially wetland birds.



Source: NP Brijuni, author: Augustin Ravnić

### “LIVING WATER” - THE MEMORIAL TO SPRING WATER

The memorial well (the so-called glass pyramid) and Kršinić's sculpture, also known as the Water Bearer or Primorka, are part of the memorial to an exceptional technical achievement - the pumping of spring water on the island. Namely, in the period from 1951 to 1953, hydrogeological research was carried out on the island, during which spring water was also found in the meadow with the significant name "Living water". This exceptional technical achievement of the use of groundwater, from a depth of 251 meters, is highlighted on the memorial stone, which, along with the sculpture, cistern and memorial well, forms an integral part of this landmark.



Source: NP Brijuni, author: Marko Vrdoljak

### SALINE WETLAND HABITAT

In the deep southern bay of the island of Veliki Brijun, behind Cape Gromača, there is the Saline wetland. It consists of three ponds on an area of about 12 ha. In order to preserve the habitat and not disturb the birds, access to the Saline wetland is limited for visitors. The entire list of birds recorded on Brijuni includes more than 160 species, which makes this archipelago a suitable location for birds. Saline habitat is the key reason why so many birds stay or rest here during their migration routes.



Source: NP Brijuni

### JAVORIKA BAY – ZONE OF STRICT PROTECTION

Javorika Bay is located in the vicinity of the Saline habitat. The bay is of great importance in preserving the biological diversity of the sea, it is an important fish hatchery and a habitat rich in fish spawn. In recent years, it has proved to be extremely important in the effort to preserve the largest Mediterranean seashell – the noble Pen Shell, because collectors for the spawn of this extremely endangered seashell have been installed in it.



Source: NP Brijuni

### BRIJUNI MEDITERRANEAN GARDEN - DEMONSTRATION AREA WHERE WATER FROM A WELL IS USED

The Brijuni Mediterranean Garden, with an area of 1.7 ha, is located in the area of a former forest nursery, which was once used for the purposes of cultivation and restoring forests throughout the islands, and partly for scientific research. Nowadays, the Garden is a horticultural attraction, intended to educate visitors about various types of plants, as well as pollinators, as one of the most endangered groups of living beings on Earth. The entire surface of the Garden is irrigated with water supplied from one of Brijuni's wells.

### EXCURSION A2: Water supply of southern Istria; Wastewater treatment plant of the city of Rovinj; Ornithological reserve Palud

**Excursion guides:** Bojana Hajduk Černeha, Dražen Vouk, Domagoj Nakić

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**Transport:** Bus

**Preliminary number of participants:** 120-150

**Price:** EUR 90

As part of the excursion, there is time for a short walk through the old town of Rovinj, as well as a tasting of local products.



### SPRING NIMFEJ - KAROLINA IN THE CITY CENTER OF PULA

The source of drinking water right by the seacoast, which in Roman times was called Nymphaeum (Nymphaeum - dedicated to nymphs) was key to the founding of the city of Pula. In the Middle Ages, it was known as Fons Polae and Fontana, and it was named Karolina after the wife of the Austrian emperor Francis I, after whose visit to Pula in 1833, a building with a catchment and two steam pumps was built around the spring. Historically, it is one of the most significant traces of the continuity of life in Pula from prehistory to the present day. In addition to its social significance, it is also important as a biological location where the existence of the *Proteus anguinus* has been documented.



### RAKONEK SPRING IN THE RAŠA RIVER VALLEY

Rakonek spring is located on the right edge of the southern part of the Raša river valley, about 7.5 km upstream from its inflow into the Raški bay. Rakonek is a typical karst spring that appears on the edge of the Quaternary sediments near the contact with the carbonate deposits. In its natural state, it had the form of a pond with a diameter of 22 m, over which a water pumping station was built. The spring was captured in 1960, with the construction of a water conditioning plant, a pressure and gravity main pipeline with a length of about 29 km. The yield of the spring is 250 l/s, and it is particularly interesting that it also supplies water to the Brijuni Islands.





### WASTEWATER TREATMENT PLANT (WWTP) CUVI, CITY OF ROVINJ

The newly built CuvI wastewater treatment plant in Rovinj, with a capacity of 63,000 PE, began trial operation in December 2022. The plant operates with III. degree of treatment, which, in addition to mechanical, also includes biological treatment of wastewater, using activated sludge with nitrogen and phosphorus removal, and separation of purified water from excess sludge by the process of membrane filtration. After ultrafiltration, part of the purified water is used as technological water in the process, the other part, after UV disinfection, is reused for the irrigation of football fields and tourist camps, and only the excess effluent is discharged through a submarine outlet. Excess sludge is solar dried at the Lokva Vidotto location. The construction of a photovoltaic power plant on the roof of WWTP objects is also being prepared, which would provide 1/3 of the total required electricity.



Source: Natura Histrica Public Institution

### ORNITHOLOGICAL RESERVE PALUD - PALÙ

The Palud - Palù area is located in the area of the city of Rovinj, in the immediate vicinity of the sea, and has an area of about 227 ha. It is a natural phenomenon of a brackish swamp with interesting vegetation, among which several rare plant species stand out. Pedological, microclimatic, hydrological and other factors determine high biodiversity, so the area is distinguished by the diversity and richness of ornithofauna, especially waterfowl during nesting, wintering and migratory movements. In 2001, the area was declared a special ornithological reserve. In recent years, increased salinization has been observed, and extensive works have been carried out to clean the canal systems for the supply of fresh water to the swamp itself.

The conference will be held in the **Hotel Park Plaza Histria**, Verudella 17, 52100 Pula, Croatia. Just steps from the beach, Park Plaza Histria Pula is located 4 km from the center of Pula. It features 3 restaurants, tennis and racquetball courts, an outdoor pool, pool tables, mini golf and sun loungers.

The accommodations with panoramic views feature a balcony, modern furnishings and a LCD satellite TV. Each unit is air-conditioned and has a private bathroom with bath or shower. The wellness and spa area is 5,920 ft<sup>2</sup> and features an indoor pool with seawater, a Turkish bath, a Finnish sauna, an ice bath and a relaxation area with heated lounge chairs. There is also a fully equipped gym and an in-house hair and beauty salon with 4 treatment rooms. Park Plaza Histria has several restaurants serving traditional Istrian cuisine and international dishes. You can enjoy views of the Adriatic Sea from the terraces of the hotel's cafes.

Pula is famous for its amphitheater, one of the 6 largest preserved Roman arenas in the world. Pula International Airport is 11.3 km from Park Plaza Histria. The Park Plaza Histria is a resort hotel situated a few kilometres from the historic centre of Pula. The hotel attracts attention with its elegance and comfort, whereas the personalised service, hospitable staff and its many facilities make it an oasis of peace and tranquillity for meetings, conferences and promotions.

The Park Plaza Histria has at its disposal a large congress hall that can seat 700 and four smaller rooms that can seat 30 to 100 people. These rooms are air-conditioned, with state-of-the-art audiovisual equipment with a possibility of simultaneous translations.



### PULA ARRIVING BY CAR

from the west: Trieste – Kopar – Buje – Pula

from the north: Villach – Ljubljana – Kopar – Buje – Pula

from the east: Zagreb – Rijeka – Tunnel Učka – Pazin – Pula

### ARRIVING BY AIR

Find out more about nearest airports, airline companies and frequency of flights from the point of departure. If you have chosen to reach Pula plane, there are plenty of options at your disposal.

You can arrive by a scheduled flight or one of the many charter flights at Pula Airport, the largest international airport in Istria and one of the nine airports in Croatia. The Pula Airport is only five kilometers from the city center, and can be easily reached by bus, organized transfer or taxi.

AIRPORT / CITY	DISTANCE
Pula (Croatia)	Pula: 5km / Medulin: 15km
Rijeka (Croatia)	Pula: 135km / Medulin: 145km
Zagreb (Croatia)	Pula: 287km / Medulin: 297km
Ljubljana (Slovenia)	Pula: 204km / Medulin: 214km
Trieste (Italy)	Pula: 121km / Medulin: 131km
Venice (Italy)	Pula: 286km / Medulin: 296km

### ARRIVING BY SEA

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COMPANY	LINE
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Trieste Lines (ustica Lines)	Trieste / Piran / Portorož / Rovinj / Pula
Venezia Lines	Venice / Umag / Poreč / Rovinj / Pula

### DISTANCE FROM OTHER CITIES IN CROATIA & EUROPE

- Rijeka – 102 km
- Zagreb – 288 km
- Dubrovnik – 696 km
- Trieste – 126 km
- Vienna – 593 km
- Frankfurt – 1030 km
- Amsterdam – 1490 km
- London – 1750 km
- Munich – 607 km
- Milan – 535 km
- Rome – 756 km
- Graz – 398 km

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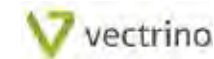


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We would also like to thank everyone, institutions, companies and individuals, who will support us in the coming period. Their names will be disclosed in the final programme of the 4<sup>th</sup> WSPA Conference, during the conference, as well as in the Book of Abstracts and in the Proceedings.

We look forward to welcoming  
you at the Conference!



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