



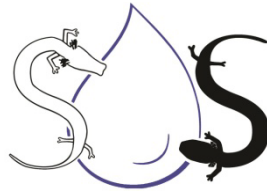
**Upon the 260<sup>th</sup> anniversary  
of the first scientific description of *Proteus anguinus* [Lacerta caeca]  
by Joannes Antonius Scopoli,**

**in partnership of  
Speleovivarium Erwin Pichl, Adriatic Speleological Society,  
Trieste Natural History Museum, Municipality of Trieste, and Tular Cave Laboratory,**

we are cordially inviting you to the

**4th International meeting SOS *Proteus*:  
CONSERVATION OF *PROTEUS* AND ITS HABITAT  
FACING CLIMATE CHANGE CHALLENGES**

*Research and conservation of *Proteus* and protection of karst water resources  
in climate change perspective*



**May 21 – 22, 2022,  
at the  
Trieste Natural History Museum,  
Trieste, Italy,**

*under the patronage of  
European Commission, Italian Ministry for Ecological Transition,  
Friuli Venezia Giulia Region, Elettra Sincrotrone Trieste, Italian Speleological Society,  
and Regional Speleological Federation FVG*

Supported by



*In collaboration with  
Illy Caffè and LifeWatch ERIC*





# SCIENTIFIC PROGRAMME

(LIVE STREAMING @ <https://www.youtube.com/watch?v=kn9XZMfbXzU>)

## Saturday, 21<sup>st</sup> May, 2020

<i>Morning sessions</i>		
9.00 – 9.45	<b>Registration of participants</b>	
9.50 – 10.00	Opening of meeting and welcome speeches	Municipality of Trieste Trieste Natural History Museum Italian Speleological Society Regional Speleological Federation FVG Tular Cave Laboratory
<b>HABITAT ASSESSMENT</b> <i>Chair: Peter Trontelj</i>		
10.00 – 10.20	Hydrogeology of the Classical Karst Region	<u>Luca Zini</u> <i>Department of Mathematics and Geosciences. University of Trieste, IT</i>
10.20 – 10.40	Assessment of environmental risks to groundwater ecosystems for chemical substances	<u>Boris Kolar</u> <i>National Laboratory of Health, Environment and Food, SI</i>
10.40 – 11.00	Characterization and delineation of the Jelševniščica and Otovski Breg catchment areas - actions to identify and mitigate anthropogenic pressure on black and white proteus	Metka Petrič <sup>1</sup> , Mitja Prelovšek <sup>1</sup> , Marina Pintar <sup>2</sup> , Nina Mali <sup>3</sup> , Rozalija Cvejič <sup>2</sup> , Miha Turk <sup>2</sup> & Janko Urbanc <sup>3</sup> <i><sup>1</sup> Research Centre of the Slovenian Academy of Sciences and Arts, Karst Research Institute, SI; <sup>2</sup> Department of Agronomy, Biotechnical Faculty, University of Ljubljana, SI; <sup>3</sup> Geological Survey of Slovenia, SI</i>
11.00 – 11.20	Chytrid fungi infection in olm: screening for pathogens in wild populations and olm's susceptibility to infection	<u>Rok Kostanjšek</u> <sup>1</sup> , Mojca Vek <sup>1</sup> , Martina Turk <sup>1</sup> , Ion Gutiérrez-Aguirre <sup>2</sup> , Nina Gunde-Cimerman <sup>1</sup> , Zhimin Li <sup>3</sup> , Elin Verbrugghe <sup>3</sup> , Maja Lukač <sup>4</sup> , Frank Pasmans <sup>3</sup> , Ivan Cizelj <sup>5</sup> & An Martel <sup>3</sup> <i><sup>1</sup> Department of Biology, Biotechnical Faculty, University of Ljubljana, SI; <sup>2</sup> National Institute of Biology, SI; <sup>3</sup> Wildlife Health Ghent, Department of Pathology, Bacteriology and Avian Diseases, Faculty of Veterinary Medicine, Ghent University, BE; <sup>4</sup> Department of Poultry Diseases With Clinic, Faculty of Veterinary Medicine, University of Zagreb, HR; <sup>5</sup> Zagreb Zoo, HR</i>
11.20 – 11.40	Conservation activities managed inside the Riserva Naturale Regionale Laghi Di Doberdò e Pietrarossa, Italy: historical mission, present challenges and future hopes - Pavees Società Cooperativa	<u>Gerardo G. Sarno</u> <i>Regional Nature Reserve of Doberdò and Pietrarossa lakes, IT</i>
11.40 – 12.00	<i>Coffee break</i>	



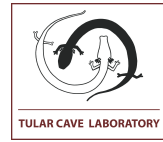


## Keynote session: CLIMATE CHANGE CHALLENGES

Chair: Raoul Manenti

12.00 – 12.30	<b>KEYNOTE LECTURE</b> <b>Climate change or global warming?</b>	<b>Renato R. Colucci</b> <i>Institute of Polar Sciences, National Research Council, IT</i>
12.30 – 12.50	Climatic pollution and underground life: threat or evolution?	Nicola Bressi <i>Trieste Natural History Museum, IT</i>
13.00 – 14.40	<i>Lunch break</i>	
<i>Afternoon sessions</i>		
<b>EVOLUTION OF PROTEUS</b>		
<i>Chair: Rok Kostanjšek</i>		
14.40 – 15.00	The evolutionary role of the genome size of <i>Proteus</i>	<u>Ettore Olmo</u> , Adriana Canapa, Federica Carducc & Maria A. Biscotti <i>Department of Life and Environmental Sciences, Marche Polytechnic University, IT</i>
15.00 – 15.20	Multiple independent transitions to cave life and high diversity in the olm	<u>Hans Recknagel</u> , Valerija Zakšek & Peter Trontelj <i>SubBio lab, Biotechnical Faculty, University of Ljubljana, SI</i>
<b>CHALLENGES IN SCIENCE OUTREACH</b>		
<i>Chair: Katarina Koller Šarić</i>		
15.20 – 15.40	A dramatic tale of scientific fraud and political propaganda with <i>Proteus</i> in the main role and a Slovenian biologist as tragic hero, along with some new data	Peter Trontelj, Rok Kostanjšek & Hans Recknagel <i>Department of Biology, Biotechnical Faculty, University of Ljubljana, SI</i>
15.40 – 16.00	From science to clickbait	<u>Gergely Balázs</u> <sup>1</sup> , Brian Lewarne <sup>2</sup> & Gábor Herczeg <sup>1</sup> <sup>1</sup> Eötvös Loránd University, HU; <sup>2</sup> Devon Karst Research Society, UK
16.00 – 16.20	Black proteus information centre in Jelševnik, Slovenia	<u>Nina Jankovič</u> & Andrej Hudoklin <i>Institute of the Republic of Slovenia for Nature Conservation, SI</i>
16.20 – 16.40	Neotenus dark dwellers Lygophila	<u>Robertina Šebjanič</u> <i>Independent artist, SI</i>
16.40 – 16.50	<i>Coffee break</i>	
16.50 – 17.50	<b>POSTERS</b>	
<i>Chair: Lucia Mancini</i>		
	Predator recognition is not a major problem in <i>Proteus anguinus</i>	<u>Enrico Lunghi</u> <sup>1</sup> , Andrea Melotto <sup>2</sup> , Olivier Guillaume <sup>3</sup> , Gentile Francesco Ficetola <sup>2,4</sup> & Raoul Manenti <sup>2,4</sup> <sup>1</sup> Ruđer Bošković Institute, HR; <sup>2</sup> Department of Environmental Science and Policy, University of Milano, IT; <sup>3</sup> Moulis Subterranean Laboratory, CNRS, FR; <sup>4</sup> Laboratory of Subterranean Biology "Enrico Pezzoli", Parco Regionale del Monte Barro, IT
	New developments in <i>Proteus</i> eDNA quantification in standing and running water	<u>Špela Gorički</u> <sup>1</sup> , Gregor Aljančič <sup>2</sup> , Blaž Kogovšek <sup>3</sup> , Uršula Prošenc Zmrzljak <sup>4</sup> & Rok Košir <sup>4</sup> <sup>1</sup> Scriptorium biologorum – Biološka pisarna, SI; <sup>2</sup> Tular Cave Laboratory, SI; <sup>3</sup> Research Centre of the Slovenian Academy of Sciences and Arts, Karst Research Institute, SI; <sup>4</sup> BIA Separations CRO, Labena d.o.o., SI





	Experience of introducing the olm to the Caves of Oliero, Venetian Prealps, Italy	<b>Marco Lazzarotto</b> <i>Oliero grotte Valbrenta Ivanxteam, IT</i>
	Speleovivarium Erwin Pichl (1990–2022): conservation, disclosure, change	<b>Edgardo Mauri</b> <i>Speleovivarium Erwin Pichl, Adriatic Speleological Society, IT</i>
	Neotenus dark dwellers   Lygophilia	<b>Robertina Šebjanič</b> <i>Independent artist, SI</i>
	Monograph “Proteus” (Association Hyla, Zagreb, 2019: 250 p.)	<b>Katarina Koller Šarić<sup>1</sup>, Dušan Jelić<sup>2</sup>, Branko Jalžić<sup>3</sup> &amp; Petra Kovač Konrad<sup>1</sup></b> <sup>1</sup> Association Hyla, HR; <sup>2</sup> Croatian Institute for Biodiversity, HR; <sup>3</sup> Croatian Biospeleological Society, HR

## Sunday, 22<sup>nd</sup> May, 2022, World Biodiversity Day

RESEARCH HIGHLIGHTS		
Chair: Nicola Bressi		
9.00 – 9.20	A virtual tour at Elettra: a powerful investigation tool in Trieste	<b>Lucia Mancini<sup>1</sup> *</b> <i>Slovenian National Building and Civil Engineering Institute, SI; *Former affiliation: Elettra-Sincrotrone Trieste S.C.p.A., IT</i>
9.20 – 9.40	3D exploring of <i>Proteus anguinus</i> by X-ray computed microtomography	<b>Markéta Tesařová<sup>1</sup>, Lucia Mancini<sup>2</sup>, Edgardo Mauri<sup>3</sup>, Gregor Aljančič<sup>4</sup>, Magdalena Năpăruș Aljančič<sup>4,5</sup>, Rok Kostanjšek<sup>6</sup>, Lilijana Bizjak Mali<sup>6</sup>, Tomáš Zikmund<sup>1</sup>, Markéta Kaucká<sup>7</sup>, Federica Papi<sup>3</sup>, Jana Goyens<sup>8</sup>, Anass Bouchnita<sup>9</sup>, Andreas Hellander<sup>10</sup>, Igor Adameyko<sup>11</sup> &amp; Jozef Kaiser<sup>1</sup></b> <sup>1</sup> Central European Institute of Technology, CZ; <sup>2</sup> Elettra-Sincrotrone Trieste S.C.p.A., IT; <sup>3</sup> Speleovivarium Erwin Pichl, Adriatic Speleological Society, IT; <sup>4</sup> Institute Tular Cave Laboratory, SI; <sup>5</sup> Research Centre of the Slovenian Academy of Sciences and Arts: Karst Research Institute, SI <sup>6</sup> Department of Biology, Biotechnical Faculty, University of Ljubljana, SI; <sup>7</sup> Max Planck Institute for Evolutionary Biology, DE; <sup>8</sup> Laboratory of Functional Morphology, University of Antwerp, BE; <sup>9</sup> Department of Information Technology, Uppsala University, SE; <sup>10</sup> Department of Integrative Biology, University of Texas at Austin, TX, US; <sup>11</sup> Medical University of Vienna, AT
9.40 – 10.00	Does age matter? Examining olms from 16-80 year of age.	<b>Susanne Holtze<sup>1</sup>, Olivier Guillaume<sup>2</sup>, Anne Ipsen<sup>3</sup> &amp; Thomas B. Hildebrandt<sup>1</sup></b> <sup>1</sup> Leibniz Institute for Zoo and Wildlife Research, DE; <sup>2</sup> Moulis Subterranean Laboratory, National Center for Scientific Research, FR; <sup>3</sup> Gesellschaft für Freilandökologie und Naturschutzplanung mbH, DE
10.00– 10.20	Linking different approaches for sex identification of <i>Proteus anguinus</i>	<b>Tajda Gredar, Lilijana Bizjak Mali &amp; Rok Kostanjšek</b> <i>Department of Biology, Biotechnical Faculty, University of Ljubljana, SI</i>
10.20 – 10.30	<i>Coffee break</i>	





<b>FIELD RESEARCH</b> <i>Chair: Gregor Aljančič</i>		
<b>10.30 – 10.50</b>	Behavioral observations of the olm ( <i>Proteus anguinus</i> ) in a karst spring	<b>Ester Premate</b> , Žiga Fišer, Žan Kuralt, Anja Pekolj, Tjaša Trajbarič, Eva Milavc, Živa Hanc & Rok Kostanjšek Department of Biology, Biotechnical Faculty, University of Ljubljana, SI
<b>10.50 – 11.10</b>	Activity of the olm ( <i>Proteus anguinus</i> ) in Italian spring habitats, close to A4 highway: conservation implications	<b>Raoul Manenti</b> <sup>1</sup> , Benedetta Barzaghi <sup>1</sup> , Edgardo Mauri <sup>2</sup> , Marco Restaino <sup>3</sup> , Veronica Zampieri, Bianca Lombardi & Gentile Francesco Ficetola <sup>1</sup> <sup>1</sup> Department of Environmental Science and Policy, University of Milano, IT; <sup>2</sup> Speleovivarium Erwin Pichl, IT; <sup>3</sup> Adriatic Speleological Society, IT
<b>11.10 – 11.30</b>	Preliminary study in cephalic morphology of <i>Proteus anguinus</i> between individuals found outside caves vs. those found deep in caves	<b>Benedetta Barzaghi</b> <sup>1,2</sup> , Gentile Francesco Ficetola <sup>1</sup> , Edgardo Mauri <sup>3,4</sup> , Marco Restaino <sup>3</sup> , Bianca Lombardi <sup>1</sup> & Raoul Manenti <sup>1,2</sup> <sup>1</sup> Department of Environmental Science and Policy, University of Milano, IT; <sup>2</sup> Laboratory of Subterranean Biology "Enrico Pezzoli", Parco Regionale del Monte Barro, IT; <sup>3</sup> Adriatic Speleological Society, IT; <sup>4</sup> Speleovivarium Erwin Pichl, IT
<b>11.30 – 11.40</b>	Images of proteus (video film)	<b>Ciril Mlinar - Cic</b> Water Cycle Institute, SI
<b>11.40 – 11.50</b>	<i>Coffee break</i>	
<b>Round Table Session: e-SCIENCE AND OPEN SCIENCE TO ADDRESS CHALLENGES IN CONSERVATION OF <i>PROTEUS</i></b> <i>Chair: Magdalena Aljančič</i>		
<b>11.50 – 12.10</b>	<b>Round table keynote Invasive species - a key issue in biodiversity</b>	<b>Alberto Basset</b> <sup>1,2</sup> <sup>1</sup> Department of Biological and Environmental Sciences and Technologies, University of Salento, IT; <sup>2</sup> LifeWatch ERIC, IT
<b>12.10 – 12.20</b>	Building virtual laboratories to monitor <i>Proteus</i> and its karst groundwater habitat	<b>Gregor Aljančič</b> <sup>1,2</sup> , Magdalena Aljančič <sup>3,2</sup> , Tanja Milotič <sup>4,5</sup> , Octavian Machidon <sup>6</sup> , Alina Machidon <sup>6</sup> , Jim Casae <sup>4,5</sup> , Tanja Pipan <sup>3,2</sup> <sup>1</sup> Institute Tular Cave Laboratory, SI <sup>2</sup> LifeWatch Slovenia, SI <sup>3</sup> Research Centre of the Slovenian Academy of Sciences and Arts, Karst Research Institute, SI <sup>4</sup> Research Institute for Nature and Forest, Open Science Lab for Biodiversity, BE <sup>5</sup> LifeWatch Belgium, BE; <sup>6</sup> University of Ljubljana, Faculty of Computer and Information Science, SI
<b>12.20 – 12.40</b>	<b>Round Table Discussion</b>	





## Social and cultural programme

### Friday, 20<sup>th</sup> May

If you are already in Trieste on *Friday evening*, the meeting point is at the Natural History Museum of Trieste (Via Tominz 4, Trieste) at **18.15**.

From there, a bus transfer is organised to take us to the Trieste Karst tourist farm "Milič Zagrski" (Località Segrado 2, Sgonico, Trieste; <https://www.miliczagrski.com/>), returning back to the Museum before 23.00.

### Saturday, 21<sup>st</sup> May

*Saturday evening* social dinner at the "Pizzeria Da Pino" at 19.30.

It is a pizzeria, but also a restaurant in the centre of town ([www.dapino.it/2020/08/26/da-pino-trieste/](http://www.dapino.it/2020/08/26/da-pino-trieste/)). Those who confirm their presence at the secretariat, will receive a coupon with a special discount of 12 € reserved only for the participants of SOS *Proteus*. Then you can order and pay a meal of your choice.

After the dinner, you will have the opportunity to visit the **Speleovivarium Erwin Pichl** (<https://sastrieste.it/index.php/speleovivarium/>).

### Sunday, 22<sup>nd</sup> May

On *Sunday afternoon* (15.30), we invite you to a free guided tour of the Grotta Gigante (Jama v Briščakih) near Sgonico, in the Trieste Karst ([www.grottagigante.it/](http://www.grottagigante.it/)).

Registration required at the registration desk. Participants should organize their own transport to the cave by car or by bus (line 42 from Piazza Oberdan).

