



# Joint ESENIAS and DIAS Scientific Conference and 12<sup>th</sup> ESENIAS Workshop

Globalisation and invasive alien species  
in the Black Sea and Mediterranean regions  
– management challenges and regional cooperation

11–14 October 2023  
Varna, Bulgaria

## Book of Abstracts

Varna, Bulgaria  
2023



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Teodora Trichkova, Hristina Kalcheva,  
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Institute of Biodiversity and Ecosystem Research  
Bulgarian Academy of Sciences

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## In Memoriam

### Honoring Gordon H. Copp

With deep sorrow, we remember Gordon H. Copp, who recently passed away at the age of 67. While many of us in the East and South European Network for Invasive Alien Species (ESENIAS) may not have had the privilege of knowing him personally, his impactful legacy extends far and wide. Gordon was a name well-known among the members of the ESENIAS network, and his contributions to the field were profound. His career, which remained vibrant until his last days, encompassed diverse facets of research and collaboration.

Gordon began his scientific journey in chemistry and biotechnology, later transitioning to fish biology, culminating in a PhD from the Université Claude Bernard, Lyon, France. His expertise expanded to include native and non-native freshwater fish population dynamics, life history, and eco-morphology during his time at the University of Hertfordshire. As he continued to thrive in his academic journey, he joined the Salmon & Freshwater Fisheries Team at the Centre for the Environment, Fisheries, and Aquaculture Science (CEFAS) in 2002, where he dedicated himself to studying the ecology and management of non-native fishes. One of Gordon's enduring research interests was the North American sunfish *Lepomis gibbosus* ('pumpkinseed'), which he used as a model species to study invasion dynamics across Europe. His work laid the foundation for the development of risk screening tools for predicting the invasiveness of non-native species – a valuable resource for decision-makers and practitioners.

Beyond his remarkable research, Gordon was a mentor to numerous early career researchers, offering guidance and support that continues to impact their work today. His generosity and dedication to his mentees remain an indelible part of his legacy. Gordon's influence extended globally, as evidenced by his extensive network of collaborators and the enduring friendships he forged. He served as an associate editor for international journals (*Folia Zoologica*, *Aquatic Invasions*, *Fisheries Management and Ecology*), leaving a mark on the academic community. Throughout his career, Gordon authored over 230 peer-reviewed papers, earning him the prestigious title of Doctor of Science (DSc) from Bournemouth University. His contributions to the field of fish biology were truly exceptional.

Gordon had an infectious laugh and a true passion and curiosity. As we reflect on Gordon's life and legacy, let us raise a glass in his honor. Whether you are a young researcher benefiting from his papers, a conference attendee, or a reader of this tribute, Gordon's remarkable contributions to our community will continue to inspire and guide us. He will be deeply missed throughout the world.

**Ali Serhan Tarkan and  
ESENIAS & DIAS team**



**Pumpkinseed impacts (or not)?**  
Impacts by pumpkinseed (or result of management actions?)

**Pumpkinseed sunfish (*Lepomis gibbosus*) invasions facilitated by introductions and nature management strongly reduce macroinvertebrate abundance in isolated water bodies**  
H. van Kleef · G. van der Velde · R. S. E. W. Leuven · H. Esselink · 2008

**Table 4** Densities of aquatic macroinvertebrates (average number of individuals·m<sup>-2</sup> ± SE) in moorland pools with and without pumpkinseed

	Without pumpkinseed (N = 4)	With pumpkinseed (N = 4)
Tricladida*	13.2 ± 6.1	0.0 ± 0.0
Gastropoda*	847.2 ± 458.3	188.0 ± 167.1
Hirudinea*	11.5 ± 5.1	0.0 ± 0.0
Oligochaeta*	170.7 ± 58.2	5.0 ± 1.5
Araneida	6.7 ± 6.2	1.5 ± 0.7
Acarina	107.2 ± 38.4	98.5 ± 13.3
Isopoda	34.5 ± 19.5	1.3 ± 1.3
Odonata*	40.3 ± 6.7	5.4 ± 4.2
Ephemeroptera	49.7 ± 39.3	5.0 ± 2.3
Heteroptera*	85.7 ± 19.3	8.3 ± 3.7
Megaloptera	1.2 ± 1.2	0.0 ± 0.0
Coleoptera	32.2 ± 17.2	3.0 ± 1.1
Diptera		
Chaoboridae	1.3 ± 1.3	0.0 ± 0.0
Culiidae	0.2 ± 0.2	0.0 ± 0.0
Chironomidae*	560.3 ± 247.5	31.7 ± 5.9
Ceratopogonidae*	44.0 ± 8.0	4.2 ± 1.5
Tabanidae	0.0 ± 0.0	0.2 ± 0.2
Trichoptera*	25.2 ± 22.3	0.0 ± 0.0
Lepidoptera	1.3 ± 0.6	0.0 ± 0.0

In 2000s, an important start on assessing pumpkinseed impacts (introduced with aquarium plants):

- Apparent impact due to pumpkinseed ... but
- A confounding factor was management action, i.e. dredging of ponds to remove invasive alien plants and favour native plants
- Dredging disturbance is known to favour pumpkinseed...

Dr. Gordon H. Copp as a keynote lecturer at the anniversary Joint ESENIAS and DIAS Scientific Conference 2021 'Ten years of cooperation and networking on invasive alien species in East and South Europe', held in virtual format on 7–9 December 2021.

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## CONFERENCE PROGRAMME

**11<sup>th</sup> October 2023**

09.30 – 10:00 **Opening of the registration**

10:00 – 10:30 **Opening of the conference**

Dr. Teodora Trichkova, Chair ESENIAS and DIAS

Dr. Vladimir Vladimirov, Director of IBER-BAS

Dr. Kremena Stefanova, Vice Director of IO-BAS

Academician Julian Revalski, President of the Bulgarian Academy of Sciences

Mr. Julian Popov, Minister of Environment and Water

### Session 1

**Chairs: F. Güler Ekmekçi, Rumen Tomov**

#### Keynote presentation 1

10:30 – 11:00 **Ana Cristina Cardoso, Eugenio Gervasini, Chiara Magliozzi** – European Alien Species Information Network at the interface between science and policy

#### Keynote presentation 2

11:00 – 11:30 **Teodora Trichkova, Bela Csanyi, Marius Skolka, Yuriy Kvach, Petya Ivanova, Hristina Kalcheva, Momir Paunović** – Contribution of regional networks (ESENIAS, DIAS, IAD) to the invasive alien species management: Danube River Basin case study

#### Keynote presentation 3

11:30 – 12:00 **Liliana Aurelia Bădulescu, Roxana Ciceoi, Mihaela Iordăchescu, Silviu Ionut Beia, Ramona Popescu** – Regional cooperation for early detection of invasive alien species in East and South European countries

12:00 – 12:15 **Coffee break**

### Session 2

**Chairs: Valentina Todorova, Marian Tudor**

12:15 – 12:30 **Kalina Stoyanova** – Invasive alien species: policies and measures at global, European and national level

12:30 – 12:45 **Teodora Trichkova, Rumen Tomov, Yordan Koshev, Eliza Uzunova, Vladimir Vladimirov et al.** – Development of action plans on the priority pathways of unintentional introduction and spread of invasive alien species in Bulgaria

12:45 – 13:00 **Marina Piria, Ivan Špelić, Ana Štih Koren, Ana Gavrilović, Tena Radočaj, Neven Iveša, Petra Burić, Dragica Šalamon** – Non-native fish species of isolated ponds and canals along the Adriatic Sea coastline that may threaten native turtle communities

13:00 – 14:00 **Lunch break**



### Session 3

**Chairs: Marina Piria, Sashto Trajanovski**

#### Keynote presentation 4

14:00 – 14:30 **Paraskevi K. Karachle** – Can there be a bright side of (marine) IAS?

#### Keynote presentation 5

14:30 – 15:00 **Marius Skolka** – List of the invasive marine species in the western part of the Black Sea

15:00 – 15:15 **Kremena Stefanova, Elitsa Stefanova, Ivelina Zlateva** – Review of *Mnemiopsis leidyi* last twenty years trend, variability and distribution pattern along the Bulgarian Black Sea coast

15:15 – 15:30 **Polyxeni Kourkoutmani, Evdokia Iliadou, Christodoulos Rados, Evangelia Michaloudi** – Day-night pattern of the non-indigenous copepod *Pseudodiaptomus marinus* Sato, 1913 in Thessaloniki Bay, North Aegean Sea, Greece

15:30 – 15:45 **Coffee break**

### Session 4

**Chairs: Cristina Preda, Leonid Svetlichny**

15:45 – 16:00 **Valentina Todorova, Marina Panayotova, Valentina Doncheva** – Distribution and impact on benthic habitats of the non-native invasive species *Rapana venosa* in the Bulgarian Black Sea

16:00 – 16:15 **Alexander Varigin** – Asian date mussel *Arcuatula senhousia* captures estuarine habitats in Ukrainian Black Sea waters

16:15 – 16:30 **Gökhan Ballıkaya, Mehmet Aydın** – Threat or benefit? An alien species *Diadema setosum* (Leske, 1778) in the Mediterranean Türkiye

16:30 – 16:45 **Merve Karakus, İsmal Dal, Meltem Buğdaycı Kanlı** – Investigation of the growth characteristics of the pufferfish (*Lagocephalus sceleratus*, Gmelin, 1989) in Antalya Bay, Mediterranean Sea

16:45 – 17:00 **Coffee break**

17:00 – 18:30 **Poster Session 1**

**12<sup>th</sup> October 2023**

### Session 5

**Chairs: Katrin Teubner, Alexander Varigin**

#### Keynote presentation 6

09:30 – 10:00 **Fitnat Güler Ekmekçi, Şerife Gülsün Kırankaya, Baran Yoğurtçuoğlu** – When beauty becomes pesty: the potential impacts of invasive ornamental fish species in Anatolia, Türkiye

### Keynote presentation 7

10:00 – 10:30 **Sasho Trajanovski, Biljana Budzakoska Gjoreska, Sonja Trajanovska, Konstantin Zdraveski** – Lake Prespa (North Macedonia) – Horizon scanning for invasive and alien species using AS-ISK tool

10:30 – 10:45 **Şerife Gülsün Kırankaya, Baran Yoğurtçuoğlu, Fatma Demir, Havva Özer, Fitnat Güler Ekmekçi** – Ecological monitoring of feral populations of two ornamental fish species in the Upper Euphrates (Türkiye)

10:45 – 11:00 **Bella Japoshvili, Madona Varshanidze, Levan Mumladze** – Trends of invasive species investigation in Georgia

11:00 – 11:15 **Yuliia Kutsokon, Volodymyr Yuryshynets, Yuriy Kvach** – Alien fish species and their parasites of the small river (Zdvyzh river, Dnieper River basin, Ukraine)

11:15 – 11:30 **Polina K. Nikova, Milcho Todorov, Teodora Trichkova** – Pathways of introduction and spread of a recent invader *Micropterus salmoides* (Lacépède, 1802) in Bulgaria

11:30 – 11:45 **Coffee break**

### Session 6

**Chairs: Marija Smederevac-Lalić, Volodymyr Tytar**

#### Keynote presentation 8

11:45 – 12:15 **Katrin Teubner** – Alien plankton species and macrophytes introduced to Danubian countries over decades and their significance for freshwater ecology

12:15 – 12:30 **Chiara Magliozzi, Eugenio Gervasini, Ana Cristina Cardoso** – Spatiotemporal trends of Invasive Alien Species of Union concern in the Danube catchment

12:30 – 12:45 **Konstantin Zdraveski, Sasho Trajanovski, Biljana Budzakoska Gjoreska, Sonja Trajanovska** – Capitalising on invasive alien species for revenue generation and biodiversity conservation in national parks: A comprehensive global analysis

12:45 – 13:00 **Cristina Preda, Laura Abraham, Tim Adriaens, Lissa Breugelmans, David A. Clarke, Lina M. Estupinan-Suarez, Louise Hendrickx, Cang Hui, Katelyn T. Faulkner, Miguel Fernandez, Alexis Joly, Sabrina Kumschick, Ward Langerhaert, Matilde Martini, Melodie McGeoch, Daniyar Memedemin, Joe Miller, Damiano Oldoni, Henrique M. Pereira, Tim Robertson, Duccio Rocchini, Hanno Seebens, Yanina V. Sica, Heliana Teixeira, Maarten Trekels, Toon Vandaele, John R. Wilson, Tsungai A. Zengeya, Peter Desmet, Jasmijn Hillaert, Quentin Groom** – Introducing the B-cubed project in the context of biological invasions

13:00 – 14:00 **Lunch break**

### Session 7

**Chairs: Nataliia Miroshnyk, Antoaneta Petrova**

#### Keynote presentation 9

14:00 – 14:30 **Vladimir Vladimirov, Ana Petrova** – Alien species of vascular plants first reported for Bulgaria after 2000

14:30 – 14:45 **Paulina Anastasiu, Athanasios Alexandru Gavrillidis, Viorica Iulia Miu, Mihăiță Iulian Niculae, Ioana-Minodora Sîrbu, Laurențiu Rozyłowicz, Nicolae Manta** – Updated distribution in Romania of alien plant species of European Union concern

14:45 – 15:00 **Markola Saulic, Ivica Djalo vic, Darko Stojicevic, Dragana Bozic, Sava Vrbnicanin** – Invasive weed species in Arable Soil Seed Bank in Serbia

15:00 – 15:15 **Roxana Ciceoi, Oana Venat, Elena Ștefania Ivan, Vasilica Luchian, Minodora Gutue, Mala-Maria Stavrescu-Bedivan** – Gojiberry - an invasive host plant for an invasive mite

15:15 – 15:30 **Preslav Enchev, Yancho Zarev, Ina Kojuharova, Iliana Ionkova** – Searching for beneficial uses of the invasive plant *Phytolacca americana*

15:30 – 15:45 **Coffee break**

### Session 8

**Chairs: Paulina Anastasiu, Vladimir Vladimirov**

15:45 – 16:00 **Vladimir Vladimirov, Antoaneta Petrova** – New and noteworthy records of alien vascular plants from the Black Sea Coast floristic region of Bulgaria

16:00 – 16:15 **Oleksandr L. Savytskyi** – Problems of invasive alien species of Nyzhnyosulsky National Natural Park

16:15 – 17:15 **Poster Session 2**

17:15 – 17:30 **Coffee break**

17:30 – 18:30 **Poster Session 2 (Cont.)**

19:30 **Conference dinner**

## 13<sup>th</sup> October 2023

### Session 9

**Chairs: Bella Japoshvili, Evangelia Michaloudi**

#### Keynote presentation 10

09:30 – 10:00 **Mahir Kanyılmaz, Derya Özcan, Elvan Tercan, Mustafa Altuğ Atalay** – Aquatic invasive non-native species in Türkiye: What has been learned so far?

#### Keynote presentation 11

10:00 – 10:30 **Halyna Morhun, Tomasz Rewicz, Michał Grabowski** – Taxonomic status of the Azov-Black Sea populations of the supralittoral genus *Cryptorchestia* (Amphipoda: Talitridae) with remarks of other Ukrainian talitrids

#### Keynote presentation 12

10:30 – 11:00 **Mehmet Ekmekçi, Sukran Acikel** – Interacting systems approach to water resources management for sustaining aquatic ecosystems for native fish species

11:00 – 11:15 **Teodora Trichkova, Rumen Tomov, Vladimir Vladimirov, Milcho Todorov, Elena Tsvetkova, Violeta Tyufekchieva, Hristina Kalcheva, Polina K. Nikova** – BioBlitz surveys on invasive alien species in Sofia and Varna Regions: collection of data and raising of public awareness

11:15 – 11:30 **Lyubomir Kenderov, Mihail Iliev, Ilya Gyonov, Zdravko Hubenov, Plamen Mitov, Teodora Trichkova, Vesela Evtimova, Eliza Uzunova, Tihomir Stefanov, Nesho Chipev, Albena Alexandrova, Vladimir Bozukov, Ralica Sabeva, Stefan Velev, Docho Dochev** – Presenting the project 'Complex ecosystem study of the aquatic area of the Underwater Petrified Forest Natural Phenomenon, Sozopol Bay' related to biodiversity shift in the Black Sea

11:30 – 11:45 **Coffee break**

### Session 10

**Chairs: Marga Grădilă, Rumen Tomov**

#### Keynote presentation 13

11:45 – 12:15 **Rumen Tomov** – Alien species in European horticulture – what we do not know?

12:15 – 12:30 **Marius Skolka, Dan Cogălniceanu, Daniyar Memedemin, Ovidiu Drăgan, Cristina Preda** – Climate changes and invasive alien species in Romania – the *Corytucha* case

12:30 – 12:45 **Oleksandr Tsybulskyi, Oleksandr Stryhun, Petro Chumak** – Monitoring and distribution of the Emerald Ash Borer (*Agrilus planipennis* Fairmaire, 1888: Coleoptera, Buprestidae) in the urbocenoses of Kyiv (Ukraine)

12:45 – 13:00 **Rumen Tomov, Tsvetelina Vasileva** – The invasion of *Neodryinus typhlocybae* (Ashmead) (Hymenoptera: Dryinidae) in Sofia

13:00 – 14:00 **Lunch break**

### Session 11

**Chairs: Lidija Velkova-Jordanoska, Ivan Rusev**

14:00 – 14:15 **Mariya Kaschieva, Tatiana Dimitrova, Irina Pavlova** – Forest pedagogy in the context of invasive species control

14:15 – 14:30 **Geanina Fănar, Miruna Vizireanu, Ovidiu Drăgan, Sabina Vlad, Raluca I. Băncilă, Silviu O. Petrovan, Laurențiu Rozyłowicz, Dan Cogălniceanu** – Nesting ecology of the red-eared sliders – *Trachemys scripta* in an urban environment, Romania

14:30 – 14:45 **Marian Tudor, Daniyar Memedemin** – Changes in the microhabitat preferences of the steppe viper (*Vipera ursinii moldavica*) from the Danube Delta as a result of the invasion and spread of the invasive species *Xanthium orientale* subsp. *italicum*

14:45 – 15:00 **Polina K. Nikova, Maria Kachamakova, Yordan Koshev** – First documented records in the wild of American mink (*Neogale vision* von Schreber, 1776) in Bulgaria

15:00 – 15:15 **Oxana Munjiu** – Study of invasive benthic crustaceans in the Republic of Moldova

15:15 – 15:30 **Coffee break**

15:30 – 16:30 **Poster Session 3**

16:30 – 18:00 **12th ESENIAS Workshop**

- Awarding of best oral/poster presentations – one free publication in NeoBiota and two free zoological publications in Acta Zoologica Bulgarica

## POSTERS

### Poster Session 1

(17:00 – 18:30 h, 11.10.2023)

Chair: Sasho Trajanovski

- P1.01: Leonid Svetlichny, Larysa Samchyshyna** – Asian calanoid copepod *Sinodiaptomus sarsi*: three years after the first appearance in the Nyvky Park pond (Kyiv, Ukraine)
- P1.02: Volodymyr Tytar** – An ecological niche model for the invasive mud snail, *Potamopyrgus antipodarum*, with special reference to Ukraine
- P1.03: Vera Nikolić, Rajko Roljić, Zlatko Nedić, Dubravka Škraba Jurlina, Vojislav Sokolović, Tamara Kanjuh, Ana Marić, Predrag Simonović** – New distribution record of *Faxonius (Orconectes) limosus* Rafinesque, 1817 in Lake Čelije, Serbia
- P1.04: Violeta Tyufekchieva, Emilia Varadinova, Yanka Vidinova, Vesela Evtimova, Galia Georgieva, Milcho Todorov, Rabia Soufi, Lubomir Kenderov, Teodora Trichkova** – Invasive alien species of benthic macroinvertebrates in Bulgarian rivers: results within the validation of the typology and classification system of the surface water bodies
- P1.05: Vesela Evtimova, Emilia Varadinova, Violeta Tyufekchieva, Galia Georgieva, Yanka Vidinova, Milcho Todorov, Lubomir Kenderov, Rabia Soufi, Teodora Trichkova** – Invasive alien species of benthic macroinvertebrates in Bulgarian reservoirs
- P1.06: Anzhelika Sylaieva, Tetiana Novosolova, Yulia Gromova, Alexander Protasov** – Biological invasion in water technoecosystems in long term period

Chairs: Vesna Djikanović, F. Güler Ekmekçi

- P1.07: Ana Marić, Goran Žikić, Tamara Kanjuh, Vojislav Sokolović, Vera Nikolić, Dubravka Škraba Jurlina, Predrag Simonović** – First record of black carp *Mylopharyngodon piceus* in Serbia
- P1.08: Sergey Afanasyev, Olena Hupalo, Nataliia Tymoshenko, Olena Lietytska** – Alien fishes in the Upper Tisa River (Ukraine): reasons of appearance and invasion paths
- P1.09: Ovidiu Dragan, Dan Cogalniceanu, Laurentiu Rozyłowicz** – Invasive fish species distribution in Romanian freshwaters
- P1.10: Ana Marić, Vera Nikolić, Tamara Kanjuh, Vojislav Sokolović, Dubravka Škraba Jurlina, Predrag Simonović** – Do non-native fish species now predominate in the River Danube in the National Park “Djerdap”?
- P1.11: Dušan Nikolić, Milica Jaćimović, Srđan Subotić** – Relationships of otolith size to fish size – a study on pumpkinseed (*Lepomis gibbosus*) from Topola reservoir (Serbia)
- P1.12: Vesna Djikanović, Katarina Jovičić, Srđan Subotić, Milica Jaćimović, Dušan Nikolić** – Intestinal content analyses of pumpkinseed *Lepomis gibbosus* (Linnaeus, 1785) in five small reservoirs – central Serbia
- P1.13: Lidija Velkova-Jordanoska, Stojmir Stojanovski, Dijana Blazekovikj-Dimovska** – Investigation of histopathological alteration in liver and gills of non-native species *Lepomis gibbosus* in Lake Prespa

- P1.14: Milica Jaćimović, Dušan Nikolić, Gorčin Cvijanović, Željka Višnjić-Jeftić, Stefan Skorić, Marija Smederevac-Lalić** – Results of selective removal of the black bullhead (*Ameiurus melas*) in two different lentic systems
- P1.15: Sabina E. Vlad, Ovidiu Drăgan, Noé Ferreira-Rodríguez, Ana Maria Drăgan, Florina Stănescu, Raluca Ioana Băncilă, Dan Cogalniceanu** – How does the public perceive fish removal from alpine lakes? A case study from the Romanian Carpathians

Chair: Sava Vrbnicanin

- P1.16: Mykola Kozyr, Liubov Gubar** – New locations of *Lepidium virginicum* L. on the territory of Ukraine
- P1.17: Liubov Gubar, Sergei Kochnov** – Study of populations of the invasive species *Cenchrus longispinus* (Hack.) Fernald of the flora of Ukraine
- P1.18: Raisa Matyashuk, Liubov Gubar, Iryna Tkachenko** – Spontaneous distribution of introducers as an example the landscape art park-monument “Feofaniya”
- P1.19: Roxana Ciceoi, Silviu Ionut Beia, Elena Ștefania Ivan, Violeta Alexandra Ion** – Mycotoxigenic fungi perspectives under the climate change context

### Poster Session 2

(16:15 – 18:30 h, 12.10.2023)

Chair: Paraskevi K. Karachle

- P2.01: Nadezhda Todorova, Gabriele Jovtchev, Svetla Gateva, Miroslav Rangelov** – Black Sea coastal sulfate reducing bacteria (SRB) and their potential influence on benthic anaerobic zone dynamics
- P2.02: Martha Syrri, Paraskevi K. Karachle, Polyxeni Kourkoutmani, Evangelia Michaloudi** – Presence of the non-indigenous copepod *Pseudodiaptomus marinus* Sato, 1913 in the stomach content of *Sardina pilchardus* (Walbaum, 1792)
- P2.03: Stela Ruci, Ermira Milori, Sajmir Beqiraj** – *Callinectes sapidus* population in the coastal lagoons of Adriatic Sea in Albania
- P2.04: Simge Bozkaya, Sule Gurkan, Ertan Taskavak** – A preliminary study on the body indexes of the red cornetfish *Fistularia petimba* Lacepède, 1803 from Taşucu gulf offshore (Mersin, eastern Mediterranean)
- P2.05: Ioannis Keramidas, Athanassios C. Tsikliras, Argyro Zenetos, Aikaterini Dogrammatzi, Paraskevi K. Karachle** – Risk assessment of two siganid species in the Greek seas

Chairs: Paulina Anastasiu, Vladimir Vladimirov

- P2.06: Svetoslava Terzieva, Neli Grozeva** – Morphological characteristics of invasive species of genus *Amaranthus* L. in Bulgaria
- P2.07: Elena Bulakh, Tetiana Dvirna, Liudmyla Zavialova, Oksana Kucher, Oleksandr Orlov, Vira Protopopova, Myroslav Shevera** – *Portulaca oleracea* aggregate (Portulacaceae Juss.) in Ukraine: modern state of investigation

- P2.08: Vladimir Vladimirov** – *Bidens subalternans* (Asteraceae), a new alien species to the Bulgarian flora
- P2.09: Vladimir Vladimirov, Alexandar Tashev** – *Rhus typhina* (Anacardiaceae), a new alien species in the Bulgarian flora
- P2.10: Antoaneta Petrova, Diana Venkova, Boris Assyov, Rossen Vassilev** – Notes on the current distribution and population size of non-native *Claytonia sibirica* in Bulgaria
- P2.11: Dimcho Zahariev** – *Opuntia humifusa* (Raf.) Raf. (Cactaceae) in three new floristic regions in Bulgaria
- P2.12: Boris Baranovski, Lina Karmyzova, Iryna Ivanko, Alla Kulik, Volodymyr Fedenko** – The adventive flora of the steppe zone of Ukraine
- P2.13: Petya Boycheva, Mariya Kaschieva** – Alien and invasive plant species in natural habitat 62C0 “Ponto-Sarmatian steppes” in the Northern Black Sea coast, Bulgaria
- P2.14: Daniyar Memedemin, Paulina Anastasiu, Marius Skolka, Dan Cogalniceanu** – Alien plant species in alpine areas – a case study in Southern Carpathians
- P2.15: Rossen Vassilev, Antoaneta Petrova, Boris Assyov, Atanas Tanev** – Ornamental escapes and citizen science – the example of *Campanula lactiflora*
- P2.16: Oleksander Shynder, Vitalii Kolomiichuk, Myroslav Shevera** – Monitoring of invasive potential of ergasiophytes in botanical gardens and dendrological parks of the Ukrainian CIS-Black Sea Region
- P2.17: Lyudmila Lyubinska, Ilya Vlasov** – The rare species *Echinops exaltatus* Schrad and invasive plants
- P2.18: Necmi Aksoy, Ahmet Uludağ, İlhan Üremiş** – Threat of bamboo taxa invasion to natural ecosystems: A case study from Türkiye
- P2.19: Nataliia Miroshnyk, Tetiana Grabovska, Olga Tertychna** – Alien plant species in forest shelterbelts: impact on biodiversity, the need for risk management
- P2.20: Dessislava Gyurova, Todor Karakiev, Nikola Doykin, Vladimir Vladimirov** – Giant hogweed (*Heracleum mantegazzianum*) in Vitosha Nature Park, Bulgaria – distribution, control methods and site clean-up
- P2.21: Liudmyla Zavialova, Vitalii Kolomiichuk, Myroslav Shevera, Sergiy Panchenko, Vira Protopopova, Oksana Kucher, Viktoria Smago** – The main trends of post-entry regeneration of vegetation cover of Ukraine
- P2.22: Marga Grădilă, Valentin Marius Ciontu, Raluca Monica Cristea, Daniel Jalobă** – Efficacy of postemergence herbicides in control of *Ambrosia artemisiifolia* L. (Common ragweed) in maize crop
- P2.23: Sava Vrbnicanin, Dragana Božić, Djordje Bastajić, Teodora Tojić, Dejan Nedeljković** – Response of ragweed to nicosulfuron and imazamox
- P2.24: Zornitsa Zherkova, Neli Grozeva, Mima Todorova** – Analysis of organic acids of purslane (*Portulaca oleracea* L.) at various locations in Bulgaria

### Poster Session 3

(15:15 – 16:30 h, 13.10.2023)

**Chairs: Marga Grădilă, Rumen Tomov**

- P3.01: Alexandr Vasiliev** – Discoveries of non-native Araneae (Arachnida) and Simuliidae (Diptera) species in the Republic of Moldova
- P3.02: Rumen Tomov** – First report of *Cupressatia siskiyou* gall midge in Bulgaria

- P3.03: Rumen Tomov, Boryana Plashkova** – Presence of the Asian walnut moth, *Garella musculana* (Erschov, 1874) (Lepidoptera, Nolidae), in Sofia Region, Bulgaria
- P3.04: Constantina Chireceanu, Andrei Teodoru, Ioana Florescu** – Invasive *Auchenorrhyncha* species in vineyards from Romania
- P3.05: Boryana Plashkova, Gergana Mladenova** – The relationship between the center of origin and plant host preferences of pest insects on vegetable crops in Bulgaria
- P3.06: Teodora Popova, Dimitar Semerdjiev, Rumen Tomov** – Study of the microflora of the ladybug *Harmonia axyridis* in order to assess its role as a carrier of pathogenic microorganisms
- P3.07: Roumiana Todorova** – Disease control of invasive insects in Europe
- P3.08: Manana Kereselidze, Daniela Pilarska, Nika Guntadze, Andreas Linde, Ann Hajek** – Preliminary results of *Halyomorpha halys* infection with the microsporidium *Nosema maddoxi* under laboratory conditions
- P3.09: Danail Takov, Marek Barta, Teodora Toshova, Daniela Pilarska, Danail Doychev** – Pathogenicity of the fungus *Metarhizium pemphigi* against invasive hemipteran species *Oxycarenus lavaterae* under laboratory conditions
- P3.10: Rositsa Davidova, Viktor Vasilev, Ivaylo Ivanov** – Mite fauna (Acari: Acariformes and Parasitiformes) in nests of Passerine species in Northeastern Bulgaria
- P3.11: Mzia Kokhia, Oleg Gorgadze, Manana Lortkipanidze, Madona Kuchava** – Earthworms of Georgia and their biodiversity
- P3.12: Ivan Rusev** – Range expansion of golden jackal (*Canis aureus*) in the Tuzlivski Lymany National Nature Park, Ukraine

**Chair: Marina Piria**

- P3.13: Hristina Kalcheva** – Apply of purple phototrophic bacteria for resource recovery from organic waste in European countries – a review of the COST Action ‘PURPLEGAIN’
- P3.14: Ruslan Martinov** – Economic costs of biological invasions
- P3.15: Marina Piria, Ivan Špelić, Vedran Car** – Possibilities of non-native species detection and monitoring by using unmanned aerial system imagery
- P3.16: Tetyana Alieksieieva, Svitlana Belokon, Denis Radionov** – Biological monitoring of natural freshwater sources
- P3.17: Laurentiu Rozylowicz, Raluca I. Bancila, Viorel D. Popescu, Andreea Nita, Marian D. Mirea, Steluta Manolache** – Hierarchical methods for alien species data collection

**14th October 2023**

**Conference excursion  
(10:00 – 17:00 h)**

## Relationships of otolith size to fish size – a study on pumpkinseed (*Lepomis gibbosus*) from Topola Reservoir (Serbia)

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Otoliths are calcareous structures commonly used for fish age, size, and taxon determination. Information obtained from the analysis of otoliths can be of great importance for the management of fish populations, including invasive fish species. Pumpkinseed (*Lepomis gibbosus*) is one of the most successful invaders of Serbian freshwaters. It preys on aquatic invertebrates, fish eggs and small fish. This species shows high plasticity of life history traits and can tolerate harsh environmental conditions, including hypoxia and high water temperatures.

In October of 2020, a total of 28 pumpkinseed individuals from Topola Reservoir (44.268229 N, 20.691564 E) were caught with electrofishing device Villager VGI2400 (230 V, 8.7 A, 2.0 kW). In order to determine relationships of otolith to fish size, a total length (TL) and body weight (BW) of each fish were measured as well as otolith area (OA), perimeter (OP), length (OL), and weight (OW). There were no significant differences between left and right otolith regarding OA, OP, OL, and OW (t-test,  $P > 0.94$ ). Significant and strong correlations were recorded for TL and OA ( $r^2 = 0.936$ ,  $P < 0.0001$ ), TL and OP ( $r^2 = 0.958$ ,  $P < 0.0001$ ), TL and OL ( $r^2 = 0.945$ ,  $P < 0.0001$ ), and TL and OW ( $r^2 = 0.838$ ,  $P < 0.0001$ ). Additionally, significant and strong correlations were recorded for BW and OA ( $r^2 = 0.844$ ,  $P < 0.0001$ ), BW and OP ( $r^2 = 0.819$ ,  $P < 0.0001$ ), BW and OL ( $r^2 = 0.828$ ,  $P < 0.0001$ ), and BW and OW ( $r^2 = 0.795$ ,  $P < 0.0001$ ). Results indicated that TL-OP relationship is the best predictor of pumpkinseed length, while BW-OW relationship is the weakest predictor of pumpkinseed weight. The common linear regression equations were determined:  $y = 3.2643 + 0.9004x$  for OA-TL,  $y = 0.9079x - 0.4816$  for OP-TL,  $y = 2.4873x - 0.6667$  for OL-TL,  $y = 5.2364 + 523.2832x$  for OW-TL,  $y = 3.2985x - 9.6439$  for OA-BW,  $y = 3.2389x - 22.5237$  for OP-BW,  $y = 8.9825x - 23.5786$  for OL-BW, and  $y = 1966.5664x - 2.7114$ . The obtained equations allow the calculation of pumpkinseed TL and BW based on the set of data on the morphological characteristics of the otoliths. Of the considered otolith parameters, otolith weight is the least suitable character for estimation of pumpkinseed size.

**Key words:** Invasive fish, otolith and fish length, otolith and body weight, fish condition, otolith area, otolith perimeter.

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