



# 22ND INTERNATIONAL CONFERENCE ON AQUATIC INVASIVE SPECIES

April 18-22, 2022

Thermae Palace Hotel, Oostende, Belgium

*Global Climate Change  
Amplifies Aquatic Invasive  
Species Impacts*

**PROGRAM AND ABSTRACTS**



Netherlands Food and Consumer  
Product Safety Authority  
Ministry of Agriculture,  
Nature and Food Quality



RESEARCH INSTITUTE  
NATURE AND FOREST



Invasive  
Species  
Centre

The conference is co-hosted by the Netherlands Office for Risk Assessment & Research (NVWA-BuRO) and Belgium's Research Institute for Nature and Forest (INBO), with the support of Canada's Invasive Species Centre, the ICAIS Secretariat.

<b>U.S. Habitattitude™ Program – innovative non-regulatory consumer education program to prevent introduction of aquatic invasive species . . . . .</b>	<b>39</b>
<i>Joshua Jones</i> <i>Pet Industry Joint Advisory Council, USA</i>	
<b>Towards detecting and characterizing habitat niche and preference of <i>Lamprichthys tanganicanus</i> (Boulenger, 1898), a faster invasive species in Lake Kivu . . . . .</b>	<b>39</b>
<i>Tchalondawa Kisekelwa</i> <sup>1,2*</sup> , <i>Joyeuse Mudagi</i> <sup>1,2</sup> , <i>Alimasi Wilondja</i> <sup>1,2</sup> , <i>Musombwa Kubota</i> <sup>1,2</sup>	
<sup>1</sup> ISP de Bukavu, Département de Biologie-Chimie, Unité d'Enseignement et de Recherche en Hydrobiologie Appliquée, Democratic Republic of Congo;	
<sup>2</sup> Centre de Recherche en Biodiversité, Ecologie, Evolution et Conservation (CRBEC), Democratic Republic of Congo	
<b>Hooked out of place: ensemble forecasting climate suitable areas for the invasive <i>Cichla ocellaris</i> Bloch &amp; Schneider, 1801 under two climate change scenarios . . . . .</b>	<b>40</b>
<i>Gabriel Klippel</i> <sup>1,2</sup> , <i>Ana Clara Sampaio Franco</i> <sup>1,2</sup> , <i>Rafael Lacerda Macêdo</i> <sup>3</sup> , <i>Maria Lucia Lorini</i> <sup>1</sup> , <i>Mariana Novello</i> <sup>2</sup> , <i>Luciano Neves dos Santos</i> <sup>1,2</sup>	
<sup>1</sup> Federal University of the State of Rio de Janeiro, Theoretical and Applied Ichthyology Laboratory, Brazil; <sup>2</sup> Federal University of the State of Rio de Janeiro, Graduate Program in Biological Sciences (Neotropical Biodiversity), Brazil; <sup>3</sup> Federal University of São Carlos, Department of Ecology and Evolutionary Biology, Brazil	
<b>Invasive cyclopoid <i>Oithona davisae</i> Ferrari &amp; Orsi, 1984 in Kavala harbor (North Aegean Sea): temporal and spatial variation . . . . .</b>	<b>40</b>
<i>Polyxeni Kourkoutmani</i> <sup>1</sup> , <i>Georgia Kalantaridou</i> <sup>1</sup> , <i>Aikaterini Loufi</i> <sup>1</sup> , <i>Aikaterini Karagianni</i> <sup>1</sup> , <i>Evangelia Michaloudi</i> <sup>1</sup>	
<sup>1</sup> Aristotle University of Thessaloniki, School of Biology, Department of Zoology, Greece	
<b>The invasive drain fly <i>Clogmia albipunctata</i> in Europe: timeline of invasion, first records from Denmark and Sweden and potential for citizen science monitoring . . . . .</b>	<b>41</b>
<i>Gunnar Mikalsen Kvitte</i> <i>Nord University, Faculty of Biosciences and Aquaculture</i>	
<b>Biomonitoring the impact of agricultural pesticides in freshwater habitats using the invasive clam <i>Corbicula largillierii</i> . . . . .</b>	<b>41</b>
<i>Verónica Laura Lozano</i> <sup>1,2,3</sup> , <i>Esteban Paolucci</i> <sup>4</sup> , <i>Camila Muñoz</i> <sup>2</sup> , <i>Liliana Moraña</i> <sup>2</sup> , <i>Florencia Liquin</i> <sup>1,3</sup> , <i>Francisco Sylvester</i> <sup>1,3</sup>	
<sup>1</sup> Universidad Nacional de Salta, Instituto para el Estudio de la Biodiversidad de Invertebrados (IEBI); Argentina; <sup>2</sup> Universidad Nacional de Salta, Cátedra de Biología y Diversidad de Protistas Autótrofos y Fungi; Argentina/ <sup>3</sup> Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET), CCT-Salta, Argentina; <sup>4</sup> Museo Argentino de Ciencias Naturales "Bernardino Rivadavia" CONICET, Argentina	
<b>Detecting <i>Xenopus laevis</i> in Belgium using eDNA and qPCR. . . . .</b>	<b>42</b>
<i>Sophie Gombeer</i> <sup>1</sup> , <i>Kenny Meganck</i> <sup>2</sup> , <i>Ann Vanderheyden</i> <sup>1</sup> , <i>Nathalie Smitz</i> <sup>2</sup> , <i>Olivier Pauwels</i> <sup>3</sup> , <i>Jonathan Brecko</i> <sup>3</sup> , <i>Marc De Meyer</i> <sup>2</sup> , <i>Thierry Backeljau</i> <sup>1,4</sup>	
<sup>1</sup> Royal Belgian Institute of Natural Sciences, BopCo, Belgium; <sup>2</sup> Royal Museum for Central Africa, BopCo, Belgium; <sup>3</sup> Royal Belgian Institute of Natural Sciences, Scientific Heritage Service, Belgium; <sup>4</sup> University of Antwerp, Evolutionary Ecology Group, Belgium	
<b>Assessing management efficacy of a multiple herbicide treatment plan on <i>Ludwigia Peploides</i> and <i>Hydrocharis morsus-ranae</i> in a freshwater community. . . . .</b>	<b>42</b>
<i>Ashley Morris</i> <sup>1,2</sup> ; <i>Catherine McGlynn</i> <sup>1</sup> ; <i>Steven Pearson</i> <sup>1</sup> ; <i>Nicole White</i> <sup>1</sup>	
<sup>1</sup> New York State Department of Environmental Conservation, USA; <sup>2</sup> Stony Brook University, Department of Ecology and Evolution, USA	
<b>Feeding in fear – food consumption in crayfish as influenced by cues of conspecifics and/or predatory fish . . . . .</b>	<b>43</b>
<i>Martin Musil</i> <sup>1</sup> , <i>Sara Roje</i> <sup>1</sup> , <i>Marek Let</i> <sup>1</sup> , <i>Antonín Kouba</i> <sup>1</sup>	
<sup>1</sup> University of South Bohemia in České Budějovice, Faculty of Fisheries and Protection of Waters, South Bohemian Research Center of Aquaculture and Biodiversity of Hydrocenoses, Czech Republic	
<b>Prospects for the invasion of six exotic aquatic turtles species recorded in Eastern Europe: bioclimatic thresholds . . . . .</b>	<b>43</b>
<i>Oksana Nekrasova</i> <sup>1,2</sup> , <i>Mihails Pupins</i> <sup>2</sup> , <i>Oleksii Marushchak</i> <sup>1</sup> , <i>Volodymyr Tytar</i> <sup>1</sup> , <i>Albert Martinez-Silvestre</i> <sup>3</sup> , <i>Jean-Yves Georges</i> <sup>4</sup> , <i>Kathrin Theissinger</i> <sup>5</sup> , <i>Andris Čeiņāns</i> <sup>2</sup> , <i>Arturs Skute</i> <sup>2</sup>	
<sup>1</sup> Schmalhausen Institute of Zoology, NAS of Ukraine, Ukraine; <sup>2</sup> Department of Ecology, Institute of Life Sciences and Technologies, Daugavpils University, Latvia;	
<sup>3</sup> Catalonian Reptiles and Amphibians Rescue Center (CRARC), Spain; <sup>4</sup> Institut Pluridisciplinaire Hubert Curien IPHC UMR7178, CNRS, France; <sup>5</sup> LOEWE Center for Translational Biodiversity Genomics, TBG - Senckenberg Nature Research Institute, Germany	
<b>Webtool for early detection of invasive alien plants . . . . .</b>	<b>44</b>
<i>Baudewijn Odé</i> <sup>1</sup> , <i>Michiel Verhofstad</i> <sup>1</sup>	
<sup>1</sup> FLORON Plant Conservation Netherlands, The Netherlands	
<b>Can we stop further spread of <i>Crassula helmsii</i> in Europe? Toolkits and guidelines used in Flanders (Belgium) . . . . .</b>	<b>44</b>
<i>Jo Packet</i> <sup>1</sup> , <i>Kevin Scheers</i> <sup>1</sup> , <i>Luc Denys</i> <sup>1</sup> , <i>Geert De Knijf</i> <sup>1</sup> , <i>Tim Adriaens</i> <sup>1</sup>	
<sup>1</sup> Research Institute for Nature and Forest INBO, Belgium	
<b>Challenges and means of management of <i>Myriophyllum heterophyllum</i> by Voies Navigables de France . . . . .</b>	<b>45</b>
<i>Cécile Pestelard</i> <sup>1</sup> , <i>Hélène Groffier</i> <sup>2,4</sup> , <i>Claire Mangeant</i> <sup>3</sup> , <i>Elisabeth M. Gross</i> <sup>2,4</sup>	
<sup>1</sup> VNF DT NE, France; <sup>2</sup> Université de Lorraine, CNRS, LIEC, France; <sup>3</sup> VNF Siège, France; <sup>4</sup> LTSER-Zone Atelier Moselle, France	
<b>Detection of an exotic zooplankter, <i>Bosmina (Eubosmina) coregoni</i> Baird, 1857 (Crustacea, Branchiopoda, Anomopoda), in southern Portuguese reservoirs . . . . .</b>	<b>45</b>
<i>João Pinto</i> <sup>1</sup> , <i>Mafalda Gama</i> <sup>1</sup> , <i>Filipe Banha</i> <sup>1</sup> , <i>Pedro Anastácio</i> <sup>1</sup> , <i>Bruno Castro</i> <sup>2</sup> , <i>Sara Antunes</i> <sup>3</sup>	
<sup>1</sup> MARE – Marine and Environmental Sciences Center/Department of Landscape, Environment and Planning, University of Évora, Portugal; <sup>2</sup> Center of Molecular and Environmental Biology (CBMA)/Department of Biology & Institute of Science and Innovation for Biosustainability (IB-S), University of Minho, Portugal;	
<sup>3</sup> Interdisciplinary Center for Marine and Environmental Research (CIIMAR/CIIMAR) /Department of Biology, Faculty of Science, University of Porto, Portugal	



### Feeding in fear – food consumption in crayfish as influenced by cues of conspecifics and/or predatory fish

Martin Musil<sup>1</sup>, Sara Roje<sup>1</sup>, Marek Let<sup>1</sup>, Antonín Kouba<sup>1</sup>

<sup>1</sup>University of South Bohemia in České Budějovice, Faculty of Fisheries and Protection of Waters, South Bohemian Research Center of Aquaculture and Biodiversity of Hydrocenoses, Czech Republic

Many studies have shown that established populations of non-indigenous crayfish species lead to the transformation of native crayfish behaviour and negatively impact native biodiversity. The parthenogenetic marbled crayfish *Procambarus virginalis* is rapidly spreading in European countries, including several localities in the Czech Republic, thanks to releases of originally pet-traded individuals. Round goby *Neogobius melanostomus* is invasive species native to the Ponto-Caspian region. Nowadays, the species is expanding out of its native range to the large European rivers and North American water bodies. Populations of round goby in the Czech Republic are established in the Elbe river basin and Morava river basin. Round goby is mainly a benthic feeder with a wide diet spectrum, including zooplankton, benthic invertebrates (including crayfish), and fish eggs and larvae. Presently, detail behavioural information of crayfish as a prey using chemical cues originating from predators to evaluate the danger in their environment and especially food consumption connected with is still lacking. Crayfish are useful model organisms for this type of research because they are susceptible to predators and alarm odours. This study is focused on the responses and differences in food consumption of same-sized marbled crayfish to the predator odours of round goby and/or cues of conspecifics. A waterlouse *Asellus aquaticus* was used as food for marbled crayfish. Food consumption in the control group and group with a co-specific individual were higher when contrasted with the group containing round goby. Understanding how marbled crayfish populations respond to the presence of round goby (and predators in general) may help us to predict and manage changes to these invaded freshwater ecosystems.

### Prospects for the invasion of six exotic aquatic turtles species recorded in Eastern Europe: bioclimatic thresholds

Oksana Nekrasova<sup>1,2</sup>, Mihails Pupins<sup>2</sup>, Oleksii Marushchak<sup>1</sup>, Volodymyr Tytar<sup>1</sup>, Albert Martinez-Silvestre<sup>3</sup>, Jean-Yves Georges<sup>4</sup>, Kathrin Theissinger<sup>5</sup>, Andris Čeirāns<sup>2</sup>, Arturs Skute<sup>2</sup>

<sup>1</sup>Schmalhausen Institute of Zoology, NAS of Ukraine, Ukraine; <sup>2</sup>Department of Ecology, Institute of Life Sciences and Technologies, Daugavpils University, Latvia;

<sup>3</sup>Catalonian Reptiles and Amphibians Rescue Center (CRARC), Spain; <sup>4</sup>Institut Pluridisciplinaire Hubert Curien IPHC UMR7178, CNRS, France; <sup>5</sup>LOEWE Center for Translational Biodiversity Genomics, TBG - Senckenberg Nature Research Institute, Germany

Exotic aquatic turtle species often become favorite pets, especially juveniles. Later, at the adult stage, they are commonly released into the wild. However, questions remain - how likely it is that, these thermophilic exotic turtles can establish themselves in Eastern Europe and neighboring territories. We made an attempt to explore this issue by employing a GIS modeling approach (GBIF.org, 2021, CliMond climate dataset, the Maxent modeling software, SDM, AUC>0.8), using our original findings and data from the literature. To date in Ukraine we found: *Trachemys scripta* (*T.s. scripta*; *T.s. elegans*; *T.s. troostii*), *Mauremys rivulata*, *M. caspica*, and in Latvia records have been made of *T. scripta* (all 3 subspecies), *M. rivulata*, *M. caspica*, *Pelodiscus sinensis*, perhaps *Pseudemys nelsonii* and *P. concinna*. Of these species, the most potentially successful could be - *T. scripta* (from 27% of Eastern Europe), *M. caspica* - 10.1-14.6%, *M. rivulata* - 6.1-9.3%, especially in the south of Ukraine - Odesa, Kherson, Zaporizhzhya regions, and Crimea. They will become more synanthropic, populating areas where they have been released, especially in warmed water-bodies within cities. At the same time, the native species *Emys orbicularis* (70% of Eastern Europe) in the future will actively move towards northeastern Europe, and in the south, it is predicted to compete with *T. scripta*, the most common exotic turtle. For all these exotic turtles, the most promising area of establishment is the Crimea, Ukraine, where it is necessary to develop a proactive plan to protect the native species of *E. orbicularis* from being influenced by invaders. The research was partly founded by the BiodivERSA and Water JPI project "A socio-ecological evaluation of wetlands restoration and reintroduction programs in favor of the emblematic European pond turtle and associated biodiversity: a pan-European approach" and by the project "Ecological and socioeconomic thresholds as a basis for defining adaptive management triggers in Latvian pond aquaculture" (Izp-2021/1-0247).