

Report on the outcomes of a Short-Term Scientific Mission¹

Action number: CA18221

Grantee name: Blagovesta Dimitrova

Details of the STSM

Title: Meta-analysis of toxicological data to assess reptilian sensitivity to pollutants

Start and end date: 05/02/2023 to 18/03/2023

Description of the work carried out during the STSM

Description of the activities carried out during the STSM. Any deviations from the initial working plan shall also be described in this section.

In the established timeframe of this STSM, I was working in the Department of Organisms and Ecosystems Research at the National Institute of Biology (NIB), in Ljubljana, Slovenia. The main objective was to provide an overview of the existing information on the effects of pesticides on reptile species. To do this overview, we planned to perform a meta-analysis based on an already compiled database of scientific papers, which was gathered by a previous STSM candidate visiting NIB for the papers published after 2016 and included also entries from the database that was created and published by Manuel Ortiz-Santaliestra and colleagues (2017) that included entries from papers up until 2016. My first task was to conduct a first check of the existing database that was created by the previous STSM candidate and provide an overview of the database, so that we know how many substances, species, methods, etc. were used over the years. The first check-up revealed that the database had many unresolved issues, such as (i) the inputs from different papers were not uniform, (ii) mistakes, empty rows and typos were found across the entries, (iii) papers were included in the database but did not provide toxicological information, for example, papers that investigated bioaccumulation. Therefore, we had to adjust the work plan and my work for the six weeks of this STSM was mostly cleaning the entries of the database and preparing it for the meta-analysis.

I went through the 190 papers one by one to make sure everything was correct and uniform, and during this process I discovered that 71 papers were not fit to be included in the database based on specific selection criteria that were set out by Manuel during his work on the initial database. I also added a few columns to the database that uniform experimental duration periods into hours, which would make it easier to do the meta-analysis later, and added an "Origin of species" column for an extra level of information, which will also be useful for the meta-analysis.

Now the final database, ready for a meta-analysis, includes 119 papers in which 67 substances were analyzed on 40 different species from all over the world. When it was finished, I also performed the

¹ This report is submitted by the grantee to the Action MC for approval and for claiming payment of the awarded grant. The Grant Awarding Coordinator coordinates the evaluation of this report on behalf of the Action MC and instructs the GH for payment of the Grant.

descriptive statistics on it, investigating the most commonly tested substances, the types of substances (e.g., fungicide, insecticide, herbicide), the most used species that experiments were performed on, the broad groups of animals (e.g., lizards, snakes, crocodilians), the experimental setups (e.g., route of exposure, life stages tested, types of exposure, endpoints measured, lethality). This database is now prepared for future meta-analysis.

Description of the STSM main achievements and planned follow-up activities

Description and assessment of whether the STSM achieved its planned goals and expected outcomes, including specific contribution to Action objective and deliverables, or publications resulting from the STSM. Agreed plans for future follow-up collaborations shall also be described in this section.

My stay in Ljubljana as part of the Department of Organisms and Ecosystems Research at NIB, was very useful for me, because I learned what is required when creating a large database and how to handle such large sets of information. This STSM is over, but my work together with Anamarija and her team at the NIB, is not. I plan on applying for a virtual grant to continue my work on the meta-analysis, which will undoubtedly result in at least one publication. The work I did in Ljubljana helped me improve my organisation and communication skills, and was a solid stepping stone for my development into the field of ecotoxicology. The following objectives were addressed with this task: RCO 2, whose aim is to continuously update and analyse the available information potentially useful to fill the gaps relative to the characterisation of pesticide exposure and effects on amphibians and reptiles; the objectives of WG3, in particular O.3: Identify chances of minimising the use of *in vivo* amphibian and reptile models to build the pesticide ERA scheme through replacement methods (Task 3.4); Capacity Building Objective 1 (CBO 1) – this STSM allowed for the exchange of information between groups and institutions, creating networks that will help me become a capable scientist that can predict and address challenges regarding the impact of pesticide use on reptiles.

The main benefit for me, after completing this STSM in NIB, was the establishment of a connection between me and my hosts, which will be maintained through the completion of the work we set out to do, as well as other common scientific interests that we share, which may lead to collaborations on new projects and the publication of research papers. I am grateful for this opportunity and I have learned a lot during my stay in Slovenia.