

Report on the outcomes of a Short-Term Scientific Mission¹

Action number: CA18221 - Pesticide Risk Assessment for Amphibians and Reptiles (PERIAMAR)

Grantee name: Miruna-Gabriela Vizireanu

Details of the STSM

Title: The effect of pesticides on the reproductive success of lizards (Post breeding period).

Start and end date: 15/07/2023 to 02/09/2023

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.

(max. 500 words)

The STSM that I conducted is an extension to a previous study which was conducted subsequently by Myrto Roumelioti and Sabina Vlad before my arrival. The goal was to evaluate the effect of the pesticides on squamates that can be found near vineyards and, thus, are frequently exposed to the agrochemicals used for agriculture. I continued to investigate and observe if the pesticide treatments have an impact on external morphology, body mass, and reproductive success. The model species used for this experiment was *Podarcis bocagei*, its habitat represented by rocky structures in agroecosystems. The experimental design bases on keeping adult male and female lizards under semi-natural conditions (mesocosms simulating a vineyard culture) with three treatments: mixture of standard pesticides, copper sulfate and control (no pesticides).

During my stay at CIBIO, I followed all the guidelines and work protocols that the team implemented. I went daily to make sure that the irrigation system worked, I reapplied tape where needed to the joint between the tube and the main water system. I checked daily that the mesocosms did not have any openings between the wood plate and the container, and the PVC stripes previously installed were glued properly. I systematically cut the vegetation twice a week, or every time I notice that it grew too much. I repaired a mesocosm that was colonized by ants. I applied duct tape on all the edges of the fabric located on the net and used for shadow in mesocosms to ensure a proper fixation. I continued to maintain the same hygiene rules and protocol for measuring and scanning the animals. I checked weekly the entire

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.

mesocosm system, the situation of animals (presence) and the eggs development. I fed the animals twice a week with 2 crickets size S/individual. Every Friday before feeding, I applied a mix of vitamins with the crickets to complete lizard's diet.

Every two weeks, I collected and measured the body mass of the animals, and checked their external appearance. To make sure their diet is adequate, on the measurement day, I fed the animals in the lab with 1 cricket and 2 mealworms per individual.

Every month, I scanned the animals on the same day of measuring to avoid extra stress on the animals (dorsal, ventral, and lateral view).

In those cases of mortality, I preserved the dead animals in an Eppendorf tube filled with ethanol and stored them in the freezer (-20°C) for further veterinarian investigations into the cause of death.

I kept the sick-looking animals in the lab to avoid spreading disease in case of its existence and for better monitoring of their health.

I applied the treatments (copper sulfate and the mixture of pesticides) along with the control every three weeks and fed the animals at the same time to allow the food to be sprayed as well, avoiding contact with the water dish and animals.

I compiled data regarding body mass, eggs viability, and lizards health (alive/dead) into a comprehensive Excel following that the data obtained will be analyzed depending on the treatments applied.

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.

(max. 500 words)

No females laid eggs during my stay at CIBIO (late breeding and post breeding season). I only monitored the eggs that already existed and the eggs did not have a visible embryo. No juveniles hatched by 1st September (but some did it soon after).

Out of 64 lizards used at the start of the experiment, 47 remained, of which: Control – 10 males and 5 females; Copper sulfate treatment – 5 males and 7 females; Mix treatment – 10 males and 10 females.

Between the first measurement of body mass in July and the first one in September (during my stay), I compared the mean of body mass for every treatment, separated by sex. These are the preliminary results, that will have to be completed till the end of the experiment:

Treatment	Sex	MeanJuly BM	Mean Sep BM	Mean (July –Sep BM)
Control	F	2.6496 g	2.0149 g	-0.6347 g
	M	3.9005 g	3.4544 g	-0.4461 g
Copper sulfate	F	2.4693 g	2.2967 g	-0.1726 g
	M	3.1222 g	2.9501 g	-0.1721 g
Mix	F	2.4618 g	2.1232 g	-0.3386 g

	M	3.1524 g	2.7967 g	-0.3557 g