05-06/10/2023

# Subject │ Minutes of the Third General Meeting of COST Action CA18221: “PEsticide RIsk AssessMent for Amphibians and Reptiles”

1. **Welcome to participants and meeting presentation**

The participants (**Annex 1**) were welcomed by the Action Chair, Manuel Ortiz, and the local organiser, Marta Biaggini.

1. **Progress review of PERIAMAR COST Action and meeting objectives**

The Action Chair reviewed the progress of the Action so far. In particular, the high degree of achievement of Capacity Building Objectives was mentioned. The Research Coordination Objectives were linked to the tasks and deliverables that were set for their achievement. According to that RCOs 1 and 2 have a high degree of achievement while RCOs 3, 4 and 5 have an intermediate degree. Progress of should be made basically during the last Grant Period, so a particular focused should be placed on RCO3. In this context, we need to work on deliverables “Proposal on needs for developing test methods for toxicity evaluation in amphibians and reptiles” and “Proceedings of the workshop about indirect effects of pesticides on ecosystems, including a proposal to address such effects in ERA”. We will work on these deliverables, although it is not envisaged that a workshop on indirect effects will take place (indirect effect can be addressed in the ERA proposal, anyway).

The meeting objectives include:

* Review the action progress in the frame of the risk assessment scheme proposal, not in the frame of the original structure of Action RCOs and Tasks.
* Link the action deliverables to the risk assessment-based structure of the Action.
* Define the objectives to finalise the Action in the next Grant Period, including the elaboration of the pending deliverables.

1. **The risk assessment scheme**

Manuel Ortiz presented the different risk assessment schemes that have been under consideration over the course of the Action. These include the conventional, tiered approach, the fit-for-purpose approach that was presented at the Second General Meeting (September 2022), the proposal from the EFSA Scientific Opinion of using a population-level assessment, based on models, following the first tier, and the systems-based approach that has been stressed by EFSA through its PERA: Building a European Partnership for next generation, systems‐based Environmental Risk Assessment. It is stressed that we do not need to choose one option, but create a proposal that can combine elements from several schemes, and/or develop different alternatives informing about their pros and cons.

Silvia Pieper reviewed the Specific Protection Goals that have been proposed by the EFSA Opinion, which include individual survival and population persistence. It was informed that the last joint meeting of Working Groups 3 and 4 agreed that we could adopt those SPGs.

1. **Indicator a focal species**

The progress made so far on the work to identify indicator and focal species was reviewed. Simeon Lukanov presented the work conducted at CICGE, under direction of Neftali Sillero and through several STSMs, on the analysis of spatial distribution of amphibians and reptiles in agricultural landscapes across Europe. Ana Marques presented the last data collection of life history traits, corresponding to snakes and turtles, which followed previous STSMs having done the same work for the rest of taxa. Manuel Ortiz summarized the progress on focal species selection and showed the table for traits leading to higher or lower susceptibility that was elaborated during the Joint WG3-4 Meeting in Osijek in June. During discussion, some comments were made on this:

* The traits to consider in the definition of the indicator species depends on the RA (e.g. migration may have no sense in tier 1).
* The table should be revisited to check the associations between traits and susceptibility at all tiers and protection goals. This could be complemented with regressions between those traits identified as sensitive and toxicity data.
* For the focal species, we should recommend how to identify them instead of proposing focal species per habitat, region or crop (see the approach for birds and mammals in the new guidance).
* Consider separating traits leading to ecotoxicological and ecological sensitivity.
* Diurnal or nocturnal activity could be added to the list of traits.

1. **Exposure assessment**

Valentin Mingo presented the single-compartment model to predict amphibian body burden after dermal exposure. It is suggested that, for application with regulatory purposes, the model could use soil PEC values. Peter Vermeiren showed their proof-of-concept model regarding exposure and accumulation of currently used pesticides in sand lizards, partially developed through an STSM carried at RIFCON. As part of the exposure assessment discussion, the possibility of considering maternal transfer was discussed.

Manuel Ortiz presented the ongoing elaboration of a paper to present options for exposure refinement based on field characteristics of amphibians and reptiles.

1. **Effect assessment**

Several STSMs have been funded during this GP to focus on effect assessment. The STSMs by John Howieson in Aveiro relative to the use of behavioural endpoints, Frances Orton at CTGB on evaluation of amphibian chronic toxicity to extrapolate assessment factors, and by Besta Dimitrova in Ljubljana relative to the evaluation of reptilian toxicological literature for extrapolation of assessment factors were presented by Isabel Lopes (STSM host), Frances and Besta, respectively. Discussion included how to relate behaviour-based NOEC and LOEC to endpoints more linked to SPGs (e.g. reproduction, growth or development, and options to explore further correlations between fish and amphibian sensitivity.

A second group of STSMs were presented by Enerit Sacdanaku, Sabina Vlad and Miruna Vizireanu relative to the establishment of mesocosm for toxicity testing Bocage’s lizards, that have been carried out at CIBIO (Portugal) under the direction of Miguel Carretero.

Simon Hansul summarized the conclusions of the workshop on application of modelling to risk assessment that took place in September 2023 in Osnabrück. Strategies and needs to use population models were highlighted and discussed.

David du Pasquier explained the process for developing a standard toxicity tests method that could be approved by OECD. The group agreed that tools for reptile toxicity testing are needed, although perhaps the aim of having a OECD-approved method is too ambitious and would anyway require a long time.

1. **Landscape approaches**

Annette Aldrich presented the results of the survey on risk mitigation measures for amphibians that was conducted last year. Each measure was assessed in term of costs, controllability and efficacy. A question was raised regarding how measures should be triggered, since tey are not product-specific, which difficults their implementation under the current scheme. The results are still preliminary. is sti

Thijs Schippers and Marion Junghans presented the proof-of-concept study to test the chances of linking chemical and amphibian monitoring in the Netherlands that was planned after the monitoring meeting in Dübbendorf in June 2023.

1. **Discussion**

Four discussion groups were created to propose activities in the short- (within the last Action GP) and medium-term. The four groups and their proposals were as follows:

Group on extrapolation to assess chronic toxicity in amphibians (including high tier assessments):

* Check if predictive pattern for amphibian acute toxicity from fish data is observed also for terrestrial stages from fish acute data recalculated for LD values.
* Ask toxicologists which substances could be showing higher toxicity if metabolism is slowed down.
* Investigate if the outcome of fish early life stage test with an assessment factor could be use to cover effects on amphibian growth and development.
* Review tests chronically exposing tadpoles until completing metamorphosis to eventually use developmental effects as a surrogate of population recruitment. This could set the basis for a future research project to validate this approach.

Group on exposure quantification and risk mitigation:

* Initiate discussion to integrate temporary pond to FOCUS. Discuss with the developers of the pond scenario whether there is an input from substances in soil.
* Discuss whether the buffer strips can be defined on a temporal scale.
* Survey stakeholders to understand what is meant by a vegetation buffer strip. Once results are back, discuss within PERIMAR if vegetative buffer strips are suitable for amphibians to access the pond.
* Agree in the indicator model species discussion the depth of exposure and whether exposure is via pore water, soil or both.
* Agree on the soil PEC value to be used.
* Consolidate the overspray exposure methodology in a report to feed in a guidance document.
* Define indicator model species food intake rates for dietary exposure (including secondary poisoning), and bring exposure assessment methodology together in a report to feed in a guidance document.
* Define trigger based on Log Kow and/or other studies in the pesticide registration dossiers (e.g. fish BCF) to assess chronic toxicity in amphibians resulting from maternal transfer of pesticides (including high tier assessments).

Group on indicator and focal species:

* Subject the trait sensitivity proposal to expert judgement to refine the indicator species selection criteria.
* Review the life history trait database for indicator species elaboration.
* Publish the life history trait databases.
* Elaborate further the protocol for determining focal species.

Group on monitoring and population modelling:

* Opinion paper on the status and roadmap for integration of population models in risk assessment, coming from the workshop summary.
* Present a corresponding poster about workshop at SETAC
* Use output from monitoring actions to assess how to incorporate available monitoring data in modelling (e.g. scenario development), with an interim discussion at last PERIAMAR meeting.
* Proof-of-concept: calibration of organism-level models, inference of physiological modes of action.
* Validation of mixture TKTD modules,
* Exploratory modelling studies on the population level, for which a survey can be designed to ask regulators about specific protection goals and useful predictions. Then, a workshop to discuss outcome of the survey and define specific application cases can be organized.
* Do pilot analysis on Netherlands amphibian monitoring and water quality data and crops. This could eventually be presented as a poster at SETAC.
* Define strategy for longer-term goals relating to monitoring of amphibian pond data regarding PPP.
* Review on availability of pond water quality data regarding PPP
* Design a pesticide residue monitoring in matrices relevant for amphibians and reptiles
* Explore incoming soil data, use TK model and published residue data. Predict doses to calculate virtual risk quotients amphibians.
* Elaborate a map of European pond types and land use to be eventually integrated into ongoing amphibian atlas efforts coordinated by the European Herpetological Society.

Group on reptilian toxicity assessment:

* Identification of relevant endpoints and suitable model species for potential toxicity testing.
* Update toxicity values from EFSA procurement review after update of the database with recently published papers.

The conclusions were summarized and sent for discussion within the Management Committee, to elaborate the Working Budget Plan for the next Grant Period.

1. **Closing**

The Action Chair acknowledges the participation of all meeting attendants and thanks Marta Biaggini and the Museo di Storia Naturale La Specola. It is reminded that all participants in the General Meetings that are not MC members or appointed substitutes are invited to stay for the MC meeting as hearing persons.

## **LIST OF ANNEXES**

**Annex 1 – List of Participants**

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