

SHORT TERM SCIENTIFIC MISSION (STSM) SCIENTIFIC REPORT

This report is submitted for approval by the STSM applicant to the STSM coordinator

Action number: CA18221

STSM title: Telemetry study on lizards *Lacerta agilis*

STSM start and end date: 04-06-2021 to 28/06/2021

Grantee name: Giulia Simbula

PURPOSE OF THE STSM:

The main purpose of the STSM is to learn how to carry out telemetry studies on lizard species, implementing a current research carried out by Rifcon about the applicability of the radio-tracking methods, mainly applied on birds and mammals, on reptile model species, *Lacerta agilis*, in vineyards landscapes. We aim to assess the possibility of recording PT values (i.e. portion of diet from treated area) for lizards foraging on farmland, equivalent to those collected for birds and mammals. Assuming that, as in birds and mammals, the time active animals spend in the treated area is equivalent to the proportion of diet taken from the treated area, daily activity and home ranges of lizards can then be exactly quantified using continuous radio-tracking.

DESCRIPTION OF WORK CARRIED OUT DURING THE STSMS

Two polluted vineyards were chosen as study sites. During field activities, 8 adult lizards (4 females and 4 males) of *Lacerta agilis* were captured, marked with a microchip and measured for standard parameters (i.e., weight and SVL). If the individuals exceeded a body weight of 10 g, it was tagged (tags used: Biotrack, PicoPic, Ag379, lifespan >5weeks, weight 0.41 g). Radio transmitters were attached on the back of the lizards, above the shoulder. A special waterproof, sterile, transparent film patch were used to fix the transmitter, so that it remained on the animal until exuviation, allowing 10 days of tracking.

The individuals were released in the same spot in the field, where they were initially captured. Radio-tracking began 24 hours after the animals were released to avoid any distortion due to manipulation stress. Each specimen was continuously radio-tracked for 3 weeks from sunrise to sunset (i.e. 7:00 a.m.-21:00 p.m.) placing the observer at the border between the target crop and the non-crop habitats. The following parameters were recorded with any signal or position change:

1. animal being active or non-active
2. visual contact, including more detailed behaviour record, if possible (i.e., basking, mating, moving)
3. habitat where the animal was located

When the animal lost the transmitter, it was recapture, if possible, and once again tagged.

Twice a week, the position of all animals studied in the two fields were annotated in 5 specific time-ranges of the day every three hours:

1. 05:00-08:00
2. 08:00-11:00
3. 11:00- 14:00
4. 14:00-17:00
5. 17:00-20:00

DESCRIPTION OF THE MAIN RESULTS OBTAINED

All individuals were found inside the vineyards. Six individuals were successfully followed for three weeks, while one male was preyed by a *Coronella austriaca* and a female lost the radio transmitter and we could not find her anymore in the study area. For all six individuals visual contact was restricted during basking activity in the early morning (from 07:00 a.m. to 10:00 a.m.) and late afternoon (from 05:30 p.m. to 07:00 p.m.), while they generally hid in the ground or in dense vegetation during the hottest hours of the day and at dusk. As expected for this species, males were more easily observed than females, and they tended to move around the vineyard much more than females. In order to have a bigger dataset on this regard, quantitative information and statistical analysis in this matter will be done at the end of all sampling activities at the end of July.

These preliminary results confirmed the use of vineyards as foraging habitat by sand lizards (mainly using habitats bordering vineyards) and their tendency to be covered by vegetation or other shelter during 'active phases' in vineyards, and being open exposed to the sun only for thermoregulation.

It seems quite plausible the possibility of recording PT values (i.e. portion of diet from treated area) for lizards foraging on farmland, similar to those collected for birds and mammals also. Such data can be used for higher tier refinement of sand lizard environmental risk assessments. Finally, it will be interesting to investigate the escape behaviour during the application of pesticides, and re-entry time of lizards into vineyards to assess pesticide exposure risks in more detail.

FUTURE COLLABORATIONS (if applicable)

This STSM was born as an exchange of collaborations between Rifcon and the University of RomaTre that was a Home institution for a previous STSM carried out by Dr. Gianpaolo Montinari from Rifcon, with a project about lizard housing and performance tests.