University of Cyprus
Department of Biological Sciences

# Ph.D. Thesis Defense

# Student Presentation

**Thursday, 16 May 2024 at 11:30**

***This seminar is open to the public via Zoom***

https://ucy.zoom.us/j/63197251688?pwd=bkcwT1NsWUk5SCt2VUN3K1Bna1EvUT09

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## "Evaluation of the role of environmental, habitat and landscape heterogeneity for lizard communities"

This study focuses on the diversity of lizards along riverbanks. Its aim is to compare lizard diversity and abundance patterns across seasons, elevations, and protection status of areas along riverbanks, the latter expressed by their presence within or outside Natura 2000 sites. Additionally, the study examines the relationship of lizard diversity with habitat and landscape heterogeneity, and the importance of the composition and configuration of landscape in specific areas. The findings of this study provide insights into the significance of environment, habitat, and landscape heterogeneity for the distribution, abundance, and diversity of native reptiles and especially for lizards.

The effect that these factors may have on lizard communities has been explored by studying three rivers that exhibit variation in environmental conditions. These are: (a) Alykos – Potamos Gialias, (b) Peristerona, and (c) Mesa Potamos. For each river, 18 transect lines were selected for monitoring lizard species occurrence and abundance.

Additionally, the abundances of four common species, namely *Ophisops elegans*, *Phoenicolacerta troodica*, *Laudakia cypriaca*, and *Acanthodactylus schreiberi*, were evaluated separately. Also, eleven of those transect lines plus another two were monitored in order to investigate the effect of landscape heterogeneity on lizards' richness.

The 18 transect lines were monitored monthly, from May to September in 2019, and were re-visited from April to September in 2020. Additionally, another two transect lines were visited from May to July in 2021 and re-visited in the same months, in 2023 for the examination of the effects of landscape heterogeneity.

Furthermore, the DAFOR scale (Dominant, Abundant, Frequent, Occasional and Rare) was used to evaluate habitat heterogeneity by identifying six distinct vegetation and surface cover categories in the transect line and calculating the extent and percentage of each category present at each site. Then, a

simple Habitat Diversity Metric (HDM) was calculated for each transect line, for each of the four most common and endemic species, as mentioned above, and for the total lizard diversity.

Additionally, in order to evaluate the effect of landscape heterogeneity on lizard diversity, land cover was mapped in a buffer zone of 100 meters around the 13 transect lines and land cover was classified in ten categories. Following land cover mapping, FRAGSTAT was used to calculate different configuration and composition metrics around every transect.

Results suggest that lizard diversity in riparian systems is high compared to the total number of lizard species found in Cyprus, reaching 60% of total richness. This underlines the importance of riverbank areas for lizard diversity. More research on this topic is required to evaluate in more detail the factors affecting lizard diversity within these habitats. The present study did not find any correlation between elevation, season, protection status, or habitat heterogeneity with total lizard species richness or diversity. A significant correlation has been observed only between the abundance of three of the four species under investigation and elevation, season, and/or protected regions. In any case, similar research has to be repeated regularly in order to monitor the effectiveness of Natura 2000 areas for the preservation of reptiles.

Regarding landscape heterogeneity, the findings demonstrated that lizards are significantly affected by landscape composition. A since a positive relationship between species richness and landscape composition has been found. Moreover, three landscape metrics appeared to be important in the study locations, indicating a relationship between landscape heterogeneity and lizard abundance.

In conclusion, it appears that riparian habitats can play an important role for reptile conservation, as they provide an heterogeneous environment that is important for many species regardless of individual environmental factors.