



## **O11. Habitat use and sexual dimorphism in *Podarcis* wall lizards: micro- and macroevolutionary patterns of morphological variation**

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Understanding how phenotypic diversity evolves is a major objective of evolutionary biology. Iberian and North African *Podarcis* are a lizard group of astonishing morphological diversity, thus providing an intriguing model system for studying the causes underlying phenotypic evolution. We examined body size and shape variation at the individual and evolutionary lineage level in relation to sexual dimorphism (SD) and habitat use, to trace the potential effects of sexual and natural selection on different morphological traits. The results obtained indicate that SD is a major source of phenotypic variation in this group, with significant effects on all examined variables at the individual level. Habitat use also explains large part of the variation observed at the individual level, but surprisingly is not associated to body size and limb length variation, as has been the case in other lizard groups. Comparative analyses of trait evolution using the most recent mtDNA phylogeny of the group indicate a significant difference between habitats in male head shape, where males of saxicolous species exhibit relatively flatter and shorter heads than ground-dwelling ones. Such variation is also reflected on macroevolutionary patterns of sexual dimorphism, which also varies across habitats, possibly indicating an interaction between sexual and natural selection. Comparison of evolutionary rates between habitats showed that male head shape has evolved about 9 times faster in saxicolous species. Remarkably, limb length was not associated to habitat use at the macroevolutionary level, contradicting predictions of the ecomorphological paradigm and previous observations on other lizard groups. Indeed, a comparison of evolutionary rates across traits demonstrated that head dimensions have evolved much faster in this group of lizards as compared to limb length. Together our results shed new light to the evolution of the remarkable morphological diversity of this lizard group.

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