

Oral (Regular session)

Title

Metabarcoding analysis of endemic lizards' diet for guiding reserve management in the Macaronesian Islands

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Abstract

Islands are considered natural laboratories as they represent simplified models and hold a higher number of endemic and threatened species when compared with the mainland. Therefore, studying their ecological networks is of high importance for developing accurate conservation plans. Interesting study models for evolutionary and ecological studies are the reptiles of the Macaronesian Islands, especially the ones inhabiting remote areas. Some of them present uncommon ecological and evolutionary patterns, and most have simplified trophic webs that remain poorly studied. The diet of the most widespread continental *Tarentola* species is already widely studied using classical methods. However, only one known study was performed using next-generation sequencing (NGS) techniques for this genus and very few for reptiles in general.

In this work, the main objective was to assess diet composition of two endemic geckos from Macaronesia, the emblematic giant wall gecko of Cabo Verde *Tarentola gigas*, and the Selvagens gecko *Tarentola (boettgeri) bischoffi* of those Portuguese islands (**Figure 1**), using DNA metabarcoding in order to provide valuable information to the conservation of these threatened species. Little was known on both their ecology and dietary habits. In the first study, we aimed to

compare the diet of the two subspecies of *T. gigas* to discuss options regarding its reintroduction on an island where it went extinct. In the second, we compared morphological and DNA metabarcoding techniques associated to very different sampling efforts to check the impacts on the representation of the Selvagens gecko's diet and discussed advantages and limitations of both methods.

Results have revealed that both species are generalists, feeding on plants, invertebrates and even vertebrates. Using metabarcoding, we were able to identify a higher diversity of dietary items, many that formerly went unnoticed, with generally higher taxonomic resolution than using traditional methods, and to reveal that plants have a significant role in their diets.

Overall, the information revealed by these ecological networks is important for the development of conservation plans on these protected areas and reinforce the important and commonly neglected role of reptiles on island systems.

Keywords

Tarentola gigas; *Tarentola (boettgeri) bischoffi*; Conservation genetics; Protected Areas, Remote areas



Figure 1. The giant wall gecko *T. gigas* endemic of Cabo Verde (top) and the Selvagens geckos *Tarentola (boettgeri) bischoffi* (bottom), both threatened species of remote Macaronesian Islands.