Phylogeny and biogeography of the *Acanthodactylus scutellatus* species complex in North Africa

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Deserts and arid regions are perceived as homogeneous spaces poor in biodiversity. Yet, this contrasts with considerable endemicity and the high degree of genetic structure observed in some species inhabiting the Sahara Desert, which have been frequently attributed to progressive aridification and climatic oscillations during the Plio-Pleistocene. Lizards of the *Acanthodactylus scutellatus* complex are among the most conspicuous representatives of the Saharan xeric fauna. The complex is composed of seven currently recognised species: *A. aegyptius*, *A. aureus*, *A. dumerilii*, *A. longipes*, *A. scutellatus*, *A. senegalensis*, and *A. taghitensis*. Despite being a promising model to assess historical biodiversity dynamics in arid regions, no comprehensive study on the evolutionary history of the complex has been performed to date. Our study addresses the phylogenetic relationships, potential cryptic diversity, and inter-specific contact zones within the *A. scutellatus* complex. Two mitochondrial markers and one nuclear gene were used to infer phylogenetic relationships and identify cryptic lineages, while species' ecological models based on climatic and remote-sensing variables were used to estimate potential contact zones. Phylogenetic relationships among species were generally recovered with good support. However, the lack of distinction between *A. dumerilii* and *A. senegalensis* calls for a taxonomic reassessment. The presence of

several highly-divergent lineages, particularly around mountain areas, reveals a high degree of cryptic diversity within the complex. Ecological models suggest a series of contact zones where potential inter-specific hybridization remains unstudied. This work contradicts the “empty-desert” conception and underlines the existence of still unexplored diversity across the Sahara.