
Tridactyle (Orchidaceae): a story of speciation and colonisation in São Tomé and Príncipe.

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Abstract

Despite many zoological biogeographic studies on the islands of the Gulf of Guinea, the mechanisms of diversification are still poorly understood, and almost no studies have been conducted on the origin of the flora. Here, we used the genus *Tridactyle* (Orchidaceae) (50 spp.) as a model to understand the story of colonization of epiphytic orchids. This genus is only found in continental Africa and São Tomé and Príncipe, and has a very high rate of endemism on these islands. Resolving phylogenetic relationships allowed to investigate how species diversity has evolved on this archipelago, and more precisely, we tested three main colonisation scenarios that could explain the diversity of *Tridactyle*: i) a scenario of colonisation without speciation, ii) adaptative radiation and iii) a simultaneous colonisation by taxonomically and/or ecologically linked organisms. In this study, we used one nuclear marker *PhyC* (c. 900 pb), the sequencing of plastome (pDNA: c. 160,000 bp), ribosomal DNA (rDNA: c. 5900 bp), and habitat characteristics for each species (41 species), which provided: (i) a phylogenetic relationships tree between species and estimated the divergence period between the main lineages, and (ii) reconstructed ancestral states regarding biome preferences. Preliminary results suggested that the adaptative radiation was the most probable scenario, with one species, *Tridactyle tridactylites*, colonizing both islands and differentiated with elevation and habitats.

Keywords: São Tomé and Príncipe, Gulf of Guinea, Tridactyle, Orchidaceae, radiation, ecological differentiation.

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