

Testing the Phylogenetic Niche Conservatism Hypothesis in Genus *Escallonia*

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Abstract

A posing question in evolutionary biology is how does ecological diversification happen? A possible answer suggested by Harvey and Pagel (1991) is the phylogenetic niche conservatism hypothesis. This hypothesis proposes closely related species will tend to occur in similar environment than distantly related species. We tested the climatic aspect of the phylogenetic niche conservatism hypothesis with the study system of a Neotropical plant genus *Escallonia*. The objective was to determine if the closer related species would have a greater niche overlap than more distantly related species. We accounted for the background environment to address the spatial autocorrelation confounding effect between climatic data and longitude and latitude. We defined the background environment as the geographic region surrounding the species occurrences. We used the R packages “Ecospat” for niche quantification and used records of 33 species in the genus *Escallonia* from the Tropicos database. In our analysis we evaluated the clades due to being well supported. We tested the niche similarity in niches between within clade and among clades using the Schoener’s D metric. We tested for Schoener’s D without taking into account the background environment and measured the effect size of Schoener’s D and standardized effect size with taking into account the background environment. Our results showed greater supportive evidence for niche conservatism within clade than among clades. Our hypothesis was supported overall and although the within clades showed evidence for niche conservatism, the among clades also displayed niche conservatism as well but not as strongly.