

# ECOLOGICAL NICHE MODELING AND PATTERNS OF DISTRIBUTION IN GYMNOPHTHALMIDAE LIZARDS AT THE SÃO FRANCISCO SAND DUNES

**Theme:** Modeling tools & biodiversity conservation

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The current distribution of a given clade expresses a specific window in the evolutionary time of the group history, as long as the lineage's geographical distribution exhibits temporal variation. Patterns of spatial distribution may be influenced by several parameters, including environmental factors. Such effects are likely observed in vertebrate ectotherms, as their organismal and physiological performances are susceptible to environmental variation in temperature. In this context, the present study investigated the potential distribution of six psammophilous Gymnophthalmidae lizard species: *Calyptommatus leiolepis*, *Calyptommatus sinebrachiatus*, *Notobachia ablephara*, *Procellosaurinus erythrocercus*, *Psilophthalmus paeminus* e *Vanzosaura rubricauda*. These species belong to a monophyletic clade (Gymnophthalmini) and occur in sand dunes along the São Francisco River. The study was performed using the Ecological Niche Modeling approach, based on the software Maxent. Information on species' occurrence was obtained from the Herpetological Collection of the Museum of Zoology at University of São Paulo (MZUSP) and supplemented by data directly obtained in the field using GPS. The statistical models generated for species' distributions had high AUC value (*Calyptommatus leiolepis*: AUC=0.98; *Calyptommatus sinebrachiatus*: AUC=0.98; *Notobachia ablephara*: AUC=0.99; *Procellosaurinus erythrocercus*: AUC=0.99; *Psilophthalmus paeminus*: AUC=0.96 and *Vanzosaura rubricauda*: AUC=0.99.), which suggests that the algorithm used is a good predictor. Data obtained from the species studied indicate that the region with the highest probability of occurrence of these corresponds to an area that is considered as "extreme" priority for conservation. The present work directly contributes for new directions of conservation policies. Ecological niche modeling is an important tool for studies in ecology and evolution, and enhances the definition of priority areas for conservation, also estimating likely effects of climatic changes on future species distribution.