

# COMPARATIVE STUDY OF OCULAR MORPHOLOGY IN FOUR SPECIES OF TROPICAL LIZARDS (SCINCIDAE) LIVING IN DIFFERENT ECOLOGICAL NICHES

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Scincidae represents one of the most diverse families within Squamates, exhibiting considerable variations in behavior and lifestyle. However, limited research has been conducted on the visual system of these reptiles.

The aim of this study was to better understand the visual system of Scincidae. Four tropical species were selected: *Tribolonotus gracilis*, *Mochlus fernandi*, *Tiliqua gigas*, and *Tiliqua scincoides*. Foraging in tropical forests, which are enclosed and dim environments, may drive animals to develop specific adaptations. Eye morphology was studied using histological methods, RMI, and examination of fresh retinal samples. The photoreceptor types were identified by immunohistochemistry using specific anti-opsin antibodies.

Our results show that *T. gracilis* and *M. fernandi* possess a well-developed fovea, which is an unusual feature of Scincidae. In contrast, *T. gigas* and *T. scincoides* have no fovea but present a high density of photoreceptors in the central part of the retina. *T. scincoides* possesses a low depression in the central retina, suggesting a sketched fovea. The main cone populations identified in all the species are sensitive to long wavelengths (opsin LWS). Most cones possess a colored or colorless oil droplet that allows the focalization of light rays to the opsins present in the discs of the cone external segment. A small population of photoreceptor cells showed immunoreactivity to rhodopsin, which is highly sensitive under scotopic conditions. MRI analysis of the morphology of the cornea and lens reflects an adaptation to photopic vision, but in a habitat where the light intensity is moderate. We also observed a linear connection between photoreceptors and ganglion cells favoring visual acuity. The morphological differences, including the presence of fovea, observed in *Tribolonotus gracilis* and *Mochlus fernandi* could be linked to their modes of predation and ecological niches.

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