Quantitative tracking of change in tail color in blue-tailed skink (*Plestiodon elegans*) throughout its growth cycle

Chen Yang[1], Siheng Chen[2], and Jie Wang[3]

[1]Southwest Minzu University
[2]Beijing University of Posts and Telecommunications
[3]Chengdu Institute of Biology, Chinese Academy of Sciences

April 1, 2023

Abstract

Ontogenetic color change in animals is an interesting evolution-related phenomenon that has been studied by evolutionary biologists for decades. However, the performance of quantitative and continuous color measurements throughout the life cycle of animals is a challenge. To understand the rhythm of change in tail color and sexual dichromatism, we used a spectrometer to measure the tail color of blue-tailed skink (Plestiodon elegans) from birth to sexual maturity. Lab color space was selected due to its simple, fast, and accurate and depends on the visual sense of the observer for measuring the tail color of skinks. A strong relationship was observed between color indexes (values of L*, a*, b*) and growth time of skink. The luminance of tail color decreased from juveniles to adults in both sexes. Moreover, we observed differences in color rhythms between the sexes, which may be influenced by different behavioral strategies employed by them. This study provides continuous measurements of change in tail color in skinks from juveniles to adults and offers insights into their sex-based differences. Our findings explain the potential factors that drive dichromatism between the sexes of lizards and is expected to serve as a reference for future studies that explore possible mechanisms of ontogenetic color change in reptiles.

Hosted file

`1. Main Document 20230331clean.docx` available at https://authorea.com/users/516972/articles/633048-quantitative-tracking-of-change-in-tail-color-in-blue-tailed-skink-plestiodon-elegans-throughout-its-growth-cycle

Hosted file

`2. Figures.docx` available at https://authorea.com/users/516972/articles/633048-quantitative-tracking-of-change-in-tail-color-in-blue-tailed-skink-plestiodon-elegans-throughout-its-growth-cycle

Hosted file

`3. Tables.docx` available at https://authorea.com/users/516972/articles/633048-quantitative-tracking-of-change-in-tail-color-in-blue-tailed-skink-plestiodon-elegans-throughout-its-growth-cycle