Water balance and species distribution in a frog community from Northeastern Brazil

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Terrestrial amphibians may dehydrate when exposed to low humidity, representing an important factor affecting spatial distribution and community composition. We investigated whether rates of dehydration and rehydration are able to explain the spatial distribution of an anuran community from Northeastern Brazil. The environmental data set was reduced to few synthetic axes by principal component analysis. Physiological variables measured were rates of dehydration, rehydration from water, and rehydration from a neutral substrate. Multiple regression analyses were used to test for association between the environmental data set and physiological variables.

Of 15 possible partial regressions only PC1 vs. rehydration from neutral substrate, PC1 vs. rate of rehydration from water, and PC2 vs. rate of dehydration were significant. Our study area included two different habitats: a beach area with high density of bromeliads and an environment without bodies of water. Species of very specific natural history and morphological characters occur in these environments: *Phyllodytes melanomystax*, *Scinax auratus*, and *Ischnocnema ramagii*. In dry environments species with lower rates of dehydration were dominant, whereas species showing greater rates of dehydration were found predominantly in microhabitats with greater moisture and/or abundance of bodies of water.

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