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Source of environmental data and warming tolerance estimation in six species of North American larval anurans

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ABSTRACT

The current global warming scenario has led to a renewed interest in determining which species are more vulnerable to climate change. Hence, it is important to understand which factors can affect estimates of species vulnerability. We determined the critical thermal maxima (CT_{max}) for six species of North American anuran larvae and measured the environmental temperatures to which they are exposed during their aquatic stage to estimate their warming tolerance (WT; difference between the critical thermal maximum and the macro- and microhabitat maximum environmental temperatures). Our results indicate that these species exhibited CT_{max} values (37.8-41.7°C) that were similar to other temperate species and positively correlated only with environmental temperatures measured at the microclimate scale. This indicates that microclimatic variables are better predictors of CT_{max} variation than macroclimate data. Moreover, most of the CT_{max} variation found was associated with higher taxonomic levels, indicating that related species may show similar CT_{max} values due to phylogenetic inertia. Studied species also exhibited high values of WT (10.3-22.6°C), similar to temperate amphibian species from other bioregions. This indicates

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