Geographical distribution and physiological evolution of anurans

Fernando Ribeiro Gomes[1] and Braz Titon Junior[1]
[1]Department of Physiology, Biosciences Institute, University of São Paulo, Brazil

We investigated the evolution of (1) sensitivity of locomotor performance to dehydration (SDLD), rates of evaporative water loss (TPAE), resistance to evaporative water loss (RPAE) and rates of rehydration from free water (TRAL) along the phylogeny of anurans from the State of São Paulo, and (2) their possible associations with the geographic distribution of the species occurring in the Atlantic Forest and the Cerrado, a Brazilian savannah area. The relationships between all variables corrected for phylogeny showed a positive association between TPAE and SDLD, and both were negatively related to RPAE. Since the variation in the rate of evaporative water loss is determined by skin resistance to evaporative water loss, TPAE and RPAE should comprise an evolutionary unit. A plausible hypothesis for the negative relationship between TPAE and SDLD is of correlated selection, with both characters responding to the same selective pressures. TRAL is positively associated to body mass, possibly due to the allometric relationship between body mass and the area of pelvic patch. Although the results indicated the importance of natural selection acting on the studied traits, more information about microhabitat selection and/or additional sampling of species and localities are probably needed to identify these selective pressures. Grants: FAPESP.