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EVOLUÇÃO CRANIANA EM *TRINOMYS YONENAGAE* (RODENTIA: ECHIMYIDAE): ANÁLISE GEOMÉTRICA NO CONTEXTO DE UMA FILOGENIA MOLECULAR

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Evolution of skull in *Trinomys yonenagae* (Rodentia: Echimyidae): Geometric analysis in the context of a molecular phylogeny. (In Portuguese)

The skull of a monophyletic lineage of the genus *Trinomys* that includes the species *T. yonenagae* is viewed in this study under the paradigm of complex morphological structures whose final shape results from the interaction of several component parts. Under this paradigm, shape can be modeled at the morphogenetic level as localized variation at different geometric scales. Skull shape variation among the five species of *Trinomys*, for the dorsal, ventral, and lateral views of the skull, was investigated comparatively using the geometric formalism of the thin-plate spline functions to describe the organization of skull shape in terms of the geometric scale of shape differences. The results demon-

strated that the information content of skull shape in the lineage that includes *T. yonenagae* can vary with respect to the molecular phylogenetic structure in the different levels of organizational complexity represented by the dorsal, ventral, and lateral views of the skull. The results also showed that there is a natural scale of variation in skull shape, which is commensurate with the molecular hierarchical variation of mitochondrial cytochrome *b* gene. Principal component analysis of the partial warps showed that, only for the lateral view of the skull and for the localized components of shape at small geometric scales ($\alpha = -1$), the pattern of morphological differentiation is commensurate with the independent phylogenetic hypothesis inferred from the sequences of the cytochrome *b* gene for the lineage of *Trinomys* that includes *T. yonenagae*.

TAXONOMIC, FUNCTIONAL, AND PHENETIC COMPONENTS OF BIODIVERSITY: PERSPECTIVES ON THE COMMUNITY ECOLOGY OF NEW WORLD BATS

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Ecology Program, Department of Biological Sciences, Texas Tech University, Lubbock Texas 79409-3131, USA. Number of Pages: 199; kind of thesis: Ph.D.; Texas Tech University; day of thesis defense 27 September 2002; board members: Michael Willig, Richard Strauss, Mark McGinley, Robert Owen, David Schmidly

Over the last century, our understanding of the various modes of biotic diversification has expanded at an accelerating rate. This consequently has driven the expansion of Biology into a large number of disciplines including Systematics, Ecology, Physiology, Molecular Biology, and Biogeography, to name only a few. This expansion has been driven primarily by reductionist approaches resulting in specialization with only a few attempts to synthesize information across disparate disciplines or even integrate paradigms within disciplines (Pickett et al., 1994). A prime example of this characterizes advances in the field of ecology. Ecologists seek to understand organismal diversification by evaluating the distribution and abundance of organisms from a variety of temporal, spatial, and taxonomic perspec-

tives (Ricklefs, 1990). Second only to the theory of natural selection, the concept of biodiversity is central to investigations involving biotic diversification. Contributions from ecology have resulted from independent investigation in different sub-disciplines that focus on issues such as species diversity, ecosystem function and dynamics, metapopulations, ecomorphology, or competition. This body of research has demonstrated that changes in species richness or the equability of species abundances are not the only manifestations of biotic diversification across space and time (Heywood and Watson, 1995; Gaston, 1996; Levin, 2001). Consequently, the meaning of the term biodiversity has expanded and is defined by the current paradigm as the totality of variation in living things (Tilman, 2001). This ex-