Feb 14th, 2:50 PM

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The Cave Beetle *Neaphaenops tellkampfi* Erichson: Relationships Within and Among Related Genera Using Molecular Data

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Abstract

Studies of North American cave beetle systematics have been based primarily on morphology. This project analyzes the relationships and validity of the four subspecies of the monotypic *Neaphaenops* based on monophyly, as well as relationships with the remaining four eastern N.A. cave beetle genera (*Pseudanophthalmus*, *Nelsonites*, *Darlingtonea*, and *Ameroduvalius*) using molecular methods. This study utilized 39 beetle samples collected from 27 Kentucky caves and one outgroup accessed from GenBank. Evidence for phylogenetic hypotheses is based on sequences of one nuclear protein-coding gene (arginine kinase) and one mitochondrial gene (CO1). Analyses support *Neaphaenops* as sister to all other taxa. One subspecies of *Neaphaenops* is valid, a second possibly so, and the other two are not. All tested genera are monophyletic except for *Pseudanophthalmus*; *Nelsonites* appears to be a derived clade of *Pseudanophthalmus*.