



Re-evaluation of species allied to *Mithrax hispidus* (Decapoda: Brachyura: Majoidea: Mithracidae) based on three mitochondrial genes

AMANDA M. WINDSOR¹ & DARRYL L. FELDER²

¹The University of Louisiana at Lafayette, Department of Biology, P.O. Box 42451 Lafayette, Louisiana 70504, U.S.A.
E-mail: amwindsor@gmail.com

²The University of Louisiana at Lafayette, Department of Biology, P.O. Box 42451 Lafayette, Louisiana 70504, U.S.A.
E-mail: dlf4517@louisiana.edu

Abstract

Mithrax hispidus, *M. caribbaeus*, *M. pleuracanthus*, and *M. tortugae* are closely related shallow-water crabs that are difficult to distinguish by morphology alone. This led to recent synonymy of the four species under *M. hispidus* (Herbst, 1790). The use of three mitochondrial genes (12s, 16s, and COI) nevertheless provides evidence for three distinct species (*M. hispidus*, *M. pleuracanthus*, and *M. tortugae*) and the synonymy of *M. caribbaeus* with *M. hispidus*. Morphological features of the merus and carpus of the chelipeds serve as characters to separate the three species.

Key words: Phylogenetics, Sequencing, Spider Crabs

Introduction

Mithrax hispidus (Herbst, 1790) and some of its close congeners form a species complex that exemplifies the problematic taxonomy for several subgroups in the genus *Mithrax* Desmarest, 1823. The four species that make up this complex, *M. hispidus*, *M. caribbaeus* (Rathbun, 1920), *M. pleuracanthus* (Stimpson, 1871), and *M. tortugae* (Rathbun, 1920), were originally distinguished by Rathbun (1925) on the shape of the rostral sinus and the degree of carapace tuberculation. Wagner (1990) however, did not consider that these characters were sufficient enough to separate the species and synonymized the four species treated here along with *M. laevimanus* Desbonne, in Desbonne & Schramm, 1867, which was not included in this study. He cited distinctive grooves on the distal half of the first gonopod as a unifying character not found in any other species of *Mithrax*. Ng *et al.* (2008) followed this synonymy under which *Mithrax hispidus* is the only recognized species within the complex.

Characters originally proposed to separate the four species are highly variable when a series of specimens is examined, especially when individuals are not closely comparable in size and age. For example, variation is seen in the shape of the rostral sinus, which was used in Rathbun's (1925) diagnoses of the species. *Mithrax hispidus*, *M. caribbaeus*, and adults of *M. pleuracanthus* were originally reported to have a U-shaped rostral sinus, while *M. tortugae* and juveniles of *M. pleuracanthus* were noted to exhibit a V-shaped sinus. However, among the specimens we observed, rostral sinuses intermediate between U- and V-shaped are commonplace. Relative development of tuberculation and spines on the posterolateral slope of the carapace was also used in these diagnoses. Rathbun (1925) concluded that *M. hispidus* and juveniles of *M. caribbaeus* exhibited a spine on or above the posterolateral slope of the carapace. The slope was noted to be tuberculate in *M. pleuracanthus*, while it was said to be smooth with only a single tubercle above in *M. tortugae*. *Mithrax caribbaeus* was diagnosed by Rathbun (1920; 1925) as possessing two transverse, parallel rows of tubercles on the posterolateral slope. For all four of these species, we find that the degree of tuberculation varies with