Abstract

Relationships within the Madagascan freshwater crab fauna were examined based on unstudied specimens from all parts of Madagascar. This study allowed the examination of the validity of existing genera and species, and identified potential new taxa. The new specimens provided phylogenetic and evolutionary data, as well as new insights into the distribution patterns of the Malagasy freshwater crab fauna. In addition, the large number of new localities from previously unsurveyed areas of Madagascar allowed the construction of updated distribution maps.

The present analysis included 62 unidentified specimens plus 13 identified species of Malagasy freshwater crab taxa that had already been sequenced. The gene targeted for constructing the phylogeny was a partial mitochondrial gene fragment (600 bp), cytochrome oxidase I (COI). Phylogenetic analyses, MP, ML, and BI, yielded 36 most parsimonious trees and recovered topologies with several highly-supported clades with similar topologies. The MP 50% majority-rule strict consensus tree was selected as the representative topology. Results indicate that the unidentified and identified Malagasy freshwater crab specimens included in this study show a great deal of diversification that falls into nine well-supported clades (Clades 1-9).

The distribution maps presented here based on comprehensive data from 500 identified individuals, 74 of which represent new localities, establish that freshwater crabs are found throughout all six provinces, and in all five ecoregions on the island. This includes new records from Mahajanga and Toliara Provinces. Improved taxonomic sampling for this study supports the validity of the current taxonomic assignment of seven of the eight currently recognized genera based on morphological and molecular studies.

Dedication

This thesis project is dedicated to the most influential women in my life. My grandmothers, Mary H. Hendricks, and Mary L. Sand. Daughters of immigrant families who fought and survived tribulations during pivotal times in America. Both were successful in their lives, despite their struggles, one held degrees in nursing and Russian and the other was one of the first women business owners of multiple saloons, cafes and diners in my hometown, Ogden City, Utah; and, to my mother, Deena M. Soter, a daughter of an immigrant coal miner, who despite her hardships raised me and my brother alone and was still a successful business owner. All three women were figures of strength, determination and of promise for me.

What I remember most from them are tic-tac size words of advice that shaped me into the person that I am today: “I’d rather be lucky than good any day”, “Please yourself, because it’s impossible to please everyone”, and mostly, “Life is not a dress rehearsal”. Had I not been raised by these women, with their level of wisdom, care, and love, nor heeded their advice, I would not be the confident woman nor the successful scientist that I am today. I am forever grateful, thank you.

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