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## New taxonomic and distributional information on hermit crabs (Crustacea: Anomura: Paguroidea) from the Gulf of Mexico, Caribbean Sea, and Atlantic coast of South America

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### Abstract

A collection of Paguroidea recently obtained during deep-water expeditions along the coast of Brazil, forms the basis of this report. Of the 14 species reported from Brazil, 11 represent range extensions to the south, and one, *Michelopagurus atlanticus* (Bouvier, 1922), is a first record for the western Atlantic. The specimens were compared with types and western Atlantic materials deposited in various major museums. A diagnosis and illustrations are presented for each of seven spe-

cies found to be poorly or insufficiently known. New material and information is reported for two additional species that occur in Brazil but not found in the recent deep-water collections: *Clibanarius symmetricus* (Randall, 1840) and *Mixtopagurus paradoxus* A. Milne-Edwards, 1880. Remarkable and unique color photographs of live or fresh specimens of *Allodardanus bredini* Haig & Provenzano, 1965, *Bathynarius anomalus* (A. Milne-Edwards & Bouvier, 1893), *Pylopagurus discoidalis* (A. Milne-Edwards, 1880), *Paguristes spinipes* A. Milne-Edwards, 1880, *Parapagurus pilosimanus* Smith, 1876, and *P. alaminos* Lemaitre, 1986, are presented. A review of published records and museum collections of the terrestrial *Coenobita clypeatus* (Fabricius, 1787), has shown that the southern range limit of this species does not extend beyond the southern Caribbean and Trinidad and Tobago, and thus does not occur on the Brazilian coast as previously believed. A distribution map of *C. clypeatus* is provided based on specimens in the collections of the National Museum of Natural History, Smithsonian Institution. New distribution records in the Gulf of Mexico and southern Caribbean, and morphological information, are included for *Pagurus rotundimanus* Wass, 1963, a species originally described from the Florida Keys but rarely reported since. Relevant remarks on the taxonomy, morphology, and distribution of all these species are included. The revised list of Paguroidea known from Brazil is updated, and now includes a total of 62 species in the families Pylochelidae (1), Diogenidae (27), Paguridae (28), and Parapaguridae (6). A synopsis of primary taxonomic works on western Atlantic Paguroidea is also presented.

**Key words:** Crustacea, Paguroidea, hermit crabs, new records, taxonomy, distribution, Gulf of Mexico, Caribbean Sea, Brazil, Atlantic South America

## Introduction

Despite the number of studies that have so far been published on western Atlantic paguroids, taxonomic and distributional knowledge of many species remains deficient, incomplete, or confusing even for some of the most commonly occurring species (*e.g.*, species of *Pagurus*, *Paguristes*, *Clibanarius*). This unsatisfactory state of paguroid knowledge can be attributed primarily to: 1) the inherent morphological variability exhibited by paguroids that has confounded carcinologists, and thus contributed to poor definition of many species and a complicated taxonomy; 2) lack of sampling in many areas, particularly in the Caribbean to Brazil; and 3) absence of monographs of this group from this vast region, even at the family level [except for Forest's (1987) worldwide treatment of the unusual, "symmetrical" Pylochelidae], that may have utilized the large, unstudied specimen base that exists in various museums from the Americas. Furthermore, the majority of paguroid studies have used specimens collected primarily along the northwestern Atlantic from the east coast of the United States to the Caribbean, whereas relatively fewer studies have used specimens from the immense, habitat rich coastline of eastern South America from Venezuela to Argentina. Few studies have compared in detail northwestern and southwestern Atlantic paguroid specimens. As result, numerous questions remain about the extent of the distributions, and often identity, of many western Atlantic species that have traditionally been considered to range broadly in the western Atlantic.

During recent deep-water expeditions along the coast of Brazil, a collection of 14 interesting paguroid species was obtained that adds significant knowledge to the western Atlantic paguroid fauna, and that collection forms the base of this report. The detailed study of this material, which included comparisons with western Atlantic specimens and types deposited in major museums, revealed that 11 of the 14 species found represent considerable range extensions to the south or first record for the western Atlantic, and that morphological definitions are poorly defined. Of these, one male was found of a rare species, *Nematopaguroides pusillus* Forest & de Saint Laurent, 1968, previously known from Brazil based only on the holotype and at the time of its description questionably placed in *Nematopaguroides*. No other specimens of *N. pusillus* have ever been reported of this species except for specimens attributed to *N. cf. pusillus* in a list included in an ecological study of *Oculina* reefs off the east coast of Florida (Reed *et al.* 1982). Reexamination of this unique Florida material of *N. pusillus*, which included males and females, reconfirmed McLaughlin & Wang's (2000) conclusion of the correct generic placement by Forest & de Saint Laurent (1968) of this species. Several specimens in the Brazilian collection represent *Michelopagurus atlanticus* (Bouvier, 1922), a species not previously known to occur in the western Atlantic. While comparing specimens of the Brazilian species of *Pagurus* with those in the National Museum of Natural History, Smithsonian Institution, Washington DC (USNM), a significant number of specimens were discovered of *P. rotundimanus* Wass, 1963 from localities in the southern Caribbean, much further south and collected in much deeper waters than previously known; thus, the opportunity is taken herein to document this new information for this species. A