



Taxonomic re-examination of the hermit crab species *Pagurus forceps* and *Pagurus comptus* (Decapoda: Paguridae) by molecular analysis

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Abstract

The current taxonomy of two poorly known hermit crab species *Pagurus forceps* H. Milne Edwards, 1836 and *Pagurus comptus* White, 1847 from temperate Pacific and Atlantic coastlines of South America is based only on adult morphology. Past studies have questioned the separation of these two very similar species, which occur sympatrically. We included specimens morphologically assignable to *P. forceps* and *P. comptus* in a phylogenetic analysis, along with other selected anomuran decapods, based on 16S ribosomal gene sequences. Differences between samples putatively assigned to either *P. forceps* and *P. comptus* were moderate, with sequence similarity ranging from 98.2 to 99.4% for the fragments analyzed. Our comparison of mitochondrial DNA sequences (16S rRNA) revealed diagnostic differences between the two putative species, suggesting that *P. forceps* and *P. comptus* are indeed phylogenetically close but different species, with no genetic justification to support their synonymization. The polyphyly of *Pagurus* is not corroborated here among the represented Atlantic species, despite obviously complex relationships among the members of the genus.

Key words: Anomura, molecular systematics, 16S rRNA, South Atlantic

Introduction

The anomurans are one of the most morphologically and ecologically diverse groups of decapod crustaceans, including a large number of extant species such as hermit crabs. More than 800 species in 127 genera are currently reported for the superfamily Paguroidea (McLaughlin 2003), and these inhabit diverse biotopes from intertidal to deep seas. Many more, however, appear to be undescribed. Even though explanations of evolutionary relationships at higher taxonomic levels have been attempted (McLaughlin 1983; Morrison *et al.* 2002), classification and evolutionary history of the group at many taxonomic levels is far from being resolved (McLaughlin 1983; Forest 1987; Ingle 1993; Martin & Davis 2001; McLaughlin 2003; McLaughlin *et al.* 2007).

The family Paguridae is highly diverse, with species widely distributed through all oceans. In recent years, new genera have been added to almost all the families of Paguroidea, but most additions have been to the Paguridae, currently comprised of 74 genera (McLaughlin 2003). Systematic problems remain among these, as for example with the polyphyletic genus *Pagurus* Fabricius, 1775. *Pagurus* exhibits a high degree of