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## **Benthic amphipods (Amphipoda: Gammaridea and Corophiidea) from the Mexican southeast sector of the Gulf of Mexico: checklist, new records and zoogeographic comments**

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### **Abstract**

The southeast region of the Gulf of Mexico is considered to be biologically important, because it is a connection and transition zone between the Caribbean and the Gulf of Mexico, harboring great marine biodiversity. Nevertheless, benthic amphipods have been poorly studied in the Mexican southeast sector of the Gulf of Mexico with few studies listing species. The aim of this study is to provide an update checklist of species for the Mexican southeast sector (based on literature review and records from the present study) as well as a brief zoogeographical analysis for the Gulf of Mexico amphipod fauna, putting them in context with the fauna on the tropical western Atlantic. Fifty-five species were listed for the Mexican southeast sector; 36 of them showed a geographical extension to the Yucatan continental shelf representing 23 new records for the Mexican southeast sector, nine for the southeast region and four for the Gulf of Mexico. Based on the zoogeographical analysis, there is support of the application of Carolinian and Caribbean zoogeographic provinces to amphipods in the Gulf of Mexico.

**Key words:** Yucatan, Crustacea, Peracarida, marine, biodiversity, biogeography

### **Introduction**

Benthic amphipods inhabit a variety of substrata, including hard and soft bottoms, submerged aquatic vegetation and other benthic organisms (e.g. sponges, corals, anemones, tunicates). The high morphological diversity of amphipods dwelling on sandy sediments suggests a great adaptive radiation (Bousfield 1970). Benthic amphipods obtain a great part of their food from the sediment or water column, displaying major feeding modes such as detritivory, filter-feeding, herbivory, predatory, scavenging and sand-cleaning (Bousfield 1973; Biernbaum 1979). This ecological diversity has conferred them the ability to colonize all marine habitats and a broad interval of depth, from intertidal to abyssal zone (Thomas 1993; Escobar-Briones & Winfield 2003; LeCroy *et al.* 2009). Biologically, the reproductive strategy in amphipods is to brood their eggs in a marsupium, releasing them as miniature versions of adults (direct development), and in some cases providing parental care (Thiel 1999). Thereby species show a trade-off condition to achieve reproductive success (Sainte-Marie 1991; William *et al.* 2001).

Amphipods are important for bioturbation because they promote the interchange of gases (mainly oxygen and nitrogen) and contribute high rates of secondary production for energy flow to higher trophic levels (Marques & Bellan-Santini 1993; Duffy & Hay 2000; Soliman & Rowe 2008). These ecological and biological traits have positioned amphipods as one key link between the sediment and the water column.

Despite their importance, there are many marine regions where amphipods are often ignored, leaving a gap of information which provides an erroneous assessment of the regional biodiversity. One approximation to solve this crisis is to make checklists of species based on reliable identification or taxonomic revision. This is the first step in establishing a framework of how many and which species are in which habitats (alpha, beta and gamma diversity). According to Hendrickx and Harvey (1999), a checklist of species provides information about the complexity of the biological communities and the live resources available, helping to recognize and to delimit the protected areas and to identify potential anthropogenic impacts.