



## Diversity of Siphonophora (Cnidaria: Hydrozoa) in the Western Caribbean Sea: new records from deep-water trawls

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### Abstract

Siphonophores are one of the least known gelatinous zooplankters in the tropical waters of the Northwestern Atlantic. Most of the regional knowledge about their diversity and distribution is based on surface samples (0–200 m). Siphonophores were collected from oceanic waters off the Mexican Caribbean across an expanded sampling range (0–940 m) during two cruises and were taxonomically examined. A total of 47 siphonophore species were recorded, of these, 14 had not been found in this sector of the Caribbean Sea and 10 represent new records for the Caribbean Basin. The number of species currently known from the western Caribbean is increased from 42 to 56. Some of these species also represent new records for the Northwestern Tropical Atlantic region. The greatest relative increase was observed among species of *Lensia*, five of which are exclusively deep-living forms dwelling below 300 m. A revised, expanded checklist of the siphonophores of the Western Caribbean is also provided. These results confirm the need of further deep sampling to increase our understanding of Caribbean siphonophore diversity.

**Key words:** siphonophores, gelatinous zooplankton, marine biodiversity

### Introduction

Siphonophores are a widespread and abundant group of colonial gelatinous cnidarians that play important roles in the trophic web of the pelagic realm (Mackie *et al.* 1987; Pugh 1996). Currently, there are about 175 known species grouped into three orders: Cystonectae, Physonectae, and Calycophorae, each with a distinctive morphological organization (Pugh 1999). While evidence suggests that Cystonectae and Calycophorae are monophyletic, the physonects likely represent a grade that gave rise to Calycophorae (Dunn *et al.* 2005; Pugh 2006).

Most siphonophore species collected by standard plankton nets belong to the highly diverse order Calycophorae, which comprises nearly 65% of all known siphonophore species. The other two orders, Physonectae and Cystonectae, are typically viewed as less diverse and abundant. However, when other sampling gear and techniques (e.g. diving, submarines) are used, nearly 60% of species and 75% of individuals collected are representatives of Physonectae (Pugh 1999). Across broad oceanic regions, particularly within the tropics, our knowledge of the diversity and distribution of these cnidarians is based mainly on collections from the upper layers of the ocean. Relatively little is known about the deep-living siphonophore fauna of tropical areas.

In Mexican waters knowledge concerning the group is limited mainly to epipelagic layers. There are 89 species of Siphonophora recorded from Mexican waters of the Pacific and the Atlantic (Suárez-Morales and Gasca 1991; Gasca 2002; Pugh and Gasca 2009), and most of these are epipelagic. According to Margulis (1984), epipelagic siphonophores (0–200 m) are distributed only in this layer, while most other species occur in deeper strata or have wider depth distributions. While this pattern may be generally true, the extent of