

“An update on the caridean shrimps (excluding the family Alpheidae) from the shallow waters of the South-eastern Coast of the Gulf of México: new records”

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Introduction

The infraorder of the caridean shrimps is by far the largest group of shrimp throughout the world, with about 3500 described species grouped in more than 389 genera. In order to contribute to the knowledge of this group in the Gulf of Mexico, a number of different sampling campaigns were carried out in a reef complex located northeast of the Yucatan Peninsula supplemented by fieldwork in the marshes, estuaries, and coastal wetlands of northwestern Yucatan. The data obtained combined with literature records, databases and museum collections in Mexico, were used to construct a preliminary list of the species for the Yucatan coast of the Gulf of Mexico.

Material and methods

Fieldwork was conducted, both during the day and night throughout the year according to weather conditions to search for caridean shrimps in the coastal regions of Yucatan (Celestun, Sisal, Bocana Chelem-Progresso, Ria Lagartos) and coral reefs like Serpientes, Madagascar and the Alacranes Reef National Park. Sampling was conducted in a targeted manner, focussing on potentially shrimp rich habitats (coral reefs, seagrass beds, tidal flats, seamount of dead coral rock, and sponges) using SCUBA and snorkeling, supplemented by collecting techniques, such as nets, traps and suction pumps (yabby pump). We conducted an extensive review of information on carideans for the Gulf of Mexico, Caribbean and Western Atlantic consulting literature sources, online databases and zoological collections.



Result and Discussion

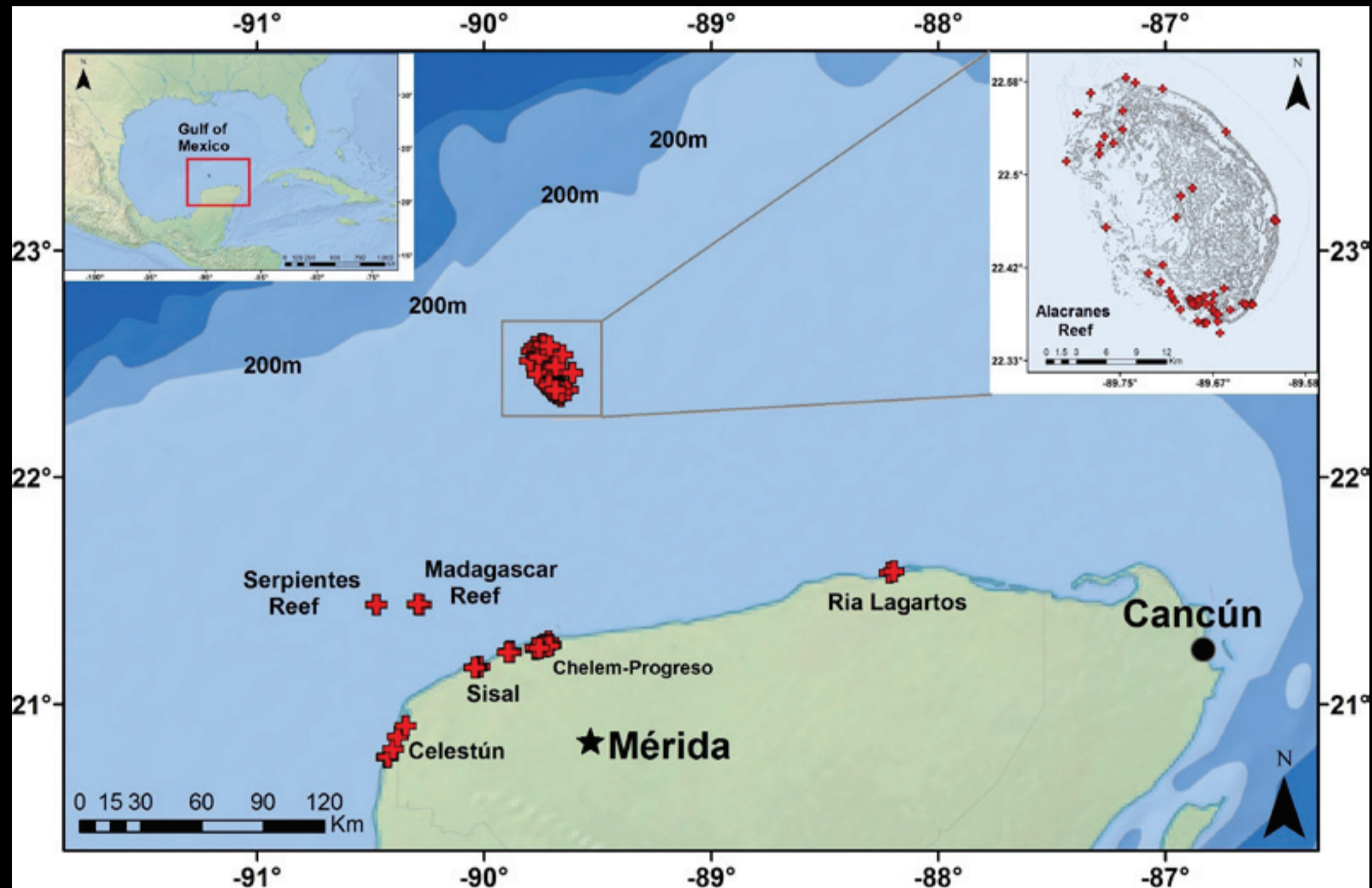
54 species of shallow water caridean shrimps (0-50m) were known from the northwest coast of Yucatan (excluding Alpheidae) prior to this study. Our results add 4 species for the Gulf of Mexico, an additional 12 species are newly recorded for Mexico, whilst 25 are new records for Yucatan.

The most species rich family is Palaemonidae with 22 species, then Hippolytidae with 19 species, followed by Processidae (5 species), Gnathophyllidae (2), Pasiphaeidae (2) and Barbouridae, Anchistioididae, Ogyrididae and Rhynchocinetidae with 1 species each.

The following species are newly recorded for the Gulf of Mexico: Janicea antiguensis, Lysmata ankeri, Ascidonia quasipusilla and Rapipontonia platalea, all of which were collected in Alacranes Reef, Yucatán.

Comparing the total number of species present in this study by zones, we can clearly notice how in coastal lagoons as Celestun, Sisal Marsh, Chelem-Progresso, the diversity of Caridean shrimp is lower (total of 12 species) compared with coral reef systems and rocky shores as Alacranes Reef National Park, Madagascar Reef and Serpientes reef (a total of 32 species), because estuaries are semi closed areas with a reduced habitat complexity.

The use of diverse collecting techniques such as suction pumps, bait traps, SCUBA equipment, trawls and directly collecting potential hosts (e.g. sponges, and sea urchins), as well as substrate (e.g. corals, rocks with cavities), is shown to be the optimal field technique to advance knowledge of the shrimp fauna inventory along the Yucatan coast of Mexico.



Map showing sampling locations in the marine shallow oceanic and coastal waters of the northeastern Yucatan peninsula. A total of 39 sampling points in coral reefs locations and 27 sampling points on coastal waters.

Table 1. Marine Caridean shrimps (excluding Alpheidae) reported in literature, Mexican collections, and found during present study of northeast coast of Yucatán (AA=Arrecife Alacranes, Ser= Arrecife Serpientes, Mad= Arrecife Madagascar, Cel= Celestun, Che= Laguna Chelem-Progresso, Sis= Sisal, Boc=Bocana de la carbonera, Ria= Ria Lagartos).

| No | Family | Species | Authority | Previous information | | This work | | | | | | | | | | New records | | |
|----|------------------------|-----------------------------|------------------------|----------------------|-------------|-----------|-----|-----|----|-----|-----|-----|-----|-------|-----|-------------|----|--|
| | | | | Bibliography | Collections | AA | Ser | Mad | Ce | Che | Sis | Boc | Ria | Total | Yuc | Mex | GO | |
| 1 | Anchistioididae | Anchistioides antiguensis | (Schmitt, 1924) | 2 | | * | * | * | | | | | | | | | | |
| 2 | Barbouridae | Janicea antiguensis | (Schmitt, 1924) | | 2 | * | * | * | | | | | | | | | | |
| 3 | Gnathophyllidae | Gnathophyllodes mineri | Schmitt, 1933 | 1, 6 | | * | * | * | | | | | * | | | | | |
| 4 | | Gnathophyllum americanum | Guérin-Ménéville, 1855 | 1 | 2 | | | | | | | | * | | | | | |
| 5 | | Hippolyte coeruleus | (Fabricius, 1775) | 1 | | | * | * | | | | | * | | | | | |
| 6 | | Hippolyte nicholsoni | Chace, 1972 | 1, 4 | 2 | | | | | | | | * | | | | | |
| 7 | Hippolytidae | Hippolyte obliquimanus | Dana, 1852 | 1, 3, 4 | 2 | * | * | * | | | | | * | | | | | |
| 8 | | Hippolyte pleuracanthus | (Stimpson, 1871) | | | | * | * | | | | | * | | | | | |
| 9 | | Hippolyte zostericola | (Smith, 1873) | 3 | 2, 3 | * | * | * | * | * | | | * | | | | | |
| 10 | | Latreutes fucorum | (Fabricius, 1798) | 3, 4 | 2 | * | * | * | | * | * | | * | | | | | |
| 11 | | Latreutes parvulus | (Stimpson, 1866) | | | | | | * | | | | * | | | | | |
| 12 | | Lysmata ankeri | (Rhyme & lin, 2006) | | 2 | | | | | | | | * | | | | | |
| 13 | | Lysmata grabhami | Gordon, 1935 | 2 | | | | | | | | | * | | | | | |
| 14 | | Lysmata intermedia | (Kingsley, 1878) | 2 | | | | | | | | | * | | | | | |
| 15 | | Lysmata pedersenii | (Rhyme & lin, 2006) | 2 | | * | * | * | | | | | * | | | | | |
| 16 | | Lysmata rafa | Rhyme & Anker, 2007 | 2 | | | | | | | | | * | | | | | |
| 17 | | Lysmata rathbunae | Chace, 1970 | 1 | | * | * | * | | | | | * | | | | | |
| 18 | | Lysmata wurdemanni | (Gibbes, 1850) | 1 | | * | * | * | | | | | * | | | | | |
| 19 | | Thor amboinensis | (De Man, 1888) | | 2 | * | * | * | | | | | * | | | | | |
| 20 | | Thor floridanus | Kingsley, 1878 | 4 | 2, 3 | * | * | * | | * | * | | * | | | | | |
| 21 | | Thor manningi | Chace, 1972 | 3, 4 | 2 | | * | * | * | * | * | | * | | | | | |
| 22 | | Tozeuma carolinense | Kingsley, 1878 | 3, 4 | 2, 3 | * | * | * | * | * | * | | * | | | | | |
| 23 | | Trachycaris rugosa | (Bate, 1888) | 2 | | | | | | | | | * | | | | | |
| 24 | | Ogyrididae | Ogyrides alphaerostris | (Kingsley, 1880) | 7 | | | | | | | | * | | | | | |
| 25 | Palaemonidae | Leander tenuicornis | (Say, 1818) | 3, 5 | 2, 3 | * | | | | | | * | | | | | | |
| 26 | | Palaemonetes intermedius | Holthuis, 1949 | | | | | | * | * | * | * | * | | | | | |
| 27 | | Palaemonetes vulgaris | (Say, 1818) | 1, 5 | | | | | | | | | * | | | | | |
| 28 | | Ancylomenes pedersoni | (Chace, 1958) | | 2 | * | * | * | | | | | * | | | | | |
| 29 | | Ascidonia quasipusilla | Chace, 1972 | | | * | * | * | | | | | * | | | | | |
| 30 | | Cuapetes americanus | (Kingsley, 1878) | 2, 3, 5 | 1, 2, 3 | * | * | * | * | | | | * | | | | | |
| 31 | | Holthuisaeus bermudensis | (Armstrong, 1940) | | 2 | * | | | | | | | * | | | | | |
| 32 | | Neopontonides beaufortensis | (Borradaile, 1920) | | 2 | | * | * | | | | | * | | | | | |
| 33 | | Periclimenaeus bredini | Chace, 1972 | 3, 5 | | | * | * | | | | | * | | | | | |
| 34 | | Periclimenaeus caribicus | Holthuis, 1951 | 3, 5 | | * | * | * | | | | | * | | | | | |
| 35 | | Periclimenaeus pearsei | (Schmitt, 1932) | | 2 | | * | * | * | | | | * | | | | | |
| 36 | | Periclimenaeus perlatus | (Boone, 1930) | 5 | 2 | * | * | * | | | | | * | | | | | |
| 37 | | Periclimenaeus schmitti | Holthuis, 1951 | | | | * | * | | | | | * | | | | | |
| 38 | | Periclimenes harringtoni | Lebour, 1949 | | 2 | | * | * | | | | | * | | | | | |
| 39 | | Periclimenes iridescens | Lebour, 1949 | | | * | * | * | | | | | * | | | | | |
| 40 | | Periclimenes rathbunae | Schmitt, 1924 | | 2 | * | * | * | * | | | | * | | | | | |
| 41 | | Periclimenes yucatanicus | (Ives, 1891) | 2, 5, 6 | 2 | * | * | * | | | | | * | | | | | |
| 42 | | Pasiphaeidae | Pontonia mexicana | Guérin, 1856 | | | | | | | | | * | | | | | |
| 43 | Rapipontonia platalea | | (Holthuis, 1951a) | | 2 | | * | * | | | | | * | | | | | |
| 44 | Tuleariocaris neglecta | | Chace, 1969 | | | * | * | * | | | | | * | | | | | |
| 45 | Typton prionurus | | Holthuis, 1951 | | | | * | * | | | | | * | | | | | |
| 46 | Urocaris longicaudata | | (Stimpson, 1860) | | 1, 3 | | * | * | * | * | | | * | | | | | |
| 47 | Leptochela papulata | | Chace, 1976 | | 1 | | | | | | | | * | | | | | |
| 48 | Processidae | Leptochela serratorbita | Bate, 1888 | | 1, 7 | | | | | | | * | | | | | | |
| 49 | | Processa bermudensis | (Rankin, 1900) | 3 | 2, 3 | * | * | * | * | | | | * | | | | | |
| 50 | | Processa fimbriata | Manning & Chace, 1971 | 3 | 2, 3 | * | * | * | | | | | * | | | | | |
| 51 | | Processa riveroi | Manning & Chace, 1971 | | | * | * | * | | | | | * | | | | | |
| 52 | | Processa vossi | Manning, 1992 | | 1, 3 | | | | | | | | * | | | | | |
| 53 | Rhynchocinetidae | Processa wheeleri | Lebour, 1941 | | 1 | | | | | | | * | | | | | | |
| 54 | | Cinetorhynchus manningi | Okuno, 1996 | | 2 | | | | | | | | * | | | | | |

References: 1(Felder et al.), 2(Holthuis, 1951b), 3(Martínez-Guzmán, 1993), 4 (Wicksten, 2005c), 5 (Wicksten, 2005b), 6(Chace, 1972), 7 (Hernández-Aguilera, 1996). Collections: 1 Colección Nacional de Crustáceos, 2 Colección de Crustáceos de la UMDI-Sisal, 3 Colección de Crustáceos de la UADY; * Collected during the present study.

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