ELEVEN NEW RECORDS OF CARIDEAN SHRIMPS FROM CUBAN WATERS (DECAPODA, CARIDEA)

BY

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Cuba is the largest island in the Caribbean – Gulf of Mexico region, with rich and diverse marine habitats along its 5700 km long coastline, ranging from mangroves and extensive seagrass beds to well-developed pristine coral reefs and marine caves. Decapod crustaceans have been relatively well studied over the course of many decades, with recent checklists documenting 95 (allowing for systematic uncertainty) marine and estuarine species of caridean shrimps (Martínez-Iglesias *et al*., 1996; Lalana and Ortiz, 2000) supplemented by the record of *Lysmata pederseni* Rhyne & Lin in Pérez-Hernández & Monteagudo (2015). However, it is clear that many more species remain to be documented in Cuban waters as in recent years several western Atlantic species complexes have been revised, especially in the family Alpheidae (e.g. Anker et al., 2007, 2008; Ríos & Duffy, 2007; Anker, 2012). In addition, several new species in the wider Caribbean Sea have been described in recent years (e.g. De Grave, 2014; Anker, 2011). Thus it is very likely that many of the revised and new taxa are present in Cuban waters, but so far have not been documented.

Here we report on a small collection of caridean shrimps made during two University of Hull undergraduate expeditions to Isla de la Juventud (formerly Isla de Pinos) in 2012 and 2014. Isla de la Juventud is Cuba's second largest island (second only to the main island of Cuba), situated immediately south of Havana across the Gulf of Batabanó. Komai & Anker (2015) already reported on material of the laomediid mud shrimp genus *Naushonia* collected during these expeditions. During the two week trips in June of each year, students and staff dived in one area of reef on the west of the Island (~21.35°N 83.10°W). The dive site

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consisted of a truncated spur and groove system on the seaward side to depths of about 18 m and a submerged patch reef towards the shore in shallower water. Specimens were also sampled from a mixed *Thalassia* and *Syringodinium* seagrass bed in shallow water (<1.5 m) in front of the El Colony hotel (~21.63°N 83.00°W).

A total of 30 species have been collected during both expeditions combined (Table I), with remarkably 11 species (i.e. 37%) not recorded before from Cuban waters, including three species (viz. *Triacanthoneus alacranes* Anker, 2010; *Triacanthoneus chapelianus* Alvarez, Iliffe & Villalobos, 2014; *Phycomenes siankaanensis* (Martínez-Mayén & Román-Contreras, 2006)) previously only known from their respective type localities. These new records are discussed below.

All material was collected off the western side of Isla de la Juventud, with for brevity only the geographical coordinates and habitat information listed under material examined. Material is deposited in the Zoological Collections of the Oxford University Museum of Natural History, Oxford, United Kingdom (OUMNH.ZC). For Alpheidae, carapace length (cl, in mm) was measured from the tip of the rostrum to the posterior margin of the carapace, whilst post-orbital carapace length (pocl, in mm), as delineated by the orbit was used for other caridean families.

Infraorder CARIDEA Dana, 1852

Family ALPHEIDAE Rafinesque, 1815

Genus *Alpheus* Fabricius, 1798

Alpheus amarillo Anker, 2012

Material examined.—1 male (cl 9.5), from rubble, 11.9 m, 21°35.100'N 83°10.200'W, 25.vi.2014, OUMNH.ZC.2016-13-005; 1 male (cl 9.0), same details, OUMNH.ZC.13-006; 1 male (cl 9.5) OUMNH.ZC.2016-13-007; coral rubble, 12.5m, 21°35.100'N 83°10.200'W, 27.vi.2014; 1 female (cl 7.9), same details, OUMNH.ZC.2016-13-008; 1 male (cl 9.5), same details, OUMNH.ZC.2016-13-009; 1 ov. female (cl 11.6), same details, OUMNH.ZC.13-010; 1 female (cl 8.5), coral rubble, 12.8 m, 21°35.100'N 83°10.200'W, 28.vi.2014, OUMNH.ZC.2016-13-011; 1 female (cl 9.3), same details, OUMNH.ZC.2016-13-012; 1 male (cl 12.0), same details, OUMNH.ZC.13-013; 1 ov. female (cl 11.4), same details, OUMNH.ZC.2016-13-014.

Remarks.—The specimens present no special features and closely adhere to the description in Anker (2012). The species is relatively widespread in the tropical north-western Atlantic,

from southern Florida southwards to Panama, including several Caribbean islands (Anker, 2012) and is now reported for the first time from Cuba.

Alpheus immaculatus Knowlton & Keller, 1983

Material examined.—1 female (cl 11.9), coral rubble, 11.3 m, 21°35.100'N 83°10.200'W, 25.vi.2014, OUMNH.ZC.2016-13-019; 1 female (cl 9.7), same details, 28.vi.2014, OUMNH.ZC.2016-13-020; 1 male (cl 12.5), same details, OUMNH.ZC.2016-13-021; 1 male (cl 10.2), 1 ov. female (cl 12.4), coral rubble, 10-15 m, 21.65°N 83.20°W, 17.vi.2012, OUMNH.ZC.2016-13-090.

Remarks.—Although no colour photo was available for the present material, the comparatively long and slender rostrum does allow assigning it to *A. immaculatus*. It is assumed that all shrimps were associated with the corkscrew sea anemone, *Bartholomea annulata* (Le Sueur, 1817), as elsewhere in the region. The species is relatively widespread in the western Atlantic ranging from southern Florida and the Gulf of Mexico southwards to Panama and Venezuela (Hurt et al., 2013). Although Martínez-Iglesias et al. (1997) already suspected *A. immaculatus* would occur in Cuba, the present records are the first confirming the species for the country.

Synalpheus yano (Ríos & Duffy, 2007)

Material examined.—1 post-ov. female (cl 3.6), from unidentified sponge, 10-15 m, 21.65°N 83.20°W, 17.vi.2012, OUMNH.ZC.2016-13-093.

Remarks.—The single specimen agrees well with the description in Ríos & Duffy (2007, as *Zuzalpheus yano*). The sponge from which the specimen was extracted was not identified. *Synalpheus yano* is sparsely recorded from the southern Gulf of Mexico to Ceará, Brazil (Anker et al., 2012).

Triacanthoneus alacranes Anker, 2010

(fig. 1A)

Material examined.—1 female (cl 1.7), coral rubble, 10-15 m, 21°35.100'N 83°10.200'W, 25.vi.2014, OUMNH.ZC.2016-13-094.

Remarks.—The single Cuban specimen is missing the first to fourth pereiopods on the right side and second to fifth on the left side. In contrast to the holotype, the orbital angle is rounded and not pronounced into a tooth (fig. 1A). As in the holotype, the rostral carina is well developed, with the mediodorsal tooth situated in the posterior third of the carapace. The

two well-developed dorsolateral teeth are comparatively more anteriorly positioned than in the holotype (Fig. 1A). Two pairs of small spiniform setae are present on the telson, positioned at 0.64 and 0.84 of the telson length, respectively. The species was previously known only from the holotype from Alacranes Reef off the Yucatan Peninsula in the southern Gulf of Mexico (Anker, 2010).

Triacanthoneus chapelianus Alvarez, Iliffe & Villalobos, 2014

(fig. 1B–C)

Material examined.—1 ov. female (cl 2.3), coral rubble, 10-15m, 21°35.100'N 83°10.200'W, 16.vi.2014, OUMNH.ZC.2016-13-095.

Remarks.— The single specimen agrees closely to the type description of *T. chapelianus* (Alvarez et al., 2014), including the characteristic supraocular position of the dorsolateral teeth on the carapace and the incised posterior margin of the telson. As in the holotype, the present ovigerous specimen bears an appendix masculina on the second pleopod, suggesting that the species may be hermaphroditic (see also Anker, 2010). The species was previously known only from the holotype collected from a marine cave off Caye Chapel, Belize. However, the Cuban specimen demonstrates that the species is not restricted to caves.

Family HIPPOLYTIDAE Spence Bate, 1888

Genus *Hippolyte* Leach, 1814

Hippolyte nicholsoni Chace, 1972

Material examined.—1 male (pocl 0.8), 1 female (pocl 1.0), on unidentified gorgonian, 11.6 m, 21°35.100'N 83°10.200'W, 26.vi.2014, OUMNH.ZC.2016-13-031; 1 female (pocl 1.1), on unidentified gorgonian, 12.8 m, 21°35.100'N 83°10.200'W, 28.vi.2014, OUMNH.ZC.2016-13-032; 2 males (pocl 0.6, 0.7), on unidentified gorgonian, 10-15 m, 21°35.100'N 83°10.200'W, 18.vi.2012, OUMNH.ZC.2016-13-084.

Remarks.—The Cuban specimens of *H. nicholsoni* appear to be typical for this common and widespread western Atlantic species (d'Udekem d'Acoz, 2007), which was previously not recorded from Cuba. It is usually associated with the slimy seaplume, *Pseudopterogorgia americana* (Gmelin, 1791), although the hosts of the present specimens were not identified.

Family PALAEMONIDAE Rafinesque, 1815

Genus *Holthuisaeus* De Grave & Anker, 2010

Holthuisaeus bermudensis (Armstrong, 1940)

Material examined.—1 female (pocl 5.0), in unidentified sponge, 10-15 m, 21.65°N 83.00°W, 16.vi.2012, OUMNH.ZC.2016-13-080.

Remarks.— The single Cuban specimen presents all features of *H. bermudensis*, with the configuration of the fossa-molar system on the major second pereiopod being unique among western Atlantic palaemonid shrimps (Anker & De Grave, 2010). The species has been extensively recorded in the western Atlantic (previously as *Periclimenaeus bermudensis*), from Bermuda southwards to Bahia, Brazil, and now also from Cuba. It is an obligate sponge dweller and is associated with a variety of sponge hosts (Anker & De Grave, 2010).

Genus *Periclimenes* Costa, 1844

Periclimenes mclellandi Heard & Spotte, 1997

Material examined.—1 male (pocl 1.3), 3 ov. females (pocl 1.5-1.8), on *Plexaura homomalla* ((Esper, 1792), 12.8 m, 21°35.100'N 83°10.200'W, 28.vi.2014, OUMNH.ZC.2016-13-041.

Remarks.—All except one specimen have a rostral dentition of 4/0, with one of the ovigerous females having 5/1, i.e. with a ventral tooth, which is rare in this species. *Periclimenes mclellandi* is only known from the Turks & Caicos Islands, Panama (De Grave & Anker, 2017), and now Cuba, and is usually associated with the slimy seaplume, *P. americana*. The host of the Cuban specimens, *P. homomalla* is a new host record for the species.

Periclimenes patae Heard & Spotte, 1991

Material examined.—1 male (pocl 1.4), 2 ov. females (pocl 1.5, 2.0), 1 post-ov. female (pocl 2.0), on unidentified gorgonian, 10-15 m, 21°35.100'N 83°10.200'W, 28.vi.2014, OUMNH.ZC.2016-13-042; 1 male (cl 1.6), 2 ov. females (pocl 1.2, 1.7), on unidentified gorgonian, 10-15 m, 21.65°N 83.00°W, 18.vi.2012, OUMNH.ZC.2016-13-081.

Remarks.—Two of the Cuban specimens of *P. patae* have a rostral dentition of 5/0, with one of the ovigerous females also having a small subdistal ventral tooth, i.e. 5/1. The species is known from the Florida Keys, Turks & Caicos Islands, Honduras, Panama (De Grave & Anker, 2017) and now Cuba. It is associated with a variety of shallow-water gorgonians, although primarily with *P americana*.

Genus *Phycomenes* Bruce, 2008

Phycomenes siankaanensis (Martínez-Mayén & Román-Contreras, 2006)

Material examined.—1 ov. female (pocl 3.2), seagrass bed, 1 m, 21.63°N 82.98°W, 26.vi.2014, OUMNH.ZC.2016-13-043; 1 ov. female (pocl 2.4), seagrass bed, 1 m, 21.65°N 83.00°W, 17.vi.2012, OUMNH.ZC-2016-13-086.

Remarks.— The rostral formulae of the Cuban specimens are 5/0 and 5/1, with the presence of a ventral tooth being rather unusual for the species. *Phycomenes siankaanensis* was previously known only from the type locality in the Bahía de la Ascensión, Quintana Roo, Mexico, where it was collected from *Thalassia* meadows in less than 1 m (Martínez-Mayén & Román-Contreras, 2006), similar to its habitat in Cuba.

Genus *Pseudocoutierea* Holthuis, 1951

Pseudocoutierea antillensis Chace, 1972

Material examined.—2 ov. females (pocl 1.2, 1.3), on *Plexaura homomalla*, 11.6 m, 21°35.100'N 83°10.200'W, 26.vi.2014, OUMNH.ZC.2016-13-051; 1 male (pocl 1.1), same collection details, 27.vi.2014, OUMNH.ZC.2016-13-052; 1 male (pocl 2.4), 1 female (pocl 2.5), on *Gorgonia flabellum* Linnaeus, 1758, 10-15 m, 21.61°N 83.20°W, 16.vi.2012, OUMNH.ZC.2016-13-076; 1 male (pocl 1.2), 1 ov. female (pocl 1.5), on unidentified gorgonian, 10-15 m, 21.65°N 83.00°W, 18.vi.2012, OUMNH.ZC.2016-13-087.

Remarks.—The Cuban specimens are typical for this species, which has been sparsely recorded from the Florida Keys southwards to Colombia, Curaçao and now Cuba, from a variety of gorgonians (Wicksten & Cox, 2011). The two identified gorgonians in the present study, *G. flabellum* and *P. homomalla*, represent new host records.

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Fig. 1. *Triacanthoneus alacranes* Anker, 2010, female (OUMNH.ZC.2016-13-094). A, carapace lateral view. *Triacanthoneus chapelianus* Alvarez, Iliffe & Villalobos, 2014. ovigerous female (OUMNH.ZC.2016-13-095), B, carapace, lateral view; C, telson, distal end. Scale bar indicates 1mm (A, B) or 0.5 mm (C).

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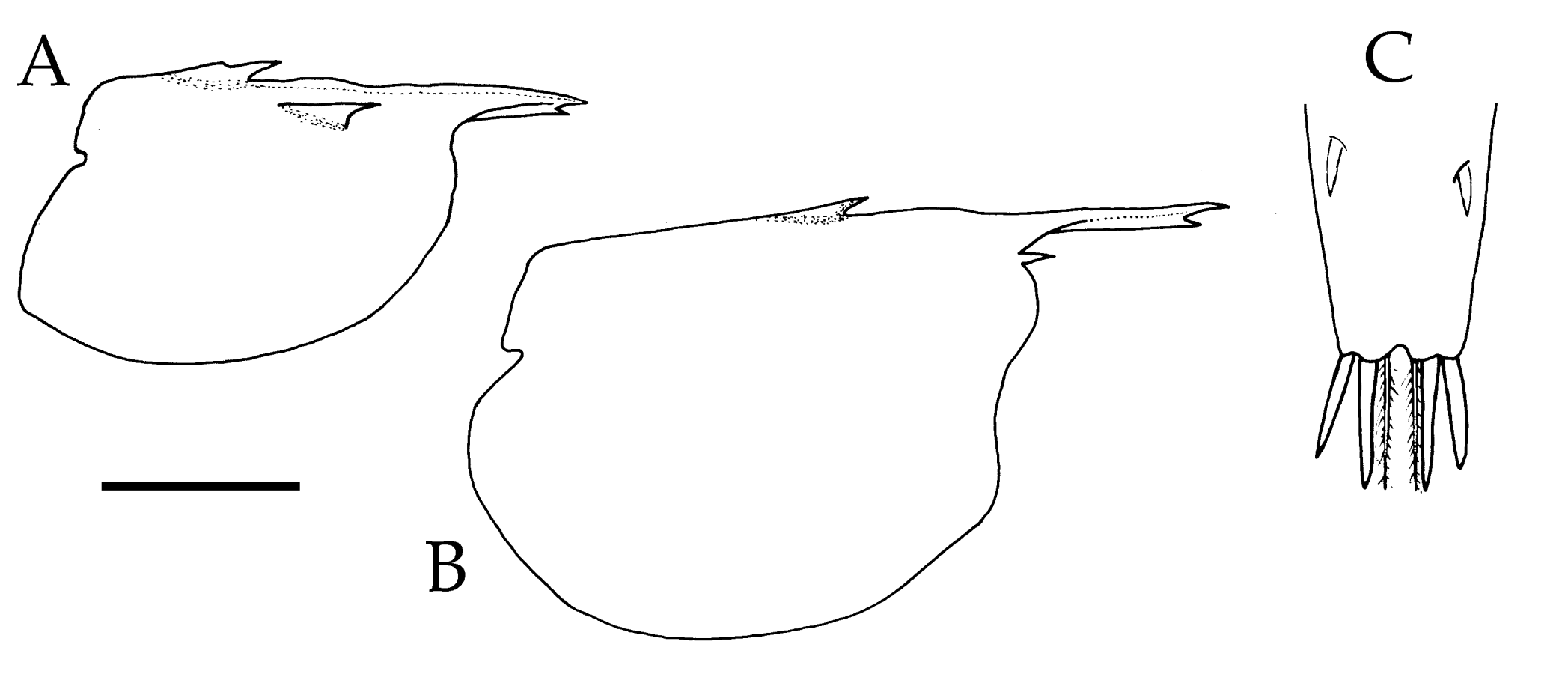
Table I. Caridean shrimp species collected during the expeditions at Isla de la Juventud.

Family Alpheidae	*Alpheopsis* cf *chalciope* De Man, 1910
	Alpheopsis cf *labis* Chace, 1972
	Alpheus amarillo Anker, 2012
	Alpheus armatus Rathbun, 1901
	Alpheus immaculatus Knowlton & Keller, 1983
	Automate cf dolichognatha De Man, 1888
	Automate cf *evermanni* Rathbun, 1901
	Synalpheus minus (Say, 1818)
	Synalpheus yano (Ríos & Duffy, 2007)
	Triacanthoneus alacranes Anker, 2010
	Tricanthoneus chapelianus Alvarez, Iliffe & Villalobos, 2014
Family Hippolytidae	*Hippolyte nicholsoni* Chace, 1972
	Hippolyte zostericola (Smith, 1873)
	Latreutes fucorum (Fabricius, 1798)
	Latreutes parvulus (Stimpson, 1871)
	Tozeuma carolinense Kingsley, 1878
	Trachycaris restricta (A. Milne-Edwards, 1878)
Family Lysmatidae	*Lysmata pederseni* Rhyne & Lin, 2006
Family Palaemonidae	*Ancylomenes pedersoni* (Chace, 1958)
	Cuapetes americanus (Kingsley, 1878)
	Holthuisaeus bermudensis (Armstrong, 1940)
	Periclimenes mclellandi Heard & Spotte, 1997
	Periclimenes patae Heard & Spotte, 1991
	Phycomenes siankaanensis (Martínez-Mayén & Román-Contreras, 2006)
	Pseudocoutierea antillensis Chace, 1972
	Urocaris longicaudata Stimpson, 1860
Family Processidae	*Processa bermudensis* (Rankin, 1900)
Family Thoridae	*Thor amboinensis* (De Man, 1888)
	Thor floridanus Kingsley, 1878
	Thor manningi Chace, 1972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