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Additions to the Pycnogonida fauna of Carrie Bow Cay, Belize, middle America

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Abstract.—Five additional species are added to the 31 species in 14 genera known to inhabit reefs in the vicinity of Carry Bow Cay, Belize. Four of these species are known from other localities while one is new; *Ascorhynchus petilus,* new species. The new species is described, illustrated, and its morphology compared with related species in this genus. Additional illustrations are provided for another species, *Parapallene bermudensis* Lebour, from an adult specimen where the species was known previously only from juveniles.

There is only one previous report on the pycnogonida of Belize (Child 1982a), listing known species and describing new species collected up to that time. Five additional species from the vicinity of Carrie Bow Cay, Belize, were collected during ongoing studies of the Caribbean reef system at that locality. The study has been continued each year since 1972, and many collectors have contributed specimens taken fortuitously with general benthic material. The present report brings the species count up to date and describes and illustrates a new species; *Ascorhynchus petilus,* and compares it with related species. Four other known species are listed as new to Belize, and parts of one additional species, *Parapallene bermudensis* Lebour, are illustrated to contribute knowledge of adult morphology where only juveniles had previously been known.

Systematics

Class Pycnogonida
Family Ammotheidae
Genus *Achelia* Hodge, 1864
Achelia gracilis Verrill

Achelia (?) *gracilis* Verrill, 1900:582, fig. 4, pl. 70, fig. 10.

Ammothea gracilis.—Cole, 1904:317–323, pl. 21, figs. 4–14.

Ammothea (*Achelia*) *gracilis.*—Giltay, 1934:5.

Achelia gracilis.—Marcus, 1940:79 [key].—Hedgpeth, 1948:244, fig. 38f–g.—Sawaya, 1951:274 [key].—Stock, 1954: 117.—Bourdillon, 1955:597.—Stock, 1975:983; 1979:10; 1986:416; 1992b: 118.—Müller, 1992:43, fig. 1.

Material examined.—Carrie Bow Cay, on *Madracis* sp. in five separate places along the forereef crest in 15 m, 16°48.2′N, 088°04.5′W, 19 April 1988 (2 males, 2 females, 1 juvenile, 2 damaged specimens).

Distribution.—Found in many localities from Bermuda to the Caribbean and the northeast coast of South America in Brazil, in depths to 44 m.

Remarks.—It is no surprise to find this infrequently collected species at Belize although it is not nearly so common as its congener, *Achelia sawayai* Marcus. It has been reported in many papers from Florida and the northeast Caribbean Sea, but not as often in the western Caribbean.

Genus *Ascorhynchus* Sars, 1877
Ascorhynchus petilus, new species
Fig. 1A–F

Material examined.—Curlew Cay Bank, among coral, sponge, and *Halimeda* in 21.3

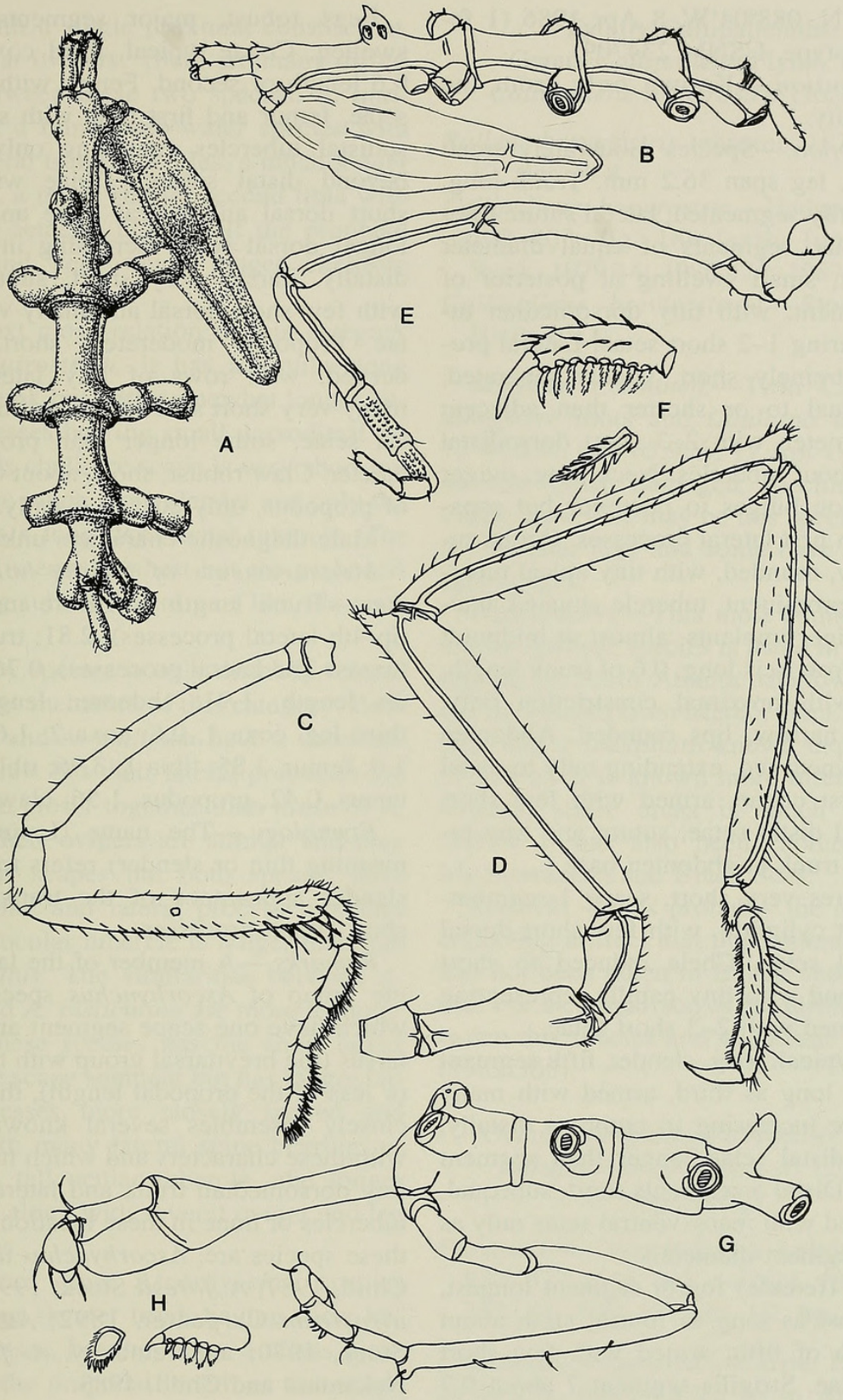

Fig. 1. *Ascorhynchus petilus,* holotype female: A, trunk, dorsal view; B, trunk, lateral view; C, palp; D, third leg; E, oviger; F, oviger terminal segment and one spine, enlarged. *Parapallene bermudensis* Lebour: G, adult male trunk, lateral view with oviger; H, oviger terminal segment with one spine, enlarged.

m, 16°47′N, 088°04′W, 8 Apr 1986 (1 female, holotype, USNM 234709).

Distribution.—Known only from the type locality.

Description.—Species moderately small for genus, leg span 36.2 mm. Trunk long, slender, fully segmented, lateral suture lines conspicuous, segments of equal diameter with neck, small swelling at posterior of each segment, with tiny dorsomedian tubercle bearing 1–2 short setae. Lateral processes extremely short, widely separated, length equal to or shorter than adjacent trunk diameter, with 2–3 short dorsodistal setae, without tubercles. Neck long, oviger implantation bulges to posterior but separated from first lateral processes. Ocular tubercle low, rounded, with tiny apical tubercle, eyes prominent, tubercle situated anterior to oviger implants, almost at midpoint of neck. Proboscis long, 0.6 of trunk length, slender, with proximal constriction only, distal tip narrow, lips rounded. Abdomen short, downcurved, extending only to distal rim of first coxae, armed with few short dorsal and distal setae, suture and tiny tubercle on trunk at abdomen base.

Chelifores very short, scape 1-segmented, almost cylindric, with few short dorsal and distal setae. Chela reduced to short rounded bud with tiny papilla representing finger, armed with 2–3 short setae.

Palps typical, long, slender, fifth segment almost as long as third, armed with many short setae increasing in numbers distally, and few distal setae longer than segment diameter. Distal 5 segments short, subequal, each armed with many ventral setae only as long as segment diameters.

Oviger (female) fourth segment longest, fifth almost as long as fourth, sixth about 0.7 length of fifth, armed with few short lateral setae. Strigilis segment 7 about 0.7 length of subequal distal 3, all armed with two lateral rows of short setae and 1 major and 2 minor rows of denticulate spines, spines with 5–6 lateral serrations. Terminal claw very slender, slightly curved, short, only half length of terminal segment.

Legs robust, major segments slightly swollen. Coxae typical, third coxae about 0.6 length of second. Femur with few tiny setae, femur and first tibia with small dorsodistal tubercles extending only slightly beyond distal suture. Tibiae with many short dorsal and lateral setae and row of longer dorsal setae increasing in numbers distally. Tarsus very short, subtriangular, with few short dorsal and many ventral setae. Propodus moderately short, slightly curved, with rows of tiny lateral setae, many very short sole setae, and row of dorsal setae, some longer than propodal diameter. Claw robust, short, about 0.3 length of propodus, only curved distally.

Male diagnostic characters unknown.

Measurements of female holotype in mm.—Trunk length (chelifore insertion to tip 4th lateral processes), 2.81; trunk width (across 2nd lateral processes), 0.76; proboscis length, 1.91; abdomen length, 0.41; third leg, coxa 1, 0.6; coxa 2, 1.6; coxa 3, 1.0; femur, 3.85; tibia 1, 3.96; tibia 2, 4.14; tarsus, 0.42; propodus, 1.56; claw, 0.59.

Etymology.—The name (Latin: *petilus,* meaning thin or slender) refers to the very slender appearance of the trunk with its short lateral processes.

Remarks.—A member of the largest single group of *Ascorhynchus* species, those which have one scape segment and a short tarsus (the brevitarsal group with tarsus half or less of the propodal length), this species closely resembles several known species with these characters and which have either tiny dorsomedian trunk and lateral process tubercles or none in these locations. Among these species are: *Ascorhynchus antipodum* Child, 1987; *A. foresti* Stock, 1991; *A. tenuirostrum* Carpenter, 1892; *A. pudicum* Stock, 1970; and remotely, *A. fusticulum* Nakamura and Child, 1983.

The new species is perhaps closest in trunk morphology to *A. antipodum.* The latter species has very short lateral processes on an elongate trunk, a long neck with oviger implantations well in advance of the first lateral processes, a similar slender pro-

boscis with a single proximal constriction, and similar ovigers. There are many differences between these two species: *A. antipodum* is a blind deep-water species with anterolateral trunk tubercles; a much longer abdomen, a much shorter second tibia with far fewer setae; a tarsus half the propodal length; and very much longer chelifore scapes.

The next close relation in this category is *A. tenuirostrum.* It has a similar long slender trunk but with somewhat longer lateral processes bearing small dorsodistal tubercles. Its chelifore scape is very short but its legs are much more slender and only the femur has a long dorsodistal tubercle. The abdomen is equally short but the proboscis has a long tubular distal part like the neck of a flask.

The new species is only distantly related to the other members of this category. Both *A. foresti* and *A. pudicum* have a short tarsus and claw but their lateral processes are longer and closer together than those of *A. petilus.* Their ovigers are similar and they have short scapes but both species have dorsomedian and lateral process tubercles and their ocular tubercle is longer than that of *A. petilus.* The similarities between *A. petilus* and *A. fusticulum* are more tenuous. The Japanese species has the short tarsus and single scape segment but has longer lateral processes more closely spaced and armed with many lateral spine bearing tubercles, a tall ocular tubercle, and longer abdomen, along with several oviger and leg differences.

There are other *Ascorhynchus* species with a long slender trunk having short lateral processes, but they have a tarsus more than half the propodal length or two scape segments, or both, among other differences.

In agreement with Stock (1993:352, footnote), and the third edition of Zoological Nomenclature, the generic suffix is recognized as masculine with species names following this rule.

Family Callipallenidae

Genus *Callipallene* Flynn, 1929

Callipallene brevirostris (Johnston)

Pallene brevirostris Johnston, 1837:380, pl. 12, figs. 7–8.

Callipallene brevirostris.—Hedgpeth, 1948: 202–203, fig. 18a [early literature].—Stock, 1979:14; 1986:424; 1987:512–513.

Callipallene brevirostrum.—Stock, 1975: 1010–1011.

Material examined.—Twin Cays, from mangrove roots and *Caulerpa* in 0–2 m, 16°49.8′N, 088°05.9′W, 17 Apr 1981 (1 ♂). Several other damaged specimens from Carrie Bow Cay may be this species, but all are without legs and some have lost other appendages.

Distribution.—This most common of all amphi-Atlantic species is listed in almost all reports on North Atlantic shallow fauna. It has one record from Meteor Bank, West Africa, and a maximum known depth record of 316 m. It is known more often in North Atlantic shore areas in much shallower depths. It has also been captured in the Mediterranean and Black Seas.

Remarks.—It is probably the result of a collecting artifact that this common species had not been taken in Belize until this record. For a comparison of the differences between this species and *C. belizae* see Child (1982:365).

Genus *Parapallene* Carpenter, 1892

Parapallene bermudensis Lebour

Fig. 1G–H

Parapallene bermudensis Lebour, 1949: 930–932, figs. 2–3.—Child, 1982a:366–367, fig. 165; 1992:61–62, fig. 28.

Material examined.—Carrie Bow Cay, 16°48.2′N, 088°04.5′W, 36 m with scuba, 29 Mar 1980 (1 ♀, without legs). Carrie Bow Cay, fore reef crest among dead coral rubble in 16.8 m, 2 Apr 1986 (1 ♂ with eggs, 1 damaged specimen).

Distribution.—As its name implies, the species was first collected in the Bermudas

in about 33 m. It was later taken as a juvenile in Belize in about the same depth. The above captures of adults confirm the juvenile record from the same place. The depth range for this species is now extended to 16.8–33 m.

Remarks.—The adult male oviger has never been illustrated and a lateral figure of a male is included with oviger attached and an enlarged figure of the terminal oviger segment and a spine (Fig. 1G–H).

Family Phoxichilidiidae
Genus *Anoplodactylus* Wilson, 1878
Anoplodactylus glandulifer Stock

Anoplodactylus glandulifer Stock, 1954: 80–84, fig. 36.—Arnaud, 1973:955.—Stock, 1974:16–17.—Child, 1982b:273–274; 1988a:58–59.—Nakamura & Child, 1988:813.—Müller, 1990:74; 1992:166, figs. 27–30.—Child, 1990:331.—Stock, 1992a:94–95; 1994:18 [list], 59.—Bamber, 1992:193–194.

Anoplodactylus multiclavus Child, 1977: 593–596, fig. 4; 1979:58, fig. 19d; 1982b: 272.—Müller, 1992:166.

Material examined.—Carrie Bow Cay, reef crest rubble, Feb 1978 (1 ♂ with eggs).

Distribution.—This species was thought to have an Indo-Pacific distribution and has been taken in many localities from the Red Sea and Oman to Australia, Hong Kong, and the Marshall Islands in very shallow waters. The second named species, *A. multiclavus,* was thought to be the Atlantic counterpart of Stock's species with a few differences in diagnostic characters. Müller (1992:166) was first to point out that the two are the same. As *A. multiclavus,* this species was collected and described from the U.S. Virgin Islands, and subsequently collected in Panama, Belize, and St. Vincent Island.

Remarks.—There appears to be a consistent difference among various populations of this species in numbers of cribriform cement gland cups; from two to five. This specimen has three on all legs except for the fourth or posterior pair which have four cups each.

Family Rhynchothoracidae
Genus *Rhynchothorax* Costa, 1861
Rhynchothorax mediterraneus? Costa

Rhynchothorax mediterraneus Costa, 1861: 8–9, pl. 1.—Child, 1988a:56 [literature].—Arnaud & Krapp, 1990:4, tab. 1.—Stock, 1992b:135–136; 1994:41.—Miyazaki & Stock, 1995:325–327, figs. 1–2.

Rhynchothorax crenatus Child, 1982a:374–376, fig. 167 [new synonymy].

Material examined.—Carrie Bow Cay, reef front, 15 m, 2 Apr 1980 (1 spec.).

Distribution.—The distribution of this species is extended north from several places in Brazil to Belize. It is also found in North and East Africa, the Mediterranean, Madagascar, Aldabra Atoll, and Papua New Guinea and Indonesia. It is usually found in moderately shallow water form the littoral to 200 m, but Stock (1992b:135) lists one capture depth as 1100 m, which may possibly be an error.

Remarks.—This specimen is only provisionally placed with this species. It could be *R. orientalis* Child (1988b:28–29, fig. 12), from the Philippine Islands. Both species have tall dorsomedian tubercles. The single observable difference between this subadult specimen and *R. orientalis* appears to be in the shape of these dorsal trunk tubercles and the minor difference of no tubercles on the fourth lateral processes, which are present on the Philippines species. The dorsal trunk tubercles have a single anterior-pointing curved tip in this specimen while they have an anterior and posterior double tip on tubercles in *R. orientalis.*

In *R. crenatus* adult specimens, the ocular tubercle assumes a long anterior projection. Also, the adult palp adds a tiny fourth terminal segment, the juvenile loses its dorsomedian proboscis tubercle, and the lateral processes develop small low dorsodistal tu-

bercles. All of these adult characters agree very well with *R. mediterraneus.*

Rhynchothorax philopsammum Hedgpeth

Rhynchothorax philopsammum Hedgpeth, 1951:111–115, pl. 3.—Arnaud & Krapp, 1990:6 [literature].—Müller, 1991:155–157, fig. 6.

Rhynchothorax anophthalmus Arnaud, 1972:405–409, figs. 1–7.

Rhynchothorax vallatus Child, 1990:333–334, fig. 7.

Material examined.—Carrie Bow Cay, reef crest, on *Porites* sp., 1–2 m, 26 Apr 1981 (1 spec.).

Distribution.—This species has recently received two groups of specimens as synonyms which greatly extend its known distribution. It has been collected from the Mediterranean and Azores, California and Mexico, Chile and the Great Barrier Reefs, Australia, and the Society Islands. It is a member of the interstitial fauna, coming from habitats in as much as 15 cm in sand. It has also been recorded from 0–2 m on the substrate surface. This is its first record from the Caribbean.

Remarks.—This is the second species without eyes or an ocular tubercle to be collected from Caribbean waters. The other is, *R. architectus* Child (1979:68–72, figs. 23, 24a–g, 25a–e), a species which has an extremely variable set of dorsomedian tubercles on the trunk and proboscis. What was originally described an ocular tubercle is actually a group of small tubercles in place of an otherwise lacking ocular tubercle.

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