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STUDIES ON THE CRUSTACEA OF THE TURKS AND CAICOS ISLANDS, BRITISH WEST INDIES. V. RECORDS OF MYSIDS FROM PINE CAY, FORT GEORGE CAY, WATER CAY, AND ADJACENT WATERS

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ABSTRACT Only 2 species of mysids, *Heteromysis spottei* and *Stygiomysis clarkei*, have been previously reported from the Turks and Caicos Islands. Between 1988 and 1990, 21 species of mysids were collected from reef (to 38 m) and shallow non-reef habitats surrounding Pine Cay, Fort George Cay, and Water Cay, Turks and Caicos Islands. One species collected, *Anchialina typica*, is distributed throughout tropical and subtropical seas. Twelve species (*Bowmaniella johnsoni, Dioptromysis paucispinosa, Heteromysis bermudensis, H. guitarti, H. mayana, Mysidium columbiae, M. gracile, M. integrum, Mysidopsis bispinulata, M. brattstromei, Parvimysis bahamensis, and Siriella chierchiae*) are widely distributed throughout the subtropical and tropical waters of the Northwest Atlantic. Five species (*Amathimysis serrata, A. torleivi, Heteromysis coralina, Mysidopsis mathewsoni, and Siriella chessi*) are reported for only the second or third time. Three undescribed species are recognized: 2 species of *Amathimysis* associated with either gorgonians on reefs or grass beds and a species of *Heteromysis* collected from sponges on deeper reefs.

INTRODUCTION

The Turks and Caicos Islands are the northernmost islands in the British West Indies and are located about 175 km north of Hispaniola and 250 km northeast of Cuba. This archipelago of inhabited and uninhabitated islands is geologically part of the southeastern Bahamas (Schotte et al. 1991).

This report represents the fifth in a series devoted to the crustacean fauna of the Turks and Caicos Islands. The first 4 contributions dealt with marine isopods (Kensley and Heard 1991, Schotte and Heard 1991, Schotte et al. 1991) and a mysid species (Price and Heard 2000). In addition, another series of 5 publications addressed the taxonomy, distribution, and ecology of commensal palaemonid shrimps (Heard and Spotte 1991, Heard et al. 1993, Spotte, et al. 1994, Spotte and Bubucis 1996, Heard and Spotte 1997).

To date, documentation of the mysid fauna of the Turks and Caicos Islands includes only 2 species; *Stygiomysis clarkei* Bowman, Iliffe, and Yager, 1984 and *Heteromysis spottei* Price and Heard, 2000 were described from an anchialine cave on Middle Caicos Island (Bowman et al. 1984) and from live bottom (calcareous algae, sponges, anthozoans) off Pine Cay (Price and Heard 2000), respectively. The purpose of this study is to document the marine mysid fauna from the reef (to 38 m) and shallow non-reef habitats surrounding Pine Cay, Fort George Cay, and Water Cay, Turks and Caicos Islands (Figure 1).

MATERIALS AND METHODS

Mysids were collected from subtidal habitats in the vicinity of Pine Cay, St. George Cay, and Water Cay in the northeastern Turks and Caicos Islands (Figure 1) between April 1988 and June 1990. Collecting methods included the use of fine mesh kicknets (0.5 and 1.0 mm), an epibenthic sled (0.33 mm), plankton nets (mouth dia. 33 cm, 0.33 mm mesh size), yabby pumps, and plankton (light) traps. Algal-sponge-rock substrata were gently washed in a weak formalin-seawater solution and specimens were captured on a 0.5 mm sieve. SCUBA was used to collect subtidal organisms. The slimy sea plume *Pseudopterogorgia americana* (Gmelin, 1791) and other gorgonian species were sampled for crustacean associates utilizing hand nets, kicknets, and plastic bags placed over the gorgonians from the Turks and Caicos Islands. Additional samples were collected with a kicknet by the second author from Tobago in 1993 and during a study by Spotte et al. 1995 from Guana Island, British Virgin Islands in 1995 in which plastic bags were used. The plastic bagging procedure is described in detail by Spotte et al. 1995 and Spotte and Bubucis 1996. Samples were preserved in 10% formalin-seawater. Measurements of total length of mysids were determined as the distance from the anterior dorsal margin of the carapace to the posterior margin of the telson, excluding spiniform setae. Brood size was determined from counts of young removed from full marsupia of ovigerous females. Larval development was categorized into 3 phases according to Wittmann (1981): 1) embryonic—embryo spherical

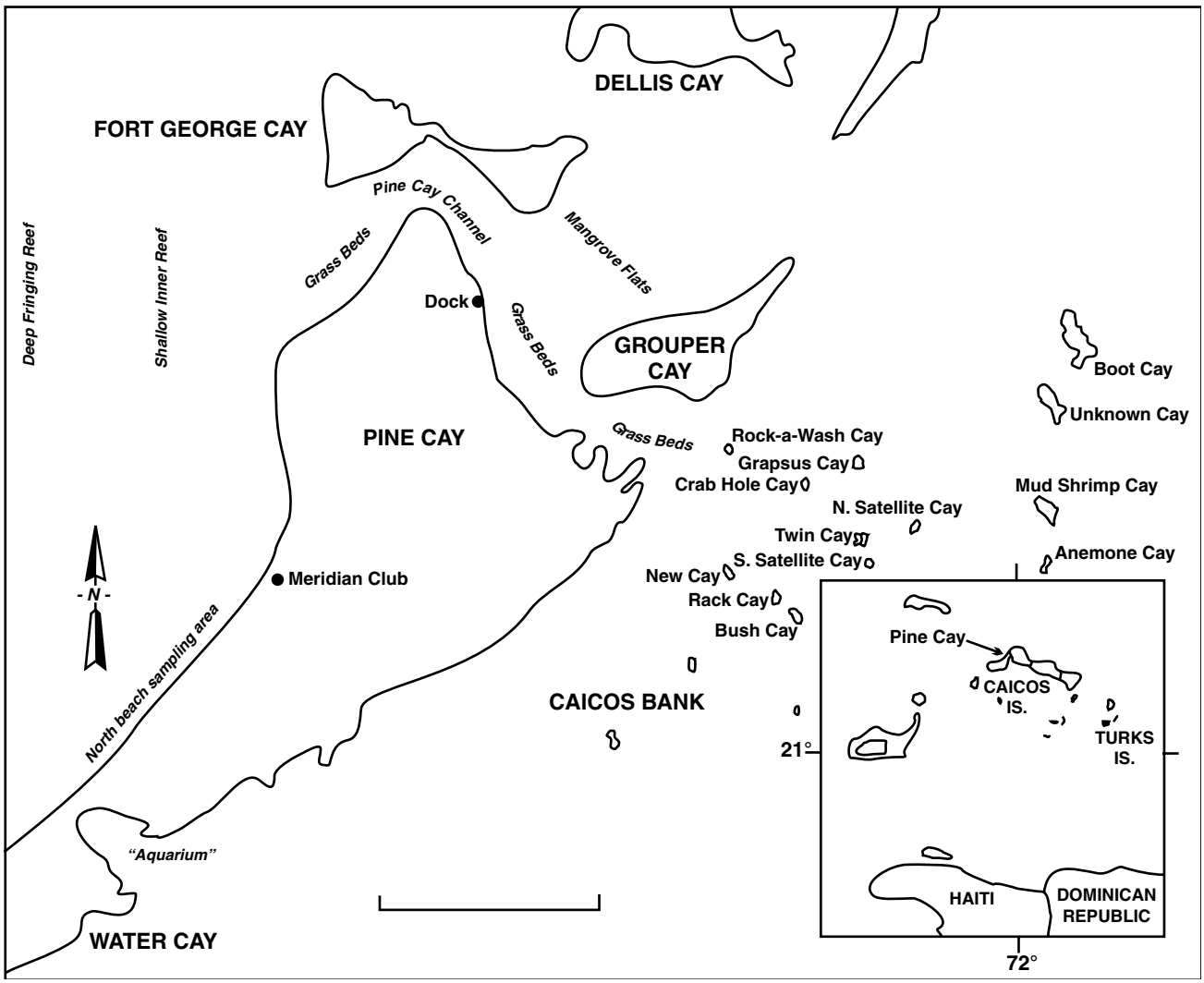

Figure 1. Map showing collecting sites in waters adjacent to Pine Cay, Turks and Caicos Islands, British West Indies. Scale=1km.

and surrounded by an egg membrane; 2) nauplioid—larva elongate, but enclosed in naupliar cuticle; 3) postnauplioid—all appendages and eyestalks free following molt of cuticle. Representative specimens of each described species are deposited in the National Museum of Natural History, Smithsonian Institution, Washington, DC, and the Gulf Coast Research Laboratory Museum.

RESULTS

Eighteen described and 3 undescribed species of mysids were identified from more than 1500 specimens collected from subtidal habitats surrounding Pine Cay. Occurrence, distribution, ecological information, and, at times, systematic remarks are presented for each species. Synonymies, type localities, and detailed ecological remarks are given only for species not treated in Price et al. (2002). For an illustrated key to most species included in this study, see Price et al. 2002. Refer to figure 2 for the general morphological features of the family Mysidae.

ORDER MYSIDA
Family Mysidae
Sub-family Siriellinae
Siriella chessi Murano, 1986
(Figure 3B)

Material. (males-2, ovigerous females-0, immature females-6, juveniles-0), Pine Cay, Aquarium, plankton trap, night, 12 Oct 1989.—(0-0-1-1), Pine Cay, North beach, sand, epibenthic sled, night, 12 April 1989.

Distribution. Virgin Islands (Murano 1986); Cayman Islands (Price et al. 2002); Turks and Caicos Islands (present study).

Ecological remarks. Collections of *Siriella chessi* in the Turks and Caicos represent the third report for this

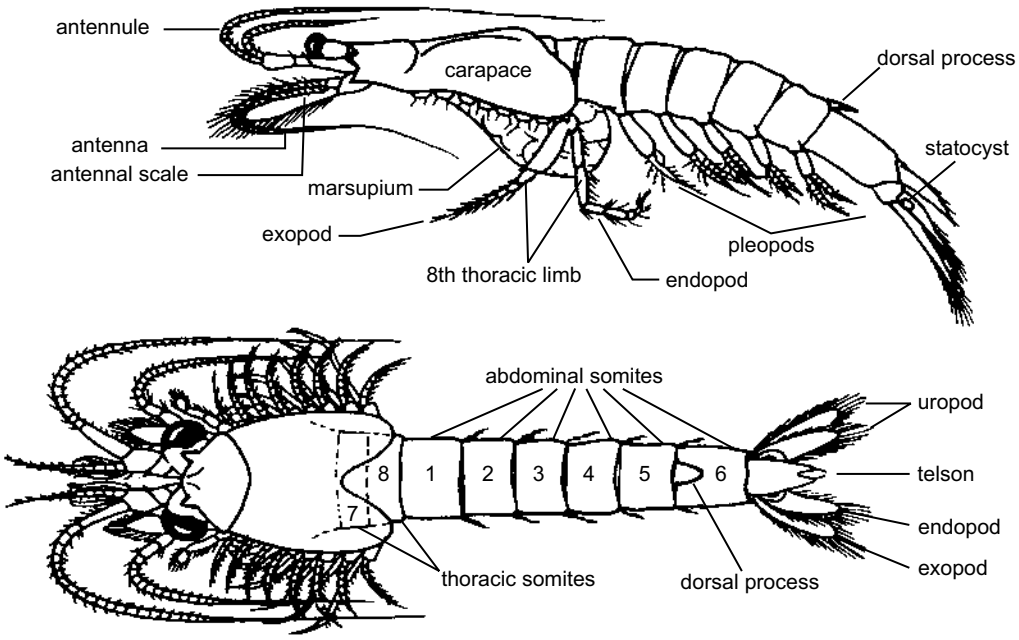

Figure 2. Morphological features typical of the Mysidae.

species. Specimens were collected only in the water column at night. Similar to other oceanic and neritic species of *Siriella*, this species probably undergoes vertical migration and remains near the bottom during the day.

Systematic remarks. See remarks for *Siriella chierchiae.*

Siriella chierchiae Coifmann, 1937 (Figure 3A)

Material. (males-1, ovigerous females-0, immature females-0, juveniles-0), Pine Cay, deep fringing reef, sand/silt, 34-38 m, hand net, 4 Nov 1988.—(1-0-1-0), Pine Cay, deep fringing reef, yellow sponge, 34–38 m, 10 Nov 1988.—(0-0-1-0), Water Cay, algae at reef top, 3–4 m, algae washings, 18 Apr 1988.—(0-1-0-0), South Satellite Cay, 1–2 m, 11 Nov 1988.—(0-1-0-0), Crab Hole Cay, 1 m, 2 Nov 1988.—(0-1-0-0), Rock-a-Wash Cay, sand, 1 m, kicknet, 11 Apr 1988.—(4-0-1-0), Rock-a-Wash Cay, *Neogoniolithon* washings, 0.5 m, 16 Apr 1988.

Distribution. Caribbean Sea, coastal waters of western Atlantic to Brazil (Coifmann 1937, W.M. Tattersall 1951, Brattegard 1970a, b, 1973, 1974a, b, 1975, Băcescu and Ortiz 1984, Modlin 1987a, Markham et al. 1990, Price et al. 2002), Key West, Florida (Tattersall 1951), Gulf of Mexico (Modlin 1984, Escobar-Briones and Soto 1988).

Ecological remarks. This species was associated with a variety of benthic substrata during daytime sampling.

Systematic Remarks. Mature specimens of this widely distributed western Atlantic species exhibited greater morphological variation than previously reported. A 6 mm ovigerous female has 30 spiniform setae on the uropodal endopod and 7 spiniform setae on the outer margin of the proximal article of the uropodal exopod. These numbers are smaller than previously reported (see Price et al. 2002) and overlap with setal counts for *Siriella chessi*. Differences in setation of the posterior two-thirds of the lateral telson margins appear to be the only reliable characteristic separating these 2 species. *Siriella chessi* has a row of subequal spiniform setae (Figure 3B); whereas, *S. chierchiae* has a series of spiniform setae in which larger ones are separated by groups of 2–6 smaller ones (Figure 3A).

Sub-family Gastrosaccinae
Anchialina typica (Kroyer, 1861) (Figure 3D)

Material. (male-1, ovigerous female-1, immature female-1, juvenile-0), Pine Cay, deep fringing reef, sand/silt, 34–38 m, 4 Nov 1988.—(0-0-0-1), Pine Cay, shallow inner reef, sand-pebble, 4 m, 5 Nov 1988.—(0-1-0-3), Pine Cay, North beach, sand, 3–4 m, epibenthic sled, night, 9 Nov 1988.—(0-0-0-1), Pine Cay, Aquarium, plankton trap, night, 12 Sept 1989.

Distribution. Widely distributed in the tropical and sub-tropical regions of the Atlantic, Indian and Pacific oceans (W.M. Tattersall 1951, Ii 1964, Brattegard 1970a, 1973, 1975, Băcescu and Ortiz 1984, Price et al. 2002), waters off Nova Scotia (Nouvel 1943), South Carolina

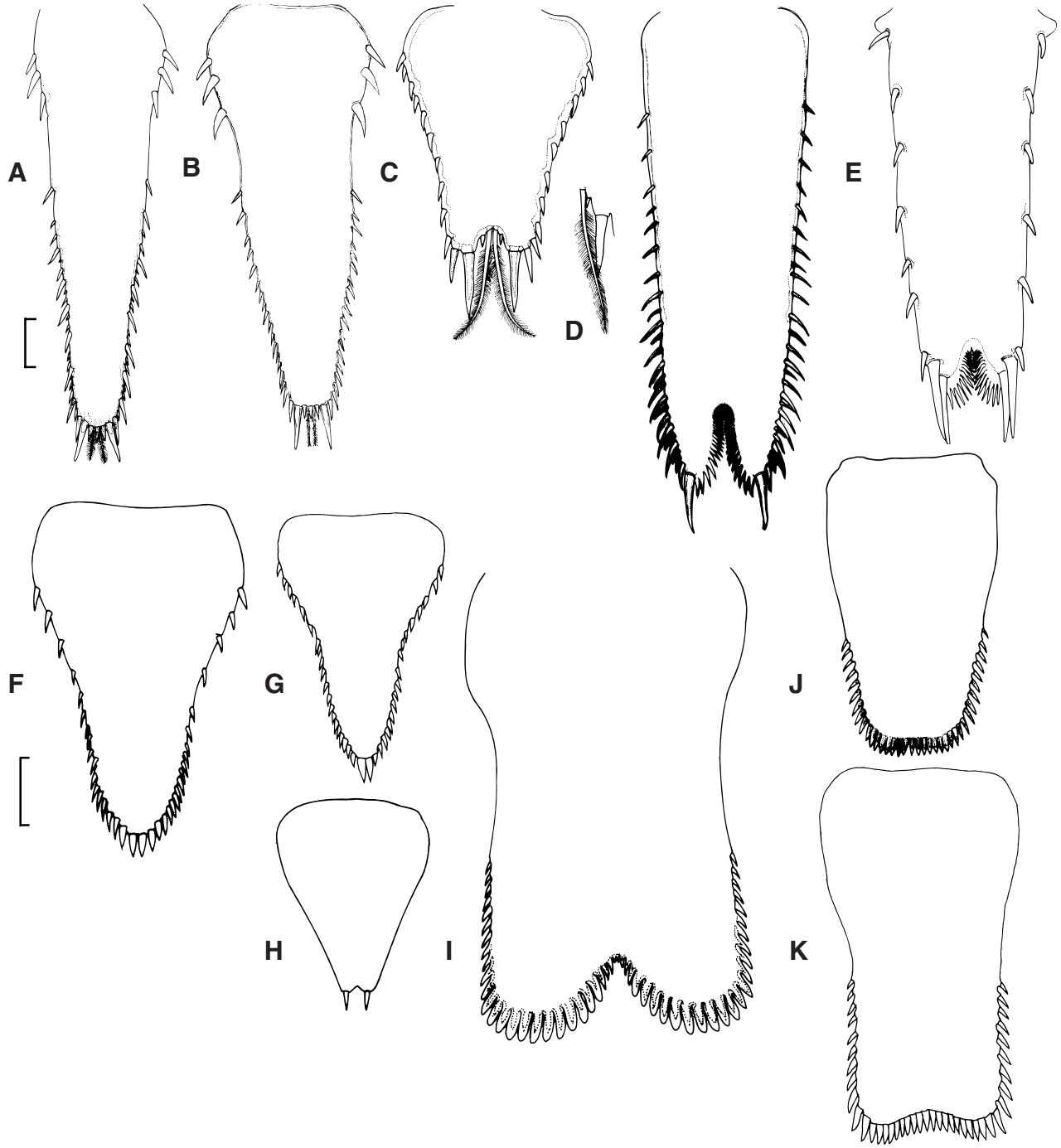

Figure 3. Telsons, dorsal view. A, *Siriella chierchiae*; B, *Siriella chessi*; C, *Dioptromysis paucispinosa* entire, closeup of apex D, *Anchialina typica*; E, *Bowmaniella johnsoni*; F, *Mysidopsis brattstroemi*; G, *Mysidopsis mathewsoni*; H, *Mysidopsis bispinulata*; I, *Mysidium colombiae*; J, *Mysidium integrum*; K, *Mysidium gracile*. Scales = 0.1 mm.

(Wigley and Burns 1971), Gulf of Mexico (Hopkins 1966, Stuck et al. 1979a, b, Modlin 1984, Price et al. 1986).

Ecological remarks. This widely distributed species was collected on/over sand bottoms during the day and in the water column at night.

Systematic Remarks. None.

Bowmaniella johnsoni (W.M. Tattersall, 1937) (Figure 3E)

Material. (males-0, ovigerous-0, immature females-1, juveniles-0), Pine Cay, seagrass beds, 2 m, epibenthic sled, night, 8 Nov 1988.—(6-6-5-0), Pine Cay, North beach, 1.0–1.5 m, sand, kicknet, 4 Nov 1988.—(10-7-29-

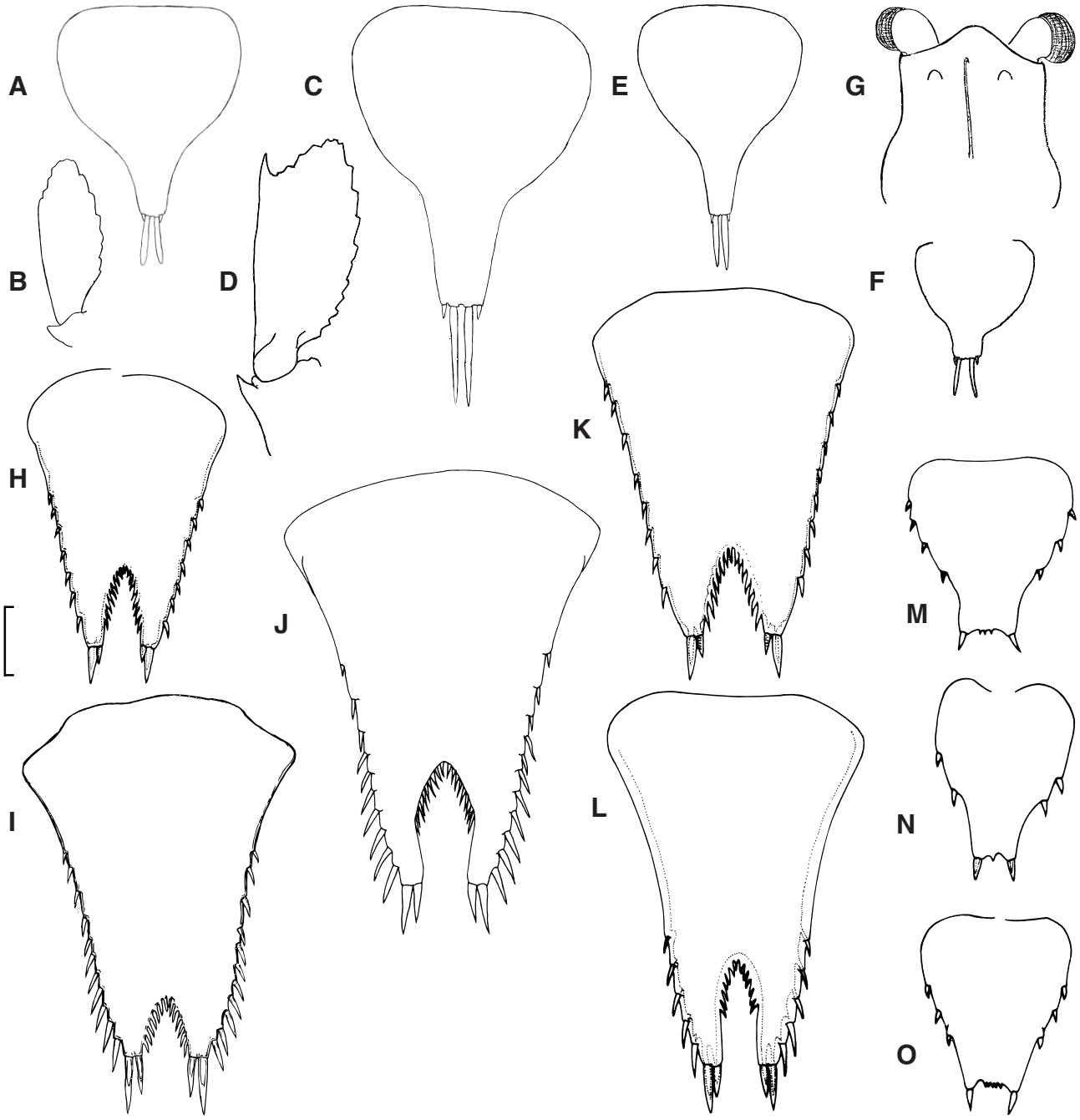

Figure 4. A, *Amathimysis torleivi*, telson; B, *A. torleivi* , antennal scale; C, *A. serrata*, telson; D, *A. serrata*, antennal scale; E, *Amathimysis* sp. A, telson; F, *Amathimysis* sp. B, telson; G, *Amathimysis* sp. B, carapace (dorsal view); H, *Heteromysis mayana*, telson; I, *Heteromysis* sp. A, telson; J, *H. coralina*, telson; K, *H. guitarti*, telson; L, *H. bermudensis*, telson; M–O, *Parvimysis bahamensis*, showing variation in telson morphology. Scale = 0.1 mm.

0), Pine Cay, North beach, 1.0–1.5 m, sand, plankton net, night, 30 Nov 1988.—(11-5-13-0), Pine Cay, North beach, sand, 3–4 m, epibenthic sled, night, 9 Nov 1988.—(7-32-4-0), Pine Cay, North beach, sand, 1 m, kicknet, 12 Apr 1989.—(10-78-7-3), Pine Cay, North beach, sand, epibenthic sled, night, 12 Apr 1989.

Distribution. Puerto Rico, Virgin Islands (W.M. Tattersall 1937); Lesser Antilles (Brattegard 1975); Cayman Islands (Price et al. 2002).

Ecological remarks. Specimens were associated exclusively with sand substrata on or near the bottom during the day and in the water column at night.

Systematic Remarks. None.

Sub-family MYSINAE
Tribe Erythropini
***Amathimysis serrata* Murano, 1986**
(Figures 4 C, D)

Amathimysis serrata.—Murano 1986:141, Figures 5–6.

Material. (males-0, ovigerous females-0, immature females-1, juveniles-0), Pine Cay, seagrass, 2 m, epibenthic sled, night, 8 Nov 1988.—(1-0-0-0), Rack Cay, sponge washings, 1 m, 31 Oct 1988.—(0-2-0-0), Mud Shrimp Cay, sand, 1 m, kicknet, 8 Apr 1988.—(1-1-3-0), Mud Shrimp Cay, algal washings, 0.5–1.0 m, 14 Apr 1988.—(1-0-0-0), Pine Cay, seagrass, epibenthic sled, night, 7 Apr 1989.

Type Locality. St. Croix, US Virgin Islands

Distribution. St. Croix, US Virgin Islands (Murano 1986); Turks and Caicos Islands (present study).

Ecological remarks. This species was collected from a variety of habitats including seagrass, sand, and sponge/algal washings. Murano (1986) reported specimens taken by divers outside a barrier reef in Tague Bay, US Virgin Islands in depths of 8–10 m.

Ovigerous females were 2.7–2.9 mm in length.

Systematic remarks. Specimens from this second record of *Amathimysis serrata* agree with Murano's (1986) original description but appear to exhibit sexual dimorphism in reference to the median dorsal keel anterior to the cervical sulcus of the carapace. The 3 males examined have higher, more pronounced keels than females. Males and females of *Amathimysis cherados* Brattegard, 1974 from Grand Cayman Island showed similar sexual dimorphism (Price et al. 2002). The carapace median keel of *A. serrata* may superficially resemble that of *A. cherados* and *A. gibba* Brattegard, 1969, but these latter species have much larger keeled humps than the former.

***Amathimysis torleivi* Ortiz, Lalana and Sánchez-Diaz, 2000**
(Figures 4 A, B)

Amathimysis torleivi.—Ortiz, Lalana and Sánchez-Díaz 2000:55, Figures 1–4.

Material. TURKS AND CAICOS ISLANDS. Shallow inner reef northwest of Pine Cay, on gorgonians, (males-19, ovigerous females-8, immature females-7, juveniles-0), 9 m, 12 Apr 1989.—(5-0-0-0), 9–11 m, 12 Apr 1989.—(11-2-1-0), Pine Cay, 8–9 m, 10 Feb 1990.—(4-0-2-0), Pine Cay, 9–11 m, hand net, 9 Feb 1990.—(2-3-0-1), Pine Cay, 18 Nov 1989.—(2-0-0-0), Pine Cay, 6.5–8.0 m, 18 Feb 1990.—(1-1-0-0), 5 m, 30 June 1990. TOBAGO. Goat Island, on gorgonians, (9-20-2-1), 4 m, 14 Jan 1993.—BRITISH VIRGIN ISLANDS, GUANA ISLAND, White Bay, off Iguana Head, on *Pseudopterogorgia americana*, (2-0-0-0), 4.5 m, July 1992.

Type Locality. Ciudad de La Habana, Cuba.

Distribution. Cuba (Ortiz et al. 2000); Turks and Caicos Islands, Guana Island, British Virgin Islands, Tobago (present study).

Ecological remarks. *Amathimysis torleivi* as well as an undescribed species, *Amathimysis* sp A, were collected on the slimy sea plume *Pseudopterogorgia americana* and other gorgonians (Figure 3). Both species were never taken on the same host and each occurred in a different bathymetric zone of the reef habitat. While *A. torleivi* was found on shallow inner reefs (11 m), *A.* sp. A was collected on outer fringing reefs, generally in depths of 20 m or more. In addition, *A. torleivi* was collected from gorgonians in shallow waters surrounding Tobago and Guana Island, British Virgin Islands.

Ortiz et al. (2000) reported *Amathimysis torleivi* from the sponge *Callyspongia vaginalis* (Lamarck, 1814) at a depth of 8 m along the north coast of the province of Ciudad de La Habana, Cuba. Sponge washings from the Turks and Caicos yielded only species of *Heteromysis*; *A. torleivi* and *A.* sp A were collected only in association with gorgonians. It appears that at least *A. torleivi* is somewhat of a generalist in its association with sessile invertebrate hosts.

Members of the genus *Amathimysis* are not generally known to live in association with gorgonians or other invertebrates, although *A. gibba* was taken from a scaly soft coral on the Florida Middle Ground (Modlin 1984) and *A. polita* Brattegard, 1974 was collected at the base of hard and soft corals and from a sponge in Belize (Modlin 1987a).

Ovigerous females of *Amathimysis torleivi* ranged from 2.1–3.3 mm in length and carried 3–4 larvae per brood. Embryonic phase diameter 0.34–0.36 mm.

Systematic remarks. *Amathimysis torleivi* can be easily distinguished from its congeners by the absence of a distolateral tooth on the antennal scale (Figure 3 B). In addition, the inner pair of apical telson spiniform setae is relatively short (0.25 or less telson length) and blunt (Figure 4A), characteristics shared only with *Amathimysis* sp. A (Figure 4 E). All other members of this genus have a longer (0.3–0.5 telson length), acute inner pair of spiniform setae on the apex of the telson.

Specimens of *Amathimysis torleivi* from the Turks and Caicos, Guana Island, and Tobago differ slightly in a number of morphological characteristics when compared to the

Figure 5. Photograph of *Amathimysis* sp. A on the gorgonian *Pseudopterogorgia americana*.

description of Ortiz et al. (2000). The width/length ratio of the base of the telson varies from 0.8–1.1 as compared to 1.0; the inner pair of spine-setae on the telson apex is 4.0–5.5 rather than 3–4 times as long as the outer pair. Ortiz et al. (2000) illustrate a faint distal suture on the antennal scale; a suture was present on a minority of specimens from the Turks and Caicos material. Ortiz et al. (2000) report a sub-distal setose "prominencia" on article 2 of the mandibular palp, but no such structure is found on our specimens. In the original description, the dactylus of thoracic endopod 2 is described and illustrated as truncate distally; our material has a dactylus that terminates in a slightly curved claw, similar to all other known species of *Amathimysis*. Male pleopod 1 of our material has 1 terminal seta on the endopod and 5 plumose setae on the pseudobranchial lobe, rather than 1 medial seta and 2 setae, respectively. Our specimens have 7-articulated endopods and exopods on male pleopods 2–5, with coarse plumation on the distal ends of subterminal and terminal setae of the endopod of pleopod 5. Ortiz et al. (2000) report 6-articulated endopods and exopods for pleopods 2–5 with the exception of 7 articles for the exopod of pleopod 3. No mention is made of coarse plumation of pleopod 5.

Amathimysis sp. A
(Figures 4E; 5)

Material. Deep fringing reef northwest of Pine Cay, on gorgonians, (males-4, ovigerous females-5, immature females-5, juveniles-3), 19 m, 26 June 1990.—(1-7-0-0), 18 m, 29 June, 1990.—(4-11-1-0), 21 m, 29 June 1990.—(5-5-1-0), 23 m, 29 June 1990.—(8-10-11-0), 25–32 m, 10 Feb 1990.

Ecological remarks. See remarks for *Amathimysis torleivi*.

Systematic remarks. *Amathimysis* sp. A is morphologically similar to *Amathimysis torleivi* but has a distolateral tooth on the antennal scale.

Amathimysis sp B
(Figure 4F, G)

Material. (males-0, ovigerous females-0, immature females-1, juveniles-1), Pine Cay, 0.5–2.0 km N of Meridian Club, seagrass, algae, 9 m, epibenthic sled, 14 Apr 1989.

Ecological remarks. None.

Systematic remarks. The 2 damaged specimens differ from all known species of *Amathimysis* in the dorsal ornamentation of the carapace anterior to the cervical sulcus. They have a median keel flanked by a tubercle on either side (Figure 4 G). The specimens most closely resemble *A. trigibba* Murano and Chess, 1987, known from coastal waters of California. *Amathimysis trigibba* has a median and 2 lateral tubercles on the carapace. Description awaits the availability of more specimens for study.

Tribe Leptomysini
Dioptromysis paucispinosa Brattegard, 1969
(Figure 3 C)

Material. (males-6, ovigerous females-2, immature females-3, juveniles-0), Twin Cay, sand, 1 m, epibenthic sled, night, 1 Nov 1988.—(1-0-0-0), Rock-a-Wash Cay, sand, 1 m, kicknet, 11 Apr 1988.—(1-1-0-0), Mud Shrimp Cay, sand 1 m, kicknet, 8 Apr 1988.—(0-1-0-0), Pine Cay, 2 km N of Meridian Club, seagrass/algae, 9 m, epibenthic sled, 14 Apr 1989.

Distribution. Bahamas (Brattegard 1969); Belize (Modlin 1987a); Grand Cayman Island (Price et al. 2002).

Ecological remarks. This rare species was collected from sand or seagrass/algae habitats with kicknets and epibenthic sleds.

Systematic remarks. This species is more widely distributed throughout the Caribbean than its only western Atlantic congener, *Dioptromysis spinosa* Brattegard, 1969, which has been collected in the Bahamas and Florida Keys (Brattegard 1969). The 2 species are similar morphologically but may be distinguished most readily by differences in numbers of spiniform setae on the uropodal endopod (2–6 for *D. paucispinosa*; 13–20 for *D. spinosa*).

Mysidopsis bispinulata Brattegard, 1974 (Figure 3 H)

Material. (males-0, ovigerous females-2, immature females-1, juveniles-0), Pine Cay, seagrass beds, 2 m, epibenthic sled, night, 8 Nov 1988.—(29-17-12-0), Pine Cay, North beach, sand, 3–4 m, epibenthic sled, night, 9 Nov 1988.—(5-2-3-11), Pine Cay, North beach, sand, 10–15 m, epibenthic sled, 14 Apr 1989.—(8-24-3-8), Pine Cay, North beach, sand, epibenthic sled, night, 12 Apr 1989.

Distribution. Caribbean coasts of Colombia (Brattegard 1973, 1974a) and Panama (Brattegard 1974b); Grand Cayman Island (Price et al. 2002); Turks and Caicos Islands (present study).

Ecological remarks. *Mysidopsis bispinulata* is reported for the first time from the Bahamas and its range is extended into the northern Caribbean Sea. This species was taken in fairly large numbers from sand and seagrass habitats.

Systematic remarks. None.

Mysidopsis brattstroemi Brattegard, 1969 (Figure 3 F)

Material. (males-1, ovigerous females-1, immature females-0, juveniles-0), Pine Cay, seagrass beds, 1–3 m, epibenthic sled, night, 30 Oct 1988.—(3-1-2-0) Pine Cay, North beach, sand, 3–4 m, epibenthic sled, night, 9 Nov 1988.

Distribution. Bahama Islands and southern Florida (Brattegard 1969); Caribbean coast of Panama (Brattegard 1974b); Little Cayman Island (Price et al. 2002).

Ecological remarks. This species was collected in small numbers from sand and seagrass habitats.

Systematic remarks. None.

Mysidopsis mathewsoni Brattegard, 1969 (Figure 3 G)

Material. (males-0, ovigerous females-0, immature females-1, juveniles-0), Pine Cay, seagrass beds, 2 m, epibenthic sled, night, 8 Nov 1988.—(0-1-1-0), Pine Cay, shallow inner reef, sand, rubble, 4–5 m, yabby pump, 10 Nov 1989.

Distribution. Bahamas Islands (Brattegard 1969); Grand Cayman Island (Price et al. 2002).

Ecological remarks. This rare species is reported for only the third time. It was taken over sand bottoms and seagrass beds.

Systematic remarks. None.

Tribe Mysini
Mysidium columbiae (Zimmer, 1915) (Figure 3 I)

Material. (males-12, ovigerous females-16, immature females-9, juveniles-4), Pine Cay, deep fringing reef, 30 m, 4 Nov 1988.—(1-0-8-5), Pine Cay shallow inner reef, sand, 4 m, 3 Nov 1988.—(58-57-10-0), Pine Cay, shallow inner reef, 2–3 m, kicknet, 5 Nov 1988.—(2-2-15-1), Pine Cay, North beach, sand/seagrass, 15–20 m, epibenthic sled, night, 14 Apr 1989.—(0-1-0-0), Rock-a-Wash Cay, *Neogoniolithon* washings, 1 m, 16 Apr 1988.

Distribution. Coastal areas throughout the Caribbean Sea and southern Gulf of Mexico (Zimmer 1915, W.M. Tattersall 1951, Steven 1961, Goodbody 1965, Emery 1968, Brattegard 1969, 1970b, 1973, 1974a, b, 1975, Băcescu and Ortiz 1984, Murano 1986, Modlin 1987a, Markham et al. 1990, Price et al. 2002).

Ecological remarks. Most specimens were collected near shallow and deep coral reefs as well as seagrass/sand habitats.

Systematic remarks. *Mysidium columbiae* from the Turks and Caicos show greater morphological variation than previously reported for the 3-articulated exopod of male pleopod 4. The ratio of the length of article 1 to articles 2 and 3 combined is greater than 2.0 for both our material (2.1–2.9) and Brattegard's specimens from the Bahamas and south Florida (Brattegard 1969). Zimmer (1915) and Price et al. (2002) recorded ratios that are generally less than 2.0 for specimens from Colombia and the Cayman Islands, respectively.

Mysidium gracile (Dana, 1852) (Figure 3 K)

Material. (males-26, ovigerous females-31, immature females-9, juveniles-0), Pine Cay, shallow inner reef, 3 m, 18 Apr 1988.

Distribution. Bermuda (Jander 1962), Florida Keys (Randall et al. 1964, Emery 1968, Brattegard 1969, 1970b), coastal areas throughout the Caribbean Sea (W.M. Tattersall 1951, Randall et al. 1964, Berrill 1968, Emery 1968, Brattegard 1974b, 1975, Price et al. 2002), coast of Brazil (Dana 1852, Zimmer 1918, Costa 1964).

Ecological remarks. Although *Mysidium gracile* has been reported throughout the Caribbean Sea, this collection is the first from the Bahamian archipelago.

Systematic remarks. Investigators have noted variation in the morphology of the antennal scale, telson, and male pleopod 4 for *Mysidium gracile* from the western Atlantic. The length-width ratio of the antennal scale for our material as well as Brattegard's (1969) specimens from south Florida ranges from 4–5. This is similar to Zimmer's (1918) description (~ 4) but contrasts with a ratio of 5–6 for specimens from the Cayman Islands (Price et al. 2002). Only pointed spiniform setae on the telson are reported by Price et al. 2002 and illustrated by Zimmer (text: Figure 44); however, *M. gracile* from the present study and from south Florida (Brattegard 1969) exhibit pointed spiniform setae on the lateral margins that grade into blunt spiniform setae apically. The specimens in our study have unequal distal articles (2 > 3 > 4) for the exopod of male pleopod 4. This agrees with Zimmer (1918) and Price et al. 2002, but Brattegard found articles 2–4 to be subequal.

Mysidium integrum W.M. Tattersall, 1951 (Figure 3 J)

Material. (males-5, ovigerous females-16, immature females-8, juveniles-0), Pine Cay, deep fringing reef, 30 m, 4 Nov 1988.—(4-8-1-2), Pine Cay, deep fringing reef, 17 m, 9 Feb 1989.—(5-9-1-0), Pine Cay, shallow inner reef, sand, 4 m, 3 Nov 1988.—(3-4-2-6), Pine Cay, shallow inner reef, 2–3 m, kicknet, 5 Nov 1988.—(1-1-7-0), Pine Cay, North beach, sand-seagrass, 15–20 m, epibenthic sled, 14 Apr 1989.—(42-58-2-0), Ft. George Cay, sand, 1 m, 5 Feb 1989.

Distribution. Coastal areas throughout the Caribbean Sea (W.M. Tattersall 1951, Brattegard 1969, 1970b, 1973, 1974a, b, 1975, Modlin 1987a, Price et al. 2002), Bermuda (Brattegard 1973), southern Florida (Emery 1968, Brattegard 1969), Gulf of Mexico (W.M. Tattersall 1951, Modlin 1984).

Ecological remarks. This species was often taken with *M. columbiae* in coral reef and seagrass/sand habitats.

Systematic remarks. Our specimens differ in some respects from the descriptions of W.M. Tattersall (1951) and Brattegard (1969, 1970b), but the morphological variations are similar to those found for specimens from the Cayman Islands (Price et al. 2002).

Some confusion exists concerning the articulation of the exopod of male pleopod 4 of *Mysidium integrum*. In the original description, Tattersall (1951) states that the exopod is 4-articulated and that article 1 is equal in length to the distal 3 articles combined. No mention is made of the relative lengths of articles 2 and 3. However, his Figure 96E shows only 3 articles, with article 1 longer than the distal 2 articles combined, and article 2 shorter than article 3. Subsequent examination of specimens from southern Florida, Bahamas, Antigua, Cayman Islands, and the present study show male pleopod 4 to be 4-articulated with article 1 longer than the distal articles combined, and article 2 > 3 > 4. A lot of more than 100 specimens of *M. integrum* collected at the same location, Cruz Bay, St. John, Virgin Islands, and the same time as the type lot was examined. Male pleopod 4 of mature males in the sample exhibits a 4-articulate exopod in which article 1 is 1.2–1.5 times longer than articles 2–4 combined. In addition, articles 2–4 decrease in length. It appears that Brattegard's illustration of male pleopod 4 (Figure 26D, 1969) is correct, but Tattersall's Figure 96E lacks an article 4 and has the lengths of articles 2 and 3 reversed. Tattersall's description is correct with the exception of the statement about the length of article 1 of male pleopod 4.

Parvimysis bahamensis Brattegard, 1969 (Figures 4 M–0)

Material. (males-5, ovigerous females-0, immature females-1, juveniles-0), Pine Cay, deep fringing reef, sand, 30 m, 2 Nov 1988.—(1-2-0-0), Pine Cay, deep fringing reef, sand/silt, 34–38 m, 4 Nov 1988.—(0-1-0-0), Pine Cay, seagrass beds, 2 m, epibenthic sled, night, 8 Nov 1988.—(23-27-19-0), Twin Cay, sand, 1 m, epibenthic sled, 1 Nov 1988.—(2-5-0-0), algal washings, 1 m, 14 Apr 1988.

Distribution. Coastal waters throughout the Caribbean Sea (Brattegard 1969, 1970b, 1973, 1974a, b, 1975, Modlin 1987a, Ortiz and Lalana 1993, Price et al. 2002, Florida Keys (Brattegard 1973).

Ecological remarks. The largest collection of this species was made in a shallow water sand habitat, but small numbers were taken near deep fringing reefs and in algal washings.

Systematic remarks. Morphological variation of this species is similar to that found for material from the Cayman Islands (Price et al. 2002).

Tribe Heteromysini
Heteromysis (Olivemysis) bermudensis G.O. Sars, 1885 (Figure 4 L)

Material. (males-2, ovigerous females-2, immature females-3, juveniles-1), Rack Cay, sponge washings, 1 m, 12 Apr 1988.—(14-8-6-3) South Satellite Cay, 1–2 m, 11 Nov 1988.—(0-2-1-0), Twin Cay, algal washings, 1 m, 1 Nov 1988.—(1-2-0-1), Rock-a-Wash Cay, *Neogoniolithon*-sponge washings, 1 m, 30 Oct 1988.—(0-1-0-1), Mud Shrimp Cay, sponge washings, 17 Apr 1988.—(0-0-2-0), Ft. George Cay, *Neogoniolithon* washings, 1 m, 18 Apr 1988.

Distribution. Bermuda (G.O. Sars 1885, Verrill 1923, Clarke 1955, Bowman 1981, Băcescu and Iliffe 1986), Turks and Caicos Islands (present study), Cuba (Băcescu 1968), Grand Cayman (Price et al. 2002), Belize (Modlin 1987a), Caribbean coast of Colombia (Brattegard 1973), Saba Bank, Lesser Antilles (Brattegard 1980).

Ecological remarks. Species of *Heteromysis* collected in the Turks and Caicos were associated with a variety of algae and sessile invertebrates. Unfortunately, in most cases, collecting methods involved sampling multiple host groups simultaneously, and it was impossible to determine if a heteromysid was associated with a specific host. *Heteromysis bermudensis* was extracted from washings of sponges, algae, and *Neogonolithion*.

Systematic remarks. As discussed by Price et al. 2002, this species is represented by 2 nominal subspecies: *Heteromysis b. bermudensis* G.O. Sars, 1885 and *Heteromysis b. cesari* Băcescu, 1968. Our material from the Turks and Caicos appears closest to *H. b. bermudensis* sensu Bowman (1981) with respect to eye and male pleopod characters. The details of earlier descriptions of this species agree with our material with minor exceptions. We found a short distal article on the antennal scale of all specimens examined. This article is noted by G.O. Sars (1885) and Bowman (1981) but not by Băcescu (1968) and Brattegard (1973). The distal margin of male pleopod 4 is armed with 27–47 flagellated spiniform setae; to date, this represents the greatest variation in this character reported from one geographical location.

Heteromysis (Olivemysis) coralina Modlin, 1987 (Figure 4J)

Material. (males-0, ovigerous females-0, immature females-1, juveniles-0), Rack Cay, sponge washings, 1 m, 12 Apr 1988.—(8-3-5-4), Rack Cay, sponge washings, 1 m, 31 Oct 1988.—(3-2-1-1), males, Rack Cay, sponge washings, 1 m, 13 Apr 1988.—(24-6-4-0), South Satellite Cay, 1–2 m, 11 Nov 1988.—(11-10-3-10), Twin Cay, algal washings, 1 m, 1 Nov 1988.—(3-4-5-3), Crab Hole Cay, algal-coral washings, 1 m, 5 Nov 1988.—(9-9-7-2), Crab Hole Cay, algal-coral washings, 1 m, 2 Nov 1988.

Distribution. Florida Keys (Modlin 1987c); Cayman Islands (Price et al. 2002); Turks and Caicos Islands (present study).

Ecological remarks. This species was collected from sponge, algal, and algal/coral washings. Ovigerous females were 3.6–4.9 mm in length and carried 3–4 larvae per brood. Diameter of embryonic phase 0.36–0.42 mm; longest postnauplioid larva 1.1 mm.

Systematic remarks. This third report of *Heteromysis coralina* extends its range eastward to the Bahamian archipelago. The morphology of our material agrees with Modlin (1987c) and Price et al. (2002) with one minor exception. The lateral margins of the telson are armed with 9–13 spiniform setae (including apical setae), rather than 7–10.

Heteromysis (Olivemysis) guitarti Băcescu, 1968 (Figure 4K)

Heteromysis guitarti.—Băcescu 1968:226, Figure 3.—Brattegard 1970:134, Figure 9.—Brattegard 1975:113.—Modlin 1984:283.—Băcescu and Iliffe 1986:102, Figure 1 K–P.—Modlin 1987b:301.

Material. (males-13, ovigerous females-5, immature females-6, juveniles-3), Rock-a-Wash Cay, sponge washings, 1 m 31 Oct 1988.—(9-5-4-0), Rack Cay, sponge washings, 1 m, 31 Oct 1988.—(1-0-2-0), Rack Cay, sponge washings, 1 m, 12 Apr 1988.—(10-7-9-5), Rock-a-Wash Cay, sponge washings, 13 Apr 1989.

Type Locality. Havana, Cuba.

Distribution. Cuba (Băcescu 1968), Bahama Islands (Brattegard 1970b, Modlin 1987b), Margarita, Lesser Antilles (Brattegard 1975), eastern Gulf of Mexico (Modlin 1984), Bermuda (Băcescu and Illife 1986).

Ecological remarks. All collections of *Heteromysis guitarti* are from sponges, strengthening the suggestion of Modlin (1984) that this species has a close commensal relationship with sponges, specifically the genus *Ircinia*. In all but one previous report (Brattegard 1975), *H. guitarti*

has been taken with sponges (Băcescu 1968; Brattegard 1970b; Modlin 1984, 1987b; Băcescu and Illife 1986).

Lengths of ovigerous females were 3.5–4.1 mm.

Systematic remarks. In most respects, our material agrees with previous descriptions (Băcescu, 1968, Brattegard, 1970b, Băcescu and Illife 1986), but exhibits more variation. For the Turks and Caicos specimens, the lateral margins of the telson have 9–14 spiniform setae (including apical setae) rather than 11–14; the telsonal cleft is lined with 13–20 spinules rather than 16–27; the carpopropodus of thoracic endopod 3 is armed with 7–10 flagellated spiniform setae, rather than 7; and the distal margins of male pleopods 3 and 4 have 5–10 and 9–17 flagellated spiniform setae, respectively, rather than 2–5 and 8–13.

Heteromysis (Olivemysis) mayana Brattegard, 1970 (Figure 4 H)

Material. (males-0, ovigerous females-0, immature females-0, juveniles-1), Rack Cay, sponge washings, 1 m, 12 Apr 1988.—(1-1-0-0), Rock-a-Wash Cay, *Neogoniolithon*-sponge washings, 1 m 30 Oct 1988.

Distribution. Quintana Roo, Mexico (Brattegard 1970b, Markham et al. 1990), Belize (Modlin 1987a), Caribbean coast of Colombia (Brattegard 1973, 1974a), tentatively from the Virgin Islands (Brattegard 1975), Grand Cayman Island (Price et al. 2002), Turks and Caicos Islands (present study).

Ecological remarks. Only 3 specimens were collected from sponge and *Neogonolithion*/sponge washings.

Systematic remarks. Minor morphological differences exist between our Turks and Caicos specimens and the original description (Brattegard 1970b) and Cayman material (Price et al. 2002). The lateral telson margin is armed with 7–9 spiniform setae, rather than 6–8 reported by Brattegard. There appears to be considerable variability in the length ratio of the outer and inner spiniform setae on the apical lobes of the telson. Brattegard's illustration (Figure 13E) shows an outer: inner ratio of 3:1, whereas Price et al. report a ratio of < 2:1. For our material, the ratio is 2.3:1.

Heteromysis sp. A (Figure 4 I)

Material. (males-3, ovigerous females-2, immature females-0, juveniles-0), Pine Cay, fringing reef, hard sponge, 24–27 m, 17 Nov 1989.—(2-0-0-1), Pine Cay, fringing reef, large yellow tube sponge, 21 m, 13 Nov 1989.—(1-2-0-0), Pine Cay, fringing reef, sponge, 24–27 m, 17 Nov 1989.

Ecological remarks. Specimens were associated with sponges from fringing reefs at depths of 21–27 m.

Systematic remarks. This undescribed species of *Heteromysis* appears to be spongicolous and is most closely related to *H. gomezi* Băcescu 1970 and *H. mayana*. It differs from these species in the form of the telson and the setation of thoracic endopod 3, male pleopods 3 and 4 and telson. Our specimens have a telsonal cleft 1/6 the length of the telson, 8–9 flagellated spiniform setae on the carpopropodus of thoracic endopod 3, male pleopods 3 and 4 without modified spiniform setae, and the telsonal outer apical spiniform seta 1.6 times the length of the inner seta.

DISCUSSION

Three of the mysid species reported in this study, *Amathimysis* spp. A, B, and *Heteromysis* sp. A, are currently known only from the Turks and Caicos Islands, and another 5, *A. serrata*, *A. torleivi*, *H. coralina*, *Mysidopsis mathewsoni*, and *Siriella chessi* are recorded for only the second or third times. The other 13 species have, at least, fairly widespread distributions in the tropical western North Atlantic; however, this is the first report for 5 of these species, *Bowmaniella johnsoni*, *Heteromysis bermudensis*, *H. mayana*, *Mysidium gracile*, and *Mysidopsis bispinulata* from the Bahamian archipelago.

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