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DEEP-SEA ANOMURANS OF SUPERFAMILY GALATHEOIDEA WITH DESCRIPTIONS OF TWO NEW SPECIES

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Deep-sea Anomurans of Superfamily Galatheoidea with Descriptions of Three New Species

Linda H. Pequegnat and Willis E. Pequegnat

Abstract

This is one of a series of biological studies on the Gulf of Mexico based upon collections made aboard the Texas A&M University Research Vessel *Alaminos*. The present study is devoted to discussing taxonomy, zoogeography, and bathymetric distribution of the Galatheoidea found in the Gulf below the 100-fathom isobath. The 39 species discussed are distributed among the genera *Munida* (14 spp.) and *Munidopsis* (23 spp.) in the family Galatheidae, the genus *Uroptychus* (1 sp.) in the family Chirostylidae, and the genus *Porcellana* (1 sp.) in the family Porcellanidae.

Three new species are described in the genus *Munidopsis*. These are *Munidopsis alaminos, M. geyeri,* and *M. gulfensis*. Taxonomic keys are provided for western Atlantic species of the family Galatheidae.

Introduction

During a series of short cruises from 1964 to 1969, the *Alaminos* dredged samplings of Galatheoidea from depths in excess of 100 fathoms in the Gulf of Mexico. The combined collections include 214 specimens representing 23 species from 66 stations. The family Galatheidae is represented by 21 species and 199 specimens, the family Chirostylidae by one species and six specimens, and the family Porcellanidae by one species and nine specimens.

In addition to the *Alaminos* material, we have included in this report records of all the Galatheoidea known to us to live in the Gulf at or below the 100-fathom isobath. Data on these additional species have been obtained from publications based upon collections made by four ships, viz., the *Blake* and *Albatross* in the 19th century, the *Atlantis* in 1938 and 1939, and the *Oregon* from 1950 to 1956.

Alaminos collections of the genus *Munidopsis* contain eight species not previously reported from the Gulf, including three that are described in this report as new species.

We have included taxonomic keys for the genera *Munida* and *Munidopsis* in the body of the report. These have been modified from those presented by Chace (1942) in his publication covering the Galatheoidea of the *Atlantis* expedition to Cuba. Somewhat substantial changes have been made in the *Munidopsis* key to include recent information and the three new species mentioned above. The decision to reproduce these important keys in their entirety, including western Atlantic species not found in the Gulf, was motivated by the fact that Chace's paper is no longer available.

The numbering system for biological stations made by the *Alaminos* requires some explanation. Selecting 69-A-11-20 as an example, 69 stands for the year 1969, A for *Alaminos,* 11 indicates the eleventh cruise in 1969, and 20 the station number in that cruise. For more definite information on the location, depth, etc. for each station, see Chapter 1. (Pequegnat & Pequegnat, 1970).

SYSTEMATIC DISCUSSION

Family GALATHEIDAE

The carapace* is usually longer than wide, and the rostrum varies from triangular to styliform. The antennal stalks are comprised of four movable segments. The last thoracic sternum is free, and the abdomen is folded forward under the cephalothorax. The third maxillipeds have a flagelliform epipodite.

Six genera are in the family Galatheidae, three of which have been reported from the western Atlantic. Only two of these, *Munida* and *Munidopsis*, occur in the deep waters of the Gulf of Mexico. These genera are distinguished from one another as follows:

Integument pliable, not heavily calcified; carapace with numerous transverse setose raised lines; rostrum slender spine flanked on each side by supraocular spine; eyes usually large and well pigmented; exopod of first maxilliped with simple lash.

Munida (p. 126)

Integument firm, well calcified; transverse setose lines on carapace usually obscure or lacking; rostrum seldom simple slender spine, not flanked on each side by supraocular spine; eyes usually poorly developed, often unpigmented; exopod of first maxilliped without lash.

Munidopsis (p. 138)

Genus *Munida* Leach, 1820

The rostrum is typically slender and styliform. Supraocular spines are present and usually well developed, as are the eyes. Dorsal surfaces of the carapace as well as of the abdomen are armed with varying numbers of spinules and/or spines. The carapace has marked transverse sculpture, in which the setose lines are numerous. The ocular peduncles are short and with few exceptions are expanded in the corneal region. Members of this genus are generally confined to the continental shelf and upper part of the continental slope (Fig. 5-1). Females carry large numbers of small eggs.

Key to the Western Atlantic Species of *Munida*
(From Chace, 1942)

1. Posterior margin of carapace unarmed; no median spines on cardiac region. 2

*Unless otherwise specified, the carapace is measured from the posterior margin to the orbit.

Ridge along posterior margin of carapace armed with spines; one or more median spines on cardiac region.

23

2. Rostral spines armed laterally with distinct spinules.

M. spinifrons Henderson, 1885

Rostral spine not distinctly spinose on the margin.

3

3. On basal segment of antennular peduncle, spine outside of base of following segment is the longer.

4

Inner terminal spine on basal antennular segment nearly or quite twice as long as outer one.

12

4. Spines of carapace and chelipeds very strongly developed.

M. spinosa Henderson, 1885

Armament of spines not abnormally strong.

5

5. Eyes distinctly wider than eyestalks.

6

Eyes not wider than the eyestalks.

11

6. Intermediate spines between large gastric pair which are directly behind supraoculars.

7

No intermediate spines between large gastric pair.

9

7. Second, third and fourth abdominal somites armed with spines.

M. constricta (A. Milne Edwards, 1880)

Fourth abdominal somite unarmed.

8

8. No spines on dorsal surface of triangular area of carapace behind anterior branch of cervical groove.

M. miles (p. 135)

One or two spines on each triangular area between branches of cervical groove, and a widely separated pair behind posterior branch of cervical groove, one on either side of cardiac region.

M. sancti-pauli Henderson, 1885

9. Supraocular spines extend beyond eyes; second and third abdominal somites armed with spines.

M. valida (p. 137)

Supraocular spines do not reach as far as eyes; third abdominal somite unarmed.

10

10. Chelipeds, measured from ischial fracture, between three and four times as long as carapace to base of rostral spine; a moderately large species.

M. forceps (p. 131)

Chelipeds less than 2½ times as long as carapace; a small species.

M. nuda (p. 136)

11. Second abdominal somite armed with spines; following somites decorated with at least one transverse groove on each.

M. microphthalma (p. 135)

No spines on any abdominal somites; fourth and following somites smooth, without transverse grooves or ridges.

M. subcaeca Bouvier, 1922

12. A second pair of small spines directly behind large gastric pair in line with supraocular spines; four small spines in midline behind rostrum.

M. robusta A. Milne Edwards, 1880

No pair of small spines directly behind large gastric pair; never more than one or two spines on midline of gastric region.

13

13. Second, third and fourth abdominal somites armed with spines; chelipeds rather robust; measured from ischial fracture, they are less than three times length of carapace to base of rostral spine.

14

Fourth abdominal somite unarmed; chelipeds slender, more than three times length of carapace.

15

14. Merus of third maxilliped with a strong curved spine at outer distal angle and usually a small spine on inner margin.

M. subrugosa Dana, 1852

Merus of third maxilliped unarmed.

M. gregaria (Fabricius, 1793)

15. Second and third abdominal somites armed with spinules.
M. media Benedict, 1902

Third abdominal somites unarmed.
16

16. Usually two or more spines on ridge behind cervical groove.
17

No spines on ridge behind cervical groove.
21

17. Second abdominal somite armed with spinules.
18

Abdominal somites unarmed.
19

18. Supraocular spines reaching to or beyond cornea; a medium-sized to large species.
M. iris (p. 131)

Supraocular spines not reaching to cornea; a very small species.
M. pusilla Benedict, 1902

19. Spine at anterolateral angle of carapace followed by six smaller lateral spines; chelae and fingers subcylindrical.
20

Spine at anterolateral angle of carapace followed by seven or eight spinules; chelae and fingers flattened.
M. sculpta (p. 136)

20. Two to four spines on ridge behind cervical groove.
M. irrasa (p. 132)

Eight spines on ridge behind cervical groove.
M. elfina Boone, 1927

21. Second abdominal somite usually armed with a few spinules.
M. angulata Benedict, 1902

Abdominal somites unarmed.
22

22. Spine at anterolateral angle of carapace long, followed by six small lateral spines.
M. simplex Benedict, 1902

Anterolateral spine not very long, followed by seven smaller spines.
M. beanii Verrill, 1908

23. Rostral spine slightly shorter than supraocular spines.
M. longipes (p. 132)

Rostral spine distinctly longer than supraoculars.
24

24. Basal segment of antennular peduncle armed at outer distal angle with two spines or a bifid spine, one above the other; carapace broad, depressed and very spinulose.
M. schroederi (p. 136)

Basal segment of antennular peduncle armed at outer distal angle with a single spine.
25

25. Transverse striae of carapace armed with many small spinules; posterior margin of carapace armed with six to 15 spines; basal joint of antennular peduncle with three to five lateral spines in addition to terminal pair; thoracic sternum with a small marginal spine at insertion of each appendage.
M. affinis Milne Edwards, 1880

Transverse striae of carapace at most tuberculate or beaded; posterior margin of carapace with two to six spines; basal segment of antennular peduncle with one or two lateral spines in addition to terminal pair; thoracic sternum unarmed.
26

26. A strong median spine on posterior portion of fourth abdominal somite.
27

No distinct median spine, rarely a minute denticle, on posterior part of fourth abdominal somite.
29

27. Supraocular spines barely reaching cornea.
M. flinti (p. 130)

Supraocular spines reaching to distal margin of cornea or beyond.
28

28. Transverse striae on carapace very numerous, discontinuous and obscure.
M. stimpsoni (p. 136)

Relatively few transverse striae on carapace, not noticeably interrupted and very distinct to the naked eye.
M. striata (p. 137)

29. One or more spines in midline on gastric region.
M. evermanni (p. 130)

No median spines on gastric region.
M. benedicti Chace, 1942

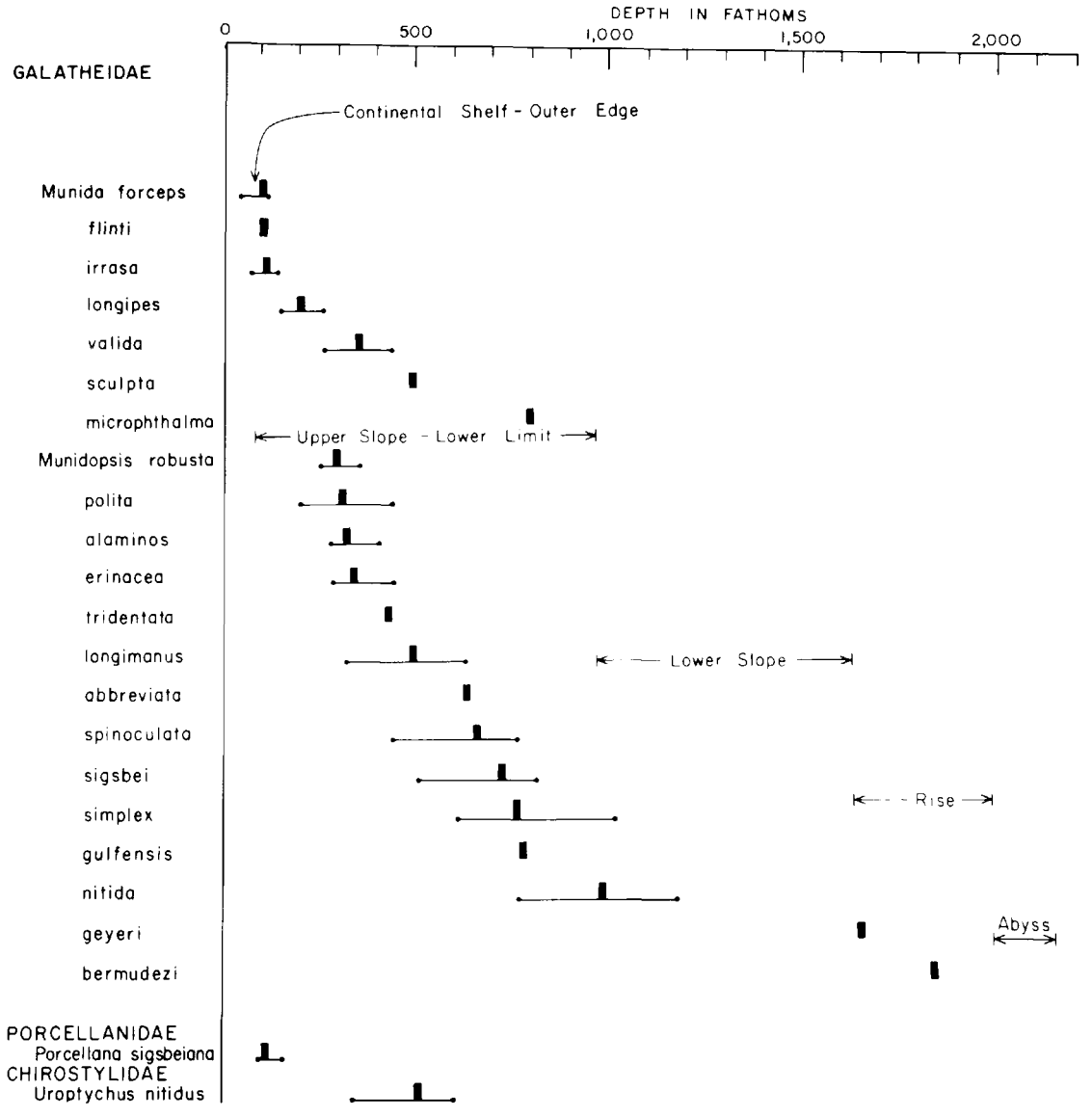

Figure 5-1. Depth ranges and centers of population (vertical bars) of the deep-water Galatheoidea taken by the Alaminos in the Gulf of Mexico. The extent of the physiographic features designations are averages for the entire Gulf.

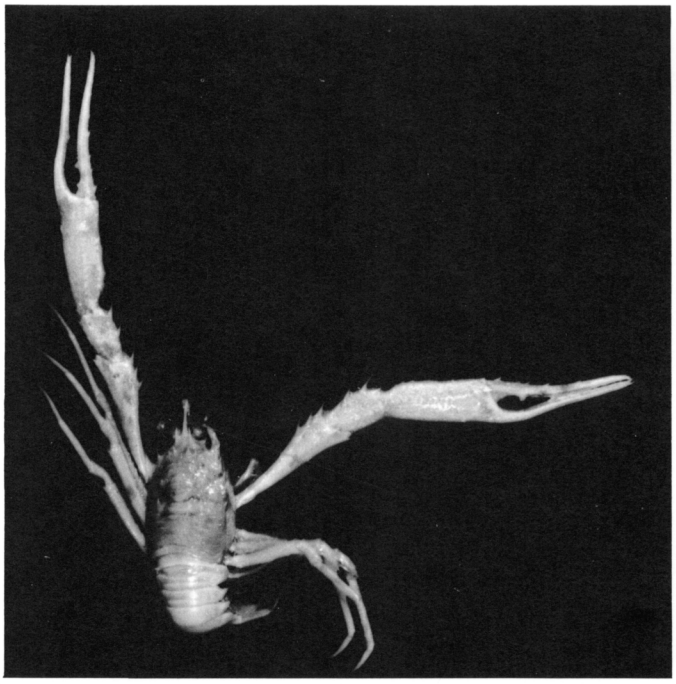

Figure 5-2. Munida forceps A. Milne Edwards. Male. x 1.4.

Munida evermanni Benedict, 1901

Munida Stimpsoni A. Milne Edwards, 1880, p. 47 (part). – A. Milne Edwards and Bouvier, 1897, p. 52 (part).

Munida evermanni Benedict, 1901, p. 146, pl. 5, fig. 4; 1902, p. 252. – Chace, 1942, p. 64, text-fig. 25.

Previous Gulf of Mexico Records

Southeast Gulf: *Atlantis* stations 3467 and 3482 (190 and 215 fms.), (Chace, 1942).

Alaminos Material

None.

Remarks

Munida evermanni is most closely related to *M. affinis,* but is distinguished by the minutely beaded, rather than spinose, transverse striations on the carapace; by the smaller number of spines, 2 to 6 rather than 6 to 15, on the posterior margin of the carapace; and by the absence of marginal spines on the sternum.

Distribution

M. evermanni is distributed off the north coast of Cuba, in the Lesser Antilles from St. Kitts to Grenada, and off Puerto Rico in 151 to 260 fathoms.

Munida flinti Benedict, 1902

Munida Stimpsoni A. Milne Edwards, 1880, p. 47 (part). – A. Milne Edwards and Bouvier, 1897, p. 48 (part), pl. 4, fig. 1.

Munida flinti Benedict, 1902, p. 258, text-fig. 9. – Chace, 1942, p. 57; 1956, p. 15.

Previous Gulf of Mexico Records

Southeast Gulf: *Blake* station 36 (84 fms.), (Milne Edwards and Bouvier, 1897).

Northeast Gulf: *Albatross* stations 2403 and 2404 (60-88 fms.), (Benedict, 1902). *Oregon* station 920 (80 fms.), (Springer and Bullis, 1956).

Alaminos Material

Three specimens from three stations in 100-115 fathoms, as follows:

Northeast Gulf: 68-A-7-8A (106 fms.), 1 juv.; 69-A-13-42 (100 fms.), 1 ♂; 69-A-13-43 (115 fms.), 1 juv.

Remarks

M. flinti is distinguished from *M. stimpsoni* and other closely associated species by having a strong median spine on the posterior portion of the fourth abdominal somite. *Alaminos* specimens range in size from 5 to 8 mm carapace length. There were no ovigerous females.

Distribution

M. flinti is distributed in the eastern Gulf of Mexico and in the Lesser Antilles off Grenada from 84 to 115 fathoms.

Munida forceps A. Milne Edwards, 1880
(Figure 5-2)

Munida forceps A. Milne Edwards, 1880, p. 49. – Perrier, 1886, p. 200, text-fig. 109. – A. Milne Edwards and Bouvier, 1894, p. 256; 1897, p. 28, pl. 2, fig. 8. – Benedict, 1902, p. 307. – Chace, 1942, p. 39, text-fig. 15; 1956, p. 15.

Previous Gulf of Mexico Records

Northeast Gulf: *Oregon* stations 27, 36, 265 and 332 (60-120 fms.), (Springer and Bullis, 1956).

Southeast Gulf: *Blake* station 36 (84 fms.), (Milne Edwards, 1880).

Alaminos Material

A total of 12 specimens from four stations in depths of 45 to 111 fms. as follows:

Northwest Gulf: 69-A-13-45 (45 fms.), 1 ♂.

Northeast Gulf: 67-A-5-10B (55 fms.), 1 juv.; 68-A-7-8C (111 fms.), 4 ♀ (3 ovig.), 5 ♂; 69-A-13-42 (100 fms.), 1 ♂.

Remarks

Alaminos specimens range in size from 6 to 18 mm carapace length. Ovigerous females range from 14 to 16 mm. In fresh specimens there are four striking purplish bands on the carapace.

Distribution

M. forceps has been reported from the north coast of Cuba and throughout the Gulf of Mexico in 45 to 180 fathoms.

Munida iris A. Milne Edwards, 1880

Munida iris A. Milne Edwards, 1880, p. 49. – A. Milne Edwards and Bouvier, 1894, p. 256; 1897, p. 21, pl. 2, figs. 2-7. – Benedict, 1902, p. 310. – Chace, 1956, p. 15. – Bullis & Thompson, 1965, p. 9.

Munida caribaea ? Smith, 1881, p. 428; 1883, p. 40, pl. 3, fig. 11; 1884, p. 355; 1886, p. 643.

Munida species indt. Smith, 1882, p. 22; 1886, p. 643.

Previous Gulf of Mexico Records

Southeast Gulf: *Oregon* stations 726, 1005, 1006, 1007, 1011, 1328, 1543 and *Combat* station 259 (180-300 fms.), (Springer and Bullis, 1956 and Bullis and Thompson, 1965).

Alaminos Material

None.

Remarks

Although *Munida iris* was taken at several *Oregon* stations in the SE Gulf, it was not taken in the *Alaminos* collection. This is probably because the *Alaminos* did not collect intensively in this part of the Gulf.

Distribution

Munida iris is distributed off the east coast of the United States, in the SE Gulf of Mexico, and the Lesser Antilles in 47 to 300 fathoms. In the eastern Atlantic, it is found off the Cape Verde Islands in 275 fathoms.

Munida irrasa A. Milne Edwards, 1880

Munida irrasa A. Milne Edwards, 1880, p. 49. – Faxon, 1895, p. 73. – Benedict, 1902, p. 251. – Hay and Shore, 1918, p. 402, pl. 28, fig. 8. – Chace, 1942, p. 46. – Bullis and Thompson, 1965, p. 9. – Williams, 1965, p. 105.
Munida cariboea A. Milne Edwards, 1880, p. 49.
Munida caribaea. – A. Milne Edwards and Bouvier, 1894, p. 256; 1897, p. 25, pl. 1, figs. 16-20, pl. 2, fig. 1. – Doflein and Balss, 1913, p. 172.

Previous Gulf of Mexico Records

Northeast Gulf: *Blake* station 50 (119 fms.)
Southeast Gulf: *Blake* stations 32 (95 fms.) and 36 (84 fms.), (Milne Edwards, 1880). *Atlantis* station 3303 (260 fms.), (Chace, 1942).

Alaminos Material

Four specimens from two stations in depths of 72 to 96 fms. as follows:
Southeast Gulf: 65-A-9-15 (96 fms.), 2 ♀ (1 ovig.); 65-A-9-20 (72 fms.), 2 juv.

Remarks

M. irrasa is similar to *M. iris,* but is distinguished by the absence of spines on the second abdominal segment and by the presence of three to four spines on the inner margin of the merus of the third maxillipeds in contrast to only one in *M. iris.* In addition, the supraocular spines are shorter in *M. irrasa,* and it is a smaller species than *M. iris. M. irrasa* is distinguished from *M. sculpta* in that only six small lateral spines are behind the antero-lateral spine in contrast to the seven or eight spines in *M. sculpta.*

Alaminos specimens range in size from 5 to 15 mm carapace lenth. The ovigerous female measures 7 mm and was taken in July.

Distribution

M. irrasa is distributed in the western Atlantic from North Carolina to Barbados and Grenada in the Lesser Antilles, in the SE Gulf of Mexico, and in the Caribbean from Cuba to Colombia and Venezuela in 30 to 260 fathoms.

Munida longipes A. Milne Edwards, 1880
(Figure 5-3)

Munida longipes A. Milne Edwards, 1880, p. 50. – A. Milne Edwards and Bouvier, 1894, p. 257; 1897, p. 44, pl. 3, figs. 9-13. – Benedict, 1901, p. 147; 1902, p. 252. – Hay and Shore, 1918, p. 402, pl. 28, fig. 9. – Chace, 1942, p. 47; 1956, p. 15. Bullis & Thompson, 1965, p. 9.
Munida paynei Boone, 1927, p. 53, text-fig. 9.

Previous Gulf of Mexico Records

Northwest Gulf: *Oregon,* 3 stations (65-200 fms.) (Springer and Bullis, 1956)
Northeast Gulf: *Oregon,* 9 stations (150-232 fms.) (Springer and Bullis, 1956)
Southeast Gulf: *Oregon*, 3 stations (170-300 fms.) (Springer and Bullis, 1956) *Atlantis,* 7 stations (145-385 fms.), (Chace, 1942).

Alaminos Material

A total of 31 specimens from 13 stations in depths of 150 to 260 fms. as follows:
Northwest Gulf: 68-A-13-5 (150 fms.), 1 ♂; 68-A-13-7 (150 fms.), 2 ♀ (1 ovig.), 2 ♂, 1 juv.; 68-A-13-18 (240 fms.), 1 ♂, 1 juv.; 68-A-13-19 (185-210 fms.), 1 ♀, 3 ♂.
Southwest Gulf: 69-A-11-29 (155 fms.), 1 ♀; 69-A-11-34 (255 fms.), 1 ♀; 69-A-11-58 (260 fms.), 1 ♀; 69-A-11-64 (210 fms.), 1 ♀, 1 ♂; 69-A-11-77 (185-205 fms.), 2 ♂.
Northeast Gulf: 67-A-5-13E (207 fms.), 1 ♀, 1 juv.; 68-A-7-2A (223 fms.), 2 ♀ (1 ovig.), 1 ♂, 1

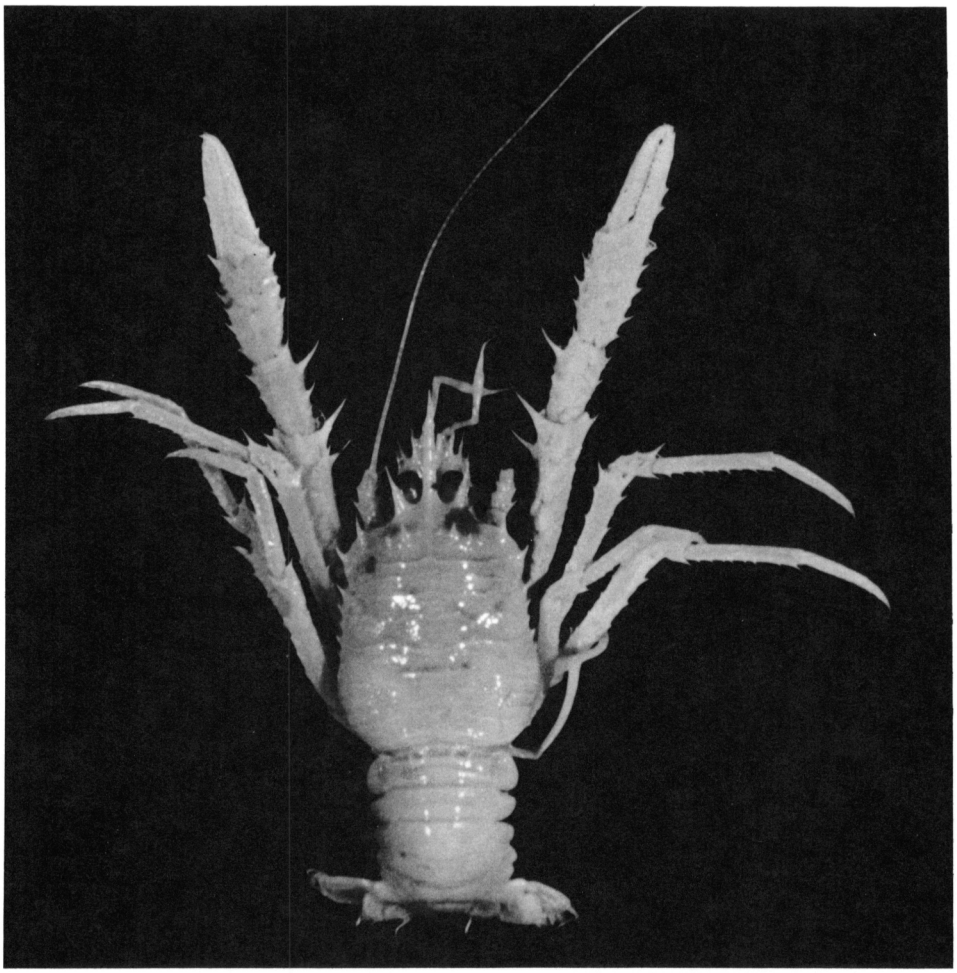

Figure 5-4. Munida microphthalma A. Milne Edwards. Female from station 69-A-11-13 (800 fms.). x 4.

juv.; 68-A-7-9A (210 fms.), 3 ♀ (1 ovig.), 2 ♂; 69-A-13-41 (170 fms.), 1 juv.

Remarks

This species is distinguished by the length of the ambulatory legs, which extend as far as the chelipeds, and the rostral spine, which is shorter than the supraorbital spines except in some juveniles where it is slightly longer. *Alaminos* specimens range in size from 4 to 17 mm carapace length. Ovigerous females range from 13 to 15 mm.

Distribution

This species is distributed throughout the Gulf from 150 to 385 fathoms, in the western Atlantic from North Carolina to the Bahamas and the Lesser Antilles, and in the Caribbean off British Honduras.

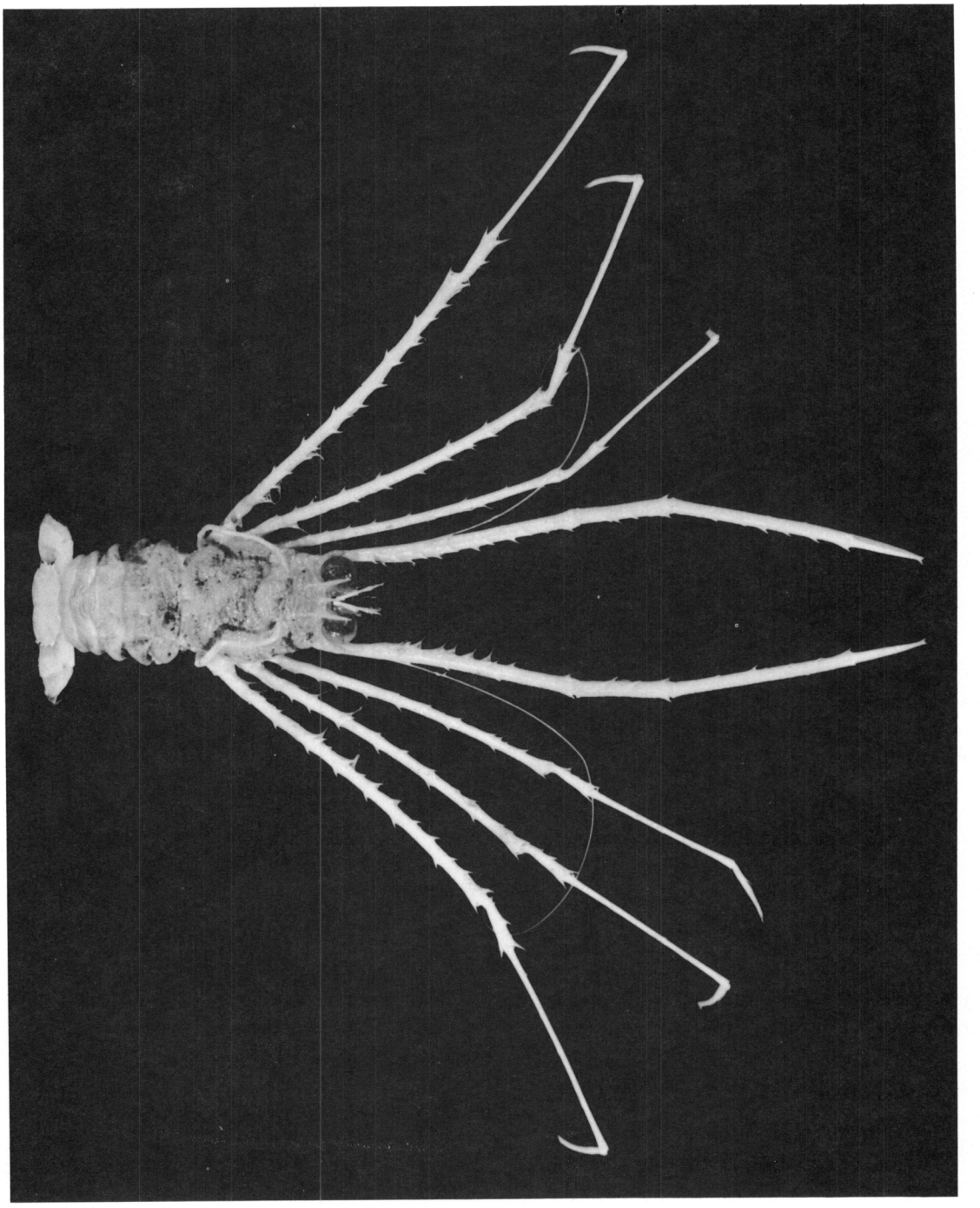

Figure 5-3. Munida longipes A. Milne Edwards. x 1.5.

Munida microphthalma A. Milne Edwards, 1880
(Figure 5-4)

Munida microphthalma A. Milne Edwards, 1880, p. 51 (part). – Henderson, 1888, p. 127, pl. 3, fig. 4. – A. Milne Edwards and Bouvier, 1894, p. 256; 1897, p. 32, pl. 2, figs. 9-13; (?) 1900, p. 292. – Benedict, 1902, p. 251. – Hansen, 1908, p. 35. – (?) Doflein and Balss, 1913, p. 142, text-fig. 8. – Bouvier, 1922, p. 45, pl. 1, fig. 3. – Chace, 1942, p. 40, text-fig. 16.
Not *Munida microphthalma* (?). – Faxon, 1895, p. 78.

Previous Gulf of Mexico Records

Southeast Gulf: *Blake* station 35 (804 fms.), (Milne Edwards, 1880). *Atlantis* stations 2995 and 2996 (370-665 fms.), (Chace, 1942).

Alaminos Material

Northwest Gulf: 69-A-11-13 (800 fms.), 1 ♀.

Remarks

This species is characterized by the relatively small eyes with the cornea no wider than the eye stalk, a row of six to eight spines (the *Alaminos* specimen has eight) across the gastric region as the only spines on the dorsal surface of the carapace, and two spines on the inner margin of the merus of the third maxillipeds. The *Alaminos* specimen, a female, measures 8 mm carapace length.

Distribution

M. microphthalma has been collected from the West Indies and the Gulf of Mexico (370-1,030 fms.). The *Alaminos* specimen is the first record from the western Gulf. It is also reported from south of Iceland (108-1,144 fms.) and from the eastern Atlantic from the Bay of Biscay to the Cape Verde Islands and Ascension Island (343-1,183 fms.). Chace (1942) points out that the specimens reported by Faxon (1895) as (?) *M. microphthalma* from the Pacific are different from the West Indies specimens and are not this species.

Munida miles A. Milne Edwards, 1880

Munida miles A. Milne Edwards, 1880, p. 51. – (?) Henderson, 1888, p. 126. – A. Milne Edwards and Bouvier, 1894, p. 256; 1897, p. 35, pl. 3, figs. 1-4. – Benedict, 1902, p. 311. – Boone, 1927, p. 50. – Chace, 1942, p. 36; 1956, p. 15.
Munida decora Benedict, 1902, p. 257, text-fig. 8.

Previous Gulf of Mexico Records

Northeast Gulf: *Blake* station 45 (101 fms.), (Chace, 1942).

Southeast Gulf: *Blake* stations 17 and 53 (242-320 fms.), (Milne Edwards, 1880 and Chace, 1942); *Atlantis* stations 3003 and 3303 (240-300 fms.), (Chace, 1942). *Oregon* station 726 (225 fms.), (Springer & Bullis, 1956).

Alaminos Material

None.

Remarks

Chace (1942), who has examined the *Blake* material, reports that three lots of specimens Milne Edwards identified as *M. miles* from *Blake* stations 11, 45, and 232 contain specimens of *M. nuda*, a smaller species. He also lists some other *Blake* stations at which *M. miles* occur in the West Indies in addition to the type series of Milne Edwards.

Distribution

M. miles is distributed off the north coast of Cuba in the eastern Gulf of Mexico; in the Caribbean off Honduras and throughout the Lesser Antilles; and as far south as Pernambuco, Brazil, in 101 to 484 fathoms.

Munida nuda Benedict, 1902

Munida nuda Benedict, 1902, p. 265, text-fig. 14. – Chace, 1942, p. 40.

Previous Gulf of Mexico Records

Northeast Gulf: *Blake* station 45 (101 fms.), (Chace, 1942).

Southeast Gulf: *Albatross* station 2338 (189 fms.), (Benedict, 1902). *Blake* station 11 (37 fms.), (Chace, 1942).

Alaminos Material

None.

Remarks

M. nuda is apparently a smaller species than *M. miles*, with which it was confused by Milne Edwards (Chace, 1942).

Distribution

M. nuda is distributed in the eastern Gulf of Mexico and the Lesser Antilles off St. Vincent in 37 to 232 fathoms.

Munida schroederi Chace, 1939

Munida schroederi Chace, 1939, p. 44; 1942, p. 50, text-figs. 20, 21.

Previous Gulf of Mexico Records

Southeast Gulf: *Atlantis* stations 3000, 3302, 3303, 3463, 3465, 3467, 3478, 3479, 3482 (170-260 fms.), (Chace, 1939 and 1942).

Alaminos Material

None.

Remarks

M. schroederi differs from its Pacific ally, *M. hispida* Benedict, in that the rostral and supraocular spines are much shorter and in that only one rather than two spines is on the inner margin of the merus of the third maxillipeds (Chace, 1942).

Distribution

M. schroederi is distributed off the north and south coasts of Cuba and in the Lesser Antilles off Guadeloupe in 150 to 270 fathoms.

Munida sculpta Benedict, 1902

Munida sculpta Benedict, 1902, p. 270, text-fig. 18. – Chace, 1942, p. 44, text-fig. 19.

Previous Gulf of Mexico Records

Southeast Gulf: *Albatross* station 2159 (98 fms.), (Benedict, 1902).

Alaminos Material

Southeast Gulf: 65-A-9-15-Dredge #3 (96 fms.), 1 ovig. ♀.

Remarks

M. sculpta is distinguished from *M. irrasa* by the seven to eight spinules on the lateral border of the carapace behind the anterolateral spine in contrast to six in *M. irrasa*, and by the flattened rather than subcylindrical chelae and fingers, which are missing in the *Alaminos* specimen. The *Alaminos* ovigerous female measures 7 mm carapace length and was taken in July.

Distribution

This is only the second record of this species in the Gulf of Mexico. Chace (1942) identified four specimens from the Bahamas, and it has been taken in the Caribbean Sea.

Munida stimpsoni A. Milne Edwards, 1880

Munida stimpsoni A. Milne Edwards, 1880, p. 47 (part). – A. Milne Edwards and Bouvier, 1894,

p. 257; 1897, p. 48 (part), pl. 4, figs. 2-13 (not fig. 1 [= *M. flinti*]). – Chace, 1942, p. 57, text-fig. 23. – Bullis and Thompson, 1965, p. 9.

Munida affinis Benedict, 1901, p. 147; 1902, p. 252.

Not *M. stimpsoni* Henderson, 1888, p. 126, pl. 14, fig. 1. – Benedict, 1901, p. 147; 1902, p. 252.

Previous Gulf of Mexico Records

Southeast Gulf: *Blake* stations 23 and 53 (158 and 190 fms.), (Milne Edwards, 1880 and Chace, 1942). *Atlantis* stations 3303, 3463, 3466, 3479, and 3482 (190-260 fms.), (Chace, 1942).

Alaminos Material

None.

Remarks

Chace (1942) straightens out the confusion in Milne Edwards' erroneous records of *M. stimpsoni* in the *Blake* material, pointing out that this species is one of numerous closely allied species in the West Indies. Apparently, Milne Edwards has confused as many as seven species with *M. stimpsoni,* one of which is *M. flinti.* Chace (1942, p. 61) gives the corrected list of *Blake* stations at which *M. stimpsoni* was taken, only two of which are in the Gulf of Mexico.

Distribution

This species is distributed from the north coast of Cuba through the West Indies to Grenada in 94 to 490 fathoms.

Munida striata Chace, 1942

Munida striata Chace, 1942, p. 61, text-fig. 24.

Previous Gulf of Mexico Records

Southeast Gulf: *Atlantis* station 3303 (260 fms.), (Chace, 1942).

Alaminos Material

None.

Remarks

Munida striata is closely related to *M. stimpsoni,* except that relatively few transverse ciliated lines are on the carapace, and the anterolateral spines on the carapace are longer and more slender than in *M. stimpsoni.*

Distribution

M. striata is distributed off the north and south coasts of Cuba and in the Lesser Antilles off St. Croix and Guadeloupe in 150-260 fathoms.

Munida valida Smith, 1883

Munida valida Smith, 1883, p. 42, pl. 1. – A. Milne Edwards and Bouvier, 1894, p. 256.–Chace, 1956, p. 15. – Bullis and Thompson, 1965, p. 9.

Munida miles Henderson, 1888, p. 126. – ? A. Milne Edwards and Bouvier, 1897, p. 35.

Not *M. miles* A. Milne Edwards, 1880.

Previous Gulf of Mexico Records

Northeast Gulf: *Oregon* stations 319, 489, and 635 (254-450 fms.), (Springer and Bullis, 1956).

Southeast Gulf: *Oregon* stations 1015, 1018, and 1019 (150-375 fms.), (Springer and Bullis, 1956).

Alaminos Material

A total of 40 specimens from 13 stations in 250 to 400 fathoms as follows:

Northwest Gulf: 64-A-13-2C (300 fms.), 1 ♂; 68-A-13-4 (280 fms.), 1 ♀, 2 ♂; 68-A-13-15 (360-470 fms.), 1 ovig. ♀, 1 ♂, 1 juv.; 68-A-13-21 (350-280 fms.), 5 ♀, 5 ♂; 68-A-13-22 (260 fms.), 1 ♀, 1 ♂; 68-A-13-23 (400 fms.), 4 ♀ (1 ovig.), 6 ♂.

Southwest Gulf: 69-A-11-34 (255 fms.), 1 ♀; 69-A-11-58 (260 fms.), 2 ♂; 69-A-11-59 (250-450 fms.), 2 ♀, 1 ♂.

Northeast Gulf: 67-A-5-9A (411 fms.), 1 ♀; 68-A-7-1A (460-280 fms.), 1 ♀, 1 ♂; 68-A-7-2C (380-360 fms.), 1 ♂; 68-A-7-10A (309 fms.), 1 ♂.

Remarks

Munida valida is the largest species of *Munida* in the Gulf of Mexico. It is distinguished by the absence of intermediate spines between the pair of gastric spines, the supraocular spines extending beyond the eyes, and second and third abdominal somites armed with spines. *Alaminos* specimens range in size from 9 to 33 mm carapace length. The smallest ovigerous female measures 21 mm. Ovigerous females were collected in November. Many specimens were parasitized by bopyrid isopods under the carapace in the branchial regions.

Distribution

This species is distributed off the east coast of the United States from New Jersey to Florida and throughout the Gulf of Mexico in 150 to 640 fathoms.

Genus *Munidopsis* Whiteaves, 1874

The rostrum of *Munidopsis* is not flanked by supraocular spines. The carapace is well calcified and generally rectangular. Transverse sculpture is moderate. When ciliated lines occur on the carapace, they are shorter and more frequently interrupted than those of *Munida*. The cardiac region always has a transverse depression at its anterior border. The eyes are always reduced. Species of *Munidopsis* are generally deep-water forms. Females carry only moderate numbers of eggs.

Key to the Western Atlantic Species of the Genus *Munidopsis* (Modified from Chace, 1942)

1. Epipods on chelipeds, at least.
   2
   No epipods on chelipeds or ambulatory legs.
   17
2. Epipods on chelipeds and first two pairs of ambulatory legs.
   3
   No epipods on second pair of ambulatory legs.
   11
3. A huge, laterally compressed spine extending upward from gastric region of carapace.
   4
   No abnormally large spine on dorsal surface of carapace.
   5
4. Rostrum armed with a pair of distinct lateral teeth at end of horizontal portion.
   M. rostrata (A. Milne Edwards, 1880)
   Rostrum laterally unarmed.
   M. spinosa (A. Milne Edwards, 1880)
5. Eyestalks cylindrical, movable, and unarmed.
   6
   Eyestalks very short, broad, and immovably fused to surrounding regions.
   8
6. Rostrum strongly upturned in distal half with pair of lateral spines at end of horizontal portion.
   7
   Rostrum little upturned and unarmed.
   M. abbreviata (p. 140)
7. Abdomen armed with a single median spine on second, third, and fourth somites.
   M. gilli Benedict, 1902
   Abdomen armed with two median spines on second somite and one on third; fourth somite unarmed.
   M. cubensis Chace, 1942
8. Eyestalks unarmed.
   9
   Eyestalks armed with one or more teeth.
   10
9. Dorsal surface of carapace punctate; anterolateral tooth broad and exceeding base of rostrum.
   M. espinis (p. 147)
   Dorsal surface of carapace lacks punctations though roughened; anterloateral tooth acuminate and scarcely attaining base of rostrum.
   M. gulfensis n. sp. (p. 151)
10. Dorsal surface of carapace at most sharply granulate.
    M. squamosa (A. Milne Edwards, 1880)

Dorsal surface of carapace covered with regularly arranged short, sharp spines.
M. barbarae (p. 145)

11. Epipods on first pair of ambulatory legs; rostrum strongly upturned in distal half and armed with pair of lateral spines at end of horizontal portion.
M. expansa (p. 147)
No epipods on ambulatory legs. 12

12. Eyestalks armed with one or more teeth or spines, that extend beyond cornea. 13
Eyestalks unarmed. 16

13. A single inner spine or tooth on eyestalk. 14
A short spine on outer side of cornea, as well as a long one on inner side. 15

14. Body and appendages covered with short, dense pubescence, which conceals surface beneath; lateral spine just behind anterior hepatic groove about same size as anterolateral spine.
M. bermudezi (p. 145)
Body not covered with dense pubescence; lateral spine just behind anterior hepatic groove about twice the size of the anterolateral spine.
M. geyeri n. sp. (p. 149)

15. Two pairs of enlarged spines on gastric region.
M. crassa Smith, 1885
One pair of enlarged spines on gastric region.
M. nitida (p. 153)

16. Rostrum a simple spine; posterior margin of carapace armed with from one to five spines.
M. sigsbei (p. 156)
Rostrum broad, flat and tridentate; posterior margin of carapace unarmed.
M. acuminata Benedict, 1902

17. Eye spines present. 18
No tooth or spine arising from eyestalk or cornea. 24

18. A stout forward-pointing spine on center of cornea proper.
M. spinoculata (p. 158)
Center of cornea unarmed. 19

19. Ridge along posterior margin of carapace bearing spines. 20
Posterior margin of carapace not bearing spines. 23

20. Rostrum a long, slender spine irregularly armed with a few lateral spines.
M. bairdii (Smith, 1884)
Rostrum not armed with lateral spines. 21

21. Abdomen armed with spines on second, third, and fourth somites.
M. serratifrons (p. 155)
Abdomen unarmed. 22

22. Merus of third maxilliped armed on inner margin with four or more irregular denticles.
M. reynoldsi (A. Milne Edwards, 1880)
Merus of third maxilliped with two long spines on inner margin.
M. sharreri (A. Milne Edwards, 1880)

23. Eyestalks armed with a short tooth at inner side of cornea.
M. aries (A. Milne Edwards, 1880)
Eyestalks armed with a long spine at inner side of cornea.
M. similis Smith, 1885

24. Rostrum either armed with strong lateral spines or teeth or abruptly constricted in its distal portion to form a pair of blunt teeth. 25
Rostrum not armed with strong lateral spines or teeth; at most, minutely serrate or with small scattered spines; usually more or less triangular or spinelike. 32

25. Rostrum broad and flat with more or less subparallel margins in its basal portion and ending in a trident. 26
Rostrum not broadly tridentate. 30

26. A pair of spines on anterior gastric region.
M. tridens (p. 158)
No dorsal spines on carapace. 27

27. A submarginal spine on pleuron of second abdominal somite.
M. latifrons (p. 152)
Abdomen completely unarmed 28

28. Rostrum comparatively narrow.
M. tenuirostris Benedict, 1902
Rostrum broad. 29

29. Chelipeds and ambulatory legs moderately slender.
M. tridentata (p. 158)
Chelipeds and ambulatory legs robust.
M. bahamensis Benedict, 1902)

30. Rostrum constricted in distal portion to form a pair of obtuse teeth; carapace and abdomen dorsally unarmed.

M. armata (p. 145)

Rostrum armed with a pair of sharp lateral spines; carapace and second, third, and fourth abdominal somites armed with regularly placed sharp spines.

31

31. Posterior margin of carapace unarmed.

M. erinacea (p. 146)

Ridge along posterior margin of carapace armed with from four to eight spines.

M. spinifer (p. 157)

32. Abdomen either armed with a median spine or tooth on second and third somites, or carinae on those somites are produced dorsally into broad, laminate lobes or form prominent tuberosites.

33

Abdomen unarmed and not abnormally carinate or produced into large tuberosities.

39

33. A sharp median spine on second and third abdominal somites; rostrum either spinelike or thick and simply triangular.

34

Carinae of second and third abdominal somites more or less strongly produced dorsally, often with a median tooth or tubercle, but no sharp spine; rostrum broad and hoodlike.

36

34. Frontal margin of carapace with triangular denticulate lobe behind base of antenna; blunt median tooth on posterior margin.

M. robusta (p. 155)

Frontal and posterior margins of carapace unarmed.

35

35. Rostrum more than two-thirds as long as remainder of carapace and strongly upcurved; antennal peduncle unarmed.

M. curvirostra Whiteaves, 1874

Rostrum about one-half as long as remainder of carapace and less strongly upcurved; antennal peduncle spinose.

M. simplex (p. 156)

36. Dorsal surface of carapace roughened by large inflated areas.

37

Dorsal surface not particularly inflated or roughened.

38

37. Rostrum bearing scattered small spines, not excavate; chelipeds short, about 1½ times length of carapace and rostrum.

M. alaminos n. sp. (p. 142)

Rostrum unarmed, but excavate; chelipeds about 2½ times as long as carapace and rostrum.

M. riveroi Chace, 1942

38. Chelipeds rather long and slender; lateral margins of carapace subparallel

M. longimanus (p. 153)

Chelipeds shorter and stouter; lateral margins of carapace convex.

M. brevimanus (p. 145)

39. Two small spines on anterior gastric region.

M. platirostris
(A. Milne Edwards & Bouvier, 1894)

Carapace unarmed dorsally.

40

40. Merus of third maxillipeds armed with long spines.

M. abdominalis
(A. Milne Edwards, 1880)

Merus of third maxillipeds armed with low, blunt teeth.

M. polita (p. 155)

Munidopsis abbreviata (A. Milne Edwards, 1880)

Galathodes abbreviatus A. Milne Edwards, 1880, p. 55.

Munidopsis abbreviata.—A. Milne Edwards & Bouvier, 1894, p. 275; 1897, p. 91. pl. 5, fig. 1. — Benedict, 1902, p. 277. — Chace, 1942, p. 77.

Previous Gulf of Mexico Records

Southeast Gulf: *Atlantis* station 2996 (600 fms.), (Chace, 1942).

Alaminos Material

Northwest Gulf: 68-A-13-27 (600-640 fms.), 1♂.

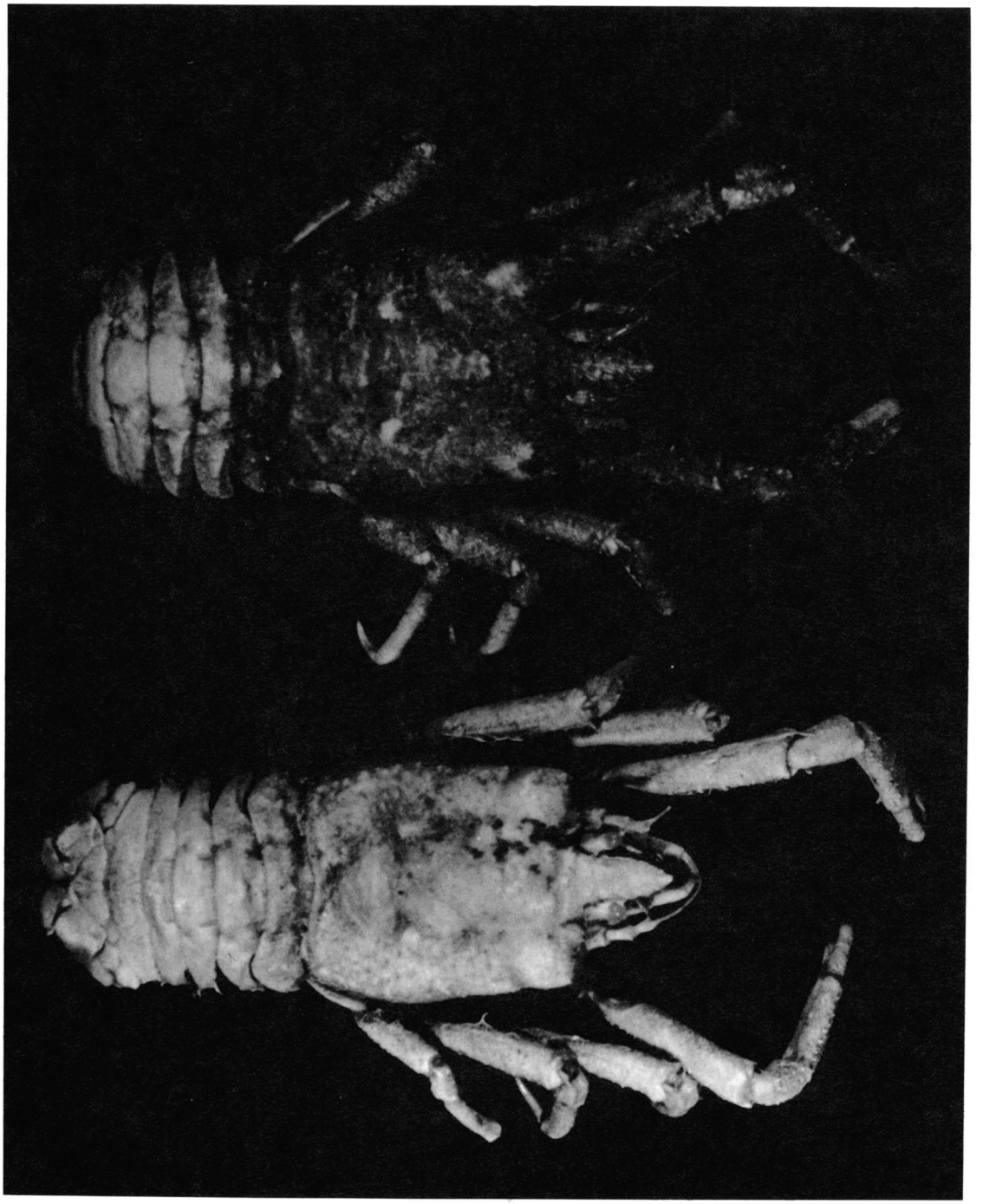

Figure 5-5. Munidopsis alaminos n. sp., male type-specimen (right), and female allotype (left). x 3.8.

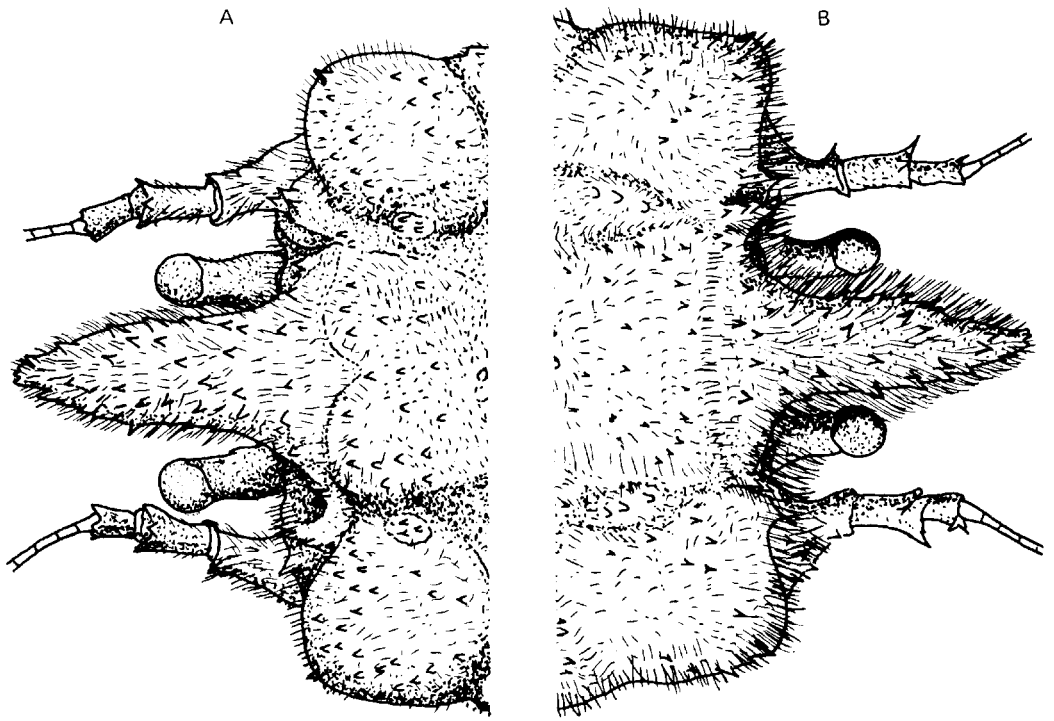

Figure 5-6. A, Anterior part of upper surface of carapace of male Munidopsis alaminos (type-specimen) showing marked inflation of anterolateral regions; B, same of female (allotype), note larger spines and denser pubescence on rostrum as compared with male.

Remarks

The *Alaminos* specimen measures 18mm carapace length. Previous records report sizes from 11 to 25 mm carapace length.

Distribution

M. abbreviata has been collected only off Martinique and Guadeloupe in 501-734 fathoms and off the north coast of Cuba in 470-665 fathoms. The *Alaminos* specimen is the first record from the western Gulf of Mexico.

***Munidopsis alaminos* n. sp.**
Figures 5-5, 5-6, 5-7

Alaminos Material

Four specimens from three stations in 280 to 400 fathoms as follows:

Northwest Gulf: 68-A-13-4 (280 fms.), 1 ovig.♀, 1♂.

Northeast Gulf: 68-A-7-10A (300 fms.) 1 ovig. ♀.

68-A-7-11A (400 fms.), 1 ovig. ♀.

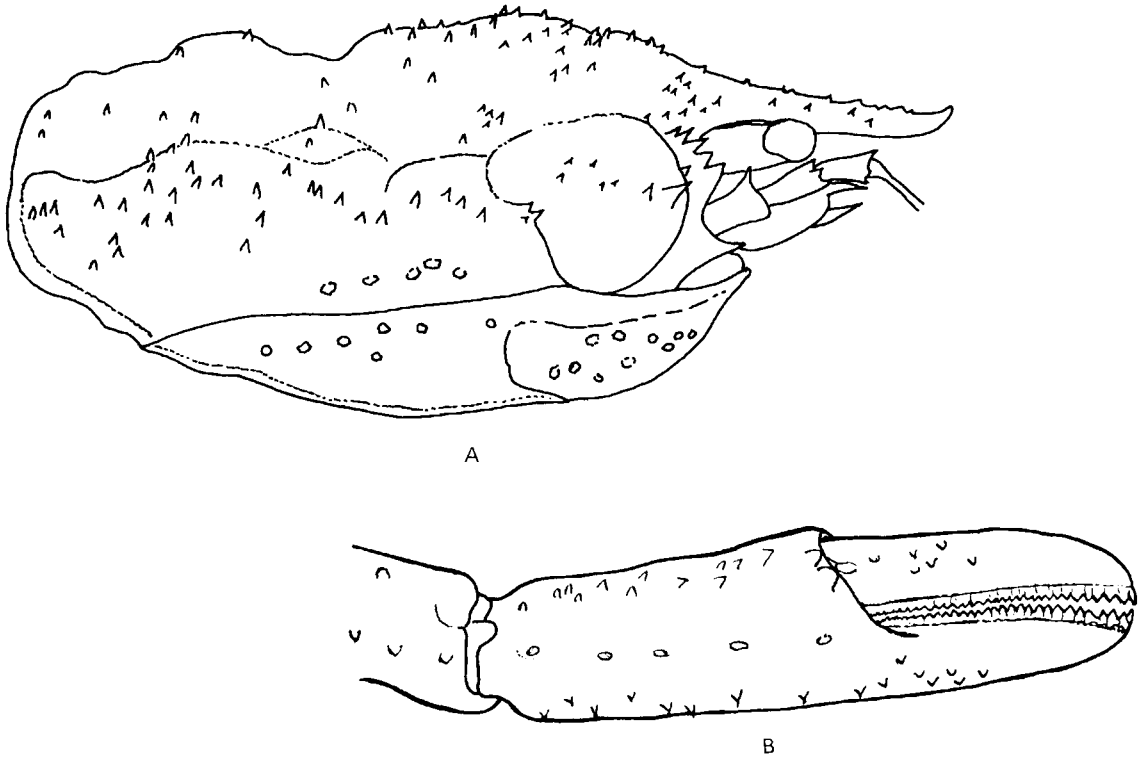

Figure 5-7. A, Side view of carapace of male Munidopsis alaminos (type-specimen); B, right chela of male M. alaminos showing teeth on occlusal surfaces of fingers.

Holotype

Male, from *Alaminos* station 68-A-13-4, 25° 38.4'N, 96° 18.3'W. 280 fms. (512 m), NW Gulf of Mexico, November 12, 1968. Deposited in the Smithsonian Institution (USNM No. 128810).

Allotype

Ovigerous female from the same station. Differs slightly from holotype, as noted below. Also deposited at the Smithsonian Institution (USNM No. 128811).

Description

Carapace with rostrum is 1.4 to 1.5 times as long as broad; excluding rostrum, length and breadth are about equal. Sides of the carapace are subparallel.

The dorsal surface of the carapace is strikingly "hummocky" as a result of inflation of the anterior hepatic, mesogastric, metabranchial, and cardiac regions. Although the dorsal surface lacks transverse ciliated ridges, it is covered with a short, dense pubescence. The carapace is also characterized by the absence of large spines on the dorsal

surface and lateral margins. The female carapace is slightly more spinose than that of the male, but inflation of regions is more pronounced in the male.

The rostrum is elongate, and the sides are nearly parallel except at the broadened base and near the moderately sharp tip. The female rostrum is narrower than that of the male and is much more spinose on the upper surface and margins. The lower surface of the rostrum is without spines but is evenly pubescent.

The remainder of the anterior carapace margin is marked by a moderately deep supraocular notch, along the lateral border of which is a row of short spines; by a minutely spinose rounded lobe; and by the anterior edge of the inflated hepatic region.

There are no anterolateral spines. The upper carapace surface is covered with scattered spinules, and the posterior margin is sinuate and armed with small, blunt spinules.

The eyestalks are movable and unarmed, as are the eyes.

The basal segment of the antennule is relatively large as a result of lateral inflation, slightly flattened, and bears two slender and sharp-pointed spines on the anterior edge. The lateral one of the above two spines is longer than the other and is bifid in some females.

The segments of the antennal peduncle are very hairy. The ventromesial border of the basal segment ends in a stout spine; the second segment bears a short, sharp spine on the lateral margin. The third segment bears two such spines, one dorsomesial and the other lateral; the fourth segment bears a single spine in the middorsal region.

The merus of the third maxilliped ends in a sharp and slightly curved spine dorsally, and the ventral margin bears three (male) to five (female) spines of unequal size, generally large alternating with small.

Chelipeds are equal and only about 1.4 times as long as the carapace and rostrum. Chela is only slightly enlarged; the occlusal surfaces of fingers, including the tips, are fitted with interlocking teeth. The carpus has no distal spine and only a few scattered spinules on the upper surface. The merus has five obscure spines on the distal border: one each on the lower corners and three on the upper margin with one on the medial edge and two near the center. The upper surface of the merus is spinose with somewhat longer spines on the mesial surface. The ischium of the cheliped has a rather stout and erect dorsal spine distally and tapers somewhat to a point at the distal articulation below.

No epipods are on the chelipeds or on the ambulatory legs.

The abdomen is only slightly narrower than the carapace. The second somite bears a central tuberosity and has 16 spinules more or less evenly spaced along the middle third of the posterior margin. The third somite bears a much smaller tuberosity and has only about 10 widely spaced, minute spinules on the posterior margin. Subsequent somites have neither a tuberosity nor posterior spinules.

Size

Carapace of male holotype 15 mm long with rostrum, 11 mm without rostrum, and 11 mm wide; allotype 15 mm x 10 mm wide. Chelipeds about 21 mm long.

Remarks

M. alaminos is closely related to *M. riveroi* but differs from it as follows: (1) the rostrum has small but distinct spines; (2) the rostrum is not excavated; (3) the chelipeds are not as long in comparison to carapace length; (4) the inflation of the carapace, especially in the branchial and cardiac regions, is more pronounced; and (5) the chela has many interlocking teeth on the occlusal surfaces.

This species is named after the R/V *Alaminos*. In turn, the ship was named in honor of Anton de Alaminos, who accompanied Christopher Columbus to the New World in 1499 and 1502. He became an esteemed pilot and served in this capacity with Cordova's 1517 expedition to Yucatan. He also guided Cortez to the West Indies in 1519. Finally, the first detailed maps of the southern

United States and the Gulf of Mexico, as published by Navarette (in Madrid, circa 1829), are credited to the work and notes of Alaminos.

Munidopsis armata (A. Milne Edwards, 1880)

Elasmonotus armatus A. Milne Edwards, 1880, p. 61. – Henderson, 1888, p. 159. – A. Milne Edwards and Bouvier, 1894, p. 282.
Munidopsis armata. – Benedict, 1902, pp. 276 and 316. – Chace, 1942, p. 90.

Previous Gulf of Mexico Records

Southeast Gulf: *Atlantis* stations 2995 and 2996 (370-665 fms.), (Chace, 1942).

Alaminos Material

None.

Distribution

This species is distributed primarily in the West Indies, extending into the Gulf of Mexico only in the eastern part of the Florida Straits.

Munidopsis barbarae (Boone, 1927)

Galacantha barbarae Boone, 1927, p. 66, text-fig. 13.
Munidopsis barbarae. – Chace, 1942, p. 81.

Previous Gulf of Mexico Records

Northeast Gulf: *Blake* station 45 (101 fms.), (Chace, 1942).

Alaminos Material

None.

Remarks

Only two specimens of *M. barbarae* have been recorded–the type from Green Cay, Bahamas, and the *Blake* specimen from 101 fathoms in the NE Gulf of Mexico. Chace (1942) discusses differences in arrangement of spines on the carapace in the two specimens.

Munidopsis bermudezi Chace, 1939
(Figure 5-8)

Munidopsis bermudezi Chace, 1939, p. 46; 1942, p. 83, figs. 29 and 30. – Sivertsen and Holthuis, 1956, p. 44, pl. 4, fig. 3 (not fig. 2).

Previous Gulf of Mexico Records

None.

Alaminos Material

Northwest Gulf: 69-A-11-17 (1,800 fms.), 1 ♀.

Remarks

There is no doubt that Sivertsen and Holthuis (1956) reversed Figures 2 and 3 of pl. IV. Figure 3 is *Munidopsis bermudezi,* not *M. sundi* as indicated. *M. bermudezi* is characterized by a single pair of gastric spines, immovable eyestalks with a small cornea, and only one large ocular spine on the internal side of the eye. The *Alaminos* specimen measures 10 mm carapace length (15 mm, including the rostrum), which is quite small in comparison to the type material of 37.7 mm and 40.2 mm (length of carapace including the rostrum).

Distribution

The *Alaminos* specimen is a first record for this species in the Gulf of Mexico. Taken by the *Michael Sars* expedition north of the Azores (45° 26' N, 25° 45' W) at 1,733 fathoms. Also taken by the *Atlantis* off the north and south coasts of Oriente Province, Cuba, in 1,330-1,650 fathoms.

Munidopsis brevimanus (A. Milne Edwards, 1880)

Elasmonotus brevimanus A. Milne Edwards, 1880, p. 60. – A. Milne Edwards and Bouvier, 1894, p. 282.

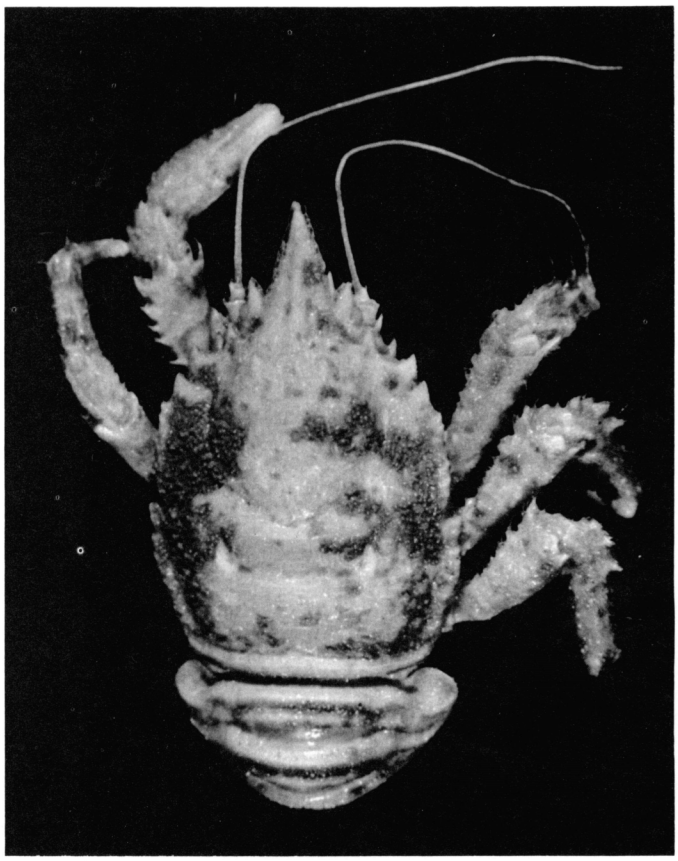

Figure 5-8. Munidopsis bermudezi Chace. x 4.6.

Munidopsis brevimana. – Chace, 1942, p. 96, text-fig. 33.

Previous Gulf of Mexico Records

Southeast Gulf: *Atlantis* station 3003 (240-300 fms.), (Chace, 1942).

Alaminos Material

None.

Remarks

Judging from our series of *Munidopsis longimanus,* we agree with Chace (1942) that *M. brevimanus* should stand as a separate species.

Distribution

This species is presently known only from Barbados and off northern Cuba, where it was taken by the *Blake* and *Atlantis,* respectively.

Munidopsis erinacea (A. Milne Edwards, 1880)

Galathodes erinaceus A. Milne Edwards, 1880, p. 53.

Munidopsis erinacea. – Henderson, 1888, p. 149, pl. 16, fig. 4. – A. Milne Edwards & Bouvier, 1894, p. 275; 1897, p. 67, pl. 7, figs. 9-12. – Benedict, 1902, p. 277. – Boone, 1927, p. 60. – Chace, 1942, p. 90.

Previous Gulf of Mexico Records

Southeast Gulf: *Atlantis* stations 2995, 3305, and 3306 (330-605 fms.), (Chace, 1942).

Alaminos Material

Five specimens from three stations in 280-450 fms. as follows:

Northwest Gulf: 68-A-13-4 (280 fms.), 1 ♀; 68-A-13-15 (360-470 fms.), 1 ovig. ♀; 68-A-13-21 (350-280 fms.), 1 ♀, 2 ♂.

Remarks

Alaminos specimens range in size from 7 to 19 mm carapace length. The ovigerous female measures 19 mm and was collected in November.

Distribution

M. erinacea is distributed from the SE Gulf of Mexico off the north coast of Cuba and the NW Gulf through the Lesser Antilles to British Honduras and Pernambuco, Brazil. The *Alaminos* material is a first record for this species from the western Gulf of Mexico. Depth range: 151 to 555 fathoms.

Munidopsis espinis Benedict, 1902

Munidopsis espinis Benedict, 1902, p. 282, text-fig. 25. – Chace, 1942, p. 80.

Previous Gulf of Mexico Records

Southeast Gulf: *Albatross* station 2351 (426 fms.), (Benedict, 1902).

Alaminos Material

None.

Remarks

This is a very rare species. The only two specimens of *M. espinis* that have been recorded are the above referenced *Albatross* specimen from Yucatan and the *Atlantis* male from off northern Cuba that was assigned to this species by Chace (1942). There is even some doubt that the latter specimen is *M. espinis* in that Benedict's description of the species is in error. Our examination of his type-specimen revealed that it has three spines on the inner margin of the merus of the external maxilliped instead of the two given in the description. It differs further from the *Atlantis* specimen in that the carapace is smooth and decidedly punctate and the lateral lobe of its carapace is definitely double-pointed.

Munidopsis expansa Benedict, 1902

Munidopsis expansa Benedict, 1902, p. 282. – Chace, 1942, p. 81.

Previous Gulf of Mexico Records

Southeast Gulf: *Atlantis* stations 2995 and 3306 (330-605 fms.), (Chace, 1942).

Alaminos Material

None.

Remarks

So far as we are aware, only three specimens of *M. expansa* have been reported: the type was taken by the *Albatross* (Stn. 2663) in the Atlantic off the northern coast of Florida, and two specimens were taken in the entrance to the Florida Straits by the *Atlantis*.

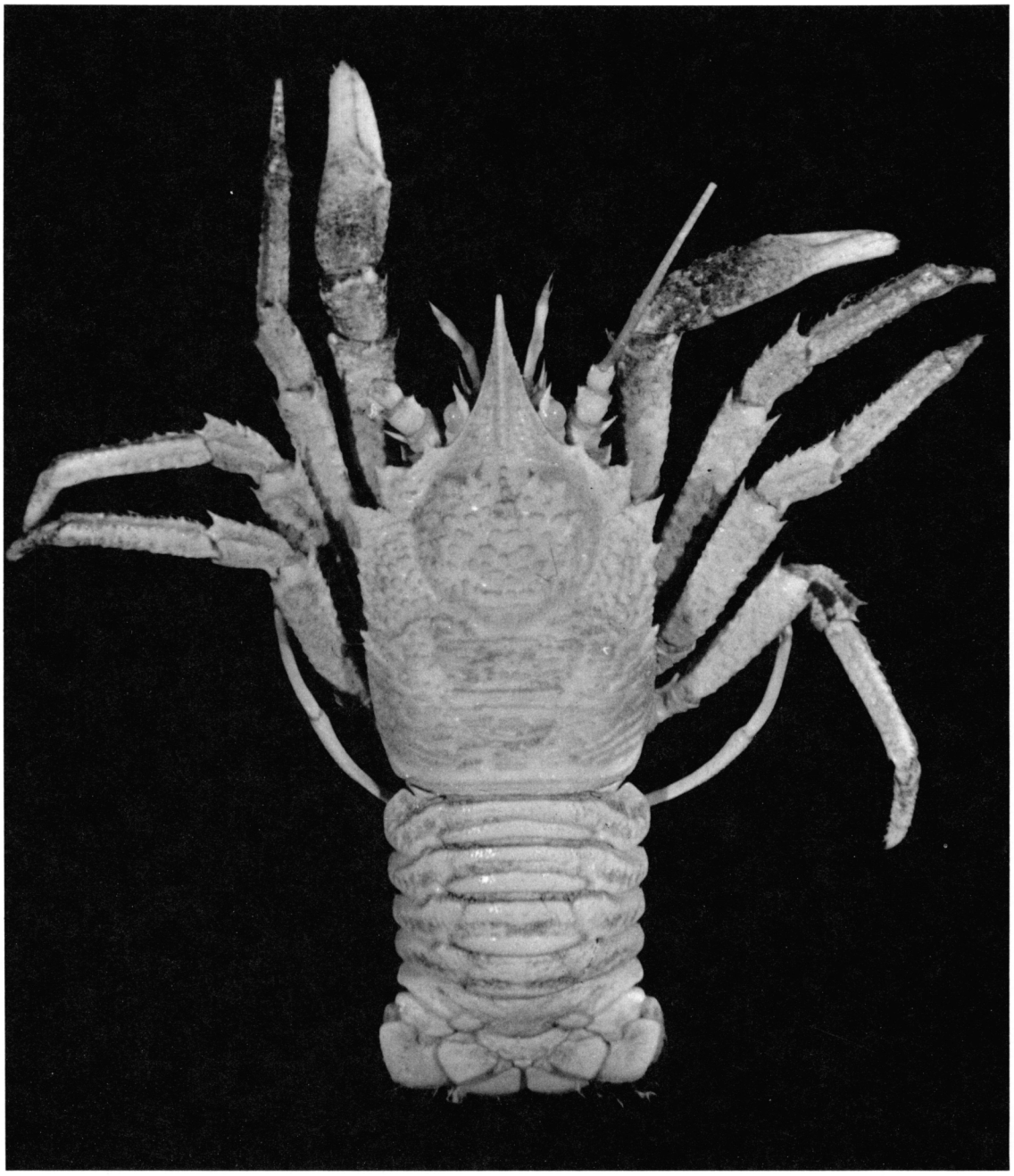

Figure 5-9. Munidopsis geyeri n. sp. Male. Type-specimen from station 69-A-11-92 (1,600-1,640 fms.). x 3.2.

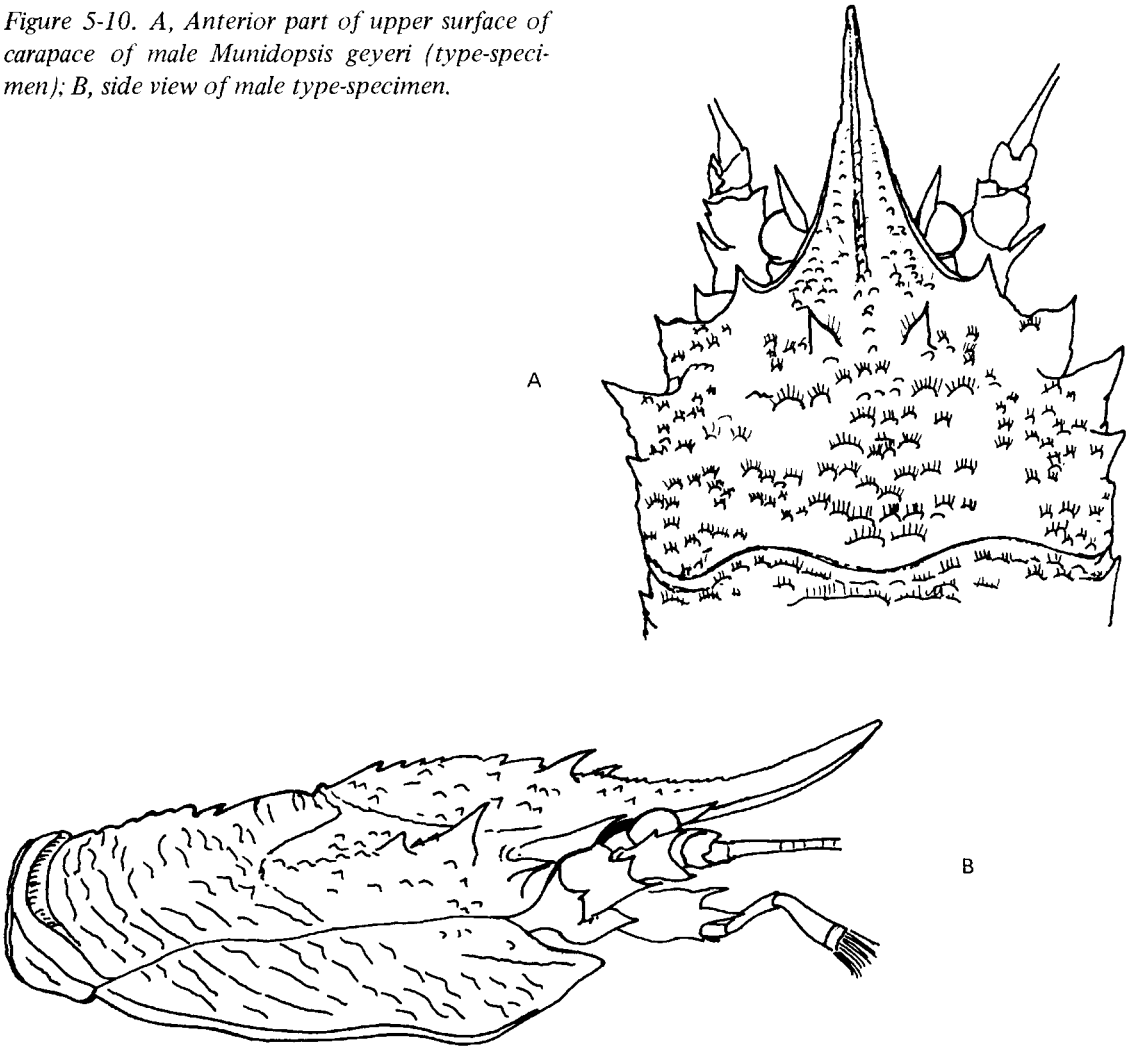

Figure 5-10. A, Anterior part of upper surface of carapace of male Munidopsis geyeri (type-specimen); B, side view of male type-specimen.

***Munidopsis geyeri* n. sp.**
(Figures 5-9, 5-10)

Alaminos Material

Southwest Gulf: 69-A-11-92, (1,600-1,640 fms.), 23° 30' N, 95° 32' W, 1 ♂.

Holotype

Male, from *Alaminos* station 69-A-11-92, 23° 30' N, 95° 32' W, 1,600-1,640 fms., (2,926-2,999 m), SW Gulf of Mexico, August 27, 1969. Deposited in the Smithsonian Institution (USNM No. 128812).

Description

The carapace is slightly longer than broad and is provided with ciliated transverse ridges, with those in front of the posterior cervical groove irregularly crescent shaped and those behind the groove longer and straighter. The frontal margin is provided with strong, acute antennal spines and anterolateral spines of about the same size. Just behind the anterior hepatic groove is a large dentiform spine, much larger than the anterolateral spine. Behind this large spine only two definite spines occur on the lateral margin of the carapace. One lies just behind the above tooth, and the other emerges just behind the posterior cervical groove. The gastric region is prominent and armed with only one pair of spines. The cardiac and branchial regions are covered throughout with interrupted ridges that are beaded, ciliated, and separated by smooth spaces. There is a broader, smooth space near the posterior margin. The latter is provided with two beaded and ciliated ridges of which the anterior is more prominent and regularly beaded.

The rostrum is triangular and upturned. It has a strong median dorsal carina and is tuberculate over the entire upper surface; it is smooth and acarinate below. Only the lateral edge of the distal half of the rostrum bears minute teeth (8 to 10).

The eyes are white, immovable, and bear a strong medial spine, which is about as long as the diameter of the eye. A lateral eye spine is lacking.

The anterior edge of the basal segment of the antennule is armed (1) with two prominent lateral spines, the lower of which is longer and curved slightly mediad, and (2) with a ventral truncate and minutely dentate process.

The basal segment of the antenna bears broadly triangular and minutely denticulate teeth on the inner and outer aspects of the distal margin. The second segment bears a much longer and more slender spine on the outer distal margin and a broadly triangular and denticulate tooth on the medial margin. The two distal segments are much less conspicuously armed.

The merus of the third maxilliped ends in a short but sharp dorsal spine. The ventral margin bears five conical spines of unequal size.

The right cheliped of the male holotype is only slightly larger than the left and is about 1.24 times the length of the carapace (including rostrum). The anterior margin of the carpus of the cheliped bears several teeth on the upper half; but the medial one is the longest and most acuminate, the others being flat, triangular, and having dentate margins. The anterior margin of the merus of the cheliped has four sharp teeth: two on the outer and inner angles of the lower surface; one in the center of the dorsal surface, where it ends a longitudinal row of 3-5 spines of unequal size; and one toward the medial angle of the dorsal surface. The ischium of the cheliped bears a strong and slightly down-curved dorsal spine and a very stout tooth-like process below.

Epipods occur on the chelipeds but not on the ambulatory legs.

The abdomen is narrower (13 mm wide) than the carapace and tapers only slightly posteriorly. It lacks longitudinal carinae, teeth, and spines. Each somite bears two transverse ridges separated by a deep transverse groove.

This species is named in honor of Dr. Richard A. Geyer, head of the Department of Oceanography at Texas A&M University and a geophysicist who has more than a perfunctory interest in the biological sciences.

Size

Carapace with rostrum 25 mm long (17 mm without rostrum) and 14 mm wide; right cheliped 31 mm long.

Remarks

This species is allied with *Munidopsis subsquamosa* Henderson, which exists in the Pacific; but the latter has movable eyes, the abdominal somites bear punctations, and the merus of the third maxilliped has only three denticulate spines on the ventral (inner) margin. *Munidopsis geyeri* is also closely related to *Munidopsis aculeata* (Henderson), but the latter has many more spines in the gastric region of the carapace. *M. aculeata* has been

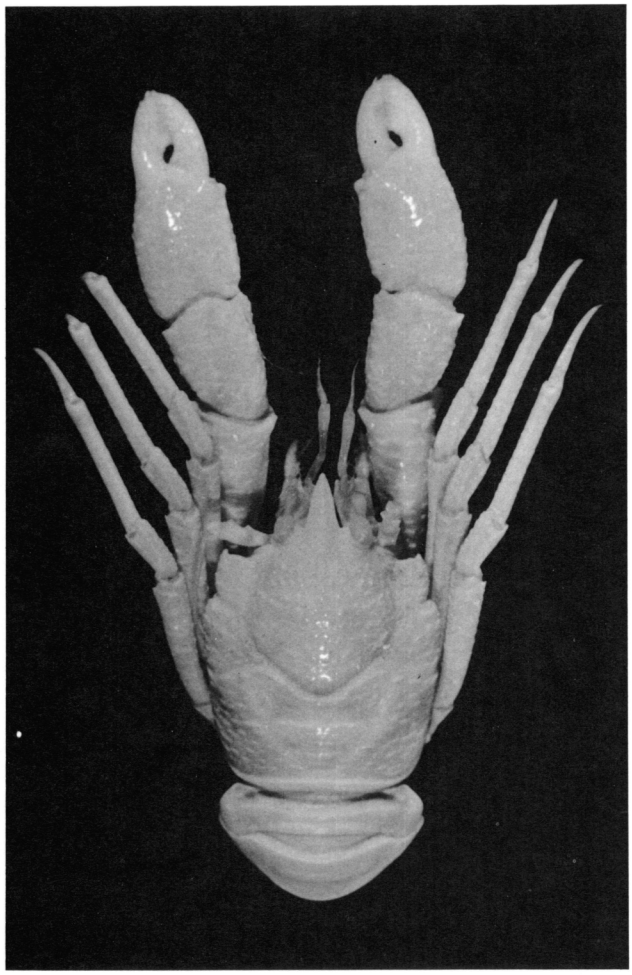

Figure 5-11. Munidopsis gulfensis n. sp. Holotype. Male from 69-A-11-7 (765 fms) x 4.2.

found in the Indian Ocean and in the Pacific off Valdivia, Chile. We have, therefore, three closely related species that occur in the three major oceans.

Munidopsis geyeri is similar to *M. bermudezi* but differs from it as follows: (1) it is less pubescent; (2) the rostrum is longer, narrower, and more upturned; and (3) its eyes are not movable. *M. geyeri* also bears some relationship with *M. crassa,* but the latter is (1) larger, (2) has a shorter and stouter rostrum, (3) has a lateral ocular spine, and (4) has two pairs of gastric spines and eight spines behind the antero-lateral spine.

***Munidopsis gulfensis* n. sp.**
(Figure 5-11)

Alaminos Material

Northwest Gulf: 69-A-11-7 (765 fm.), 1 ♂.

Holotype

Male, from *Alaminos* station 69-A-11-7, 27°01.3' N and 94° 43.5' W, 765 fm. (1,380 m), NW Gulf of Mexico, August 7, 1969.(USNM No. 128821).

Description

The carapace length (8 mm), excluding the rostrum, is equal to its width. The most prominent feature of the dorsal aspect of the carapace is the sinuous cervical groove that sets the slightly inflated gastric region off from the flat and triangular cardiac region. Just posterior to the middle of the cervical groove is a smooth transverse sulcus. The carapace is devoid of pubescence, but is covered with small elevations that tend to be rounded and randomly spaced over the gastric region and are oblong and arranged into interrupted ridges elsewhere, especially on the branchial regions. The carapace is spineless, but the anterolateral angle is prominent and terminates in a small blunt tooth. The tooth scarcely reaches the level of the orbit. The posterior margin of the carapace forms a smooth ridge.

A tiny triangular spine can be seen from above to emerge from the dorsal aspect of the epistome between the eye and the antennal peduncle.

The rostrum is triangular with the sides converging to a moderately sharp point. It is about 2½ times as long as broad in the middle and is recurved very slightly. It is weakly carinate.

The eyes are white and fused to the rostrum and anterior edge of the carapace. They are also spineless.

The basal segment of the antennule is only moderately inflated, and the anterior edge is armed with one prominent lateral spine and a shorter mesial spine.

The basal segments of the antenna are spineless, but the first and second segments bear small denticulate teeth on the distal margin.

The dorsal, distal margin of the merus of the third maxilliped ends in a very small tooth; the ventral margin bears four teeth, of which the second (proximally) is by far the largest and the fourth is minute.

The chelipeds of the male holotype are subequal and are about 1.8 times the length of the carapace, including the rostrum. The tip of the movable finger bears a sharp tooth that fits between a pair of sharp teeth on the other finger. An oval gape occurs in the chela only at the articulation of the movable finger. Small teeth are borne on the occlusal edges of both fingers, but the most proximal tooth of the movable finger is large and triangular. The fixed finger bears an enlargement on its cutting edge that forms the distal limit of the gape in the closed chela. The only spine projecting beyond articulations on the segments of the cheliped is a very sharp one found on the anteromesial angle of the ventral surface of the merus. All other spinelike prolongations of the segments of the cheliped do not project beyond their articular involvement.

Epipods are on the chelipeds and the first two pairs of ambulatory legs.

The abdomen is only slightly narrower (7 mm) than the carapace and tapers very little posteriorly. It is remarkably smooth, lacking carinae, teeth, and spines. Only the second somite bears a very faint transverse groove.

Size

Carapace with rostrum 10.5 mm long (8 mm without rostrum) and 8 mm wide. Right cheliped is 19 mm long, and the palm is 4 mm wide.

Remarks

Munidopsis gulfensis is similar to *M. espinis* but differs from it as follows: (1) the tooth on the anterolateral angle does not reach the base of the rostrum (level of the orbits): (2) there is no double-pointed tooth on the margin behind the anterolateral tooth; (3) there are four (not three) teeth on the merus of the third maxilliped; (4) the dorsal surface of the carapace lacks punctations; and (5) the cheliped is massive, and the chela gapes proximally.

***Munidopsis latifrons* (A. Milne Edwards, 1880)**

Galathodes latifrons A. Milne Edwards, 1880, p. 57. – A. Milne Edwards and Bouvier, 1894, p. 279; 1897, p. 94.

Munidopsis latifrons. – Benedict, 1902, p. 321. – Chace, 1942, p. 87.

Previous Gulf of Mexico Records

Southeast Gulf: *Atlantis* station 2995 (370-605 fms.), (Chace, 1942).

Alaminos Material

None.

Remarks

Chace (1942) was unable to find the type-specimen of this species in the Museum of Comparative Zoology, but suggests that it might be in the Paris Museum (personal communication).

Distribution

Type was taken off Barbados by the *Blake*. *Atlantis* specimens (3 males) were taken in Florida Straits, barely within the Gulf proper.

***Munidopsis longimanus* (A. Milne Edwards, 1880)**

Elasmonotus longimanus A. Milne Edwards, 1880, p. 60. – A. Milne Edwards & Bouvier, 1894, p. 282; 1897, p. 106, pl. 9 figs. 1-6.
Munidopsis longimana. – Benedict, 1902, p. 277. – Chace, 1942, p. 95.

Previous Gulf of Mexico Records

Southeast Gulf: *Atlantis* stations 2995 and 2996 (370-665 fms.), (Chace, 1942).

Alaminos Material

A total of 11 specimens from eight stations in approximately 300 to 640 fathoms as follows:

Northwest Gulf: 68-A-13-8 (400 fms.), 1 ovig. ♀; 68-A-13-21 (350-280 fms.), 1 ♂; 68-A-13-24 (480 fms.), 1 ♂; 68-A-13-27 (600-640 fms.), 1 ovig. ♀.

Northeast Gulf: 68-A-7-1A (472-289 fms.), 1 ovig. ♀; 68-A-7-12B (492 fms.), 1 ovig. ♀; 68-A-7-17B (492 fms.), 2 ♂; 69-A-13-44 (411 fms.), 1 ovig. ♀, 2 ♂.

Remarks

Chace (1942) points out the distinction between *M. longimanus* and *M. brevimanus.* This includes margins of the carapace that are subparallel in *M. longimanus* compared to convex margins in *M. brevimanus;* rostrum slightly longer and more rounded at the tip in *M. longimanus;* and chelipeds longer and thinner. There is also a difference in depth range. *M. longimanus* has been taken in 300-690 fathoms, while *M. brevimanus* is usually shallower.

Alaminos specimens range in size from 6 to 12 mm carapace length. The smallest ovigerous female measures 8 mm. Ovigerous females were taken in July, August, October, and November in approximately 300-640 fathoms.

Distribution

M. longimanus is distributed in the West Indies and off the north and south coasts of Cuba. *Alaminos* specimens are the first record in the northern Gulf of Mexico.

***Munidopsis nitida* (A. Milne Edwards, 1880)**
(Figure 5-12)

Orophorhynchus nitidus A. Milne Edwards, 1880, p. 59.
Orophorhynchus spinosus A. Milne Edwards, 1880, p. 58.
Munidopsis nitida. – A. Milne Edwards & Bouvier, 1894, p. 275; 1897, p. 74, pl. 6, figs. 6 and 7.

Previous Gulf of Mexico Records

None.

Alaminos Material

Six specimens from three stations in 750-1,160 fathoms as follows:

Southwest Gulf: 69-A-11-44 (1,160 fms.), 1 ovig. ♀; 69-A-11-69 (750 fms.), 1 ♂; 69-A-11-87 (970 fms.), 1 ovig. ♀, 3 ♂.

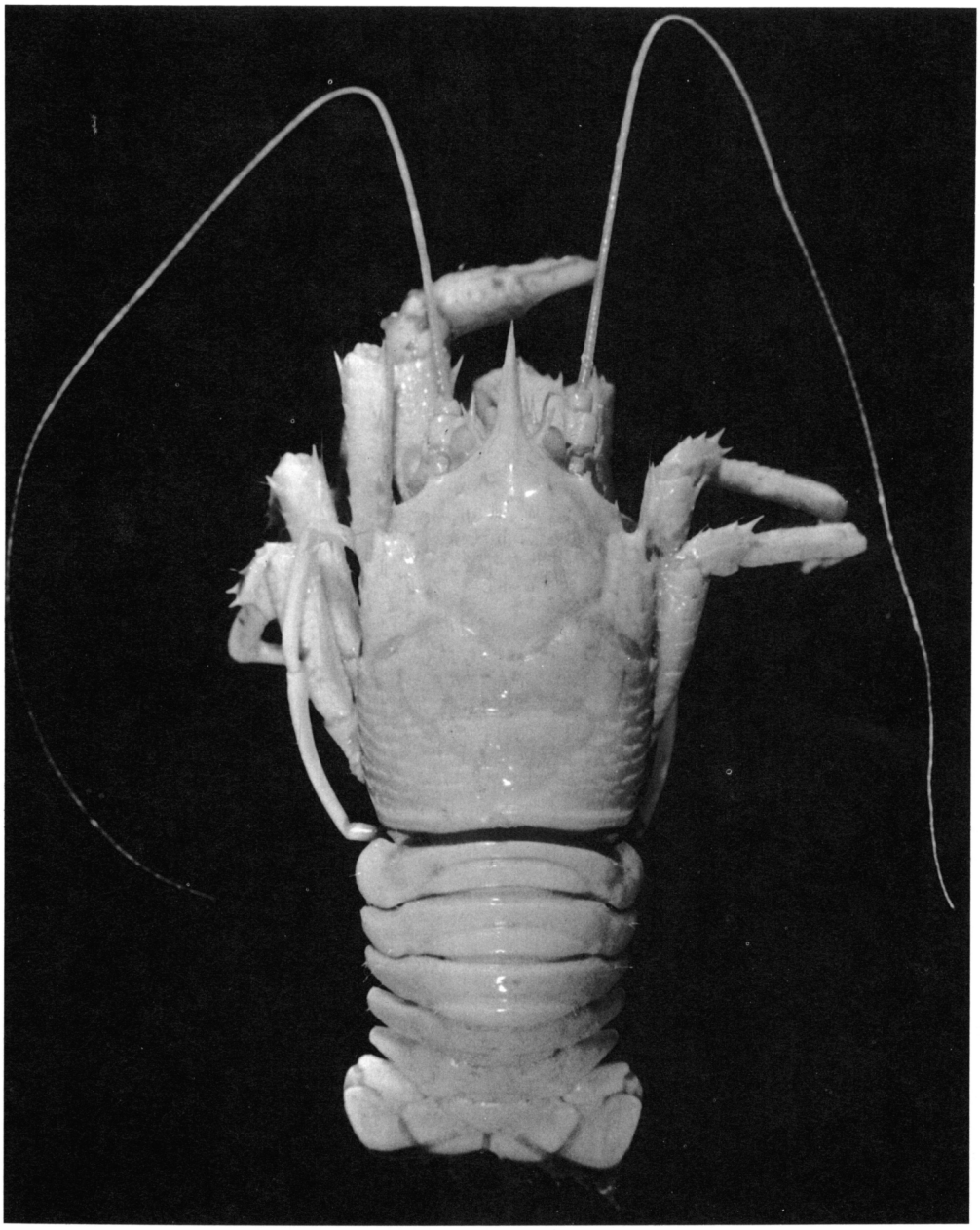

Figure 5-12. Munidopsis nitida (A. Milne Edwards). Ovigerous female from station 69-A-11-44 (1,160 fms.). Eyes of this species are bright orange in life. x 3.9.

Remarks

These are the first *M. nitida* specimens since the *Blake* material from Guadeloupe and Dominica in 769 and 982 fathoms and a first record in the Gulf of Mexico. It is interesting that the *Alaminos* material should come from the SW corner of the Gulf at so great a distance from the *Blake* specimens in the West Indies and, as yet, from nowhere in between.

Alaminos specimens measure 9 to 18 mm carapace length. The smallest ovigerous female measures 13 mm. Ovigerous females were taken in August only.

Munidopsis polita (Smith, 1883)

Anoplonotus politus Smith, 1883, p. 50, pl. 2, fig. 1, pl. 3, figs. 1-5.
Munidopsis polita. – Benedict, 1902, p. 324.

Previous Gulf of Mexico Records

None.

Alaminos Material

Northwest Gulf: 64-A-10-2-dredge (207 fms.), 1 ♂; 68-A-13-4 (280 fms.), 1 ovig. ♀; 68-A-13-15 (360-470 fms.), 1 ♂.

Remarks

Alaminos specimens range in size from 6 to 10 mm carapace length. The ovigerous female, which was taken in November, measures 9 mm carapace length.

Distribution

M. polita is distributed off the east coast of the United States (off Martha's Vineyard) and in the NW Gulf of Mexico. The *Alaminos* specimens are the first record in the Gulf of Mexico.

Munidopsis robusta (A. Milne Edwards, 1880)

Galathodes robustus A. Milne Edwards, 1880, p. 54,
Munidopsis robusta. – A. Milne Edwards & Bouvier, 1894, p. 275; 1897, p. 69, pl. 6, figs. 15-20, pl. 7, fig. 1. – Benedict, 1902, p. 325. – Chace, 1956, p. 15. – Bullis & Thompson, 1965, p. 9.

Previous Gulf of Mexico Records

Northeast Gulf: *Oregon* stations 127, 270, 272, 273, 351, 489, 603, 1238, 1276, (60-254 fms.), (Springer & Bullis, 1956).

Southeast Gulf: *Oregon* stations 1015 and 1326 (150-350 fms.), (Springer & Bullis, 1956).

Alaminos Material

Five specimens from five stations in 250 to 450 fms. as follows:

Northwest Gulf: 68-A-13-4 (280 fms.), 1 ♀; 68-A-13-22 (260 fms.), 1 ovig. ♀.

Southwest Gulf: 69-A-11-59 (250-450 fms.), 1 ovig. ♀.

Northeast Gulf: 68-A-7-10A (309 fms.), 1 ♀; 69-A-13-40 (260 fms.), 1 ♀.

Remarks

Alaminos specimens range in size from 7 to 18 mm carapace length. The ovigerous females measure 13 and 20 mm and were taken in November and August.

Distribution

M. robusta is distributed in the Lesser Antilles (near Grenada) and throughout the Gulf of Mexico.

Munidopsis serratifrons (A. Milne Edwards, 1880)

Galathodes serratifrons A. Milne Edwards, 1880, p. 55.

Munidopsis serratifrons. – Henderson, 1888, p. 149. – A. Milne Edwards and Bouvier, 1894, p. 275; 1897, p. 78. – Benedict, 1902, pp. 277, 326. – Chace, 1942. p. 85.

Previous Gulf of Mexico Records

Southeast Gulf: *Albatross* station 2154 (310 fms.), (Benedict, 1902); *Atlantis* station 3305 (330 fms.), (Chace, 1942).

Alaminos Material

None.

Distribution

This species is distributed from Bermuda to Dominica and the SE Gulf of Mexico via Florida Straits, from 310 to 1,075 (?) fathoms.

Munidopsis sigsbei (A. Milne Edwards, 1880)

Galathodes Sigsbei A. Milne Edwards, 1880, p. 56.
Munidopsis sigsbei. – Henderson, 1888, p. 150, pl. 18, fig. 2. – Milne Edwards & Bouvier, 1894, p. 275; 1897, p. 83, pl. 5, figs. 8-26. – Benedict, 1902, p. 276. – Chace, 1942, p. 82; 1956, p. 15.

Previous Gulf of Mexico Records

Southeast Gulf: *Blake* stations 29 (955 fms.) and 35 (804 fms.), (Milne Edwards, 1880). *Atlantis* stations 2995 and 2996 (370-665 fms.), (Chace, 1942).

Northeast Gulf: *Oregon* station 640 (355-475 fms.), (Springer & Bullis, 1956).

Alaminos Material

A total of 51 specimens from 13 stations in 400-800 fathoms as follows:

Northwest Gulf: 68-A-13-11 (580-750 fms.), 1 ♀, 1 ♂; 68-A-13-12A (580-720 fms.), 3 ♀ (2 ovig.), 4 ♂; 68-A-13-14 (530 fms.), 1 ovig. ♀; 68-A-13-15 (360-470 fms.) 1 ♀; 68-A-13-24 (480 fms.), 1 ♀; 68-A-13-26 (750-785 fms.) 13 ♀ (2 ovig.), 7 ♂, 2 juv.; 68-A-13-27 (600-640 fms.), 1 ovig. ♀. 69-A-11-2 (515 fms.), 1 ♀; 69-A-11-4 (550 fms.), 1 ♂; 69-A-11-7 (765 fms.), 1 ovig. ♀; 69-A-11-13 (800 fms.), 6 ♀ (4 ovig.), 3 ♂, 1 juv.

Southwest Gulf: 69-A-11-86 (530-590 fms.), 2 ♂.

Northeast Gulf: 68-A-7-15H (500 fms.), 1 ♀.

Remarks

Alaminos specimens range in size from 5 to 18 mm carapace length. The smallest ovigerous female measures 10 mm. Ovigerous females were taken in August and November.

Distribution

M. sigsbei is distributed in the Lesser Antilles, off the north coast of Cuba, and throughout the Gulf of Mexico. Depth range: 400-975 fathoms.

Munidopsis simplex (A. Milne Edwards, 1880)
(Figure 5-13)

Galathodes simplex A. Milne Edwards, 1880, p. 56.
Munidopsis simplex. – A. Milne Edwards & Bouvier, 1894, p. 275; 1897, p. 89, pl. 5, figs. 2-7. – Benedict, 1902, p. 277. – Chace, 1942, p. 92.

Previous Gulf of Mexico Records

None.

Alaminos Material

A total of 18 specimens from eight stations in 547 to 1,000 fathoms as follows:

Northwest Gulf: 68-A-13-26 (750-785 fms.), 2 ♂; 69-A-11-7 (765 fms.), 1 ovig. ♀, 2 ♂.

Southwest Gulf: 69-A-11-39 (710-760 fms.), 1 ovig. ♀; 69-A-11-69 (750 fms.), 1 ♀, 1 ♂; 69-A-11-74 (650-700 fms.), 1 ovig. ♀; 69-A-11-83 (725 fms.), 2 ♀, (1 ovig.), 4 ♂.

Northeast Gulf: 66-A-9-15 (MWT #1 hit bottom at 547 fms.), 2 ♀; 67-A-5-2H (1,000 fms.), 1 ovig. ♀.

Remarks

M. simplex is distinguished from *M. curvirostra* Whiteaves by the shorter rostrum, which is less curved than in the latter species. Chace (1942) points out that the rostrum of *M simplex* is only 41-53% of the carapace length, while it is 71-76% in *M. curvirostra.*

Alaminos specimens range in size from 6 to 11 mm carapace length. The smallest ovigerous female measures 8 mm. Ovigerous females were taken in July and August.

Distribution

M. simplex is distributed in the Lesser Antilles, off the north coast of Cuba, and throughout the Gulf of Mexico. The *Alaminos* specimens are the first record in the Gulf of Mexico.

Munidopsis spinifer (A. Milne Edwards, 1880)

Galathodes spinifer A. Milne Edwards, 1880, p. 54.

Munidopsis spinifer. – A. Milne Edwards & Bouvier, 1894, p. 275; 1897, p. 64, pl. 7, figs. 6-8. – Benedict, 1902, p. 277. – Chace, 1942, p. 91.

Previous Gulf of Mexico Records

Southeast Gulf: *Atlantis* stations 3302, 3303, (230-260 fms.), (Chace, 1942).

Alaminos Material

None.

Remarks

Chace (1942) indicates that there is a spine on the frontal margin behind the base of the antenna, contrary to Milne Edwards' and Bouvier's statement for this species.

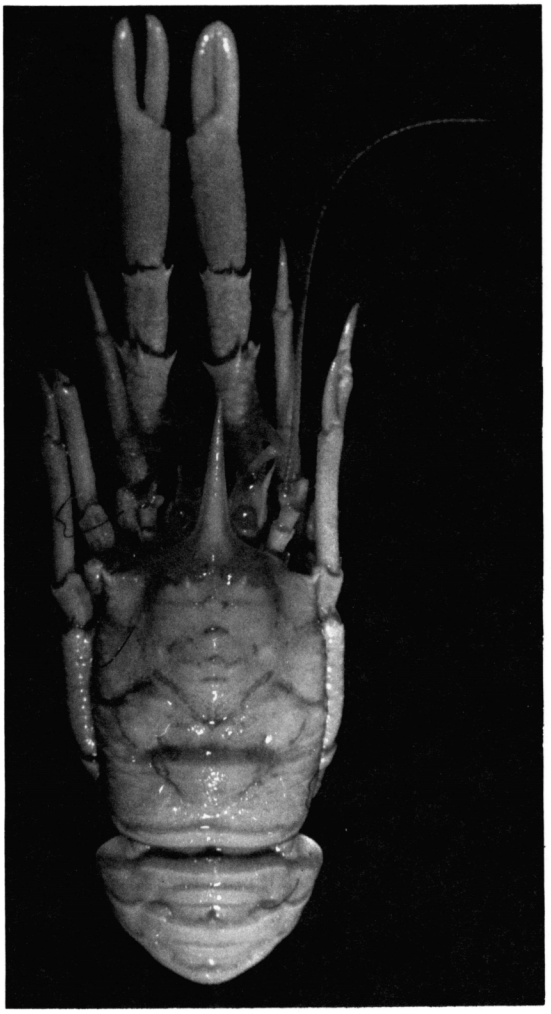

Figure 5-13. Munidopsis simplex (A. Milne Edwards). x 4.6.

Distribution

M. spinifer is distributed from the SE Gulf off Cuba to Barbados in 151 to 400 fathoms.

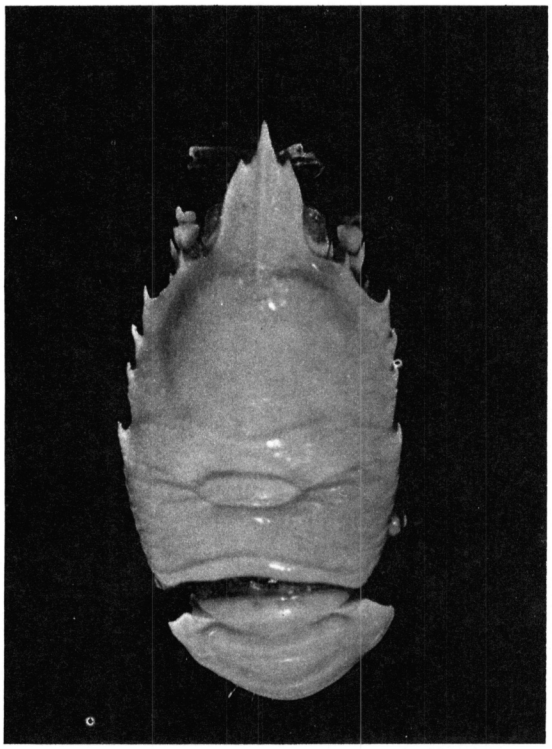

Figure 5-14. Munidopsis tridentata (Esmark). Female from station 64-A-10-3 (431 fms.). x 10.

Munidopsis spinoculata (A. Milne Edwards, 1880)

Orophorhynchus spinoculatus A. Milne Edwards, 1880, p. 59.
Munidopsis spinoculata. – A. Milne Edwards & Bouvier, 1894, p. 275; 1897, p. 75, pl. 6, figs. 8-11. – Benedict, 1902, p. 276. – Chace, 1942, p. 86.

Previous Gulf of Mexico Records

None.

Alaminos Material

Southwest Gulf: 69-A-11-27 (425-450 fms.), 1 ♂; 69-A-11-69 (750 fms.), 2 ♂.

Remarks

Alaminos specimens range in size from 6 to 10 mm carapace length. This species has only been taken twice before–the type-material by the *Blake* off Dominica, and the *Atlantis* material off the north coast of Cuba (Chace, 1942). The *Alaminos* material is the first record in the Gulf of Mexico proper. Its SW Gulf location is quite far removed from the previous eastern records. Depth range: 425-824 fms.

Munidopsis tridens (A. Milne Edwards, 1880)

Galathodes tridens A. Milne Edwards, 1880, p. 57. – A. Milne Edwards & Bouvier, 1894, p. 279; 1897, p. 96, pl. 7, figs. 13-15, pl. 8, fig. 1.
Munidopsis tridens. – Benedict, 1902, p. 328. – Chace, 1942, p. 87.

Previous Gulf of Mexico Records

Southeast Gulf: *Atlantis* sta. 3303 (260 fms.), (Chace, 1942).

Alaminos Material

None.

Remarks

Only two specimens of *M. tridens* are known–the *Blake* specimen from off St. Kitts and the *Atlantis* specimen from off the north coast of Cuba. Depth range: 208-260 fathoms.

Munidopsis tridentata (Esmark, 1857 ?)
(Figure 5-14)

Restricted Synonymy

Galathea tridentata Esmark, 1857, p. 239.
Galathodes rosaceus A. Milne Edwards, 1881, p. 932; 1883, pl. 15.

Galathodes tridentata. – G. O. Sars, 1883, pp. 4 and 43, pl. 1, fig. 3.
Munidopsis tridentata. – Ortmann, 1892, p. 256. – Chace, 1942, p. 88.
Munidopsis rosacea. – Alcock and Anderson, 1899, p. 19.
Munidopsis (Galathodes) ? tridentata. – Alcock, 1901, p. 264.

Previous Gulf of Mexico Records

Southeast Gulf: *Atlantis* stations 2995, 2996 (370-665 fms.), (Chace, 1942).

Alaminos Material

Northwest Gulf: 64-A-10-3-dredge (431 fms.), 1 ♀.

Remarks

There is some doubt as to the identification of this specimen, primarily because of its small size (carapace with rostrum length 6 mm) and the absence of legs. It differs sufficiently from *M. tridens* (absence of gastric spines, presence of pronounced carina on rostrum, etc.) to remove that species from contention.

Distribution

Chace (1942) points out that this is one of the most widespread species of *Munidopsis* known. It has been found in the eastern Atlantic from Norway through the Bay of Biscay to the west coast of Africa and the Cape Verde Islands; in the western Atlantic off the north coast of Cuba; in the NW Gulf of Mexico; and in the Indian Ocean.

Family CHIROSTYLIDAE

The carapace is longer than broad. Thoracic sternum is broad, the last segment generally much reduced or atrophied.

The abdomen is folded on itself, and the telson is also folded beneath the preceding abdominal segments.

The antennal peduncle has five joints, the third segment not being fused with the second. No epipodite on third maxilliped.

Nine species of chirostylids in three genera (*Eumunida, Gastroptychus,* and *Uroptychus*) are known from the Gulf of Mexico. Of these, only one species, *Uroptychus nitidus,* was taken by the *Alaminos.* The other eight species are listed in Table 5-1.

Key to the Genera of Chirostylidae
(after Chace)

1. Two pairs of supraorbital spines; carapace crossed by transverse ciliated lines; mandibles unarmed.
Eumunida
No supraorbital spines; carapace without transverse ciliated lines; mandibles dentate.
2
2. Rostrum and antennal scale lacking.
Chirostylus
Rostrum and antennal scale present.
3
3. Legs spiny and very long.
Gastroptychus
Legs short or of moderate length and not densely spinose.
Uroptychus

Genus *Uroptychus* Henderson, 1888
Uroptychus nitidus (A. Milne Edwards, 1880)
(Figure 5-15)

Diptychus nitidus A. Milne Edwards, 1880, p. 62. – A. Milne Edwards & Bouvier, 1894, p. 306; 1897, p. 134, pl. 11. figs. 21-22, pl. 12, figs. 10-16.
Uroptychus nitidus. – Henderson, 1888, p. 174, pl. 21, fig. 6. – Benedict, 1902, p. 292. – van Dam, 1933, pp. 37 and 41. – Chace, 1942, p. 11, text-figs. 3-6.

Figure 5-15. Uroptychus nitidus (A. Milne Edwards). Ovigerous female in the gorgonian Chrysogorgia elegans. Taken from station 69-A-11-27 (425-450 fms.). x 1.0.

Chace (1942) clarifies the four varieties of *U. nitidus,* two of which (the Typical Form and Variety B) were taken by the *Alaminos.*

Milne Edwards (1880) states that *Uroptychus nitidus* lives in a gorgonian coral *(Chrysogorgia).* No further elaboration was given. Chace (1942) was unable to verify Milne Edwards' statement. Fortunately, additional evidence is now in hand that establishes a definite relationship between *U. nitidus* and the gorgonian coral *Chrysogorgia elegans* (Verrill, 1883) and a possible relationship of this chirostylid with another gorgonian *Acanella arbuscula* (Johnson, 1862).

At station 69-A-11-27 a large specimen of *Chrysogorgia elegans,* dredged in nearly perfect condition from 425-450 fathoms, was found to have a live *Uroptychus nitidus* clinging to its branches. The latter was an ovigerous female (14 mm carapace length) that was a nearly perfect color match (pale orange) with the gorgonian.

The sharp, curved, terminal spine on the dactyli of legs 2-4 and the slanted hairs on their propodi permit this species to cling tightly or move easily through the branches of the gorgonian. It is, however, extremely difficult to remove the crustacean from the gorgonian without damaging one or the other. The above referenced specimen is the only one found so intimately associated with the gorgonian. Nevertheless, all the remaining specimens in our collection were taken in conjunction with one of two species of gorgonian as follows:

65-A-9-15-Dredge #2, 330 fathoms, *Chrysogorgia* sp.

68-A-13-23, 400 fathoms, *Chrysogorgia elegans*

69-A-11-4, 550 fathoms, *Chrysogorgia elegans*

68-A-13-27, 600-640 fathoms, *Acanella arbuscula*

68-A-13-12A, 580-720 fathoms, *Acanella arbuscula*

It appears from the above that there may be a change of host with depth, but this is not yet established.

Typical Form

Previous Gulf of Mexico Records

Northeast Gulf: *Blake* station 44 (539 fms.) (Milne Edwards, 1880).

Southeast Gulf: *Atlantis* stations 2995 and 2996 (370-665 fms.), (Chace, 1942).

Alaminos Material

Five specimens from five stations in 400 to 640 fathoms as follows:

Northwest Gulf: 68-A-13-12A (580-720 fms.), 1 ♂; 68-A-13-23 (400 fms.), 1 ♂; 68-A-13-27 (600-640 fms.), 1 ovig. ♀; 69-A-11-4 (550 fms.), 1 ♂.

Southwest Gulf: 69-A-11-27 (425-450 fms.), 1 ovig.♀.

Remarks

Chace (1942) points out that the typical form of *U. nitidus* is larger than the other varieties (up to 13.1 mm carapace length and with ovigerous females from 9.5 to 13.0 mm carapace length). *Alaminos* specimens range in size from 5 to 14 mm carapace length. The two ovigerous females measure 9 and 14 mm and were taken in August and November. Chace also points out that the typical form is found deeper than the other varieties, i.e., usually below 400 fms.; and this is also true of the *Alaminos* specimens. The typical form is distributed in the Lesser Antilles, off the north coast of Cuba, and throughout the Gulf of Mexico from 400-734 fathoms, except for the record from *Blake* station 232 given as 88 fathoms.

Variety B

Previous Gulf of Mexico Records

None.

Table 5-1
Gulf of Mexico Species of Chirostylidae
Not Taken by ALAMINOS

Species	Area of Gulf	Collected by	Depth (fms.)	Reference
Eumunida picta Smith, 1883	SE	Atlantis 3302, 3303	230-260	Chace, 1942, p. 3
	NE	Oregon 1283	260	Springer & Bullis, 1956, p. 14
Gastroptychus affinis Chace, 1942	SE	Atlantis 3303, 3479 3482	190-260	Chace, 1942, p. 6
Gastroptychus spinifer (A. Milne Edwards, 1880)	SE	Atlantis 3303, 2999, 3467, 3479	145-260	Chace, 1942, p.5
	SE	Oregon 1328	200-300	Springer & Bullis, 1956, p. 14
Uroptychus brevis Benedict, 1902	SE	Atlantis 2995	370-605	Chace, 1942, p. 26
Uroptychus jamaicensis Benedict, 1902	SE	Atlantis 2995	370-605	Chace, 1942, p. 20
Uroptychus rugosus (A. Milne Edwards, 1880)	SE	Atlantis 3303	260	Chace, 1942, p. 28
Uroptychus spinosus (Milne Edwards and Bouvier, 1894)	SE	Atlantis 2999	145-230	Chace, 1942, p. 29
Uroptychus uncifer (A. Milne Edwards, 1880)	SE	Atlantis 2999, 3479	145-230	Chace, 1942, p. 18

Alaminos Material

Southeast Gulf: 65-A-9-15-Dredge #2 (330 fms.), 1 ovig. ♀.

Remarks

Chace (1942) remarks that Variety B is smaller than the typical form but larger than Variety A. Known specimens have a carapace length of up to 6.9 mm. The *Alaminos* specimen, an ovigerous female, measures 6 mm carapace length.

Distribution

Variety B is distributed off the north coast of eastern Cuba and in the SE Gulf of Mexico from 250-400 fms.

Family PORCELLANIDAE

This family is comprised primarily of species that live in shallow water. As a result, only one species, *Porcellana sigsbeiana*, is represented in the *Alaminos* collection from below 100 fathoms.

***Porcellana sigsbeiana* A. Milne Edwards, 1880**

Porcellana sigsbeiana A. Milne Edwards, 1880, p. 35. – Benedict, 1901, p. 137. – A. Milne Edwards & Bouvier, 1923, p. 292, pl. 1, fig. 6. – Schmitt, 1935, pp. 189, 190. – Chace, 1942, p. 102; 1956, p. 16. – Haig, 1956, p. 33. – Bullis and Thompson, 1965, p. 10.

Previous Gulf of Mexico Records

Northeast Gulf: *Blake* station 49 (118 fms.), (A. Milne Edwards, 1880), *Oregon* stations 27, 326, 332, 696, 325, (60-120 fms.), (Springer and Bullis, 1956).

Southeast Gulf: *Blake* station 36 (84 fms.).

Alaminos Material

Twenty-one specimens from five stations in 100-150 fathoms:

Northwest Gulf: 68-A-13-7 (150 fms.), 3 ♀.

Southwest Gulf: 69-A-11-60 (110 fms.), 2 ♂; 69-A-11-76 (100 fms.), 1 specimen.

Northeast Gulf: 68-A-7-8C (111 fms.), 1 ♀ ovig., 1 ♂, 1 juv.; 69-A-13-42 (100 fms.), 5 ♀ (4 ovig.), 7 ♂.

Remarks

Alaminos specimens range in length from 6 to 15 mm. Ovigerous females ranging from 11 to 15 mm carapace length were taken in August and October.

Distribution

P. sigsbeiana ranges off Martha's Vineyard to the Virgin Islands and throughout the Gulf of Mexico in 27 to 215 fathoms.

Discussion

Presently, 14 species of *Munida* and 23 species of *Munidopsis* are known to exist in the deeper waters of the Gulf of Mexico. During deep-water dredging operations, the *Alaminos* collected seven species of *Munida* and 14 species of *Munidopsis*. An important reason why we did not take higher percentages of the Gulf species in these genera is related to the restricted distribution of several species (see Table 5-2 and note the SE quadrant) and to the fact that up to now the *Alaminos* has made very few dredgings in the SE quadrant. This situation is clearly reflected in Table 5-3, where we observe that five of the seven species of *Munida* and seven of the eight species of *Munidopsis* not taken by the *Alaminos* occur in the Gulf only in the SE quadrant. Moreover, the remaining three species not represented in our collection are extremely rare (e.g., *Munidopsis barbarae*, of which only two specimens are known to exist). It is understandable, therefore, why all new Gulf records for *Munidopsis* reported in this study are for species that appear not to exist in the SE quadrnat of the Gulf (see lower part of Table 5-2).

This leads us to the observation that disproportionate numbers of species of *Munida* and *Munidopsis* exist in the SE Gulf, as compared with other quadrants. Chace (1942), as a matter of fact, was impressed by the larger number of Galatheoidea taken by *Atlantis* off the northern coast of Cuba (SE Gulf), as compared with the southern coast (in the Caribbean Sea). As far as the Gulf proper is concerned, 28 species of galatheids exist in the SE quadrant (Tables 5-2 and 5-3), as compared with 16 in the NW, 12 in the NE, and only 8 in the SW. An explanation for this uneven distribution is not available. It is noteworthy, nevertheless, that all of the *Munida* species of the Gulf occur in the SE quadrant, whereas scarcely more than half of the *Munidopsis* species occur there. We note further that as a group *Munida* tends to prefer shallow water, as compared with *Munidopsis* (Figure 5-1). It might appear that the shallow-water *Munida* group flourishes only in tropical waters where winter temperature minima are quite high, but in reality temperature appears to be of only ancillary importance, judging from the paucity of *Munida* in the warm SW Gulf. In view of this, we

Table 5-2
Deep Water Galatheoidea
Taken by ALAMINOS in Gulf of Mexico
Quadrant Dividing Lines: 90th Meridian, 25th Parallel

Species	Quadrant Where Found				First Gulf Record
	SE	NW	NE	SW	
Chirostylidae					
Uroptychus nitidus	+	+	+	+	A. Milne Edwards, 1880
Galatheidae					
Munida valida	+	+	+	+	Chace, 1956
longipes	+	+	+	+	Chace, 1942
forceps	+	+	+		A. Milne Edwards, 1880
microphthalma	+	+			" " "
flinti	+		+		Benedict, 1902
irrasa	+				A. Milne Edwards, 1880
sculpta	+				Benedict, 1902
Munidopsis					
sigsbei	+	+	+	+	A. Milne Edwards, 1880
robusta	+	+	+	+	Chace, 1956
longimanus	+	+	+		Chace, 1942
espinis	+	+			Benedict, 1902
erinacea	+	+			Chace, 1942
tridentata	+	+			" "
abbreviata	+	+			" "
polita		+			Pequegnat & Pequegnat, Herein
gulfensis		+			" " "
bermudezi		+			" " "
alaminos		+	+		" " "
simplex		+	+	+	" " "
nitida				+	" " "
spinoculata				+	" " "
geyeri				+	" " "
Porcellanidae					
Porcellana					
sigsbeiana	+	+	+	+	A. Milne Edwards, 1880

are inclined to believe that moderately deep carbonaceous regions with relatively high temperature regimes favor the development of *Munida* populations in the Gulf of Mexico.

The genus *Munidopsis* contains the deep-water component of the family Galatheidae. In the Gulf of Mexico there are three bathymetric groups: (1) those that have population centers between 200 and 500 fathoms, (2) those that exist primarily between 500 and 1,000 fathoms, and (3) a truly deep-water group found most frequently between 1,500 and 2,100 fathoms (Figure 5-1). The bulk of the shallow group is found in the SE Gulf, but the deeper groups are not. They appear to prefer gen-

erally the western half of the Gulf and the SW quadrant in particular.

Bathymetric ranges of most species of galatheids in the Gulf of Mexico are quite narrow, but this is not as evident from Figure 5-1 as it is from Table 5-4. In Figure 5-1 the depth data have been derived from all geographic subdivisions of the Gulf, whereas in Table 5-4 the depths are derived from only two cruises that sampled a north-south transect of the western Gulf from Texas to Mexico. All dredging stations at which galatheids were taken in cruises 68-A-13 and 69-A-11 are included as well as a few where they were not taken. Thus each horizontal line represents one dredging station. The Benthic Skimmer was the only collecting device used. A few dredgings at 2,000 and 2,100 fathoms are not included (no galatheids were taken); otherwise, all are presented. In each dredging, attempts were made to contour along an isobath, but steep and often irregular slopes foiled these efforts about one out of every three lowerings. Nevertheless, a careful perusal of this table demonstrates the narrowness of the bathymetric range of most species when data are derived from a single transect. In general, all 68-A-13 stations were confined to the NW quadrant, whereas on 69-A-11, stations 1 to 17 were NW; and 21 to 93 were in the SW quadrant with stations 26 to 59 farthest south (18° to 19° N latitude).

Individuals listed for each species (vertical colums) in Table 5-4 are not translatable into population density, nor are they of comparative signifi-

Table 5-3
Deep Water Galatheoidea
Not Taken by ALAMINOS in Gulf of Mexico
Quadrant Dividing Lines: 90th Meridian, 25th Parallel

Species	Quadrant Where Found SE	NW	NE	SW	First Gulf Record
Galatheidae					
Munida					
evermanni	+				Benedict, 1901
iris	+				Chace, 1956
miles	+		+		A. Milne Edwards, 1880
nuda	+		+		Benedict, 1902
schroederi	+				Chace, 1939
stimpsoni	+				A. Milne Edwards, 1880
striata	+				Chace, 1942
Munidopsis					
armata	+				Chace, 1942
barbarae			+		" "
brevimanus	+				" "
espinis	+				" "
expansa	+				" "
latifrons	+				" "
serratifrons	+				Benedict, 1902
spinifer	+				Chace, 1942
tridens	+				" "

Table 5-4
Depth of Capture and Number of Individuals of Galatheoidea from Two Cruises of ALAMINOS in Western Gulf of Mexico 68-A-13 and 69-A-11

Depth (fms)	Munida			Munidopsis												Porcellana	Uroptychus
	longipes	microphthalma	valida	robusta	alaminos	polita	erinacea	longimanus	sigsbei	abbreviata	spinocultata	simplex	nitida	gulfensis	geyeri	bermudezi	sigsbeiana	nitidus
100																		
100																	1	
110																	2	
150	1																	
150	5																3	
155	1																	
185-205	2																	
185-210	4																	
210	2																	
255	1	1																
260		2		1														
260	1	2																
250-450		3		1														
280		3		1	1	1	1											
280-350		10					3	1										
360-470		3				1	1		1									
400								1										
400		10																1
425-450								1	1									1
480																		
480								1	1									
515									1									
530									1									
550									1									1
530-590									2									
580-720									7									1
580-750									2									
600-640										1	1							1
650-750												1						
725												6						
750											2	2	1					
710-760												1						
765									1			3		1				
750-785									22			2						
800			1						10									
970													4					
1,160													1		1			
1,600-1,640																		
1,800																1		
1,840																		
1,840-1,910																		

cance because no details are given as to the area covered by the dredge. It is noteworthy, however, that the number of stations at which we obtained a single specimen of a species is unusually high, as compared with our records for other kinds of invertebrates. This situation appears to apply more directly to *Munidopsis* than to *Munida.* For instance, each time a *Munidopsis* species was represented in a haul by one individual and a *Munida* was taken, the latter was represented by more than one individual. This suggests to us, other things being considered, that *Munidopsis* species are better able to escape the skimmer than are *Munida* species. Because we see no obvious morphological reason why the former could avoid the dredge better than the latter (actually, the advantage seems to be the other way, considering the better developed eyes of *Munida*), we believe that many of the *Munidopsis* species live in burrows and that at least *Munida longipes* and *M. valida* do not. We have little additional evidence to support this view other than a bottom photograph taken by *Alaminos,* showing a *Munidopsis* emerging from a small burrow. The skimmer would ordinarily not take a galatheid from a burrow, except when it cut into an irregular bottom.

It is possible, of course, that the greater numbers of *Munida* in a single haul could indicate that at least these species of that genus are more gregarious than are those of *Munidopsis.* Some bottom photographic evidence could be interpreted to support this view.

An analysis of population densities of Galatheoidea in the Gulf of Mexico in relation to other invertebrates will be presented in a later paper now in preparation.

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Alphabetical Catalogue of Species

Alphabetical Catalogue of Species *(Con't.)*

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