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

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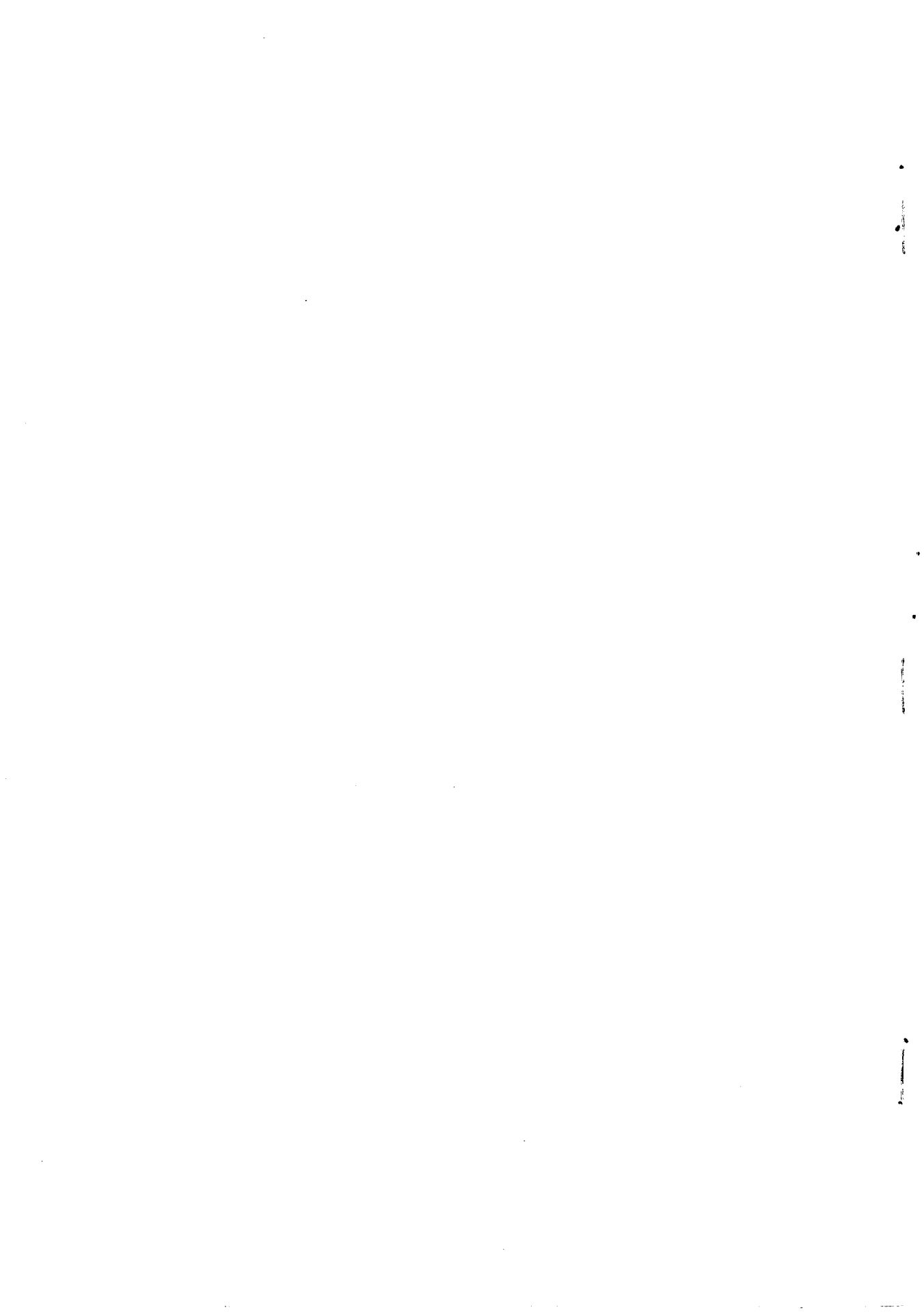
VOLUME I

CONTRIBUTIONS ON THE BIOLOGY
OF THE GULF OF MEXICO

W.E. PEQUEGNAT and F.A. CHACE, JR.
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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.

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In addition to the *Alaminos* material, we have included in this report records of all the Galatheaidea 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 Galatheaidea 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 styliiform. The antennal stalks are comprised of four movable segments. The last thoracic sternum is free, and

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

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 styliiform. 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.

- 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

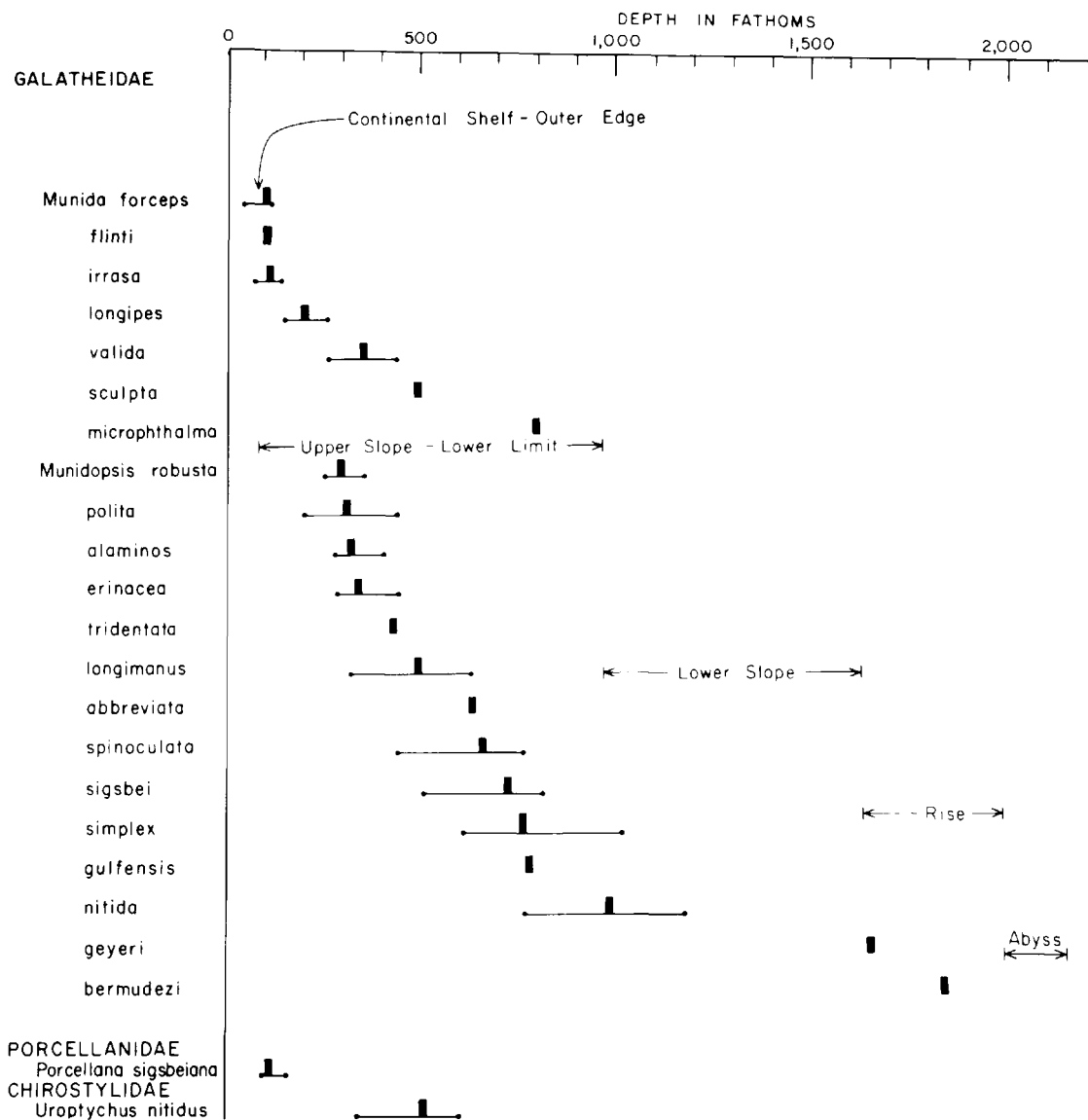
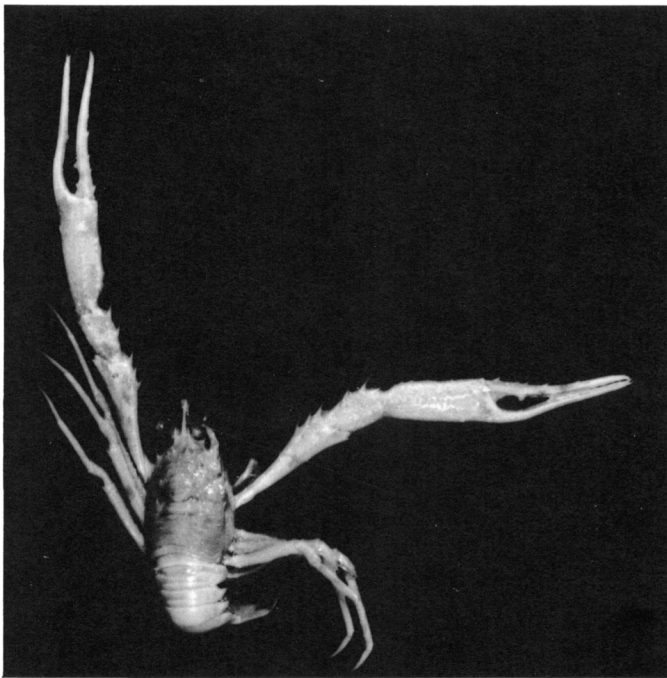


Figure 5-1. Depth ranges and centers of population (vertical bars) of the deep-water Galatheoidea taken by the Alaminos in the Gulf of Mexico. The extent of the physiographic features designations are averages for the entire Gulf.

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 irrassa* A. Milne Edwards, 1880**

- Munida irrassa* 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. irrassa 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. irrassa*, and it is a smaller species than *M. iris*. *M. irrassa* is distinguished from *M. sculpta* in that only six small lateral spines are behind the anterolateral spine in contrast to the seven or eight spines in *M. sculpta*.

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

Distribution

M. irrassa 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 sta-
 tions (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

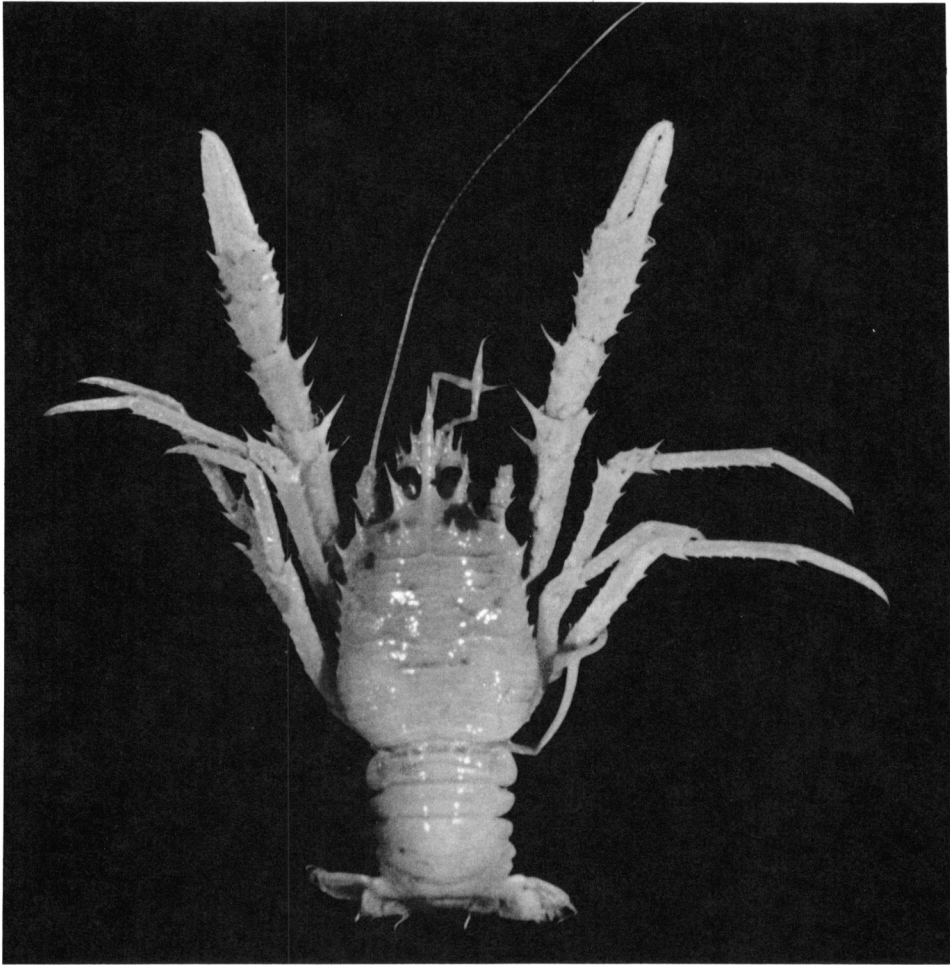


Figure 5-4. *Munida microphthalma* A. Milne Edwards. Female from station 69-A-11-13 (800 fms.). $\times 4$.

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* speci-

mens 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.

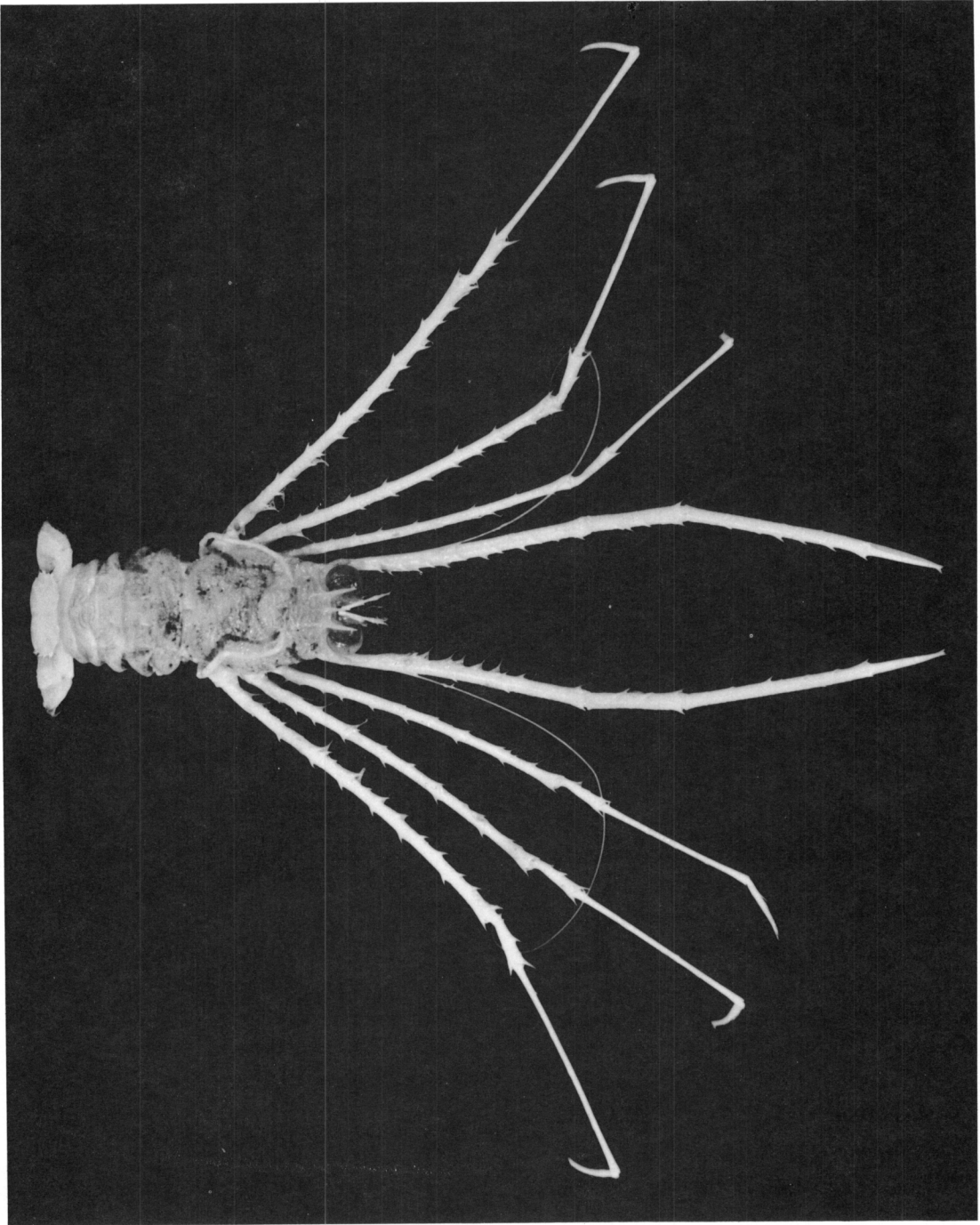


Figure 5-3. Munida longipes A. Milne Edwards. $\times 1.5$.

***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 supra-

ocular 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 antero-lateral 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. 11
- M. rostrata* (A. Milne Edwards, 1880)
- Rostrum laterally unarmed. 5
- 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. 7
- M. abbreviata* (p. 140)
7. Abdomen armed with a single median spine on second, third, and fourth somites. 9
- M. gilli* Benedict, 1902
- Abdomen armed with two median spines on second somite and one on third; fourth somite unarmed. 10
- 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. 10
- M. espinis* (p. 147)
- Dorsal surface of carapace lacks punctations though roughened; anterolateral tooth acuminate and scarcely attaining base of rostrum. 10
- M. gulfensis* n. sp. (p. 151)
10. Dorsal surface of carapace at most sharply granulate. 10
- 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. Eystalks armed with one or more teeth or spines, that extend beyond cornea. 13
Eystalks unarmed. 16
13. A single inner spine or tooth on eystalk. 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 eystalk 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. Eystalks armed with a short tooth at inner side of cornea.
M. aries (A. Milne Edwards, 1880)
Eystalks 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 tuberosities. 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 peducle unarmed.
M. curvirostra Whiteaves, 1874
 Rostrum about one-half as long as remainder of carapace and less strongly upcurved; antennal peducle 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♂.

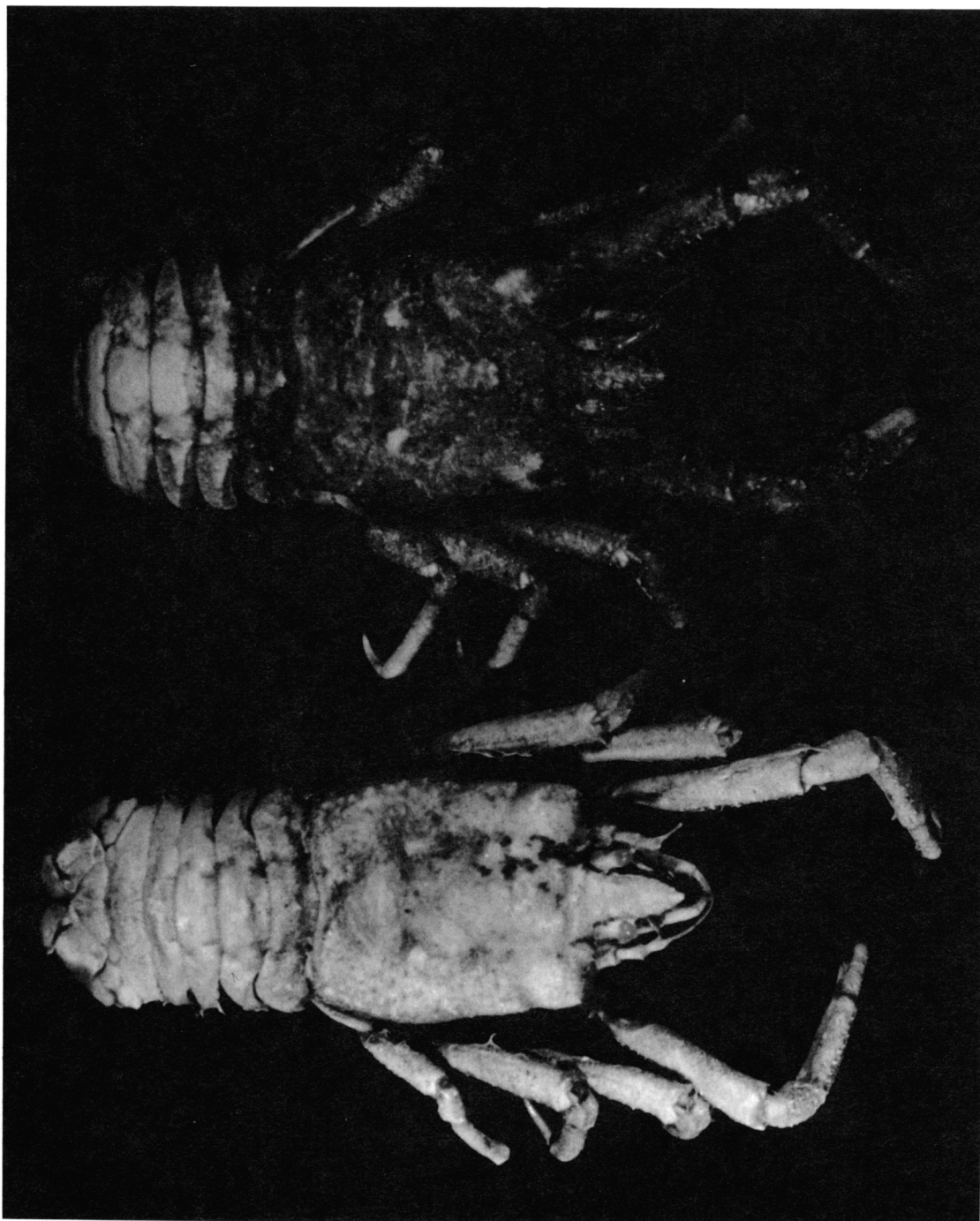


Figure 5-5. Munidopsis alaminos n. sp., male type-specimen (right), and female allotype (left), x 3.8.

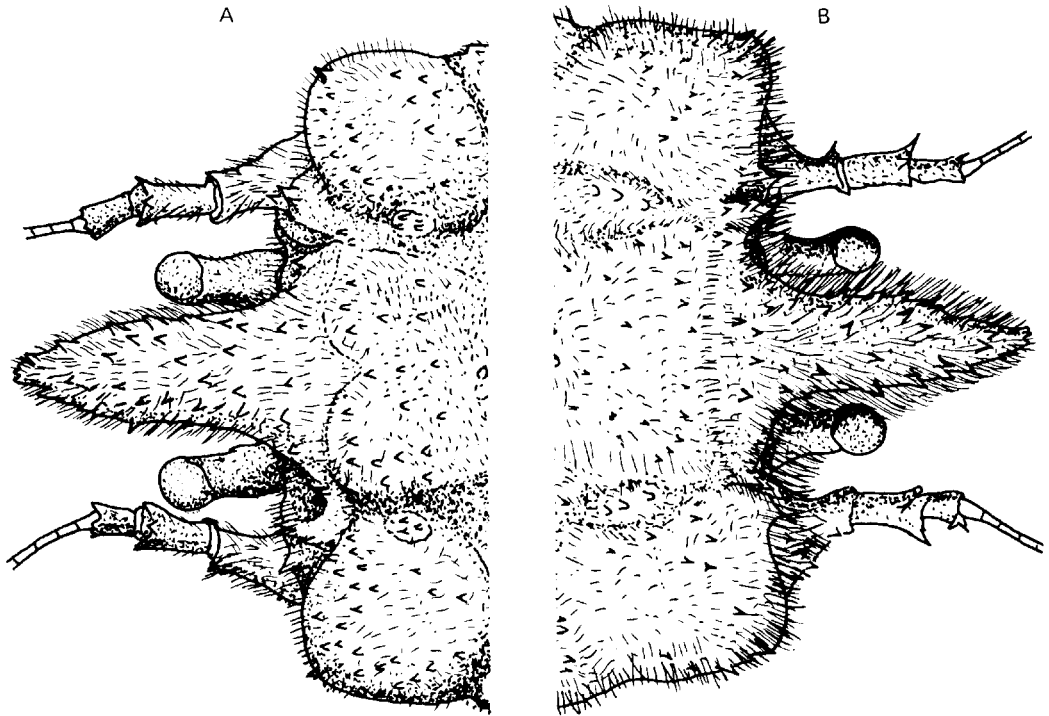


Figure 5-6. A, Anterior part of upper surface of carapace of male *Munidopsis alaminos* (type-specimen) showing marked inflation of anterolateral regions; B, same of female (allotype), note larger spines and denser pubescence on rostrum as compared with male.

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. ♀.