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# STOMATOPODA (CRUSTACEA: HOPLOCARIDA) FROM THE SHALLOW, INSHORE WATERS OF THE NORTHERN GULF OF MEXICO (APALACHICOLA RIVER, FLORIDA TO PORT ARANSAS, TEXAS)

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**ABSTRACT** Six species representing the order Stomatopoda are reported from the shallow, inshore waters (passes, bays, and estuaries) of the northern Gulf of Mexico limited to a depth of 10 m or less, and by the Apalachicola River (Florida) in the east and Port Aransas (Texas) in the west. With the exception of the “live bottom” gonodactylid, *Neogonodactylus bredini* (Manning), these predatory crustaceans usually inhabit burrows in mud, sand-mud, and sand substrata in coastal and shelf waters. The species treated in this paper are *Neogonodactylus bredini* (Manning), *Lysiosquilla scabricauda* (Lamarck), *Bigelowina biminiensis* (Bigelow), *Coronis scolopendra* Latreille, *Squilla empusa* Say, and *Gibbesia neglecta* (Gibbes). The questionable record of *Squilla rugosa* Bigelow by Archer (1948) is discussed. A review of the life history, ecology, distribution, and new northern Gulf of Mexico records is provided here for each of these species. Figures and an illustrated key are also presented.

## INTRODUCTION

Prior to the monograph by Manning (1969), stomatopod records for the Gulf of Mexico (GOM) were scattered throughout the literature. Manning consolidated much of that work and included new records in his materials. In a later work Camp (1973) reviewed the literature for the GOM taxa and added new distribution records for the Florida west coast. Thirteen species in 8 genera were listed and reviewed; yet, most of these records occurred in waters south of Cedar Key, Florida, and in depths greater than 10 m. More recent works on GOM Stomatopoda include material from southern Florida and consist mainly of records from deeper than 10 m; however, this group continues to be overlooked in the waters of the northern GOM.

Over the past several years, using yabby pumps, benthic dredges, and trawls, we have collected 6 species of Stomatopoda from northern GOM shallow, inshore marine and brackish-water habitats, less than 10 m in depth, between the Apalachicola River, Florida, and Port Aransas, Texas. New locality records are established for several of the species collected during our study. Synonyms are restricted to name changes; for full synonymies prior to 1968, refer to Manning (1969).

Museums mentioned in this paper are abbreviated as USNM (National Museum of Natural History, Smithsonian Institution, Washington, DC) and GCRL (The University of Southern Mississippi, Gulf Coast Research Laboratory, Ocean Springs, Mississippi). Total length (TL) and carapace length (CL) were measured in millimeters (mm) according to Manning (1969).

## AN ARTIFICIAL KEY TO THE STOMATOPODA (CRUSTACEA: HOPLOCARIDA) FROM THE SHALLOW, INSHORE WATERS OF THE NORTHERN GOM

- 1a. Telson without sharp median carina; median carina, if present, inflated or broadly rounded (Figures 1a–e) . . . . 2
- 1b. Telson with sharp median carina (Figures 2a–b) (Superfamily Squilloidea). . . . . 5
- 2a. Dactylus of raptorial claw unarmed (Figure 3a); propodi of 3rd and 4th maxillipeds slender, not beaded or ribbed ventrally (Figure 3b); telson with accessory median carinae present (Figures 3c–d). . . . . *Neogonodactylus bredini*
- 2b. Dactylus of raptorial claw armed with 6 or more teeth (Figures 4a,d); propodi of 3rd and 4th maxillipeds broad, beaded, or ribbed ventrally (Figure 4b); telson with accessory median carinae absent (Figures 4c, e–f) (Superfamily Lysiosquilloidea). . . . . 3
- 3a. First 2 walking legs with endopod having distal segment elongate (Figure 5a); uropod having endopod with proximal part of outer margin not folded (Figure 5b) (Family Lysiosquillidae) . . . . . *Lysiosquilla scabricauda*
- 3b. First 2 walking legs with endopod having distal segment ovate or subcircular (Figure 6a); uropod having endopod with proximal part of outer margin folded dorsally onto itself (Figures 6b–c) (Family Nannosquillidae). . . 4
- 4a. Telson, dorsal surface with 5 or more spines in fan-shaped series (Figure 7c) . . . . . *Bigelowina biminiensis*
- 4b. Telson, dorsal surface unarmed (Figure 8d). . . . . *Coronis scolopendra*

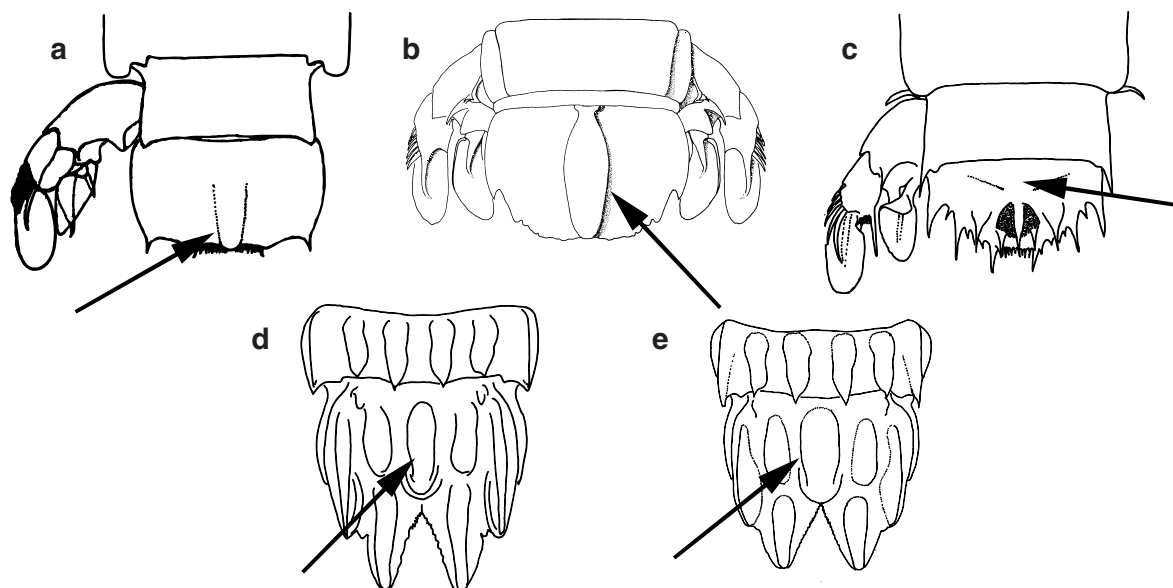


Figure 1. a) *Coronis scolopendra* Latreille, 1828, last abdominal somite, telson, and uropod (arrow indicates slight median carina). b) *Lysiosquilla scabricauda* (Lamarck, 1818), last abdominal somite, telson, and uropods (arrow indicates slight median carina). c) *Bigelowina biminiensis* (Bigelow, 1893), last abdominal somite, telson, and uropod (arrow indicates slight median carina). d–e) *Neogonodactylus bredini* (Manning, 1969). d) male last abdominal somite and telson (arrow indicates broad, rounded median carina). e) female last abdominal somite and telson (arrow indicates broad, rounded median carina); (setae omitted for clarity) (a, redrawn from Manning 1969: Figure 24b; c, redrawn from Manning 1969: Figure 15c; d, redrawn from Manning 1969: Figure 87b; e, redrawn from Manning 1969: Figure 88b).

5a. Fifth thoracic somite with lateral process produced as a spatulate process, not a sharp spine (Figure 9c); dactylus of raptorial claw with 5 teeth (Figure 9e); mandible without palp (not shown) . . . . . *Gibbesia neglecta*

5b. Fifth thoracic somite with lateral process produced as a sharp spine, not spatulate (Figure 10c); dactylus of raptorial claw with 6 teeth (Figure 10e); mandible with palp (not shown) . . . . . *Squilla empusa*

**SYSTEMATIC ACCOUNT**

**Class Malacostraca Latreille, 1802**  
**Subclass Hoplocarida Calman, 1904**  
**Order Stomatopoda Latreille, 1817**  
**Suborder Unipeltata Latreille, 1825**  
**Superfamily Gonodactyloidea Giesbrecht, 1910**  
**Family Gonodactylidae Giesbrecht, 1910**  
*Neogonodactylus bredini* (Manning, 1969)  
 (Figures 1d–e, 3a–d)

**Synonyms.** *Gonodactylus bredini* Manning 1969: 315; *Neogonodactylus bredini* Manning 1995: 80.

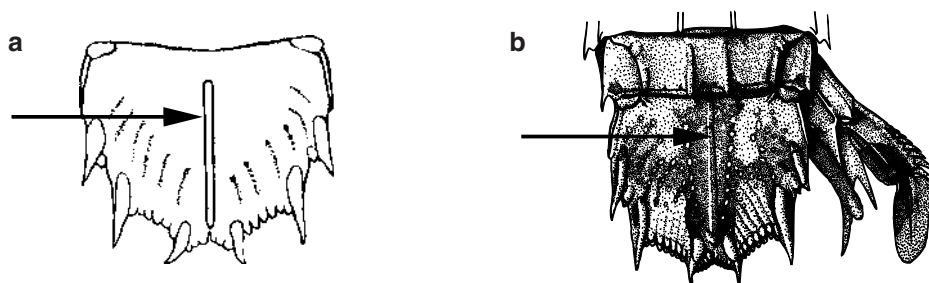


Figure 2. a) *Gibbesia neglecta* (Gibbes, 1850), telson (arrow indicates sharp median carina). b) *Squilla empusa* Say, 1818, last abdominal somite, uropod, and telson (arrow indicates sharp median carina); (setae omitted for clarity) (a, modified from Camp 1973: Figure 13; b, from Manning 1969: Figure 58e).

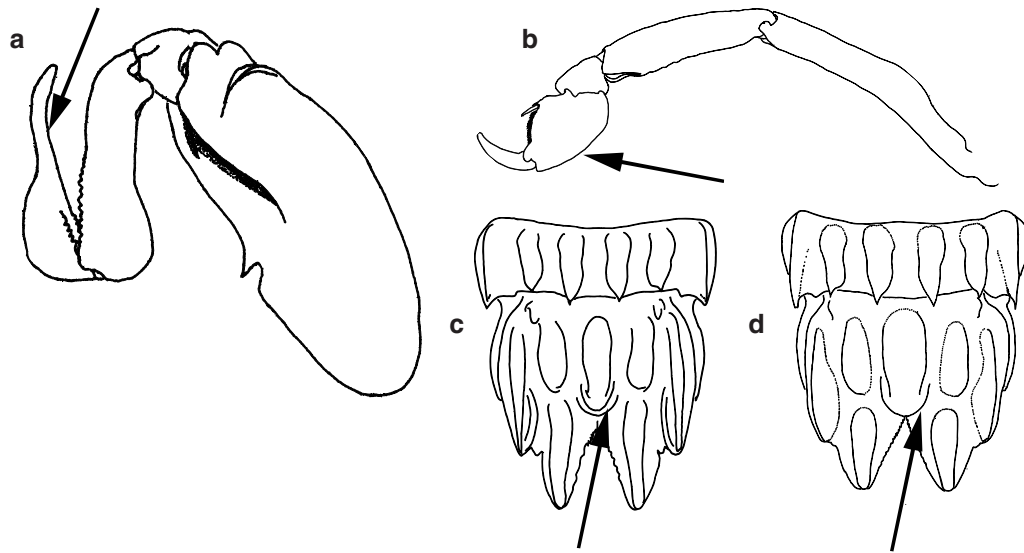


Figure 3. a–b) *Neogonodactylus bredini* (Manning, 1969). a) right, raptorial claw, inner view (arrow indicates dactylus without teeth). b) right third maxilliped (arrow indicates slender propodus, lacking beads or ribs on ventral surface). c) male last abdominal somite and telson (arrow indicates accessory median carina). d) female last abdominal somite and telson (arrow indicates accessory median carina); (setae omitted for clarity) (c, redrawn from Manning 1969: Figure 87b. d) redrawn from Manning 1969: Figure 88b).

**Diagnosis.** Rostral plate with basal portion much broader than long, long apical spine present. Cornea sub-cylindrical; ocular scales narrow, longer than wide. Mandible with palp present. Raptorial claw with dactylus unarmed. First and second abdominal somites with posterior margins evenly concave. Third and 4th abdominal somites with posterior margin of pleura straight to slightly concave. Fifth abdominal somite with posterolateral margins rounded or angled slightly, lateral margins unarmed. Sixth abdominal somite with 6 variously sized carinae, submedian and intermediate carinae often with apices unarmed. Telson usually slightly broader than long; dorsal surface unarmed; median carina often inflated, armed at most with apical tubercle; short accessory carina present, occasionally inflated, often fused posteriorly; lateral tooth not produced into a spine; submedian carina at most longitudinally pitted, never sulcate; intermediate carina with accessory carina medially. Uropod with endopod broad, inner margin straight to slightly convex, occasionally faintly sinuous, not strongly tapering towards apex.

**Distribution.** Western Atlantic, from Bermuda, the Carolinas, and the northern GOM through the Caribbean to Aruba, Bonaire, and Curaçao off the coast of South America (Manning 1969).

**New Northern GOM Records.** Adult, TL 55 mm, CL 16 mm, West Pass jetties, St. Andrew Bay, Florida, 27 July 1995, 1.0 m, rock wash, coll. J.M. Foster, id. by J.M. Foster, GCRL 2055.

**Habitat.** In sponges, on rocks, and among corals from the littoral zone to 15 m (Manning 1969).

**Remarks.** Closely related to *N. oerstedii* Hansen, 1895, *N. bredini* was distinguished as a distinct species by Manning (1969) and was transferred from the genus *Gonodactylus* to the newly erected genus *Neogonodactylus* by Manning (1995), based largely upon the morphology of carinae of the telson. Members of the genus *Neogonodactylus* are distinguished by having an accessory carina located medial to the intermediate carina.

Manning and Heard (1997) differentiated the new species *N. wenerae* from *N. bredini* based upon habitat, size, and the morphology of the rostrum; however, recent molecular work has shown that the distinction between *N. bredini* and *N. wenerae* is confused at best (Paul Barber, pers. comm., Boston University, Boston, MA). Preliminary results have shown *N. bredini* to be a Caribbean species whereas *N. wenerae* appears to be a northern species, being distributed in Bermuda, the Carolinas, Georgia, parts of Florida and possibly the GOM. Depth does not seem to be a factor in separating the 2 species as previously believed. When these 2 species are eventually separated by molecular means, it is possible that morphological characters will be identified. Based upon current literature, the specimen collected at the West Past jetties is referred to *N. bredini*; however, current molecular studies of this species complex may reveal this specimen to be *N. wenerae*.

Although numerous records for *N. bredini* exist for the GOM, primarily from the results of cruises of the *Albatross* (1884–1887), the *Fish Hawk* (1880–1916), the *Pelican* (1938–1940), the *Oregon* (1950–1964), and the *Hernan Cortez* (1965–1967) (Manning 1969, Camp 1973),

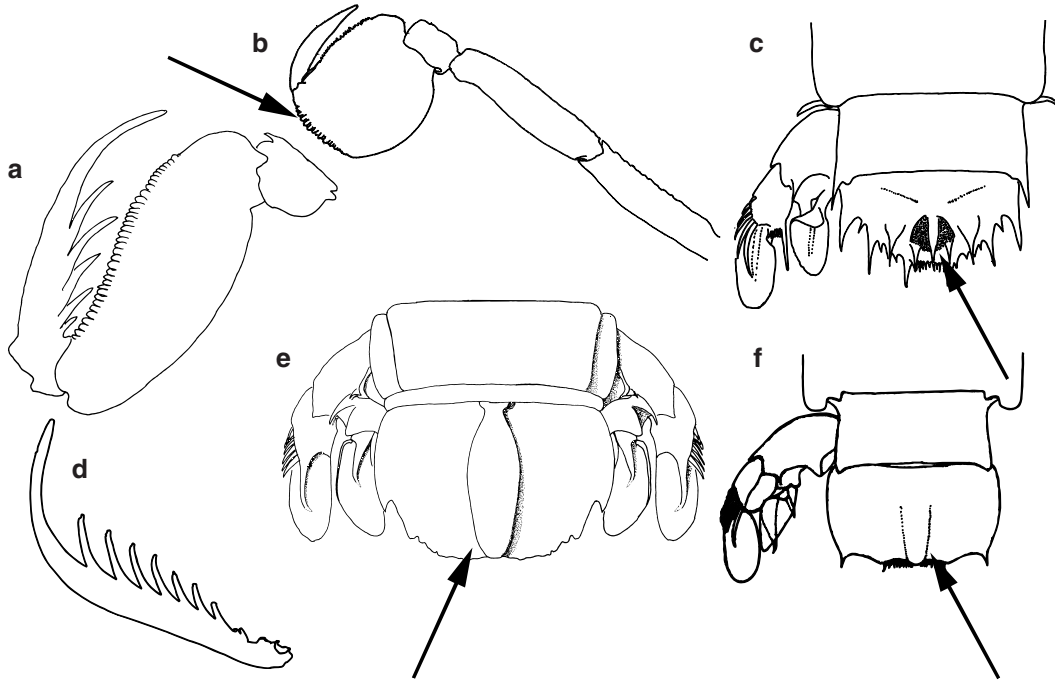


Figure 4. a–c) *Bigelowina biminiensis* (Bigelow, 1893). a) raptorial claw. b) right third maxilliped (arrow indicates beaded ventral margin of propodus). c) last abdominal somite, telson, and uropod (arrow indicates that accessory median carina is lacking). d–e) *Lysiosquilla scabricauda* (Lamarck, 1818). d) dactylus of raptorial claw. e) last abdominal somite, telson, and uropods (arrow indicates accessory median carina lacking). f) *Coronis scolopendra* Latrielle, 1828, last abdominal somite, telson, and uropod (arrow indicates accessory median carina is lacking); (setae omitted for clarity) (a, redrawn from Manning 1969: Figure 15b; c, redrawn from Manning 1969: Figure 15c; d, from Camp 1973: Figure 2; f, redrawn from Manning 1969: Figure 24b).

the occurrence of an adult specimen at the rock jetties at the mouth of St. Andrew Bay represents the northern-most record for *N. bredini* in the GOM. Whereas the specimen collected on the West Pass jetties was from a depth of about 1 m, most of the previous records for the GOM are from depths of over 10 m. Based upon its habitat and distribution in the southern part of its range, this species may occur widely on hard and live bottom substrata in the shallow waters of the northeastern GOM.

#### Superfamily Lysiosquilloidea Giesbrecht, 1910

#### Family Lysiosquillidae Giesbrecht, 1910

#### *Lysiosquilla scabricauda* (Lamarck, 1818)

(Figures 1b, 4d–e, 5a–b)

**Synonyms.** *Squilla scabricauda* Lamarck 1818: 188; *Lysiosquilla scabricauda*—Miers 1880: 7.

**Diagnosis.** Eyes very large; cornea bilobed; ocular scales triangular, separate, apices acute, inclined anterior-

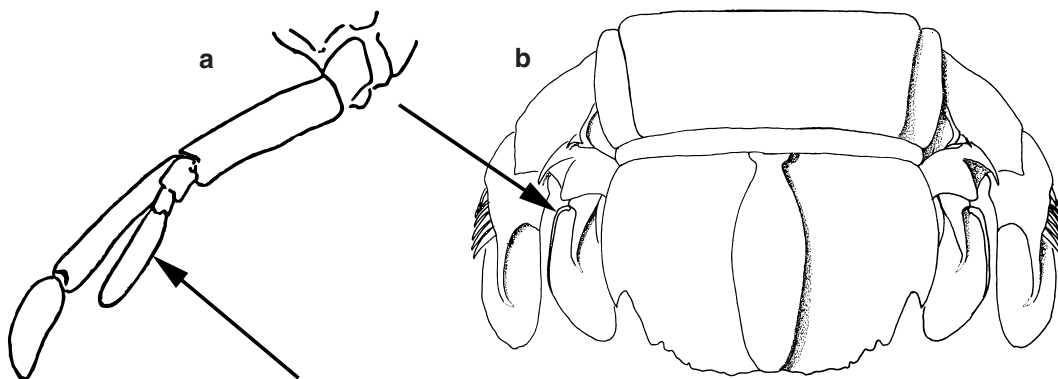


Figure 5. a–b) *Lysiosquilla scabricauda* (Lamarck, 1818). a) first walking leg (arrow indicates elongate endopod). b) last abdominal somite, telson, and uropods (arrow indicates endopod lacking dorsal fold); (setae omitted for clarity).



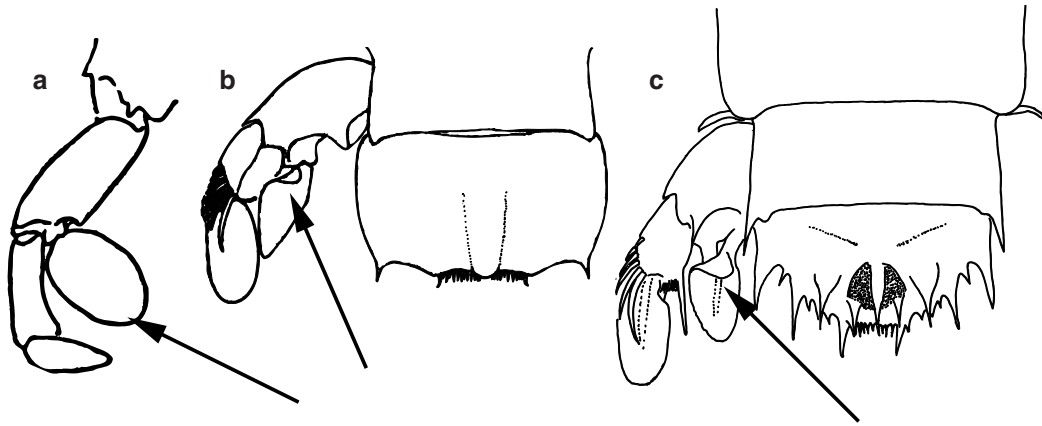


Figure 6. a–b) *Coronis scolopendra* Latreille, 1828. a) first walking leg (arrow indicates ovate endopod). b) last abdominal somite, telson, and uropod (arrow indicates endopod of uropod with outer margin folded dorsally). c) *Bigelowina biminiensis* (Bigelow, 1893), last abdominal somite, telson, and uropod (arrow indicates endopod of uropod with outer margin folded dorsally); (setae omitted for clarity) (b, redrawn from Manning 1969: Figure 24b; c, redrawn from Manning 1969: Figure 15c).

ly. Antennule with peduncle short, little more than half length of carapace; antennular processes produced into broad, anteriorly directed spines. Raptorial claw with dactylus having 8 to 11 teeth, typically 9 to 10. Eighth thoracic somite having high ventral keel with posterior apex rounded or sharp. Fourth abdominal somite with dorsal surface smooth; lateral margins unarmed. Fifth abdominal somite with dorsal surface smooth, slightly wrinkled laterally; posterior margin with spinules, diminishing medially. Sixth abdominal somite with dorsal surface roughened; triangular spine in front of articulation of uropod. Telson rectangular to ovate, broader than long; dorsal surface irregularly roughened with minute tubercles, tubercles increasing in size and density near lateral margins; lateral margins smooth or with series of small spinules; median carina broad and rounded. Uropod with endopod elongate, 2.5 times wide as long, proximal portion of endopod not folded over dorsal surface of endopod.

**Distribution.** In the western Atlantic, from Bermuda, the Bahamas, South Carolina, and the GOM through the Caribbean to southern Brazil, sublittoral to 55 m (Manning 1969, Camp 1973).

**New Northern GOM Records.** Adult, Grand Lagoon, St. Andrew Bay, Florida, June, 1977, 2 m, muddy sand substrata, hook and line, coll. J.M. Foster, id. by J.M. Foster, personal collection of author (JMF); subadult, northwestern tip of Horn Island, Mississippi Sound, Mississippi, subtidal coarse sand substratum, May 1989, 1.5 m, coll. R.W. Heard, id. by R.W. Heard, personal collection of author (RWH); Adult, Dog Keys Pass, Mississippi Sound, on R/V *Hermes*, 2 August 1968, 5.0 m, id. by C.E. Dawson, GCRL 881.

**Habitat.** Burrows in sand, emerging from burrows at night, possibly for feeding (Manning 1969).

**Remarks.** This species, which attains a maximum TL of 275 mm, represents the largest western Atlantic species of stomatopod and is widely distributed.

#### Family Nannosquillidae Manning, 1980

##### *Bigelowina biminiensis* (Bigelow, 1893)

(Figures 1c, 4a–c, 6c, 7a–d)

**Synonyms.** *Lysiosquilla biminiensis* Bigelow 1893: 102; *Acanthosquilla biminiensis*—Manning 1963: 320; *Bigelowina biminiensis* Schotte and Manning 1993: 574.

**Diagnosis.** Rostral plate rectangular, with single apical spine. Eyes very small; cornea subglobular. Antennule having peduncle short, less than half as long as carapace; antennular processes produced as sharp, anteriorly directed spines when viewed laterally. Mandible with palp present; 5 epipods present. Raptorial claw with dactylus having 6 to 7 teeth. Telson twice as broad as long; dorsal surface having 5 subequal teeth; no sharp median carina; 4 to 5 submedian denticles, outer largest, inner smallest; 4 denticles between movable submedian tooth and next fixed tooth. Uropod having endopod with proximal portion folded over dorsal surface.

**Distribution.** Bimini, Bahamas; eastern and northern GOM; Texas (Sabine Pass); Cuba; Brazil (Manning 1969).

**New Northern GOM Records.** West Pass, St Andrew Bay, Florida, 13 October 1990, 1.0 m, sand substrata, coll. J.M. Foster, id. by R.B. Manning, USNM 268895; adult, TL 55 mm, CL 14 mm, southwest tip of Horn Island, Mississippi, 9 March 2000, 1.5 m, sand substrata, coll. R.W. Heard, id. by R.W. Heard, GCRL 2056.

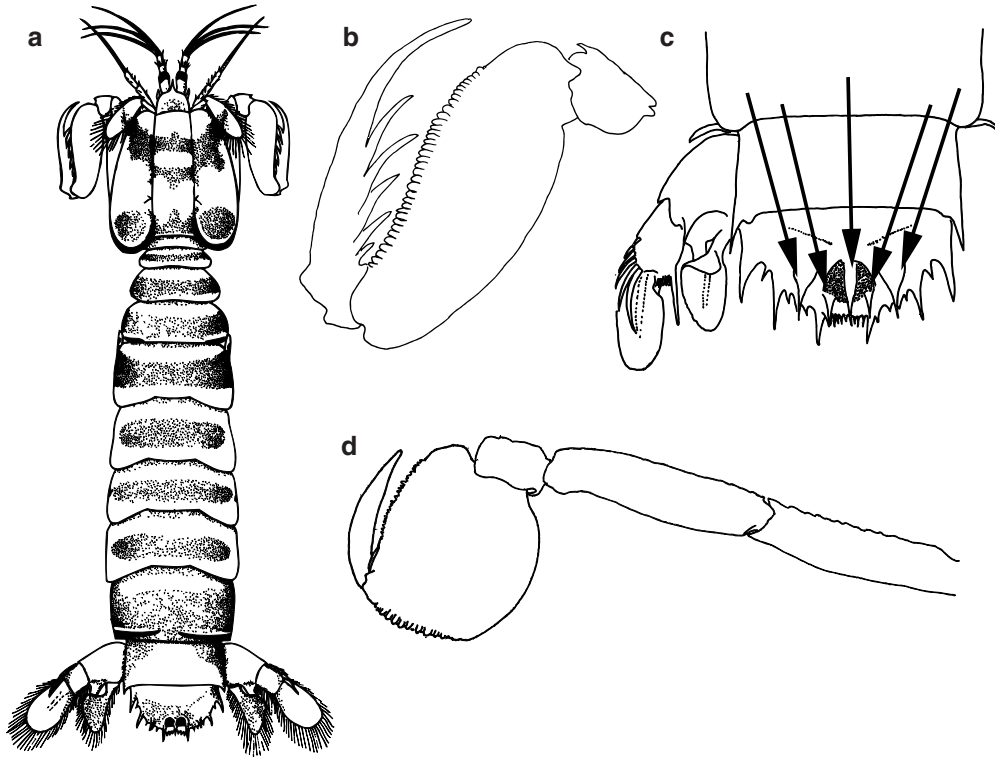


Figure 7. a–d) *Bigelowina biminiensis* (Bigelow, 1893). a) dorsal view. b) raptorial claw. c) last abdominal somite, telson, and uropod (arrows indicate 5 dorsal spines). d) right third maxilliped; (setae omitted for clarity) (a, from Manning 1969: Figure 14; b, redrawn from Manning 1969: Figure 15b; c, redrawn from Manning 1969: Figure 15c).

**Habitat.** Burrows in sand, sublittoral to 24 m (Manning 1969)

**Remarks.** *Bigelowina biminiensis* was transferred from the genus *Acanthosquilla* by Schotte and Manning (1993) based largely upon the morphology of the rostral plate and the shape of the cornea. The rostral plate, which is triangular in *Acanthosquilla* sensu stricto, is rectangular in members of the genus *Bigelowina*. Also, in members of *Bigelowina*, the cornea is subglobular, whereas that of *Acanthosquilla* is bilobed.

***Coronis scolopendra* Latreille, 1828**

(Figures 1a, 4f, 6a–b, 8a–d)

**Synonyms.** *Coronis scolopendra* Latreille 1828: 474; *Lysiosquilla excavatrix* Brooks 1886: 10; *Coronis excavatrix* Lunz 1935: 153.

**Diagnosis.** Rostral plate as broad as or slightly broader than long; lateral margins broadly rounded; single apical spine present. Eyes very small; cornea subglobular; ocular scales fused. Antennule having peduncle less than half as long as carapace; antennular processes as sharp, anteriorly directed spines on either side of rostral plate.

Raptorial claw with dactylus having 13 to 17 teeth. Telson much broader than long; dorsal surface smooth; median carina broadly rounded; row of 8 to 21 denticles along median of posterior margin; single submedian tooth and single sharp lateral tooth present on either side of telson. Uropod having endopod with proximal portion folded over dorsal surface.

**Distribution.** Intermittent between North Carolina and Brazil (see Rodrigues and Manning 1992).

**New Northern GOM Records.** Adult, TL 54 mm, CL 13 mm, West Pass jetties, St. Andrew Bay, Florida, 13 October 1990, 1.0 m, subtidal sand, yabby pump, coll. J.M. Foster, id. by J.M. Foster, GCRL 2058; adult, TL 71 mm, CL 13 mm, Bid-a-wee Beach, Panama City Beach, Florida, subtidal on sand bars, 2 May 1995, 1.0–1.5 m, coll. J.M. Foster, id. by J.M. Foster, GCRL 2059; 1 adult, TL 66 mm, CL 12 mm, 3 subadults, TL 27 mm, CL 6 mm, TL 30 mm, CL 6 mm, TL 34 mm, CL 7 mm, Bid-a-wee Beach, Panama City Beach, Florida, 10 May 2000, 1.5 m, coll. G.O. Faust, id. by R.W. Heard, GCRL 2060; Horn Island, 100 m offshore, 1.0 m, 14 June 1952, coll. H.J. Bennett, id. by C.E. Dawson, GCRL 628 (as *Lysiosquilla excavatrix* (Brooks, 1886)); juvenile, west end of Horn

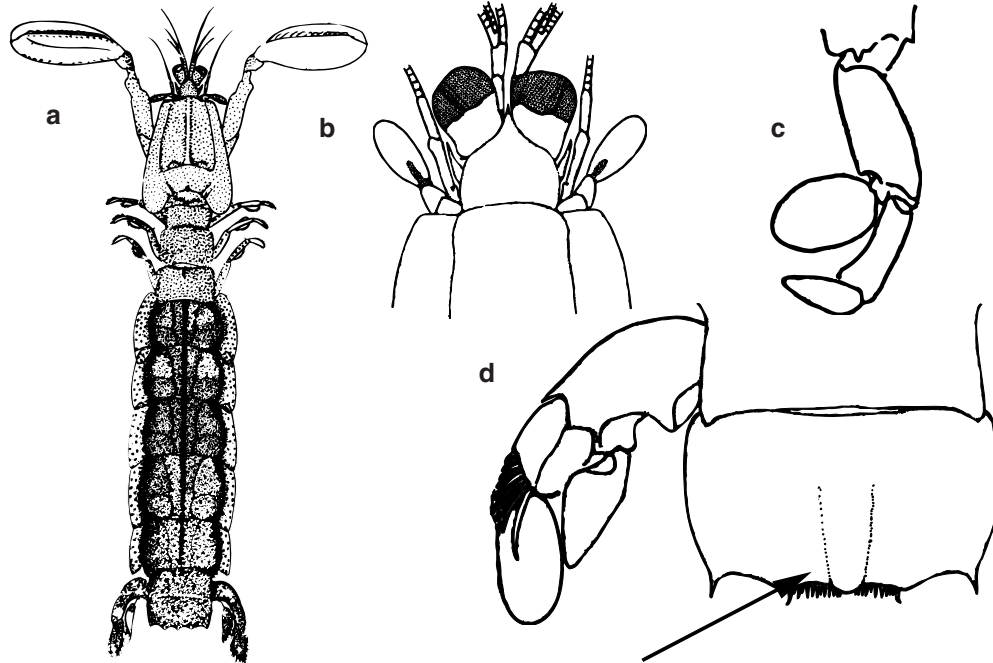


Figure 8. a–d) *Coronis scolopendra* Latreille, 1828. a) dorsal view. b) anterior portion of body. c) first walking leg. d) last abdominal somite, telson, and uropod (arrow indicates dorsal surface of telson lacking spines); (setae omitted for clarity) (a, from Manning 1969: Figure 23; b, redrawn from Manning 1969: Figure 24a; d, redrawn from Manning 1969: Figure 24b).

Island, Mississippi Sound, Mississippi, 10 April 1968, less than 1.0 m, coll. D. Farrell, id. by C.E. Dawson, GCRL 840 (as *Lysiosquilla excavatrix* (Brooks, 1886)).

**Habitat.** Clean sand substrata in shallow water adjacent to beaches.

**Remarks.** Manning and Reaka (1989) determined that *C. scolopendra* Latreille, 1828, is the senior synonym of *C. excavatrix* Brooks, 1886. This interesting stomatopod is relatively common on coarse sand bottoms on both the north and south sides of the barrier islands of the north-eastern GOM. Its burrows, which often have more than one opening, can reach depths of over 25 cm. According to R.B. Manning (pers. comm.), *C. scolopendra* preys on small fishes. The males and females of *C. scolopendra* exhibit sexual dimorphism, with adult females being dark blackish-brown and adult males pale translucent yellow (Heard, pers. obs.). Specimens are relatively easy to collect using a yabby pump. For additional information see Pearse et al. (1942), Manning (1969), Manning and Reaka (1989), Rodrigues and Manning (1992), and Manning and Heard (1997).

**Superfamily Squilloidea Latreille, 1802**

**Family Squillidae Latreille, 1802**

***Squilla empusa* Say, 1818**

(Figures 2b, 10a–e)

**Synonyms.** *Squilla empusa* Say 1818: 250.

**Diagnosis.** Rostral plate subquadrate, broader than long; distinct median carina present; apical spine absent. Eyes large; cornea bilobed; ocular scales separated, rounded or obtusely angled laterally. Antennule with peduncle as long as carapace or nearly so; antennular processes tapering to blunt, anterolaterally directed spines. Mandible with palp present; 5 epipods present. Raptorial claw with dactylus having 6 teeth; carpus with dorsal ridge having 2 to 3 irregular tubercles. Carapace with dorsal surface minutely punctate; anterolateral spines strong, extending to or slightly beyond base of rostral plate; posterolateral margins angled anteriorly; strong carinae prominent, median carina, anterior to cervical groove, bifurcate anteriorly only. Telson as broad as long, sharp marginal spines present; prelateral lobes present; median carina sharp; denticles rounded; single lateral marginal tooth per side; 6 to 9 intermediate marginal teeth per side; 3 to 5 submedian marginal teeth per side.

**Distribution.** Western Atlantic from Maine through the GOM to Surinam (Manning 1969).

**New Northern GOM Records.** Adult, TL 142 mm, CL 37 mm, Sulfur Point, St Andrew Bay, Florida, 5 May



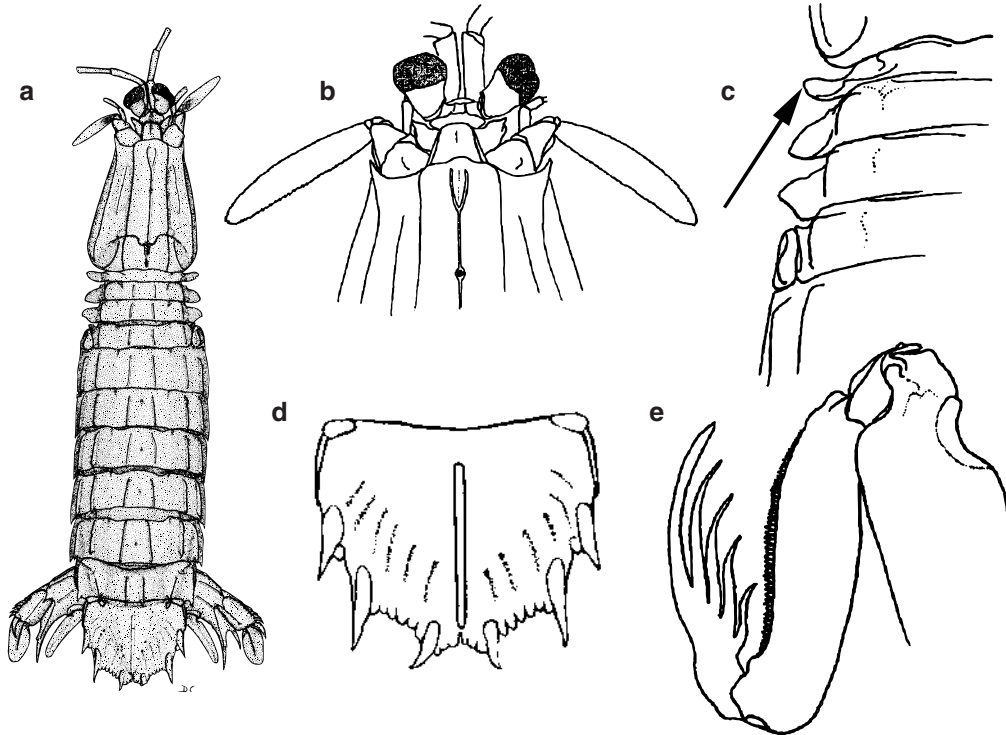


Figure 9. a–e) *Gibbesia neglecta* (Gibbes, 1850). a) dorsal view. b) anterior portion of body. c) lateral processes of 5th to 7th thoracic somites (arrow indicates spatulate 5th lateral process). d) telson. e) raptorial claw (note 5 teeth on dactylus); (setae omitted for clarity) (a, from Camp, 1973: Figure 13; b, from Manning and Heard, 1997: Figure 14a; c, from Manning and Heard, 1997: Figure 14c; d, modified from Camp, 1973: Figure 13; e, from Manning and Heard, 1997: Figure 14b).

1977, 8.0 m, mud substrata, trawl, coll. J.M. Foster, id. by J.M. Foster, GCRL 2061; south of Grand Isle, Louisiana, 4 November 1959, 20 m, coll. C.E. Dawson, id. by C.E. Dawson, GCRL 363; northwest of Horn Island, Mississippi Sound, Mississippi, 22 July 1951, 6.0 m, coll. H. Hefley, id. by F.A. Chace, GCRL 542.

**Habitat.** Burrows in sand or mud sediments, 0–154 m (Manning 1969).

**Remarks.** This is the most common large stomatopod in the near shore coastal waters of the northern GOM. It is commonly caught in trawls on sand-mud or mud bottoms around Ship and Horn Islands, Mississippi. This mantis shrimp has been found in the stomachs of *Cobia* (*Rachycentron canadum*) caught in Mississippi waters (G. Meyer, unpub. data). Manning (1969) has summarized the biological information on this well-known mantis shrimp.

The single record of *Squilla rugosa* Bigelow, 1893, as *Chloridella rugosa* sensu Rathbun, 1899, in Archer (1948) is questionable. This species is common in deeper waters, but outside of the record by Archer (1948), it has not been recorded in the shallow waters of the north central GOM. It seems likely that the specimens collected during Archer's survey were actually *S. empusa*, which is a com-

mon species in the Mississippi Sound. *Squilla rugosa* can be separated from *S. empusa* by the rugose dorsal surface of the telson. Without access to the specimens Archer examined, it is impossible to be certain of their identity.

#### *Gibbesia neglecta* (Gibbes, 1850)

(Figures 2a, 9a–e)

**Synonyms.** *Squilla neglecta* Gibbes 1850: 200; *Gibbesia neglecta* - Manning and Heard 1997: 313.

**Diagnosis.** Rostral plate truncate, broader than long, having apex transverse, not rounded; rostral spine absent; distinct median carina present. Eyes large; cornea bilobed; ocular scales separate, truncate. Antennule having peduncle shorter than carapace; antennular processes with margins sinuous, apex blunt, spine absent. Mandible with palp absent; 5 epipods present. Raptorial claw with dactylus having 5 teeth. Carapace with dorsal surface roughened; strong carinae present, median carina, anterior to cervical groove, bifurcate at both ends. First through 4th abdominal somites having 4 pairs of carinae, median carina absent. Telson dorsoventrally compressed, about as long as broad; median carina very sharp with long apical spine; sharp

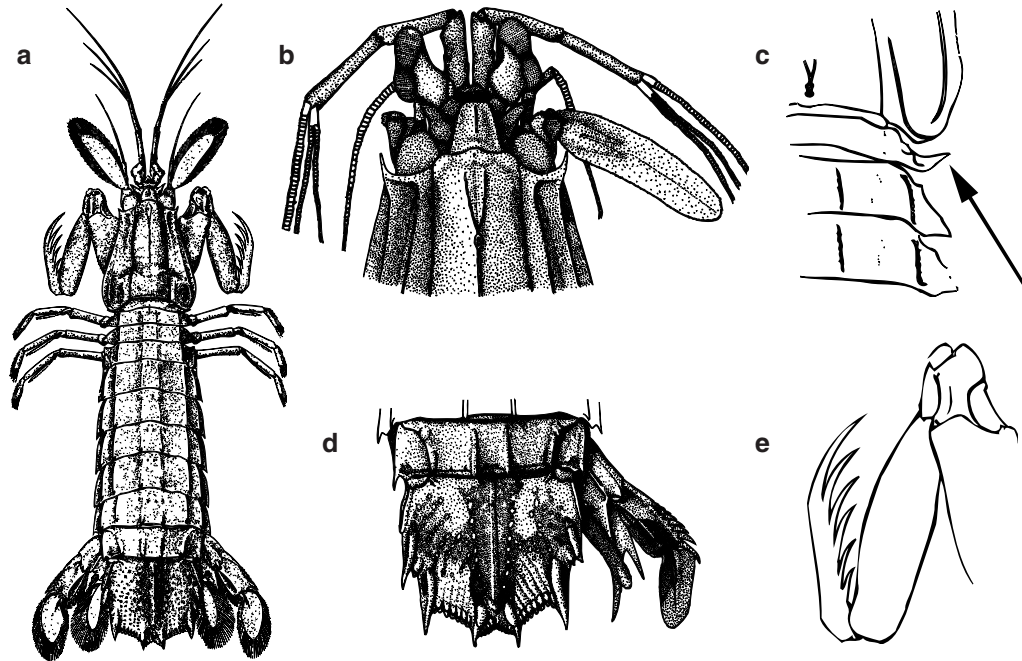


Figure 10. a–e) *Squilla empusa* Say, 1818. a) dorsal view. b) anterior portion of body. c) lateral processes of 5th to 7th somites (arrow indicates sharp 5th lateral process). d) last abdominal somite, uropod, and telson. e) raptorial claw (note 6 teeth on dactylus); (setae omitted for clarity) (a, from Rathbun, 1893: pl. 274; b, from Manning, 1969: Figure 58a; c, from Manning, 1969: Figure 58d; d, from Manning, 1969: Figure 58e; e, modified from Manning, 1969: Figure 59).

marginal teeth present; 2 to 4 submedian denticles, apices fixed; 5 to 7 intermediate denticles present.

**Distribution.** Atlantic coast of the United States, in the Carolinas, Georgia, and northeastern Florida. In the GOM on the western and northwestern coast of Florida, and on Texas coast (Manning 1969).

**New Northern GOM Records.** ca. 1 mile NE of Ship Island, Mississippi Sound, Mississippi, 5 February 1973, mud substrata, coll. R.W. Heard, id. by R.W. Heard, GCRL 1064.

**Habitat.** Littoral zone to 64 m (Manning 1969); mud and mud-sand substrata in bays and near coastal waters, mesohaline to polyhaline.

**Remarks.** This species is distinguished from *S. empusa* by having 5 teeth on the dactylus of the raptorial claw instead of 6; and by having a spatulate lateral process on the 5th thoracic somite rather than a spine-like process as in *S. empusa*.

Manning and Heard (1997) recently transferred this species from the genus *Squilla* Latreille, 1802 to the monotypic genus *Gibbesia* Manning and Heard, 1997. This species appears to be much less common than *S. empusa* in the coastal waters of the northern GOM. The single adult specimen collected by RWH at the northern entrance of Dog Keys Pass (NE of Ship Island) during 1973 constitutes the first record of this species in Mississippi coastal waters.

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