

# MEMOIRS OF THE HOURGLASS CRUISES

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## CRABS OF THE FAMILY PARTHENOPIDAE (CRUSTACEA BRACHYURA: OXYRHYNCHA) WITH NOTES ON SPECIMENS FROM THE INDIAN RIVER REGION OF FLORIDA

By

ROBERT H. GORE and LIBERTA E. SCOTTO<sup>1</sup>

### ABSTRACT

Eight species (*Cryptopodia concava*, *Heterocrypta granulata*, *Mesorhoea sexspinosa*, *Parthenope agona*, *P. fraterculus*, *P. serrata*, *P. granulata*, and *Solenolambrus tenellus*) in five genera of parthenopid crabs were captured in a 28-month systematic sampling program at ten stations (6-73m) along two transects in the Gulf of Mexico on the central western Florida shelf. These collections were supplemented by additional material (including an additional species, *Parthenope pourtalesii*), sampled over a two-year period (1973-75) from the continental shelf along the central eastern Florida coast. Twenty-two species of the family Parthenopidae are known from the western Atlantic; twelve occur in the Gulf of Mexico. Species considered herein are tropical in affinity, with only two (*Parthenope pourtalesii* and *Heterocrypta granulata*) occurring farther north than Cape Hatteras. Four additional Floridan species (*Leiolambrus nitidus*, *Solenolambrus decemspinus*, *S. typicus*, and *Tutankhamen cristatipes*) not collected during either survey are also treated.

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<sup>1</sup>Smithsonian Institution, Ft. Pierce Bureau, Ft. Pierce, Florida 33450.

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Seven of the thirteen Floridan species have Eastern Pacific analogues. Where equal effort occurred, more specimens in all species were dredged than were trawled, probably because of their semi-burrowing habits. *Parthenope agona* and *P. fraterculus* were more abundant in night samples than in day samples; other species showed little difference in abundance between day and night samples. Presence of ovigerous females in samples indicated that several species (*Parthenope agona*, *P. serrata*, *P. granulata*, *P. fraterculus*, *Heterocrypta granulata*, and *Solenolambrus tenellus*) have extended breeding seasons. Stomach contents analyses indicated omnivorous diet. In the Hourglass study area, *Heterocrypta granulata*, *Parthenope serrata*, and *P. granulata* were numerically dominant at depths of 6, 18, and 37 m respectively; *P. agona* dominated at both 55 and 73 m depths.

## INTRODUCTION

The Parthenopidae, or pentagon crabs (Fowler, 1912), an unusual and distinctive family of decapod crustaceans presently thought to be related to Cancroid or Majid crabs (see Monod, 1956; Yang, 1971), occur in all tropical and subtropical seas. They are widely distributed in the western Atlantic Ocean and the Gulf of Mexico, with records from Massachusetts, U.S.A., to vicinity of São Paulo, Brazil, and from the Yucatan Peninsula eastward to the Bahama Islands. In this region, members of the family occur predominantly in the sublittoral zone in habitats of sand, shell hash, and coralline rubble over a depth range from the intertidal zone to 618 m. The unusual shapes of these crabs often cause them to be mistaken for small pebbles or pieces of rocks; thus the family also has the common name of pebble crabs. Hay and Shore (1918) referred to the group as "long-armed crabs". Seven genera and 13 species which have been collected or recorded, or would be expected to occur, on the eastern or western Floridan continental shelves are treated in this report. The majority of specimens of this study was collected by the Florida Department of Natural Resources (FDNR) for the Hourglass Project, 1965-1967, in the Gulf of Mexico off the central western Florida coast (Figure 1). The remaining specimens were collected either by R/V *Joie de Vivre*, Florida Institute of Technology (FIT), Melbourne, R/V *Gosnold* of the Smithsonian Institution-Harbor Branch Foundation Scientific Consortium for the Indian River Coastal Zone Survey (IRCZS), or R/V *Hernan Cortez* while sampling during a FDNR Rock Shrimp Project (RSP). These latter investigations were carried out off the central eastern Florida coast between approximately 27° and 30° N latitude (Figure 2).

Not all species recorded from the aforementioned regions were taken by these vessels. In order to complete the survey of the family, several specimens of species recorded from the Gulf of Mexico and northwestern Atlantic, but not collected by either FDNR or IRCZS research vessels, were examined in collections taken in the Caribbean Sea by R/V *John Elliot Pillsbury* of the University of Miami Rosenstiel School of Marine and Atmospheric Sciences. These specimens are noted under the respective species accounts below. The total material consisted of 1104 specimens in 474 lots and forms the subject of this report.

Previous major taxonomic studies on the family Parthenopidae included the monographic work by Rathbun (1925) on American spider crabs, the Siboga Expedition Report by Flipse (1930), and Garth's (1958) monograph on the Oxyrhyncha in the eastern Pacific Ocean. However, the species which occur in the northwestern Atlantic Ocean and the Gulf of Mexico were descriptively considered only in Rathbun's (1925) monograph. Several other primarily local studies were carried out by Rodrigues da Costa (1961, 1968, 1969) and Righi (1966), both of whom treated species in the coastal area of Brazil.

Although the family Parthenopidae is relatively well known in the western North Atlantic, distribution records are badly out of date, especially for the zoogeographic transitional areas along the central eastern and

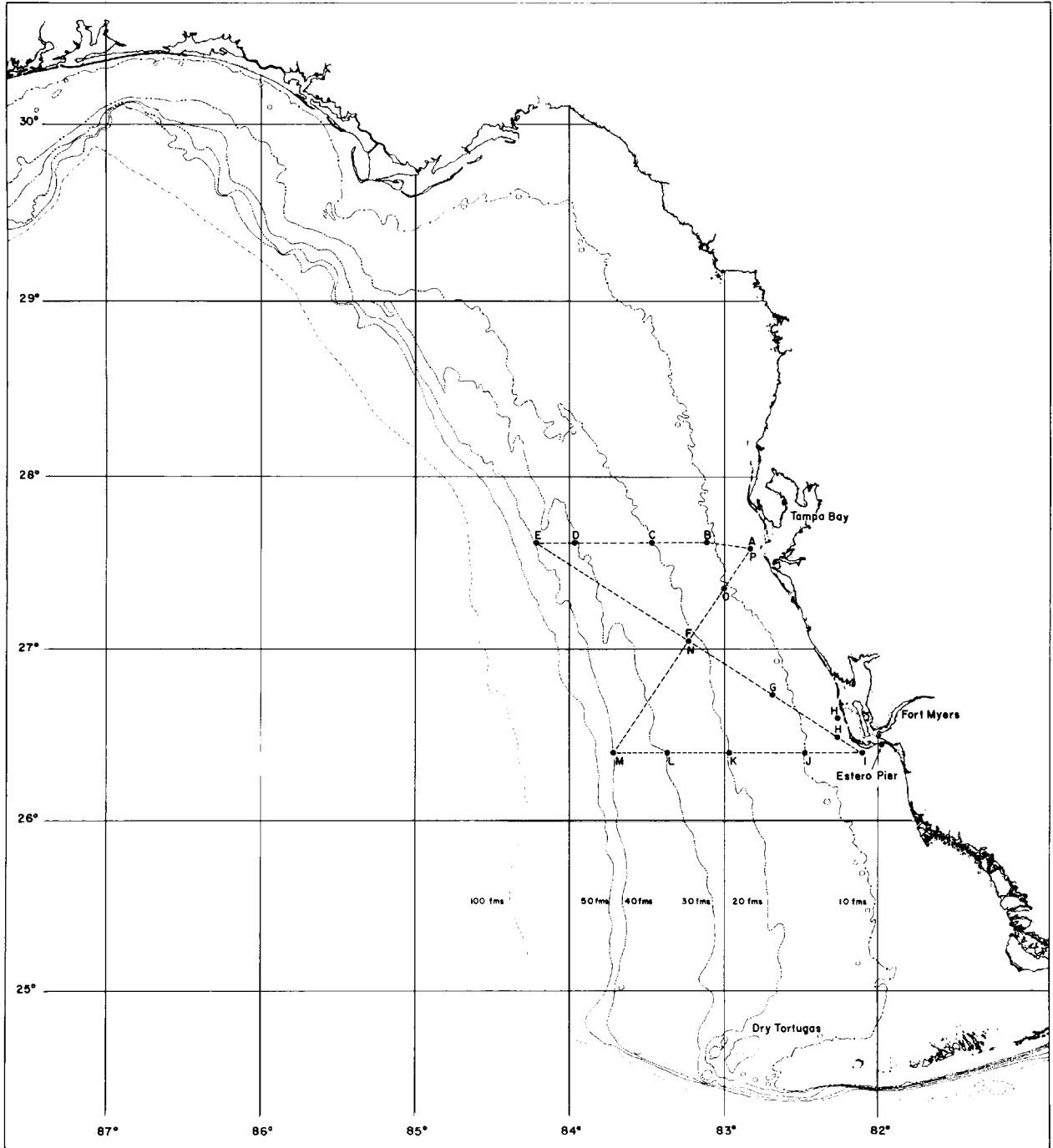


Figure 1. Hourglass cruise pattern and station locations.

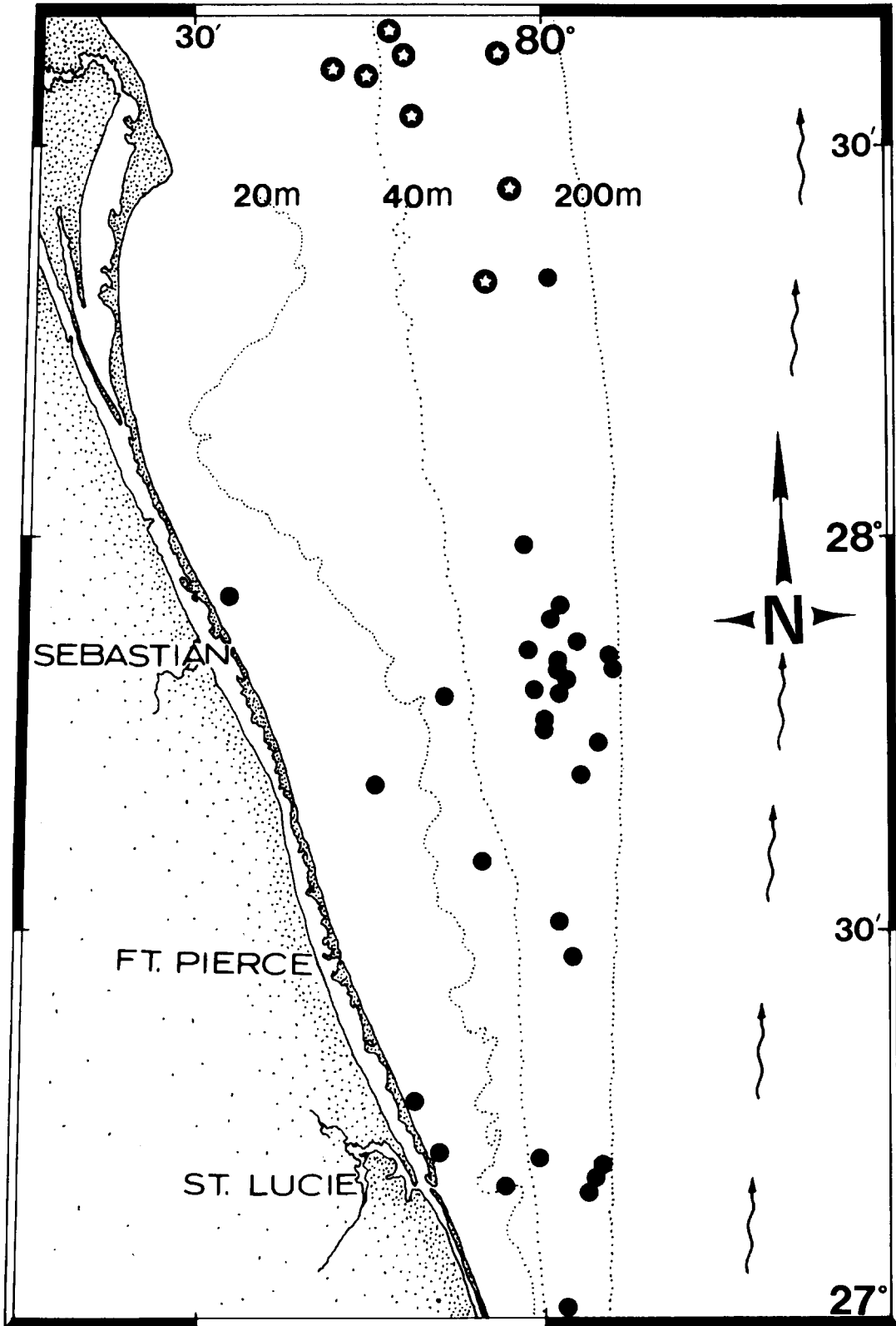


Figure 2. Indian River region on central eastern Florida coast; stations sampled by R/V *Gosnold* (dots) and R/V *Hernan Cortez* (starred dots), 1970-1974, at which parthenopid crabs were collected.

western Florida coasts between latitudes 26° and 28° N. The material collected during the Hourglass Cruises, and that obtained later chiefly by R/V *Gosnold*, thus allows us to fill in the distributional gaps for several species in these regions. In addition, gonopod studies were made which, besides being the first ever for nearly all the species here considered, also revealed that *Parthenope serrata* actually consisted of two species, viz. true *P. serrata* (H. Milne Edwards, 1834) and a previously relegated junior subjective synonym, *P. granulata* (Kingsley, 1879). We have re-established the latter species in another paper (Gore, 1977).

## ACKNOWLEDGEMENTS

We thank the staff of the Marine Research Laboratory, Florida Department of Natural Resources, especially Messrs. D. K. Camp, W. G. Lyons, and N. H. Whiting, who arranged for the loan of the specimens and provided both technical information and identification of some material. The following persons were instrumental in searching for, or comparing specimens for us, or sending us type material and other specimens from their respective institutions: Mr. C. Allan Child, National Museum of Natural History, Washington, D. C.; Drs. W. D. Dawson, University of South Carolina, Columbia; Jacques Forest, Muséum National d'Histoire Naturelle, Paris; Bernd Hauser, Muséum d'Histoire Naturelle, Geneva; Lipke B. Holthuis, Rijksmuseum van Natuurlijke Historie, Leiden; R. W. Ingle, British Museum (Natural History), London; Herbert Levi, Museum of Comparative Zoology, Harvard; Austin B. Williams, National Marine Fisheries Service, Systematics Laboratory, Washington, D. C.; and Torben Wolff, Universitetets Zoologiske Museum, Copenhagen. We thank the captains, crews and scientific parties of R/V *Hernan Cortez*, R/V *Joie de Vivre*, and R/V *Gosnold*. Drs. G. L. Voss and F. M. Bayer, University of Miami, Rosenstiel School of Marine and Atmospheric Sciences, loaned material from the R/V *Pillsbury* collections. Dr. Raymond B. Manning, National Museum of Natural History, Washington, D. C., critically read the manuscript and obtained some literature which was not available to us; Drs. L. G. Abele, Florida State University, Tallahassee, John S. Garth, Allan Hancock Foundation, University of Southern California, Los Angeles, and L. B. Holthuis provided advice on taxonomic procedure or criticism of earlier drafts of the manuscript. Mr. William Davenport photographed the specimens.

## METHODS AND MATERIALS

The Parthenopidae from the ten fisheries stations of the Hourglass Cruises were collected over a 28-month period by 30 min tows using 20 ft flat and balloon trynets during nighttime sampling of Stations A-E and I-M, and post-cruise daytime sampling of Stations B, C, and D. Bottom organisms were concurrently sampled by a heavy steel box dredge, 13" X 16" X 30", lined with ¾" X 1 ½" metal screening, pulled for 15 min at each fishery station. Fishery station locations are listed in Table 1. Further information on the sampling program is contained in Joyce and Williams (1969).

Continental shelf collections off the central eastern coast of Florida were obtained during a one-year sampling program in 1973-74 conducted by the Indian River Coastal Zone Study. Sampling gear used during this investigation consisted of 5 to 15 min tows with standard box and pipe dredges over areas of coralline rubble, and 30 to 60 min tows with 10 and 20 ft otter trawls and 5 ft Blake trawls, depending on substratum composition and water depth. Most were carried out over smooth bottom areas as determined by precision depth recorder traces. Exact station locations for R/V *Gosnold* cruises are listed in Table 2.

TABLE 1. LOCATION AND DEPTH OF HOURGLASS STATIONS PRODUCING PARTHENOPIDAE.

Station	Latitude*	Longitude*	Established Depth (meters)	Approximate Nautical Miles Offshore*
A	27°35'N	82°50'W	6.1	4, due W of Egmont Key
B	27°37'N	83°07'W	18.3	19, due W of Egmont Key
C	27°37'N	83°28'W	36.6	38, due W of Egmont Key
D	27°37'N	83°58'W	54.9	65, due W of Egmont Key
E	27°37'N	84°13'W	73.2	78, due W of Egmont Key
I	26°24'N	82°06'W	6.1	4, due W of Sanibel Island Light
J	26°24'N	82°28'W	18.3	24, due W of Sanibel Island Light
K	26°24'N	82°58'W	36.6	51, due W of Sanibel Island Light
L	26°24'N	83°22'W	54.9	73, due W of Sanibel Island Light
M	26°24'N	83°43'W	73.2	92, due W of Sanibel Island Light

\*U. S. Coast and Geodetic Chart No. 1003, dated June 1966

R/V *Joie de Vivre* sampling was confined to an area immediately east of Ft. Pierce Inlet, using a modified box dredge termed a Kirtley dredge, during July and August, 1973. Water depths varied from 20 to 80 m.

Specimens from a two-year fishery study on *Sicyonia brevirostris* Stimpson, 1871 (rock shrimp) by FDNR were obtained from monthly collections of triplicate samples on two consecutive nights, using a 22 ft otter trawl (Kennedy et al., 1977). Locations and depths of rock shrimp project stations producing Parthenopidae are listed in Table 3.

All specimens were measured to the nearest 0.1 mm using either dial calipers or a stage micrometer calibrated to an ocular reticle in a Wild M-5 stereomicroscope. The following measurements were used for analysis of each specimen:

1) Rostral Carapace Length (RCL), measured from the tip of the rostrum (or if broken, the point nearest the anterior margin) along the dorsal midline to the posterior margin of the carapace. This is the only measurement listed for each species under "Material examined."

2) Spined Carapace Width (SCW), measured from the tip of each lateral spine transversely across the widest part of the carapace.

3) Carapace Width (CW), measured from the base of each lateral protuberance, tooth or spine (if broken) across the widest part of the carapace. All of these measurements were used in analysis of length-width ratios, and incorporated into species descriptions when appropriate.

4) Propodus:Dactylus Ratio (PDR), measured along the extensor margin of the propodus of the last walking leg, from the junction of the carpus to the dactylar junction; and similarly along the dactylus from the junction of the propodus. These measurements are used to distinguish between juvenile and some adult specimens of *Parthenope fraterculus* and *P. pourtalesii*, and must be made with extreme care, preferably under a dissecting microscope, in order to ensure proper application in determining the correct species.

Text figures were made using a camera lucida on either a Wild M-5 dissecting stereomicroscope or M20 compound microscope.

Determination of sex in specimens was based on the presence or development of gonopods in males and

TABLE 2. STATION DATA FOR PARTHENOPIDAE FROM THE CENTRAL EASTERN FLORIDA COAST COLLECTED BY THE R/V *GOSNOLD*.

Cruise	Station	Latitude	Longitude	Date	Depth (m)	Gear
220	226	27°41.2' N 27°42.0' N	80°14.5' W to 80°14.7' W	13 Feb 74	17	Small biological dredge
225	360	27°47.9' N 27°45.8' N	80°01.8' W to 80°02.3' W	21 Mar 74	50-46	10' otter trawl
229	407	27°15.5' N	80°11.6' W	16 Apr 74	9.5	Box dredge
	408	27°10.7' N 27°10.7' N	80°07.4' W to 80°07.5' W	16 Apr 74	13	10' otter trawl
	412	27°10.8' N 27°13.1' N	79°55.5' W to 79°56.6' W	17 Apr 74	122-111	20' otter trawl
	416	27°27.8' N	79°57.3' W	17 Apr 74	95	5' Blake trawl
230	427	27°55.3' N 27°56.4' N	80°27.7' W to 80°28.6' W	18 Apr 74	10	10' otter trawl
237	502	26°59.7' N	79°58.8' W	10 Jun 74	45	10' otter trawl
	514	27°47.1' N 27°43.5' N	80°08.6' W to 80°08.5' W	12 Jun 74	25	20' otter trawl
	515	27°34.5' N	80°05.3' W	12 Jun 74	27	20' otter trawl
242	601	27°12.3' N	80°00.4' W	14 Aug 74	49	Pipe dredge
245	695	27°30.3' N 27°29.0' N	79°59.0' W to 79°59.5' W	28 Aug 74	72	20' otter trawl
246	696	27°49.3' N	79°58.5' W	3 Sep 74	74	Pipe dredge
	698	27°54.0' N	79°59.0' W	3 Sep 74	64-70	Pipe dredge
	702	27°50.3' N	79°57.4' W	3 Sep 74	61-79	Pipe dredge
	709	27°44.3' N	79°58.0' W	4 Sep 74	72	Pipe dredge
	710	27°42.1' N	79°58.5' W	4 Sep 74	72	Pipe dredge
248	731	28°19.8' N 28°18.8' N	79°59.9' W to 79°59.8' W	17 Sep 74	95	20' otter trawl
	735	27°50.2' N	79°57.9' W	18 Sep 74	84-80	Box dredge
	737	27°51.8' N	79°58.0' W	18 Sep 74	83	Box dredge
	738	27°53.6' N	79°58.3' W	18 Sep 74	70	Box dredge

TABLE 2. STATION DATA FOR PARTHENOPIDAE FROM THE CENTRAL EASTERN FLORIDA COAST COLLECTED BY THE R/V *GOSNOLD*. (Continued)

Cruise	Station	Latitude	Longitude	Date	Depth (m)	Gear
	740	27°59.1' N 27°57.1' N	80°02.3' W to 80°02.4' W	18 Sep 74	50	10' otter trawl
	741	27°50.8' N 27°49.5' N	80°01.0' W to 80°00.4' W	18 Sep 74	50	10' otter trawl
249	748	27°45.6' N	80°00.0' W	11 Feb 75	72	Box dredge
250	758	27°48.8' N	79°58.8' W	18 Feb 75	75-85	Box dredge
	759	27°49.6' N	79°58.9' W	18 Feb 75	75-85	Box dredge
262	772	27°10.8' N	80°04.2' W	12 Aug 75	18	Box dredge
	783	27°45.7' N	79°59.5' W	13 Aug 75	64	Box dredge
	785	27°50.0' N	79°58.3' W	13 Aug 75	70-90	Box dredge
267	793	27°11.4' N	79°57.2' W	2 Dec 75	78	Box dredge
	796	27°09.5' N 27°10.5' N	79°56.9' W to 79°56.9' W	2 Dec 75	75-74	Pipe dredge

TABLE 3. LOCATIONS AND DEPTHS OF ROCK SHRIMP PROJECT STATIONS PRODUCING PARTHENOPIDAE.

Station	Latitude	Longitude	Established Depth (m)
01A	28°35.9' N	80°18.6' W	26
001	28°34.8' N	80°14.8' W	33
002	28°39.4' N	80°13.2' W	40
003	28°37.0' N	80°11.2' W	40
004	28°32.5' N	80°10.3' W	40
005	28°37.1' N	80°04.8' W	64
076	30°05.4' N	80°29.5' W	37
180	29°15.8' N	80°13.9' W	64
222	28°51.5' N	80°08.7' W	64
251	28°27.2' N	80°02.9' W	64
262	28°19.0' N	80°04.5' W	55

the presence of gonopores and/or developed pleopods in females. Because few illustrations exist for the gonopods of any members of the Parthenopidae, we include herein figures of these appendages from eleven species known from the Gulf of Mexico and tropical western Atlantic. Differences in gonopod structure are important in the family and, as will be shown, may allow distinction of closely related species.

Gut content analyses were performed on 10% of the Hourglass Parthenopidae (5% of *Parthenope*



*agona*), usually including specimens from several stations at which each species was collected. Whenever feasible, equal numbers of males, females, ovigerous females and juveniles were examined. Analyses were performed by excising a square portion of the carapace dorsally in the area of the gastric region and removing the entire stomach. The stomach was teased apart and examined under both low-power dissecting and high-power compound microscopes. Because of difficulty with taxonomic identifications, gut contents were denoted only in general categories.

## SYSTEMATICS

Eight genera and 22 species of Parthenopidae are presently known to occur in the western Atlantic Ocean, including the Gulf of Mexico and the Caribbean Sea. Two of these species are exceedingly rare. *Thyrolambrus astroides* Rathbun, 1894 has been collected only off Cuba, and *Solenolambrus portoricensis* Rathbun, 1924 is known from the unique type specimen off Puerto Rico. *Parthenope meridionalis* (Boschi, 1965), *P. aylthoni* Righi, 1965, *P. guerini* (Brito Capello, 1871), *Solenolambrus brasiliensis* Rodrigues da Costa, 1961, *Heterocrypta aloysioi* Rodrigues da Costa, 1968, *H. lapidea* Rathbun, 1901, and *H. tommasii* Rodrigues da Costa, 1959 are known from northeastern South America, Brazilian, or Uruguayan waters. These species, except *H. lapidea*, are not considered further in this report.

Of 15 species known from the western North Atlantic, 12 occur in the Gulf of Mexico, and all are rather widely distributed throughout the tropical regions of the Caribbean. Only two species occur north of Cape Hatteras, North Carolina. *Parthenope pourtalesii* (Stimpson, 1871) and *Heterocrypta granulata* (Gibbes, 1850) have been collected in the vicinity of Cape Cod, Massachusetts, although their primary distribution, based on published records, seems to be throughout the Gulf of Mexico. *Tutankhamen cristatipes* (A. Milne Edwards, 1880) is known only from the Florida Straits and St. Vincent in the Lesser Antilles.

In the following account, material examined for each species is arranged by ship station, then by chronological order of capture, then by gear used. Specimen data include number of specimens by sex, range of sizes, and female reproductive state when apparent. With the exception of R/V *Pillsbury* material which was returned to the University of Miami, specimens we examined have been divided among the Marine Research Laboratory, St. Petersburg, Florida (FSBC I), the Smithsonian Institution Reference Museum, Ft. Pierce, Florida (SIFP), the Muséum National d'Histoire Naturelle, Paris, France (MNHNP), the Muséum d'Histoire Naturelle de Genève, Geneva, Switzerland (MHNG), the Rijksmuseum van Natuurlijke Historie, Leiden, Netherlands (RNHL), the Universitetets Zoologiske Museum, Copenhagen, Denmark (UZMC), and the National Museum of Natural History, Washington, D. C. (USNM). Specimens sent to MNHNP have been assigned accession numbers only; catalogue numbers have not yet been assigned. Specimens sent to UZMC have received only accession date designations; accession and catalogue numbers have not been assigned. No numbers have been received from MHNG. Numbers of specimens captured at each station, each month, are listed in Appendix II for the Hourglass collections in the eastern Gulf of Mexico.

Preliminary processing procedure of Hourglass samples at the Marine Research laboratory during the first half of the sampling program dictated that, after retaining an adequate and representative series of well-known species for the Invertebrate Reference Collection, some subsequent specimens were identified, recorded, and discarded. The "well-known" *Parthenope serrata*, since learned to actually consist of two species, and *P. agona* were among species so treated. These data are listed within species accounts as discarded material and are only included in further analyses where other evidence indicates such consideration appropriate. All specimens from the second half of the sampling program were retained.

In species accounts, we relied heavily on familial, generic and specific diagnoses and descriptions provided by Rathbun (1925). In many cases we supplemented these descriptions with additional observations based on our examined material, making special effort to incorporate noticeable variations in morphology into species descriptions to provide a more complete means of identification for this often exasperatingly variable family. This is especially true in regard to juvenile stages of some species, the young of which rival the Portunidae in difficulty of identification.

Synonymies for each species are complete species bibliographies gathered from all the literature known to us, and include original descriptions, first use of a name in its presently accepted combination, and references to the species in other systematic and biological literature.

The following generic and species key is taken in large part from Rathbun (1925), and the more recent update of those keys by Garth (1958). Species marked with an asterisk (\*) are known to occur in waters contiguous to Florida, but were not collected by either R/V *Hernan Cortez* or R/V *Gosnold* during our investigations. Following the key are systematic accounts of all species collected during the Hourglass Cruises and by R/V *Gosnold* or R/V *Hernan Cortez* along the central eastern Florida coast, supplemented by R/V *Pillsbury* collections from the Caribbean Sea.

## KEY TO GENERA AND SPECIES OF PARTHENOPIDAE FROM WATERS OFF THE FLORIDAN PENINSULA

(Modified from Rathbun, 1925, and Garth, 1958)

1. Carapace not laterally expanded over ambulatory legs ..... 2
1. Carapace expanded to form vault concealing ambulatory legs ..... 12
2. Carapace tuberculate or eroded ..... 3
2. Carapace smooth, except for few strong spines ..... 8
3. Carapace equilaterally subtriangular; basal antennal article long, almost or completely reaching orbital hiatus ..... *Tutankhamen cristatipes* (A. Milne Edwards)\*
3. Carapace ovate-pentagonal or broadly triangular; basal antennal article short, not reaching orbital hiatus (Genus *Parthenope*) ..... 4
4. Carapace ovate-pentagonal, surface little carinate in adult; chelipeds at least twice as long as carapace ..... *Parthenope agona* (Stimpson)
4. Carapace broadly triangular, surface carinate or tuberculate, sides more or less rounded; chelipeds as above ..... 5
5. Carapace and chelipeds very flat; spine at end of main dorsal branchial ridge small ..... 6

5. Carapace very convex; spine at end of main dorsal branchial ridge large; chelipeds not flat . . . . . 7
6. Triangular spines on outer margin of chelipeds rounded posteriorly; carapace posterolateral spine directed laterally or nearly so; carapace moderately tuberculate; angle formed by posterolateral spine, gastric tubercle and outer orbital margin always distinctly less than 90° . . . . . *Parthenope serrata* (H. Milne Edwards)
6. Triangular spines on outer margins of chelipeds acute, margins straight; carapace posterolateral spine directed obliquely posteriad; carapace heavily tuberculate; angle formed by posterolateral spine, gastric tubercle and outer orbital margin always 90°, or nearly so . . . . . *Parthenope granulata* (Kingsley)
7. Dactyl of walking leg 4 about 1.3 times longer than propodus; carapace much broader than long; manus with 8-10 teeth on inner, 10-12 teeth on outer margin . . . . . *Parthenope pourtalesii* (Stimpson)
7. Dactyl of walking leg 4 about 1.4 times longer than propodus; carapace little, if any, broader than long; manus with 6-8 teeth on inner, 3-5 teeth on outer margin . . . . . *Parthenope fraterculus* (Stimpson)
8. Efferent branchial channels opening at middle of endostome as in Oxystomata (Figure 3) . . . . . *Mesorhoea sexspinosa* Stimpson
8. Efferent branchial channels opening at sides of endostome as customary in Oxrhyncha . . . . . 9
9. Carapace depressed, with strong lateral spine . . . . . *Leiolambrus nitidus* Rathbun\*
9. Carapace high, without strong lateral spine (Genus *Solenolambrus*) . . . . . 10
10. No spines or teeth on posterior or posterolateral margin; dorsal protuberance round . . . . . *Solenolambrus tenellus* Stimpson
10. Some teeth or spines on posterior or posterolateral margin; dorsal protuberance angular . . . . . 11
11. Not more than four teeth on posterior and posterolateral margins . . . *Solenolambrus typicus* Stimpson\*
11. Six teeth or spines on posterior and posterolateral margins; two median spines; spine near middle of branchial ridge . . . . . *Solenolambrus decemspinus* Rathbun\*
12. Carapace greatly expanded both laterally and posteriorly; pterygostomial region smooth, not ridged . . . . . *Cryptopodia concava* Stimpson
12. Carapace expanded laterally, not posteriorly; 1.1-1.5 times as wide as long; pterygostomial and subhepatic regions transversed by granulate or crenulate ridge . . . *Heterocrypta granulata* (Gibbes)

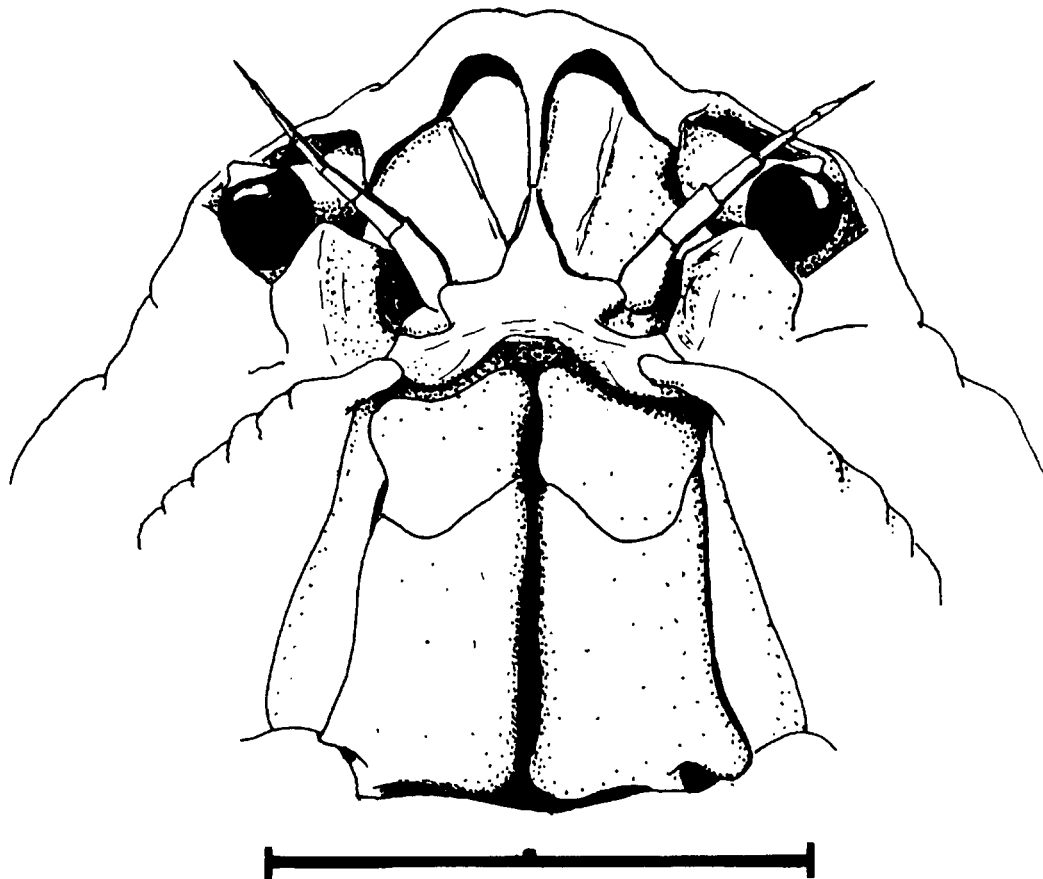


Figure 3. Mouth region of *Mesorhoea sexspinosa* Stimpson, showing efferent branchial channel opening at middle of endostome. Two millimeters indicated.

#### Family Parthenopidae MacLeay, 1838

**Diagnosis:** "Eyes usually retractile within small circular well-defined orbits; floor of orbit nearly continued to the front, leaving a hiatus usually filled by the second [article] of the antennary peduncle. Basal antennal [article] small, and deeply embedded between the inner angle of the orbit and the antennular fossae. Antennules folding a little obliquely." (Alcock, *in* Garth, 1958).

"Chelipeds not specially mobile, usually much longer and heavier than other legs, and with fingers bent on the hand at an angle toward the side with the fixed finger. Second article of antenna small, short, and not fused with epistome or front. Orbits well made. Hooked hairs almost always wanting. Male openings coxal. Palp of external maxilliped articulated at anterointernal angle of merus." (Borradaile, *in* Garth, 1958).

**Remarks:** The family is divided into two subfamilies, the extensive Parthenopinae (to which all of the American genera belong), and the smaller Eumedoninae, which is primarily Indo-West Pacific in distribution.

Subfamily Parthenopinae MacLeay, 1838

*Diagnosis*: "Carapace commonly equilaterally-triangular, sometimes sub-pentagonal or ovate-pentagonal, and sometimes almost semicircular or semielliptical in outline; cardiac and gastric regions usually deeply marked off from branchial regions on either side, making dorsal surface of carapace trilobed. Chelipeds vastly longer and more massive than ambulatory legs. Rostrum simple or obscurely trilobed." (Alcock, *in* Garth, 1958).

Gonopod 1 of variable length, more or less stout, robust, tapering apically or bluntly truncate, usually heavily armed with spines, spinules, setae or combination of all three. Gonopod 2 shorter than gonopod 1 (except in *Platylambrus carinatus* where it equals length of gonopod 1), recurved distally, tip appearing semispatulate, often with minute spinules or teeth. (Modified from Stephensen, *in* Garth, 1958).

Genus *Cryptopodia* H. Milne Edwards, 1834

*Cryptopodia* H. Milne Edwards, 1834, p. 360.

*Cryptopodia concava* Stimpson, 1871

Figures 4, 5 H-P

*Cryptopodia concava* Stimpson, 1871a, p. 137; A. Milne Edwards, 1878, p. 168, pl. 29, figs. 1-1c, 2-2c; 1880b, p. 5; Miers, 1881, p. 210 [discussion]; Rathbun, 1898, p. 261 [listed]; 1900, p. 515 [key]; 1901, p. 82; A. Milne Edwards and Bouvier, 1923, p. 360; Rathbun, 1925, p. 553, text-fig. 151, pl. 202, figs. 3, 4, pl. 282, figs. 6-11; Flipse, 1930, p. 82 [listed]; Rathbun, 1933, p. 42, text-fig. 37; Garth, 1958, pp. 471-473 [discussion]; Williams et al., 1968, p. 64; Rodrigues da Costa, 1969, p. 176; Coelho and Araújo Ramos, 1972, p. 206 [listed]; L. Pequegnat, 1975, p. 47 [listed].

*Material examined*: HOURGLASS STATION C: 1 ♂, 6.3; 3 January 1966; trawl; FSBC I 15124. — 1 juv., crushed; 2 June 1967; dredge; FSBC I 15125. — 1 ♂, 5.8; 1 July 1967; dredge; FSBC I 15126. — 1 ♂, 5.6; 1 ♀, 6.4; 11 July 1967; dredge; UZMC 15.I.1977. — 1 ♂, 6.8; 5 October 1967; dredge; USNM 156482. — HOURGLASS STATION D: 1 ♀, 7.1; 11 July 1966; dredge; USNM 156480. — 1 ♂, 3.6; 2 August 1966; trawl; FSBC I 15127. — 2 ♀, 5.8-6.0; 2 August 1966; dredge; FSBC I 3611. — 1 juv., molt; 9 November 1966; dredge; FSBC I 15128. — 1 ♂, 3.1; 28 February 1967; dredge; FSBC I 15129. — 2 juvs., 2.4-2.5; 3 March 1967; dredge; FSBC I 15130. — 1 ♂, 5.6; 21 May 1967; dredge; FSBC I 15131. — 1 ♂, 5.6; 3 ♀, 4.1-6.8; 12 July 1967; dredge; SIFP 89:2489. — HOURGLASS STATION E: 1 ♂, 6.3; 1 juv., crushed; 2 December 1966; dredge; FSBC I 15132. — 2 ♀, 3.3-4.1; 12 May 1967; dredge; USNM 156481. — 1 ♂, 5.3; 1 ♀, 7.1; 2 August 1967; dredge; SIFP 89:2486. — 1 ♀, 7.4; 6 October 1967; trawl; FSBC I 15133. — HOURGLASS STATION K: 1 ♂, 5.0; 5 July 1967; dredge; MNHNP acc. no. 7665. — HOURGLASS STATION L: 1 ♀, 6.3; 6 July 1966; trawl; FSBC I 15134. — 1 ♂, 5.7; 1 ♀, crushed; 6 July 1966; dredge; FSBC I 3171. — 3 ♂, 4.4-5.3; 1 ♀, 6.2; 5 September 1966; dredge; FSBC I 4271. — 1 ♀, 6.4; 13 October 1966; dredge; FSBC I 15135. — 1 ♂, 6.3; 13 January 1967; trawl; FSBC I 15136. — 2 ♀, 2.5, crushed; 16 February 1967; dredge; FSBC I 15137. — 1 ♂, crushed; 1 ♀, 6.4; 9 March 1967; trawl; UZMC 15.I.1977. — 1 ♂, 6.4; 1 ♀, 6.3; 8 April 1967; trawl; RNHL D 31398. — 1 ♀, 6.3, ovigerous; 12 October 1967; trawl; SIFP 89:2492. — 1 juv., 3.0; 15 November 1967; trawl; FSBC I 15138. — HOURGLASS STATION M: 2 ♀, 6.6-6.8; 5 September 1966; dredge; FSBC I 4505. — 1 ♀, crushed; 7 December 1966; dredge; FSBC I 15139. — 1 ♂, 3.1; 9 March 1967; dredge; FSBC I 15140. — EAST FLORIDA: RSP STATION 004: 1 ♂, 9.7; 15

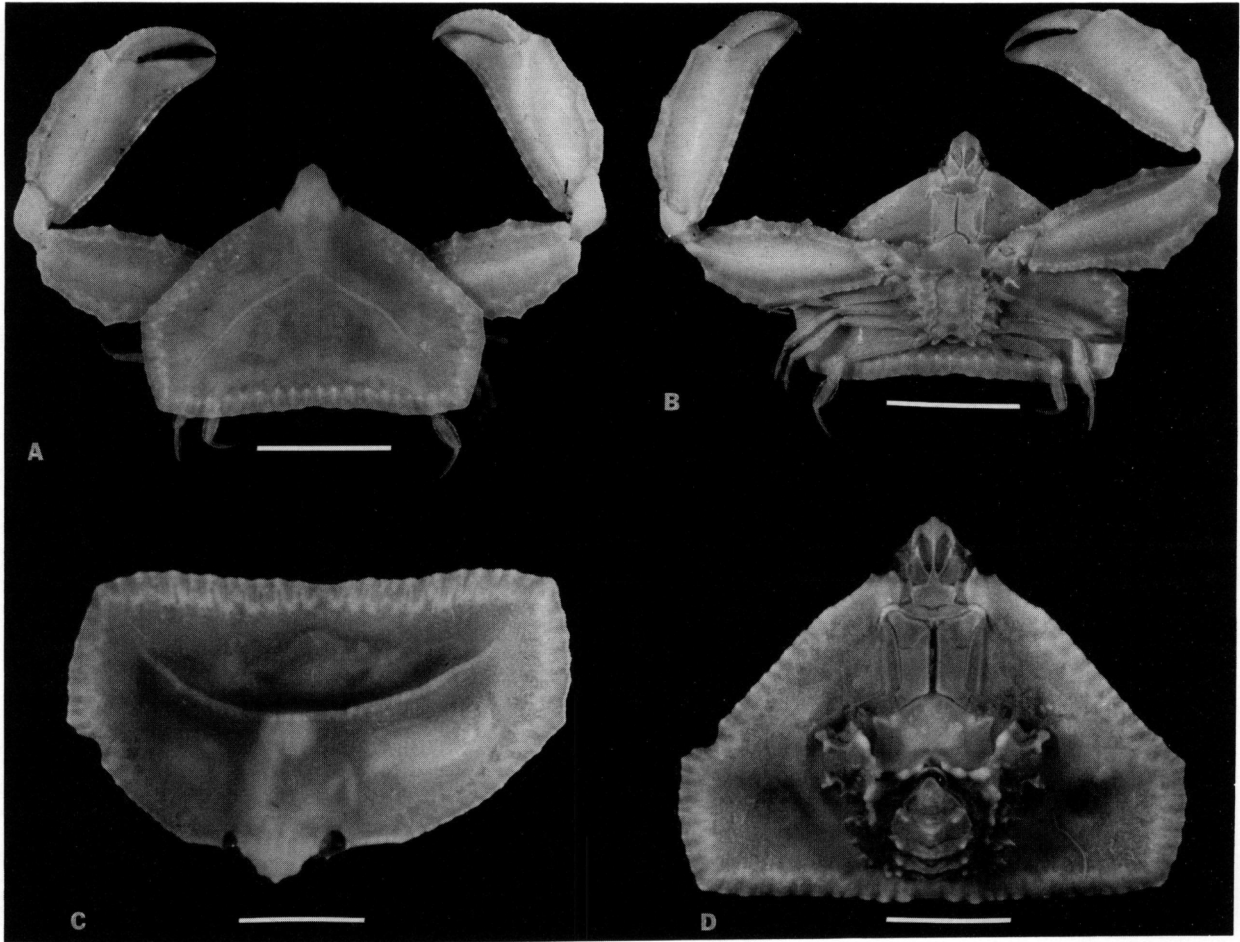


Figure 4. *Cryptopodia concava* Stimpson. A. male, off Cape Canaveral, Florida east coast, dorsal view; B. same, ventral view; scale lines = 5 mm; C. female, Gulf of Mexico, off Egmont Key, Florida, fronto-dorsal view; D. same, ventral view; scale lines = 2 mm.

May 1974; trawl; SIFP 89:1437. — 1 ♀, 8.0, ovigerous; 6 December 1974; trawl; SIFP 89:1996.

**Diagnosis:** Carapace 1.0 to 1.4 times as wide as long; rostrum distinctly broader than long. Branchial ridges convex anteriorly. (Modified from Rathbun, 1925).

**Description:** Carapace about 1.0-1.4 times wider than long (CW:RCL); anterolateral margins twice as long as posterolateral, meeting latter at obtuse, often rounded angle; posterolateral margins converging slightly posteriad; posterior margin straight to slightly emarginate in adult males and females, more noticeably emarginate in younger forms. Gastrobranchial ridges granulate, margins cut into small, rectangular or rounded, truncate teeth separated by closed fissures and often with denticulate margins. Lateral expansions of carapace not covering walking legs when latter extended. Surface overall smooth, shining, often appearing punctate under higher magnification. Front triangular, flattened or very slightly rounded dorsally near tip. Merus of maxillipeds triangular, with internal angle truncate.

Upper surface of hand and arm of cheliped somewhat expanded near middle, margins denticulate, with

few obscure teeth. Crests on walking legs denticulate.

Sternum very concave in front, with deep hollow fitting terminal somite of abdomen, with strong dentate crests prolonged to basal cheliped articles laterally. Gonopods as illustrated (Figure 5 H-P).

*Type-locality:* Conch Reef, southeastern Florida; 34 fms (62 m); type not extant (*vide* Rathbun, 1925).

*Distribution:* Cape Hatteras, North Carolina to the west coast of Florida; Bahama Banks; off St. Thomas, Virgin Islands; St. Vincent; Bahia, Brazil; 7-73 m. Hourglass Stations C, D, E, K, L and M; 37-73 m.

*East Pacific analogue:* *Cryptopodia hassleri* Rathbun, 1925 (*vide* Garth, 1958).

*Remarks:* According to Williams et al. (1968) and Soto (1972, unpubl.), the species is uncommon. However, the abundance of Hourglass material (48 specimens) suggests that it perhaps is only locally uncommon in nearshore areas. The species does appear to be more abundant in the Gulf of Mexico and Caribbean Sea than in Atlantic continental shelf waters off the eastern United States. Although slight variation in carapace morphology was noted between Gulf of Mexico and western Atlantic specimens (mainly in the degree of emargination), there was no significant variation in gonopod morphology among specimens from these regions as can be seen by comparing Figure 5 H-M and N-P.

### Genus *Heterocrypta* Stimpson, 1871

*Heterocrypta* Stimpson, 1871b, p. 102 [129].

### *Heterocrypta granulata* (Gibbs, 1850)

Figures 5 A-D, 6, 7

*Cryptopodia granulata* Gibbs, 1849, p. 21 [*nomen nudum*]; 1850, p. 173; 1856, p. 35 [woodcut]; Stimpson, 1860, p. 202; 1871b, p. 102 [discussion].

*Heterocrypta granulata:* Stimpson, 1871b, p. 102, 103 [discussion]; Verrill, 1873, p. 415 [discussion]; Verrill et al., 1873, p. 548; Coues and Yarrow, 1878, p. 297; Kingsley, 1878, p. 317; A. Milne Edwards, 1878, p. 166, pl. 29, fig. 4-4c; Kingsley, 1880, p. 391; A. Milne Edwards, 1880b, p. 5; Miers, 1881, p. 210 [discussion]; 1886, p. 103; Rathbun, 1897, p. 12; 1900, p. 515 [key]; Young, 1900, p. 112; Moreira, 1901, pp. 61, 129 [synonymy]; Rathbun, 1901, p. 83, text-fig. 13; 1905, pp. 1 [listed], 12; Fowler, 1912, p. 588; Sumner et al., 1913a, p. 141 [listed]; 1913b, p. 669; Hay and Shore, 1918, p. 464, pl. 39, fig. 9; A. Milne Edwards and Bouvier, 1923, p. 360; Balss, 1924, p. 181; Rathbun, 1925, pp. 555, 559 [discussion], text-fig. 152, pl. 203, figs. 1, 2, pl. 282, figs. 1-3; Flipse, 1930, p. 82; Rathbun, 1933, p. 43, text-fig. 38; Garth, 1940, p. 72 [discussion]; Pearse et al., 1942, p. 186; Behre, 1950, p. 23 [listed]; Capart, 1951, p. 109 [discussion]; Hedgpeth, 1953, p. 164 [discussion]; Wass, 1955, pp. 140 [key], 168; Garth, 1958, pp. 474, 479, 480 [discussion]; Parker, 1959, p. 2131 [listed], pl. 3, fig. 16a, b; Hulings, 1961, p. 219 [listed]; Tabb and Manning, 1961, p. 603; 1962, p. 62 [listed]; Dragovich and Kelly, 1964, p. 85; Bullis and Thompson, 1965, p. 13 [listed]; Williams, 1965, p. 270, text-figs. 251, 252E; Leary, 1967, pp. 45 [unnumbered fig.], 50; Rodrigues da Costa, 1968, p. 147 [discussion]; Fausto-Filho, 1970, p. 59; Rouse, 1970, p. 146; Lyons et al., 1971, p. 33; Coelho and Araújo Ramos, 1972, p. 206 [listed]; Felder, 1973, p. 45 [key], pl. 6, fig. 6; Williams, 1974, pp. 28 [key], 42, text-fig. 78; L. Pequegnat, 1975, p. 47 [listed].

?*Heterocrypta lapidea* Rathbun, 1901, p. 83, text-fig. 13; 1925, pp. 555 [key], 559, text-fig. 153; 1933, p. 44; Garth, 1958, p. 474 ["Atlantic analogue"]; ? Righi, 1966, p. 140 [listed, key]; ? Rodrigues da Costa, 1968, pp. 143, 147; ? Coelho and Araújo Ramos, 1972, p. 206 [listed].

**Material examined:** HOURGLASS STATION A: 1 ♂, 7.4; 3 January 1966; dredge; FSBC I 15142. — 2 ♂, 6.1-6.6; 1 ♀, 6.3; 6 June 1966; dredge; SIFP 89:2494. — 1 ♀, 5.0; 1 August 1966; dredge; FSBC I 3274. — 1 ♀, 6.4; 1 juv., 5.1; 8 October 1966; dredge; FSBC I 15143. — 2 ♂, 7.6-8.3; 2 June 1967; dredge; USNM 156483. — 1 ♂, 7.4; 1 August 1967; dredge; USNM 156484. — 1 ♀, 6.6, ovigerous; 5 October 1967; dredge; SIFP 89:2497. — HOURGLASS STATION B: 1 ♀, 6.8; 2 March 1967; dredge; SIFP 89:2449. — 2 ♂, 5.6-6.7; 11 May 1967; dredge; RNHL D 31401. — 2 ♀, 4.5-7.0; 2 November 1967; dredge; SIFP 89:2498. — HOURGLASS STATION I: 1 ♂, 7.3; 12 November 1965; dredge; MNHNP acc. no. 7684. — 3 ♂, 5.5-8.3; 1 ♀, 8.7, ovigerous; 12 June 1966; dredge; FSBC I 3118. — 1 ♂, 4.4; 1 ♀, 5.2, ovigerous; 5 July 1966; dredge; FSBC I 3154. — 1 ♂, 4.6; 12 October 1966; dredge; FSBC I 15144. — 1 ♂, 8.1; 7 April 1967; dredge; FSBC I 15145. — 1 ♀, 7.1; 1 juv., 5.1; 5 July 1967; dredge; FSBC I 15146. — 1 ♀, crushed; 7 August 1967; dredge; SIFP 89:2499. — 1 ♂, 7.0; 1 ♀, 7.8; 1 juv., 2.6; 4 September 1967; dredge; MHNG. — 2 ♂, 4.8-5.8; 11 October 1967; dredge; UZMC 15.I.1977. — 1 ♀, 4.5; 14 November 1967; dredge; FSBC I 15147. — HOURGLASS STATION J: 1 ♂, 6.9; 1 ♀, 7.0; 14 November 1967; dredge; MNHNP acc. no. 7666. — HOURGLASS STATION L (?): 1 ♀, 5.0; 7 August 1965; dredge; FSBC I 15148. — EAST FLORIDA: R/V GOSNOLD STATION 220/226: 2 ♂, 8.1-8.3; 13 February 1974; dredge; SIFP 89:0889. — R/V GOSNOLD STATION 225/360: 1 ♀, 9.8, ovigerous; 21 March 1974; trawl; RNHL D 31400. — R/V GOSNOLD STATION 229/407: 1 ♂, 9.6; 16 April 1974; dredge; SIFP 89:1448. — R/V GOSNOLD STATION 229/408: 1 ♀, 8.8; 16 April 1974; trawl; UZMC 15.I.1977. — R/V GOSNOLD STATION 230/427: 1 ♀, 11.0, ovigerous; 18 April 1974; trawl; SIFP 89:1539.

**Diagnosis:** Carapace 1.1 to 1.5 times as wide as long, margins crenulate, dentate, or lobate; posterolateral margin between branchial ridge and lateral angle straight, or slightly concave; gastric ridge unarmed on either side, or rarely with distinct granulate tubercle on either side; a third tubercle may occur posteriorly and mesially to those just noted.

**Description:** Carapace very wide, length from 1.1 to 1.5 times width, including rostrum; branchial ridges low, with crests formed by single or occasionally irregular double row of low granules, often indistinct; each ridge running almost parallel to anterolateral margin, becoming more faint before uniting with low gastric ridge; low depression proximal to union of branchial ridges with transverse gastric granulation; latter often distinctly granular, may terminate transversely with single, distinct, granulate tubercle on either side; third tubercle may occur posteriorly to these medially. Granulate longitudinal crest extending forward from either end of gastric ridge, usually attaining upper margin of orbit; crest quite distinct in some specimens yet not reaching orbital margin; crest in others obsolete, especially older specimens. Cardiac region with large, dome-like elevation, often granulate at apex, but also low or obsolete in some individuals. General surface of carapace finely punctate or faintly granulate, roughened dorsally. Anterolateral margins dentate, lobate or crenulate, meeting at perceptible angle with posterolateral margins; latter granulate, often with several larger, bluntly rounded teeth interspersed distally near posterior margin. Portion of margin between anterolateral margin and branchial ridge straight, slightly sinuous, or concave, often eroded or chipped. Posterior carapace margin forming, with posterolateral margin, an angle often little perceptible except in rear view. Rostrum broad, triangular or acute, thickened or blunt, little if at all deflexed, with margins rounded to nearly straight; surface granulous, upper surface smooth, with faint median furrow extending posteriorly on frontal region, becoming ill-defined or obsolete approaching gastric elevation. Merus of outer maxilliped with rectangular



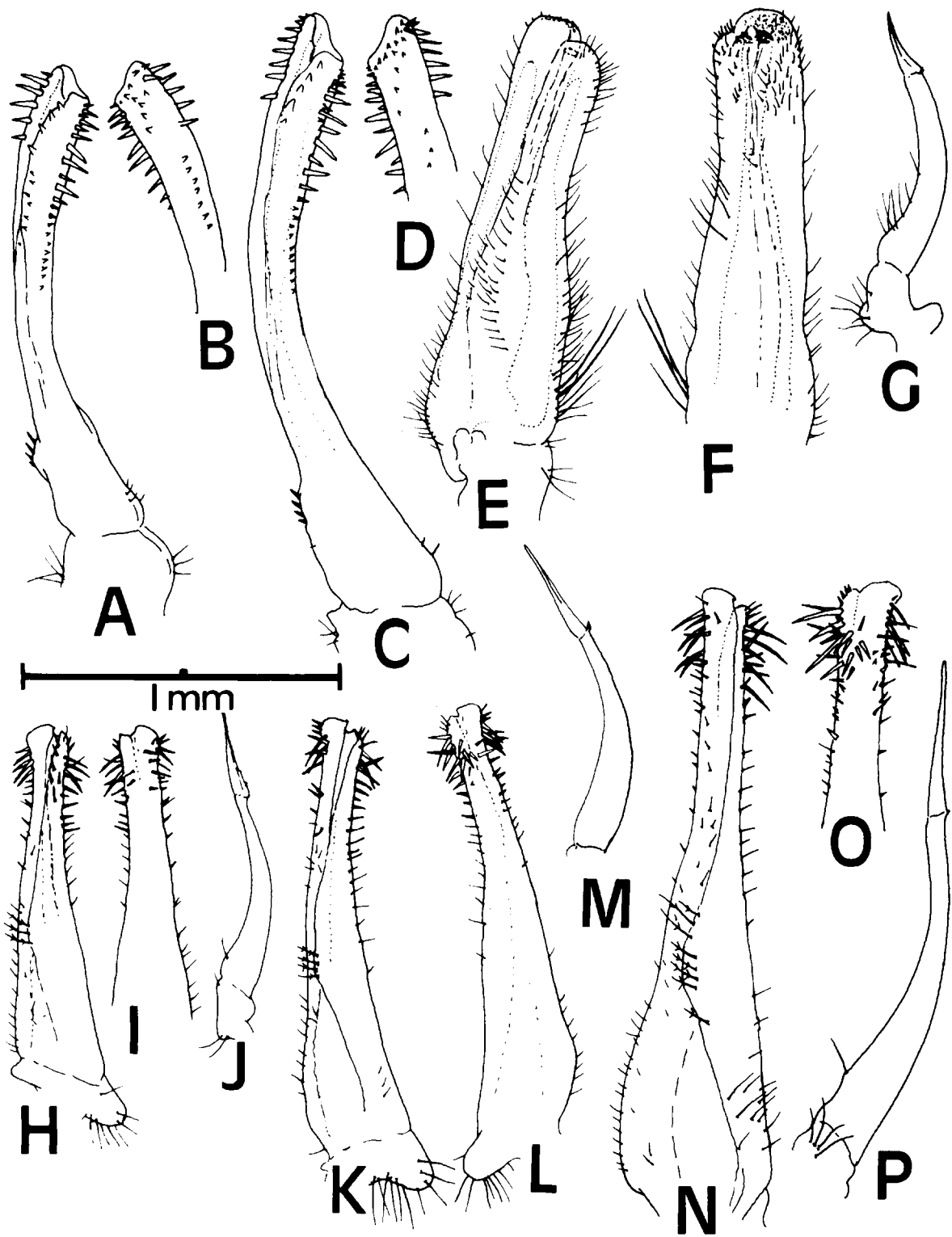


Figure 5. Major and minor left gonopods (pleopods 1 and 2) of male Parthenopidae. Gulf of Mexico specimens: *Heterocrypta granulata* (Gibbes): A. RNHL D 31401, major gonopod, mesiolateral view; B. same, ventral view; C. MHNG, major gonopod, mesiolateral view; D. same, ventral view. *Mesorhoea sexspinosa* Stimpson: E. SIFP 89:2490, major gonopod, medial view; F. same, ventral view; G. minor gonopod, mesiolateral view. *Cryptopodia concava* Stimpson: H. MNHNP acc. no. 7665, major gonopod, medial view; I. same, ventral view; J. minor gonopod, mesiolateral view; K. RNHL D 31398, major gonopod, medial view; L. same, ventral view; M. minor gonopod, mesiolateral view. *Cryptopodia concava*, Atlantic specimen: N. SIFP 89:1437, major gonopod, medial view; O. same, ventral view; P. minor gonopod, mesiolateral view.

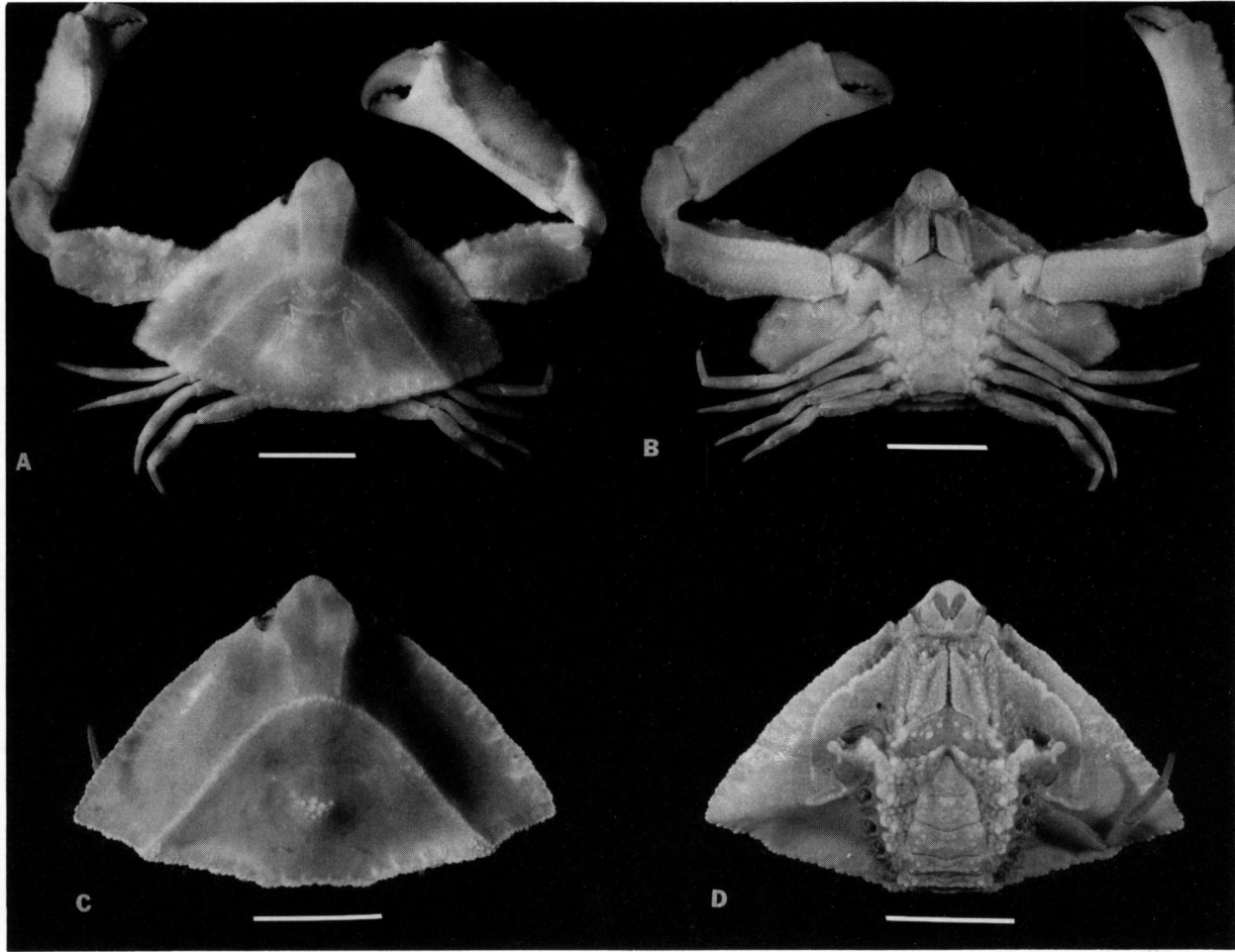


Figure 6. *Heterocrypta granulata* (Gibbes). A. male, off Vero Beach, Florida east coast, dorsal view; B. same, ventral view; C. female, Gulf of Mexico, off Sanibel Island, Florida, ventral view; D. same, dorsal view. Scale lines = 3 mm.

notch at inner angle; surface heavily granulate overall, with larger granules outlining inner and outer margins of ischium and merus, appearing more scattered on exopodite.

Chelipeds unequal, rather short and heavy, 1.5-2.1xRCL; upper surface of arm and hand dilated toward middle of irregularly dentate margins; fingers of larger chela with slight gape, less noticeable in smaller chela. Arm more roughened proximal to carapace, margins subparallel, with dentition more distinct anteriorly than posteriorly. Walking legs slender; merus with minute spinules dorsally, remaining segments with irregular granules or small spinules; merus of last pair barely visible in dorsal view.

Abdominal somites 3-5 of male fused, sixth with sharp, appressed, posteriorly directed spine; tip of spine lying between two more or less fused tubercles on somite 5. Sternum of male and female often heavily granulate, with large, low, pebble-like (often pearly) granules, becoming faint or absent on first sternal segment in some specimens. Gonopods as illustrated (Figure 5 A-D).

*Type-locality*: Near Kiawah Island, Sullivan's Island and White Point Shoal, Charleston Harbor, South

Carolina. Syntypic series probably not extant. Although a "type specimen" from Sullivan's Island was listed by Rathbun (1925: p. 555) as being in the University of South Carolina at Columbia, Dr. W. D. Dawson informs us it is no longer extant, being either destroyed during the Civil War or subsequently lost.

*Distribution:* Nantucket Sound, Massachusetts to Georgia and southeastern Florida; Gulf of Mexico from Aransas Pass, Texas to off Key West, Florida; Jamaica, Puerto Rico, and St. Thomas, Virgin Islands to Bahia, Brazil; 4-50 m; to 137 m if data for one female specimen (USNM 50385; Rathbun, 1925, Table, p. 557) are correct. Hourglass Stations A, B, I, J and (L?); 6-18 (55?) m.

*East Pacific analogue:* *Heterocrypta colombiana* Garth, 1940 (*vide* Garth, 1958).

*Remarks:* The similarity between this species and *H. lapidea* is striking if Rathbun's illustration (1901, p. 83, text-fig. 13) and reproduction of same (1925, p. 559, text-fig. 153) can be considered indicative. It would appear from these illustrations that *H. lapidea* is more noticeably granulate than *H. granulata*, especially on branchial and gastric ridges. The longitudinal crests from the gastric region appear to reach the orbital margins, and two prominent gastric tubercles, and possibly a third median tubercle immediately behind, are also indicated in her figure. There is, however, some doubt as to whether *H. lapidea* may remain a valid species. Balss (1924) was apparently the first to suggest that *H. lapidea* was, perhaps, based on a juvenile specimen of *H. granulata*, and Flipse (1930) synonymized *H. lapidea* with *H. granulata* without commenting further. After examination of our material of *H. granulata*, we tend to agree with both authors. Variation in granulosity along branchial, gastric, and protogastric ridges is extreme, ranging from granules distinctly present to barely noticeable. Four of our specimens, two males and two females (one ovigerous), seemed at first glance to be assignable to *H. lapidea*. These specimens had high, heavily granulate crests on the dorsum of the carapace, and possessed a more or less distinctly granulate tubercle at either end of the gastric ridge. In this material, a female from Station B had a third tubercle behind the two gastric tubercles (Figure 7 A), but a male from the same station was more obscure in this respect. However, a male specimen of *H. granulata* illustrated by Rathbun (1925, pl. 203, figs. 1, 2) also shows this third tubercle. Indeed, a comparison of these figures and that of figure 153 in the same work shows many similarities, especially in the distinctly granulate branchial ridges and those leading to the orbital margins from the transverse gastric ridge. In her study on Puerto Rican brachyurans, Rathbun (1933, text-fig. 38) inadvertently placed this same figure (which appears to be merely a copy of figure 153 in her 1925 work, which in turn depicts the holotype of *H. lapidea* as it was illustrated in the original description in 1901, p. 83, fig. 13) under the species account of *H. granulata* and labelled it as such. However, she also continued to list *H. lapidea* as a separate species in that paper.

We believe that much of the confusion surrounding these two species can be eliminated if, as Balss suggested, we consider *H. lapidea* to be merely a juvenile specimen of *H. granulata*. We can state that, in general, *H. granulata* is a smooth species, and is usually not heavily ornamented on the dorsal ridges of the carapace. We have also examined specimens in which the granulation on these ridges varies from usually low and indistinct to sharp and nearly tuberculous. The depressions between these ridges may be deep or shallow. These variations may be most easily seen by comparing specimens in frontal view (Figure 7 A, B). Other features in our material which showed variation were presence or absence of the posterior median tubercle on the gastric region, extension of granulosity from the gastric ridge to the orbital margin, height of gastric and cardiac elevations, and large, pebble-like granules on sternal segments of some individuals.

Comparison of gonopods from both the noticeably ornate "*lapidea*-like" specimens and the more smooth, typically "*granulata*-like" specimens in our material revealed no significant differences (Figure 5

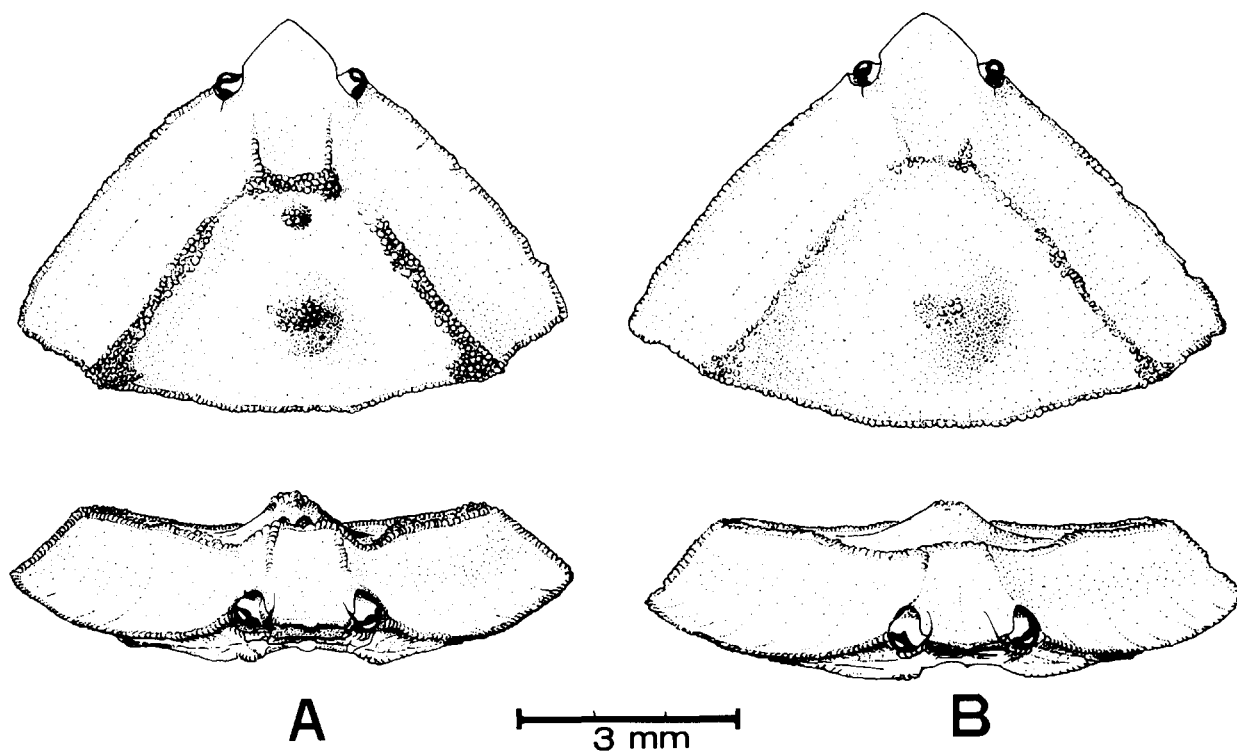


Figure 7. *Heterocrypta granulata* (Gibbes), Gulf of Mexico specimens: A. SIFP 89:2449, frontal and dorsal views of "lapidea-like" female; B. FSBC I 15146, frontal and dorsal views of typical female. Note presence or absence of distinct gastric tubercle, and variation in granularity on cardiac protuberance.

A-D). Unfortunately, comparison with the female holotype of *H. lapidea* from the Virgin Islands is not possible in this regard, while the other specimen of this species in the National Museum, a male from Puerto Rico, is a juvenile.

There remains the question of material from Brazil. Coelho and Araújo Ramos (1972) have most recently noted the distribution of *H. lapidea* along the Brazilian coast from Ceará to Santa Catarina. They also cited previous records from the Antilles, as mentioned above. Rodrigues da Costa (1968) listed five specimens of *H. lapidea* from Brazil (two males, three females) but did not illustrate them. He noted that carapacial teeth were more marked, and the angle between the posterolateral and posterior margins was more pronounced than that cited by Rathbun for her specimens. However, Rodrigues da Costa also stated that the branchial teeth, a character used by Rathbun in her description of the species, were not a constant feature and could not be correlated with either size or sex. Other more constant characters were presence of a median sulcus on the frontal region and shape of chelipeds. Variation of this type is similar to that noted by us in our Gulf of Mexico and subtropical western Atlantic material, which, in our opinion, consists of the single species, *H. granulata*. Whether the Brazilian specimens, themselves apparently somewhat variable, are assignable to *H. lapidea* or belong to an undescribed species cannot be presently ascertained. Perhaps studies on the gonopods will resolve this problem. Consequently, until such studies are done or further material becomes available, we are tentatively placing the northeastern Caribbean specimens of *H. lapidea* in synonymy with *H. granulata*, thus reaffirming Balss' and Flipse's original contentions.

Although lot FSBC I 15148 was transmitted to us as having been collected from Station L (55 m), other evidence revealed by FDNR personnel indicates the specimen was not from that locality. Erroneous

information probably resulted from inaccurate recording of the field sample number during preliminary sorting. No *Heterocrypta* were listed from Station L when Brachyura were sorted to genera.

Felder (1971, unpubl.) noted occurrence of *H. granulata* in stomach contents of a sheepshead fish, *Archosargus probatocephalus* (Walbaum).

### Genus *Solenolambrus* Stimpson, 1871

*Solenolambrus* Stimpson, 1871a, p. 132.

### *Solenolambrus tenellus* Stimpson, 1871

Figures 8, 9 D-F, 10 A

*Solenolambrus tenellus* Stimpson, 1871a, p. 134; A. Milne Edwards, 1878, p. 160; Rathbun, 1898, p. 261 [listed]; 1900, p. 514 [key]; Haeckel, 1904, pl. 86, fig. 5; Hay and Shore, 1918, p. 463, pl. 39, fig. 8; Rathbun, 1921, p. 80; A. Milne Edwards and Bouvier, 1923, p. 357; Rathbun, 1925, pp. 536 [key], 541, pl. 194, figs. 3, 4, pl. 279, figs. 5-9; Flipse, 1930, p. 89 [listed]; Rathbun, 1933, pp. 40 [key], 41; Chace, 1940, p. 54; Beatty, 1944, p. 175 [listed]; Wass, 1955, p. 171 [listed]; Monod, 1956, p. 595 [discussion]; Lewis, 1965, pp. 1054, 1071 [listed]; Williams, 1965, p. 270, text-fig. 250.

*Pisolambrus nitidus* A. Milne Edwards, 1878, p. 158, pl. 30, fig. 4-4e; 1880b, p. 5.

*Lambrus (Pisolambrus) nitidus*: Young, 1900, p. 107.

**Material examined:** HOURGLASS STATION D: 1 ♂, 4.2; 2 ♀, 3.8-4.6; 11 July 1966; dredge; FSBC I 15107. — 1 ♂, 4.4; 2 ♀, (1 ovigerous, 4.7) 2.3; 2 August 1966; dredge; FSBC I 3612. — 1 ♂, 2.8; 11 August 1966; dredge; FSBC I 3904. — 1 ♂, 2.8; 6 February 1967; dredge; FSBC I 15108. — 1 juv., 2.3; 28 February 1967; dredge; FSBC I 15109. — 1 ♀, 1.9; 12 May 1967; dredge; FSBC I 15110. — 1 ♀, 3.6; 21 May 1967; dredge; FSBC I 15111. — 2 ♂, 5.3-5.9; 3 June 1967; dredge; SIFP 89:2503. — 1 ♂, 4.4; 1 ♀, 4.6; 12 July 1967; dredge; USNM 156510. — 2 ♂, 4.1-5.4; 1 ♀, 4.8, ovigerous; 1 juv., 2.8; 1 September 1967; dredge; RNHL D 31399. — 1 ♂, 4.2; 1 ♀, 4.6, ovigerous; 6 October 1967; trawl; UZMC 15.I.1977. — 1 ♂, 4.0; 6 October 1967; dredge; FSBC I 15112. — 1 ♀, 5.2, ovigerous; 21 November 1967; dredge; USNM 156509. — HOURGLASS STATION E: 1 ♀, 3.9; 3 July 1966; trawl; FSBC I 15113. — 3 ♂, 4.3-4.7; 7 ♀, (1 ovigerous, 6.5) 2.4-4.7; 2 juvs., crushed; 2 August 1966; dredge; FSBC I 3703. — 1 ♂, 3.9; 1 molted carapace; 9 October 1966; dredge; FSBC I 15114. — 1 juv., 1.8; 2 December 1966; dredge; SIFP 89:2502. — 1 ♂, crushed; 1 ♀, 2.8; 2 juvs., 2.3-2.4; 3 March 1967; dredge; MNHNP acc. no. 7669. — 1 ♀, 2.9; 12 May 1967; dredge; USNM 156511. — 2 ♂, 4.1-4.5; 2 ♀, (1 ovigerous, 5.1) 5.0; 2 August 1967; dredge; SIFP 89:2501. — 1 ♂, 3.8; 6 October 1967; dredge; FSBC I 15115. — 1 ♂, 5.0; 6 October 1967; trawl; FSBC I 15116. — HOURGLASS STATION L: 1 ♀, 4.4, ovigerous; 6 August 1966; dredge; FSBC I 3784. — 2 ♂, 4.3-4.5; 4 ♀, (3 ovigerous) all 4.9; 5 September 1966; dredge; FSBC I 4272. — 1 ♀, 3.3; 16 February 1967; dredge; FSBC I 15117. — 1 ♀, 3.5; 16 May 1967; dredge; SIFP 89:2505. — 1 juv., 2.0; 7 June 1967; dredge; FSBC I 15118. — 1 ♀, 3.8; 12 October 1967; dredge; FSBC I 15119. — HOURGLASS STATION M: 1 ♂, 6.0; 12 April 1966; trawl; FSBC I 2752. — 1 ♀, 3.2; 12 April 1966; dredge; FSBC I 2763. — 1 ♀, 4.1; 1 juv., 2.3; 12 May 1966; dredge; FSBC I 2816. — 1 ♂, 3.9; 13 June 1966; dredge; FSBC I 15120. — 4 ♂, 4.0-4.4; 9 ♀, (5 ovigerous, 4.4-5.0) 2.8-4.6; 5 September 1966; dredge; FSBC I 4513. — 1 ♂, 6.6; 1 ♀, 5.0, ovigerous; 13 November 1966; dredge; MHNG. — 1 ♂, 3.6; 3 July 1967; dredge; FSBC I 15121. — EAST FLORIDA : R/V GOSNOLD STATION 262/772: 1 ♀, 6.9, ovigerous; 12 August 1975; dredge; SIFP 89:2440.