

# OCCURRENCE OF *CHACEON* LARVAE IN PLANKTON SAMPLES FROM SLOPE WATERS OF THE NORTHEASTERN GULF OF MEXICO

HARRIET M. PERRY<sup>1</sup>, RICHARD WALLER<sup>1</sup>, LIDIA STUCK<sup>1</sup>,  
KENNETH STUCK<sup>1</sup>, ROBERT ERDMAN<sup>2</sup>, NORMAN BLAKE<sup>2</sup>,  
FRANK LOCKHART<sup>3</sup>, AND WILLIAM LINDBERG<sup>3</sup>

<sup>1</sup>Gulf Coast Research Laboratory, P.O. Box 7000,  
Ocean Springs, Mississippi 39564

<sup>2</sup>University of South Florida, Department of Marine Science,  
140 Seventh Avenue South, St. Petersburg, Florida 33701

<sup>3</sup>Fisheries and Aquaculture, 7922 NW 71st Street,  
University of Florida, Gainesville, Florida 32606

**ABSTRACT** Geographic, seasonal, and bathymetric distributions of *Chaceon* larvae are described for the northeastern Gulf of Mexico.

## INTRODUCTION

From 1986 to 1988 a cooperative research project to define geographic, seasonal and bathymetric distribution and abundance of geryonid crabs in the northeastern Gulf of Mexico was carried out by personnel of the University of Florida, the University of South Florida, and the Gulf Coast Research Laboratory (Lockhart *et al.* 1990).

Four seasonal cruises (May 1987, August 1987, December, 1987, and February 1988) were conducted in five distinct geographic sampling areas (Figure 1). Three depth contours (311, 494, and 677 m) were sampled in each area.

## MATERIALS AND METHODS

Plankton tows were made at each depth contour in Areas 1 through 5. Oblique tows were taken with closing nets (1 meter diameter, 333 micron mesh) equipped with Niskin double-trip devices. Deployment rate was approximately 8 meters per minute. Tow depth and duration varied with station depth. The upper 200 meters of the water column were sampled at all depth contours (this was the only portion of the water column sampled at the 311 meter stations). At the 494 and 677 depth contours, bottom tow depth range was 200 to 400 meters and 200 to 500 meters, respectively. Samples were preserved in the field in 5% formalin and taken to Gulf Coast Research Laboratory for analysis.

Samples in May, August, November/December 1987

and February 1988 were taken aboard the Gulf Coast Research Laboratory vessel R/V *TOMMY MUNRO*. An additional set of samples was taken in Area 5 in March 1988 by personnel of the University of South Florida aboard the R/V *SUNCOASTER* (Florida Institute of Oceanography).

## RESULTS

*Chaceon* larvae occurred infrequently and in small numbers. Larvae of the red crab, *Chaceon quinque-dens*, occurred in samples in February. Zoeal stages I, II, and III were identified from samples taken in the upper 200 meters of the water column (Table 1). Zoeae occurred in all areas except Area 4. The fourth zoeal stage and the megalopal stage were not collected.

Zoeae of *Chaceon fenneri* (Stuck *et al.* In manuscript) were more limited in distribution. Seven stage II zoeae were collected in a surface tow in Area 2 in February. All other occurrences were in Area 5 in March 1988; a single stage I zoea and two stage II zoeae were identified from surface samples, and one stage II zoea was taken in a bottom tow.

TABLE 1  
Number of zoeae of *Chaceon quinque-dens* by area and developmental stage.

Area	Zoea I	Zoea II	Zoea III
5		1	3
3	4	3	
2	6	6	1
1	9	4	1

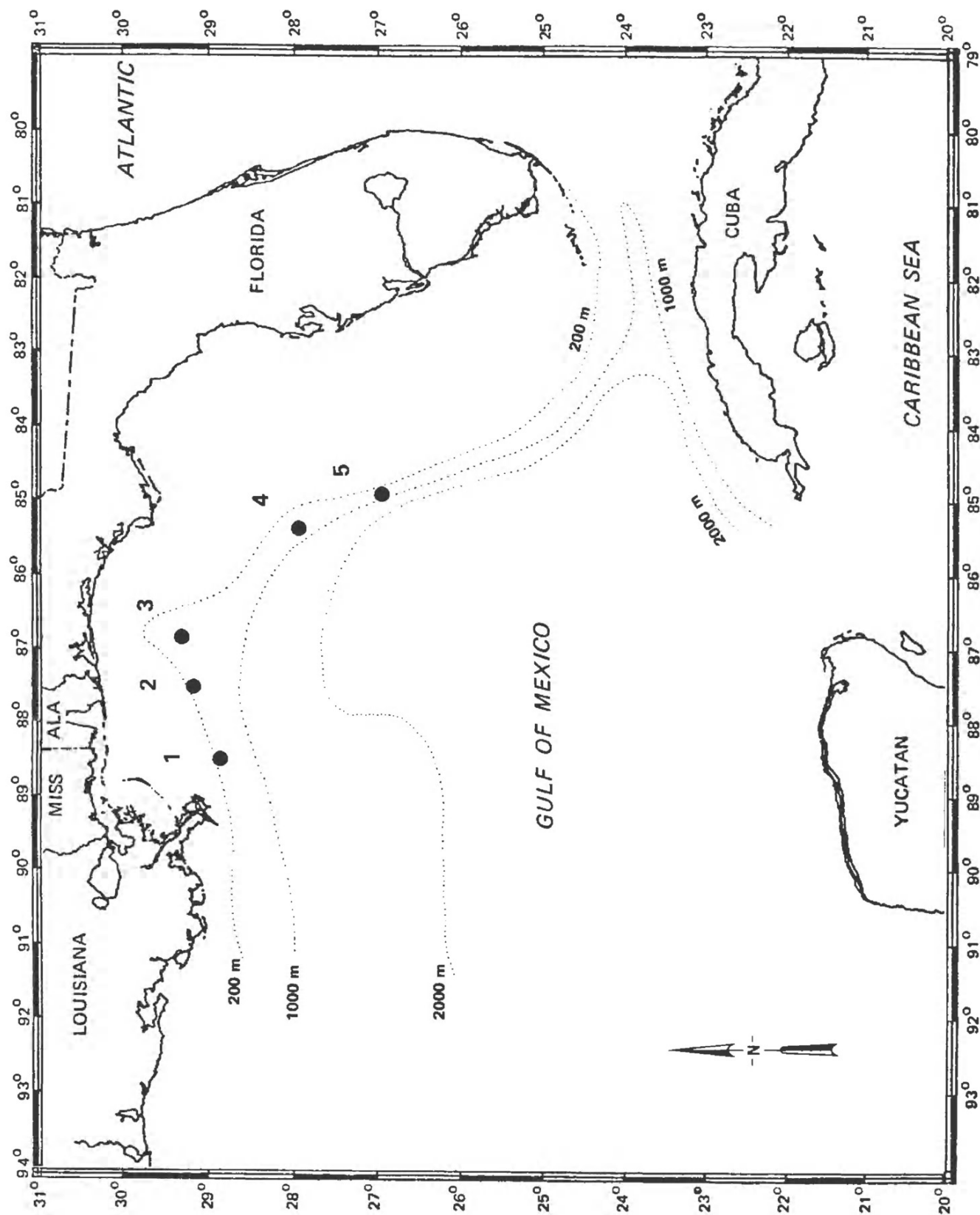


Figure 1. Locations of MARTIN-Chaceon sampling areas in the Gulf of Mexico.

## DISCUSSION

Reproduction of *C. quinquegens* and *C. fenneri*, based on gross description of the intact ovary and histological examination of ovarian tissue, was discussed by Erdman *et al.* (In press) and Perry *et al.* (1989) for the eastern Gulf of Mexico. Both species exhibit an annual reproductive cycle. Oviposition in the red crab, *C. quinquegens*, begins in May with a brooding period of nine months. These data are similar to the data of Ganz and Hermann (1975) who suggest the same cycle for red crab in New England waters, though the timing of events occurs earlier in the Gulf of Mexico. Oviposition in the golden crab, *C. fenneri*, begins in late summer and the eggs are carried for six months. Reproduction of *C. fenneri* (Erdman *et al.* In press) corroborates the data of Hinsch (1988) for the eastern Gulf of Mexico, and was similar to that reported by Erdman and Blake (1988) for the Atlantic waters off southeast Florida.

Although oviposition occurs earlier in the red crab, hatching of larvae coincides in both species. Zoeae of *C. quinquegens* and *C. fenneri* occurred in plankton samples in February and March taken from slope waters of the eastern Gulf of Mexico. With a single exception, all larvae were taken in surface tows.

Field evidence (presence of egg remnants on pleopods), histological data, and the occurrence of larvae of both species support an annual cycle of reproduction for these species in the Gulf of Mexico with hatching of eggs in the late winter/early spring.

## ACKNOWLEDGEMENTS

Funding was provided by the Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service Marine Fisheries Initiative (MARFIN) Project NA89-WC-H-MF021.

## REFERENCES CITED

- Erdman, R.B. and N.J. Blake. 1988. Reproductive ecology of female golden crabs, *Geryon fenneri* Manning and Holthuis, from southeastern Florida. *J. Crust. Biol.* 8:392-400.
- Erdman, R.B., N.J. Blake, W.J. Lindberg, F.D. Lockhart, H.M. Perry, and R.S. Waller. Comparative reproduction of the deep sea crabs *Chaceon fenneri* and *Chaceon quinquegens* (Brachyura: Geryonidae) from the northeast Gulf of Mexico. *Int. J. Invert. Repro. Dev.* (In press)
- Ganz, A.R. and J.F. Hermann. 1975. Investigations into the southern New England red crab fishery. Rhode Island Dept. Nat. Res., Div. Fish. Wildl., Mar. Fish. Sect. 78pp.
- Hinsch, G.W. 1988. Morphology of the reproductive tract and seasonality of reproduction in the golden crab *Geryon fenneri* from the eastern Gulf of Mexico. *J. Crust. Biol.* 8(2):254-261.
- Lockhart, F.D., W.J. Lindberg, N.J. Blake, R.B. Erdman, H.M. Perry, and R.S. Waller. 1990. Distributional differences and population similarities for two deep-sea crabs (Family Geryonidae) in the northeastern Gulf of Mexico. *Can. J. Fish. Aquat. Sci.* 47(11):2112-2122.
- Perry, H.M., R. Waller, C. Trigg, T. McBee, R. Erdman, and N. Blake. 1989. Harvest potential of the deep sea red crab, *Chaceon quinquegens*, and distribution of the genus in the Gulf of Mexico. Final Report to NOAA, National Marine Fisheries Service, Marine Fisheries Initiative (MARFIN) Project NA89WC-H-MF021, 24 pp.
- Stuck, K.C., H.M. Perry, L.M. Stuck, and A.A. Barrett. Larval development of the golden crab, *Chaceon fenneri* (Manning and Holthuis, 1984) (Decapoda: Brachyura: Geryonidae) reared in the laboratory. *Proc. Biol. Soc. Wash.* (In submission)



Perry, Harriet et al. 1991. "Occurrence of Chaceon Larvae in Plankton Samples from Slope Waters of the Northeastern Gulf of Mexico." *Gulf research reports* 8(3), 313–315. <https://doi.org/10.18785/grr.0803.13>.

**View This Item Online:** <https://www.biodiversitylibrary.org/item/220349>

**DOI:** <https://doi.org/10.18785/grr.0803.13>

**Permalink:** <https://www.biodiversitylibrary.org/partpdf/219611>

#### **Holding Institution**

Gulf Coast Research Laboratory and the University of Southern Mississippi

#### **Sponsored by**

IMLS LG-70-15-0138-15

#### **Copyright & Reuse**

Copyright Status: In copyright. Digitized with the permission of the rights holder.

Rights Holder: Gulf Coast Research Laboratory and the University of Southern Mississippi

License: <http://creativecommons.org/licenses/by-nc-sa/4.0/>

Rights: <https://biodiversitylibrary.org/permissions>

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.