

OBSERVATIONS ON FEEDING, MATURITY, AND FECUNDITY OF *CALLINECTES SIMILIS* WILLIAMS, 1966, ON THE CENTRAL CONTINENTAL SHELF OFF VERACRUZ, GULF OF MEXICO

BY

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ABSTRACT

The aim of this study was to contribute to the knowledge of abundance, fecundity, sex ratio, maturity, and diet of the crab *Callinectes similis*, on the central continental shelf off Veracruz, Gulf of Mexico. Samples were collected at night on 23-24 April 1996. In all, 2,066 crabs were collected from professional catches of shrimps, 259 of which were *C. similis*; 126 specimens of this species were collected in the sample taken at 06:00 h. *C. similis* was the second most abundant species of all crabs collected. The sex ratio showed a predominance of males probably because females are found at greater depths. *C. similis* is called "dwarf crab" in the area; the reduced size of the species may be the result of precocious maturity which is an effective reproductive strategy to increase population size. The mean number of eggs per ovigerous female was $277,886 \pm 136,270$. Gut content analysis revealed several groups of food items in the diet: plant fragments, remains of fish, polychaetes, crustaceans (*Farfantepenaeus aztecus* and *Portunus gibbesii*), micromolluscs (*Mulinia lateralis*), and detritus. *Callinectes similis* may influence the distribution and abundance of prey populations.

RESUMEN

El proposito de este estudio fue el de contribuir al conocimiento sobre la abundancia, fecundidad, proporcion sexual, madurez y dieta de *Callinectes similis*, en la plataforma central de Veracruz, Golfo de Mexico. Las muestras fueron colectadas durante la noche entre el 23 y 24 de abril de 1996. De la captura total, 2,066 cangrejos fueron colectados de capturas comerciales de camarones, 259 de los cuales fueron *C. similis*; 126 de esos cangrejos fueron colectados en el muestreo de las 06:00 h. *C. similis* fue la segunda especie mas abundante de todos los cangrejos colectados. La proporcion sexual presento predominancia de los machos debido probablemente a que las hembras se encuentran a mayores profundidades. *C. similis* es llamada "jaiba enana" en el area; el tamaño reducido de la especie puede ser resultado de la madurez precoz, la cual es una estrategia reproductiva efectiva para incrementar el tamaño de la poblacion. El numero medio de huevos por hembra ovigera fue de $277,886 \pm 136,270$. El analisis del contenido estomacal revelo varios grupos de alimentos en

la dieta: fragmentos vegetales, restos de peces, poliquetos, crustaceos (*Farfantepenaeus aztecus* y *Portunus gibbesii*), micromoluscos (*Mulinia lateralis*) y detritus. *Callinectes similis* puede influir en la distribución y abundancia de las poblaciones presa.

INTRODUCTION

The genus *Callinectes* is commercially important in Mexico. These crabs, called locally "jaibas", are among the dominant benthic invertebrates off the Atlantic and Pacific coast of North and South America, and west coast of Africa (Rodríguez, 1980; Williams, 1974, 1984; Rocha et al., 1992).

In Mexico, *Callinectes sapidus* Rathbun, 1896, *C. rathbunae* Contreras, 1930, and *C. similis* Williams, 1966, have been reported from the coast along the Gulf of Mexico, including estuaries and coastal lagoons (Powers, 1977; Williams, 1984; Román-Contreras, 1986, 1988; Raz-Guzmán et al., 1986, 1992; Rocha et al., 1992; Rosas et al., 1994; Alvarez & Calderón, 1996). *Callinectes similis*, commonly known as the "dwarf crab", is not a commercially exploited food resource; however, since it occurs abundantly, and next to its size and flavour, the species is considered a potential source for human consumption in the Gulf of Mexico.

Since fecundity, sex ratio, maturity, and food habits of *C. similis* are poorly understood, the aim of this study was to contribute to the knowledge on these parameters for the population of *C. similis* occurring on the central continental shelf off Veracruz, Gulf of Mexico (fig. 1).

MATERIALS AND METHODS

The area where *Callinectes similis* was collected (18° 53' 49" - 18° 54' 40" N 95° 39' 09" - 95° 41' 15" W) is characterized by high concentrations of organic matter and nutrients from the lagoon systems Alvarado-Buen Pais and Camaronera-Tlalixcoyan. The sediments are dominated by clay and sand. The region has three seasons: a dry and hot spring (March-May), a hot and rainy summer (June-September), and a cold and dry winter with winds called "Nortes" (cold winds from the north) (October-February).

The samples were collected at night on 23-24 April 1996 from commercial catches of shrimps at depths of 32-46 m. A net of c. 57 mm mesh was used. Trawling lasted 4 hours, starting at 22:00, 02:00, and 06:00 h. All crabs were preserved in 30% formaldehyde after being identified, counted, sexed, and measured (carapace width, including lateral spines). The crabs were grouped in 1 cm interval carapace width (CW) classes for analysis of the stomach contents. Maturity was determined according to Loran et al. (1993).