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Contribution to the biology of the spider crabs *Maiopsis panamensis* Faxon, 1893 and *Stenocionops ovata* (Bell, 1835) (Decapoda: Majoidea) from the Gulf of California, Mexico

Contribución a la biología de los cangrejos araña *Maiopsis panamensis* y *Stenocionops ovata* (Decapoda: Majoidea) del Golfo de California, México

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Abstract.- Morphological data from incidental captures in the Gulf of California of the spider crabs *Maiopsis panamensis* and *Stenocionops ovata* are presented. Sex ratios, carapace width and length distributions by sex, weight distribution by sex, and ovigerous female frequency are reported. New maximum values for the size of the branchial width of the carapace in males of both species have been observed. 70 mm wider than previously recorded in *M. panamensis* and a 9.5 mm wider in *S. ovata*. Moreover, the presence of *M. panamensis* along the West Coast of the Gulf of California has been registered, out of its limit of the reported distribution.

Key words: Spider crab, Majoidea, Gulf of California, Mexico

Resumen.- Se presentan datos morfológicos de los cangrejos araña *Maiopsis panamensis* y *Stenocionops ovata* obtenidos a partir de capturas incidentales realizadas en el Golfo de California. Se informan proporciones de sexo, distribuciones de talla por sexo, valores de anchura y longitud del caparazón, distribuciones de peso por sexo, y frecuencia de hembras ovígeras. Se observaron valores de la talla del ancho branquial superiores a aquellos citados anteriormente para organismos machos de ambas especies: *M. panamensis*, 70 mm más ancho y *S. ovata*, 9.5 mm más ancho. Por otra parte, se registra la presencia de *M. panamensis* a lo largo de la costa occidental del Golfo de California (25°48'54"N 111°15'45"W), fuera de su límite de distribución conocido.

Palabras clave: Cangrejo araña, Majoidea, Golfo de California, México

Introduction

The malacostracan fauna from the Gulf of California represents potentially a very important fishery resource, but one that has not well been studied yet. Because the spider crabs of the family Majidae, *Maiopsis panamensis* Faxon, 1893 and *Stenocionops ovata* (Bell, 1835) live in deep waters on the continental shelf of the Gulf of California, they are difficult to collect (Hendrickx 1989). Whence works about their biology and ecology are also scarce. These species represent a rich and ecologically important fauna (Hendrickx 1989). *Maiopsis panamensis* is the largest species of brachyuran crabs in the Gulf of California. The maximum size of the branchial width of the carapace recorded is 240 mm (Wicksten 1979). Its most northern distribution in the Gulf of California reaches off Río Fuerte, just north of Topolobampo, Sinaloa, in the eastern coast of the Gulf (Hendrickx 1989).

Stenocionops ovata is abundant at the north of Isla Tiburón, Sonora (Hendrickx 1989), its maximum recorded carapace branchial width is 81.5 mm (Garth 1958).

Material and Methods

Incidental captures of spider crabs were made from October 1993 to January 1994 along the northern end of Isla Danzante, Gulf of California, Mexico (25°48'54"N, 111°15'45"W). The material was capture with monofilament gill nets of 6 inches mesh size at a deep of 180 m.

Specimens obtained were identified with Garth (1958) and Hendrickx (1995) key for the species. For each specimen, length of carapace without rostral horns (CL), branchial width of carapace (CW), total wet weight, sex, and presence or absence of ovigerous mass was registered.

Results

Stenocionops ovata

A total of 433 individuals were captured, 338 males (M) and 95 females (F). The sex ratio was 3.5 M: 1 F. It differs significantly from a 1:1 ratio ($p < 0.05$, χ^2 test).

Length distribution by sex shows females being smaller than males (Fig. 1A, B). Females reach 65.6-88.5 mm CW (mean 76.3 mm, SD 5.4) and 71.5-103.4 CL (mean 90 mm, SD 6.3), whereas males reach 63-140 mm CW (mean 112.2 mm, SD 17.4) and 74.2-153.1 mm CL (mean 126.2 mm, SD 17.6).

Total wet weight is differential by sex as well. Female weights were 93.4-231.7 g (mean 157.9 g, SD 31.7), and male weights 100-1500 g (mean 742.9 g, SD 393.6) (Fig. 2).

Ovigerous females were only present in October and November with a frequency of 98.9 %.

Maiopsis panamensis

A total of 79 individuals were captured, 49 males and 30 females. The sex ratio was 1.63M:1F and this differs significantly from a 1:1 ratio ($p < 0.05$, χ^2 test).

Length distribution shows that females are smaller than males (Fig. 3A, B). Females reach 120-162 mm CW (mean 140.3 mm, SD 9.8) and 132-167 mm CL (mean 150.1 mm, SD 8.6) whereas males reach 140-310 mm CW (mean 177.5 mm, SD 39.6) and 142-310 mm CL (mean 179.6 mm, SD 37.1).

Total wet weight is differential by sex as well. Female total wet weights were of 900-1400 g (mean 1099 mm, SD 176.1) and male weights 680-4000 g (mean 1614.2 mm, SD 989.9) (Fig. 4). Ovigerous females were only present in November and December with a frequency of 96.6 %.

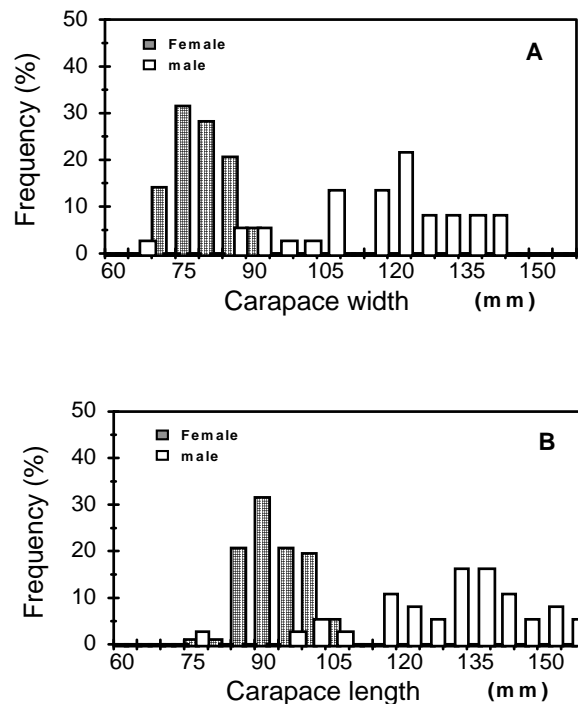


Figure 1

A) Carapace width distribution and B) carapace length distribution of *Stenocionops ovata* by sex.

A) Distribución del ancho del caparazón y B) distribución de la longitud del caparazón de *Stenocionops ovata* por sexo.

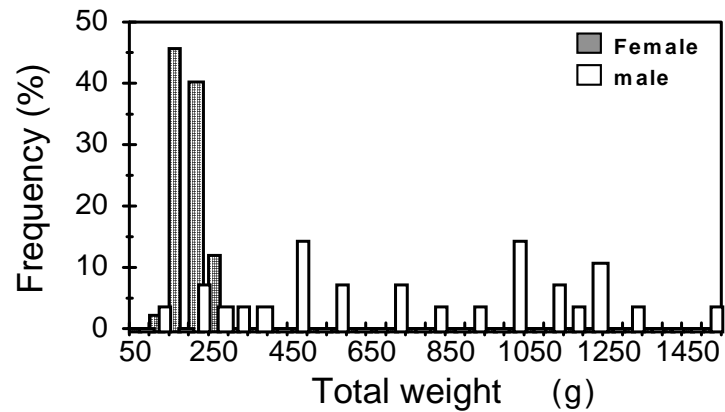


Figure 2

Total weight distribution of *Stenocionops ovata* by sex.
Distribución del peso total de *Stenocionops ovata* por sexo.

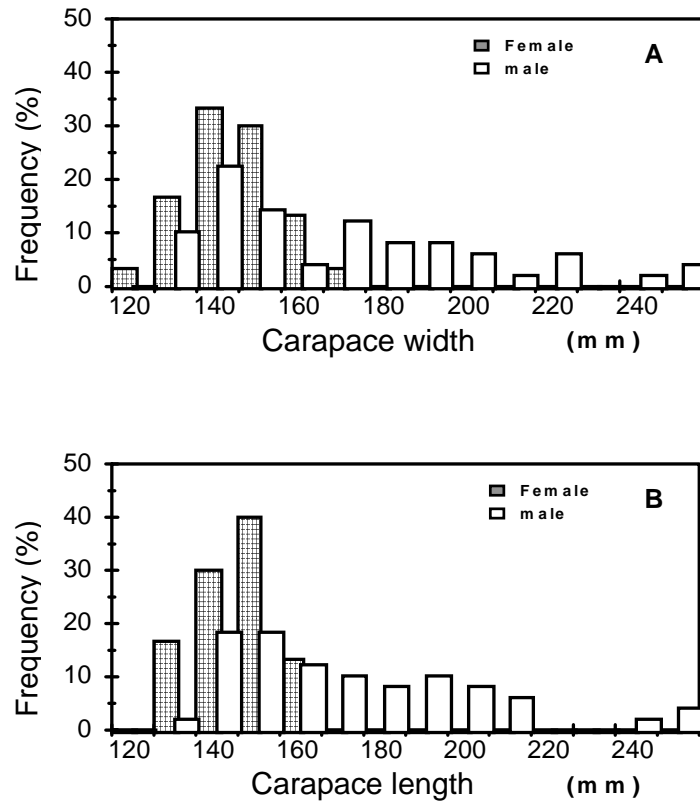


Figure 3

A) Carapace width distribution and B) carapace length distribution of *Maiopsis panamensis* by sex.
A) Distribución del ancho del caparazón y B) distribución de la longitud del caparazón de *Maiopsis panamensis* por sexo.

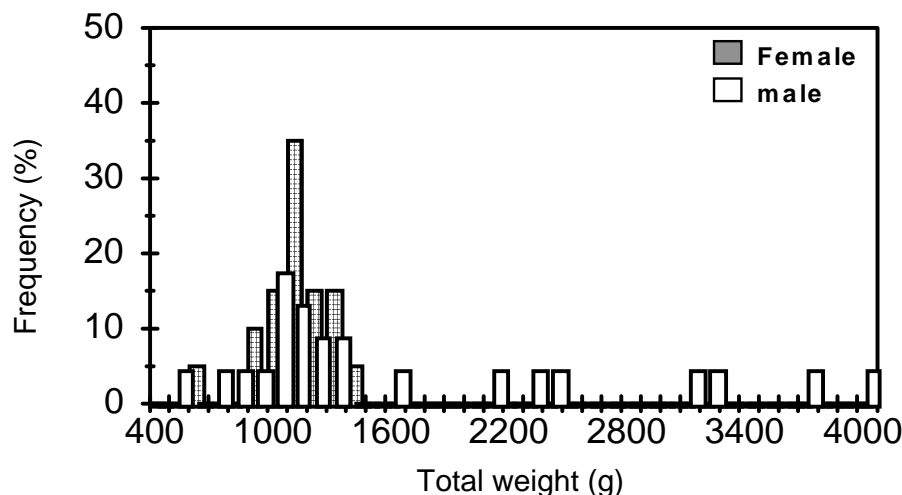


Figure 4

Total weight distribution of *Maiopsis panamensis* by sex.

Distribución del peso total de *Maiopsis panamensis* por sexo.

Discussion

The sex ratio in both species differs significantly from 1:1, and males outnumbered females. Therefore, it is possible that in the population males are dominant. In both species differences in length and weight distributions by sex were observed, and it is clear that sexual dimorphism occurs in these two species. This dimorphism had already been established for both species (Garth 1958, Hendrickx 1995).

The breeding of *Stenocionops ovata* in the Gulf of California was observed in April (Garth 1958), but in this study *S. ovata* had a greater abundance of females and a great frequency of ovigerous females in October and November, whereas the females of *Maiopsis panamensis* were more abundant in November and December coinciding also with a greater frequency of ovigerous females.

Because of its distribution throughout the Gulf of California, *Maiopsis panamensis* has been considered to have its northern range limit off Río Fuerte, just north of Topolobampo, Sinaloa (25°46'N 109°35'W) along the eastern coast (Hendrickx 1989, 1995). Because the specimens were caught at Isla Danzante (25°48'54"N 111°15'45"W) this record constitutes an extension of the

distribution of the species to the western coast of the Gulf of California. Additionally, the maximum length registered for *Maiopsis panamensis* in the tropical eastern Pacific is 240 mm CW for males and of 168 mm for females (Wicksten 1979, Hendrickx 1995). In the present paper the maximum length was established at 310 mm CW for two males, which represents an increase of 70 mm.

For *Stenocionops ovata*, the maximum length recorded in the tropical eastern Pacific is 130.5 mm CW for males and of 98.1 mm for females (Wicksten 1979, Hendrickx 1995). In the present study the maximum length was recorded as 140 mm CW for a male, a new size record of 9.5 mm more.

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