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The stomatopod and decapod crustaceans collected during the GUAYTEC II Cruise in the Central Gulf of California, Mexico, with the description of a new species of *Plesionika* Bate (Caridea: Pandalidae)

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Abstract: Sampling for epifaunal invertebrates on the lower continental platform and the upper slope in the central Gulf of California, México, has yielded specimens of 59 species of stomatopod and decapod crustaceans, including an undescribed Pandalidae, *Plesionika carinirostris*, new species. The samples, obtained between 65 and 380 m with otter-trawl and benthic dredge, also yielded specimens of *Schmittius politus*, a species of stomatopod scarcely reported for the Gulf of California, and of *Iridopagurus occidentalis* and *Nanocassiope polita*, two species of rarely collected decapods. Two species of brachyuran are reported for the first time in the Gulf of California (*Clythrocerus decorus* and *C. laminatus*) and two others, recently described for the area (*Chacellus pacificus* and *Ethusa steyaerti*), were again captured.

Key words: *Stomatopoda, Decapoda, Plesionika, Schmittius, Iridopagurus, Nanocassiope, Clythrocerus, Chacellus,* Gulf of California, México, crustaceans.

Although commercial trawling on the continental platform of the Gulf of California, México, has become effective in the early 40's with a peak production in the 60's, the amount of scientific information that has derived from this activity is rather reduced. In fact, the largest part of all published data available up to 1970–80 and refering to the benthic invertebrate fauna, originated from the study of material collected by scientific expeditions aboard ships from the USA that entered the Gulf between 1875 and 1961 (e.g. the U.S. "Narraganset" in 1875; the "Albatross" in 1888 and 1911; the "Silver Gate" in 1921; the "Pawnee" in 1926; the "Velero III" in 1931–41; the "Zaca" in 1936 and 1938; a series of expeditions of SCRIPPS between 1958 and 1961).

Some major research cruises were organized in 1970–72 by México, aboard the "Antonio Alzate" and the "Alejandro de Humboldt", but the published information resulting from these cruises in scarce and not in proportion to the vast fishing effort that was made on the continental platform and slope.

The acquisition in 1980 by the Universidad Nacional Autónoma de México (UNAM) of a 50 m research vessel, "El Puma" based on the Pacific coast of México, promoted the organization of large-scale surveys of the deep-water fauna of the eastern Pacific by Mexican Institutions. Since the vessel started operating in April 1981, a significant number of contributions to the ecology and taxonomy of benthic invertebrates of the continental platform of the Gulf of California (SIPCO and CORTES Cruises) has been published by the Laboratorio de Invertebrados y Peces Bentónicos (LIPB), Estación Mazatlán, UNAM, mostly on stomatopod and decapod crustaceans. A summary of these contributions can be found in Hendrickx (1986); more recent contributions are listed in the bibliography.

In August 1987, a major sampling cruise (GUAYTEC II) was organized by the Instituto Tecnológico Superior de Monterrey (ITESM), Guaymas, in the central Gulf of California. Samples of benthic organisms were collected by the R/V "El Puma" and the specimens of the stoma-

topod and decapod crustaceans were made available to the author through the courtesy of L. Findley, Chief Scientist of the GUAYTEC II Cruise. This report presents the results of their study. A total of 57 species were recognized including a new species of *Plesionika* (Pandalidae) which is described herein.

MATERIAL AND METHODS

The material on which this study is based was obtained in August 1987 from sampling activity in the Gulf of California, approximately between 26° N and 30° N (Fig. 1), during the GUAYTEC II Cruise aboard the R/V "El Puma" of the Universidad Nacional Autonoma de México. The GUAYTEC II Cruise, organized by the ITESM, Guaymas, Sonora, was aimed at collecting the fish and invertebrate faunas of the lower continental shelf of the Gulf of California and to make some experimental deeper hauls on the upper continental slope. A total of 16 hauls of 5 to 30 minutes were made, 11 between 65 and 103 m and 5 between 162 and 380 m using either an 11.6 m commercial otter–trawl (5.7 cm stretched mesh) or a 2.5 m wide oyster dredge, depending on depth and bottom structure (Table 1). Collections of stomatopods and decapod crustaceans were obtained from 13 sampling stations and the specimens were inmediately sorted and fixed in 8% formaldehyde solution or deep–frozen (larger specimens). Identification of the material collected was performed at the laboratory using pertinent literature (see text) and the reference collection of Crustacea of the LIPB, Estación Mazatlan, UNAM, where the material examined herein has been deposited. Drawings were made with the help of a drawing tube. Abbreviations used in the text are as follow: C.W., carapace width; C.L., carapace length; T.L., total length; EMU, Estación Mazatlán UNAM; St., station.

All collected species are presented in the systematic account that follows. For each species, a list of the material examined is given, including: station, date and depth of collection; number, sex and size of specimens.

The currently known geographic distribution is also provided for each species; including the new records derived from the GUAYTEC II collections and some unpublished records based on specimens held in the reference collection (i.e. specimens collected during other cruises).

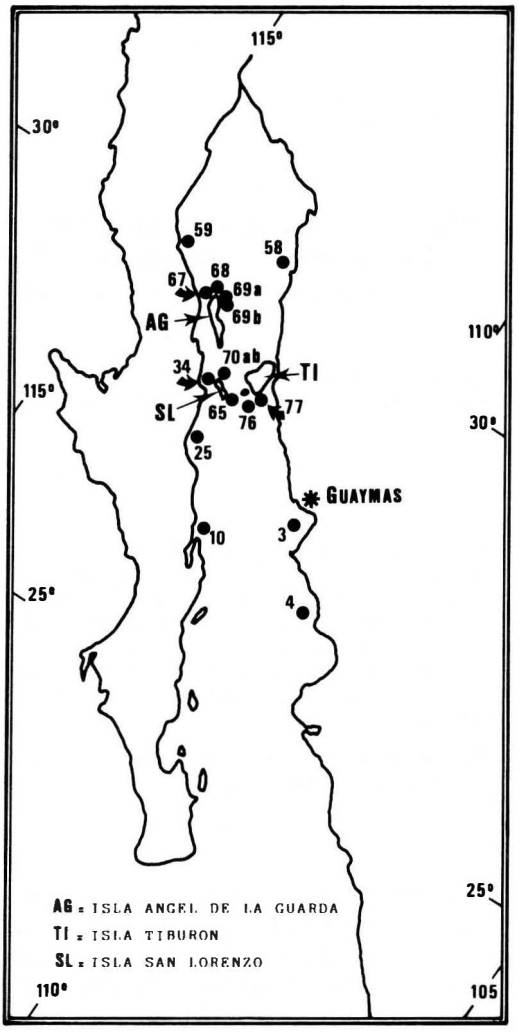

Fig. 1. Gulf of California, México, with station locations during the GUAYTEC cruise (August 1987).

Some "remarks" on the ecology, distribution or bathymetry of species are also provided.

RESULTS

STOMATOPODA

Superfamily Gonodactyloidea (Giesbrecht, 1910)
Family Hemisquillidae Manning, 1980

Hemisquilla ensigera californiensis Stephenson, 1967.

Material examined: St. 69a, 11/VIII/87, 1 ♂ (T.L. 205 mm) collected at 83–88 mm (trawl).

CUADRO 1

List of sampling stations of the GUAYTEC II in the Central Gulf of California, México (B/O "El Puma").

Station number	Date	Position	Depth (m)	Method
3	1/VIII/87	27°38' N – 110°44' W	79–85	Trawl
4	1/VIII/87	26°47' N – 110°06' W	85	Trawl
10	2/VIII/87	27°00' N – 111°50' W	85–89	Trawl
25	4/VIII/87	27°59' N – 112°42' W	87–97	Trawl
34	6/VIII/87	28°36' N – 113°06' W	72–82	Trawl
58	7/VIII/87	29°53' N – 113°00' W	95	Trawl
59	8/VIII/87	29°46' N – 114°09' W	100–103	Trawl
65	10/VIII/87	28°37' N – 112°43' W	195–210	Dredge
67	11/VIII/87	29°33' N – 113°36' W	95	Dredge
68	11/VIII/87	29°35' N – 113°33' W	162–175	Dredge
69a	11/VIII/87	29°29' N – 113°23' W	83–88	Trawl
69b	11/VIII/87	29°29' N – 113°22' W	65–82	Trawl
70a	10/VIII/87	28°47' N – 112°54' W	380	Dredge
70b	10/VIII/87	28°47' N – 112°54' W	360–380	Dredge
76	13/VIII/87	28°31' N – 112°17' W	175–185	Dredge
77	13/VIII/87	28°39' N – 112°12' W	94–97	Trawl

Distribution: This subspecies of *H. ensigera* (Owen) is known from Southern California and the entire Gulf of California, south to the Gulf of Chiriqui, Panama (Hendrickx and Salgado–Barragan 1990).

Remarks: This is the largest species of stomatopod (up to 250 mm T.L.) known from the Pacific coast of México. It occurs between 33 and 106 m in the Eastern Pacific (Hendrickx and Salgado–Barragan 1990).

Family Squillidae Latreille, 1803.

Squilla bigelowi Schmitt, 1940.

Material examined: St.59, 8/VIII/87, 1 ♂ (T.L. 84 mm) and 1 ♀ (T.L. 104 mm) collected at 100–103 m (trawl).

Distribution: Gulf of California, from off Rocas Consag to Cabo San Lucas and Islas Marias in the south. A single record from "Punta Arenas" [Puntarenas], Costa Rica, must be considered extra–limital (Hendrickx and Salgado–Barragan 1990).

Remarks: The bathymetric distribution of this species, which is the dominant species in the Northern Gulf, is from 6 to 150 m (Hendrickx and Salgado–Barragan 1990).

Squilla panamensis Bigelow, 1891.

Material examined: St. 3, 01/VIII/87, 1 ♀ (T.L. 109 mm) collected at 79–85 m (trawl).

Distribution: In the Gulf of California, *S. panamensis* is found exclusively along the eastern coast, from Guaymas southward. Southernmost distribution limit is at Tumbes, Peru (Hendrickx and Salgado–Barragan 1990).

Remarks: Together with *S. mantoidea* and *S. parva, S. panamensis* is a dominant species in the Southeastern Gulf of California, but it is unfrequently found north of 26° N (Hendrickx and Salgado–Barragan 1990).

Squilla tiburonensis Schmitt, 1940.

Material examined: St.77, 13/VIII/87, 1 ♂ (T.L. 86 mm), collected at 94–97 m (trawl).

Distribution: Known only from the Gulf of California, from the northern end to Isla Espiritu Santo and Punta Piaxtla (Hendrickx and Salgado–Barragan 1990).

Remarks: *Squilla tiburonensis* has been found between 15 and 112 m, most specimens being captured between 30 and 60 m (Hendrickx and Salgado–Barragan 1990).

Schmittius politus (Bigelow, 1891).

Material examined: St.68, 11/VIII/87, 1 ♀ (T.L. 34.5 mm) collected at 162–175 m (dredge).

Distribution: From Monterrey Bay, California to the Gulf of California, where the species was previously cited for one locality only (Punta Concepcion) (Hendrickx and Salgado–Barragan 1990).

Remarks: This is the third precise locality reported for *S. politus* in the Gulf; it represents a northern extension of its distribution to just north of Isla Angel de la Guarda. It has also been reported along the coast of eastern Baja California from Punta Concepcion southward by Brusca (1980), who gives no precise locality but reports the species as abundant in this area.

DECAPODA

DENDOBRANCHIATA

Superfamily Penaeoidea Rafinesque, 1815
Family Penaeidae Rafinesque, 1815

Penaeus (Farfantepenaeus) californiensis Holmes, 1900

Material examined: St. 3, 01/VIII/87, 1 ♂ (T.L. 135 mm) and 1 ♀ (T.L. 215 mm), collected at 79–85 m (trawl).

Distribution: From San Francisco Bay to Callao, Peru, including the entire Gulf of California (Hendrickx 1986).

Remarks: This species is more commonly found in much shallower waters (20 to 70 m) (Hendrickx 1986).

Family Sicyoniidae Ortmann, 1898

Sicyonia picta Faxon, 1893

Material examined: St. 58, 07/VIII/87, 3 ♀ (T.L. 44.5–49.3 mm) collected at 95 m (trawl); St.68, 11/VIII/87, 7 ♂ (T.L. 27–37 mm) and 5 ♀ (T.L. 28–49 mm) collected at 162–175 mm (dredge); St. 69a, 11/VIII/87, 1 ♂ (T.L. 36 mm) collected at 83–88 m (trawl); St. 76, 13/VIII/87, 1 ♀ (T.L. 36 mm) collected at 175–185 m (dredge).

Distribution: From the Northern Gulf of California to Isla Lobos de Afuera, Peru (Hendrickx 1984).

Remarks: Material from the present study was found to at least 175 m, but the species has a maximum depth occurrence of about 400 m (Arana and Mendez 1978).

Sicyonia disedwardsi (Burkenroad, 1934)

Material examined: St.10, 02/VIII/87, 7 ♂ (T.L. 39–63 mm) and 1 ♀ (T.L. 66 mm) collected at 85–89 m (trawl); St. 25, 04/VIII/87, 1 ♀ (T.L. 41 mm) collected at 87–97 m (trawl); St. 69b, 11/VIII/87, 1 ♀ (T.L. 38 mm) collected at 65–82 m (trawl); St. 77, 13/VIII/87, 3 ♀ (T.L. 26.0–41.8 mm) collected at 94–97 m (trawl).

Distribution: From Bahia Magdalena and the extreme upper–Gulf to Cupica Gulf, Colombia (Pérez–Farfante 1985).

Remarks: *S. disedwardsi* is, together with *S. picta,* the most widely distributed species of the genus *Sicyonia* in the Gulf of California (Hendrickx 1984).

Sicyonia penicillata Lockington, 1879.

Material examined: St. 3, 01/VIII/87, 6 ♂ (T.L. 80–91.2 mm) and 5 ♀ (T.L. 68–95 mm) collected at 79–85 m (trawl); St. 10, 02/VIII/87, 1 ♂ (T.L. 86 mm) collected at 85–89 m (trawl); St.58, 07/VIII/87, 1 ♂ (T.L. 89.4 mm) collected at 95 m (trawl); St. 77, 13/VIII/87, 9 ♂ (T.L. 67–81 mm) and 7 ♀ (T.L. 70–81.5 mm)collected at 94–97 m (trawl).

Distribution: From Laguna Ojo de Liebre, Baja California, and the Gulf of California where it occurs along the West coast and from the upper–Gulf South to Punta Arboleda (26°51' N) (Hendrickx 1985). A possible record from Costa Rica (Pérez–Farfante 1985) must be considered extra–limital.

Remarks: *S. penicillata* is undoubtely the dominant species in the Northern and Central Gulf. It is known from 18 to 103 m (Hendrickx 1985).

Family Solenoceridae Wood–Mason and Alcock, 1891

Solenocera mutator Burkenroad, 1938

Material examined: St.68, 11/VIII/87, 1 ♂ (T.L. 31 mm) and 4 ♀ (T.L. 30–38 mm) collected at 162–175 m (dredge); St. 70b, 10/VIII/87, 1 ♂ (T.L. 65 mm) collected at 360–380 m (dredge); St. 76, 13/VIII/87, 1 ♂ (T.L/ 48.4 mm) and 2 ♀ (T.L. 19.5 and 21.2 mm) collected at 175–185 m (dredge).

Distribution: *S. mutator* has recently been reported in the Northern Gulf of California (Hendrickx 1989c); it occurs from off Rocas Consag, along both coasts of the Gulf, and south to Isla Lobos de Tierra, Peru.

Remarks: Large populations of *S. mutator* have been detected along the lower edge of the continental platform off the coasts of Sinaloa and Sonora (Hendrickx 1985, 1986) generally below 60 m. The collecting depth of 360–380 m reported herein is about twice as much as the maximum depth previously known for this species (Burkenroad 1938).

PLEOCYEMATA

CARIDEA

Family Pasiphaeidae Dana, 1852

Leptochela serratorbita Bate, 1888

Material examined: St. 69b, 11/VIII/87, 1 ♂ and 3 ♀ (T.L. 25 m) collected at 65–82 m (trawl).

Distribution: From Isla Angel de la Guarda, Gulf of California, south to Puerto Parker, Costa Rica. Also in tropical and warm temperate Atlantic (Hendrickx *et al.* 1983, Wicksten 1983).

Remarks: This species of benthic pasiphaeid shrimp appears to be fairly common in the central and southern Gulf of California.

Family Pandalidae Haworth, 1825

Plesionika carinirostris sp. nov.
(Figs. 2–3)

Material examined: One ♂ , holotype (EMU–2622), carapace length 20.7 mm, total length 110 mm, collected off Isla San Lorenzo (28°46' N – 112°54' W), 10/VIII/86, B/O "El Puma", St. 70B, dredged at 360–380 m.

Description: Rostrum curving dorsad, long and tapering, overreaching antennal scale, about 1.7 times as long as carapace, cylindrical in cross–section throughout its length. Dorsal margin armed on basal crest with 3 widely spaced teeth, all with an acute tip, not barbed, the rest of the rostrum not armed; distal tooth small, sharp, not carinate; median tooth longer, stronger and carinate, the carina extending to the base of the proximal tooth; proximal tooth stronger than median, carinate, tip of tooth in front of orbital margin, the carina straight and extending posterior to orbital margin; two movable spines posterior to carina of proximal tooth followed by a low, rounded ridge extending on less than half the length of carapace. Ventral margin of rostrum armed with 6 low carinate teeth distributed over entire length of rostrum, tip sharp, carina of each tooth very thin and extending almost to base of next tooth; proximal tooth sharper, with shorter carina (distal tooth broken).

Antennal spine strong, much longer than pterygostomian spine.

Abdomen without dorsal carinae, with third somite rounded posteriorly, unarmed; posteroventral angle of somites 1–3 rounded, of somites 4 and 5 armed with a minute tooth; sixth somite long, about 2.5 times as long as high. Telson slightly longer than sixth abdominal somite, with 4–5 pairs of dorsolateral spinules, including pairnext to lateral spines.

Eye without ocellus, a little wider than long.

Antennular peduncle with ventromesial margin of basal segment unarmed; stylocerite acute, tip long and sharp, overreaching dorsal arc of distal margin of first antennular segment.

Antennal scale with lateral margin convex, about 3/4 carapace length, about 3.5 times as long as wide; distolateral tooth stout, not overreaching the distal margin of blade.

Mouthparts are as described for the genus. Third maxillipeds with epipod, overreaching antennal scale by over 1/2 of terminal segment; penultimate segment as long as terminal segment.

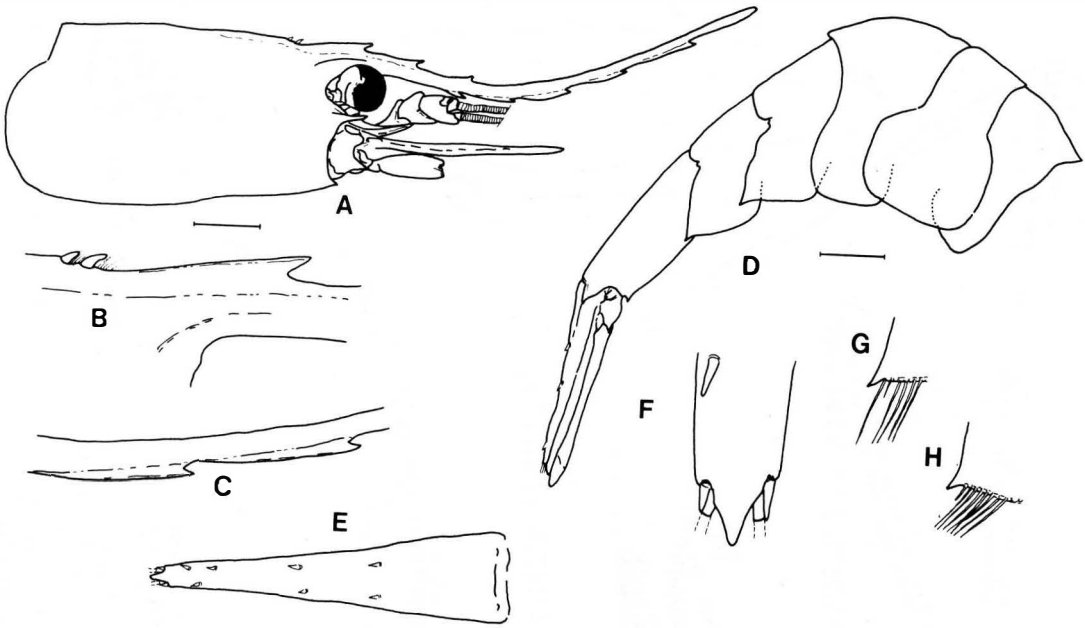

Fig. 2 *Plesionika carinirostris*, A new species, male holotype from GUAYTEC station 70b: carapace and anterior appendages; B, anterior carapace and base of rostrum; C, mid–part of rostrum, with ventral teeth 3–4; D, abdomen, lateral view; E, telson, dorsal view; F, tip of telson, enlarged, dorsal view; G, posteroventral angle of somite 4; H, posteroventral angle of somite 5 (scale bar = 5 mm).

Pereiopods with well–developed, strap–like epipod on 4 anterior pairs. Pereiopods 1 overreaching distal margin of antennal scale by 4/5 length of chela, undistinctly chelate; chela about 6/10 length of carpus; carpus almost as long as merus. Pereiopods 2 subequal, overreaching distal margin of antennal scale by length of chela; right carpus composed of 28 articles, left of 23 articles. Pereiopods 3 overreaching distal margin of antennal scale by combined lengths of dactyl, propodus and half of carpus; dactyl very short, about 1/10 length of propodus, armed with 3–4 movables spinules on flexor margin, the proximal the shortest, the distal the strongest; carpus about 5/6 lenght of carpus; carpus about 4/6 length of merus. Left fourth pereiopod missing, right incomplete. Both fifth pereiopods missing. None of pereiopods is extremely slender. Endopod of first pleopod of male holotype without notch in distal margin. Appendix masculina on second pleopod as long as appendix interna and armed with more than 30 spines; appendix interna with two long subterminal spines.

Etymology: The name of this new species of *Plesionika* is formed by the combination of the Latin *carini* (carena) and *rostris* (rostum) to emphasize the presence of long carinated teeth on the ventral side of the rostrum.

Remarks: *Plesionika carinirostris* differs from the three other species of benthic *Plesionika* known from the eastern Pacific (*P. beebei* Chace; *P. mexicana* Chace; *P. trispinus* Squires and Barragan) by its large size and a combination of characters not found together in any of these species, including: the reduced number of dorsal (not barbed) and ventral rostral teeth; the absence of teeth on the carapace beyond the level of the orbital margin; the length of the stylocerite, overreaching the dorsal arc of the distal margin of antennula first segment; the number of carpal articles of the second pereiopods, subequal in the new species. These same characteristics and the presence of long strap–like epipods on pereiopods 1–4, combined to the absence of a posteromesial tooth on third abdominal somite, the presence of a small marginal tooth on pleuron of abdominal somites 4 and 5 and the very short dactylus on pereiopods 3, make it also distinct from all other species of *Plesionika* reported by Chace (1985:45, key) and Crosnier (1986) for the Pacific and Indian Oceans, by Abele and Kim (1986) from the coast of Florida and by Crosnier and Forest (1973) from the east tropical Atlantic. It is also very different from the two species of exclusively pelagic *Plesionika*, *P. sanctaecatalinae* and *P. aff. rossignoli*, reported from the eastern Pacific (Hendrickx and Estrada–Navarrete 1989) by the structure of the rostrum and the size of the dactylus of the pereiopods 3 and 4 (see Crosnier and Forest 1968, Wicksten 1983, Hanamura 1983).

Regarding the variation of the number of dorsolateral spinules on the telson of *P. carinirostris*, it should be noted that Chace (1985: 103) observed the same anomaly on the telson of the holotype of *P. pumila* Chace, 1985 ("... and armed with five dorsolateral spinules on the left side, four on the right"), while the paratype of this later species had four spinules on both sides. Similarly, Crosnier (1986: 373) observed one specimen of *P. aff. williamsi* Forest, 1964, from Tahiti with "...telson avec cinq épines d'un côté (i.e. left side) et quatre de l'autre...", not counting the subterminal pair. Both authors concluded that the telson was abnormal.

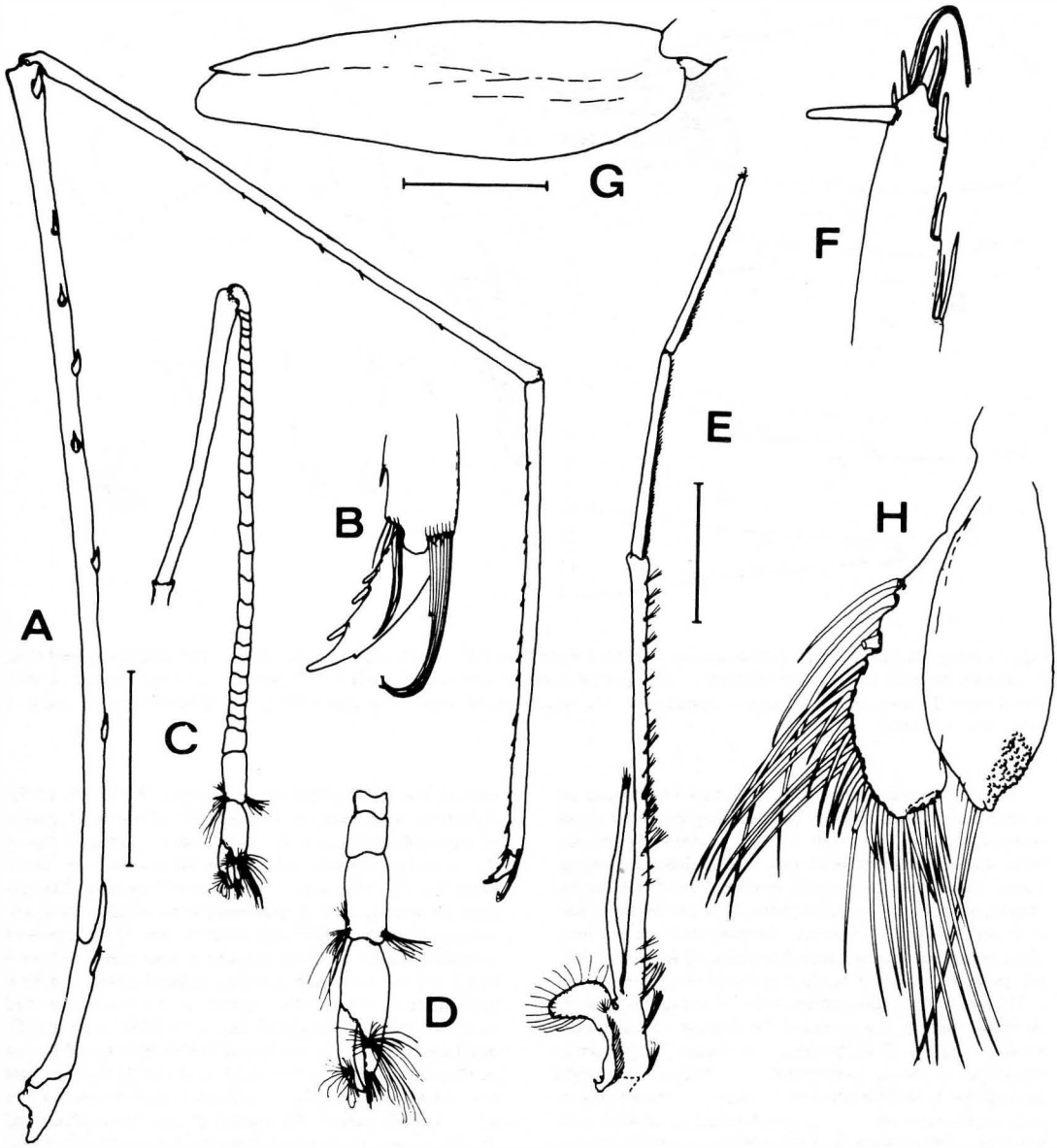

Fig. 3. *Plesionika carinirostris*, new species, male holotype from GUAYTEC station 70b: A, right 3rd pereiopod; B, same, dactyl, enlarged; C, right 2nd pereiopod; D, same, chela, enlarged; E. right 3rd maxilliped; F. same, distal end, enlarged; G. left antennal scale, ventral view; H. endopod and exopod of right 1st pleopod (scale bar = 5 mm).

Processa peruviana Wicksten, 1983

Material examined: St.76, 13/VIII/87, 3 ♂ (T.L. 28–33 mm) and 3 ♀ (T.L. 27–31 mm) collected at 175–185 m (dredge).

Distribution: Commonly found throughout the Gulf of California, from as far North as off Rocas Consag and southward along both coasts; also found along the Baja California west coast up to Isla San Benedicto; southernmost limit is at Mancora, Peru (Wicksten 1983, Hendrickx 1989c).

Remarks: *Processa peruviana* is fairly common throughout the Gulf of California. According to Hendrickx (1989c), records from off the coast of Panama, Costa Rica and Peru appeared to be in deeper waters (95–146 m) than in the Gulf of California (27–106 m). However, the material from the GUAYTEC II clearly indicates that *P. peruviana* also occurs in deep water (175–185 m) in the northern part of its range.

Family Alpheidae Rafinesque, 1815

Alpheus bellimanus Lockington, 1877

Material examined: St.58, 07/VIII/87, 1 ♂ (T.L. 27 mm) and 1 ♀ ovig. (T.L. 29 mm) collected at 95 m (trawl).

Distribution: From Monterey, California, to Islas Secas, Panama, including the Gulf of California up to Cabo Lobos (ca. 29°55' N – 113°W). Islas Clarion and Socorro (Wicksten 1983).

Remarks: The GUAYTEC record represents a significant extension of range within the Gulf of California, the previous northernmost distribution limit being at Banco Arena, in the southwestern Gulf (Wicksten 1983). According to Wicksten (*op.cit.*) *A. bellimanus* is found from the lowest intertidal to 80 m. Present record slightly extent the lower bathymetric limit to 95 m and represents the first deep–water capture of this species along continental México.

ANOMURA

Superfamily Paguroidea Latreille, 1803
Family Diogenidae Ortmann, 1892

Petrochirus californiensis Bouvier, 1895.

Material examined: St. 3, 01/VIII/87, 3 specimens (C.L. 17.2–19.5 mm) collected at 79–85 m (trawl); St.4, 01/VIII/87, 2 specimens collected at 85 m (trawl).

Distribution: From Bahia Santa María, on the west coast of Baja California, and Punta Peñasco in the upper–Gulf, to Caleta La Cruz, Peru (Ball and Haig 1974, Haig, *in litt.*).

Remarks: *Petrochirus californiensis* is reported mostly as a shallow water species (0–12 m) (Ball and Haig 1974). Recent sampling on the continental shelf of the Gulf of California, however, demonstrated that this species is found to at least 107 m (CORTES Cruises; unpublished data). The material reported herein confirms this fact.

Dardanus sinistripes (Stimpson, 1859)

Material examined: St.3, 01/VIII/87, 7 specimens (C.L. 7.0–11.1 mm) collected at 79–85 m (trawl); St.4, 01/VIII/87, 5 specimens (C.L. 5.5–14.5 mm) collected at 85 m (trawl); St.25, 04/VIII/87, 2 ♂ (C.L. 12.4–13.0 mm), 1 ♂ (C.L. 14.7 mm) and 1 ♀ ovig. (C.L. 13.6 mm) collected at 87–97 m (trawl).

Distribution: Throughout the Gulf of California and from Boca de Santo Domingo, on the West coast of Baja California, south to Bahia Sechura, Peru (Ball and Haig 1974 and unpublished data).

Remarks: On the eastern shelf of the Gulf of California, specimens of the genus *Dardanus* are almost invariably found in bottom–trawls between 20 and 115 m. Although all specimens collected so far have been identified with Stimpson's species, it would seem that two species of *Dardanus* might occur along the Pacific coast of tropical America (Biffar and Provenzano 1972), and the material reported herein might eventually belong to another species, so far undescribed.

Paguristes aztatlanensis Glassell, 1937.

Material examined: One specimen, taken at St. 3, 01/VIII/87, at 79–85 m (trawl).

Distribution: *Paguristes aztatlanensis,* described by Glassell (1937a) from material collected at 90 m off Cabo Pulmo has apparently never been taken since. Our material would add a second locality for this rare (overlooked!) species, off Guaymas.

Remarks: Although the single specimen collected during the GUAYTEC II agrees with the short description of Glassell (1937a; not illustrated in the original description), it may be necessary to compare it with the type, if still available.

Family Paguridae Latreille, 1803

Pagurus smithi (Benedict, 1892)

Material examined: St.3, 01/VIII/87, 7 specimens (C.L. 6.2–7.8 mm) collected at 79–85 m (trawl); St.4, 01/VIII/87, 55 specimens (C.L. 4.9–8.8 mm) collected at 85 m (trawl); St.25, 4/VIII/87, 5 specimens (C.L. 5.0–6.1 mm) collected at 87–97 m (trawl); St. 69a, 11/VIII/87, 1 ♀ (C.L. 67.3 mm) collected at 83–88 m (trawl); St. 69b, 11/VIII/87, 6 specimens (C.L. 3.1–8.7 mm) collected at 65–82 m (trawl); St.77, 13/VIII/87, 3 specimens (C.L. 5.8–7.4 mm)collected at 94–97 m (trawl).

Distribution: Throughout the Gulf of California and along the west coast of Baja California up to Isla San Benito (Haig 1977).

Remarks: This species is reported from 33 m and below (Haig *et al.* 1970). The lower limit of the bathymetric distribution of *P. smithi* is not clearly defined in the literature; our data indicate that it occurs to at least 115 m (this study and unpublished data of the CORTES Cruises).

Phimochirus californiensis (Benedict, 1892)

Material examined: St.3, 01/VIII/87, one specimen (C.L. 6.5 mm) collected at 79–85 m (trawl); St. 69b, 11/VIII/87, one specimen collected at 65–82 m (trawl).

Distribution: From Monterey, California, to Darien, Panama and Islas Galapagos, Ecuador; throughout the Gulf of California (Snyder–Conn 1980).

Remarks: This is the *Pylopagurus californiensis* of earlier literature, transfered to the genus *Phimochirus* by Mc Laughlin (1981a, 1981b).

Manucomplanus varians (Benedict, 1892)

Material examined: St.77, 13/VIII/87, one specimen (C.L. 3.9 mm) collected at 94–97 m (trawl).

Distribution: Bahia Magdalena, on the west coast of Baja California, and the entire Gulf of California; a single record at Isla Secas, Panama (Walton 1954, Ball and Haig 1974).

Remarks: Unless more localities are provided for this species between the southeastern Gulf of California and Panama, it would be wise to consider the record from Panama as extra-limital. *Manucomplanus varians* was removed from the genus *Pylopagurus* by Mc Laughlin (1981a).

Iridopagurus occidentalis (Faxon, 1893).

Material examined: St. 69b, 11/VIII/87, one specimen (C.L. 5.0 mm) collected at 65–82 m (trawl).

Distribution: Gulf of California, from North of Isla Tiburon and Isla Angel de la Guarda to the Bay of Panama; Islas Cocos, Costa Rica (Glassell 1937b, present study and unpublished data of the CORTES Cruises).

Remarks: This is the unique and type-species of the genus *Iridopagurus* established by the Saint Laurent (1966). Since its description as *Spiropagurus occidentalis* in 1893-95 by Faxon this species has been scarcely reported in the literature, probably because it does not seem to appear above 60 m of depth.

Superfamily Galatheoidea Samouelle, 1819
Family Galatheidae Samouelle, 1819

Munida cf. *tenella* Benedict, 1902.

Material examined: St. 69b, 11/VIII/87, 11 specimens (C.L. 5.0–8.1 mm) collected at 65–82 m (trawl).

Distribution: Throughout the Gulf of California (unpublished data of CORTES Cruises).

Remarks: Although the specimens collected during the GUAYTEC cruise are all relatively small (the maximum known size is up to 19.0 mm C.L.), they present the typical anterodorsal spines on abdominal segments 2, 3 and 4 (see Benedict 1902). However, the chelae are relatively shorter when compared to material from the CORTES Cruises held in the reference collection of the LIPB.

Munida sp.

Material examined: St.59, 8/VIII/87, 1 specimen (C.L. 11.0 mm) collected at 100–103 m (trawl).

Distribution: Northern Gulf of California.

Remarks: The specimen of *Munida* collected during the GUAYTEC Cruise is similar to a large series of specimens collected in the northern Gulf of California during the CORTES Cruises. It belongs to an undescribed species that will be treated in a forthcoming paper.

Family Porcellanidae Haworth, 1825

Porcellana cancrisocialis Glassell, 1936.

Material examined: St.4, 01/VIII/87, 1 ♂ (C.W. 3.5 mm) collected at 85 m (trawl).

Distribution: From Bahia San Juanico, west coast of Baja California, and the entire Gulf of California, to Tumbes, Peru (Gore and Abele 1976).

Remarks: Commensal on *Petrochirus californiensis* and *Dardanus sinistripes*, the specimen examined was found arnong the trawled material that also included both these species of hermit crabs (see under Diogenidae).

Porcellana hancocki Glassell, 1938

Material examined: St.58, 07/VIII/87, 1 ♂ (C.W. 7.7 mm) collected at 95 m (trawl).

Distribution: From Rocas Consag, in the upper-Gulf of California, and along the eastern coast of the Gulf to Panama (and maybe to Peru) (Gore and Abele 1976, unpublished data CORTES Cruises).

Remarks: Contrary to *P. paguriconviva* Glassell and *P. cancrisocialis* Glassell, *P. hancocki* has never been reported as a commensal (Haig 1960).

BRACHYURA

Superfamily Dromioidea de Haan, 1833
Family Dromiidae de Haan, 1833

Dromidia larraburei Rathbun, 1910

Material examined: St. 69b, 11/VIII/87, 1 ♂ (C.W. 11.8 mm) collected at 65–82 m (trawl).

Distribution: From Monterey Bay, California to Bahia de Sechura, Peru, including the entire Gulf of California and Islas Galapagos, Ecuador (Garth 1960).

Remarks: Although this species has been reported in very shallow water by Rathbun (1937), it generally occurs between 40 and 90 m.

Hypoconcha panamensis Smith, 1869

Material examined: St. 25, 04/VIII/87, 1 ♀ (C.W. 13.7 mm) collected at 87–97 m (trawl).

Distribution: From the upper-Gulf of California to Matapalo, Peru; Islas Galapagos and Socorro (Garth 1960).

Remarks: This is the most common species of *Hypoconcha* in the Gulf of California. Like the other species found there, *H. panamensis* carries a valve of a Pelecypoda for protection.

Superfamily Tymoloidea Alcock, 1896
Family Tymolidae Alcock, 1896

Clythrocerus decorus Rathbun, 1904

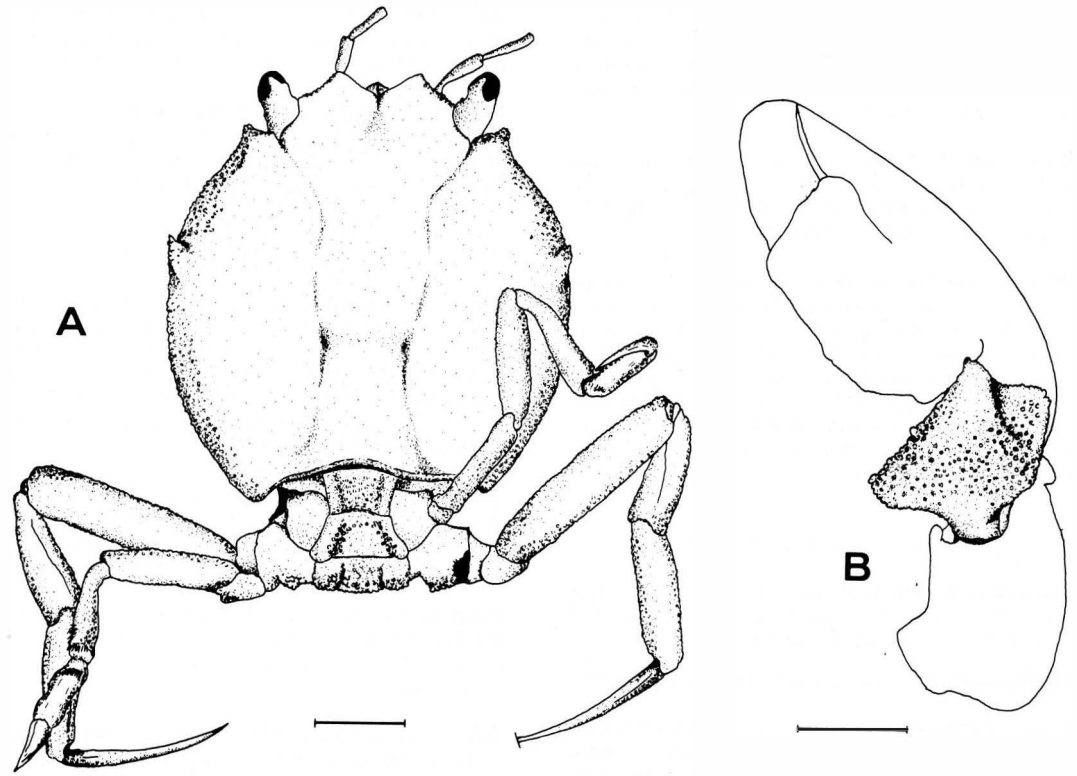

Fig. 4. *Clythrocerus laminatus* Rathbun, male specimen from GUAYTEC station 69b: A, dorsal view; B, right cheliped in dorsal view, notice shape of carpus (scale = 1 mm).

Material examined: St.68, 11/VIII/87, 32 ♂ (C.W. 4.8–6.9 mm) and 30 ♀ (C.W. 4.5–6.0 mm) collected at 162–175 m (dredge); St. 69b, 11/VIII/87, 6 ♂ (C.W. 5.4–6.7 mm) and 22 ♀ (C.W. 4.4–5.1 mm) collected at 65–82 m (trawl); St.76 13/VIII/87, 1 ♂ (C.W. 5.4 mm) collected at 175–185 m (dredge).

Distribution: From Brockway Point, California south to the Gulf of California where it is known from Cabo San Miguel (unpublished data, CORTES Cruises) and the localities given hereabove, in the Central Gulf.

Remarks: *Clythrocerus decorus* had previously been collected from 67 to 110 m (unpublished data, CORTES Cruises) and is now being recorded down to at least 175 m. The systematic position of the genus *Clythrocerus* is discussed by Guinot (1978a), Manning and Holthuis (1981) and Williams (1984). Guinot's classification within the Tymoloidea, with a single family, is followed here.

Clythrocerus laminatus Rathbun, 1935
(Fig. 4)

Material examined: St. 69b, 11/VIII/87, 2 ♂ (C.W. 3.9–4.7 mm) and 1 ♂ ovig. (C.W. 2.9 mm) collected at 65–82 m (trawl).

Distribution: Islas Galapagos and Clarion (Rathbun 1937, Garth 1946) and Gulf of California (one locality).

Remarks: The position and size of the lateral tooth on carapace, the shape of frontal lobes and the presence of the strong subrectangular inner projection on carpus are diagnostic characters for *C. laminatus* (Fig. 4). The capture of two males and one ovigerous female indicates the presence of a reproducing population of this species in the Gulf of California.

The discovery of a second species of *Clythrocerus* in the Gulf of California is noteworthy, particularly so because *C. laminatus* was considered endemic to the Islas Galapagos (Garth 1946, 1966). Only 11 species of decapod crustaceans had so far been reported only from the Gulf of California and one or several oceanic islands of the east Pacific. Of these, four (*Actaea angusta* Rathbun, *Alpheus exilis* Kim and Abele, *Upogebia galapagensis* Williams and *Munida mexicana* Benedict) were known only from the Islas Galapagos. *Clythrocerus laminatus* is therefore the twelfth species of decapod crustacean and the sixth species of brachyuran crab to present such a peculiar geographic distribution.

Superfamily Dorippoidea Mc Leay, 1838
Family Dorippidae Mc Leay, 1838

Ethusa lata Rathbun, 1893

Material examined: ST.3, 01/VIII/87, 1 ♂ (C.W. 17.8 mm) and 1 ♀ (C.W. 20.2 mm) collected at 79–85 m (trawl); St.4, 01/VIII/87, 2 ♂ (C.W. 16.1–21.1 mm) collected at 85 m (trawl); St.58, 07/VIII/87, 1 ♂ (C.W. 18.1 mm) collected at 95 m (trawl).

Distribution: In literature, *E. lata* is reported from Isla Cedros, on the west coast of Baja California, to La Plata, Ecuador, including the entire Gulf of California. Islas Galapagos and Cocos (Rathbun 1937, Garth 1966).

Remarks: The discovery of a new species of *Ethusa* close to *E. lata* from the eastern tropical Pacific (see below) arises the problem of deciding to which species (*E. lata* or *E. steyaerti*?) should the earliest records of *E. lata* been attributed. Material obtained during the CORTES Cruises and compared to the type material of *E. lata*, indicates that Rathbun's species is actually present in the whole Gulf, while *E. steyaerti* is apparently restricted to the Central Gulf (see below).

Ethusa steyaerti Hendrickx, 1989.

Material examined: St.25, 04/VIII/87, 1 ♂ (C.W. 13.5 mm) collected at 87–97 m (trawl); St. 77, 13/VIII/87, 1 ♂ C.W. 15.0 mm) collected at 94–97 m (trawl).

Distribution: Central Gulf of California (Hendrickx 1989b).

Remarks: *Ethusa steyaerti* has so far been collected on the outer shelf, between 87 and 115 m. A revisión of material previously cited as *E. lata* in the literature is necessary in order to confirm the endemicity of *E. steyaerti*.

Family Palicidae Rathbun, 1898

Palicus fragilis (Rathbun, 1893)

Material examined: St.68, 11/VIII/87, 6 ♂ (C.W. 8.8–10.8 mm), 2 ♂ (C.W. 10.7–10.9 mm) and 11 ♂ ovig. (C.W. 9.4–11.8 mm) collected at 162–175 m (dredge); St. 69b, 11/VIII/87, 3 ♂ (C.W. 8.0–10.9 mm) and 13 ♀ ovig. (C.W. 8.6–11.2 mm) collected at 65–82 m (trawl).

Distribution: From Isla Cedros, on the west coast of Baja California, and from Puerto Refugio and Guaymas, in the Gulf of California, south to Ecuador (3°59' N). Islas Cocos and Galapagos (Crane 1937, Garth 1960).

Remarks: Although *P. zacae* (Glassell) is cited by Garth (1960: 113) as a valid species endemic to the Gulf of California, on the basis of Garth's review of the Galapagos Brachyura (1946) it must be considered as a synonym of *P. fragilis*. Consulted on this matter, Garth (pers. conm., May 1987) confirmed this fact.

Superfamily Calappoidea de Haan, 1833.
Family Calappidae de Haan, 1833

Calappa saussurei Rathbun, 1898

Material examined: St.4, 01/VIII/87, 14 ♂ (C.W. 23.4–40.9 mm) and 9 ♂ (C.W. 23.2–35.7 mm) collected at 85 m (trawl); St.10, 02/VIII/87, 1 ♂ (C.W. 31.1 mm) collected at 85–89 m (trawl).

Distribution: From Punta Tosca, on the western coast of Baja California, and throughout the Gulf of California, south to Isla La Plata, Ecuador (Rathbun 1937, Garth 1960).

Remarks: Contrary to what is stated by Rathbun (1937), *C. saussurei* does not occur at Islas Galapagos where *C. convexa* de Saussure, the second species of the genus in the Eastern Pacific, is to be found (Garth 1946).

Hepatus lineatus Rathbun, 1898.

Material examined: St.3, 01/VIII/87, 1 ♂ (C.W. 129.6 mm) and 1 ♀ (C.W. 57.3 mm) collected at 79–85 m (trawl); St.4, 01/VIII/87, 2 ♂ (C.W. 74.4–110.4 mm) collected at 85 m (trawl); St. 76, 13/VIII/87, 1 ♂ (C.W. 112.7 mm) collected at 175–185 m (dredge); St.77, 13/VIII/87, 3 ♂ (C.W. 107.5–118.6 mm) and 2 ♀ (C.W. 87.8–88.4 mm) collected at 94–97 mm (trawl).

Distribution: From Punta Abreojos, on the west coast of Baja California, and from the upper Gulf of California to La Paz and Bahia de Macapule (Buitendijk 1950, Brusca 1980).

Remarks: *Hepatus lineatus* does not seem to occur outside the Gulf of California. It is a large species (max. C.W. of about 124.0 mm for the males), much larger than *H. kossmanni* (max. C.W. of about 75.0 mm).

Guinot (1966a, 1966b, 1978a, 1978b) removed the genus *Hepatus* Latreille (together with *Hepatella* Smith and *Osachila* Stimpson) from the Calappidae to the provisional group of Parthenoxystomata, a position not adopted herein for the purpose of clarity.

Superfamily Leucosioidea Samouelle, 1819
Family Leucosiidae Samouelle, 1819

Iliacantha schmitti Rathbun, 1935

Material examined: St.25, 04/VIII/87, 1 ♀ ovig. (C.W. 27.4 mm) collected at 87–97 m (trawl).

Distribution: From Punta Tosca, on the west coast ob Baja California, and the Central Gulf of California, to Isla La Plata, Ecuador (Crane 1937b, Garth 1960).

Remarks: The presense of two rostral teeth above the eyes make this species easy to recognize.

Iliacantha hancocki Rathbun, 1935

Material examined: St.4, 01/VIII/87, 2 ♂ (C.W. 27.9–29.0 mm), 3 ♀ (C.W. 21.2–25.3 mm) and 1 ♀ ovig. (C.W. 25.0 mm) collected at 85 m (trawl).

Distribution: From Punta Arboleda (26°47' N), on the east coast of the Gulf of California, and Bahia Santa María, on the west coast of Baja California, to Cabo Santa Elena, Ecuador (Garth 1966).

Remarks: The record of Punta Arboleda represents a slight extension of the northern distribution limit of *I. hancocki*,

which is by far more common than *I. schmitti,* the only other species of the genus present in the Gulf.

Randallia ornata Randall, 1939)

Material examined: St.25, 04/VIII/87, 1 ♂ (C.W. 21.2 mm), damaged, collected at 87–97 m (trawl); St.58, 07/VIII/87, 1 ♀ (C.W. 14.2 mm) collected at 95 m (trawl); St.67, 11/VIII/87, 1 ♂ (C.W. 32.6 mm) collected at 95 m (dredge); St. 68, 11/VIII/87, 4 ♀ (C.W. 8.4–12.1 mm) collected at 162–175 m (dredge); St. 76, 13/VIII/87, 1 ♀ (C.W. 34.9 mm) collected at 175–185 m (dredge).

Distribution: From San Francisco, California, to Bahia Magdalena, on the west coast of Baja California; in the Northern Gulf and to off Punta San Carlos (27° 58' N) (Garth 1966).

Remarks: Previous bathymetric records for this species are 10 to 93 m (Rathbun 1937); the record of station 76 almost doubles the lower limit (at least to 175 m). Unpublished records at 111-112 m are also available for the Northern Gulf (CORTES Cruises).

Although no records are available so far for the southern Gulf of California, the occurrence of the species at 165–175 m at station 76 might indicates that *R. ornata* occurs still deeper in more southern latitudes in tropical–subtropical waters.

Randallia americana (Rathbun, 1893)

Material examined: St.25, 04/VIII/87, 1 ♂ (C.W. 9.4 mm) collected at 87–97 m (trawl); St. 68, 11/VIII/87, 1 ♀ ovig. (C.W. 8.8 mm) collected at 162–175 m (trawl); St. 77, 13/VIII/87, 1 ♂ (C.W. 9.9 mm) collected at 94–97 m (trawl).

Distribution: Gulf of California, from the northern end to Banco Gordo (west coast) and Bahia Santa Maria (east coast) (unpublished records of the CORTES Cruises).

Remarks: This endemic species of *Randallia* is very common on the eastern shelf. The capture of *R. americana* at 162–175 m represents a new bathymetric record for this species, previously known from 18 to 130 m (Crane 1937).

Superfamily Majoidea Samouelle, 1819
Family Inachoididae Dana, 1851

Euprognatha bifida Rathbun, 1893

Material examined: St. 25, 04/VIII/87, 1 ♂ (C.W. 11.0 mm) collected at 87–97 m (trawl); St.68, 11/VIII/87, 1 ♂ (C.W. 10.7 mm) collected at 162–175 m (dredge); St. 69b, 11/VIII/87, 17 ♂ (C.W. 5.8–12.5 mm) and 12 ♀ ovig. (C.W. 5.2–8.5 mm) collected at 65–82 m (trawl).

Distribution: From Isla San Benedicto, west coast of Baja California, and the northern Gulf of California, south to Cabo San Francisco, Ecuador; Islas Cocos and Revillagigedo (Garth 1958).

Remarks: One of the dominant species of Majidae in trawl–catches in the Gulf of California, *E. bifida* has been caught between 2 and 165 m (Garth 1958).

Collodes tenuirostris Rathbun, 1893

Material examined: St. 4, 01/VIII/87, 10 ♂ (C.W. 18.1–20.9 mm), 1 ♂ (C.W. 16.2 mm) and 5 ♀ ovig. (C.W. 16.1–17.6 mm) collected at 85 m (trawl); St. 77, 13/VIII/87, 1 ♂ (C.W. 14.0 mm) and 2 ♀ ovig. (C.W. 15.1–18.6 mm) collected at 94–97 m (trawl).

Distribution: From Isla Cedros, on the west coast of Baja California, and the whole Gulf of California, to Bahia Sechura, Peru (Hendrickx *et al.* 1989).

Remarks: Probably one of the most common species of b rachyuran crabs on the continental shelf, *C. tenuirostris* has been reported to 265 m (Garth 1958), although it would appears that the species occurs mostly between 40 and 90 m (unpublished data, CORTES Cruises).

Paradasygyus depressus (Bell, 1835)

Material examined: St. 3, 01/VIII/87, 11 ♀ ovig. (C.W. 23.7–31.6 mm) collected at 79–85 m (trawl); St. 4, 01/VIII/87, 98♂ (C.W. 20.2–33.6 mm) and 140 ♀ ovig. (C.W. 21.8–29.7 mm) collected at 85 m (trawl); St. 10, 02/VIII/87, 2 ♂ (C.W. 22.7–28.5 mm), 1 ♀ (C.W. 24.1 mm) and 2 ♂ ovig. (C.W. 21.9–22.0 mm) collected at 85–89 m (trawl).

Distribution: Gulf of California, from its northern end; south to Bahia Cuevita, Colombia (Hendrickx *et al.* 1989).

Remarks: Another very common species of Majidae in the Gulf of California, *P. depressus* was abundantly collected during the GUAYTEC II Cruise.

Pyromaia tuberculata (Lockington, 1877)

Material examined: St.10, 02/VIII/87, 1 ♂ (C.W. 14.4 mm) collected at 85–89 m (trawl); St. 25, 04/VIII/87, 2 ♂ (C.W. 16.1–17.2 mm) collected at 87–97 m (trawl); St.59, 08/VIII/87, 2 ♂ (C.W. 17.0–21.1 mm), 2 ♀ (C.W. 14.8 mm) 1 ♀ ovig. (C.W. 19.0 mm) collected at 100–103 m (trawl); St. 68, 11/VIII/87, 2 ♂ (C.V. 11.8–14.0 mm) and 1 ♀ (C.W. 14.5 mm) collected at 162–175 m (dredge); St. 69b, 11/VIII/87, 2 ♀ ovig. (C.W. 13.0–13.8 mm) collected at 65–82 m (trawl).

Distribution: From Tomales Bay, California, to Cabo Corrientes, Colombia, including the whole Gulf of California (Garth 1959, 1960).

Remarks: On the basis of specimens collected in the Gulf of California, Garth (1958) considered two subspecies of *P. tuberculata* (subspp. *mexicana* and *tuberculata,* the former being restricted to the northern Gulf). A close examination of a very large series of specimens collected at many localities in the Gulf of California (material from the CORTES cruises), demonstrates that the characteristics selected by Garth (*op.cit.*), namely the relative length of the neck and rostrum, the grade of swelling of branchial cavities and the ornamentation of the carapace, are not clearly distinct

according to the geographic area where the specimens come from, as the recognition of the subspecies suggests. Specimens of typical "*tuberculata*" are commonly found in the northern Gulf, and a number of specimens with "swollen branchial cavities and short neck" (characteristics of typical "*mexicana*") also have long median tubercules and a reduced number of granules on the carapace (characteristics of typical "*tuberculata*"). In the view of the distributions overlap of the two subspecies and the existence of intermediate specimens, it seems preferable to eliminate these subspecies.

Family Inachidae Mc Leay, 1838

Erileptus spinosus Rathbun, 1893

Material examined: St.68, 11/VIII/87, 16 ♂ (C.W. 4.2–6.3 mm), ♀ (C.W. 3.9–4.2 mm) and 1 ♀ ovig. (C.W. 4.1 mm) collected at 162–175 m (dredge).

Distribution: From Santa Barbara, California to Isla Cardones, Panama, including the whole Gulf of California (Garth 1958, 1960).

Remarks: Although it has been caught in as little as 5.5 m of water, *E. spinosus* seems to occur to 549 m (Garth 1958). Most records in the Gulf of California are from below 60 m.

Podochela hemphili (Lockington, 1877).

Material examined: St. 25, 04/VIII/87, 1 ♂ (C.W. 12.2 mm) collected at 87–97 m (trawl).

Distribution: From Monterey, California to Cabo Corrientes, Colombia; in the Gulf of California, the species is found south of Islas Tiburon and Angel de la Guarda; Islas Cocos and Revillagigedo (Garth 1858, 1960).

Remarks: A rather common species in the Central Gulf. *E. hemphili* is usually found on sandy substrates to 115 m (Hendrickx 1987).

Podochela lobifrons Rathbun, 1893

Material examined: St.3, 01/VIII/87, 1 ♂ (C.W. 11.8 mm) and 1 ♀ ovig. (C.W. 10.6 mm) collected at 79–85 m (trawl); St. 4, 01/VIII/87, 1 ♂ (C.W. 12.1 mm) collected at 85 m (trawl).

Distribution: From Mugu Point, California, to Cabo San Lucas; in the Gulf of California, the species occurs from Cabo Tepoca and Islas Angel de la Guarda to Punta Arboleda (Garth 1960, Hendrickx 1987).

Remarks: *P. lobifrons* is mostly found on sandy substrates, although it is not frequently found in association with *P. hemphili* (Hendrickx 1987).

Stenorhynchus debilis (Smith, 1871)

Material examined: St. 4, 01/VIII/87, 1 ♂ (C.W. 13.3 mm) and 1 ♀ ovig. (C.W. 13.0 mm) collected at 85 m (trawl); St.25, 04/VIII/87, 1 ♂ (C.W. 16.1 mm) collected at 87–97 m (trawl).

Distribution: From the northern Gulf of California and Bahia Magdalena, on the west coast of Baja California, south to Valparaiso, Chile; Islas Cocos and Galapagos (Garth 1958, 1960).

Remarks: The only species of the genus in the eastern Pacific, it is readely recognized for its slender and long walking legs.

Family Epialtidae Mc Leay, 1838, *emend*. Drach and Guinot, 1983

Sphenocarcinus agassizi Rathbun, 1893.

Material examined: St.10, 02/VIII/87, 1 ♂ (C.W. 12.0 mm) collected at 85–89 m (trawl); St.58, 07/VIII/87, 1 ♂ (C.W. 8.3 mm) collected at 95 m (trawl); St. 68, 11/VIII/87, 1 ♂ (C.W. 8.3 mm) collected at 95–m (trawl); St. 68, 11/VIII/87, 1 ♂ (C.W. 9.3 mm) collected at 162–175 m (dredge); St. 77, 13/VIII/87, 1 ♀ ovig. (C.W. 19.8 mm) collected at 94–97 m (trawl).

Distribution: From Isla Angel de la Guarda and Cabo Lobos (29°55'), Gulf of California, south to Bahia Honda, Panama; Islas Galapagos and Cocos (Garth 1958, 1960).

Remarks: On the eastern shelf, the previously known northern distribution limit of *S. agassizi* was at Guaymas. Its lower bathymetric limit is at 165 m (Garth 1958).

Family Mithracidae Mc Leay, 1838

Stenocionops ovata (Bell, 1835)

Material examined: St. 4, 01/VIII/87, 1 juvenile (C.W. 14.6 mm) collected at 85 m (trawl); St. 67, 11/VIII/87, 4 ♂ (C.W. 86.3–119.4 mm) collected at 94–97 m (dredge); St. 77, 13/VIII/87, 12 ♂ (C.W. 97.0–123.0 m) collected at 94–97 m (trawl).

Distribution: From Punta Abreojos, west coast of Baja California, from Isla Angel de la Guarda and off Rocas Consag, south to Bahia Santa Helena, Ecuador; Islas Galapagos (Hendrickx 1989d).

Remarks: Recent collections, including the material reported herein, indicate that *S. ovata* is one of the largest spider crab of the eastern tropical Pacific, second only to *Maiopsis panamensis* Faxon that reaches up to 240.0 mm (C.W.) (Wicksten 1979, Hendrickx 1989d).

Superfamily Parthenopoidea Mc Leay, 1838
Family Parthenopidae Mc Leay, 1838
Parthenope (*Platylambrus*) *exilipes* (Rathbun, 1893)

Material examined: St.3, 01/VIII/87, 1 ♀ (C.W. 29.8 mm) collected at 79–85 m (trawl); St.4, 01/VIII/87, 4 ♂ (C.W. 24.7–36.5 mm) and 2 ♀ (C.W. 25.3–28.2 mm) collected at 85 m (trawl); St.10, 02/VIII/87, 1 ♂ (C.W. 21.7 mm) collected at 85–89 m (trawl).

Distribution: Punta San Domingo, on the west coast of Baja California. Gulf of California, from Estero Tastiota and Cabo San Miguel to Isla Lobos de Afuera, Peru; Isla Cocos (Hendrickx *et al.* 1989).

Remarks: *Parthenope* (*Platylambrus*) *exilipes* is one of the most common species of Parthenopidae *s.s.* in the Gulf of California, well distributed along both coasts.

Leiolambrus punctatissimus (Owen, 1839)

Material examined: St.4, 01/VIII/87, 15 ♂ (C.W. 22.1–26.7 mm), 43 ♀ (C.W. 19.9–26.0 mm) and 5 ♀ ovig. (C.W. 20.7–24.3 mm) collected at 85 m (trawl); St. 10, 02/VIII/87, 2 ♂ (C.W. 23.5–26.5 mm) and 5 ♀, recently spawned (C.W. 21.0–22.7 mm) collected at 85–89 m (trawl).

Distribution: From Punta Tosca, west coast of Baja California, and the northern Gulf of California (Isla Tiburon and Punta Willard) to Esmeraldas, Ecuador (Hendrickx *et al.* 1989).

Remarks: Another common species of Parthenopidae *s.s.* of the Gulf of California, *L. punctatissimus* is mostly found on the eastern shelf. This species has apparently never been reported between the Gulf of California and Costa Rica, where it is known from 5 localities (Garth 1958).

Family Aethridae Dana, 1851,
sensu Ng and Rodriguez, 1986

Mesorhoea belli (A. Milne Edwards, 1878)

Material examined: St.4, 01/VIII/87, 1 ♂ (C.W. 15.2 mm) and 2 ♀ (C.W. 18.4–20.9 mm) collected at 85 m (trawl); St. 58, 07/VIII/87, 1 ♂ (C.W. 16.0 mm) collected at 95 m (trawl); St. 77, 13/VIII/87, 2 ♂ (C.W. 19.4–21.9 mm) collected at 94–97 m (trawl).

Distribution: West coast of Baja California, south of Punta Abreojos. Throughout the Gulf of California and south to Esmeraldas, Ecuador; Islas Galapagos (Hendrickx *et al.* 1989).

Remarks: *Mesorhoea belli* is included herein in the Aethridae Dana with some restriction. Ng and Rodriguez (1966) considered the genus *Mesorhoea* as a last step within the Parthenopidae *s.l.* towards the "Oxystomateous" type as defined by Guinot (1966a: 747). If the "...tendance parthénoxystomienne...", as defined by Guinot (1978a, b), clearly appears in *Mesorhoea,* the affinities of this genus are still to be defined more precisely.

Superfarnily Portunoidea Rafinesque, 1815
Family Portunidae Rafinesque, 1815

Portunus iridescens (Rathbun, 1893)

Material examined: St. 69b, 3 juveniles (C.W. 11.5–16.0 mm) collected at 65–82 m (trawl).

Distribution: From Cabo San Lazaro, on the west coast of Baja California and from Punta Diggs and Cabo Lobos, in the Gulf of California; south to Mancora, Peru (del Solar *et al.* 1970, Hendrickx 1984b).

Remarks: *P. iridescens,* a species of Portunidae easy to recognize for its very long carpal spine, has never been reported between the southern Gulf and Costa Rica.

Portunus xantusii xantusii (Stimpson, 1860)

Material examined: St.3, 01/VIII/87, 1 ♀ (C.W. 38.2 mm) collected at 79–85 m (trawl); St.4, 01/VIII/87, 2 ♂ (C.W. 39.1–46.2 mm) collected at 85 m (trawl); St. 25, 04/VIII/87, 3 ♂ (C.W. 25.0–41.6 mm) collected at 87–97 m (trawl); St. 69a, 11/VIII/87, 1 ♀ (C.W. 21.2 mm) collected at 83–88 m (trawl).

Distribution: From Santa Barbara, California, to the southern Gulf of California (Hendrickx 1984b).

Remarks: The range of this species of Portunidae is from California (*P.x. xantusii*) to Ecuador (*P. x. affinis* (Faxon)), with a third subspecies, *P. x. minimus* Rathbun, restricted to the Gulf of California and surrounding areas (Hendrickx 1984b). Distinction at subspecies level is, however, sometimes difficult due to the fact that the subspecies, as recognized by Stephenson (1965), are not fully allopatric. Intermediate forms *affinis–minimus* collected in the southern Gulf of California (see Garth and Stephenson 1966), might be the result of interbreeding between "subspecific populations".

Euphylax robustus A. Milne Edwards, 1874.

Material examined: St.3, 01/VIII/87, 1 ♀ (C.W. 88.7 mm) collected at 79–85 m (trawl).

Distribution: From the northern Gulf of California, south to Paita, Peru (Hendrickx 1984b).

Remarks: This large species of swimming crab is apparently absent from the Gulf's west coast south of Isla Tiburón.

Superfamily Corystoidea Samouelle, 1819.
Family Cancridae Latreille, 1803.

Cancer amphioetus Rathbun, 1898.

Material examined: St.68, 11/VIII/87, 3 ♂ (C.W. 16.1–16.4 mm) collected at 162–175 m (dredge); St. 70b, 10/VIII/87, 3 juveniles (C.W. aprox. 10.1 mm) collected at 360–380 m (dredge).

Distribution: From Newport Bay, Oregon, south to Bahia Magdalena on the west coast of Baja California. The species is known from the northern and central Gulf, Japan and Korea (Carvacho and Bonfil Garth *in litt.*)

Remarks: Previous bathymetric records along the west coast of America are from 8 to 111 m (Rathbun 1930, unpublished data, CORTES cruises). The three juveniles specimens collected during the GUAYTEC cruise at 360–380 m, off the coast of Isla San Lorenzo, were compared to a large series of *C. amphioetus* from the Gulf of California and belong, undoubtly to that species, thus representing a considerable increase of the lower bathymetric limit for the American continent. *Cancer amphioetus* has been recovered from as deep as 310 m off the coast of Japan (Rathbun 1930).

Superfamily Xanthoidea Mc Leay, 1838.
Family Xanthidae McLeay, 1838
sensu Guinot, 1978a.

Edwardsium lobipes (Rathbun, 1898).

Material examined: St.3, 01/VIII/87, 2 ♂ (C.W. 17.8–29.7 mm) and 1 ♀ (C.W. 13.3 mm) collected at 79–85 m (trawl); St.4, 01/VIII/87, 2 ♂ (C.W. 12.9–30.0 mm) collected at 85 m (trawl).

Distribution: Gulf of California, from Bahia Santa Inés and Estero Tastiota, south to Bahia de Panama, Panama; Islas Galapagos.

Remarks: This species, known in earlier literature as *Medaeus lobipes*, was removed from the genus *Medaeus* and included in the genus *Edwardsium* Guinot, Euxanthinae Alcock, one of the 5 subfamilies of Xanthidae considered by Guinot (1967a, 1978a).

Family Panopeidae Ortmann, 1893
sensu Guinot, 1978a.

Nanocassiope polita (Rathbun, 1893)
(Figs. 5–6)

Material examined: St. 69b, 11/VIII/87, ♂ (C.W. 10.7 mm) collected at 65–82 m (trawl).

Distribution: From Isla Cedros, on the west coast of Baja California, Cabo San Miguel and Estero Tastiota, in the Gulf of California, to Banco Hannibal, Panama; Islas Cocos, Clarion and Galapagos (Rathbun 1930, Garth 1961, unpublished records of CORTES Cruises.

Remarks: *Nanocassiope polita* was removed from *Micropanope* Stimpson by Guinot (1967: 356) on the basis of morphological affinities with three other species of Xanthidae (*sensu* Balss 1957) (*Xanthodes melanodactylus* A. Milne Edwards, *Xanthias alcocki* Rathbun, and *Heteropanope granulipes* Sakai), that she included in the genus *Nanocassiope* Guinot. Guinot (*loc. cit.*) did not figure the male pleopod of *N. polita*.

In his study of the decapod crustaceans of St. Helena Islands, Chace (1966) included *N. polita* (as *Micropanope*) in the synonymy of *Micropanope melanodactyla* (i.e. *Xanthodes melanodactylus*), the type–species of *Nanocassiope* (Guinot, 1967). The comparison of tip of first pleopod of *Nanocassiope melanodactyla* (*sensu* Guinot) (Fig. 5D) to that of *N. polita* (Fig. 5A–B) illustrates the great similarity existing between the two appendages.

Small differences are: 1) *N. polita* presents a series of 6 curved subterminal setae of equal length followed by a shorter one, while in *N. meladonactyla* there are 6 subterminal setae of increasing length, the proximal being the shorter; 2) in *N. polita* the setae are arranged in a vertical row, while in *N. meladonactyla* the setae form a cluster and their basis are arranged somewhat in a curve.

Family uncertain (? Xanthidae).

Chacellus pacificus Hendrickx, 1989.

Material examined: St.59, 08/VIII/87, 1 ♂ (C.W. 40.7 mm) collected at 100–103 m (trawl).

Distribution: Gulf of California (Hendrickx 1989a).

Remarks: The genus *Chacellus* Guinot, created to accomodate a species from the Gulf of Mexico and Florida (see Guinot 1969c), presents in both known species a cyclometopous–like organization. It should therefore be placed close to the Xanthidae, as suggested by Guinot (1969c: 722), but its position within the Xanthoidea is still uncertain (Hendrickx 1989a).

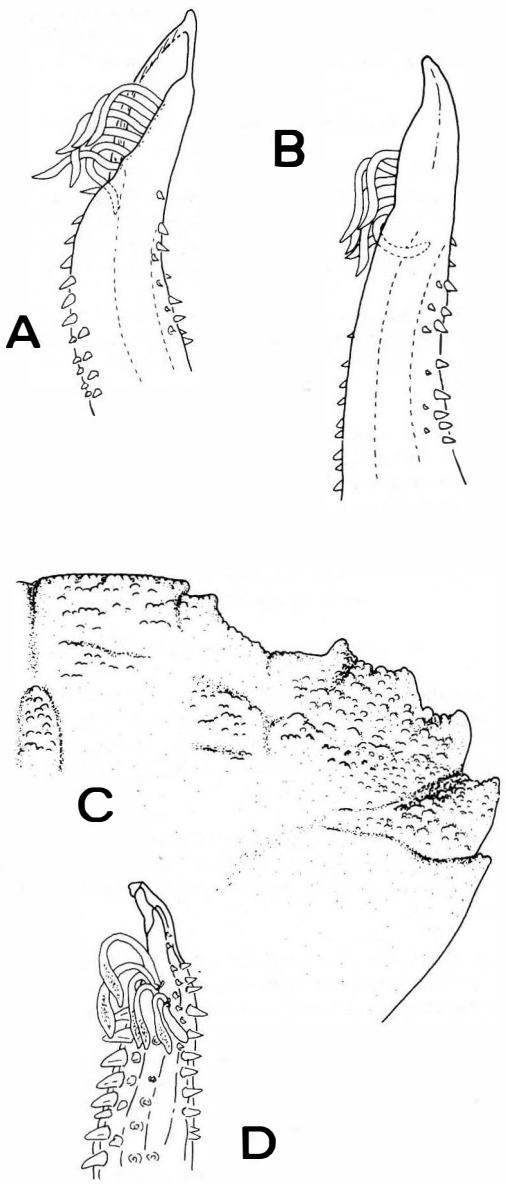

Fig.5. A–C, *Nanocassiope polita* (Rathbun), male specimen from GUAYTEC station 69b: A–B, tip of male first pleopod; C, anterolateral part of carapace. D, *Nanocassiope melanodactyla* (A. Milne Edwards), tip of male first pleopod (redrawn from Guinot 1967).

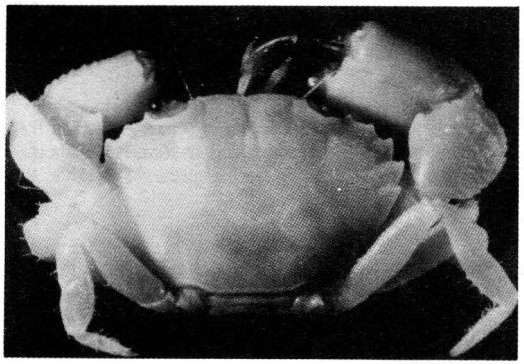

Fig.6. *Nanocassiope polita* (Rathbun), male specimen from GUAYTEC station 69b (10.7 mm C.W.).

Family Goneplacidae Mc Leay, 1838.

Trizocarcinus dentatus (Rathbun, 1893).

Material examined: St.4, 01/VIII/87, 1 ♀ (C.W. 10.5 mm) and 3 ♀ ovig. (C.W. 15.0–25.3 mm) collected at 85 m (trawl); St. 58, 07/VIII/87, 3 ♂ (C.W. 12.9–20.7 mm) collected at 95 m (trawl).

Distribution: Throughout the Gulf of California and south to Ecuador (00°55' N) (Garth 1948, 1960 and *in lit.*, unpublished records of the CORTES Cruises).

Remarks: According to Guinot (1970), the genus *Trizocarcinus* Rathbun belongs to the "Goneplacidae euryplaciens", the Euryplacinae Stimpson, although some features of *T. dentatus*, the type-species, set the genus a little apart from the other genera included in this subfamily (see Guinot 1969b: 519).

DISCUSSION

Of the 59 species of crustaceans collected during this study, 5 belong to the Stomatopoda and 52 to the Decapoda (5 Penaeoidea; 4 Caridea; 11 Anomura; 34 Brachyura). Except for *Schmittius politus* the species of stomatopods collected are relatively common in the Gulf of California, especially in the northern Gulf (*S. bigelowi*) and on the eastern shelf (Hendrickx and Salgado-Barragan 1990). Among the Penaeoidea, only the record in deep-water (360–380 m) of *Solenocera mutator* is noteworthy and this medium size penaeid shrimp could represent an unexploited fishery resource on the lower shelf and in deeper-water (Hendrickx 1986, 1989c). Only a few species of Caridea were caught during this study, including a new species of deep-water *Plesionika*. Among the Anomura, the hermit-crabs (7 species) were the most abundant and two species of *Porcellana* were found, including *P. cancrisocialis*, a commensal Porcellanidae common throughout the Gulf of California. With 34 species examined, brachyuran crabs were by far the dominant group. The capture of two species of *Clythrocerus* within the Gulf of California is probably one of the most interesting features of the survey.

When compared to the 335 species and subspecies of stomatopod and decapod crustaceans known from the continental platform of the Gulf of California (20 to 150 m) (Hendrickx, unpublished data), the collection obtained during the GUAYTEC II Cruise is rather poor. The main reasons for it are: 1) macro-crustacean fauna on the continental platform grow poorer with depth and about 20–30 species only are commonly found below 90 m (Hendrickx 1984a, 1985, 1986, Hendrickx and Salgado-Barragan 1990, Hendrickx unpublished data); 2) although the Gulf of California stomatopod and decapod crustaceans fauna is mostly tropical, the endpoints to northern advance of Panamic species (as defined by Garth 1960) within the Gulf are sometimes located in the southern Gulf (Garth 1960, Hendrickx, unpublished data); 3) the sampling was done by trawl or dredge, no grabs were used, and the macro-crustaceans infauna is therefore not represented; and 4) the total fishing effort during the GUAYTEC II Cruise was of less than five hours.

Despite all this, the results of this survey clearly indicate that the deep-water fauna of the Gulf of California is poorly known. Intensive sampling operations below the 100 m depth contour should be undertaken urgently and would almost certainly yield interesting data on the macro-crustacean fauna of the area.

RESUMEN

Cincuenta y nueve especies de crustáceos estomatópodos y decapodos incluyendo una nueva especie de Pandalidae, *Plesionika carinirostris*, fueron colectadas en el centro del golfo de California, México, durante muestreos de la fauna de invertebrados epibentónicos en la parte inferior de la plataforma continental. Las muestras fueron colectadas entre 65 y 380 m de profundidad mediante redes de arrastre y draga. Se encontraron especímenes de *Schmittius politus*, una especie de estomatópodo raramente encontrada en el golfo de California asi como especímenes de *Iridopagurus occidentalis* y *Nanocas-*

siope polita, dos especies de decapodos que han sido escasamente colectadas hasta la fecha. Además, se señala la presencia por primera vez en el golfo de California de *Clythrocerus decorus* y *C. laminatus*. Dos especies de cangrejos braquiuros recientemente descritas para el golfo de California, *Chacellus pacificus* y *Ethusa steyaerti,* fueron capturadas nuevamente.

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