

## Taxonomical remarks and distribution of the genus *Pilumnus* in the gulf of California, Mexico (Crustacea: Brachyura)

The genus *Pilumnus* Leach 1815, comprises a small group of hairy crabs which are typical residents of rocky habitats. Eight species are known along the Mexican Pacific coast (Hendrickx 1995. *Bulletin de l'Institut Royal des Sciences Naturelles de Belgique (Biologie)* 65: 125-150). Of them, six have been recorded in the upper gulf of California, north of parallel 30°N: *P. depressus* Stimpson 1871; *P. gonzalensis* Rathbun, 1893; *P. limosus* Smith, 1869; *P. spinohirsutus* (Lockington 1877), *P. tectus* Rathbun 1933 and *P. townsendi* Rathbun 1923.

The study of material collected in the upper gulf of California (Baja Peninsula and Sonora coast) and that reported by Vogel (1966, *Southwestern Naturalist* 11: 139-140) and deposited in the Peabody Museum of Natural History, Yale University, New Haven, Connecticut (YPN) confirm the presence in the area of only three of the six species listed above. Vogel's records of *P. depressus* and *P. spinohirsutus* at Punta Pelicano (near Puerto Peñasco), Sonora, were based on misidentifications of *P. gonzalensis* and *P. townsendi*, respectively.

The presence of *P. tectus* at San Felipe, BC (type locality), is not confirmed by the present study. However, most of the original diagnostic description provided by Rathbun (1933) for this species fits with specimens of *P. gonzalensis*.

A revision of the six *Pilumnus* species, based mainly on new material is presented; for each species some taxonomic remarks are provided. Voucher specimens of the below noted species are in the Colección de Invertebrados, Facultad de Ciencias, Universidad Autónoma de Baja California (UABC). Other abbreviations are: BC, Baja California, BCS, Baja California Sur; GS, Gulf of California; SON, Sonora.

### Taxonomic account Family Pilumnidae

#### *Pilumnus depressus* Stimpson 1871

*Revised distribution.* Known only from the type locality, Cabo San Lucas, BCS, Mexico.

*Material examined.* None.

*Remarks.* Vogel's (1966, *op. cit.*) record of *P. depressus* for Punta Pelicano (near Puerto Peñasco, SON), is wrong. Two females on which she based her report belong in *P. gonzalensis*. This species can be separated from *P. depressus* by the presence of 5 anterolateral spines on the carapace (Fig. 1A) and by the granulated outer surface of the major cheliped. *Pilumnus depressus* has 4 anterolateral spines and the surface of the major cheliped is almost naked, only obsolete granulated on the larger part of its distal surface.

*Pilumnus townsendi* and *P. depressus* share 4 anterolateral spines on the carapace (Fig. 1B). Those of the former are larger, single and falcated. Those of *P. depressus* are shorter, straight and the first two are bifid. In addition, *P. townsendi* has the carapace covered with numerous long stiff setae (Fig. 1B), while the carapace of *P. depressus* is for the most part naked (Rathbun 1930, *Bulletin of the United States National Museum* 152: 1-609).

***Pilumnus gonzalensis* Rathbun 1893**

Fig. 1A

*Previous distribution.* GC, from Bahía San Luis Gonzaga, BC and Bahía Tepoca, SON, Mexico to Costa Rica (Villalobos-Hiriart *et al.* 1989. *Listados Faunísticos de México. I. Crustáceos estomatópodos y decápodos intermareales de las islas del Golfo de California, México.* Instituto de Biología, UNAM 14 pp; Hendrickx, 1995, *op. cit.*).

*Material examined.* 40 specimens. San Felipe-Puertecitos area, BC. 1989-1995.

*Remarks.* The record of *P. gonzalensis* for San Felipe, BC extends its range 70 km north along the Baja Peninsula coast. It was collected under rocks in sandy gravel bottom. Oviparous females have been found in April-May and September-October.

*Additional remarks.* Under *P. tectus*.

***Pilumnus limosus* Stimpson 1869**

Fig. 1D-E

*Previous distribution.* GC, Puerto Peñasco, SON (Glasseli 1935) and Bahía San Luis Gonzaga, BC, Mexico to Paita, Peru (Rathbun 1930, *op. cit.*).

*Material examined.* 40+ specimens, San Felipe-Puertecitos area, BC. 1989-1995

*Remarks.* The record of *P. limosus* for San Felipe extends its range about 170 km north along the peninsula coast. The carapace has 4 anterolateral spines (Fig. 1E) and is dorsally covered by a dense pubescence that forms a soft velvety-tan carpet in which are set small tubercles (Fig. 1D) (Brusca 1980. *Common invertebrates of the Gulf of California.* University of Arizona Press, 513 pp.); these features are diagnos-

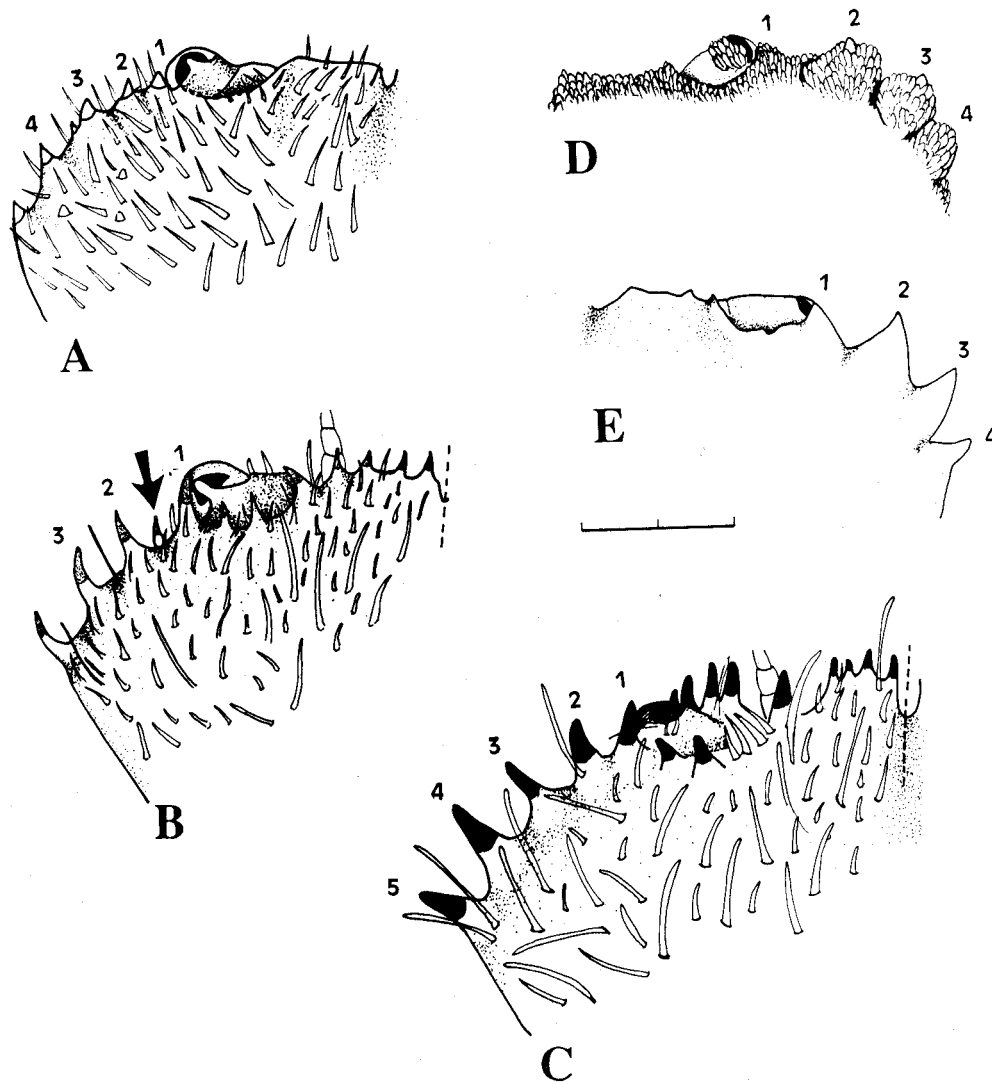


Fig. 1. Anterolateral spines of the carapace, dorsal view. A. *Pilumnus gonzalensis*, B. *P. townsendi*, C. *P. spinohirsutus*, D-E. *P. limosus*, with and without pubescence respectively; numbers 1-5 indicate anterolateral spines; arrow indicates the subhepatic spine. Scale, A, C = 3 mm; B = 3.5 mm; E = 2.6 mm

tic for this species. Oviparous females have been found in April-May and September-October.

***Pilumnus spinohirsutus* Lockington 1877**

Fig. 1C

*Distribution.* From San Pedro, CA, along the Baja Peninsula to Bahía Magdalena, BCS, and Gulf of California at Cabo San Miguel, BC (Hendrickx 1995, *op. cit.*).

*Material examined.* 10 males, 10 females, Bahía Todos Santos, BC and Bahía Tortugas, BCS. 1985-1995

*Remarks.* See under *P. townsendi*.

***Pilumnus tectus* Rathbun 1933**

*Distribution.* Known only from its type locality, San Felipe, BC (Rathbun 1933. *Proceedings of the Biological Society of Washington* 46: 147-149).

*Material examined.* None.

*Remarks.* *Pilumnus tectus* Rathbun 1933 was described on basis of a male collected in San Felipe, BC, Mexico. *P. tectus*, *P. gonzalensis* and *P. spinohirsutus* have a carapace with 5 anterolateral spines (Fig. 1A, C). *P. gonzalensis* and *P. tectus* can be easily separated from *P. spinohirsutus* on having carapace and legs covered with a short and soft pubescence instead of long and stiff spines. Separation of *P. gonzalensis* and *P. tectus* is almost impossible. The diagnostic description of *P. tectus* by Rathbun (1933, *op. cit.*) is imprecise, as many of their passages fit well with the original description and specimens of *P. gonzalensis*. The holotype of *P. tectus* was unavailable to me, but it needs to be redescribed and fully illustrated to clearly point out the differences from *P. gonzalensis*.

***Pilumnus townsendi* Rathbun 1923**

*Previous distribution.* GC, from Bahía San Luis Gonzaga, BC and Bahía La Choya, SON to Málaga, Colombia (Rathbun 1930, *op. cit.*; von Prael & Friedefond 1985, *Zoologische Jahrbuecher fur Systematik* 112: 261-273; Villalobos-Hiriart *et al.* 1989, *op. cit.*).

*Material examined.* 40+ specimens, San Felipe-Puertecitos area, BC. 1989-1995.

*Remarks.* Vogel's record of *P. spinohirsutus* for Punta Pelicano (Puerto Peñasco, SON) is incorrect. It was based on misidentification of 5 males and 3 females of *P. townsendi* and 1 male of *Gonopapope aerolata* (Rathbun 1898), (YPM 5701). *P. townsendi* can be

separated from *P. spinohirsutus* as follows: 1) presence of 4 equally separated anterolateral spines, and 2) a slender and well marked subhepatic spine below the interval between the first and second lateral spines (Fig. 1B). *P. spinohirsutus* has 5 anterolateral spines, the space between the orbital and the second spine is shorter than the other, and there is not a subhepatic spine (Fig. 1C). Rathbun (1923. *Bulletin of the American Museum of Natural History* 48: 619-637) noted that *P. spinohirsutus* and *P. townsendi* occurred in Bahía Magdalena, BCS. Records of the former in the Gulf of California (Hendrickx 1995, *op. cit.*) suggest that these species overlap in most of their ranges.

The record of *P. townsendi* for San Felipe extends the range about 170 km along the Baja California peninsula coast. It was collected under rocks in sandy-gravel bottom. Ovigerous females of this species have been found in April-May and September-October.

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