



## CHECKLIST OF LOBSTER-LIKE DECAPOD CRUSTACEANS (CRUSTACEA: DECAPODA: THALASSINIDEA, ASTACIDEA AND PALINURIDEA) FROM THE EASTERN TROPICAL PACIFIC

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### RESUMEN

Se revisó la literatura relacionada con los Thalassinidea, Astacidea y Palinuridea del Pacífico oriental. Se enlistan las especies marinas y de aguas salobres citadas por lo menos una vez para la subregión del Pacífico tropical oriental, que se extiende de bahía Magdalena, en la costa oeste de Baja California, México, a Paita, en el norte del Perú. Se indican los límites de distribución de cada especie en la costa pacífica de América. Para determinar o confirmar la presencia de especies, también se consideró la información no publicada, basada en material recolectado por el autor ("Colección de Referencia de Invertebrados", Estación Mazatlán, UNAM). Un total de 47 especies pertenecientes a 24 géneros están incluidas en la lista, la cual representa la primera en su género para la subregión zoogeográfica tropical de la costa oeste de América. Una lista de los nombres de especies y subespecies actualmente reconocidos como inválidos para el área fue anexada.

Palabras clave: Thalassinidea, Astacidea, Palinuridea, Pacífico tropical oriental, lista.

### ABSTRACT

Literature dealing with Thalassinidea, Astacidea and Palinuridea from the east Pacific was reviewed. Marine and brackish water species reported at least once in the eastern tropical Pacific zoogeographic subregion, which extends from Magdalena Bay, on the west coast of Baja California, Mexico, to Paita, in northern Peru, are enlisted and their distribution range along the Pacific coast of America is provided. Unpublished records, based on material kept in the author's collection ("Colección de Referencia de Invertebrados", Estación Mazatlán, UNAM) were also considered to determine or confirm the presence of species. A total of 47 species, belonging to 24 genera are included in the checklist which is the first for the entire tropical zoogeographic subregion of

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the west coast of America. A list of names of species and subspecies currently recognized as invalid for the area is also included.

Key words: Thalassinidea, Astacidea, Palinuridea, eastern Tropical Pacific, checklist.

## INTRODUCTION

Checklists of marine species occurring in distinct geographic regions of the world are of multiple use. In addition to providing comparative figures for biodiversity studies, they serve as an important tool in defining the extension of protected areas, inferring potential impact of anthropogenic activity and complexity of communities, and estimating availability of living resources. Checklists for zoogeographic regions or provinces also facilitate biodiversity studies in specific habitats, which serve as points of departure for studying the structure of food chains, the relative abundance of species, and number of species or total number of organisms of various physical sizes (among others) (May, 1992). It is now recognized that a significant increase of comprehensive surveys and inventories would help reinforce conservation practices in poorly known areas of the tropics (Hatcher *et al.*, 1989; McNeely *et al.*, 1990).

Checklists of marine and brackish water species of several groups of decapod crustaceans occurring in the eastern tropical Pacific (ETP) have recently been published. These include the benthic shrimps (Wicksten & Hendrickx 1992), and the Brachyura (Hendrickx 1995a). A similar checklist of Anomura is currently being prepared. Pelagic shrimps occurring in the east Pacific were also reviewed by Hendrickx and Estrada-Navarrete (1989).

Information related to species of Astacidea, Palinuridea (Palinura of Bowman & Abele, 1982), and Thalassinidea known from different areas of the ETP are found in Hendrickx (1992: Gulf of California), Lemaitre & Álvarez-León (1992: Pacific coast of Colombia), Hendrickx (1993b: Pacific coast of Mexico), and Morán and Dittel (1993: Pacific coast of Costa Rica). For comparative purposes, Hendrickx (1993b) also estimated the total number of species of decapod crustaceans occurring in the whole ETP, totalling 926 species. Of these, only one species corresponded to Astacidea, 10 to Palinuridea and 35 to Thalassinidea. The most significant recent contribution to our knowledge on the distribution of species of Thalassinidea occurring in the entire east Pacific is a checklist by Lemaitre and Ramos (1992), who summarized the numerous taxonomic changes that had occurred within this group in recent years. The commercially important species of lobster-like decapod crustaceans were treated by Hendrickx (1995b), mostly the Palinuridae, Scyllaridae and Axiidae. Many other papers contain significant data related to the taxonomy or the occurrence of some lobster-like species in the study area. These will be cited in the checklist when needed.

## METHODS

Records in the checklist were derived from the review of literature dealing with the ETP Astacidea, Palinuridea and Thalassinidea, and from unpublished data obtained by the author during recent surveys of the decapod crustaceans fauna of the Pacific coast of Mexico. The taxonomic sequence adopted herein is the one of Holthuis (1991; Palinuridea and Astacidea), and of Lemaitre & Ramos (1992; Thalassinidea), which were previously adopted by Hendrickx (1993a; 1993b). Some modifications proposed by Poore (1994) were also included in the Thalassinidea. The ETP is here defined as the area extending from Magdalena Bay, on the west coast of Baja California, to Paita, Peru; it comprises the entire Gulf of California, and all oceanic islands that lay within the latitudinally defined tropical fringe.

Species are grouped by family and superfamily. Within each family, genera and species are in alphabetic order. Author and date of the original description is provided. If the range was given in the original description and has not been modified since, the source is the original citation. If the range has been modified by a later author, that author's citation is given at the end of the range. A "?" has been used to emphasize the existence of reasonable doubt concerning the records of a species at a given locality or whenever an unreliable record for a country or area is presented. An appendix, at the end of the list, provides names of invalid species or subspecies cited for the ETP. The correct, currently recognized valid name is provided in parenthesis in such a way that the reader can refer to it in the list. Invalid species names cited for other zoogeographic regions are not included as they are not relevant to this study.

Presence of species in other geographic regions of the world have been indicated with the following abbreviations: IPAC, Indo-Pacific; W-ATL, West Atlantic; E-ATL, East Atlantic; W-PAC, West Pacific; and COS, cosmopolitan species. Records from offshore islands or rocks are cited separately, as they often indicate southern or northern distribution limits markedly different from those known along the continent. As a rule, only oceanic islands (Clarion and Socorro, Revillagigedo, Mexico; Clipperton, France; Coco, Costa Rica; Malpelo, Colombia; Galapagos, Ecuador; Juan Fernández, Chile) or rocks (Alijos, Mexico) have been considered as "offshore" records. For the sake of clarity, records for "Isla del Coco", Costa Rica, have all been noted as "Coco", replacing "Coco Island, Cocos Island, isla Coco, isla Cocos and (rarely) isla del Coco". Records from the Gulf of California islands, Tres Mariás, Gorgona, and Gulf of Panama islands, have been considered as included in the general continental range of the species as they occur much closer to shore.

The present paper is the third of a series dealing with all species of decapod crustaceans known from the eastern tropical Pacific (Wicksten & Hendrickx, 1992; Hendrickx, 1995a).

## RESULTS

The present paper provides an updated taxonomic list of all species of lobster-like decapod crustaceans (Palinuridea, Astacidea, Thalassinidea) known from the area: 47 species, belonging to 24 genera. Although it is not intended to be a systematic paper, the following comments are necessary to understand the taxonomic position or the validity of the scientific name of some species. Data related to the other species will be found in recent literature cited in the text.

*Polycheles granulatus* Faxon, 1893, is cited by Lemaitre & Álvarez-León (1992: 45) for Malpelo Island. Their source of information, however, is the original description (Faxon, 1893: unique type specimen collected at 4°3'N - 81°31'W). Indeed, Firth & Pequegnat (1971), cited as a second reference by Lemaitre & Álvarez-León (*loc. cit.*), examined *P. granulatus* from Hawaii only, and quoted Faxon (1895) for their source of information on it in the eastern Pacific. Wicksten (pers. comm.) reviewed material at the Scripps Institution of Oceanography, and came to the conclusion that they all belong to *Stereomastis nana* Smith, 1884. Bouvier (1917) recorded and illustrated *P. granulatus* from many samples taken in the eastern Atlantic and quoted Rathbun (1906) for additional Hawaiian records.

Sakai & de Saint Laurent (1989) included *Calastacus rostriserratus* Andrade & Baez, 1977, in the synonymy of *Calocarides quinqueseriatus* (Rathbun, 1902), although with some caution (Sakai & de Saint Laurent, 1989: 80). If confirmed, this would increase the currently recognized range of *C. quinqueseriatus* to Hembra, Chile (see Hendrickx, 1995c). *Eiconaxius acutifrons* Bate, 1888, described from material collected in Indonesia, was posteriorly reported from Panama by Faxon (1893) as *Axius acutifrons*. Wicksten (1982, 1989) also reported her California material in this genus, ignoring at that time that Sakai & de Saint Laurent (1989: 16) had just reinstated *acutifrons* in his original genus, *Eiconaxius* Bate, 1888. The statement "previously in the genus *Axius*" used under *E. acutifrons* by Lemaitre & Ramos (1992: 356) is rather confusing, as it is otherwise used by these authors to indicate the genus of the prime synonym (in this case, *Eiconaxius acutifrons*). Lemaitre & Ramos (*loc. cit.*) also overlooked Wicksten's California records for this species. In their review of the east Pacific Thalassinidea, Lemaitre & Ramos (1992) incorrectly used the specific name "*stylirostris*" for *Calastacus stylirostris* Faxon, 1893. According to Sakai & de Saint Laurent (1989), this invalid spelling correction was apparently introduced by Balss (1925). Wicksten (1989: 312) correctly adopted Faxon's original spelling and reported this species from Canada to Peru.

*Corallichirus xutha* (Manning, 1988), originally described within the genus *Corallianassa*, had been previously reported from Clarion Island by Chace (1962) and Hernández Aguilera *et al.* (1986) under the name *Callianassa placida*, and by Hult (1938) and Schmitt (1939) from Clipperton and the Galapagos Islands, respectively, under the name *Callianassa hartmeyeri* (see Manning, 1988: 885). *Callianassa rochei* Bouvier, 1895, originally described from Baja California, Mexico, is placed with some doubts in the genus *Neotrypaea* by Lemaitre & Álvarez-León (1992: 357),

thus following the hypothesis of Manning & Felder (1991: 792) concerning its generic placement. It is also cited as "?" *N. rochei* by Hendrickx (1993b: 308), who included this species in the warm temperate Mexican fauna occurring north of the Magdalena Bay area. As for other species collected along the coast of Baja California by L. Diguët and described by E.L. Bouvier, the type locality of *N. rochei* is unknown. The original citation refers to "Basse-Californie", and it is therefore included in this checklist with reserve. Localities known to have been visited by L. Diguët include La Paz, Santa Rosalia and San Jose Island, Gulf of California, all within the ETP boundaries. The genus *Naushonia* was overlooked all together by Lemaitre & Ramos (1992). It contains only two eastern tropical Pacific species, both included in the checklist.

### TAXONOMIC LIST

PALINURIDEA Latreille, 1802

PALINUROIDEA Latreille, 1802

SCYLLARIDAE Latreille, 1825

1. *Evibacus princeps* Smith, 1869

From Puerto Peñasco, Sonora and Puerto Escondido, Baja California Sur, Gulf of California, Mexico, to Mancora, Peru (Holthuis, 1985).

2. *Scyllarides astori* Holthuis, 1960

Gulf of California, from south of Tiburon Island, Sonora to Cabo San Lucas, Baja California Sur and off Sinaloa, Mexico; Galapagos Islands (Holthuis, 1991; Hendrickx, 1995b).

PALINURIDAE Latreille, 1802

3. *Panulirus gracilis* Streets, 1871

From Magdalena Bay, west coast of Baja California Sur, La Paz, Baja California Sur and Mazatlan, Sinaloa, Gulf of California, Mexico, to Paita, Peru (Holthuis, 1991).

4. *Panulirus inflatus* (Bouvier, 1895)

From Santa Maria Bay, west coast of Baja California Sur, and from Angel de la Guarda Island, Baja California, Gulf of California, Mexico, to Colombia; Socorro Island (Holthuis and Villalobos, 1961; Briones & Lozano, 1982; Villalobos *et al.*, 1989; Lemaitre and Álvarez-León, 1992). A doubtful record from San Diego, California, USA (Fitch, 1962; Holthuis, 1991).

5. *Panulirus interruptus* (Randall, 1839)

From San Luis Obispo Bay, California, USA, to Magdalena Bay, west coast of Baja California Sur, and along the west coast of the Gulf of California, to Carmen Island, Baja California Sur, Mexico (Hendrickx, 1985; Holthuis, 1991).

6. *Panulirus penicillatus* (Olivier, 1791)  
 From Cerritos (Mazatlan), to Guerrero, Mexico; Socorro, Clipperton, Coco, Malpelo, and Galapagos Islands (Flores-Campana & Pérez-González, 1991; Holthuis, 1991). I-PAC

ERYONOIDEA de Haan, 1841  
 POLYCHELIDAE Wood-Mason, 1874

7. *Polycheles granulatus* Faxon, 1893  
 Known from 40°3'N - 81°31'W (off Malpelo Island), Colombia (Faxon, 1893; Bouvier, 1917; Lemaitre & Álvarez-León, 1992). I-PAC, E-ATL, W-ATL
8. *Polycheles tanneri* Faxon, 1893  
 Gulf of Panama, Panama; Galapagos Islands, Ecuador (Faxon, 1895).
9. *Stereomastis nana* (Smith, 1884)  
 From Alaska, USA, to Chile, including one record off Santa Maria Bay (24°39'N - 108°37.8'W), Sinaloa, Gulf of California, Mexico (Wicksten, 1989). COS
10. *Stereomastis sculpta pacifica* (Faxon, 1893)  
 From San Clemente Island, California, USA, to Valparaiso, Chile, including one record off Tres Marias Islands, Nayarit, Gulf of California, Mexico (Wicksten, 1981, 1989).

ASTACIDEA Latreille, 1802  
 NEPHROPOIDEA Dana, 1852  
 NEPHROPIDAE Dana, 1852

11. *Nephropsis occidentalis* Faxon, 1893  
 Known from the west coast of Baja California (27°38'45"N - 115°17'40"W) and off Santa Maria Bay (24°39'N - 108°37.8'W), Sinaloa, Gulf of California, Mexico, to Valparaiso, Chile (Wicksten, 1989; Holthuis, 1991; Hendrickx, 1995c).

THALASSINIDEA Latreille, 1831  
 AXIOIDEA Huxley, 1879  
 AXIIDAE Huxley, 1879

12. *Axiopsis baronai* Squires, 1977  
 From Puerto Peñasco, Sonora, Gulf of California, Mexico, to Caleta La Cruz, Peru (Hendrickx, 1987).
13. *Axiopsis serratifrons* (A. Milne Edwards, 1873)  
 Known only from Gorgona Island, Colombia (Lemaitre & Ramos, 1992). I-PAC, W-ATL
14. *Acanthaxius caespitosa* (Squires, 1979)  
 Off Consag Rocks, Baja California and off Santa Maria Bay, Sinaloa, Gulf of California, Mexico, to Mancora, Peru (Hendrickx, 1987).

15. *Calocarides quinqueseriatus* (Rathbun, 1902)  
From the Sea of Okhotsk, Alaska, USA, to the Gulf of California, Mexico, where it is known from off Angel de la Guarda Island, Baja California and off the coast of Sinaloa (23°44.3'N - 107°38.6'W) (Wicksten, 1989; Hendrickx, 1995c). Probably south to Hembra, Chile (Sakai & de Saint Laurent, 1989).
16. *Coralaxius galapagensis* Kensley, 1994  
Known only from the Galapagos Islands, Ecuador (Kensley, 1994).
17. *Eiconaxius acutifrons* (Bate, 1893)  
From San Clemente Island, California, USA, to Mariato Point, Gulf of Panama, Panama (Wicksten, 1982, 1989; Sakai & de Saint Laurent, 1989). W-PAC
18. *Eiconaxius cristagalli* (Faxon, 1893)  
Off Mariato Point, Panama (Faxon, 1895; Sakai & de Saint Laurent, 1989).

## STRAHLAXIIDAE Poore, 1994

19. *Neaxius vivesi* (Bouvier, 1895)  
From Los Angeles Bay, Baja California and Puerto Peñasco, Sonora, Gulf of California, Mexico, to Contreras Island, Panama (Hendrickx, 1987).
20. *Neaxius frankeae* Lemaitre & Ramos, 1992  
Known only from Gorgona Island, Colombia (Lemaitre & Ramos, 1992).

## CALOCARIDIDAE Ortmann, 1891

21. *Calastacus stilirostris* Faxon, 1893  
From southwest of Vancouver Island (47°58'N - 125°47'12"W), Canada, to off Peru (16°S - 73°27'W) (Hart, 1982; Wicksten, 1989).

## CALLIANASSOIDEA Dana, 1852

## CALLIANASSIDAE Dana, 1852

22. *Callichirus seilacheri* (Bott, 1955)  
From Los Blancos, El Salvador, to Chile (Bott, 1955; Lemaitre & Ramos, 1992)
23. *Corallichirus xuthus* (Manning, 1988)  
From Tres Marias Islands, Nayarit, Gulf of California, Mexico, south to Utria Port and Gorgona Island, Colombia; Clarion, Clipperton, and Galapagos Islands (Manning, 1988, 1992; Lemaitre & Ramos, 1992).
24. *Lepidophthalmus bocourti* (A. Milne Edwards, 1870)  
From San José del Cabo, (as *L. eiseni*), Baja California Sur, Gulf of California, Mexico, to Malaga Bay and Gorgona Island, Colombia (Holmes, 1904; Lemaitre & Ramos, 1992).
25. *Neocallichirus grandimana* (Gibbes, 1850)  
Panama to Ecuador (Lemaitre & Ramos, 1992). W-ATL

26. ? *Neotrypaea rochei* (Bouvier, 1895)  
Known only from Baja California, Mexico (exact locality unknown) (Bouvier, 1895; Manning & Felder, 1991).

## CALLIANIDEIDAE Kossmann, 1880

27. *Callianidea laevicauda* Gill, 1859  
From west coast of Baja California, and Tres Marias Islands, Nayarit, Gulf of California, Mexico, to Colombia; Clarion, Socorro, and Galapagos Islands (Hernández-Aguilera *et al.* 1986; Lemaitre & Ramos, 1992). W-ATL

## CTENOCHELIDAE Manning &amp; Felder, 1991

28. *Callianopsis goniophthalma* (Rathbun, 1902)  
Alaska to southern California, USA, and off Ahome Point (25°45'12"N - 109°47'W), Sinaloa, Gulf of California, Mexico (Wicksten, 1989; Hendrickx, 1995c).

## UPOGEBIIDAE Borradaile, 1903

29. *Pomatogebia cocosia* (Williams, 1986)  
Known only from Coco Island, Costa Rica (Williams, 1986).
30. *Pomatogebia rugosa* (Lockington, 1878)  
From Agua Verde Bay, Baja California Sur, Gulf of California, Mexico, to Gorgona Island, Colombia (Williams, 1986; Lemaitre & Ramos, 1992).
31. *Upogebia acanthops* Williams, 1986  
Known only from the type locality, at Fort Kobbe Beach, Panama (Williams, 1986).
32. *Upogebia burkenroadi* Williams, 1986  
Known only from the type locality, La Libertad, Sonora, Mexico (Williams, 1986).
33. *Upogebia dawsoni* Williams, 1986  
From San Felipe and Estero Morua, Sonora, Gulf of California, Mexico, to Honda Bay and Naos Island, Panama (Williams, 1986).
34. *Upogebia galapagensis* Williams, 1986  
San Jose Island, Baja California, Sur, Gulf of California, Mexico; Galapagos Islands, Ecuador (Williams, 1986; Villalobos *et al.* 1989)
35. *Upogebia jonesi* Williams, 1986  
Off Consag Rocks, Baja California and off Rocky Point (31°18'35"N - 113°37'55"W), Sonora, Gulf of California, Mexico, to Naos and Perico Islands, Panama (Williams, 1986).
36. *Upogebia longipollex* (Streets, 1871)  
Puerto El Triunfo, El Salvador, to Gulf of Guayaquil, Ecuador (Williams, 1986).
37. *Upogebia macrariae* Williams, 1986  
Puerto El Triunfo, El Salvador, to Gulf of Guayaquil, Ecuador (Williams, 1986).



38. *Upogebia ramphula* Williams, 1986  
Maria Madre Island, Nayarit, Gulf of California, Mexico (Williams, 1986).
39. *Upogebia schmitti* Williams, 1986  
Known only from the type locality, Honda Bay, Panama (Williams, 1986).
40. *Upogebia spinigera* (Smith, 1871)  
Ensenada del Pabellón coastal lagoon, Sinaloa, Gulf of California, Mexico, to Gulf of Guayaquil, Ecuador (Williams, 1986; Salgado-Barragán & Hendrickx, 1996).
41. *Upogebia tenuipollex* Williams, 1986  
Malaga Bay, Colombia, to Gulf of Guayaquil, Ecuador (Williams, 1986; Lemaitre & Ramos, 1992).
42. *Upogebia thistlei* Williams, 1986  
From San Felipe, Baja California and Cholla Point, Sonora, Gulf of California, Mexico, to Las Palmas (Esmeraldas), Ecuador (Williams, 1986).
43. *Upogebia veleronis* Williams, 1986  
Tres Marias Islands, Nayarit, Gulf of California, Mexico, to San Francisco Cape, Ecuador (Williams, 1986).

#### LAOMEDIIDAE Borradaile, 1903

44. *Axianassa mineri* Boone, 1931  
Known only from the type locality, Pearl Island, Bay of Panama, Panama (Kensley & Heard, 1990).
45. *Axianassa canalis* Kensley & Heard, 1990  
Panama Canal, Panama (Kensley & Heard, 1990).
46. *Naushonia macginitiei* (Glassell, 1938)  
From La Jolla, California, USA, to Ensenada de San Francisco, Sonora, Gulf of California, Mexico (Goy & Provenzano, 1979).
47. *Naushonia panamensis* Martin & Abele, 1982  
Gulf of Panama, Panama (Martin & Abele, 1982).

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**Appendix.** List of invalid names (with the original orthography) cited for the eastern Tropical Pacific. The valid name to which they are currently synonymized appears in parenthesis. Invalid names cited only for other zoogeographic regions where ETP species occur (e.g. Western Atlantic, Indo-West Pacific) have not been included in the list.

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## SCYLLARIDAE

*Evibacus princoes* Scelzo, 1974 (= *E. princeps*)

## AXIIDAE

*Calastacus rostriserratus* Andrade & Baez, 1977 (? = *Calocarides quinqueseriatus*)

## CALLIANASSIDAE

*Glypturus branneri* Rathbun, 1900 (= *Neocallichirus grandimana*)

*Lepidophthalmus eiseni* Holmes, 1904 (= *L. bocourti*)

## UPOGEBIIDAE

*Upogebia sturgisae* Boone, 1931 (= *U. spinigera*)

*Upogebia rostrospinosa* Bott, 1955 (holotype F) (= *U. spinigera*)

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