



## A re-definition of the genus *Periclimenes* Costa, 1844 and the designation of a new genus *Margitonia* (Crustacea: Decapoda: Pontoniinae)

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**Abstract:** A revised definition of the pontoniine shrimp genus *Periclimenes* Costa, 1844, is presented, to accommodate the recent separation of numerous new genera from that genus. Eight such new genera have been described and a further four, which had been placed in synonymy, have been resurrected. A further new genus, *Margitonia* gen. nov., is also here designated for the species *Periclimenes insolitus* Bruce, 1974. The restricted genus *Periclimenes* is still the most speciose genus in the subfamily Pontoniinae, with over 155 species. Within the restricted genus *Periclimenes* the species present a wide range of morphological diversity and most are associated with a wide range of invertebrate host taxa. They fall into several natural groups that are probably polyphyletic in origin and further subdivision of the genus *Periclimenes* is to be anticipated.

**Résumé :** Une redéfinition du genre *Periclimenes* Costa, 1844 et la description d'un nouveau genre, *Margitonia* (Crustacea : Decapoda : Pontoniinae). Une redéfinition du genre de crevette pontoniine *Periclimenes* Costa, 1844, est présentée afin de prendre en compte l'éclatement de ce genre en de nombreux nouveaux genres. Huit nouveaux genres ont été décrits et quatre, qui avaient été placés en synonymie, ont été ressuscités. Un autre nouveau genre, *Margitonia* gen. nov., est désigné ici pour l'espèce *Periclimenes insolitus* Bruce, 1974. Le genre *Periclimenes sensu stricto* reste le genre le plus riche en espèces dans la sous-famille Pontoniinae avec plus de 155 espèces. Celles-ci présentent une grande diversité morphologique et la plupart sont associées à un grand nombre d'espèces d'hôtes invertébrés. Ils s'arrangent en plusieurs groupes naturels qui sont probablement d'origine polyphylétique et il est possible de prévoir plusieurs sous-divisions du genre *Periclimenes*.

**Keywords:** *Periclimenes* re-defined • *Margitonia* gen. nov. • Crustacea • Decapoda • Pontoniinae

## Introduction

The genus *Periclimenes* was established in 1844 by Costa for a Mediterranean species, *Periclimenes amethysteus* (Risso, 1826). It has subsequently become the most speciose genus of the Pontoniinae. At present over 155 species are referred to it despite numerous taxa having been separated and given generic status over recent years. Some of the genera placed in synonymy with *Periclimenes* have also been recently resurrected. Amongst the former are *Zenopontonia* Bruce, 1975, *Exoclimenella* Bruce, 1995, *Periclimenella* Bruce, 1995, *Manipontonia* Bruce, Okuno & Li, 2005, *Kemponia* Bruce, 2004, *Crinotonia* Marin, 2006, *Brucecaris* Marin & Chan, 2006, *Leptomenes* Bruce, 2006. Amongst the latter, *Harpilius* Dana, 1852 (Bruce, 2004), *Hamiger* Borradaile, 1916 (Bruce, 1986), and *Laomenes* Clark, 1919 (Okuno & Fujita, 2007). The separation of these genera enables a more precise definition of the genus *Periclimenes* to be presented. In the restricted genus *Periclimenes* a number of “species groups” have been recognised (the *obscurus* group (Bruce, 1987), *diversipes* group (Bruce, 1989), *aesopius* group (Bruce, 1991), *alcocki* group (Li & Bruce, 2006), which suggest a polyphyletic state of the present genus. The separation of further genera is to be expected, gradually refining the concept of this complex genus. A further contribution to this process is provided below with the designation of *Margitonia* gen. nov.

## Systematics

### FAMILY PALAEMONIDAE Rafinesque, 1815

#### Sub-family Pontoniinae Kingsley, 1878

#### *Periclimenes* Costa, 1844

*Periclimenes* Costa, 1844, Ann. Accad. Aspir. Nat. Napoli, 2 : 290.

Type species by monotypy: *Periclimenes insignis* Costa, 1844, Ann. Accad. Aspir. Nat. Napoli, 2: 291 (= *Alpheus amethystea* Risso, 1826, Hist. nat. Europ. merid., 5: 77. Holotype: not located. Gender: masculine.

#### Diagnosis of genus

Small to medium sized palaemonid shrimps of subcylindrical body form. Rostrum well developed, compressed, usually with numerous dorsal and fewer ventral teeth, lateral carinae distinct. Carapace smooth, with orbit usually feebly developed, epigastric and supraorbital spines or teeth present or absent, inferior orbital angle produced, fixed hepatic spine and antennal spine present. Abdomen smooth, third segment sometimes posteriorly produced, pleura generally rounded, fourth and fifth sometimes

posteroventrally acute. Telson generally with two pairs of dorsal spines, sometimes minute, and three pairs of posterior spines, sometimes with up to 7 pairs of dorsal spines. Eyes with globular cornea. Antennule well developed. Antenna with basicerite armed or unarmed, scaphocerite well developed. Epistome unarmed. Mandible without palp, molar process generally robust, incisor process normal, maxillula with bilobed palp, laciniae usually slender; maxilla with simple palp, basal endite slender, simple or bilobed, coxal endite obsolete, scaphognathite well developed; first maxilliped with simple palp, basal endite large, coxal endite distinct or fused with basis, exopod with large or small caridean lobe, flagellum variable, broad with numerous plumose setae distally, or slender with three or four plumose distal setae, epipod generally large and bilobed; second maxilliped with normal endopod, exopod similar to first maxilliped, without accessory lobe, coxa generally with oval or subrectangular epipod without podobranch; third maxilliped generally with slender endopod, ischiomerus distinct from or fused to basis, exopod as in second maxilliped, coxa generally with oval lateral plate, arthrobranch well developed, small, rudimentary or absent. Thoracic sternites not elongate, fourth thoracic sternite without median process. First pereopods slender or robust, chela with fingers simple with entire cutting edges or subspatulate, or spatulate with pectinate cutting edges. Second pereopods variable, usually well developed, sometimes small, smooth; equal or unequal in length, similar or dissimilar in form, fingers simple or dentate, without molar process or fossae, carpus and merus generally unarmed. Ambulatory pereopods slender or robust, dactyls simple or biunguiculate, sometimes ornate. Uropod with protopodite posterolaterally armed or unarmed, exopod generally with distolateral tooth with mobile spine medially.

#### Remarks

The genus is widely distributed in all oceans, from brackish and anchialine waters to considerable depths. The various species are found in association with a wide variety of invertebrate hosts, including sponges, cnidarians, molluscs, and echinoderms. Some species are reported as free-living, and the hosts of many, particularly deep-water species probably remain to be identified.

The whereabouts of the type material appears unknown. The specimens are not in the collections of the Muséum d'Histoire Naturelle, Nice (pers. comm., O. Gerriet, 6 April 2007) or the Muséum National d'Histoire Naturelle, Paris (pers. comm., R. Cleve, 2 May 2007) and may be no longer extant.

*Margitonia* gen. nov.*Diagnosis of genus*

Small sized palaemonid shrimps of subcylindrical body form. Carapace smooth; rostrum well developed, compressed, lateral carinae distinct, posteriorly expanded, separated by small notch from superior orbital rim, dorsal and ventral carinae unarmed, orbit well developed, with posterior orbital notch, epigastric and supraorbital spines or teeth absent, inferior orbital angle distinct, without ventral flange, fixed hepatic spine and antennal spines present. Abdomen smooth, third segment not produced, pleura rounded, fourth and fifth not posteroventrally acute. Telson with two pairs of small dorsal spines, three pairs of posterior marginal spines. Eyes with oblique globular cornea, not conoidally produced. Antennule well developed, normal. Antenna with basicerite armed, scaphocerite well developed. Epistome unarmed. Mandible without palp, molar process robust, incisor process normal, not distally expanded; maxillula with bilobed palp, laciniae slender; maxilla with simple palp, basal endite slender, bilobed, coxal endite obsolete, scaphognathite moderately narrow; first maxilliped with simple setiferous palp, basal endite large, coxal endite obsolete, exopod with well developed caridean lobe, flagellum slender with four plumose distal setae, epipod well developed, bilobed; second maxilliped with normal endopod, exopod with four terminal plumose setae, without accessory lobe, coxa with small subrectangular epipod without podobranch; third maxilliped with slender endopod, ischiomerus largely fused to basis, exopod as in second maxilliped, coxa with oval lateral plate, without arthrobranch. Thoracic sternites not elongate, fourth thoracic sternite without median process. First pereopods slender, chela with fingers markedly longer than palm, laterally scaphoid with pectinate cutting edges. Second pereopods well developed, chelae robust, subequal and similar, fingers dentate, without molar process or fossa, carpus and merus unarmed. Ambulatory pereopods robust, dactyls biunguiculate, unguis elongate, slender, subequal to corpus length, subequal to corpus length, corpus with long crenulate distal accessory tooth, with transverse row of simple setae distolaterally, without proximo-dorsal spines; propod non-spinulate, with dense distal setal tufts. Uropod with protopodite posterolaterally rounded, exopod with distolateral tooth with mobile spine medially.

*Type species*

*Periclimenes insolitus* Bruce, 1974, present designation, by monotypy.

*Etymology*

The genus is named in recognition of the considerable

contribution made by my wife, Marguite, to my study of pontoniine shrimps over many years, and part of the name *Pontonia* first used by Latreille, 1896. Gender feminine.

*Systematic position*

Distinguished from the genus *Periclimenes*, as re-defined above, by the combination of the well developed toothless rostrum, deep orbits with posterior notch, absence of supra-orbital and epigastric spines, and the morphology of the ambulatory pereopods, with slender elongate unguis, subequal to corpus length, crenulate distoventral accessory tooth on the compressed dactyls, with non-spinulate propods with dense lateral distoventral tufts of simple setae.

*Remarks*

*Margitonia insolitus* has been fully described and illustrated in the original report (Bruce, 1974). The species is known only from the type material from Waikiki, Oahu, the Hawaiian Islands, where specimens were collected from the echinoid *Pseudoboletia indiana* (Michelin) [Toxopneustidae: Echinoidea], the only pontoniine shrimp known to associate with this echinoid family (Bruce, 1982).

The majority of pontoniine shrimp genera are without an hepatic spine. In some, for example, *Paranchistus* Holthuis, 1952, it may be minute and obsolescent (Bruce, 2000). Where present it is generally situated posterior to and at or below the horizontal level of the antennal spine. In some *Periclimenes* species, such as *P. hertwigi* Balss or *P. calcaratus* Chace & Bruce, 1993 (see Holthuis, 1952, fig. 11; Chace & Bruce, 1993, fig. 21) it approaches the anterior margin of the carapace. In *Margitonia* the spine is particularly low and anteriorly placed and could be considered branchiostegal in position.

*Margitonia insolitus* also has a particularly well developed palisade of contiguous short stout distally plumose conical setae along the proximal ischial medial margin of the third maxilliped (Bruce, 1974:304. fig. 8). Similar setae have been reported in some species of *Periclimenes* associated with crinoids (Bruce, 1974) but these are much less well developed. Their function is obscure.

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