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Deep water echinoid-associated pontoniine shrimp “*Periclimenes hertwigi* Balss, 1913” species group (Crustacea: Decapoda: Caridea: Palaemonidae): species review, description of a new genus and species from Philippines

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Abstract

The new pontoniine shrimp genus, *Echinopericlimenes* **gen. nov.**, is suggested for four species, *Periclimenes hertwigi* Balss, 1913, *Periclimenes dentidactylus* Bruce, 1984, *Periclimenes calcaratus* Chace & Bruce, 1993 and *Echinopericlimenes aurorae* **sp. nov.**, belonging to so-called “*Periclimenes hertwigi* Balss, 1913” species group *sensu stricto*. The new genus can be clearly separated by the unique form of hepatic tooth greatly extending beyond the pterygostomial margin of carapace, unique form of fingers of pereopods II (chelipeds) and dactyli of ambulatory pereopods III–V. All species referring to the new genus are similar in ecology being deep-water dwellers, usually collected deeper than 300 meters in associations with venomous sea urchins of the family Echinothuriidae (Echinodermata: Echinoidea). Remarks on ecology, description of the new species from Philippines and a key to all known species of *Echinopericlimenes* **gen. nov.** are presented.

Key words: Crustacea, Decapoda, Palaemonidae, Pontoniinae, echinoid-associated, Echinodermata, Echinoidea, new genus, new species, *Echinopericlimenes*, symbiosis, deep water, sea urchins, Indo-West Pacific

Introduction

“*Periclimenes hertwigi* Balss, 1913” species group currently includes 3 valid species, namely *Periclimenes hertwigi* Balss, 1913, *Periclimenes dentidactylus* Bruce, 1984, *Periclimenes calcaratus* Chace & Bruce, 1993. *Periclimenes hertwigi* Balss, 1913 was originally described from Sagami Bay, Japan, being collected from 120 meters depth in association with deep water venomous sea urchin of the genus *Phormosoma* Rhomson, 1872 (Echinodermata: Echinoidea: Echinothuriidae). Since, then it has been reported from Indonesia, the Great Barrier Reef of Australia and New Caledonia in associations with different species of deep water sea urchins of the family Echinothuriidae within the range of depths from 70 to 600 meters (e.g. Holthuis, 1952; Bruce, 1983, 1990, 1991; Debelius, 1999; Minemizu, 2000; Kobayashi, 2000). Two probably related deep-water species, namely *P. dentidactylus* Bruce, 1984 and *P. calcaratus* Chace & Bruce, 1993, are known by several specimens from Indonesia and Philippines, respectively. The information about ecology or even coloration of all these species is minimal because of deeper lifestyle; most of known specimens were collected by trawls and are partly or completely damaged.

During the recent Philippines PANGLAO 2004, 2005 and AURORA 2007 expeditions numerous specimens of shrimps belonging to the “*Periclimenes hertwigi* Balss, 1913” species group were collected from the depth of 80–600 meters. Some of them were identified and reported by Li et al. (2006) as *P. hertwigi* and *P. dentidactylus*. At the same time, re-examination on these specimens revealed some incorrect identification as well as several specimens belonging to an undescribed species. The DNA analysis of most of known specimens using barcoding gene COI supported the presence of 4 distinct species within the “*Periclimenes hertwigi* Balss, 1913” species

Sandymenes Li, 2009) associated with *Astropyga radiata* (Leske, 1778) and *Eremopyga denudata* de Meijere, 1901 respectively belonging to lublittoral deadematid long-spined sea urchins (Echinodermata: Echinoidea: Diadematidae) usually found in the range of the depth 15–130 meters. Both shrimp species also show general deeply red pigmentation of body and appendages covered with white longitudinal stripes as well as large hemispherical cornea of eyes similar to the species of the genus *Echinopericlimenes* **gen. nov.**

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