



## Crinoid-associated shrimps of the genus *Laomenes* A.H. Clark, 1919 (Caridea: Palaemonidae: Pontoniinae): new species and probable diversity

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## Abstract

Three new species of the genus *Laomenes* A.H. Clark are described as symbionts of feather stars (Crinoidea: Comatulida) from shallow waters of Nhatrang Bay, Vietnam. Including these new species, the genus comprises 8 species and can be arranged into 3 suggested groups of species. The “*L. amboinensis*” species group with 4 species, *L. amboinensis* (De Man, 1888), *L. cornutus* (Borradaile, 1915), *L. clarki* **sp. nov.** and *L. pardus* **sp. nov.**, characterized by the presence of ventral rostral teeth, distoventral spines on propodus of pereopod III and a fixed tooth on distolateral margin of uropodal exopod. The “*L. jackhintoni*” species group includes 2 species, *L. jackhintoni* (Bruce, 2006) and *Laomenes tigris* **sp. nov.**, characterized by the absence of ventral rostral teeth, extremely elongated apical papilla on cornea of eyes, the presence of fixed tooth on exopod of uropod, the absence of distoventral spines on propodus and the presence of large accessory tooth on dactylus of pereopod III. The “*L. ceratophthalmus*” species group includes 2 species, *L. ceratophthalmus* (Borradaile, 1915) and *L. nudirostris* (Bruce, 1968), characterized by the absence of ventral rostral teeth and distoventral spines on propodus of pereopod III, the presence of small accessory tooth on dactylus of pereopod III, tiny marginal dorsal spines on telson and the absence of a fixed distolateral tooth on exopod of uropod. Remarks and a key for all species of the genus as well as a discussion of the undescribed diversity of the genus are given.

**Key words:** Crustacea, Decapoda, Pontoniinae, *Laomenes*, new species, shrimp, feather stars

## Introduction

The known commensal shrimp fauna of crinoids presently consists of 25 species of pontoniine shrimps. Most of them (22 species) occur in the Indo-West Pacific. Twenty-one species live in symbiosis with shallow water unstalked crinoids of the family Comasteridae, or feather stars (Crinoidea: Comatulida) (Bruce 1982; Marin 2006; Marin & Chan 2006), whilst only 1 species is known as symbiont of deep-water stalked isocrinid crinoid, or sea lilies (Crinoidea: Isocrinida, Cyrtocrinida) (Bruce 1980). Six pontoniine genera are known from Indo-West Pacific exclusively in association with crinoids: *Araiopontonia* Fujino & Miyake, 1970 (1 species), *Brucecaris* Marin & Chan, 2006 (1 species), *Crinotonia* Marin, 2006 (2 species), *Pontoniopsis* Borradaile, 1915 (1 species), *Unguicaris* Marin & Chan, 2006 (4 species) and *Laomenes* A.H. Clark, 1919 (5 species). Of the further 8 species of crinoid-associated pontoniids, seven are still contained in the polyphyletic genus *Periclimenes* Costa, 1844, and 1 species in *Palaemonella* Borradaile, 1915. The common occurrence of species-poor genera among inhabitants of crinoids indicates a high level of host specialization and adaptation to the morphology of the host (Marin 2006; Marin & Chan 2006), while some species show high specialization in occupation of ecological niches evaluated in occurrence of cryptic sibling species very similar morphologically but clearly differing ecologically (at least, dwelling on different sibling hosts such as *Crinotonia attenuatus* (Bruce) and *C. anastassiae* Marin (Marin 2008)).

Representatives of the genus *Laomenes* A.H. Clark, 1919 are characterized by the presence of antennal and hepatic teeth, sharp epistomial horns, distinctly produced distal cornea of eyes, well developed proximal rostral margins with triangular supraocular teeth. Five species of the genus are currently known: *Laomenes amboinensis* (De Man, 1888), *L. ceratophthalmus* (Borradaile, 1915), *L. nudirostris* (Bruce, 1968) and *L. cornutus* (Borradaile, 1915) (see Okuno & Fujita 2007) and *L. jackhintoni* (Bruce, 2006) (see Bruce 2007). The actual diversity of the genus is probably higher and, as an example, numerous underwater photos showing crinoid-associated species with a non-typical coloration for any of the currently known species (see below) can be found on the world-wide-web. Accurate species identification is very important, because it allows several ecological questions to be answered, such as host specificity, type of spatial distribution and colour patterns of crinoid-associated pontoniine species. Presently, most of these questions cannot be answered, as the true species diversity is unclear. The aim of this paper is to give an adequate key for the identification of all known species of the genus *Laomenes* as well as to describe 3 new species collected in coastal waters of Vietnam. Postorbital carapace length (pcl., mm) is used as a standard measurement of size. All specimens described in