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Athanas manticolus sp. nov., a new stomatopod-associated alpheid shrimp from Vietnam (Crustacea, Decapoda)

ZDENEK ĎURIŠ[1] & ARTHUR ANKER[2, 3]

[1]*Department of Biology and Ecology, University of Ostrava, Chittussiho 10, 710 00 Ostrava, Czech Republic*
[2]*Tropical Marine Science Institute, National University of Singapore, 18 Kent Ridge Road, Singapore 119227, Republic of Singapore*
[3]*Corresponding author. E-mail arthuranker7@yahoo.com*

Abstract

A new species of the alpheid shrimp genus *Athanas* Leach, 1814 is described based on a single specimen, an ovigerous female from Nha Trang Bay, Vietnam. *Athanas manticolus* **sp. nov.** differs from all other species of *Athanas* by the presence of a small post-rostral tubercle, combined with a minutely toothed rostrum, reduced extra-corneal teeth, and the absence of infra-corneal and supra-corneal teeth. In addition, the new species is characterised by its unique colour pattern, particularly by the red chromatophores disposed in randomly oriented, short, narrow streaks. As its name suggests, *A. manticolus* **sp. nov.** is commensally associated with the burrows of the nannosquillid mantis shrimp *Bigelowina phalangium* (Fabricius, 1798).

Key words: Caridea, Alpheidae, Stomatopoda, Nannosquillidae, symbiosis, infaunal shrimp, Indo-West Pacific, Vietnam

Introduction

Most species of the alpheid shrimp genus *Athanas* Leach, 1814, recently re-diagnosed by Anker and Jeng (2007), are free-living under rocks or in coral rubble crevices. However, the genus also includes a number of symbiotic taxa associated with various marine invertebrates, e.g., stomatopods, mud shrimps, hermit crabs, fan clams, feather stars, brittle stars, and sea urchins (Crosnier & Forest 1966; Banner & Banner 1973; Froglia & Atkinson 1998; Anker *et al.* 2001; Hayashi 2002; Marin *et al.* 2005; Anker & Marin 2007).

In September 2013, a single specimen of *Athanas* was collected on a subtidal sandy bottom adjacent to a near-shore coral reef off Hon Chong Beach, north of the city of Nha Trang, Vietnam. The specimen, an ovigerous female, was collected from a burrow with the aid of a suction ("yabby") pump, together with its presumed stomatopod host (see below). Both the alpheid shrimp and the stomatopod were relaxed with clove oil and photographed alive before preservation in 70% ethanol. The morphological examination of the alpheid specimen revealed a unique combination of characters, suggesting that it belonged to a hitherto undescribed species of *Athanas*. This species is here described as new. The holotype is deposited in the collections of the Oxford University Museum of Natural History, Oxford, the United Kingdom (OUMNH.ZC), together with the stomatopod host. All drawings were made under a dissecting microscope equipped with a camera lucida. Carapace length (cl, in mm) was measured along the mid-dorsal line from the tip of the rostrum to the posterior margin of the carapace.

Taxonomy

Family Alpheidae Rafinesque, 1815

Genus *Athanas* Leach, 1814

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Athanas manticolus **sp. nov.** appears to be most closely related to *Athanas daviei* Anker, 2011, presently known only from the northern Great Barrier Reef. The two species have many similarities, especially in the general shape of the frontal margin of the carapace, as well as in the shape and proportions of the chelipeds and walking legs (cf. Anker 2011). However, *A. daviei* has neither rostral teeth nor post-rostral tubercle (characteristic of *A. manticolus* **sp. nov.**), but on the other hand has spiniform setae on the propodus of the third and fourth pereiopods (absent in *A. manticolus* **sp. nov.**).

Athanas manticolus **sp. nov.** shares some characters, e.g., the absence of infra-corneal teeth, with *Athanas iranicus* Anker, Naderloo & Marin, 2010 from Iran; *Athanas ahyongi* Anker & Komai, 2010 from Madagascar and Japan; and *Athanas shawnsmithi* Anker, 2011 from the northern Great Barrier Reef. However, these three species differ from *A. manticolus* **sp. nov.** by the absence of rostral dentition and post-rostral tubercle, as well as by the differently shaped chelipeds (especially *A. iranicus* and *A. shawnsmithi*); *A. iranicus* also differs by the much longer second article of the antennular peduncle (cf. Anker & Komai 2010; Anker *et al.* 2010; Anker 2011). None of the remaining species of *Athanas* is morphologically close to *A. manticolus* **sp. nov.** (cf. De Man 1911; Holthuis 1951; Chace 1955; Banner & Banner 1960, 1973, 1978; Chace 1988; Bruce 1990; Anker 2003; Anker & Jeng 2007; Anker & Ahyong 2007; Anker & Marin 2007).

The colour pattern of *Athanas manticolus* **sp. nov.** is unique within the Alpheidae (A. Anker, pers. obs.) in the arrangement of the red chromatophores on the carapace and abdomen, resembling unorganised reddish "hairs" (Fig. 6A–C). In most other species of *Athanas* with an overall similar colour pattern (reddish body with a whitish or yellowish mediodorsal band), the chromatophores are grouped in smaller or larger dots, as in *Athanas amazone* Holthuis, 1951, *A. japonicus* (cf. Anker & Jeng 2007), *A. shawnsmithi, A. daviei* (cf. Anker 2011), or form a broad longitudinal band, as in *A. ahyongi* (cf. Anker & Komai 2010).

Athanas manticolus **sp. nov.** is the third species of *Athanas* reported to be associated with stomatopods, the other two being *Athanas squillophilus* Hayashi, 2002 from Japan and *A. amazone* from the Mediterranean Sea, both morphologically very different from the new species (cf. Holthuis 1951; Froglia & Atkinson 1998; Hayashi 2002). In addition, another species of *Athanas*, presumably closely related to *A. ahyongi* Anker & Komai, 2010, is known to be associated with larger lysiosquillid stomatopods in the Philippines and Indonesia, based on underwater photographs (Kuiter & Debelius 2009: p. 159; A. Anker, pers. obs.). The burrowing host of the Madagascar specimens of *A. ahyongi* remains unknown, but based on the substrate and shape of the burrow entrance it may be either a stomatopod or a callianassid ghost shrimp (A. Anker, pers. obs.). Thus, associations between shrimps of the genus *Athanas* and burrowing stomatopods (Squillidae, Lysiosquillidae, Nannosquillidae) appear to be relatively common and likely more stomatopod-associated species will be found in the future.

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