



## Redescription of *Prosaetes rhinodontis* (Wright, 1876) (Crustacea: Copepoda: Siphonostomatoida), an enigmatic parasite of the whale shark, *Rhincodon typus* Smith (Elasmobranchii: Orectolobiformes: Rhincodontidae)

DANNY TANG<sup>1,4</sup>, MAKIO YANAGISAWA<sup>2</sup> & KAZUYA NAGASAWA<sup>3</sup>

<sup>1</sup>Laboratory of Aquaculture, Graduate School of Biosphere Science, Hiroshima University, 1-4-4 Kagamiyama, Higashi-Hiroshima, Hiroshima 739-8528, Japan. E-mail: copepods@gmail.com

<sup>2</sup>Okinawa Churaumi Aquarium, 424 Ishikawa, Motobu-cho, Kunigami-gun, Okinawa 905-0206, Japan.  
E-mail: m\_yanagisawa@kaiyohaku.or.jp

<sup>3</sup>Laboratory of Aquaculture, Graduate School of Biosphere Science, Hiroshima University, 1-4-4 Kagamiyama, Higashi-Hiroshima, Hiroshima 739-8528, Japan. E-mail: ornatus@hiroshima-u.ac.jp

<sup>4</sup>Corresponding author

### Abstract

The siphonostomatoid copepod *Prosaetes rhinodontis* (Wright, 1876) is redescribed in detail based on adult female specimens recently collected from the sieve-like gill rakers of a whale shark, *Rhincodon typus* Smith, held in captivity off the coast of Motobu-cho, Okinawa-jima Island, Japan. Comparisons with other caligiform copepod species previously identified as *Dysgamus atlanticus* Steenstrup & Lütken, 1861 and described as *Echthrogaleus pectinatus* Kirtisinghe, 1964 from a whale shark revealed that these two taxa are conspecific with *P. rhinodontis*. The latter is transferred herein from the Pandaridae to the Cecropidae based on the relatively slim shape of its maxilliped corpus, and an amended diagnosis of *Prosaetes* C. B. Wilson, 1907 is provided. Neotype material of *P. rhinodontis* was selected from a previous collection of 173 specimens removed from a whale shark caught alive off the coast of Yonabaru-cho, Okinawa-jima Island, Japan, and subsequently held in captivity, albeit briefly, in the Okinawa Churaumi Aquarium, Motobu-cho, Okinawa-jima Island, Japan. Asymmetrical clusters of *P. rhinodontis* females on the host's gill rakers were observed in this study, which suggest that this aggregative behavior most likely does not facilitate their attachment to the host but rather is a strategy used to augment their reproductive fitness. We also postulate that *P. rhinodontis* grazes on the epithelium of the host's gill rakers and is, in contrast to other cecropids, a relatively vagile species.

**Key words:** taxonomy, Japan, aquarium, captivity

### Introduction

The siphonostomatoid copepod *Stasiotes rhinodontis* was established by Wright (1876) as a new genus and species in the Pandarina (now the Pandaridae Milne Edwards, 1840) based on 40–50 adult female specimens collected from presumably two whale sharks, *Rhincodon typus* Smith, harpooned in waters off the Seychelles. It is relevant to clarify at this point in time the authorship date for *S. rhinodontis*, which has been historically cited as either 1874 (see Wilson 1907; Yamaguti 1963; Heegaard 1972) or 1876 (see Wilson 1944). Although the former is indeed the year in which Wright's paper was recited before the Royal Irish Academy, the latter is recognized as valid herein, as indicated above, since Wright's paper was formally printed on July 1876 of Series 2, Volume 2, Part 6 of the *Proceedings of the Royal Irish Academy*.

As the name *Stasiotes* had already been used by Jan (1862) for a genus of snakes, Wilson (1907) subsequently proposed *Prosaetes* as a replacement name for the preoccupied *Stasiotes* Wright, 1876. Wilson (1944) later transferred *Prosaetes rhinodontis* (Wright, 1876) to the now defunct caligid genus *Dysgamus* Steenstrup & Lütken, 1861, since he believed that the former taxon and his adult female copepod specimens identified as *Dysgamus atlanticus* Steenstrup & Lütken, 1861, from a whale shark captured off Cuba, represented congeneric species. Although Heegaard (1972) subsequently synonymized four nominal species