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Description of the male of *Prosaetes rhinodontis* (Wright, 1876) (Crustacea, Copepoda, Siphonostomatoida), with a proposal to synonymize Cecropidae Dana, 1849 and Amaterasidae Izawa, 2008 with Pandaridae Milne Edwards, 1840

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Abstract

This report provides the first description of the male of *Prosaetes rhinodontis* (Wright, 1876) (Copepoda, Siphonostomatoida, Cecropidae) based on specimens collected from two whale sharks (*Rhincodon typus* Smith) held in sea pens off the west coast of Okinawa-jima Island, Japan. We argue that the morphology of *P. rhinodontis* contributes significantly to the blurring of familial limits between Cecropidae Dana, 1849 and Pandaridae Milne Edwards, 1840 and based on our detailed consideration of this matter we recommend that Cecropidae be recognized as a junior synonym of Pandaridae. Accordingly, we transfer *P. rhinodontis*, along with species of *Cecrops* Leach, 1816, *Luetkenia* Claus, 1864, *Philorthagoriscus* Horst, 1897, *Orthagoriscicola* Poche, 1902, and *Entepherus* Bere, 1936, to the Pandaridae. In addition, our critical evaluation of the morphological features of the adult female and copepodid I of *Amaterasia amanoiwatoi* Izawa, 2008 indicated that the establishment of Amaterasidae Izawa, 2008 to hold the species was unfounded because *A. amanoiwatoi* can be accommodated within Pandaridae. Thus, we transfer *A. amanoitwatoi* to Pandaridae and consider Amaterasidae to be a junior synonym of Pandaridae. Lastly, our comparisons of morphological and ecological attributes of *A. amanoiwatoi,* specimens of "*Nesippus costatus*? Wilson, 1924" (Pandaridae) reported by Lewis in 1964, and other pandarids (Pandaridae) revealed the first two taxa to be strikingly similar and suggested them to be congeners. Based on those results we propose Lewis' specimens represent a new species, which we name *Amaterasia lewisi* **n. sp.** Within the Pandaridae, *Amaterasia* spp. seem to belong to the *Dinemoura*-group based primarily on their similarity to some *Nesippus* spp., while representatives of *Prosaetes*, *Cecrops*, *Luetkenia*, *Philorthagoriscus*, *Orthagoriscicola*, and *Entepherus* are more confidently considered members of the *Dinemoura*-group based on their shared possession of a narrow third pedigerous somite and dorsal plates on the fourth pedigerous somite in the adult female and a modified leg 3 terminal endopodal segment in the adult male.

Key words: whale shark, *Rhincodon typus*, systematics, parasitic copepod, parasite

Introduction

The whale shark (*Rhincodon typus* Smith) inhabits oceanic and coastal waters of all tropical and warm-temperate seas except the Mediterranean Sea. The species is distinguished for its polka-dotted coloration pattern and because it is the world's largest fish and one of only three shark species which filter feed (Norman 2005). Despite the recent increase in the number of whale sharks captured alive

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