

Supplementary Description of Three *Acartiella* Species (Crustacea: Copepoda: Calanoida) from Estuarine Waters in Thailand

Khwanruan Srinui¹ and Susumu Ohtsuka^{2,3}

¹*Institute of Marine Science, Burapha University, Muang, Chon Buri, 20131 Thailand*
E-mail: khwanruan@buu.ac.th

²*Takehara Marine Science Station, Setouchi Field Science Center, Graduate School of Biosphere Science, Hiroshima University, 5-8-1 Minato-machi, Takehara 725-0024, Japan*
E-mail: ohtsuka@hiroshima-u.ac.jp

³*Corresponding author*

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Three species of calanoid copepods belonging to the genus *Acartiella* Sewell, 1914 are redescribed from three estuaries in Thailand. Two species, *Acartiella kemp*i Sewell, 1914 and *A. nicolae* Dussart, 1985, were collected from the Kraburi Estuary and Prasae Estuary, respectively, representing the first records of these species from Thailand. In addition, *A. sinensis* Shen and Lee, 1963, collected from the Bangpakong Estuary on the northeast coast of the Gulf of Thailand, is redescribed, as the original description is poor. This genus is zoogeographically unique as it is restricted to tropical and subtropical Asian estuarine waters, and this study increases our understanding of the evolution of estuarine copepods in the Indo-West Pacific.

Key Words: *Acartiella*, *Acartiidae*, Andaman Sea, Gulf of Thailand.

Introduction

The family *Acartiidae* Sars, 1903 currently comprises the following genera and species: *Acartia* Dana, 1846 with 64 species, *Acartiella* Sewell, 1914 with 11 species, *Paracartia* Scott, 1894 with five species, *Paralabidocera* Wolfenden, 1908 with three species, and *Pteriacartia* Belmonte, 1998 with one species (Boxshall and Halsey 2004; Razouls *et al.* 2014). Species of the genus *Acartiella* Sewell, 1914 are predominantly found in estuarine and coastal river systems in the Indo-Malayan region (Sewell 1919; Tranter and Abraham 1971). The coastal/estuarine genus *Acartia* has been intensively studied by ecological researchers due to its high abundance (see Mauchline 1998). In contrast, *Acartiella* has rarely been investigated, possibly because of its restricted distribution in tropical and subtropical brackish waters in Asia. However, *A. sinensis* Shen and Lee, 1963 was introduced from Asian waters to San Francisco Bay, USA via ship ballast water (Orsi and Ohtsuka 1999), and has been suggested to play a pivotal role in this highly disturbed ecosystem (York *et al.* 2013).

Surveys of the estuarine copepod fauna in Thailand are limited. Recently, a new species of *Pseudodiaptomus* was found in estuarine waters of the Gulf of Thailand (Srinui *et al.* 2013), an indication that a more extensive faunal survey is required. Prior to the current study, only a single species of the brackish water genus *Acartiella*, *A. sinensis*, was known from the Bangpakong Estuary, Thailand (Suwanrumpha 1987); it was subsequently also recorded in the

Chanthaburi River, Chanthaburi Province (Ohtsuka *et al.* unpublished data). Although Pinkaew (2003) intensively studied the copepod fauna of the Bangpakong Estuary, no other species of *Acartiella* was recorded there. Our faunal investigation of brackish water copepods in Thailand has turned up two previously described species of *Acartiella* that are reported herein for the first time from Thailand, namely *A. kemp*i Sewell, 1914 and *A. nicolae* Dussart, 1985. Since no species of *Acartiella* has ever been described on the basis of the homology scheme proposed by Huys and Boxshall (1991), modern redescrptions of all three Thai species of *Acartiella* are provided herein. The zoogeography of the genus is also commented upon.

Materials and Methods

Copepod samples were collected from three sites in the Kraburi Estuary, Ranong Province, on the coast of the Andaman Sea (09°57'32.30"N, 98°35'15.58"E, depth 1.5 m) on November 7, 2011 (local time 17:30), the Prasae River, Rayong Province (12°44'45.48"N, 101°41'40.22"E, depth 1.5–4 m) on August 13, 2012 (local time 10:12) and March 5, 2013 (local time 11:40), and the Bangpakong Estuary, Chon Buri Province (13°29'67"N, 100°59'63"E, depth 3 m) on July 22, 2012 (local time 9:22) (Fig. 1). At each sampling location, plankton was collected during daytime by a series of vertical tows of a conical plankton net (diameter 30 cm, mesh size 0.33 mm) from the river bed to the surface. All samples were immediately fixed in 4% neutral-