



The genus *Peramphithoe* Conlan & Bousfield, 1982 from Korean waters (Crustacea: Amphipoda: Ampithoidae)

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Abstract

Four species of the genus *Peramphithoe* have been recorded in Korean waters. Herein we add two peramphithoid species, *Peramphithoe chujaensis* **sp. nov.** and *P. eoa* (Brüggen). The new species is easily distinguished from congeners by: (1) male antenna 2 with plumose setae ventrally, (2) male gnathopod 2, propodus 0.7 x as wide as long and palm excavated, (3) male pereopods 5–7, meri and carpi expanded, (4) in both sexes, gnathopod 1, carpus subequal in length to propodus. The newly recorded species in Korea, *P. eoa* is well accorded with the original description. A key to and description of Korean peramphithoid species is also provided. To examine relationships among species in the genus *Peramphithoe* from Korea, a morphological and molecular phylogenetic study was conducted using 657 bp of the gene for the mitochondrial cytochrome *c* oxidase subunit 1 (mtCO1). This gene showed good resolution as a molecular marker for species identification of the genus *Peramphithoe* in Korea.

Key words: Crustacea, Amphipoda, Ampithoidae, *Peramphithoe*, new species, taxonomy, mtCO1, Korea

Introduction

Ampithoid amphipods often dominate the invertebrate communities living on shallow-water red, green and brown macro-algae in many tropical and warm temperate areas including Korean waters. The genus *Peramphithoe* Conlan & Bousfield, 1982 is one of the 13 genera belonging to the family Ampithoidae, easily distinguished by rectangular propodus of gnathopod 1 with transverse palm (both sexes) and dominantly distributed on the North Pacific coast. To date, 17 species are currently known in the genus *Peramphithoe*, of which four species attributed to peramphithoid amphipods have been reported from Korea: *P. baegryeongensis* Kim & Kim, 1988, *P. namhaensis* Kim & Kim, 1988, *P. orientalis* (Dana, 1853), and *P. tea* (J.L. Barnard, 1965). Here we add two species, *P. chujaensis* **sp. nov.** and *P. eoa* (Brüggen, 1907) to the Korean peramphithoid gammaridean fauna. Also, we evaluate a representative sample of the five species with the mitochondrial cytochrome *c* oxidase subunit 1 (mtCO1) gene as a genetic marker to clarify the systematics and genetic relationships of peramphithoid amphipods in Korea. Mitochondrial DNA has a relatively fast mutation rate, which can result in significant sequence divergence 19 to 48 times greater between congeneric species than between individuals of species (Costra *et al.* 2007; Hou *et al.* 2009). Among the mitochondrial genes investigated in Crustacea, the cytochrome *c* oxidase subunit 1 (mtCO1) gene has proved to be a very useful taxonomic and phylogenetic marker. In this present study, the mtDNA evidence is compared with a phylogenetic approach based on morphological features.

Material and methods

Morphological taxonomic study. Specimens were collected by SCUBA diving, light trap, hand net, D-frame net and fishing net from the shallow and sublittoral waters in Korea during the period 2002–2009 (Fig. 1, Table 1).