

Two New Amphipods Associated with a Hermit Crab from the Kumano-nada, Central Japan (Crustacea: Amphipoda: Isaeidae, Stenothoidae)

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ABSTRACT. Two new species of amphipods associated with a hermit crab *Propagurus obtusifrons* were collected from the bottom of a 190–380 m depth in Kumano-nada, central Japan. *Metopelloides lowryi* sp. nov. is characterized by the short article 2 of antenna 1, the slender mandibular palp with 3 setae, and the oblique palm of gnathopod 2. *Isaea concinnoides* sp. nov. can be distinguished from its congeners by the short carpus of gnathopod 2, the relatively stout antennae with short setae, and the oval basis of pereopod 5. Both species have prehensile pereopods 3–7 for clinging to the setae of the hermit crab.

Introduction

Amphipods live in various habitats and many associations of benthic amphipods with other animals are known; e.g., sponges, actinarians, medusae, molluscs, brachiopods, echinoderms and tunicates (Bellan-Santini, 2015). Benthic amphipods are also associated with large decapod crustaceans and eight amphipod families are recorded as direct associates of decapods: Amphilochidae Boeck, 1871; Calliopiidae G. O. Sars, 1893; Caprellidae Leach, 1814; Iphigenellidae Kamal'tynov, 2002; Isaeidae Dana, 1852; Ischyroceridae Stebbing, 1899; Pleustidae Buchholz, 1874; and Stenothoidae Boeck, 1871 (Vader & Tandberg, 2015), most of which have prehensile pereopods for clinging (Vader, 1983).

During our survey of animals on the bottom of the Kumano-nada (Ariyama & Moritaki, 2020), two amphipod species associated with the hermit crab *Propagurus obtusifrons* (Ortmann, 1892) were obtained. Closer examination revealed that they are new to science and herein we describe them as new species in detail.

Materials and methods

The hermit crab with which amphipods were associated was collected by a commercial trawl net in the Kumano-nada. The Kumano-nada is a small sea area located in the south of Mie and Wakayama Prefectures, central Japan. The hermit crab was transported to Toba Aquarium (TA) and was observed there. The amphipods dwelled on the surface of the hermit crab and usually clung to the setae. Six specimens of the amphipods were collected from the hermit crab. All the specimens were dissected and appendages were drawn using a phase-contrast microscope with an attached drawing tube. Body length (BL) was measured from the apex of rostrum to the distal end of urosomite 3 (Barnard & Drummond, 1978). The type specimens are deposited in the Osaka Museum of Natural History, Japan (OMNH).

Abbreviations used in the figures are: A, antenna; C, coxa; EP, epimeral plate; G, gnathopod; L, left; LL, lower lip; LM, large male; Md, mandible; Mp, maxilliped; Mx, maxilla; P, pereopod; Pl, pleopod; PS, plumose seta; R, right; SF, small female; SM, small male; T, telson; U, uropod; and UL, upper lip.

Keywords: Amphipoda, hermit crab associate, Isaeidae, Japan, Paguridae, prehensile pereopods, Stenothoidae, symbiosis

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