



Records of species of the hippolytid genus *Lebbeus* White, 1847 (Crustacea: Decapoda: Caridea) from hydrothermal vents in the Pacific Ocean, with descriptions of three new species

TOMOYUKI KOMAI¹, SHINJI TSUCHIDA² & MICHEL SEGONZAC³

¹Natural History Museum and Institute, Chiba, 955-2 Aoba-cho, Chuo-ku, Chiba, 260-8682 Japan. E-mail: komai@chiba-muse.or.jp

²Japan Agency for Marine-Earth Science and Technology (JAMSTEC), 2-15 Natsushima-cho, Yokosuka, 237-0061 Japan.

E-mail: tsuchidas@jamstec.go.jp

³Muséum national d'Histoire naturelle, Département Milieux et Peuplements Aquatiques, 61 rue Buffon, 75005 Paris, France.

E-mail: segonzac@mnhn.fr

Abstract

Five species of the hippolytid shrimp genus *Lebbeus* White, 1847 are reported from various deep-water hydrothermal vent sites in the Pacific Ocean: *L. laurentae* Wicksten, 2010 from the East Pacific Rise 13°N; *L. wera* Ahyong, 2009 from the Brothers Seamount, Kermadec Ridge, New Zealand; *L. pacmanus* **sp. nov.** from the Manus Basin, Bismarck Sea; *L. shinkaiiae* **sp. nov.** from the Okinawa Trough, Japan; and *L. thermophilus* **sp. nov.** from the Manus and Lau basins, south-western Pacific. *Lebbeus laurentae* is fully redescribed because the original and subsequent descriptions are not totally detailed. Differentiating characters among the three new species and close allies are discussed. Previous records of *Lebbeus* species from hydrothermal vents are reviewed.

Key words: Crustacea, Decapoda, Caridea, Hippolytidae, *Lebbeus*, new species, hydrothermal vents, Pacific Ocean

Introduction

The hippolytid shrimp genus *Lebbeus* White, 1847 is currently represented by 57 species (De Grave & Fransen 2011), many of which are distributed in the high latitudinal areas in the North Pacific. *Lebbeus* is the sole representative of Hippolytidae with species inhabiting chemosynthetic habitats, although the identities of the recorded species are not always clear (Martin & Haney 2005). Martin & Haney (2005) summarized information on species of the genus recorded from hydrothermal vents, and listed four species: *Lebbeus bidentatus* (?) Zarenkov, 1976 from the southern East Pacific Rise (EPR), *L. 'carinatus'* de Saint Laurent, 1984 from the East Pacific Rise at 13°N, *L. washingtonianus* (Rathbun, 1902) from the Okinawa Trough, Japan and *Lebbeus* sp. A from the Lau Basin, south-western Pacific. The problem of the homonymy between *L. carinatus* Zarenkov, 1976 and *L. carinatus* de Saint Laurent, 1984 had long been recognized (e.g. de Saint Laurent 1997). The specific identity of *L. washingtonianus* from the Okinawa Trough has been questioned (e.g., Komai *et al.* 2004; Martin & Haney 2005). Komai (2006) published an account on *L. carinatus* sensu de Saint Laurent, 1984, but the name was erroneously referred to Zarenkov (1976). Ahyong (2009) described a new species, *L. wera*, from the Brothers Caldera, southern Kermadec Ridge, New Zealand. Komai & Collins (2009) reported on the occurrence of two species of *Lebbeus* from the Manus Basin, Bismarck Sea, one of them was described as new, *L. manus*, though the second remained undescribed. Wicksten (2010) finally gave a new replacement name *L. laurentae* for *L. carinatus* de Saint Laurent, 1984, and redescribed this species based on the syntypes.

This study deals with collections made by cruises to various hydrothermal vent sites in the Pacific Ocean. Five species have been identified, including three new species: *Lebbeus laurentae* from EPR 13°N, *L. wera* from the Brothers Seamount, Kermadec Ridge, *L. pacmanus* **sp. nov.** from the Manus Basin, *L. shinkaiiae* **sp. nov.** from the Okinawa Trough (previously referred to *L. washingtonianus*) and *L. thermophilus* **sp. nov.** from the Manus and Lau basins. Based on the present results, previous hydrothermal vent records of species of *Lebbeus* are reviewed.