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## Reinstatement and redescription of *Lebbeus armatus* (Owen, 1839), long synonymized with *L. groenlandicus* (Fabricius, 1775), and description of one new species from the southwestern Sea of Okhotsk, Hokkaido, Japan (Crustacea: Decapoda: Caridea: Thoridae)

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### Abstract

The caridean shrimp species *Lebbeus armatus* (Owen, 1839) (Thoridae), originally described from Kamchatka, is reinstated from the synonymy of *L. groenlandicus* (Fabricius, 1775) and redescribed. It is easily distinguished from *L. groenlandicus* by having dense covering of short setae on the carapace and lateral parts of the pleon (versus only sparse setae are present), the clearly delimited branchial ridge on the carapace (versus at most a trace of a branchial ridge being discernible), the postrostral dorsal teeth noticeably becoming stronger and higher anteriorly (versus the anteriormost postrostral tooth is not the strongest), the higher number of ventral teeth of the second pleuron (three to five versus one) and of the third and fourth pleura (three or four versus one or two), and the usual presence of one or two spines on the carpi of the third to fifth pereopods (versus unarmed). A new species, *L. magnificus*, is described and illustrated on the basis of five specimens from the Kitami-Yamato Bank, southwestern Sea of Okhotsk, Hokkaido, Japan. The new species appears closest to *L. groenlandicus*, but is easily distinguished from the latter by having five postrostral teeth in females (versus four), more numerous ventral teeth on the fifth pleuron (three or four versus two), the stouter inner flagellum of the antennule in males, and the more numerous meral spines on the third to fifth pereopods. Previous records of *L. groenlandicus* from East Asian waters are referred to *L. armatus*. Records of *L. groenlandicus* from the northeastern Pacific remain to be reassessed, because specimens reported from the area do not agree in some characters with any of the three species treated in this study.

**Key words:** *Lebbeus magnificus* n. sp., Kitami-Yamato Bank

### Introduction

Owen (1839) described two new species of shrimp, *Hippolite armata* and *Hippolite cornuta*, on the basis of material collected during the voyage of “Blossom” to the North Pacific Ocean. For *H. armata*, he noted that “This species is abundant on the shores of Kamtchatka”, while a locality was not indicated for *H. cornuta*. Similarities of these two species to “*Hippolite aculeata*” (O. Fabricius, 1780) [now placed in the synonymy of *Lebbeus groenlandicus* (Fabricius, 1775)] were suggested by Owen (1839). Later, Krøyer (1842) synonymized Owen’s (1839) taxa with *Hippolyte aculeata*. Brandt (1851) also argued the synonymy of Owen’s taxa with *Hippolyte aculeata*, and supported the action by Krøyer (1842). Since then the synonymy of Owen’s taxa with *L. groenlandicus* has long been accepted by subsequent workers (e.g., Stimpson 1860; Smith 1879; Doflein 1900; Rathbun 1904; Brashnikov 1907; Kobjakova 1937; Makarov 1941; Urita 1942; Holthuis 1947; Vinogradov 1950; Couture & Trudel 1968; Igarashi 1969; H.S. Kim 1977; Butler 1980; Komai 1991, 1995; Hayashi 1992; Chace 1997; Cha *et al.* 2001; Sokolov 2001; De Grave & Fransen 2011; J.N. Kim 2012). As a result, *L. groenlandicus* is believed to be widely distributed in the Arctic, northern North Atlantic and northern North Pacific oceans, extending to the Sea of Japan westward and Puget Sound eastward. Such a wide distribution is rather exceptional for species of *Lebbeus*, for which the vast majority of the known species exhibit narrow geographical ranges (e.g., Hayashi 1992; Fransen 1997; Komai *et al.* 2004, 2012).

This study was initiated to identify five specimens of a species of *Lebbeus* White, 1847 collected from the

related. Ventral teeth on pleura of the pleon seem to become smaller with increase of the animal size in females. The number of ventral teeth of the fifth pleomere is variable from two to four (mostly three) on one side, but none of the specimens examined has two ventral teeth on both sides. Like other congeneric species (cf. Komai *et al.* 2004, 2012; Komai 2013), the new species exhibits strong sexual dimorphism in the structure of the inner antennular flagellum (see above description; cf. Figs. 10A and 13A).

**Distribution.** Known only from Kitami-Yamato Bank, southwestern Sea of Okhotsk, at depth of 156–208 m.

**Remarks.** As mentioned above, *Lebbeus magnificus* n. sp. is morphologically closer to *L. groenlandicus* than to *L. armatus*. Nevertheless, the new species is readily distinguished from *L. groenlandicus* by the following characters (see Table 2): the dorsal margin of the rostrum is armed usually with only one tooth in *L. magnificus* n. sp., rather than two to four teeth in *L. groenlandicus*; the postrostral teeth on the carapace in the female is five in *L. magnificus* n. sp., rather than four in *L. groenlandicus*; ventral teeth on pleura of the pleon are generally weaker in *L. magnificus* n. sp. than in *L. groenlandicus*; the fifth pleuron is armed usually with three or four teeth in *L. magnificus* n. sp., instead of two teeth in *L. groenlandicus*; the inner antennular flagellum of males is thicker in *L. magnificus* n. sp. than in *L. groenlandicus*; meral spines on the third to fifth pereopods are more numerous in *L. magnificus* n. sp. than in *L. groenlandicus* (for detail, see Table 2).

**Etymology.** The specific epithet “*magnificus*” refers to the beautiful appearance of the new species.

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