EXTENSION OF THE KNOWN SOUTHERN DISTRIBUTIONS OF THREE ESTUARINE SNAPPING SHRIMPS OF THE GENUS ALPHEUS FABRICIUS, 1798 (CARIDEA, ALPHEIDAE) IN SOUTH AMERICA

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Snapping shrimps of the genus *Alpheus* Fabricius, 1798 are found mainly in shallow water in coastal tropical and subtropical ecosystems. In estuaries, several species of *Alpheus* are adapted to the special physical and biological conditions of mangroves and mudflats (see examples in Christoffersen, 1984; Kim & Abele, 1988; Anker & De Grave, 2009). *Alpheus colombiensis* Wicksten, 1988 (synonym: *A. hamus* Kim & Abele, 1988, see Abele & Kim, 1989) and *A. latus* Kim & Abele, 1988 in the eastern Pacific, and *A. estuariensis* Christoffersen, 1984 in the western Atlantic are examples of species living in this estuarine type of environment. These three taxa form a morphologically and genetically well-supported clade within the heterogeneous *A. edwardsii* (Audouin, 1826) group (see Kim & Abele, 1988; Wicksten, 1988; Williams et al., 2001; Hurt et al., 2009).

While revising material deposited in the Crustacean Collections of the Netherlands Centre for Biodiversity Naturalis, Leiden, The Netherlands (RMNH) for a project aiming toward the revision of the *A. heterochaelis* Say, 1818 species complex, we observed that specimens labelled as “*A. ? heterochaelis*”, collected in 1966 from mangroves on the northern Peruvian coast, matched the characteristics of *A. colombiensis* and *A. latus*. These specimens represent not only the first records from Peru, but also southward range extensions for both species in the eastern Pacific. During the study of unidentified material of *Alpheus* deposited in the Crustacean Collection of the Department of Biology of Faculty of Philosophy, Science and Letters of Ribeirão Preto, University of São Paulo

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(CCDB/FFCLRP/USP), we also found two females of *A. estuariensis* collected in 2007 from mangroves of Santa Catarina, southern Brazil. The occurrence of this species in Santa Catarina represents the first record from this state, and also a modest southward range extension of this species in the western Atlantic. Here we report and discuss the range extensions of these species, and briefly discuss their zoogeography. Drawings were made under a dissecting microscope equipped with a camera lucida. Carapace length (CL) was measured from the tip of the rostrum to the posterior margin of the carapace.

**SYSTEMATICS**

**Family ALPHEIDAE Rafinesque, 1815**

**Genus Alpheus Fabricius, 1798**

**Alpheus colombiensis** Wicksten, 1988

(fig. 1)

*Alpheus colombiensis* Wicksten, 1988: 1, fig. 1.

*Alpheus hamus* Kim & Abele, 1988: 91, fig. 38.

Material examined.— 1 female (CL = 17.5 mm), Peru, Department of Tumbes, Puerto Pizarro, coll. H. O. von Hagen, iv.1966, on mangrove soft mud, RMNH.Crus.D 23970.

Distribution.— Eastern Pacific: Mexico (Bahía Concepción) (see below), Costa Rica (Golfito), Panama (Pacific side of Panama Canal), Colombia (Bahía Malaga), Peru (Puerto Pizarro) (Wicksten, 1988; Abele & Kim, 1989; Ríos, 1992; Lazarus-Agudelo & Cantera-Kintz, 2007; this study).

Habitat.— Mangroves and estuarine mudflats, in burrows in mud or under rocks (Wicksten, 1988; Abele & Kim, 1989).

Remarks.— The southern limit of distribution of *A. colombiensis* is extended from Bahía Malaga, Valle del Cauca, Colombia (approx. 04°00’N) (Wicksten, 1988) to Puerto Pizarro, Tumbes, northern Peru (approx. 03°30’S). The locality of collection coincides with the southern limit of mangrove distribution in the eastern Pacific, which is Tumbes River (approx. 03°30’S). The Peruvian coast is influenced by cold water of the Humboldt or Peru Current, which flows northward along the Chilean and Peruvian coasts, losing its significance at 5°S (UNEP, 2006). The low water temperature plus other consequences of this current such as arid climate, salty soils and low freshwater discharge restrict the occurrence of mangroves and associated species in the eastern Pacific south of Tumbes River (Yáñez-Arancibia & Lara-Domínguez, 1999). *Alpheus colombiensis* is a tropical species of the Panamanian Province, which harbors the largest diversity of decapods in the eastern Pacific (Boschi, 2000). The northward direction and cold waters of the