



## Revision of the *Alpheus websteri* Kingsley, 1880 species complex (Crustacea: Decapoda: Alpheidae), with revalidation of *A. arenensis* (Chace, 1937)

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### Abstract

The *Alpheus websteri* Kingsley, 1880 species complex is revised. *Alpheus websteri* s. str. is redefined and restricted to the western Atlantic, ranging from the type locality in the Florida Keys to northeastern Brazil. The eastern Pacific *A. arenensis* (Chace, 1937), formerly a synonym of *A. websteri*, and the eastern Atlantic *A. fagei* Crosnier and Forest, 1966, are shown to be distinct from *A. websteri* morphologically, genetically and also by color pattern. Morphology, genetics and color patterns all suggest that *A. websteri* and *A. arenensis* are transisthmian sister species, with *A. fagei* being their closest relative. Complete synonymy, color photographs and GenBank barcodes (COI) are provided for all three species.

**Key words:** *Alpheus*, snapping shrimp, species complex, transisthmian taxa, color pattern, eastern Pacific, Atlantic, Caribbean, molecular phylogeny, barcode, COI

### Introduction

The largest alpheid genus, *Alpheus* Fabricius, 1798, includes seven species groups first defined by Coutière (1899, 1905) and widely used by most subsequent workers (e.g., Banner & Banner 1982; Chace 1988). One of these species groups is the fairly large (over 30 species) *A. sulcatus* Kingsley, 1878 group, defined by orbital hoods usually armed with acute teeth, the major cheliped lacking marked dorsal and ventral notches, and the uropod bearing a stout, usually dark-colored (black to tan-brown) distolateral spine (e.g., Banner & Banner 1982). Based on molecular data, Williams *et al.* (2001) suggested that the *A. sulcatus* group, as currently defined, is polyphyletic. However, within this group, all species with a stout and dark-colored uropodal spine appear to form a monophyletic clade (Williams *et al.* 2001), which includes *A. websteri* Kingsley, 1880.

*Alpheus websteri* was originally described without illustrations from Key West, Florida (Kingsley 1880). The type of *A. websteri* was deposited in the National Museum of Natural History, Smithsonian Institution, Washington DC, USA (USNM). *Alpheus websteri* can be separated from all other western Atlantic species by the following features: (1) small, acute, dorsally rounded rostrum, furnished with stiff setae; (2) broad rostral carina, extending posteriorly well beyond orbital hoods; (3) acute orbital teeth inserted on the anterior margin of the orbital hoods; (4) major chela bearing a shallow transverse constriction on the dorsal margin of the palm, near the dactylus; (5) merus of the major cheliped with an acute distal tooth on the ventromesial margin; (6) minor cheliped with non-balaeniceps fingers in both sexes; (7) third to fifth pereopods without spine on