



Sponge-dwelling snapping shrimps of Curaçao, with descriptions of three new species*

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Abstract

Sixteen species of sponge-dwelling snapping shrimp in the genus *Synalpheus* (*gambarelloides* group) were collected from sites spanning the south coast of Curaçao, including three new to science. *Synalpheus hoetjesi* sp. nov. belongs to a species complex that includes *Synalpheus pandionis*, *S. dardeauui*, *S. yano*, *S. goodei*, *S. longicarpus*, and *S. ul*. *Synalpheus kuadramanus* sp. nov. is a distinctive shrimp characterized by a short, square moveable finger on the major first pereopod and by brilliant turquoise embryos in females. *Synalpheus orapilosus* sp. nov. is a shrimp most morphologically similar to *Synalpheus barahonensis*—both species share the distinctive character of a tuft of setae on the distal end of the third maxilliped, instead of a distal circlet of spines—but can be distinguished from the latter by the number of carpal segments on the second pereopod. Although eusocial *Synalpheus* species (defined here as species that live in large colonies with strong reproductive skew) are often the most numerically abundant *Synalpheus* collected from sponges at other sites, only pair-bonding *Synalpheus* species were recorded from our collections in Curaçao.

Key words: *Synalpheus*, *Zuzalpheus*, *gambarelloides* group, Alpheidae, sponge, symbiotic, coral reef, eusociality

Introduction

Snapping shrimp in the genus *Synalpheus* Bate are some of the most numerically abundant (Felder & Chaney 1979; Reed *et al.* 1982; Snelgrove & Lewis 1989) and taxonomically diverse (Coutière 1909; Banner & Banner 1975; Bruce 1976) cryptic fauna inhabiting coral reefs worldwide. The genus *Synalpheus* contains over 150 species (Chace 1988; Rios & Duffy 2007), and the majority of Caribbean species belong to the “*gambarelloides*” group (formerly known as “*laevimanus*” group, e.g. Coutière 1909), characterized by a dense brush of setae on the dactyl of the minor first chela. *Synalpheus* species in the *gambarelloides* group were placed in a new genus (*Zuzalpheus*) by Rios & Duffy (2007), based on several morphological synapomorphies and strong molecular support for monophyly of this group in the western Atlantic (Morrison *et al.* 2004). However, following the recent argument that designation of this new genus should await a more comprehensive taxonomic revision of *Synalpheus* (Anker & De Grave 2008), here we refer to this group as the *gambarelloides* species group within the genus *Synalpheus*.

Most, if not all, species in the *gambarelloides* group are obligate sponge-dwellers that inhabit the internal canals of their sponge hosts (Duffy 1992; Macdonald *et al.* 2006; Rios & Duffy 2007). In the west Atlantic, >30 described species in the *gambarelloides* group inhabit ~20 different sponge host species (Macdonald *et al.* 2006; Rios & Duffy 2007; Anker & Tóth 2008; Macdonald *et al.* 2009), and distribution of these species is thus closely linked to the distribution and abundance of their sponge hosts. *Gambarelloides* group *Synalpheus* are also unusual in containing the first described cases of eusociality in marine invertebrates (Duffy 1996a): many species of *Synalpheus* live in large, reproductively skewed colonies (often in excess of 100 individuals),