



## A new species of *Lysmata* (Crustacea, Decapoda, Hippolytidae) from Venezuela, southeastern Caribbean Sea

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### Abstract

*Lysmata udoi* n. sp., a new peppermint shrimp, is described from Venezuela, southeastern Caribbean Sea. All individuals were collected from dens of the toadfish *Amphichthys cryptocentrus* (Valenciennes, 1837) in the subtidal zone. This new species can be distinguished from other closely related species of *Lysmata* by the number of teeth, length and shape of the rostrum, the relative length of the antennular peduncle, and the number of carpal articles of the second pereiopod. The color pattern is distinctive. The fourth abdominal segment almost lacks color, but bears a posterior red thin line with three short forward projections. Morphological and molecular characters demonstrate that *L. udoi* n. sp. is most closely related to the Gulf of Mexico *L. boggessi* Rhyne and Lin, 2006 and the Caribbean *L. rafa* Rhyne and Anker, 2007 and *L. ankeri* Rhyne and Lin, 2006. Field observations suggest that *L. udoi* n. sp. is a protandric simultaneous hermaphrodite, with a primary male phase followed by a simultaneous hermaphrodite phase.

**Key words:** *Lysmata*, Lysmatidae, Hippolytidae, Caribbean, Venezuela, hermaphrodite

### Introduction

Shrimps from the genera *Lysmata* Risso, 1816 and *Exhippolysmata* Stebbing, 1916 are unique among decapod crustaceans because of their enigmatic sexual system. All species so far studied are protandric simultaneous hermaphrodites, in which individuals consistently mature and reproduce initially as males, and later in life, become functional simultaneous hermaphrodites (Bauer & Holt 1998; Braga *et al.* 2009; Baeza 2009).

Shrimps from genera *Lysmata* and *Exhippolysmata* are also recognized because their wide diversity of lifestyles. Many species are not conspicuous in terms of coloration, occur in dense aggregations, and dwell freely among rocks at intertidal and/or subtidal temperate and subtropical zones (e.g., *L. californica* (Stimpson, 1866)—Bauer & Newman 2004, *L. nayaritensis* Wicksten, 2000—Baeza *et al.* 2008, *Exhippolysmata oplophoroides* (Holthuis, 1948)—Braga *et al.* 2009). Other species live in small groups sometimes developing symbiotic associations with sessile macroinvertebrates (i.e., *L. pedersenii* Rhyne and Lin, 2006 inhabiting tube sponges—Baeza 2009). Lastly, a few species have a striking coloration, live as socially monogamous pairs, and apparently provide cleaning services to fishes (e.g., the red blood shrimp *L. splendida* Burukovsky, 2000 and *L. debelius* Bruce, 1983 and the lady scarlet shrimp *L. amboinensis* (De Man, 1888) and *L. grabhami* (Gordon, 1935)—Limbaugh *et al.* 1961; Bruce 1983; Fiedler 1998). Because of this lifestyle diversity, shrimps from the genus *Lysmata* and *Exhippolysmata* have captured the attention of systematists, aquaculturists, natural historians and evolutionary biologists (d'Udekem d'Acoz 2003; Rhyne & Lin 2006; Rhyne & Anker 2007; Baeza & Bauer 2004; Baeza 2006, 2007a, b, c, 2008). They currently are