



Article

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Morphology of the second zoeal stage of *Grapsus adscensionis* (Osbeck, 1765) (Crustacea, Decapoda, Grapsoidea) confirms larval characters of the family Grapsidae

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Abstract

The morphology of the second zoeal stage of *Grapsus adscensionis*, hatched from ovigerous specimens collected in the supralittoral zone of Taliarte Harbour, Gran Canaria (Canary Islands, NE Atlantic), is described and illustrated in detail for the first time. The comparison of its larval morphology with those of other species of Grapsidae provides information for the characterization of the zoeal morphology of grapsids, with implications in the phylogenetic relationships within the family, as well as an aid in identification of plankton samples.

Key words: Grapsidae, larval development, *Grapsus adscensionis*, zoea, megalopa

Introduction

The Grapsidae MacLeay, 1838, presently is a small family consisting of 40 species in 8 genera (Ng *et al.* 2008). Despite of being mainly intertidal, and therefore ovigerous females are easy to collect, the complete larval development of few of these species is known. This is due to the small size of the first zoeal stage that are difficult to feed (see Ingle 1987), and the long duration of the zoeal phase that often fails in laboratory cultures (see Cuesta *et al.* 2011). The exception to these problems is *Metopograpsus* H. Milne Edwards, 1853, which also present peculiarities in larval morphology and in the number of zoeal stages. Such peculiarities are reflected in a recent molecular phylogeny where *Metopograpsus* is placed in a basal position, clearly differentiated from the rest of the grapsid genera (Schubart 2011).

All present known larval data for the family Grapsidae are summarized by Cuesta *et al.* (2011: table 2). Larval descriptions are known for seven out of the eight valid genera, but the complete larval development is known for only four species (one for *Geograpsus* Stimpson, 1858, three for *Metopograpsus*). The rest of larval stages described correspond mainly to zoeae I (for 18 species) and a few later stages for 6 species. Despite the fact that larval morphology of grapsids is far from being completely known, Cuesta *et al.* (1997, 2006) and Cuesta & Schubart (1999) proposed a set of characters that allows defining the morphology of the larval stages of Grapsidae (with the exception of *Leptograpsodes* Montgomery, 1931, because there are no larval data known). This set of features was emended by Cuesta *et al.* (2011) with new features for later zoeal stages that require some modification of the patterns in mouthpart setations.

There are few larval data on *Grapsus* Lamarck, 1801, and these are mainly restricted to the zoea I, as in *Grapsus adscensionis* (Cuesta *et al.* 1997), *G. fourmanoiri* Crosnier, 1965, (Flores *et al.* 2003), *G. grapsus* (Linnaeus, 1758) (Guerao *et al.* 2001) and *G. tenuicrustatus* (Herbst, 1783) (Flores *et al.* 2003). Information on more developed larval stages other than the zoea I is scarce and based on specimens collected from plankton samples. Only the zoeae I-V attributed to *G. strigosus* Herbst, 1799, and the megalopa of *G. longitarsis* Dana, 1851, have been described by Gohar and Al-Kholy (1957) and Chen (1995) respectively.