Early zoeal development of the shrimp Hippolyte leptocerus (Decapoda, Caridea, Hippolytidae)

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Abstract

The morphology of the first three zoeal stages of Hippolyte leptocerus (Heller, 1863) are described and illustrated in detail from laboratory-hatched material. The ovigerous females were collected on the Alfacs Bay, Ebro Delta, Spain (Western Mediterranean). The early larval stages (ZI, ZII, ZIII) showed the anterolateral margin of carapace with denticulations, a median tubercle behind rostrum, scaphocerite segmented distally (only ZI and ZII), exopodal seta at the maxillule and pleonite 5 with a pair of dorsolateral spines. The morphology of the first three zoeal stages of H. leptocerus is typical of species with an extended larval development. Morphological characteristics of the genus Hippolyte are discussed.

Key words: Caridea, Hippolyte, zoea, morphology, larval development

Introduction

The genus Hippolyte (Leach, 1814) show an wide geographic and ecological distribution, comprising more than 30 species distributed worldwide except in extremely cold waters (d’Udekem d’Acoz, 1996). The taxonomy and systematic of the species of the genus Hippolyte is still problematic; the available information reveals a great deal of intraspecific variability in developmental traits, showing a high morphological variability in adults (d’Udekem d’Acoz, 1996; García Raso et al. 1998).

Among of the genus Hippolyte, 14 species are recently recorded in north-eastern Atlantic and Mediterranean waters (d’Udekem d’Acoz, 1999). Hippolyte leptocerus has been recorded on photophile algae from intertidal zone to 30 m depth along the eastern Atlantic from western Ireland to Mauritania, including the Madeira and Cape Verde Islands and throughout the Mediterranean Sea and Black Sea (d’Udekem d’Acoz, 1996).

Information on larval morphology of genus Hippolyte is available for 14 species: H. acuta (Stimpson, 1860) (Yokoya, 1957); H. bifidirostris (Miers, 1876) (Packer, 1985); H. clarki Chace, 1951 (Needler, 1934 as H. californiensis); H. coerulescens (Fabricius, 1775) (Gurney, 1936 as H. acuminata); H. inermis Leach, 1815 (Bourdillo-Casanova, 1960; Heegard, 1963; Le Roux, 1963; Zupo and Buttino, 2001); H. multicolorata Yaldwyn, 1971 (Packer, 1985); H. obliquimanus Dana, 1852 (Terossi et al., 2010), H. pleuracanthus (Stimpson, 1871) (Shield, 1978); H. prideauxiana Leach, 1817 (Lebour, 1931); H. sapphica d’Udekem d’Acoz, 1993 (Ntakis et al., 2010); H. varians Leach, 1814 (Sars, 1911; Webb, 1921; Lebour, 1931); H. ventricosa H.Milne Edwards, 1837 (as H. orientalis Gurney, 1927); H. williamsi Schmitt, 1924 (Albornoz & Wehrtmann, 1997) and H. zostericola (Smith 1873) (Negreiros-Franozo et al., 1996). Except for H. obliquimanus, H. pleuracanthus and H. sapphica, the descriptions of their zoeal stages are incomplete or not described in detail. The complete larval development was described only for H. pleuracanthus and H. sapphica.

The present study aimed to describe in detail the morphology of the three first zoeal stages of Hyppolyte leptocerus from a population of western Mediterranean. This represent the first complete description of the early larval stages of genus Hippolyte species from eastern Atlantic and western Mediterranean.