Zootaxa 1508: 49–59 (2007)
www.mapress.com/zootaxa/

ISSN 1175-5326 (print edition)
ZOOTAXA
ISSN 1175-5334 (online edition)

The first phyllosoma stage of *Palinurus mauritanicus* (Crustacea: Decapoda: Palinuridae)

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Abstract

The external morphology of the first phyllosoma larva of the spiny lobster *Palinurus mauritanicus* is described based on hatched larvae, and compared with those described in other Palinurids. This constitutes the first scanning electron microscopy description of a phyllosoma of the genus *Palinurus* and the first complete description of a phyllosoma stage of *P. mauritanicus.* The first phyllosoma larva of *P. mauritanicus* hatches in a very advanced stage, compared to other palinurid genera, which would allow it to stay in the plankton for a shorter period of time. We cannot point out any major morphological differences from the congeneric species *Palinurus elephas*, co-occurring in most of its distribution area. The first phyllosoma larva of *P. mauritanicus* can be differentiated from those described for the genus *Panulirus* as well as from those of *Scyllarus* and *Scyllarides* widely co-occurring in the distribution area of *P. mauritanicus*, by the pereiopods 4 and 5 being already present as small buds and by the long, non-setose exopod on pereiopod 3. The morphology and differential position of the chromatophores of the living animal are also described.

Key words: Phyllosoma, Palinuridae, spiny lobster, SEM, meroplankton

Introduction

The phyllosoma is the larval stage of spiny, slipper and coral lobsters (Palinuridae, Scyllaridae and Synaxidae), and represents one of the most significant characters that unify them under the Achelata (Scholtz & Richter 1995; Richter & Scholtz 2001; Dixon *et al*. 2003). The phyllosoma larva of spiny lobsters has a long planktonic life before metamorphosing into the puerulus stage, which is the transitional stage from planktonic to a benthic existence (Phillips & Olsen 1975; Herrnkind *et al*. 1994; Lipcius & Eggleston 2000; Diaz *et al*. 2001). Despite the importance of larval survival to predict recruitment, not much is known about the biology of phyllosoma larvae (Goñi & Latrouite 2005).

The genus *Palinurus* is the oldest known among the Palinurid genera, and has a restricted distribution. It is only found in the Eastern Atlantic Ocean, Mediterranean Sea, and off South East Africa. Five species are known in the genus, all of them of present or potential commercial interest (Holthuis 1991). Larvae have been adscribed to all the species of the genus *Palinurus* except for *Palinurus charlestoni* Forest & Postel, 1964 (Bouvier 1913; Berry 1974; Maigret 1979). However, no detailed description of a phyllosoma larva of *Palinurus* is available in the previous literature, according to modern standards.

Only two species of the genus *Palinurus* are distributed in the northeastern Atlantic and Mediterranean Sea (Zariquiey-Álvarez 1968; d'Udekem d'Acoz 1999; Goñi & Latrouite 2005): *Palinurus elephas* Fabricius, 1787 and *Palinurus mauritanicus* Gruvel, 1911. *P. mauritanicus* occurs along the western coasts of Africa and Europe from Senegal to the western coasts of Ireland, and throughout the western Mediterranean Sea (Zariquiey-Álvarez 1968; Minchin 1989; d'Udekem d'Acoz 1999). Bathymetrically, this species has been recorded

Accepted by J. Goy: 14 Mar. 2007; published: 18 Jun. 2007