



Characterization of a population of the Harlequin crab, *Lissocarcinus orbicularis* Dana, 1852, an obligate symbiont of holothuroids, in Toliara bay (Madagascar)*

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Abstract

Harlequin crabs, *Lissocarcinus orbicularis*, are commensals found on the integument and in the buccal/cloacal cavity of several species of holothuroids. The population of these crabs was investigated on holothuroids of the barrier reef of Toliara (South-West of Madagascar) from 2002 to 2008. Seventeen holothuroid species were observed and eight were crab hosts. There is generally one adult crab or a heterosexual pair per infested holothuroid but up to ten juveniles were recorded on a *Thelenota ananas*. Carapace length of the observed *L. orbicularis* was from 0.3 to 1.4 cm from the tip of the rostrum to the end of the cephalothorax, with a mean length of 0.85 cm. *L. orbicularis* is characterized by a weak sexual dimorphism (females are bigger than males) and the presence of pereopods morphologically adapted to fixation on the host integument. Gravid females were observed at each month of the survey indicating that the crab reproduces all the year. Considering our results and personal observations, we also discuss the monogamy mating system of the Harlequin crab.

Key words: Indian Ocean, Holothuroidea, symbiotic crabs, reproduction

Introduction

Three families of brachyuran crabs are closely associated with various species of echinoderms: the Eumedonidae, Portunidae and Pinnotheridae (Ng & Jeng 1999). About ten percent of Portunidae have developed a relatively strong association with other organisms (Vannini & Innocenti 2000), amongst them is the genus *Lissocarcinus*. Of nine species of *Lissocarcinus*, three are known to be facultative symbionts of anthozoans (*L. laevis* Miers, 1886), echinoids (*L. arkati* Kemp, 1923) and madreporans (*L. polybioides* Adams & White, 1949) (Spiridonov 1990). The Harlequin crabs, *L. orbicularis* Dana, 1852, are obligate symbionts found exclusively on the integument (Fig. 1) or in the buccal and cloacal cavities of several species of holothuroids (Bauchau 1966; Spiridonov 1990). These crabs do not cause any negative effects on their hosts and they are considered as commensals (Vannini & Innocenti