POPULATION STRUCTURE AND BREEDING SEASON OF THE SOUTH ATLANTIC HERMIT CRAB, *LOXOPAGURUS LOXOCHELIS* (ANOMURA, DIOGENIDAE) FROM THE UBATUBA REGION, BRAZIL

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ABSTRACT

A population of *Loxopagurus loxochelis* was studied in terms of seasonal abundance, size frequency distribution, sex ratio, and reproductive period (percentage of ovigerous females). Specimens were collected monthly over a period of two years (from September 1995 to August 1997) in the non-consolidated areas of the Ubatuba, Mar Virado, and Ubatumirim bays (northern coast of São Paulo State, Brazil) with a double-rig trawl net. A total of 1,084 individuals were analysed. Animal size (minimum, maximum, and mean ± SD shield length) was 2.8, 9.1, and 6.88 ± 1.13 mm for 625 males; 2.8, 8.2, and 5.78±0.98 mm for 236 non-ovigerous females; and 4.6, 8.0, and 6.24±0.68 mm for 223 ovigerous females, respectively. Sexual dimorphism was recorded by the presence of males in the largest size classes. The sex ratio was 1.4 : 1 in favour of males. The highest incidence of ovigerous females occurred during winter and spring (June to October), with a low percentage in summer and fall (November to May), indicating continuity in the reproductive cycle. This strategy of reproduction is related to temperature. The occurrence of *L. loxochelis* in the Ubatuba region represents the final point of northern distribution of this species as a function of water mass influence, and could be its real limit on the Atlantic coast of South America.

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RESUMO

Uma população do ermitão *Loxopagurus loxochelis* foi estudada com relação à sua abundância sazonal, distribuição de freqüência de tamanho, razão sexual e período reprodutivo (porcentagem de fêmeas ovígeras). Os espécimens foram coletados mensalmente, por um período de 2 anos (Setembro 1995 a Agosto 1997) em áreas de substrato não-consolidado das Enseadas de Ubatuba, Mar Virado e Ubatumirim (costa norte do Estado de São Paulo, Brasil) com uma rede do tipo "double-rig". Um total de 1.084 indivíduos foram analisados. Os tamanhos dos exemplares (mínimo, máximo e média ± SD do comprimento do escudo cefalotorácico) foram 2,8, 9,1 e 6,88 ± 1,13 mm para 625 machos; 2,8, 8,2 e 5,78 ± 0,98 mm para 236 fêmeas não ovígeras; e 4,6, 8,0 e 6,24 ± 0,68 mm para 223 fêmeas ovígeras, respectivamente. O dimorfismo sexual foi registrado pela presença de machos nas maiores classes de tamanho. A razão sexual foi de 1,4 : 1 em favor dos machos. A maior incidência de fêmeas ovígeras ocorreu no inverno e na primavera (Junho a Outubro), com uma baixa porcentagem no verão e no outono (Novembro a Maio), indicando continuidade no ciclo reprodutivo. Tal estratégia na reprodução está relacionada à temperatura. A ocorrência de *L. loxochelis* na região de Ubatuba representa o limite da distribuição setentrional desta espécie em função da influência das massas de água e pode ser seu limite real na costa Atlântica da América do Sul.

INTRODUCTION

Marine decapods have been the target of biological population studies and more general investigations over the last thirty years. The Anomura represent a highly significant group among these animals, comprising more than 800 species of hermit crabs worldwide. Their taxonomy has undergone considerable revision (Ingle, 1993). Despite this situation, the population biological aspects of hermit crabs have been poorly studied, especially with regard to the 46 species of hermit crabs recorded in Brazilian waters (Melo, 1999).

Important contributions have been made in surveys along the northern coast of São Paulo State during the last few years, primarily in the Ubatuba region, which is an important area for crustacean investigations (Mantelatto & Fransozo, 2000) and possesses a mixture of faunas of both tropical and Patagonian origin (Sumida & Pires-Vanin, 1997). For this reason, there have been an impressive number of studies of the intertidal zone and continental shelf in recent years. These studies centred on the faunal composition of hermit crabs of a variety of habitats along the Ubatuba coast. Information about the population structure of hermit crabs is available in studies by Negreiros-Fransozo et al. (1991), Negreiros-Fransozo & Fransozo (1992), Fernandes-Góes (1997), Fransozo & Mantelatto (1998), Mantelatto & Garcia (1999), Bertini & Fransozo (2000), Garcia & Mantelatto (2001), and Mantelatto & Sousa (in press).

Loxopagurus loxochelis (Moreira, 1901) is an endemic hermit crab of the Atlantic coast of South America, occurring in Brazil (states of Bahia to Rio Grande do Sul), Uruguay, and Argentina (Melo, 1999). The biology of this species is poorly known. The data available deal only with species description and adult