



Diversity and distribution of assemblages of estuarine decapod larvae (Crustacea: Decapoda: Anomura, Brachyura) in tropical southeastern Brazil

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Abstract

Decapod larvae assemblages were studied in the tropical estuaries off southeastern Brazil (Piraquê-açú and Piraquê-mirim rivers estuaries). A total of 32 taxa of decapod larvae were recorded. Brachyuran larvae dominated in Piraquê-açú estuary, with 62% of the relative abundance, and 49% in Piraquê-mirim estuary. Mean larvae concentrations ranged from 17.2 m⁻³ at Piraquê-mirim (August 2003) to 221.1 m⁻³ at Piraquê-açú (April 2003). The assemblage of larvae in both estuaries was diverse, especially at Piraquê-mirim, which showed higher ecological stability. The high spatial heterogeneity of the Piraquê-açú and Piraquê-mirim estuarine system resulted in the division of the assemblage into two well-defined groups (truly estuarine and euryhaline). Salinity spatial gradient was a key factor in the structure and distribution of larvae.

Key words: larvae, spatial distribution, seasonal distribution, salinity, southern Brazil estuaries

Introduction

The structural heterogeneity, lower risk of predation, and food availability of estuaries provide favorable conditions for survival and growth of larvae and young stages and these environments are recognized as nursery habitats (Laegdsgaard & Johnson 2000). It is often said that estuaries are among the most highly productive ecosystems in the world. Larvae of decapods crustaceans often can become an important part of this biomass, especially when the environmental conditions facilitate larval release (Gonçalves *et al.* 2003; King 1995; Lindley 1998).

Estuarine populations, however, must live in the dynamic conditions of tides and currents and their tolerance of changes in salinity. Decapod larvae have presumably developed dramatic ontogenetic changes in ecology, feeding, behavior, and functional morphology to the pelagic environment where the larvae live and develop (Anger 2006). Furthermore, spawning by adults show different rhythms of larval release that are synchronized with the light-dark cycle, lunar and/or semi-lunar period and tidal amplitude in order to promote the exportation of their larvae to coastal waters or the retention within of the estuaries (Gonçalves *et al.* 2003; Moser & Macintosh 2001).

As planktonic development has an obviously important role for recruitment and population dynamics, much effort has been invested to improve our knowledge on larval transport, settlement patterns and relationships between planktonic communities and physical forcing (Olague-Feliú *et al.* 2010). In addition, since 1970 a rapidly increasing number of the studies have also been produced on larval ecology, morphology, physiology, and biochemistry, so that the ontogeny of various basic biological functions on decapod is increasingly understood, and new fields of science research have recently been propagating (Anger 2001).

In contrast with this scenario, there have been few studies of the decapod larval ecology and distribution in the tropics, especially regarding the effects of seasonality, as the study of the Epifanio & Dittel (1984), which investigated the distribution of brachyuran larvae in a Costa Rican mangrove during dry and wet seasons. In contrast with the situation in tropical environments, various studies have been undertaken at temperate latitudes (Dittel & Epifanio 1982; Drake *et al.* 1998; Fusté & Gili 1991; González-Gordillo & Rodríguez 2003; Grabe 2003; Lovrich 1999; Natunewicz & Epifanio, 2001). Published research that focus on decapod larvae along Brazilian coast are