ABSTRACT

The population biology of *Uca thayeri* was studied in a subtropical mangrove in Ubatuba, State of São Paulo, Brazil. Two sampling techniques were used: transect sampling and catch-per-unit-effort. Size frequency distribution, sex-ratio, and reproductive period were analysed. For juvenile crabs (CW < 4.6 mm), the transect procedure was most efficient, while ovigerous females were most collected during the capture effort. Males were most numerous in the transect technique, while in the catch-per-unit-effort there was no difference between sexes. The species showed a different size frequency distribution for each sampling procedure. The reproduction of *U. thayeri* is seasonal, being more pronounced in the warmer months of the year. However, juveniles occurred all over the year, although more numerous in the colder months. The success of the species in reproductive activity and the constant colonization of the area can be attributed to the availability of food resources and differential occupation of the habitat by ovigerous females.

RESUMEN

Se ha estudiado la biología poblacional de *Uca thayeri* en un manglar subtropical de Ubatuba, Estado de São Paulo, Brasil. Se emplearon dos métodos de muestreo: transectos y capturas por unidad de esfuerzo. Se analizó la distribución de frecuencias de tallas, proporción de sexos y periodo reproductivo. Para los ejemplares juveniles y machos adultos (CW < 4.6 mm) el método de transectos fue el procedimiento más eficaz, mientras que las hembras ovígeras fueron evaluadas más eficazmente mediante capturas por unidad de esfuerzo. La especie mostró diferentes distribuciones de frecuencias de tallas según el método de muestreo. La reproducción de *U. thayeri* es estacional, siendo más importante en los meses cálidos. Sin embargo, los juveniles aparecieron durante todo el año, aunque siendo más numerosos en los meses fríos. El éxito en la actividad reproductiva y la colonización constante en el área puede ser atribuido a la disponibilidad del alimento y a la diferente ocupación del hábitat por las hembras ovígeras.
INTRODUCTION

Fiddler crabs live in the intertidal zone of mud-sandy sediments in estuarine and sheltered areas from tropical to warm-temperate regions. These crabs build complex burrows in the substratum and display particular behaviour associated with burrow utilization. Both activities follow a tidal rhythm (Crane, 1975; Barnwell & Thurman, 1984; Macintosh, 1988).

The characterization of natural populations is considered to be of importance for an understanding of their ecological stability. Seasonal variations of population structure, density, sex ratio, juvenile recruitment, and breeding intensity, together with estimates of migration, birth, and mortality rates are the most frequently studied aspects regarding population biology (for crabs see, e.g., Pillay & Nair, 1971; Hutchinson, 1981; Jones & Simons, 1983; Santos et al., 1995).

Fiddler crab populations are usually characterized by a high density compared to other brachyurans, including other semiterrestrial crabs (Teal, 1958). Several techniques have been used to estimate the abundance of burrowing crabs, but only a few are appropriate to be used in mangroves due to the complex structure of this habitat. Thus, one should be cautious when comparing different species or populations, or reports from different authors (Nobbs & McGuinnes, 1999).

Mangrove crab populations have been characterized by means of examining size frequency distributions (Genoni, 1985). These populations usually undergo wide reproductive periods, during which females spawn several egg masses a year. Consequently, the modal classes change over time as a result of both reproduction and quick juvenile recruitment (Thurman, 1985; Macintosh, 1988).

The length of the breeding period can be influenced by interacting biotic and abiotic environmental factors. Temperature has been identified as a main factor influencing the reproductive process by promoting an increase of the metabolic rate (in case of decapod crustaceans see Jones & Simons, 1983; Negreiros-Fransozo & Fransozo, 1992). Other authors emphasized the importance of the availability of food as a primary factor affecting growth rate and egg production in natural populations (Pillay & Nair, 1971; Wenner et al., 1974; Seiple, 1979; Sastry, 1983). Reproductive periodicity can also be controlled by a combination of factors, including latitude and intertidal zonation (Thorson, 1950; Jones & Simons, 1983; Sastry, 1983; Emmerson, 1994).

According to Crane (1975), fiddler crabs can be separated into two groups by the morphology of their carapace front. Wide-front crabs include Central, South, and North American species, while narrow-front crabs are found in the Indo-Pacific. Christy & Salmon (1984) have demonstrated that differences between wide and narrow fronts are a consequence of variations of ecological pressures that promote alternatives, but with similarly adaptative strategies. However, *U. thayeri* does not fit in either group, as it presents an intermediate front-orbital distance.