I. INTRODUCTION

Dilocarcinus pagei pagei (Simpson) is one of the several Argentinean freshwater crabs; its geographical distribution extends from northeastern Argentina to Buenos Aires (Morrone and Lopretto 1995, Magalhães and Türkay 1996). This crab is an important component of the littoral fauna in the lagoons of the Río Pilcomayo National Park, in the province of Formosa; however, there is little information in the literature about its biology and ecology (Lopretto 1981, 1995, 1998, Magalhães and Türkay 1996).

All ecosystems exhibit a complex periodical variation. Variations in activity rhythms over a time period also differ among species (Margalef 1986). Invertebrates, in particular crustaceans, have circadian rhythms determined by endogenous and exogenous components. These factors may produce changes in movement, color, secretory activity, feeding, trophic spectrum, and shelter selection (Lewis et al. 1966, Hopkin and Nott 1980, Wassemberg and Hill 1987, Collins 1995, 1997). Certainly, trophic activity in animal populations can occur at any time during the day, but its intensity varies according to food availability, intra and interspecific competition and the risk of predation. As a consequence, organisms have adjusted their daily activities to these factors. Further, it is often thought that evolution has shaped these patterns in an optimal manner (Stenseth 1983).

The aim of this study was to examine the diet composition and its possible daily variation in the freshwater crab D. pagei pagei in the “Laguna Blanca” lake, in the Río Pilcomayo National Park, Argentina. The obtained information may be an essential start point to study other aspects of the ecology and conservation of freshwater crabs.

II. MATERIALS AND METHODS

Study area

The study site was located in the “Laguna Blanca” lake at the Río Pilcomayo National Park (25° 30’ S, 58° 30’ W), province of Formosa, northern Argentina (Fig. 1). The park covers an area of about 51889 ha and the lake over 700 ha. The protected area is located in a region classified as “hyperseasonal Chaco” with a humid - semihumid weather regime.

The lake border is covered with floating and emergent macrophytes: Eichhornia crassipes, E. azurea, Pontederia cordata, P. lanceolata, Nymphoides indica, Pistia stratiotes, and Azolla spp. There is also a tall grass area where the dominant species are: Thalia geniculata, T. multiflora, Canna glauca, Cyperus giganteus, and Juncus spp (Reca and Pujalte 1986).

Sampling

Samples of D. pagei pagei were taken from under the vegetation at the border of the lake in two different sites with identical characteristics, at the same depth (0.5 m), and with the presence of E. crassipes, N. indica, P. stratiotes, and Azolla spp. The samples were taken every four hours during three days on May, 1999. The net used to sample had a 0.2 m² mouth area and a 1 mm mesh. The same sampling effort was used...
Figure 1. Sampling sites in the “Laguna Blanca” lake, in the Río Pilcomayo National Park, Formosa, Argentina.

for all the samples. Crabs were immediately anaesthetized by cooling, and later preserved in 70% alcohol.

The dissolved oxygen concentration of the sampling sites was monitored with a portable oxygenmeter. Temperature was measured with a conventional mercury thermometer. Conductivity and pH were determined using a Beckman conductimeter and a Helige pH-meter, respectively. Transparency was measured with a Secchi disc. During the sampling, these parameters were registered every 4 hours.

Individual analysis
Crabs were separated into females, males or juveniles according to the abdomen morphology (Lopretto 1976). Both, carapace length and width, were obtained from every crab. After opening the alimentary tract of each crab, its fullness was estimated; in this case a subjective scale ranking from 1 (empty) to 3 (full) was used. Later, foreguts were opened and the contents were placed in Khan-tubes with 70% alcohol and stained with eritroxine. Aliquots were put on slides and examined under the compound microscope. Prey items were identified as precisely as possible.

Numerical analysis
Trophic diversity was estimated for every sample (Figs. 2, 3) using the Simpson index (Legendre and Legendre 1979). Food items were analyzed with the Index of Relative Importance (IRI), $IRI = (C_v + C_n) \times F$ (Pinkas et al. 1971); where $C_v$ is the volumetric content of prey, $C_n$ the number of prey, and $F$ the frequency of occurrence of each prey item. The volume of the items was calculated by approximation to a geometric shape or transformed from values obtained