ABSTRACT

Seasonal changes in reproductive parameters like number and size of ovigerous females and number and size of eggs were studied throughout the year in an amphipod living in a stable environment. Specimens of *Ampelisca araucana* were collected from samples of fine sediments obtained at Coliumo Bay, Chile (36°31′S 72°55′W) between October 1995 and October 1996. Monthly measurements show changes throughout the year in the size of the ovigerous females and their eggs, as well as in their abundance. Batch size as well as egg size, however, are not directly related to female size. The changes observed in the reproductive parameters seem to be related to various physico-chemical properties of the water, and to the availability of food.

INTRODUCTION

Studies related to the life history of amphipods have emphasized biological parameters such as reproductive size, size of the eggs, and size of ovigerous females, and the likely relationships among them (Powell, 1992; Covi & Kneib,

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1995; Ikeda, 1995; Bell & Fish, 1996). According to Bell & Fish (1996) an amphipod of unstable environment, *Pectenogammarus planicrurus* Reid, 1940 shows a seasonal difference in egg size, which is inversely related to brood size. Brood size, in turn, is directly related with female her size. Powell (1992) found the same relationship between number of eggs produced by each female and her size, but only for amphipods that had many reproductive periods within their life history. To Bell & Fish (1996) the changes observed in these parameters and their relations are a mechanism of adaptation to a habitat characterized by coarse sediment. In the opinion of those authors, the seasonal changes cause “rearrangements” in the reproductive parameters (fecundity, egg size, and ovigerous female size).

*Ampelisca araucana* Gallardo, 1962 is a marine amphipod distributed along the northern half of the Chilean continental shelf (Gonzalez, 1991). Studies related to sublittoral amphipods are not ubiquitous in general, and especially not in the southern Pacific. The species here at issue, however, has been subject of population biological research, because it is an important food for bentho-demersal fish of economic interest (Carrasco & Arcos, 1984). Other studies have focused on its sensitivity as a test organism for marine sediment toxicity assessment (Larraín et al., 1998).

*Ampelisca araucana* has a semi-annual life history, with two generations (winter and spring). These two cycles are evident through two annual maxima of population density and reproductive activity, but ovigerous females can be found year-round (Carrasco & Arcos, 1984). This crustacean is a frequent inhabitant of relatively stable environments, where the percentage of mud-clay is over 50% and the percentage of organic matter is approximately 10% (Carrasco & Arcos, 1984). The aim of this study was to verify whether seasonal variations provoke changes in reproductive parameters like fecundity, egg size, and ovigerous female size of a typical amphipod from stable, fine-sediment environments.

**MATERIALS AND METHODS**

Specimens of *Ampelisca araucana* were obtained from monthly samples of muddy sediment collected from October 1995 to October 1996 in 3 replicates with a Beckman dredge of 0.027 m² mouth area at Coliumo Bay, Chile (36°31’S 72°55’W) (fig. 1). Amphipods were separated from the sediment using a 250 µm mesh sieve. All individuals were counted and kept in 10% formalin in sea water. Female size was measured from the tip of the rostrum to the posterior end of telson. Egg size was measured as the length of the longer axis.

To determine the physico-chemical conditions in which the amphipods lived, samples of water were taken near the bottom at the site of sampling. Temperature,