

OBSERVATIONS ON THE REPRODUCTION OF *ARISTAEOMORPHA FOLIACEA* (CRUSTACEA : ARISTEIDAE) IN THE SE. IONIAN SEA

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Abstract

The deep water shrimp *Aristaeomorpha foliacea* (Risso, 1827) is of high economic importance in the western and Central Mediterranean. In the present paper first data from a population in the SE. Ionian are presented. Compared to other Mediterranean stocks, shrimps showed an earlier reproduction peak (June), while mating activity was more pronounced and lasted for a longer period (ten months). GSI showed lower mean values (0.80, 1.09, 4.89, 6.63 for stages I-IV respectively).

Keywords : reproduction, decapods, Ionian Sea, Deep water

Introduction

The deep-water shrimp *Aristaeomorpha foliacea* (Risso, 1827), together with *Aristeus antennatus* (Risso, 1816), constitutes a commercially important resource for the Western and Central Mediterranean. Recently, new evidence from Greek waters suggested that it is adequate for exploitation [1, 2]. As opposed to the W. Mediterranean [4-8], few data exist for the E. Mediterranean [3]. The aim of this study is to present first data on the reproduction of *A. foliacea* in the SE. Ionian and contribute to a comparison along the Mediterranean.

Materials and methods

The material was collected monthly between the Peloponnisos and Zakynthos Island (December 1996 - November 1997), in a depth range from 446 to 728 m, using a commercial trawl net (14 mm at the cod end). Female size (CL, mm) was measured to the nearest 0.01 mm and the presence of spermatophores was recorded. Body and ovary weight were measured to the nearest 0.0001 g. Gonad maturity was determined macroscopically [5] and the gonadosomatic index (GSI) calculated as $100 \times \text{GW}/\text{BW}$.

Results and discussion

Mated females always constituted more than 75% of the female population, except for October and November (5% and 30% respectively). In May, June and September they actually dominated almost completely. The size of the smallest female bearing spermatophores was 25 mm CL, while the observed size at which 50% of the females had already mated, was 37 mm CL.

Spawning (ovarian stage III+IV) began in April and May (2.7% and 10.3% respectively), sharply increased in June (87.5%), continued in July and August (57.8% and 37.1% respectively) and ended in September (Fig. 1). The smallest mature female measured 37.5 mm CL. For a four-month period (October to January) almost all females showed inactive ovaries, entering the preparation for the new reproduction in February (>60% with maturing ovaries). An overlapping of female size according to the ovarian maturation has been observed (Table 1).

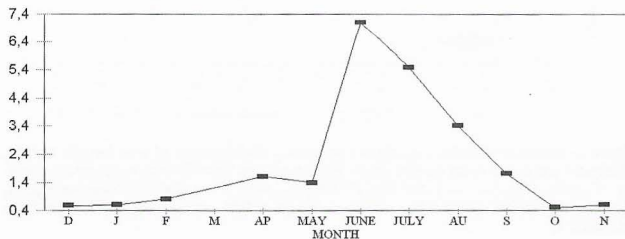


Fig. 1. Temporal evolution of female maturity of *Aristaeomorpha foliacea*.

Table 1 : Gonadosomic index (GSI, %) and female size (CL, mm) of *Aristaeomorpha foliacea* in relevance to the maturity stage of the ovary.

STAGE	GSI	CL
	Mean \pm SD	Mean \pm SD
I	0.80 \pm 0.61	42.62 \pm 6.57
II	1.09 \pm 0.72	47.11 \pm 6.30
III	4.89 \pm 1.48	44.58 \pm 4.27
IV	6.63 \pm 2.27	46.37 \pm 4.19

Temporal variability of the mean GSI (Fig. 2) showed a distinct seasonal pattern: <1% for the period October to February, slightly increasing in April and May (1.6% and 1.4% respectively), peaking in June (7.1%) and gradually decreasing afterwards until September (1.7%). The mean GSI for each maturity stage is given in Table 1.

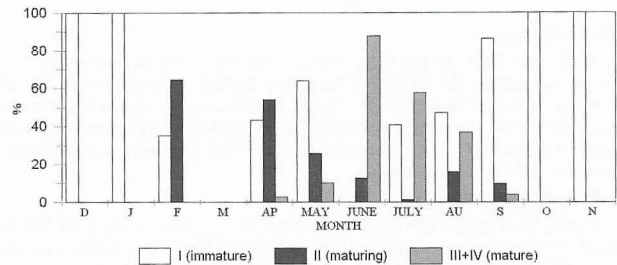


Fig. 2. Mean values of GSI of *Aristaeomorpha foliacea*.

From the above results, a preliminary comparison with other localities along the Mediterranean can be attempted. In the SE. Ionian, although the overall reproductive period coincides with that in Sardinia, Sicily and NW. Ionian [6,7,8], both the start and the peak of the reproductive activity was shifted for about one month earlier (regarding both mature ovaries and GSI). Moreover, mating activity seemed to be more pronounced (higher percentages of mated females) and lasting longer (ten months). The period of low mating activity is in accordance with that of the low male maturity [8].

Regarding GSI, the mean for each ovary stage was significantly smaller than that already reported [5, 9]. It could be tentatively attributed to population differences; nevertheless, methodological reasons cannot be excluded as frozen material was used in the present study. It is evident therefore, that a better insight in the biology of the species along the Mediterranean can be achieved only by applying common methods in parallel.

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