REPRODUCTIVE ASPECTS OF *MELICERTUS KERATHURUS* (DECAPODA: PENAEIDAE) FROM THE THERMAIKOS GULF (N. AEGEAN SEA)

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Abstract

Aspects of the reproductive biology of *Melicertus kerathurus* were investigated in Thermaikos Gulf (N. Aegean Sea) from October 2000 to September 2002. Temporal variations in mated females percentage, gonad maturation and gonadosomatic index showed that reproduction begins in spring, peaks in summer and extends to October. Managerial measurements are discussed in relation to the present results.

Keywords : Aegean Sea, Reproduction, Decapoda.

Introduction

The prawn *Melicertus kerathurus* is one of the most valuable resources for both the otter-trawl and artisanal coastal fisheries in the Thermaikos Gulf. Information on its catch rates, size structure and sex ratio has been published only recently [1]. The present work provides the first data on its reproduction.

Material and Methods

During two open fishing seasons (October to April 2000-01 and 2001-02) a monthly sampling schedule was followed on board commercial otter-trawlers. Due to unprofitable catches and consequently to fishermen's change of fishing target, samples were obtained from the artisanal fishery in May 2001 and 2002. During the closed season, experimental trawling was carried out (June and September 2001; July, August and September 2002), and additional samples were obtained from the artisanal fishery (June and July 2002). Female carapace length (CL, mm), body (BW, g) and gonad (GW, g) fresh weight, and spermatophore presence were recorded. The gonadosomatic index (GSI) was estimated as GSI = (GW/BW)x100. Ovary maturation was assessed using a five-stage ovary scale [2].

Results and Discussion

Out of the 7,206 females studied, about half (3,682) were found to be mated (size range 25.31 - 57.7 mm CL). Between April and July, more than 80% of the females were mated decreasing sharply in August-September (Fig. 1). Comparable maximum mating activity has been reported from Cadiz (Atlantic) [2] and Gabès (Tunisia) [3], while in Amvrakikos Gulf (E. Ionian Sea) maximum frequencies were much lower [5]. In contrast to the Gadiz and Amvrakikos populations, mating activity of the Thermaikos population was significant also during winter. The lowest monthly GSI was observed in winter, steadily increasing thereafter to a maximum in July, and sharply decreasing in August (Fig. 1). A slight increase was also observed in October. In general, GSI monthly values were much lower that those reported from the Atlantic [2].

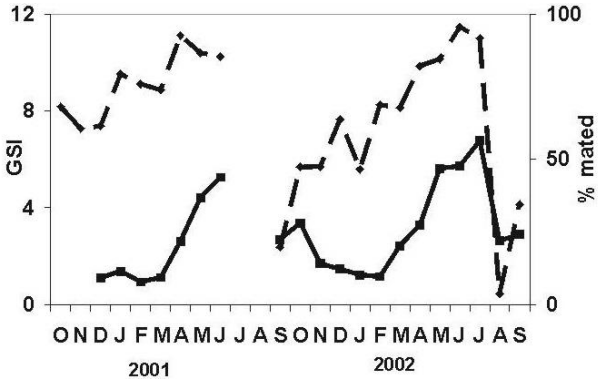

Fig. 1. *Melicertus kerathurus* from the Thermaikos Gulf: temporal variations of mated females frequency (dashed line) and gonadosomatic index (GSI) (solid line).

In accordance with other geographical locations, the reproductive period of *M. kerathurus* extends from mid spring to early autumn with a June-July peak: high frequency (50-92%) of female maturity stages (ST) 3 and 4 coincided with that of mated individuals (April to July) (Fig. 2). The smallest spawning female had a size (32.24 mm CL) which was between those reported from Amvrakikos [4] and Smirni (Izmir) [6].

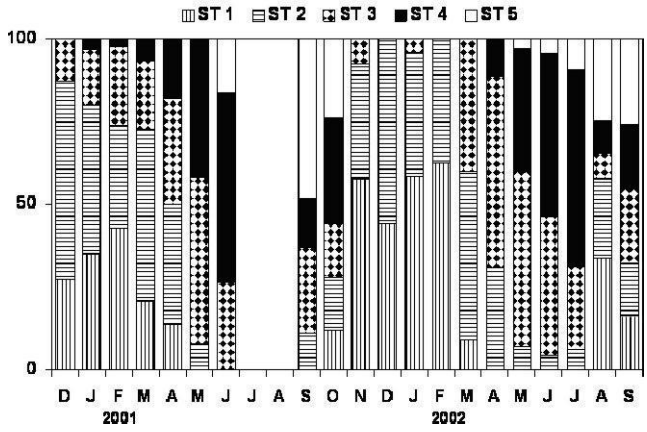

Fig. 2. *Melicertus kerathurus* from the Thermaikos Gulf: monthly percentages of ovary maturation stages; ST 1 = undeveloped, ST 2 = developing, ST 3 = early maturing, ST 4 = fully mature, and ST 5 = spent.

Regarding resource management, the trawl banning from June to September implemented in the Greek fishery seems to cover most of the prawn reproductive season. In that period, however, the artisanal fleet targets prawns in shallow waters, where it migrates for spawning. A closed period exists also for the artisanal fishery (10^{th} July-10^{th} September), but, according to the present results, it seems to be inefficient, as it covers only partially the main period in which females are functionally reproductive (May to July).

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