

VARIATIONS OF CARPET SHELL CLAM (*TAPES DECUSSATUS*, LINNAEUS 1758) BENTHIC JUVENILES IN ÇAKALBURNU LAGOON, IZMIR, TURKEY

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Abstract

Two stations were selected in Çakalburnu Lagoon, Izmir, Turkey for determining amount of *Tapes decussatus* benthic juveniles. The maximum clam spat in St.1 and St. 2 were obtained 35 juvenile / 100 cm² (in November) and 15 juvenile / 100 cm² (in March), respectively. There was not detected any clam in February, April and June (St. 1) and in April and May (St. 2).

Keywords: *Bivalves, Aegean Sea, Recruitment*

Introduction

The dynamics of planktonic larval populations have important implications for the life histories of marine benthic invertebrates [1]. An increased knowledge of bivalve larvae and settlement ecology will allow a better understanding of environmental processes that determine the magnitude of bivalve recruitment [2] and larval recruitment processes and survival of juveniles influence the bivalve population dynamics.

In Turkey, carpet shell clam, *Tapes decussatus*, is distributed along the all coastline except from Black Sea. Mainly, *Tapes decussatus* is collected from Izmir Bay, especially in Çakalburnu Lagoon and this species has a commercial value in Turkey. But production of clam is based on wild stocks and there is not any aquaculture facility. So amount of clam juveniles is important for natural stocks and sustainable production. This study was conducted for determining abundance of juvenile clam in Çakalburnu Lagoon, Izmir Bay, Turkey.

Material and Methods

Çakalburnu Lagoon (150 ha acreage) in Izmir Bay, Aegean Sea was selected for the study site, located at the south part of Izmir Bay (Fig. 1). The study was conducted in two stations in inside of lagoon. Field sampling was carried out monthly during a year. Environmental parameters such as temperature, salinity, chlorophyll-a, total particulate matter (TPM) and phytoplankton species were determined each month.

Benthic juvenile clam are aggregated largely with in the upper 1.0 cm of the sediment. Three sediment samples were collected at each station using a core sampler (5.0 cm diameter). The samples were fixed immediately with 5 % formalin and dyed with Rose Bengal to simplify sorting the specimens of settled bivalves under a loupe.

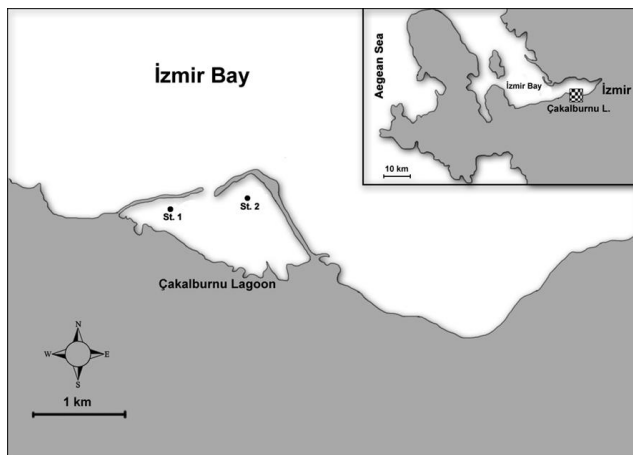


Fig. 1. Map of study site

Results and Discussion

Sea water temperature was between 13.2 °C and 28.6 °C throughout the study. Salinity value ranged from 36.1 ‰ to 38.5 ‰. Chlorophyll a value was determined between 4.71 µg L⁻¹ and 24.02 µg L⁻¹ in St. 1 and from 1.89 µg L⁻¹

to 58.40 mg L⁻¹ in St. 2. The average TPM concentration was found 11.19 mg L⁻¹ in St. 1 and 16.56 mg L⁻¹ in St. 2. Species belonging to Dinophyceae and Bacillariophyceae group were identified the most in terms of phytoplankton species composition in two stations. The maximum amount was obtained 35 juvenile / 100 cm² in St. 1 (in November) and 15 juvenile / 100 cm² in St. 2 (in March) (Fig. 2). There was not detected any clam in February, April and June (St. 1) and in April and May (St. 2) (p<0.05).

Newly settled of Manila clam in Tokyo Bay, Japan was observed mainly between May and October [3]. Our results showed similar to results of [3]. Moreover, in Nameishi, Japan, amount of Manila clam benthic juveniles was 90 ind. / 100 cm² [4]. Although our results lower than results of [4], Çakalburnu Lagoon was productive area for clam settlement.

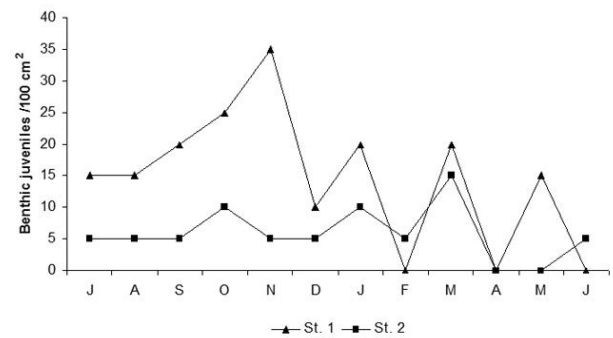


Fig. 2. Amount of benthic juveniles in two stations

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References

- Hines A.H., 1986. Larval problems and perspectives in life histories of marine invertebrates. *Bull Mar Sci* 39: 506-525.
- Chicharo, L., Chicharo, M. A., 2001. Effects of environmental conditions on planktonic abundances, benthic recruitment and growth rates of the bivalve mollusc *Ruditapes decussatus* in a Portuguese coastal lagoon. *Fisheries Research* 53: 235-250.
- Toba, M., Yamakawa, H., Kobayashi, Y., Sugiura, Y., Honma, K., Yamada, H., 2007. Observations on the maintenance mechanisms of metapopulations, with special reference to the early reproductive process of the Manila clam *Ruditapes philippinarum* (Adams&Reeve) in Tokyo Bay. *Journal of Shellfish Research*, Vol. 26, No.1.
- Ishii, R., Sekiguchi, H., Nakahara, Y., Jinnai, Y., 2001. Larval recruitment of the Manila clam *Ruditapes philippinarum* in Ariake Sound, southern Japan. *Fisheries Science*; 67:579-591.