

PRELIMINARY RESULTS ON EARLY GROWTH AND HABITAT PREFERENCE OF YOUNG WILD GREY MULLET (MUGIL CEPHALUS LINNAEUS, 1758) ALONG THE EAST ADRIATIC COAST (CROATIA)

Bartulovic V. ^{1*}, Conides, A. ² and Glamuzina B. ¹

¹ Department for Aquaculture, University of Dubrovnik, Croatia - *vlasta@vdu.hr

² Hellenic Centre for Marine Research, Agios Kosmas, Hellinikon, Athens, Greece

Abstract

In this paper we present results on habitat preference and early growth rates of young wild grey mullet along the south-eastern Adriatic coast. Grey mullets juveniles showed preference and better growth rates in eutrophic urban areas than in other natural areas and lagoons. After reaching a total length of 16-17 mm, they migrate to adjacent areas of low salinity.

Keywords: Mugil cephalus, appearance, growth

Introduction

Mugilids are commercially important for the Mediterranean [1]. The grey mullet, *Mugil cephalus*, represents an important commodity due to good meat quality and high-priced dried roe. However, the biology and ecology of this species along the Eastern Adriatic coast is relatively unknown [2]. They usually change habitat several times during their life so their appearance can be random [3].

Materials and Methods

A total number of 526 young grey mullets were caught during August-November 2002 using small nets (mesh size 2 mm), at three stations in Neretva River estuary (the Port of Ploce and Blace village as marine sites and Rogotin village as a low salinity site) and one reference station in Bistrina Bay located 30-km from the estuary. Ploce, Blace and Bistrina are typical coastal marine ecosystems with salinity fluctuating between 25-38 psu. Rogotin is a typical estuarine site located adjacent to a small torrent (Crna Rijeka) with salinity fluctuating between 2-20 psu. All individuals caught were counted and measured for total length (TL, mm). Growth rates (in mm/day) was related to TL as follows [3,4]:

$$G = a(L - b)$$

Results

TL increased in a linear form. The relationships between TL and time were positive for Ploce and Bistrina and negative for Rogotin. However the low abundance of grey mullets in Bistrina and Rogotin did not allow for applying regression analysis (few data points). For Ploce, the relationship between TL and time was significant ($r^2=0.911$). Juveniles appeared firstly in the Ploce area early in August and after almost one month in Bistrina lagoon and finally at Rogotin and Blace with lower numbers. Juveniles remained in coastal waters for one month, and started to migrate in freshwater bodies only when they reached more than 16-17 mm TL. The highest number of juveniles was observed in Ploce (355 individuals) and lower in Bistrina (14 individuals), Blace (74 individuals) and Rogotin (83 individuals).

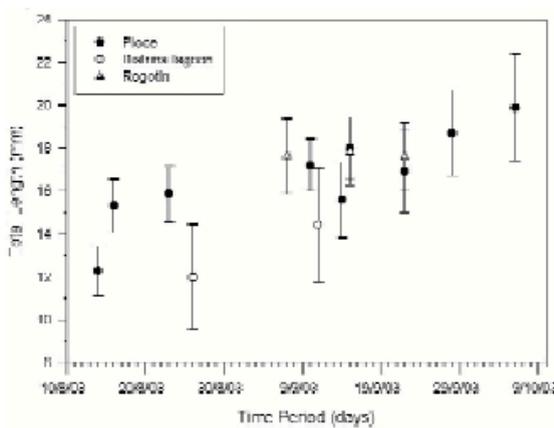


Fig. 1. Temporal distribution of total length of grey mullet juveniles, *Mugil cephalus* in Ploce, Bistrina and Rogotin sampling areas.

The relationship between daily growth rates and TL and time (days) is illustrated in Figure 2. Growth rates were higher (t-test=2.1, df=8, $\alpha=5\%$) in Ploce than in Rogotin. Inadequate data from the other areas did not allow statistical comparisons.

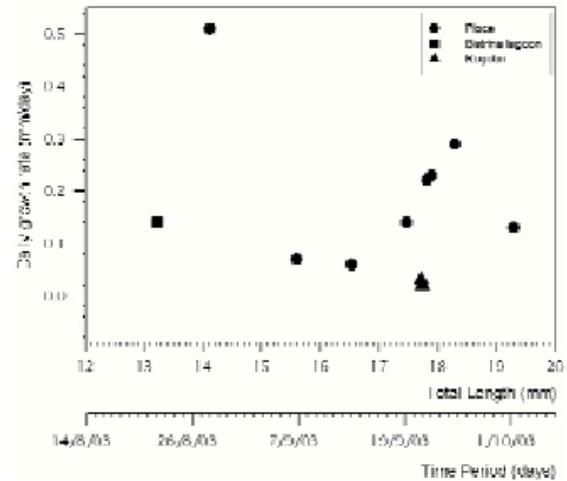


Fig. 2. Relationship between daily growth rate, total length and time for grey mullet, *Mugil cephalus* juveniles in the estuary of Neretva River.

Discussion

The grey mullet juveniles showed clear preference to firstly appear and inhabit urban areas such as Ploceport. The species prefers to appear first in Ploceport and then Bistrina Bay within the period of 1 month and then distribute laterally to Rogotin and Blace whereas at Bistrina its appearance is considered as by chance. Their appearance pattern seems to be size-related and divided in two phases: at first they spend at least one month in the marine coastal waters until they reach 16 mm TL and afterwards start migrating upstream in the estuary in areas of lower salinity where they appear when TL > 16 mm.

References

- 1-FAO, 1987. Mugilidae, pp. 1190-1194. In: Fischer, W., and Schneider, M., (eds.), Fiches FAO d'identification des espèces pour les besoins de la pêche, Méditerranée et mer Noire, Zone de Pêche 37, révision 1, volume II, Vertébrés.
- 2-Modrušan, Z., Teskeredžić, E. and Jukic, S., 1987. Biology and ecology of Mugilidae species on the eastern Adriatic coast (Sibenik Bay). *FAO Fishery Report*, 394: 159-167.
- 3-Conides, A., Anastasopoulou, K., Fotis, G., Koussouris, Th., and Diapoulis A., 1992. Growth of four Mugilidae species in Western Hellas lagoons. *Proceedings of the 27th EMBS, Dublin, Ireland, 7-11 September 1992.*
- 4-Bayley, P.B., 1977. A method of finding the limits of application of the von Bertalanffy growth model and statistical estimates of the parameters. *J. Fish. Res. Bd Can.*, 34(8): 1079-1084.