

DISTRIBUTION OF GELATINOUS MACROZOOPLANKTON IN THE BLACK SEA OF TURKEY (SINOP REGION)

Zekiye Birinci Ozdemir ^{1*}, Yakup Erdem ¹ and Levent Bat ¹
¹ Sinop University, Fisheries Faculty - zekiyebirinci@hotmail.com

Abstract

The distribution, abundance and biomass of gelatinous macrozooplankton (*Aurelia aurita*, *Mnemiopsis leidyi*, *Beroe ovata* and *Pleubranchia pileus*) were determined between January 2008 and December 2008 in the southern Black Sea (Sinop Region). In the vertical, the amount of gelatinous organism was no significant statistically among stations ($p > 0.05$: Anova). Seasonal differences have been observed in biomass and abundance of species. Maximum gelatinous macrozooplankton abundance and biomass were calculated 44.17 n.m⁻² (September) and 180.83 g.m⁻² (April) respectively.

Keywords: Black Sea, Cnidaria, Ctenophora, Biomass

Introduction Gelatinous macrozooplankton important effects on their pelagic ecosystems. They consume zooplankton groups and the eggs - larvae of fish considered in the ecosystem of Black Sea [1,2,3]. Gelatinous macrozooplankton is considered to be one of the effects in changes in the Black Sea fisheries. Therefore determined of its distribution, abundance and biomass is one of the most important points ascertain of role in ecosystem.

Material and methods

The present study was carried out to determine gelatinous macrozooplankton structure in the Sinop Region of Black Sea. Vertical sampling made using plankton nets (50 cm diameter mouth opening and 210 mm mesh size). Samples were collected monthly from three stations (St.A: 50 m, St.B: 65 m, St.C: 25 m) between January 2008-December 2008.

Result and Discussion

The maximum abundance and biomass of average gelatinous macrozooplankton was obtained 44.17 n.m⁻² in September and 180.83 g.m⁻² in April. Its abundance increased in the summer and early autumn, however biomass values were increase at the beginning of winter and spring. Minimum abundance and biomass of average gelatinous zooplankton were found 5 n.m⁻² and 5.67 n.m⁻² in December (fig 1).

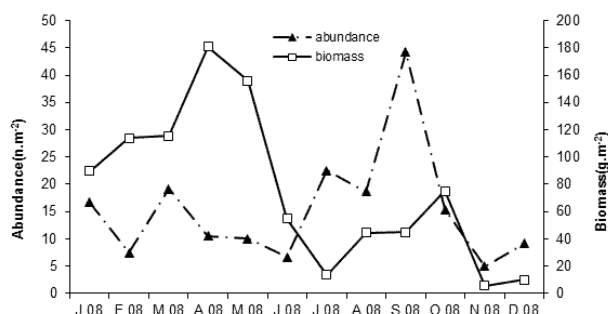


Fig. 1. Distribution of total gelatinous macrozooplankton of Sinop region, in 2008

In the study in the same region between 2002 and 2006, the most abundant and biomass of gelatinous macrozooplankton were obtained on May 2005 with 120 n.m⁻² and March 2003 with 1073.5 g.m⁻². The high abundance values were determined as 42.5 n.m⁻² on September 2002, as 91.25 n.m⁻² on July 2003, as 108.33 n.m⁻² on July 2004 and as 95 n.m⁻² on May 2006. High biomass values were achieved at 230 g.m⁻² on May 2002, 111.3 g.m⁻² on March 2004, 447.75 g.m⁻² on May 2005 and 393.33 g.m⁻² on July 2006, respectively [4,5,6]. Gelatinous species composition showed varied by monthly. Growth *A. aurita* biomass was showed in spring and late winter. Its highest value was determined 16.67 n.m⁻² in March and 124.17 g.m⁻² in April. *M. leidyi* abundance was increased summer. Maximum value was in August as 51 n.m⁻², however maximum biomass was determined 82.5 g.m⁻² in January. Higher *P. pileus* values were recorded in the winter and autumn months. Its maximum abundance and biomass was 11.67 n.m⁻² in September and 7.14 g.m⁻² in January. *B. ovata* was found just 3 months (October, November and December). Maximum

abundance and biomass was 2.5 n.m⁻² in December and 17.29 g.m⁻² in September (fig 2).

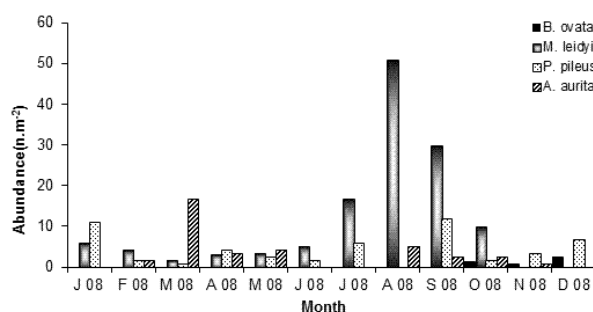


Fig. 2. Abundance and biomass of gelatinous macrozooplankton species of Sinop region in 2008

In terms of annual abundance, *M. leidyi* was the dominant group (52%) in 2008, then the following species was *P. pileus* with 27%. Analyzed the distribution of biomass of the species *A. aurita* had the highest share value of 53%, the next species was *M. leidyi* with 41%. In both abundance and biomass *B. ovata* was found to have a very low. Compared to previous years, *A. aurita* was the dominant group in 2002, whereas *P. pileus* was the highest abundance group in 2004, 2005 and 2006 [4,5,6]. The percentage of *M. leidyi* decreased from 2002 to 2006, whereas it was increased in this study.

References

- 1 - Kideys, A.E. and Romanova, Z., 2001. Distribution of gelatinous macrozooplankton in the southern Black Sea during 1996-1999. *Marine Biology*, 139(3): 535-547.
- 2 - Mutlu E., 1999. Distribution of abundance ctenophores, and their zooplankton food in the Black sea.II. *Mnemiopsis leidyi*. *Mar Biol.*, 135:603-613.
- 3 - Birinci Ozdemir, Z., 2011. Seasonal Changes of Some Population Parameters and Stomach Content of Gelatinous Organisms in Sinop Coasts of The Black Sea (in Turkish), 2011. Sinop University, Science Institute, Turkey, 133 pp.
- 4 - Bat, L., Kideys, E.A., Oguz, T., Besiktepe, S., Yardim, O., Gundogdu, A., Ustun, F., Satilmis, H.H., Sahin, F., Birinci Ozdemir, Z. and Zoral, T., 2005. Orta Karadeniz'de Basic pelajik ekosistem parametrelerinin izlenmesi. Proje no: DPT 2002 K120500 (TAP-S013 No'lu Proje). 488 s.(in Turkish)
- 5 - Birinci Ozdemir, Z., Bat, L., Satilmis, H.H., Sahin, F., Ustun and F., Kideys, A., 2007. Seasonality Of Gelatinous Macrozooplankton Off Sinop, Southern Black Sea, In 2002-2003. - *Rapp. Comm. Int. Mer Médit.*, 38, 436.
- 6 - Birinci Ozdemir, Z., 2010. Bat, L., Sezgin, M., Satilmis, H.H., Bat, L., Sahin, F., Ustun, F. "Gelatinous Macrozooplankton Composition and Seasonal Distribution in Sinop Peninsula of the Central Black Sea of Turkey Between 2002 and 2006". GFCM-General Fisheries Commission for the Mediterranean, SAC - SCMEF, Workshop on Algal and Jellyfish Blooms, 6-8 October 2010, Istanbul, Turkey.