

DISTRIBUTION OF *MERLUCCIVUS MERLUCCIVUS* (LINNAEUS, 1758) AND *MERLANGIVUS MERLANGIVUS* (LINNAEUS, 1758) IN THE SEA OF MARMARA (1992-1995)

Ahsen Yuksek¹, Erdogan Okus¹, Ayhan Uysal¹ and Nazli Demirel^{1*}

¹ Institute of Marine Sciences and Management, Istanbul University - yanenade@hotmail.com

Abstract

Present study has been carried out in 34 trawling stations in the Sea of Marmara between 1992-1995, fish stocks and distribution has been investigated using trawling gear and the effect of physico-chemical conditions monitored. The fishes have been separated from trawl material and distributions, stock size and conditions have been investigated. Hake biomass was highest whole year and its percentage in total economical demersal fish stocks was around 50-60 % annually. Cod biomass was following the hake, especially its stock size has been gradually increased by years and its percentage was around 15-20 %.

Keywords: Demersal, Fishes, Stock Assessment

Introduction

The Sea of Marmara is the second fishing ground after Black Sea with respect to fishing in Turkey. The annual average fishing has been 87.04 % in the Black Sea, 7.58 % in the Sea of Marmara, 3.57 % in the Aegean Sea, and 1.50 % in the Mediterranean Sea [1]. The general problems of the Sea of Marmara are the intense population and industrial areas on the shores, resulting organic and inorganic pollution and the interaction of the eco-systems of two different seas. This type of pollution is an important reason for the narrowing of species distribution areas. The rapidly growing industry, the related increase in population, the distribution of port services and all discharges from the land into bays and gulfs, which are the most productive regions of sea eco-systems, are leading to an increase in pollution. Therefore, degradation can be observed in very important egg-laying areas. The situation experienced in the gulfs of Izmit, Gemlik and Bandirma is one of the best examples. In this way, new stock areas disappear every day, because of insufficient precautions, and stocks and fishing are affected negatively as a result. Detailed studies on biomasses and stocks, based on numeric data remain insufficient in regards to the sea life of the Sea of Marmara that is significantly important on fishing activities.

Materials and Method

Sampling studies have been made at a total of 32 stations in the summer and winter seasons between 1992-1995, taking into account the depth scale ratios of the Sea of Marmara. During the research, demersal fish distribution was observed in different ecological regions in the Sea of Marmara. Therefore, 4 sub-regions were specified and the stock values were calculated.

Region I comprises the Southeast part of the Sea of Marmara. The line drawn between the south exit of the Bosphorus and approximately Bozburun constitutes the border of this region. Since this region comprises gulfs and shores with heavy industrial activities, the water here is affected by industrial waste and this region constitutes the most polluted and unproductive region of the Sea of Marmara (20-110 m = 289.3 km²).

Region II comprises mainly the northern part of the Sea of Marmara. It stretches from the south exit of the Bosphorus to Mürefte. This region is not appropriate for trawl fishing and its eastern part is subject to limitations stemming from the nature of the ground, the vessel circulation and industrial waste (20-110 m = 1056.0 km²).

Region III comprises mainly the southern part of the Sea of Marmara. This region contains very appropriate places for trawl fishing (20-110 m = 1863.0 km²).

Region IV comprises the Southwest part of the Sea of Marmara. Although the region's surface is relatively small, it is the most productive part of the Sea of Marmara according to 1993 data (20-110 m = 1538.8 km²).

Results and Discussion

The hake alone represents 56 % of the total catch between 1992-1994. Decreasing to catch trend to 33% in the winter of 1994 was determined while it was 81 % in the summer of 1993. In the winter of 1995, sudden increase of all fish stocks were determined again. Consequently, the proportion of the hake to the total catch increased to 48 % parallel to the increase in all other fish stocks. Generally, hake could be seen in between Büyükçekmece and Marmara Ereğlisi in the northern, Erdek Gulf and the entrance of the Dardanelles in southwestern and the northwest of Imralı Island in southern Sea of Marmara.

Distribution of cod was slightly difficult to observe in the northern part. However in the summer of 1992, it has been observed a slight availability in Marmara Ereğlisi. In 1995, species distribution observed in a change of its location to the east for cod stocks and in the same period main distribution area was recorded at the entrance of Izmit Gulf. The actual distribution area of this species is southeastern and southern Sea of Marmara where the Mediterranean

current is very effective at the bottom (Dardanelles and Bay of Erdek).

Evaluation of the biomass ratio of hake and cod amongst other species, opposition of biomass values and distributional aspects was recorded between those two species that shares nearly the same habitat. While hake biomass in total fishing amount decreased, cod biomass was determined in increasing trend and vice versa. Similar feeding strategies is evaluated for the most important reason of this situation. Both hake and cod are known as predators. It has been considered as an important result that distributional effects and food availability between those two species and its relation in fisheries.

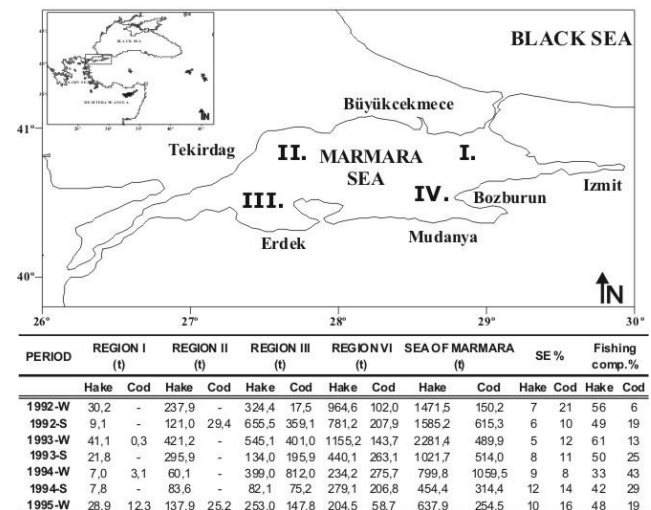


Fig. 1. Study area and the changes of biomass values of hake and cod in years with region

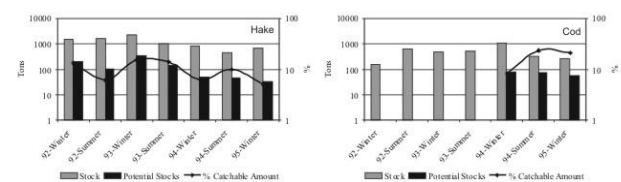


Fig. 2. Stock values of hake and cod in years in the Sea of Marmara

References

1 - Uslu O., Benli A.H., 1998. Deniz Kaynaklarının Yönetimi ve Kirlilik Kontrolü. Devlet Planlama Teskilatı Ulusal Çevre Eylem Planı, Ankara.