

# ON BOARD TRAWL SAMPLING IN THE THERMAIKOS GULF. SEASONAL QUANTITATIVE AND QUALITATIVE COMPOSITION OF THE CATCH

Kostantinos Efthimiadis<sup>1</sup>, Erotokritos Chairistanidis<sup>1</sup>, Pavlos Vidoris<sup>1</sup> and Argyris Kallianiotis<sup>1\*</sup>

<sup>1</sup> NAGREF – Fisheries Research Institute - akallian@inale.gr

## Abstract

The purpose of this work is to describe the qualitative and quantitative composition of the catch in Thermaikos Gulf, using a special bottom trawl. It is also tested if there is a statistically important differentiation in the abundance between the inner gulf, where the fishing with trawlers is not allowed and the outer gulf, where the fishing with trawlers is allowed.

*Keywords: Aegean Sea, Trawl Surveys, Fisheries*

## Introduction

Thermaikos Gulf is the biggest gulf of the Aegean Sea. The Rivers Axios, Aliakmonas, Loudias and Galikos, and several smaller, are flowing into Thermaikos, contributing to its strong productivity. The existence of 23 ports on the shores of the four counties that surround Thermaikos, with a total of 1453 vessels (30 purse seiners, 68 trawlers, 12 boat seiners and 1343 coastal) of coastal and open sea fisheries, reveals the intensive fishing activity within the limits of the bay.

## Materials and Methods

The experimental sampling was conducted with professional trawler. Twenty hauls took place, each lasting 30 minutes in each sampling period, in default stations, on May, on July, on September and on December of 2008. The depth of the stations ranged between 16 and 90 meters. The abundance index was calculated for each season. By using ANOSIM, the statistical differentiation of two different areas of Thermaikos was estimated, according to the access or not of trawlers in these areas. Specifically, the access of trawlers is not allowed to the inner part of the gulf. The remaining part of the gulf where the access of trawlers is allowed, is referred as outer Thermaikos. The SIMPER analysis revealed which species mainly contributed to the differentiation between the two areas of Thermaikos. All the above mentioned analyses were conducted using the PRIMER software [1].

individuals/km<sup>2</sup>), 5) *Arnoglossus laterna* (4689,0 individuals/km<sup>2</sup>), 6) *Pagellus acarne* (4345,8 individuals/km<sup>2</sup>), 7) *Diplodus annularis* (3056,2 individuals/km<sup>2</sup>). ANOSIM was used in order to test if there is a statistically important differentiation in the abundance between the inner gulf and the outer gulf. The resulting value  $R=0,659$ , shows that the stations of inner Thermaikos are statistically different from the stations of the outer Thermaikos on May. This is also the case for the other sampling months, where the values of  $R$  are  $R=0,636$ ,  $R=0,658$  and  $R=0,53$ , for July, September and December, respectively. The SIMPER analysis showed that the species which mainly contribute to the statistically important differences are the following: *A. laterna*, *L. vulgaris*, *G. niger*, *L. depurator*, *T. minutus*, *D. annularis* and *P. longirostris*. This result is attributed to the fact that in inner Thermaikos the trawlers are not allowed and the concentration of nutrients is higher due to the outfall in Thermaikos of the rivers. However, there is only little knowledge of the effects of fisheries with trawlers on marine organisms in the Mediterranean [2].

## References

- 1 - Carr M.K., 1997. PRIMER User Manual. Plymouth Marine Laboratory. 36 p.
- 2 - Moranta J., Massuti E., and Morales-Nin B., 2000. Fish catch composition of the deep-sea decapod crustacean fisheries in the Balearic Islands (western Mediterranean). *Fisheries Research*, 45: 253-264.

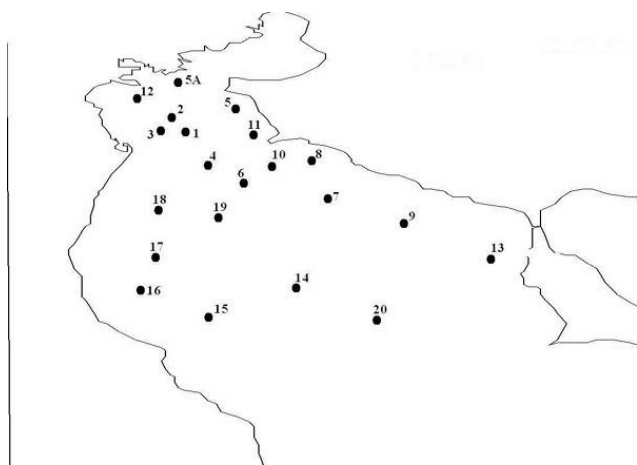


Fig. 1. Map of stations sampled.

## Results and Discussion

In all four samplings 122 species were recorded, of which 94 (77%) were fishes, 12 (10%) were cephalopods and 16 (13%) were crustaceans. Specifically, on May, 88 species were recorded, of which 65 (74%) were fishes, 8 (9%) were cephalopods and 15 (17%) were crustaceans. On July, 94 species were recorded, of which 71 (76%) were fishes, 10 (11%) were cephalopods and 13 (13%) were crustaceans. On September, 91 species were recorded, of which 70 (77%) were fishes, 10 (11%) were cephalopods and 11 (12%) were crustaceans. Finally, on December, 87 species were recorded, of which 68 (78%) were fishes, 9 (10%) were cephalopods and 10 (12%) were crustaceans. The species that occurred in all four sampling seasons were 64 (52%), while the species that occurred only in one sampling season were 25 (20%). The most abundant species in all four sampling seasons are the following: 1) *Liocarcinus depurator* (12007,9 individuals/km<sup>2</sup>), 2) *Serranus hepatus* (8836,0 individuals/km<sup>2</sup>), 3) *Trachurus mediterraneus* (5949,1 individuals/km<sup>2</sup>), 4) *Mullus barbatus* (5226,7