MAPPING OF FOURSPOTTED MEGRIM, *LEPIDORHOMBUS BOSCII* (RISSO, 1810), RESOURCE ON SOUTH-WESTERN ADRIATIC SEA TRAWLABLE BOTTOMS.

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Abstract

The authors report data about fourspotted megrim resource distribution and abundance on south-western Adriatic trawlable bottoms, elaborated by means of geostatistical method. The species distribution shows the highest biomass indices between 150 m and 500 m depth (200 m and 400 m for the recruitment) and higher aggregation during late autunm in comparison with late spring seasons; this last result is probably related to the reproductive cycle of the species.

Key-words: teleostei, Adriatic Sea, GIS.

Since 1985 seasonal (late spring - late autumn) trawl-surveys were carried out on south-western Adriatic trawlable bottoms in order to evaluate the quali-quantitative distribution of demersal resources (1, 2, 3); the fourspotted megrim results one of the most valuable resources of investigated area (4, 5, 6).

Quantitative data (kg / trawl haul) came from n° 252 hauls (n° 126 "spring" hauls, '91, '92, '94, '95 surveys; n° 126 "autumn" hauls, '91, '92, '94, '95 surveys) carried out in south-western Adriatic Sea (Lat. 40°-42°N; Long. 16°-19°E); the sampling gear was an "italian" trawl net (cod-end stretched mesh = 36 mm) while the sampling design was random stratified.

The data were standardized to the "unit of area" (km^2) by using the net hydrodynamic parameters measurements (7). In order to map the biomass indices (kg/km^2) the geostatistical method was applied (8, 9, 10); the use of the above mentioned technique to fishery assessment purpose has risen lately in Mediterranean area (11, 12).

The semivariograms obtained by data analysis (cumulative samples distribution for "spring" surveys and "autumn" ones) show a low spatial correlation; this result (increase of point distance = strong decrease of correlation) suggested the use of spherical model to a best data fitting (Figure 1).

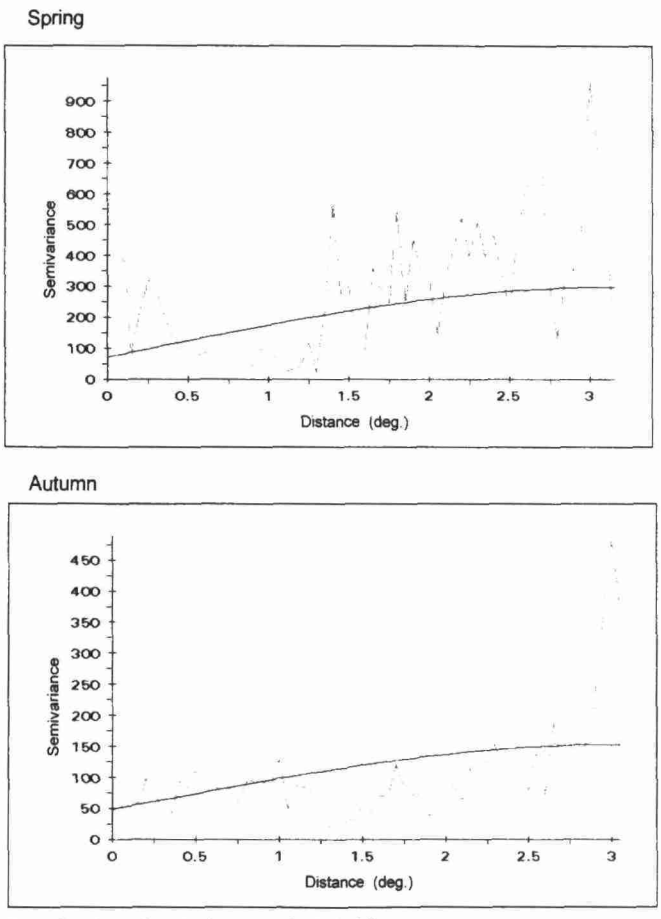

Fig. 1. Experimental semivariograms and spherical fit.

The fitted spherical model, referring to the pooled spring surveys and the pooled autumn ones, gave the results shown on figure 2. Generally the kriging variance appears to be rather large in both seasons; this result is probably due to the well known irregular space-distribution of fish populations together with the low sampling density. However the estimate reliability is higher in relation to spring season.

According to the depth, the highest values of the biomass indices can be found between 150 m and 500 m (for both seasons) while the recruitment to the fishery (here specimens with total length less than 12 cm) is mostly concentrated between 200 m and 400 m.

The different "aggregation intensity" showed in relation to the spring and autumn seasons could be explained by the knowledge of species biology; the fourspotted megrim spawning time in the investigated area is around late winter (6), therefore it is possible to suppose a specimens concentration (to a reproductive purpose) during late autumn-winter times and a more homogenous distribution during late spring times (inter-genetic stage).

The global results of the analysis confirm that geostatistical methods can be useful to describe and to compare the space-time distribution of fishery resources, also in relation to species biology and ecology.

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