

Comparison of Biodiversity Indices and Distribution of Some Fish Species in the Southeastern Black Sea Coasts

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Aim of the study: In this study, in the light of data obtained from fishing operations, distribution of fish species was determined by considering season and depth factors, also diversity indices for the fish species were estimated.

Material and Methods: This study was conducted between June 2010 and June 2011 in the coastal area along Rize coasts in the Southeastern Black Sea at the depths varying from 8 m to 54 m. Sixteen trammel net operations were performed and the catch composition was determined. Totally, 3460 fish specimens belonging to 21 fish species were caught during the operations. Similarity analysis of fish species composition and amount obtained by the operations was performed using the PRIMER 5 software package. Fourth root transformation linked with group average fusion was used for clustering the operations. Multidimensional Scaling (MDS) analysis was performed according to the Bray-Curtis similarity matrix (Kruskal and Wish 1978). Depth and season were used as factors in both cluster and MDS analysis in order to categorize the operations in terms of number and species composition. To determine the contribution of each species to the dissimilarity rate (cut-off percentage = 90) observed between groups, Similarity Percentages (SIMPER) analysis was used (Clarke, 1993). The univariate indices of species richness (Margalef's *D*), Shannon's index of diversity (*H*) and Pielou's measure of evenness (*J*), total number of species were calculated for each depth groups. Differences between the groups were determined applying the Mann-Whitney test.

Results: According to cluster and MDS analysis, two season groups (S1: Winter-Spring, S2: Summer-Autumn) were identified. S1 consisted of operations conducted between depths of 22-54 m, while the S2 group consisted of operations between 8-18 m. MDS stress value was 0.06. This value shows that there is a good ordination between the groups. According to SIMPER analysis, the species that contributed most to the distinction of the two groups were *Merlangius merlangus* (26.22%) for S1 group, *Scopeana porcus* (18.06%), *Solea sp.* (11.95%) and *Uranoscopus scaber* (9.25%) for S2 group. For the species of both two groups, significant differences were found in the species richness (*D*) and species diversity index (*H*) ($p < 0,05$), with the exception of the evenness (*J*) indices. According to these findings, from summer to autumn on the coastal areas at 8-18 m depths, species richness and diversity are higher than the 22-54 m depths. It may be said that, generally fish species in the Black Sea mostly migrate towards to the shore for reproduction and feeding activities in the beginning of summer to autumn.

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Keywords: Black Sea, diversity, fish species, distribution, season and depth.