

FISHERY MAPPING WITH THE HELP OF MULTIVARIATE ANALYSIS. AN EXAMPLE WITH DATA ADRIATIC SEA

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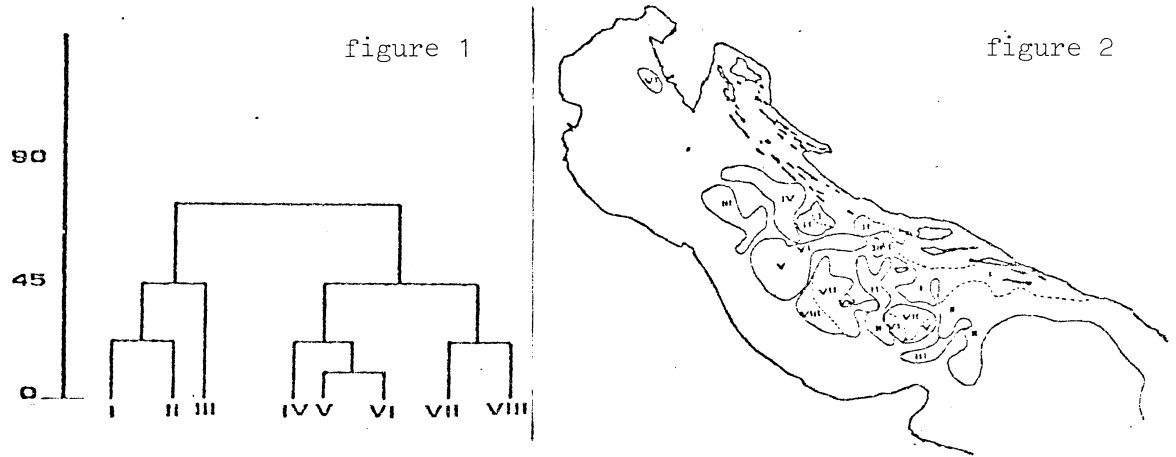
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The data of O. KARLOVAC (1959), have been analyzed by multivariate methods with the aim to discover association between species and homogeneous areas of fishing.

The association between species has been investigated by factor analysis and linkage clustering both based on the point correlation coefficient. The stations have been classified by polythetic agglomerative and monothetic divisive methods (WILLIAMS, 1971). The similarity between the stations has been investigated also by non-centering principal component based on Jaccard coefficient. The correspondence between the outstanding groups of species and groups of stations obtained by clustering methods has been tested by Concentration Analysis (FEOLI and ORLOCI, 1978). For all the employed methods and classification at the correspondence has been resulted significative.

This means that in the Adriatic Sea fish communities, corresponding to certain well defined areas, may be individuated. In fig.1 it is presented a distribution pattern of the stations belonging to the main clusters fig.2 obtained by the method of CRAWFORD and WISHART (1967). The stations of clusters I, II, III are easily characterizable by very constant species (*Lepidotrigla cavillone*, *Aspitrigla cuculus*, *Citharus linguatula*, etc.). The stations of the clusters IV, V, VI, VII, VIII are less characterizable and poorer in demersal species. The cluster IV may be characterized by *Pagellus erythrinus*, *Scorpaena scrofa*, *Mullus surmuletus*, *Scorpaena notata*. Cluster VI presents *Chlorophthalmus agassizi*, *Coelorhynchus coelorhynchus*, *Raya oxyrinchus*. The other clusters do not present peculiar species but may be characterized in negative terms.



REFERENCES

- CRAWFORD (R.M.M.) and WISHART (1967).- A rapid multivariate method for detection and classification of groups of ecologically related species.- *J. Ecol.*, 55 : 505-524.
- FEOLI (E.) and ORLOCI (L.), 1978.- Concentration analysis and detection of underlying factors in structured tables.- Min. U. W. O.
- KARLOVAC (O.), 1959.- Exploration of fish stocks and edible invertebrata carried out by trawling in the open Adriatic, Split.
- WILLIAMS (W.T.), 1971.- Principles of clustering.- *Ann. Rev. Ecol. Syst.*, 2 : 303-326.