PERIODICITY OF ZOOPLANKTON COMMUNITY OF TRIESTE GULF IN CONTINGENCY TABLE ANALYSIS.

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SUMMARY : Canonical analysis of contingency table and lattices analysis of the residual have been applied to average monthly frequencies of the most frequent species of zooplankton at two stations of the Trieste Gulf. One station is situated within the stream coming from Istria coast and the other one is situated near the estuary of urban sevage. The analysis put in evidence different underlying cycles between the two station causing different trends of time variations.

The zooplankton data sampled at regular intervals within the year can be organized in contingency tables in which the rows are counts or density values of each species and the columns are the time intervals.

Two contingency tables of the zooplankton community of the Gulf of Trieste at two stations - one situated within the stream coming from Istria coasts (1°) and the other one located in front of the estuary of urban sewages (2°) - both obtained by averaging the monthly density values of a five year investigation period have been compared by the method of canonical analysis of contingency table (Feoli & Orloci,1979) and by interpretation of the lattices deviations (Orloci,1981). The first method decomposes the total x^2 of a contingency table in canonical variates while the second decomposes the deviations from random expectations.

Canonical variates represent a means for the joint ordination of the time intervals and species and also allow to measure the links between them (tab.I) by computing influence levels (Feoli & Orloci,1979).

TAB.I

	G	F	M	A	M	G	L	A	S	O	N	D
Acartia clausi			+									
Penilia avirostris						+						
Temora longicornis			+									
Temora stylifera							+					
Evadne tergestina					+							
Evadne spinifera						+						
Evdane nordmanni			+									
Pseudocalanus elongatus		+										
Noctiluca miliaris				+								

Lattices of deviations allow to measure the deviation of the species densities within the time intervals from random expectation. The comparison of the trend of actual data with the trend of deviations from random expectation allows to explain some responses in terms of competition.

Fig.1a and 1b present the ordination of the time intervals (months) at the two stations. The ordination related to the first station suggests that a certain periodicity is present in the compositional variation of the commu-

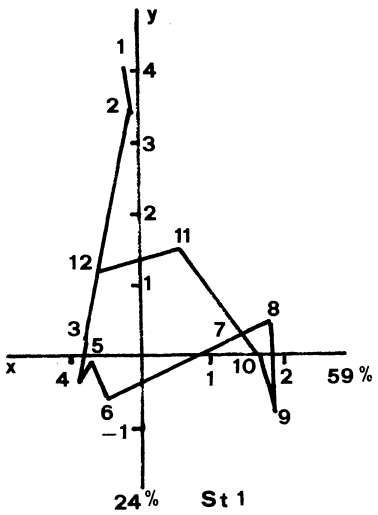

fig.1a

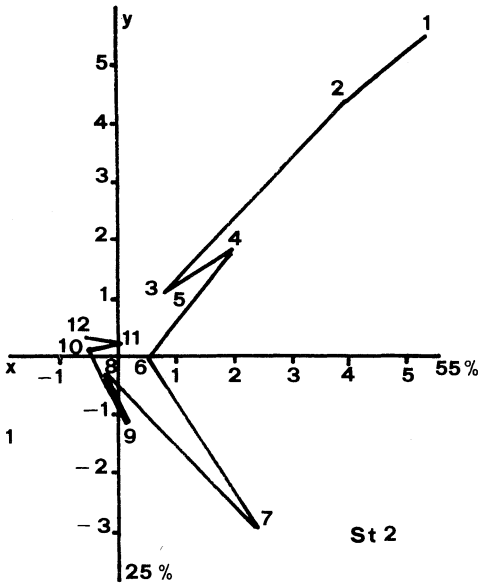

fig.1b

ty,while the ordination of the time intervals in the second station suggests a tendency of irregularity in the seasonal cycles.The classification of species according to the total lattices of residuals proved that at the first station clusters of species can be found which exhibit,more or less,the same periodicity (fig.2)The classification of the species according to the data of the second station does not produce such clusters of species.It is evident (for example) that at the first station there is a strong correlation between *Penilia avirostris* and *Evadne spinifera* which are typical summer species in the Gulf of Trieste (Specchi & al.,1974a,1974b).

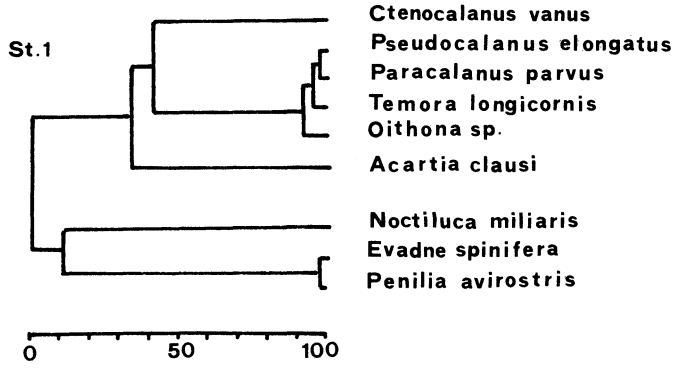

fig.2

This leads to the conclusion that the pollution in the 2° station may cause considerable modifications in the periodicity of species responses.

The analysis of lattices of deviations at the first station could allow to explain the behaviour of *Acartia clausi* and *Noctiluca miliaris* as a result of competition.In fact *N.miliaris* appears in lower quantities with respect to expectation while *A.clausi* appears in higher quantities (figs. 3a and 3b).

By looking Tab.I *A.clausi* appears to preceed *N.miliaris* within the season,for this reason it may contrast the development of *N.miliaris*.

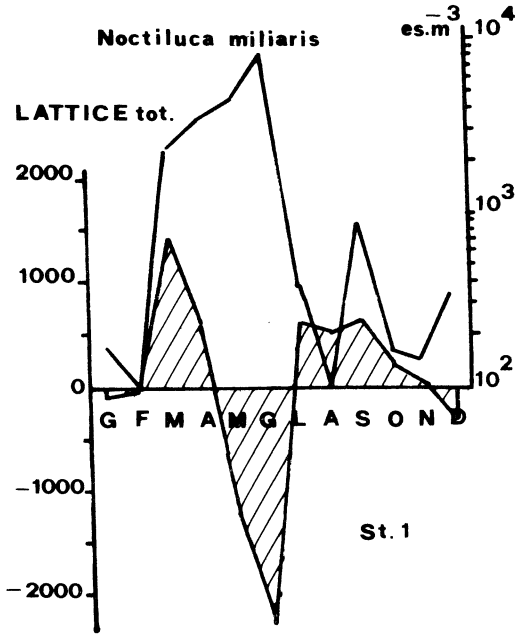

fig.3 a

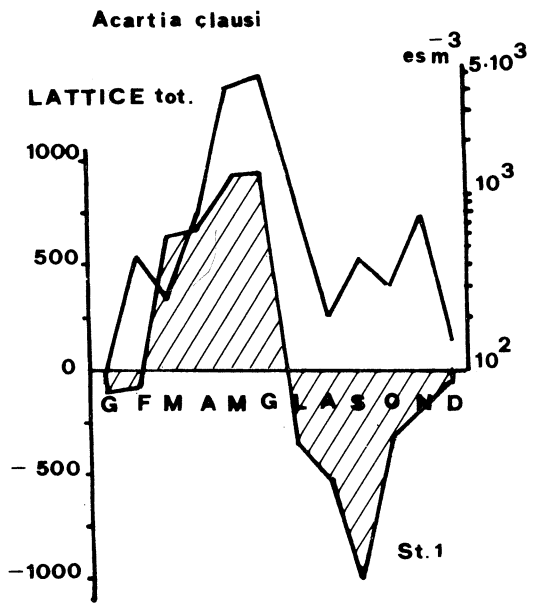

fig.3 b

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