

Correlations between hydrodynamical parameters and catches of migrating fry (Lake Fusaro, Naples)

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Lake Fusaro is located in the Gulf of Gaeta, the Tyrrhenian Sea, and its characteristics make it particularly suitable for aquaculture. Its hydrodynamics are strongly affected by the tidal activity of the open sea, whose maximum range in that area attains, at the time of syzygy, 30 cm; tidal currents are namely responsible for the water turnover in the lake, thanks to the connection with the Gulf of Gaeta provided by three channels, and in particular by the one in the middle, which definitely plays the most important role.

Among the species of fry migrating into the lake through those channels, the most common ones belong to the family of Mugilidi, namely to the genus *Liza aurata*, *Liza ramada*, *Liza saliens* and *Mugil cephalus*; none of them seems to be very much affected by the variations in temperature and salinity evidenced by our measurements.

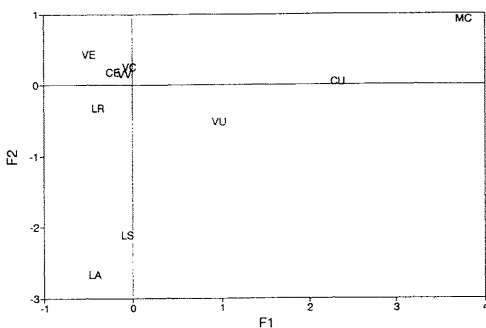
The main goal of this research is an investigation of the influence on the above mentioned species of a number of hydrodynamical factors, and in particular of the along-channel components of wind and current.

In order to assess correlations between catches and physical parameters we utilized the factor analysis of the correspondences, which represents one of the most recent methodologies within the field of ecological investigation.

Our study showed that catches of *Mugil cephalus* are correlated to well determined wind and current patterns, namely along-channel wind and flow regimes, while catches of *Liza aurata* and *Liza saliens* are more frequent in calm situations. Anyway, the tidal flow does not seem to affect them.

However, it has to be pointed out that the results of the statistical analysis are strongly affected by the still very little known behaviour of the fry fish, whose presence in the channels definitely depends upon the reproduction activity of the grown-up individuals, from the availability of food in the examined area, from the local meteorological conditions and, finally, from the intensity of the fishing activities along the domitian coasts.

Analysis of correspondences Distribution of Variables



LA = *Liza aurata*

LR = *Liza ramada*

LS = *Liza saliens*

MC = *Mugil cephalus*

CE = Incoming flow

CU = Outgoing flow

VE = Incoming wind

VU = Outgoing wind

VC = Current speed

VV = Wind speed

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