

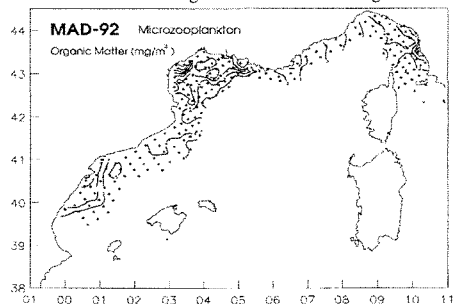
MICROZOOPLANKTON AND FEEDING OF ANCHOVY LARVAE IN NORTHWESTERN MEDITERRANEAN

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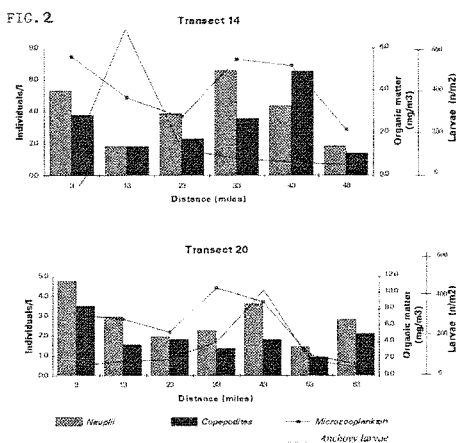
In 1992, spawning season of anchovy (*Engraulis encrasicolus*), samples of microzooplankton were taken simultaneously with ichthyoplankton samples in order to detect favorable areas for the anchovy larval survival, in the area covering Catalan sea, Gulf of Lions and Ligurian sea. Samples of microzooplankton were taken with a 15 cm diameter Bongo fitted with conical nets of 53 μm , attached at the same wire that the 40 cm diameter bongo used for sampling ichthyoplankton. We analyzed dry weight, organic matter and ashes of 193 samples of microzooplankton. Samples were defrosted and filtered with a mesh of 53 μm . Organisms bigger than 1 cm were eliminated for the analysis. Later the samples were dried in a stove at constant temperature of 70°C during 24 hours in order to secure total dry. After 4 hours in a dessicator, samples were weighed, with a precision of 1 mg. Afterwards this samples were introduced in a oven at a temperature of 500°C during 1 hour. Ashes were weighed with a precision of 1 mg. Contents of organic matter was then obtained by the difference between dry weight and ashes weight. Composition of different groups of microzooplankton was analysed in samples of 39 stations including two complete transects perpendicular to the coast south (transect 14) and middle Gulf of Lions (transect 20). The gut content of 228 anchovy larvae obtained by the 40 cm bongo net in selected stations along the catalan coast and gulf of Lions was studied. Anchovy larvae were measured with an eyepiece micrometer and afterwards the guts were removed and opened. The contents were identified, counted and copepod developmental stages measured (mm). Maximum concentrations of organic matter were found at Gulf of Lions, with a maximum around 20 mg/m^3 at a coastal area near Cap d'Agde.

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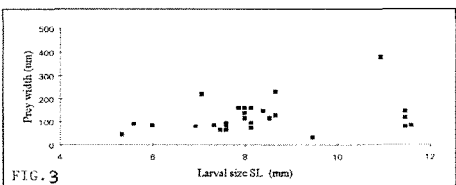


the values over the Gulf were high and we can see two more high values in the central area (11 mg/m^3) and near the mouth of the Rhone river. Going to the south the values were lower until the delta of the Ebro river with a maximum of 12 mg/m^3 . At the Ligurian sea, the values were generally lower, only a maximum of 11 mg/m^3 in front of Livorno. (Fig. 1). In fact, maximum values coincide with areas of lower salinities in the zones of outflow of rivers. Anchovy larvae were found near the shelf break (GARCIA, 1994) in areas where the values of microzooplankton were relatively high. Nauplii and copepodites were the dominant components of microzooplankton, and were also important cladocers. Other potential preys for anchovy larvae were present but in less important numbers.

Distribution of abundances in the two transects analyzed (Fig. 2) showed that values of microzooplankton are high at stations near the shelf break, coinciding in transect 20 with larvae maximum, and that the values of nauplii/l were closed to those of organic matter, while copepodites maintained similar values in all stations. The size range of larvae studied for feeding aspects was 3.59 to 13.33 mm SL. Only the 10.52% of the larvae examined had food in their gut. The size range of larvae with food in the gut was 5.33 to 11.59 mm SL. The mean number of particles per feeding larvae was 1.83. The main dietary components were eggs, naupliar and copepodite stages of copepods. Copepod eggs were the 29.5% of the preys, nauplius the 27.2% and copepodites de 31.8%. Other items in the diet were cladocers, pollen of gymnosperms and other organic particles not identified. Cladocers were the bigger preys detected. Measures of the maximum width of preys showed that maximum prey size increases with larvae size. Nevertheless the range of prey size also increases (Fig. 3) meaning that larger larvae feed on larger prey but continues feeding small preys.



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REFERENCES

GARCIA, A. *et al.*, 1993.-Northwestern Mediterranean anchovy. Distribution, biology, fisheries and biomass estimation by different methods. Final Report Study Contract FAR Project MA 3.370. U.E. DG XIV.

