

## DEMOGRAPHIC STRUCTURE OF EARLY STAGES OF *ENGRAULIS ENCRASICOLUS* AND *SARDINELLA AURITA* AND WATER MASS CIRCULATION IN THE SOUTHERN CATALAN SEA

M.-P. Olivar<sup>1</sup>\*, M. Emelianov<sup>1</sup>, I. Uriarte<sup>2</sup>, F. Vellarte<sup>2</sup>, I. Álvarez<sup>1</sup>, E. Morote<sup>1</sup>, B. Fuerstenau<sup>1</sup>, B. Molí<sup>1</sup>

<sup>1</sup> Institut de Ciències del Mar (CSIC). Passeig Marítim 37. 08003 Barcelona. Spain. - polivar@icm.csic.es

<sup>2</sup> University of the Basque Country, 48008 Bilbao. Spain.

### Abstract

The demographic structure of the early stages of anchovy (*E. encrasicolus*) and round sardinella (*S. aurita*) in the southern Catalan sea in late June 2005 were analysed and results discussed based on the hydrographic situation. Contrasting to previous studies, distribution patterns showed an important overlap, with most of the larvae of both species located between the coast and the 200 m isobath (horizontal pattern) and between the surface and 30 m (vertical pattern).

*Keywords* : Ichthyoplankton, Larvae, Spawning, Circulation, Western Mediterranean.

The stratified summer period is the main spawning season for anchovy (*E. encrasicolus*) and round sardinella (*S. aurita*) in the NW Mediterranean [1]. Previous studies have documented that their eggs and larvae have different distribution patterns [2]. The present work investigates the conspicuous overlapping distributions observed in June 2005 throughout the analysis of the demographic structure of their early stages and the hydrographic situation. Horizontal egg and larval distributions of the anchovy and round sardinella, as well as microzooplankton biomass presented the highest concentrations over the continental shelf (<200 m) (Fig. 1).

A sharp decrease in egg abundance was observed in both species from stations located at <100 m isobath to those located beyond the shelf break (>200 m) (77% of anchovy eggs and 97% of round sardinella eggs were found inshore of 100 m isobath). Although larvae exhibit a wider inshore-offshore distribution, the pattern of abundance also exhibits the highest concentrations in the coastal band (56% of anchovy and 77% of round sardinella).

An increase in the modal size class was evident from the first to the second group of stations, while mode and size range was maintained in the shelf break stations.

The weak SW surface current velocities on the continental shelf could explain this slight cross-shelf larval displacement, but the strong current at the shelf break region (sometimes reaching the maximum values characteristic of this current [3]) could prevent further dispersal.

This coastal pattern for anchovy eggs and larvae is in opposition to the general trends for the species in the region, in which spawning occurs mainly in the shelf break zone and secondary modal size classes of larger larvae appear offshore-wards [1]. The conspicuous overlapping distributions of the two species, together with the similar size structure of their larvae in the different sectors, imply that, under the environmental situation found in June 2005, larvae had to share the available food resources. The fact that the main microzooplankton biomass was also coincident with the main larval distributions would work in favour of survival likelihood of larvae of these species.

### References

- 1 - Palomera I., Olivar M.P., Salat J., Sabatés A., Coll M., García A., Morales-Nin B. Small Pelagic Fish in the NW Mediterranean Sea: An Ecological Review. *Prog. Oceanog.*, (in press).
- 2 - Palomera I. and Sabatés A., 1990. Co-occurrence of *Engraulis encrasicolus* and *Sardinella aurita* eggs and larvae in the western Mediterranean. *Sci. Mar.*, 54: 61-67.
- 3 - Salat J., 1996. Review of hydrographic environmental factors that may influence anchovy habitats in the northwestern Mediterranean. *Sci. Mar.*, 60: 21-32.

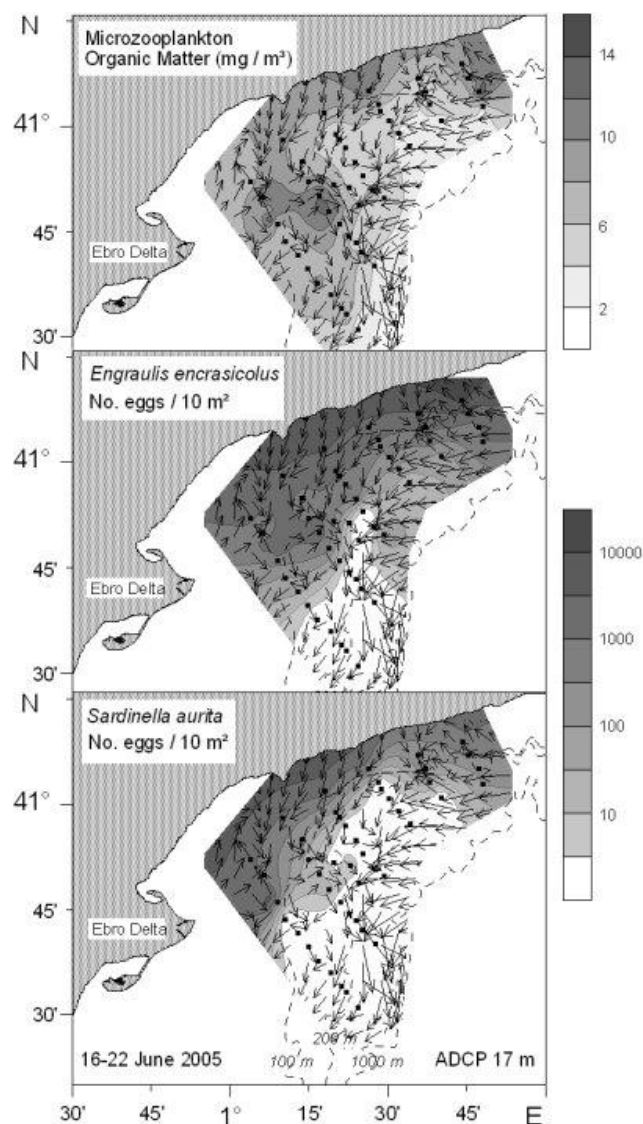


Fig. 1. Egg distributions and ADCP currents at 17 m depth.