

GENERAL CHARACTERISTICS OF THE NERITIC ICHTHYOPLANKTON OF THE
NORTHWESTERN SECTOR OF THE ALBORAN SEA IN AUGUST, 1982
III. GENERAL DISTRIBUTION OF ENGRAULIS ENCRASICHOLUS

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ABSTRACT.- The general distribution of eggs and larvae of Engraulis encrasicholus in function of some marine environmental factors is analyzed.

Résumé.- *La distribution générale des oeufs et larves d'Engraulis encrasicholus en fonction de certains facteurs de l'environnement marin fait l'objet de cette étude.*

The principal objective of the ichthyoplanktonic survey "Chanquete II-82", described in our first paper, was the study of the distribution of the planktonic stages of Engraulis encrasicholus, and the influence of environmental factors on the distribution observed, along the coast of Málaga.

A total of 305 eggs and 292 larvae were collected from the 16 station sampled. They represent 2.1% and 14.8%, respectively, referred to the totality of ichthyoplankton captured.

The horizontal distribution of eggs reveal litoral spawning grounds localized in the bay of Fuengirola and the bay of Málaga (Fig. 1). In comparison with the horizontal representation of superficial temperatures registered (Fig. 2), these spawning areas are situated in the range of 20-23°C, an optimum temperature for their development. Major abundances have been taken in stations of 22-23°C.

The representation of surface salinities (Fig. 3) show a decreasing gradient of salinity from the coast towards offshore waters, although no particular influences of this factor have been observed on the distribution of this species of clear thermic tendencies.

The maximum concentrations of larvae have been located shifted towards the west in Punta Calaburras, natural limit between the bay of Marbella and Fuengirola (Fig. 4). It is interesting to remark that stations 7 and 9, corresponding to this area, have registered the highest values of zooplankton biomass (39.4 mg/m³ and 50.2 mg/m³, respectively) and zooplanktonic biovolumes (7.8 ml/m³ and 6.7 ml/m³).

Although maintaining its neritic character and with the exception of the area of maximum concentration, major larval abundances tend to occupy farther offshore waters, probably due the dispersion caused by superficial currents proceeding from the Strait of Gibraltar.

The mortalities of the eggs of Engraulis encrasicholus recorded vary from 25% to 71%. The mean mortality for all stations has been 47.6%. The most important nucleus, station 11, registers a relatively low mortality (35%), and a gradual increase of mortality has been observed towards the west, increasing to 48% in station 10 and 66% in station 9.

The range of sizes of larvae vary from 2 mm. to 11.5 mm.. The size frequency

distribution (Fig. 5). shows that most frequent sizes are between 3.5 and 5.5 mm.. The mean size for larvae corresponding to coastal stations has been 4.5 mm., while those of stations situated farther offshore has been 4.7 mm., although it is interesting to remark that 78% of larvae above 7.5 mm. correspond to offshore stations.

With respect to the vertical distribution observed, larvae of this species have a tendency to occupy subsuperficial levels, since with the Bongo hauls these have represented 23.6% of the total, while with neuston hauls it has merely represented 5.2%.

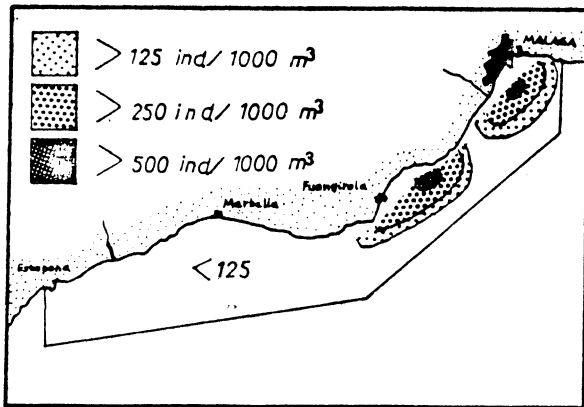


Fig. 1.- *E. encrasicholus* egg distribution.

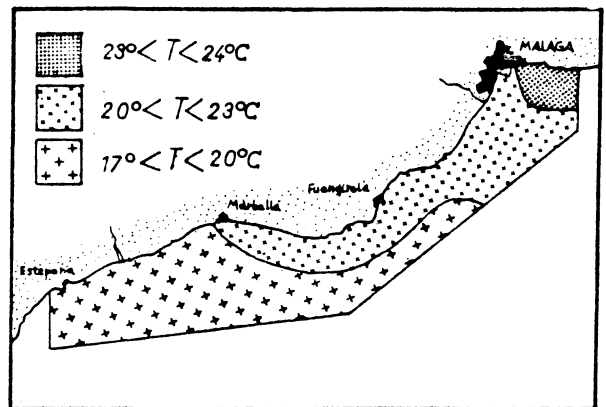


Fig. 2.- Surface temperature distribution.

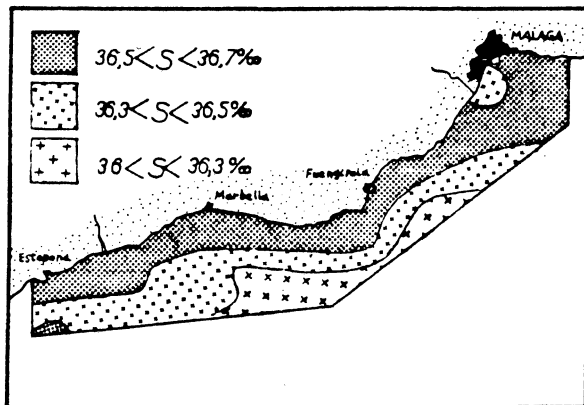


Fig. 3.- Surface salinity distribution.

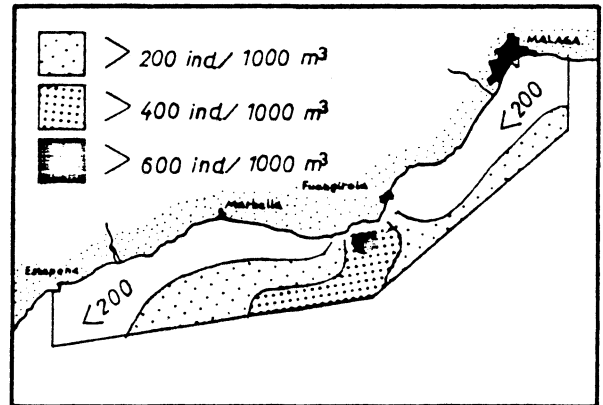


Fig. 4.- *E. encrasicholus* larvae distribution.

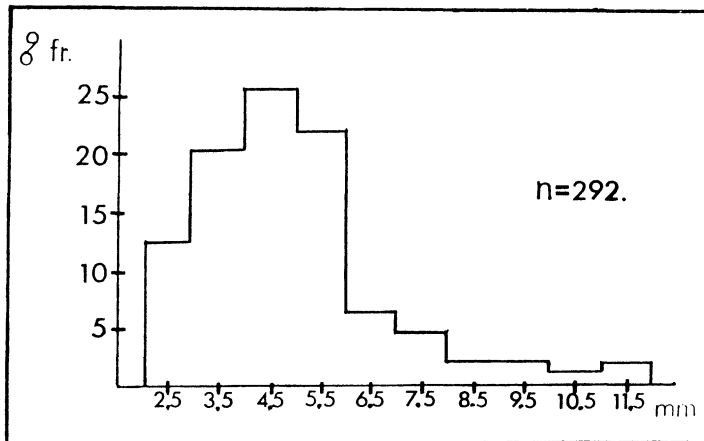


Fig. 5.- Size frequency of *E. encrasicholus* larvae.