

CHANGES ON BIOMASS ESTIMATION AND SPATIAL DISTRIBUTION OF ANCHOVY (*ENGRAULIS ENCRASICOLUS*) IN THE CATALAN PLATFORM

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Abstract

This document provides an insight on the changes detected in the Catalan platform to the anchovy population. Data were collected through two acoustic surveys in 2007 and 2008, providing biomass estimation and spatial distribution as well as some biological information. A significant recovery of the anchovy local population was detected. The length mode has increased from 5.5 cm in 2007 until 9 cm in 2008.

Keywords: *Acoustics, Biomass, Ebro Delta, Pelagic*

Introduction

An acoustic survey for the follow up of the small pelagic populations in the Catalan platform is carried out annually during December. Up to 10 small pelagic species are assessed during these surveys. The data collected is used as support for management of these species. The situation of anchovy (*Engraulis encrasicolus*) resources in the area was of major concern.

Material and Methods

Acoustic data collection takes place during day hours in December from a vessel platform with a scientific echosounder EK60 mounted on the keel equipped with 3 frequencies (38, 120 and 200 kHz). A pelagic trawl net Gloria352M with 20 m horizontal opening and 10 m vertical opening is used to collect the groundtruth data (biological samples) necessary to identify the schools and determine biological characteristics of the species collected. Transects perpendicular to the coast line are separated 6.5 nm from each other from the Spanish-French border until south of Ebro river delta. Data collection speed is 10 knots and trawling speed is 4 knots. The coefficient for TS calculation was -72.6 for anchovy.

Results and Discussion

Anchovy population has been decreasing in the last years reaching very low levels in 2007. Several management measures like close seasons and minimum landing size have been put in place in order to protect this pelagic stock but they showed no positive results until 2008 when a recovery was detected. The 2007 biomass estimation indicated a stock of 350 tons in the 2000 nm² study area with a distribution mainly located in the north of Ebro river delta in front of Tarragona. The individuals collected were very scarce (n=148) and showed a mode in length of 5.5 cm being all immature individuals (size of first maturity is 10 cm).

The length-weight relationship for these samples was as follows:

$$W=0.0018*L^{3.6131}; \text{ where } R^2=0.7328$$

However, the 2008 biomass estimation showed a recovering situation of the anchovy stock with 8,575.8 tons, twenty times the estimated biomass in 2007. Its spatial distribution was wider indicating that the majority of the population was located in the Gulf of Rosas and the Ebro river estuary (Fig. 1). No samples were found in the rest of the area (approximately 2,000 nm²).

Samples were composed by anchovy in 65.7% of weight. The samples collected were more abundant (n=3,264) showing a 9 cm mode in length overall, being 14 cm in the Ebro estuary area, indicating that mature individuals were present in the area in 2008.

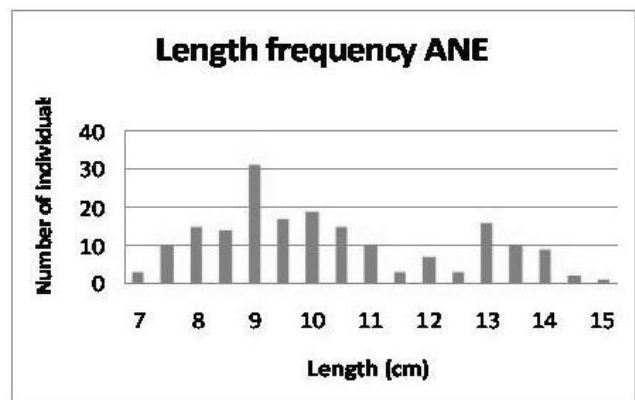


Fig. 2. Anchovy length-frequency for 2008 Gulf of Rosas samples

The length-weight relationship for 2008 samples was as follows:

$$W=0.0064*L^{2.93}; \text{ where } R^2=0.8988$$

The coefficient of determination indicates a positive correlation between length and weight of the specimens. The number of specimens measured and weighed was much larger than in 2007 assuring the representativeness of the samples (Fig. 2).

Conclusions

The anchovy population in the Catalan coast has shown an important recovery from 2007 figures. Mature individuals were found mainly in the Ebro river delta area. The Gulf of Rosas has notably increased its anchovy stock.

References

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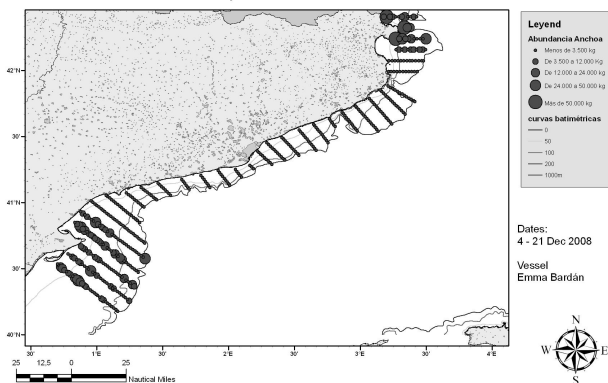


Fig. 1. Spatial distribution and relative abundance of anchovy