

DISTRIBUTION OF ANCHOVY AND SARDINE EGGS AND LARVAE IN THE NORTHERN AEGEAN SEA

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Abstract

Preliminary results of distribution and abundance of anchovy (*Engraulis encrasicolus*) and sardine (*Sardina pilchardus*) eggs and larvae in the northern Aegean Sea was studied during the period of August 23-29, 2008. The spawning areas for anchovy are located in the northern coast of Foca (Izmir), Edremit Bay, and the area between the Saroz Bay and the north of Gökceada Island. Anchovy eggs and larvae were mainly distributed over the continental shelf. Few sardine eggs and larvae were collected.

Keywords: *Ichthyoplankton, Larvae, Pelagic, Aegean Sea, Fishes*

Introduction

Due to the rich nutrient content of the northern Aegean Sea which is becoming seawater rich with nutrients from the Black Sea and the Sea of Marmara, many rivers bringing 1000 m³/s of fresh water flow into this part of the Aegean Sea [1]. This area is an important fishing ground for sardines, anchovy, chub and Atlantic mackerel. 62.5% of the sardines (13 088 t) and 2.2% of the anchovy (8390 t) catch in Turkish waters comes from the Aegean Sea [2].

Ichthyoplankton-based methods are increasingly being used around the world to estimate the biomass of fish stocks and monitor trends in fish abundance [3]. Ichthyoplankton researches conducted in the Turkish waters of the Aegean Sea are concentrated in Izmir Bay (central Aegean Sea). The aim of this paper is to give the results of ichthyoplankton research on the distribution and abundance of the anchovy and sardine eggs and larvae in the northern Aegean Sea.

Material and Methods

The samples were collected during an ichthyoplankton cruise onboard the R/V Yunus S in August 2008 in the northern Aegean Sea. A total of 13 sub-surface plankton horizontal tows with a Bongo net of 60 cm inlet diameter equipped with 250 µm mesh for oblique tows. The net was geared with general oceanic flowmeter for filtered volume estimates. All tows were fixed at 10 minutes duration. In each of the stations covered, a CTD (Seabird19+) was cast. All samples were preserved in 5% formaldehyde solution buffered with sodium borate.

In the laboratory all egg and larvae were removed, identified to the lowest possible taxon, counted and measured (diameter for eggs and standard length for larvae). The absolute number of eggs and larvae per haul was recorded and the relative number per 100 m³ filtered water was calculated.

Results and Discussion

Survey area surface seawater ranged from 20.0 to 26.0°C, salinity from 34.7 to 39.4 psu, oxygen from 3.59 to 6.88 mg/l, and bathymetry from 40 to 330 m.

Anchovy eggs were found in three areas; namely in the northern coast of Foca (Izmir), Edremit Bay, and the area between the Saroz Bay and the north of Gökceada Island (Fig.1). Throughout the entire study area they were mainly located at the shelf (<=100 m). Maximum egg abundance of 324 eggs/100 m³ was recorded. The longitudinal diameter of the eggs varied between 0.91 and 1.32 mm, and the transverse diameter between 0.48 and 0.57 mm. Peak larval abundance was 125 larvae/100 m³ and the size ranged from 2.50 to 9.02 mm SL. Eggs were more abundant than larvae. This is in agreement with existing knowledge of the reproductive period of this species which occurs from April to September with peaks usually in the warmest months [4].

Few sardine eggs and larvae were collected on this cruise (Fig.2). Maximum egg abundance of 14 eggs/100 m³ was recorded. The diameter of the eggs varied between 0.67 and 1.13 mm. The length of the sardine larvae was 4.88 – 7.10 mm SL.

In a research conducted in the northern Aegean Sea (Greek waters), anchovy larvae were highly abundant in June 1996 [5]. According to our results, in the northern Aegean Sea (Turkish waters), anchovy egg and larvae were highly abundant in August 2008. The restriction of the Turkish Ministry of Agriculture and Rural Affairs of fish catch by purse seiners in the summer period (between 15 April and 1 September) is an appropriate regulation for the protection of the anchovy population. In the Mediterranean Sea, the anchovy is caught also by other nations. Therefore, a common fishing legislation should jointly be regulated with other fishing partners.

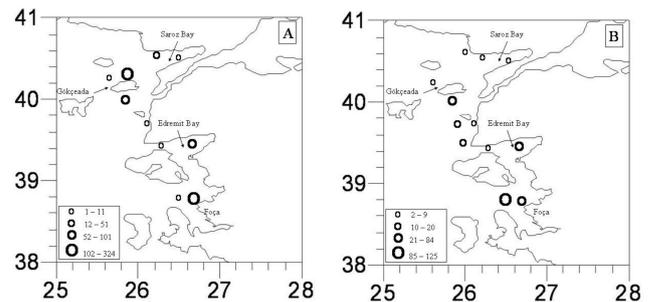


Fig. 1. Distribution and abundance of anchovy eggs (A) and larvae (B)

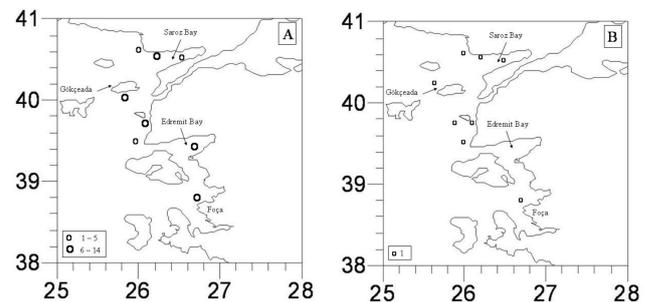


Fig. 2. Distribution and abundance of sardine eggs (A) and larvae (B)

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