ICHTHYOPLANKTON DISTRIBUTION OF IZMIR INNER BAY BETWEEN 2000 AND 2005

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Abstract
The Izmir Bay, which is located on the western coast of Turkey, became one of the conspicuous areas in the Mediterranean Sea with its high domestic and industrial pollution level by the end of 1990s. However, starting from 2000, as a result of terminating the pollution sources and beginning of water treatment system, positive changes have been observed in the habitat. This is reflected in all living groups in the marine ecosystem. By evaluation of the seasonal surface plankton sampling between the years of 2000 and 2005, it was determined that spawning fish populations in the Izmir Inner Bay consisted of *Engraulis encrasicholus, Arnoglossus* spp , *Buglossidium luteum, Callionymus pusillus, Solea* spp. These species are considered as resistant to the pollution. *Engraulis encrasicholus* forms 98% of eggs and 60% of larvae. Other important larval species are *Gobius niger* (14%) , *Parablennius gattorugine* (10%) and *Salaria pavo* (8%) in the Inner Bay.
Keywords : Ichthyoplankton, Pollution.

Introduction
The pollution process in the Izmir Inner Bay had accelerated due to domestic and industrial effects from 1960. Because of this, after 1970s the priority in scientific studies was especially given to observation of pollution effects. The pollution had reached the highest level in the Inner Bay in 2000, when the water treatment system began to work. Pollution sources of the Inner Bay were reported as; hydrocarbon, heavy metal, pathogenic organisms caused from domestic and industrial waters (organic materials) (50%), precipitations (15%), brooks and streams (10%), agricultural sources (10%), sea transportation-harbour (4%) and other sources (11%) [1]. After caving Rag ip Paşa Lagoon's walls, which is located in the Inner Bay, deep and surface flows have become more effective, and significant improvement has been observed in the Bay by completing the Great Channel Project. Eutrophication has regressed largely in the Inner Bay and light transmission has increased. The pollution effects in last 30 years as; beginning of pollution, the most polluted and termination period of pollution sources, have importantly affected certain species composition in the marine ecosystem of the Inner Bay. Related to recovery of the Bay, positive effects have been observed on the organism groups (phytoplankton, zooplankton, macrobentic organism, fish) [2]. Ichthyoplankton organisms are the most importantly affected group among the mentioned organism groups. In this study, changings in distribution of ichthyoplankton in the pelagic region during recovery period of the Bay were discussed.

Tab. 1. Fish species of which eggs and larvae were determined in the Inner Bay between 2000 and 2005.

Fish species	Eggs	Larvae
Sardina pilchardus (European Pilchard)		+
Engraulis encrasicholus (European Anchovy)	+	+
Trisopterus luscus capelanus (Poor Cod)		+
Diplodus annularis (Annular Sea Bream)	+	
Gobius niger (Black goby)		+
Pomatoschistus microps (Common goby)		+
Zosterisessor ophiocephalus (Grass goby)		+
Callionymus lyra (Dragonet)		+
Callionymus pusillus (Dragon)	+	+
Blennius ocellaris (Butterfly blenny)		+
Salaria pavo (Peacock blenny)		+
Parablennius gattorugine (Tombot blenny)		+
Parablennius sanguinolentus (Blenny)		+
Parablennius tentacularis (Blenny)		+
Blennius spp.		+
Arnoglossus spp.	+	+
Solea spp.	+	
Buglossidium luteum (Solenette)		+

Material and Method
Sampling studies were carried out with R/V K. Piri Reis between 2000 and 2005, by horizontal (25 times) hauling with 250 m mesh size WP-2 type plankton net lasting in 10 minutes. Hauling was achieved in 5 stations located in the Izmir Inner Bay; inshore, central part (around) and exit way to the Middle Bay. Depth in the region is maximally around 23 m. Hauling include seasonal periods as 2000 (January), 2001 (January, April, August, December), 2002 (August), 2004 (March, August, November) and 2005 (April, February). Samples were preserved in 4% formaldehyde solution and examined in laboratory with SZ-60 type 10x6 binocular microscope.

Result
In the study fish eggs (Clupeidae, Engraulidae, Gadidae, Callionymidae, Bothidae and Soleidae families) and larvae (Engraulidae Sparidae, Gobiidae, Callionymidae, Blenniidae and Soleidae families) were determined to belong to 18 species from 9 family. Species diversity of ichthyoplankton was observed to increase through east-west direction of the Middle Bay, except in south and south-east inshore parts of the Inner Bay.

Anchovy eggs composed 98% of the total eggs in the Inner Bay and dominated the egg composition during 2000-2005. Other species consisting of 2 % are; *Callionymus pusillus, Arnoglossus* spp., *Solea* spp., *Sardina pilchardus* , *Buglossidium luteum* and dead eggs. European anchovy (60 %) composed the highest level in larval distribution in the Inner Bay. Black goby (14 %) was in the second place. Two species from Blennidae family , Tombot blenny (10 %), Peacock blenny (8 %) were the important species. Other Blennidae and Gobiidae species distributed in 1-2 % levels. In 1 % part; Annular Sea Bream, Solenette, Common goby species had equal distribution values. According to distribution percentage of species in stations at the Inner Bay, the highest distribution rates belong to; European anchovy (64 %) and Black goby (45-47 %) species. *B. ocellaris* (Butterfly blenny), *P. sanguinolentus* (Blenny) species found in 18-27% values in central part of Inner Bay. Common goby, Dragon , *P. tentacularis* (Blenny) , *Blennius spp.,* and Solenette larvae were represented with the lowest levels (1-9 %) in some stations. No larvae was found around the port. In study area it was observed that egg percentage distributed irregular and larva distribution increased through out of the Inner Bay. In spite of the improvement in water quality, dominancy of anchovy known as resistant to pollution is in point issue. The Inner Bay composes one of the most important areas for anchovy to spawn in all around the Bay. On the other hand larvae of goby species (*G.niger*) were obtained dominantly in Inner Bay as done in past periods. Dominancy of mentioned species eggs- larvae evaluated as the indicator that the environment has not been recovered completely.

References
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