The spawning period of the Sole (*Solea solea* L.), population and distribution ef eggs and larvae of Sole in Izmir Bay

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The sole is one of the important fishes for the Izmir Bay, with a not determined period of spawning (URBAN and ALHEIT, 1988). The spawning periods of the sole were found as February, March, April and May for Villefranche in the Mediterranean (SARDOU, 1970), and as December, January, February, March and April (MATER, 1981) for the Izmir Bay.

In order to determine the spawning period of the sole, this study used the distribution of eggs and larvae aswell as gonadosomatic indexes. The distribution of eggs and larvae according to the physico-chemistry of the stations was also studied (ºC, S‰, O_2, pH).

Sampling was done over a period of one year (1989-90) with monthly intervals. The soles were caught by gill nets, their eggs were collected from plancton using plancton nets, horizontally (during 20 minutes, at a speed of 2 mil/h). Vertical sampling was also done, in January, the highest spawning period. The mesh size of the plancton net is 500 µm (Hensen type). The gonadosomatic index (G.S.I.) was calculated using the following formula:

$$G.S.I. = \frac{\text{Weight of gonad}}{\text{Fish weight (without gonad)}} \times 100$$

The mean diameter of the eggs was calculated as 1.19 mm (1.08 mm - 1.26 mm). Among the stations, the maximum number of eggs was collected in Guzelbahçe and the minimum number in Tuzla (Fig. 1,2).

The spawning period of sole was determined including the months December, January, February and March in Izmir Bay (Fig. 3). It was deduced that the gonads were ready to spawn in these months because most of the eggs were collected in February (47 eggs) and the G.S.I. was highest (6.86) in December (Fig. 4). The G.S.I. of sole and the amount of eggs collected from the plankton during the whole year were in harmony. The temperature of the sea water ranged between 12.5ºC and 14ºC during the spawning period.

MONTH	DECEMBER		JANUARY		FEBRUARY		MARCH		TOTAL	
STATION	Egg	Larva	Egg	Larva	Egg	Larva	Egg	Larva	Egg	Larva
1. Güzelbahçe	22	--	14	--	3	--	3	--	42	1
2. Tuzla	1	--	3	--	--	--	1	--	5	-
3. Kırdeniz	--	--	15	--	3	--	--	--	18	-
4. Uzunada	10	--	3	--	12	--	--	--	25	-
5. Gülbahçe	--	--	2	--	29	--	--	--	31	-
Total	33	--	37	--	47	--	4	--	125	1

Table 1. The seasonal abundance of the sole *S. solea* eggs and larvae (1989-90), according to stations in Izmir Bay.

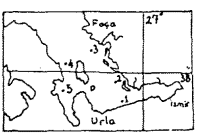

Fig. 1. Izmir Bay and the stations.

Fig. 2. The seasonal abundance of sole S. solea eggs (1989-90) in Izmir Bay.

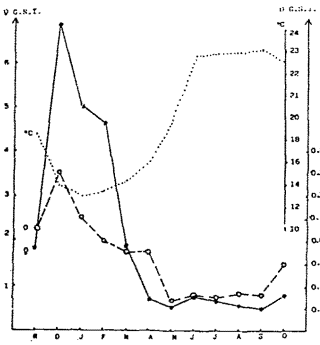

Fig. 3. Gonadosomatic index (G.S.I.) of sole S. solea.

	Females			Males		
MONTH	n	min.-Max. G.S.I.	Mean of G.S.I.	n	min.-Max. G.S.I.	Mean of G.S.I.
May	5	0.3-0.8	0.57±0.09	2	0.02-0.03	0.02±0.003
June	7	0.5-1.2	0.8±0.01	8	0.01-0.08	0.03-0.007
July	3	0.4-0.9	0.7±0.15	1	0.03	0.03
August	6	0.4-0.7	0.6±0.05	6	0.02-0.05	0.04±0.01
September	3	0.12-1.05	0.52±0.28	7	0.01-0.06	0.03±0.01
October	6	0.5-1.1	0.81±0.09	16	0.03-0.1	0.06±0.05
November	10	0.4-5.8	1.84±0.6	1	0.09	0.09
December	14	0.6-18.9	6.86±1.4	12	0.1 - 0.2	0.14±0.03
January	6	0.6-18.5	5.03±2.8	1	0.1	0.1
February	15	0.5-18.3	4.65±1.25	10	0.04-0.1	0.085±0.008
March	5	0.4-4.2	1.9±0.75	5	0.06-0.08	0.07±0.005
April	3	0.6-0.8	0.7±0.08	1	--	0.07

Table 2. Minimum, maximum, mean and standard error of mean G.S.I. (between indivi duals of 20-30 cms).

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