Time series of the stomach fillings of Saurida undosquamis in the Northern Cilician Basin (Eastern Mediterranean)

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The Lizard fish emigrated into the eastern Mediterranean Sea via the Suez Canal and became commercially important along the coastline of the Levantine Basin in the mid fifties (BEN-YAMI and GLASER, 1973). This fish is today one of the most important commercial species in the inshore region of the eastern Mediterranean coast of Turkey (BINGEL, 1981, 1987).

As far as known there is no special work dealing with the cahanges of stomach content of this fish in the northern Cilician Basin.

For the analysis of temporal differences of the stomach filling of this fish two stations were chosen and sampled from July 1980 to September 1981.

Lizard fish feeds little during day time but most intensively during the early morning, i.e., two hours after sun rise (TORIYAMA, (1958). Therefore samples were taken before noon, iced on board and kept frozen in the laboratory.

Food specimens in the stomachs of Lizard fish were tried to be identified at species level. The stomachs were simply categorized as full if they contained food or otherwise as empty, and totally 5223 individuals from both stations (2801 in Goksu-River-Delta and 2422 in Tirtar region) were collected monthly between July 1980-September 1981 and examined.

In the Tirtar region relatively intensive feeding starts in July-August and reaches its maximum in September-October and slows down towards November-December. In this period (July-December) 73.07 % of the total food consumed annually is already taken. In contrast to the Tirtar station, feeding intensity was found rather low in July-August in Goksu station, where higher rates were observed in September-December, with a maximum in November-December. During this time (July-December) Lizard fish consumed 70.59 % of its total annual food requirement (Figure 1).

As shown in Figure 1 this fish feeds intensively between April-July and most intensively between September and November . BINGEL (1988) stressed that Lizard fish spawns twice a year. The times of the spawning period and the times of inytensive feeding overlaps in both stations. This is in contrast to the known behaviour of fish in colder climates such as in northern Europe.

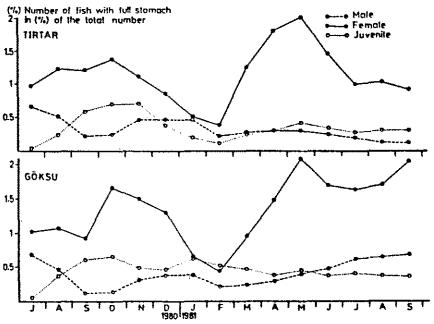

Figure 1: Three times running averages of stomach filling.

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Prey size of Saurida undosquamis in the Northern Cilician Basin (Eastern Mediterranean)

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Food is the most important component which determines growth. Nevertheless, very little is known about the feeding habit and especially about the prey size of Lizard fish in the Levantine Basin, where it mostly feed on *Mullus barbatus*, *Leiognathus klunzingeri* and *Saurida undosquamis* in the northern Cilician Basin (BINGEL & AVSAR, 1988 a).

In November 1982 for a determination of the prey sizes 35 individuals in the Goksu river delta and 73 individuals in the Tirtar region were examined with full stomachs and the food specimens in the stomachs of Lizard fish were tried to be identified at species level.

The distribution of prey sizes of Lizard fish is given in Table 1. As theoretically expected the prey size increases with increasing fish length. But the weights of prey did not always follow this trend.

In the Tirtar station, the largest prey ever taken by a Lizard fish of 31.8 cm in length, was the same species with a length of 15.7 cm and weighing 22.03 g. In the Goksu station, the largest prey was a common sole (20.39 g and 14.7 cm) swallowed by a Lizard fish of 33.8 cm in length.

Minimum prey size is usually observed by females and juvenile individuals at both stations. The mean weight of the prey ranged between 0.6 - 5.4 g. The standard deviations and the variances of the means were found high (Table 1).

Utilizing the mean prey weights (male, female & juveniles) (3.75 g) and assuming that this value reflects the mean daily ration of this fish at times of relatively intense feeding (July-December=6 months BINGEL & AVSAR, 1988 b), than, one may end up with 674 g fish flesh consumption per specimen/6 months. Considering the total duration of sampling an annual consumption of 750 g prey/year/specimen was calculated. This will result in a production of fish flesh of 75 g/year on the basis of 1/10 food transfer. Based on the data presented in the report of BINGEL (1987) the length and weights for different age groups and the obtainable flesh production in view of above suggestions will be as follows:

As seen from the table below the expected weights calculated from food consumption for different age groups aggree well with the mean weights. At least these have the same order of magnitude.

Age Group	Mean Length	Mean Weight	Weight expected from food consumption
0	5.9	3.1	-
I	18.3	49.3	75
II	26.4	120.9	150
III	31.8	190.7	225
IV	35.3	246.3	300

Table 1: Minimum, maximum and mean prey sizes of *Saurida undosquamis* in the northern Cilician Basin.

	n	Min	Max	Mean	s	s'
TIRTAR MALES						
Length (mm)	22	49	123	92.6	19.6	367.8
Weight (g)	22	1.6	10.2	5.4	2.5	5.7
TIRTAR FEMALES						
Length (mm)	42	33	208	81.5	32.6	1035.1
Weight (g)	42	0.2	22.0	4.2	3.8	13.7
TIRTAR JUVENILES						
Length (mm)	9	24	98	49.3	22.3	440.2
Weight (g)	9	0.2	1.3	0.6	0.4	0.1
GOKSU MALES						
Length (mm)	6	37	144	84.2	40.0	1333.1
Weight (g)	6	0.6	14.3	5.2	5	20.7
GOKSU FEMALES						
Length (mm)	21	35	147	85.7	33.3	1058.0
Weight (g)	21	0.2	20.4	5.4	5.8	31.4
GOKSU JUVENILES						
Length (mm)	8	42	76	60	12.7	140.3
Weight (g)	8	0.5	4.6	1.7	1.4	1.7

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