

**Ichthyoplankton of the Egyptian Mediterranean waters**  
**V. Distribution and abundance of larvae of *Sardinella aurita*, Valen**

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The distribution and abundance of the larvae of *Sardinella aurita*, valen. in the Mediterranean waters overlying the continental shelf off the Egyptian coast (Fig. 1) were studied seasonally during the period from December 1981 to October 1984. The study area, stations sampled, sampling methods were previously described by EL-RASHIDY & DOWIDAR (1990).

**RESULTS & DISCUSSION**

A total of 863 larvae of *S. aurita* were recorded in the ichthyoplankton samples collected during the warm months from July to October. The larvae were completely absent in other months. The length of the recorded larvae ranged between 3 and 21 mm. The larvae of *S. aurita* first appeared in the plankton samples collected during the first half of July when a total of 88 larvae were recorded, 75% of them occurred in the offshore station off Burullus (Fig. 1A). The recorded larvae covered the length range 3 to 19 mm, but most of them (60%) had length from 7 to 11 mm (Table 1). Assuming the same rate of growth given by OLIVER & NAVARRO (1952) the older larvae caught during this cruise were probably spawned around mid June.

In late July - early August cruise, the larval density was low and mostly concentrated in the inshore, (< 50m) depth and middle zones (Fig. 1A) and ranged in length from 3 to 13 mm (Table 1).

The larval density of *S. aurita* reached its peak during the second half of August when about 88% (758) of the larvae fished in all cruises were recorded (Fig. 1C) ranging in length from 3 to 21 mm. The majority of them (77%) had lengths between 5 and 15mm (Table 1). As shown in Fig. 1C, 92% of the sampled larvae occurred in the inshore zone. From late July throughout August the larvae were not recorded in the offshore zone. In early October only 2 specimens 10 and 15 mm were recorded from the inshore waters off El Agami and probably reflecting the end of the spawning season.

The present pattern of larval occurrence and abundance, clearly demonstrates that *S. aurita* is a typical summer breeder. The spawning season mostly begins in June, reaches its peak in late August and ends in October. The temperature range recorded during this period varied between 21°-29.5°C. These results generally conform with those reported by other authors working on the reproductive biology of the species. (BEN-TUVIA, 1960; EL-MAGHRABY, 1960).

Concerning the spawning grounds of *S. aurita*, it is believed that the final stage in gonad maturation takes place in the spawning grounds away from the coast (EL-MAGHRABY, 1960). This may explain, at least partly, the abundance of larvae (311 mm) in the offshore zone at the beginning of the spawning season. According to the local current regime, it is more probable that these larvae belong to an offshore stock which perform regular migrations to the coastal region off the Nile Delta during this period. On the other hand during the peak of larval occurrence most of the larvae occurred in the coastal waters and none occurred in the offshore waters. This picture may substantiate the suggestion that the populations of *S. aurita* present in the Egyptian Mediterranean waters are composed of two stocks, an endemic stock widely distributed in the coastal waters (< 50 m depth) all the year round and which spawns throughout the period from June to early October with a peak in August, and a migratory stock from the offshore waters that invades the area for feeding and spawning. The high larval density recorded at the offshore station off Burullus in early July would suggest that, this area acts as a suitable breeding ground for the species.

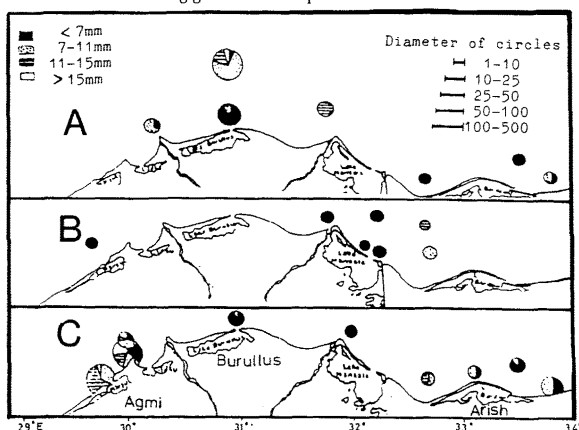


Fig.1. Distribution and abundance of different size groups of *S. aurita* larvae in the inshore, middle and offshore zones in the study area during (A) July, (B) July-August, and (C) August cruises.

Table 1. Occurrence of the different size groups (mm) of *S. aurita* larvae in the inshore, middle and offshore zones of the study area.

Cruise	Zone	3.1-7	7.1-11	11.1-15	15.1-19	>19	Total
6-18	Inshore	13.6%	3.4%	1.1%	NR	NR	18.2%
July 84	Middle	2.3%	NR	4.5%	NR	NR	6.8%
	Offshore	4.5%	56.8%	11.4%	2.3%	NR	75.0%
28/7-4/8/83	Inshore	46.7%	6.7%	NR	NR	NR	53.3%
	Middle	40.0%	NR	6.7%	NR	NR	46.7%
17-25 August 82	Inshore	24.8%	24.0%	32.4%	10.4%	0.4%	92.1%
	Middle	4.1%	2.5%	0.6%	0.6%	NR	7.9%

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