Composition of Fish Larvae from the Gulf of Kisamos (Crete, Greece) in the periods of May and July 1989

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The data of the present paper concerns with the composition of fish larvae collected in May and July 1989 from the Gulf of Kisamos (NW Crete, Greece). Zooplankton samples have been collected from five stations by using WP-2 (mouth diameter 57 cm and mesh size 200 µm) and Bongo (mouth diameter of each net 61 cm and mesh size 500µm) nets, in order to cover a wide range of larvae sizes. Double oblique hauls were applied at a speed of 2-2.5 knots. Flowmeters were attached to both nets. The average water volumes filtered through nets were 98 m^3 for each Bongo net and 87 m^3 for WP-2 net.

Identification of fish larvae was based on various sources (ABOUSSOUAN, 1964; BERTOLINI ET AL, 1931-1956; DEKHNIK and SINYUKOVA, 1966). In samples collected in May 23rd and July 29th 1989, the fish larvae of the Table 1 were identified.

TABLE 1. Larvae per fish family identified in samples collected in May and July 1989 from the Gulf of Kisamos. The collection period for each larval species and the net type are indicated in parenthesis: M = May, J = July, B = Bongo and WP = WP-2 net

FAMILY	SPECIES
Blenniidae	Blennius gattorugine (M:B,WP), B. ocellaris (M:B-J:B) B. tentacularis (M:B), Blennius sp. (J:B)
Bothidae	Arnoglossus sp (M:B-J:B,WP)
Callionymidae	Callionymus lyra (M:B)
Carangidae	Trachurus mediterraneus(M:B), T. trachurus (M:B)
Cepolidae	Cepola rubencens (M:B-J:B)
Clupeidae	Clupea sprattus (J:B)
Gobiidae	Gobius niger(M:B,WP-J:B,WP), G. minutus(M:B), Crystallogobius linearis (M:B,WP), Gobius sp (M:B-J:B,WP), G. paganellus (J:B)
Labridae	Coris julis (M:B-J:B,WP), Crenilabrus melops (M:B,WP) Labrus bergylta (M:B), Crenilabrus sp (J:B,WP)
Mullidae	Mullus surmuletus (M:B)
Myctophidae	Ceratoscopelus maderensis (M:B-J:B,WP), Diaphus holti (M:B-J:B), Lampanyctus pusillus (M:B,WP-J:B)
Ophiididae	Ophidion barbatum (J:WP)
Paralepididae	Lestidium sphyraenoides (M:B), Lestidium sp (J:B)
Pomacentridae	Chromis chromis (J:B,WP)
Serranidae	Dicentrachus labrax (M:B), Hepatus hepatus (M:B-J:B), Serranus cabrilla (M:B,WP-J:B,WP), S. Scriba (J:B)
Soleidae	Pegusa lascaris (J:B)
Sparidae	Pagrus pagrus (M:B-J:B), Sargus sargus (M:B,WP)
Sternoptychidae	Cyclothone braueri (M:B,WP-J:B), Maurolicus pennanti (M:B-J:B)
Syngnathidae	Hippocampus guttulatus (M:B,WP), Nerophis ophidion (M:B,WP-J:B)
Synodidae	Synodus saurus (J:B)
Triglidae	Lepidotrigla aspera (M:B,WP)

In samples collected in May using Bongo net 30 larval species were identified and 11 ones in WP-2 samples.

The densities of fish larvae collected with WP-2 and Bongo net show differences in all sampling sites of the Gulf of Kisamos (Table 2). Higher densities were recorded in station 1 and 5 (45 and 35 m in depth), and followed by densities in station 2 (300 m in depth).

TABLE 2. Densities of fish larvae in samples of May 1989, in respect to plankton net and station depth

STATION	DEPTH (m)	BONGO-NET (DENSITY n $10m^{-3}$) IDENTIFIED	BONGO-NET UNIDENTIFIED	WP2-NET (DENSITY n $10m^{-3}$) IDENTIFIED	WP2-NET UNIDENTIFIED
S1	45	5.13	0.06	2.57	0.09
S2	300	9.66	0.05	1.82	0.08
S3	250	2.03	0.11	1.08	-
S4	230	1.88	-	0.52	-
S5	35	13.28	-	3.57	-

TABLE 3. Densities (n $10m^{-3}$) of dominant fish larvae in samples collected in May 1989. The numbers in parenthesis show percentages corresponding to the total densities of fish larvae

STATION	BONGO-NET Sargus sargus	BONGO-NET Gobius niger	BONGO-NET Ceratoscopelus maderensis	WP2-NET Sargus sargus	WP2-NET Gobius niger
S1	1.55(15.4)	0.7(6.8)	0.35	1.85(36.0)	0.39(7.5)
S2	2.55(13.2)	1.8(9.3)	0.44	0.79(21.7)	-
S3	0.16(4.0)	0.05(1.3)	0.11	0.82(37.5)	-
S4	0.72(19.1)	0.05(1.3)	0.11	0.40(4.2)	-
S5	0.91(3.4)	10.3(38.9)	0.05	1.06(14.9)	1.13(15.5)

The sizes of fish larvae collected with Bongo net vary between 4.5 to 7.0 mm and those with the WP-2 net between 3.0 to 6.0 mm.

The large number of fish larval species and their low densities in the Gulf of Kisamos suggest an oligotrophic character of this ecosystem. Larvae of Myctophidae are encountered in all sampling sites, indicating an oceanic influence on the entire gulf. Abundant larvae of many fish species of commercial importance (Sargus sargus, Oblada melanura etc.) have been sampled from the gulf.

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Ichthyoplankton of the Egyptian Mediterranean waters. III- Distribution and occurrence of *Sphyraena* Larvae

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The present paper entails results on the abundance and distribution of Sphyraena larvae (S. sphyraena and S. chrysotaenia) recorded in the plankton samples collected seasonally from the S.E. Mediterranean waters overlying the continental shelf off the Egyptian coast between longitudes 29° 45' E and 33° 45' E, throughout the period from January 1982 to October 1984. The study area extends from Agami to Arish and is divided into 12 sections. The sections were from west to east : Agami (Ag.), Abu Qir (A.Q.), Rosetta (Ros), Burullus (Bur), Damietta (Dam.), Diba (Di), Gamil (Ga), Port Said (P.S.), Tena (Tn), Bardawil I, II (Brd.I, II), Arish (Ar.). With few exceptions 3 stations were sampled in each section representing inshore (< 50 m), middle (50 - 100 m) and offshore zones (> 100 m). Plankton samples were collected using an ichthyoplankton net of 100 cm mouth opening, 0.5 mm mesh size, fitted with a flowmeter. In each sample the larvae of Sphyraena were sorted and counted, the counts were converted to represent numbers/1000 m^3. The length of the larvae was measured to the nearest 1mm.

A total of 671 larvae of Sphyraena sphyraena and Sphyraena chrysotaenia were recorded in the plankton samples collected in summer and autumn cruises only, i.e. from July to October. About 64% of the total collected Sphyraena larvae were recorded during August. The larvae of S. sphyraena were recorded during July and August, the length composition may indicate that the spawning probably begins during June or early July and ends in late August early September. On the other hand, the length composition of S. chrysotaenia larvae may indicate that the breeding of this species extends to late October. The water temperature ranged between 24° - 29.5° C.

As shown in table (1) Sphyraena larvae were abundant in the inshore waters during early July and August. The highest density (111 L./1000 m^3) was recorded in the inshore water of Agami during August, while in October, the larvae were abundant in the middle zone.

Table 1: Average density of total S. sphyraena and S. chrysotaenia larvae (larvae/m^3) in different zones.

Month	Inshore	Middle	Offshore
August 1982	10.4	3.6	0.1
July 1984	13.3	4.2	not recorded
October 1984	4.5	68.2	9.2

Figure (1 A) shows the distribution and abundance of the different size groups of Sphyraena larvae during July. The distribution pattern during the beginning of the spawning season (July) indicates that the recorded larvae of Sphyraena represent a new brood where 67% of which were distributed in the inshore waters off Rosetta, Burullus and Arish. About 62% of Sphyraena larvae recorded, belong to S. sphyraena and 38% belong to S. chrysotaenia.

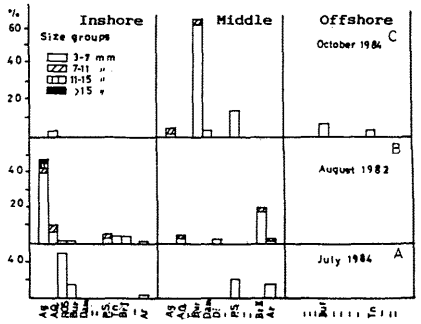

Figure 1 : Distribution and abundance of the different size groups of total Sphyraena larvae in the study area.

During August (peak of larval occurrence; figure 1-B) the newly hatched larvae up till 7 mm represented 86 % of the larvae, and most of which were distributed in the coastal water of the area (from Agami to Arish). S. sphyraena larvae contributed 35% of Sphyraena larvae, they varied in length between 5 - 17 mm and were confined to the inshore and middle zones of the western area (Agami - Abu Qir). This finding agrees with Riskalla (1985) working on the fishery biology of these fishes who reported that S. sphyraena migrates towards the coastal water during the spawning season. The pattern of distribution of S. chrysotaenia larvae during August (figure 1-B) indicated that the newly hatched larvae were abundant in the inshore and middle zones of the eastern area between Port Said and Arish, while during October (figure 1-C) about 94% of the recorded larvae represent a new brood and were common in the middle zones of the eastern part (Burullus, Damietta and Port Said) and also recorded in the offshore water. This is probably attributed to the sensitivity of these larvae to the rapid changes in water temperature near the shore, thus moving towards the deeper water during the autumn where changes of temperature occur less rapidly (De Sylva, 1963).

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