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Preliminary observations on the seasonal presence of Teleostean Larvae in the Tyrrhenian Sea

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Since July 1988 periodic ichthyoplanktonic surveys in waters around Sardinia as well as along the coast of Tuscany-Latium (orientatively from Viareggio to Gaeta) are being carried out in order to evaluate the year by year fluctuations of the local Clupeoid stocks. As the main target species are pilchards and anchovies, two main surveys covering all the mentioned area are carried out each year in coincidence with the reproductive peaks of these species (respectively early summer and autumn-winter). In the sector from Viareggio to Fiumicino (Rome), which has wider continental shelf in the northern part and seems to have higher density of fish eggs and larvae, supplementary surveys are carried out between the main surveys.

In the latter area the sampling scheme is usually set in five 235° oriented transects 30 miles apart; along each transect the stations are placed every 5-10 miles, from the coast line down to -500 m. Due to the limited extension of the continental shelf, which has been found by different authors as the main spawning area of sardines and anchovies, in Sardinia the stations are 10 miles apart along the 100 m isobath.

Year round samplings (usually every 20 days) carried out at fixed stations 3, 5 and 10 miles off Fiumicino allow us to monitore the target species' reproductive season.

Samples are anytime collected at sea by standard "Bongo 20" and "60" ichthyoplankton nets equipped with 236 and 335 micron meshes; the latter has been analyzed for the present purpose. Hauls are always carried out in double oblique, possibly down to 50-70 m, as is done also by the other working groups involved in similar research activities in different areas of the Italian peninsula.

In addition to target species we lately start to identify, in our ichthyoplanktonic material, tsome other fish larvae. As it is well known the identification at the family level is usually simple (at least referring to post-larvae), while the same may not be true when closer identification is sought. On the other side, many species (e.g. Gobiidae) can be differenziated only when far ahead in their development, while most of our post-larvae are in the range 3-6 mm in Standard Length.

DATE	July 1988	November 1988	Febr.-March 1989	March 1989	September 1989
AREA	Viareggio-Gaeta	Viareggio-Fiumicino	Viareggio-Gaeta	Sardinia	Viareggio-Fiumicino
NET TYPE	Bongo 20+60	Bongo 20	Bongo 20	Bongo 60	Bongo 60
SAMPLING STATIONS (n.)	35	31	37	34	35
MEAN FILTERED WATER (m^3)	88.5 ± 54.7	22.8 ± 7.8	16.0 ± 4.2	76.1 ± 19.9	87.4 ± 23.9
Sardina pilchardus (Walb.)	-	56 (69.9)	80 (26.9)	287 (51.7)	-
Sardinella aurita (Val.)	316 (43.4)	-	-	-	25 (1.9)
Engraulis encrasicolus L.	499 (29.0)	-	-	-	100(16.2)
Microstoma microstoma (Risso)	-	1	1	-	-
Myctophum punctatum Raf.	-	-	-	2	5
Myctophides n.e.i.	48	3	6	5	10
Paralepis c. coregonoides Risso	5	1*	-	-	-
Lestidiops pseudosphyraenoides (Risso)	1	-	-	-	-
Evermanella balbo (Risso)	1	-	-	-	-
Anguilliformes n.e.i.	-	-	-	-	6
Gaidropsarus sp.	-	-	3	-	-
Gadiculus argenteus Guich.	-	-	2	-	-
Micromesistius potassou (Risso)	-	-	1	-	-
Merluccius merluccius (L.)	-	-	-	-	17
Sphyraena sphyraena (L.)	5	-	-	-	1
Mugil spp.	-	1	-	-	1
Dicentrarchus sp.	-	-	1	-	-
Serranus cabrilla (L.)	8	-	-	-	1
Serranus hepatus (L.)	30	-	-	-	-
Anthias anthias (L.)	-	-	-	-	1
Callanthias ruber	-	-	-	-	1
Serranidae n.e.i.	-	-	-	-	2
Pagrus pagrus pagrus (L.)	7	-	-	-	1
Pagellus acarne (Risso)	-	2*	-	-	-
Pagellus bogaraveo (Brunn.)	-	-	1	106	10
Diplodus sp.	-	1	1	-	1
Sparus aurata L.	-	-	27	-	-
Sparidae n.e.i.	247	-	-	51	6
Mullus barbatus L.	3	-	-	-	-
Trachurus trachurus (L.)	14	-	6	-	4
Trachurus mediterraneus (Stdr.)	40	-	-	-	6
Carangidae n.e.i.	2	-	-	-	5
Capola macrophthalma (L.)	8	-	-	-	33
Coris julis (L.)	47	-	-	-	-
Labridae n.e.i.	1	2	7	7	-
Trachinus draco L.	1	-	-	-	7
Callionymus spp.	2	-	2	9	19
Gymnammodytes cicerellus (Raf.)	-	-	1	200	-
Blennidae n.e.i.	44	-	-	2	-
Gobiidae n.e.i.	553	5*	9	38	582
Parophidion vassali (Risso)	2	-	-	-	11
Sarda sarda (Bloch)	1	-	-	-	-
Thunnus alalunga (Bonn.)	2	-	-	-	-
Auxis rochei (Risso)	10	-	-	-	8
Thunnidae n.e.i.	2	-	-	-	1
Lepidopus caudatus (Euphr.)	3	-	-	-	44
Scorpaena porcus L.	9	-	-	-	9
Trigla lucerna L.	-	-	1	-	-
Triglidae n.e.i.	-	-	1	-	2
Citharus linguatula (L.)	-	1	-	-	-
Lepidorhombus whiffiagonis (Walb.)	-	-	-	2	-
Arnoglossus laterna (Walb.)	4	-	1	-	16
Arnoglossus kessleri (Schmidt)	4	-	-	-	-
Arnoglossus thori (Kyle)	-	-	-	-	2
Arnoglossus n.e.i.	3	-	-	-	6
Solea vulgaris (Quensel)	-	-	1	-	1
Microchirus variegatus (Don.)	-	-	-	8	-
Buglossidium luteum (Risso)	-	-	-	1	-
Soleidae n.e.i.	-	-	-	-	2
Symphurus ligulatus (Cocco)	-	-	-	-	1
UNIDENTIFIED	109	6	19	59	54
TOTAL	2031	73	146	718	985

* including specimens from WP3 net
( ): rate of collected eggs (all survey) belonging to the species (%)

TAB. 1 : LIST OF FISH LARVAE COLLECTED DURING 5 SURVEYS

Referring to table 1, it is worth noting that almost all of the larvae found in our samples are post-larvae and that the "unidentified" group mainly include larvae and postlarvae having high numbers of myomeres (30/45) and lacking special features such as spines,large fins,etc.,so they should mainly belong to taxonomic families such as *Blennidae*, *Myctophidae*, etc. The table shows clearly the high incidence both of eggs and larvae of Engraulis encrasicholus , Sardinella aurita and Sardina pilchardus; Gobiidae and *Sparidae* are families much represented too. In Sardinia we can also note the importance of the sardine, followed by Gymnammodites cicerellus and Pagellus bogaraveo.

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Investigation on the Abundance and Distribution of Pelagic Eggs and Larvae of Teleost Fishes from Izmir Bay

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Summary : The data on the abundance and distribution of pelagic eggs and larvae of teleost fishes collected in 1989 from İzmir Bay were evaluated and compared with a previous (1979) investigation.According to the 1979 data ; 42 different Teleost eggs and 34 larvae were present in the pelagic waters of İzmir Bay; but today,these numbers are regressed to 27 and 25 respectively.It is strongly probable that,this regression stems from gradualy increasing pollution in the bay waters.

Methods : Monthly samples were collected during daytime from 10 stations chosen according to their pollution in levels.The first 6 stations display gradually decreasing pollution levels from west to east,while the last 4 stations have no pollution.The samples were taken with a UNESCO WP - 2 Model plankton net having a mesh-size of 200 micrometers and a diameter of 0.57 meters.Vertical hauls were made.

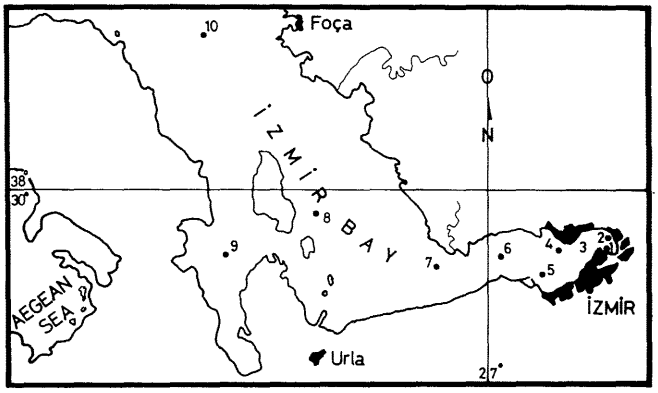

Fig. Location of Stations.

Results : The total material collected in 1989 is 17426 eggs and 304 larvae.62,3 % of the eggs, 32,1 % and 28.% of the larvae belong to Engraulis encrasicholus , Sardina pilchardus and Gobius niger,respectively.A qualitative reduction observed in the bay from west towards east shows that the breeding of the Teleost is under the influence of pollution.The richest stations both qualitatively and quantitatively are situated in the middle and western regions,while eastern stations are quite poor;i.e,while eggs of only one species (E.encrasicholus) were collected from stations no.1,egg samples from 18 different species were obtained from station no.7. The situation is same with respect to the larvae.In station no.1, postlarvae of only E.encrasicholus is found while beginning from 2nd and 3rd stations,it became possible to find G.niger larvae as well.

Compared with the 1979 period ;of that material,75,4 % of the total number of collected eggs (21473) belong to E.encrasicholus and 6,57 % to S.pilchardus.Number of eggs collected in the polluted zone (Station no:1-3) was 4756,belonging only to 5 different species.

In station no.1,no eggs except those of E.encrasicholus are found.Samples collected in 1-3 stations in 1989 belong to two species. The situation is similar in larvae ; two species in stations 1-3 in 1979 and seven species in the same area in 1989 were found.

Seasonally,spring and summer periods are richer both qualitatively and quantitatively than autumn and winter periods. While in September and October,a reneval is evident in ichthyoplankton correlated with temparature.

Summarily,the abundance and distribution of the ichthyoplankton in the bay is mainly influenced by pollution.The investigated two yearly periods ten years apart show that the increasing pollution in the İzmir Bay reduced the species number of Teleost fishes spawning in the region.

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