Distribution of the Zooplankton in Mediterranean Sea along the River Nile Delta Region

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During the period from 20 to 26 December, 1988 the R/V "Akademik M.A. Laverentyev" Soviet Cruise in the frame work of an agreement between the Pacific Oceanological Institute of the Far Eastern Branch of the USSR Academy of Sciences and the National Institute of Oceanography and Fisheries, Egypt this work was carried out to study the influence of natural processes on pollutant migration (oil hydrocarbons and heavy metals) in the River Nile Delta Region. Vertical zooplankton hauls were collected by means of the closing Juday net (mesh aperture 168 µm) from seven sectors perpendicular to the Egyptian Coast from Alexandria to Port Said. The biomass of the whole zooplankton haul was conducted on board the ship by Mrs. Tamara A. Zadonskay research worker of the Biology laboratory (microvolume Yashnov meter).

The zooplankton population shows a considerable variation in its density and constituents within different sectors (Fig. 1) as well as between the three different zones of inshore neritic zone (< 50 meters depth), offshore neritic zone (50-200 meters depth) and the oceanic zone (> 200 meters depth). The inshore neritic waters off Abu Kir (A) and Rossetta (B) were more productive areas with a relatively high density in both zooplankton population and the plankton biomass (wet weight, mg/m^3) yielded an average 1980 org/ m^3, 113 mg/ m^3 and 2943 org/m^3, 282 mg/m^3, respectively (Table 1). The number of zooplankton and their biomass greatly reduced away from inshore waters of A sector at depths 72, 256, 335 and 780 meters deep to 536, 420, 410 and 517 org/ m^3 respectively. At B sector they decreased to 463 org/m^3 at 235 m and 715 org/m^3 at 668 meters deep. The zooplankton biomass in the offshore and oceanic zones decreased to 27-70 mg/m^3 as the total zooplankton number does. At Manzalah (F) sector the density of zooplankton crop is high productive amounted 1207 org/m^3 in the inshore neritic region, where the zooplankton biomass is maximum weighing 333 mg/m^3. They decreased rapidly from the shore to 616 org/ m^3 and 102 mg/ m^3 as regards to increasing depth at the offshore neritic zone (74 meters deep) and the oceanic zone at depths 229, 1090 and 1300 meters deep amounted 486 org/ m^3 (82 mg/m^3), 383 org/ m^3 (40 mg/m^3) and 571 org/m^3 (58 mg/ m^3), respectively. Generally, zooplankton crop was higher in the inshore neritic region than offshore neritic region and the lowest in the oceanic region (Fig.1). Similarly, the zooplankton community was less productive at Borollus (C&D), Domiatta (E) and Port Said (G) sectors than in the previous sectors of A, B and F. The zooplankton population in plankton samples sustained a low values with an average ranging from 936 to 827 org/ m^3 and a total biomass weighing 115-94 mg/ m^3 in the inshore neritic zone. It decreased rapidly in the offshore neritic zone to 466 org/m^3 and 38 mg/ m^3 at Port Said sector and to the lowest amount 124 org/m^3 and 45 mg/ m^3 at Borollus section of 1740 meters depth.

The number of copepoda and copepod nauplii was dominating among the zooplankton population in the different stations and it is represented with an average ranging from 70 % to 92 % of the total zooplankton count. Nauplii larvae of cirriped were numerically high, yielded 420 org/m^3 at Abu Kir and 537 org/m^3 at Rossetta sectors in the inshore neritic zone. Whereas, Appendicularia, Chaetognatha, copepod nauplii and Gastropod larvae were common among the zooplankton population and a high number recorded was 50 org/ m^3 or less in the three different regions in the different sectors. The rest groups of zooplankton were less important and represented with a relatively very small number of organisms per cubic meter ranging from 2 to 33. These groups were Siphonophores, Leptomedusae; Ostracoda, Protozoa, Heteropoda, Pteropoda, Mysidaceae, Polychaeta larvae, Thaliacea , Decapod larvae, Lamellibranch veligers, Bryozoa larvae, Echinoderm larvae, fish eggs and fish larvae.

In this study the zooplankton crop through a total of 31 samples collected from 31 stations covering a wide area in the Mediteranean Sea (ca 4000 Km^2) appears that it reduced greatly in the number of organisms per cubic meter and in the biomass of the total zooplankton in comparison to the previous results by the earlier investigators (El-Maghraby and Halim,1965 and Hussein, 1977). The environmental conditions of this area subjected to great changes due to the construction of the High Dam and the complete cessation of the Nile flood.

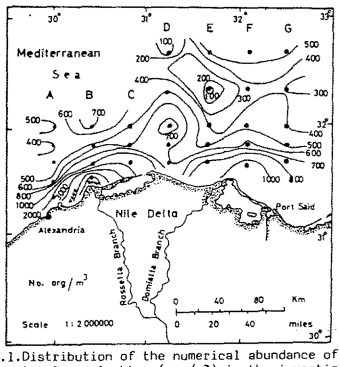

Fig.1.Distribution of the numerical abundance of the total zooplankton (org/m3),in the investigated stations (Mediterranean Sea,River Nile Delta region).

Sector	Depth m	Total zoopl. org/m^3	Biomass mg/m^3
Abu Kir	35	1980	113
A	72	536	103
	256	420	30
	335	410	31
	780	517	27
Rossetta	18	4825	525
B	28	1060	38
	235	463	42
	668	715	70
Borollus	16	1861	147
C	43	524	54
	124	504	70
D	18	589	141
	56	624	117
	96	752	75
	1740	124	45
Domiatta	29	827	89
E	66	455	81
	111	404	40
	1112	90	12
	1400	515	27
Manzalah	18	1207	333
F	74	616	102
	229	486	82
	1090	382	40
	1300	517	58
Port	35	742	94
Said	182	466	38
G	509	414	37
	930	307	104
	1260	520	49

Table 1.The biomass (mg/m3) and the total zooplankton crop (org/m3)in the study area.

REFERENCES

El-Maghraby, A.M. and Halim,Y. 1965. A quantitative and qualitative study of the plankton of Alexandria waters. Hydrobiologia, 25(1-2):221-238.

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