Waste influence on Zooplankton Distribution in Valencia Coastal Waters (Spain)

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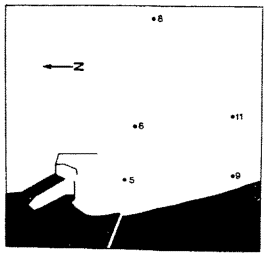


Fig.1.- Localization of sampling points.

The study zone corresponds to the mouth of a waste disposal channel from urban origin, mainly from the city of Valencia (Fig. 1). Twelve sets of samples were collected between May 1989 and January 1990 at six stations of different deep: 9(5m), 5(10m), 6 and 11(20m) and 8(40m). Salinity, dissolved inorganic nitrogen (nitrite, nitrate plus ammonium), dissolved phosphorous, total phosphorous, dissolved silica and chlorophyll *a* have been analized in each sample. The zooplankton studied, corresponds to vertical samples of water column, taken with a net 1m long and 53µm mesh.

prm. / st.	SAL. (1) x̄	sd	P.S.R. (2) x̄	sd	P.T. (2) x̄	sd	N.I.D. (2) x̄	sd	$Si\,O_4$ (2) x̄	sd	Cla (3) x̄	sd
5	36.72	1.13	0.27	0.22	1.72	0.66	11.99	22.25	2.02	1.78	11.12	13.42
6	37.14	0.44	0.22	0.28	1.35	0.76	8.47	9.84	1.62	1.48	4.24	3.69
8	37.53	0.30	0.09	0.05	0.74	0.23	3.14	1.79	0.94	0.52	0.86	0.91
9	36.92	0.66	0.31	0.28	1.81	1.17	9.77	6.93	1.85	1.54	8.47	11.61
11	37.27	0.43	0.18	0.09	1.20	0.55	7.08	6.22	1.38	0.89	3.58	5.45

Table 1.- Average values (x̄) and standard deviations (sd) of physicochemical parameters at the stations. (1)‰, (2)µ at-gl^{-1}, (3) mg/m^3.

In table 1 the physicochemical data appear in the form of mean values and standard deviation in each one of the stations considered. St. 5 is the one showing the highest influence of waste disposal as it presents a lesser degree of salinity and a greater standard deviation. The contents of nutrients an silica are in general greater, showing a higher productivity in terms of chlorophyll *a*. We must underscore the increase in phosphorous due to the influence of continental waters used for agriculture purposes. Seasonal variability of these parameters as well as those referring to zooplankton composition differs according to the zones due to continental outflow irregularities and littoral dynamic factors.

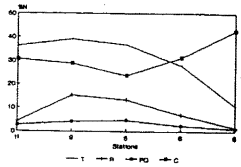
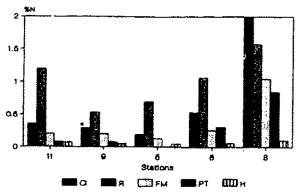


Fig.2 -Distribution of more abundant taxa in samples. T-Tintinnids, R-Rotifers, PQ-Polychaetes, C-Copepods.



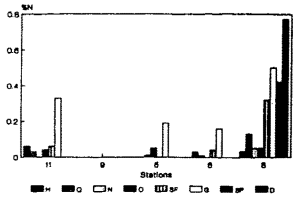


Fig. 3.- Percent abundance of different taxa. Positive gradient in open waters. 3A.- Cl-Cladocerans, R-Radiolarians, FM-Foraminipherans, PT-Pteropods, H-Hydromedusae. 3B.- H-Heliozoans, Q-Chaetognaths, N-Nemerteans, O-Ophiuroids, SF-Siphonophores, G-Gasteropods, SP-Salps, D-Doliolids.

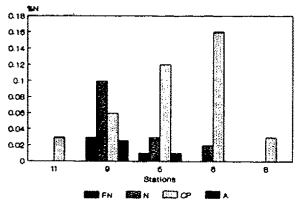


Fig.4.- Percent abundance of different taxa. Negative gradient in open waters. Fn-Phoronids, N-Nematods, Cp-Cirriped larvae, A-Ascidian larvae.

The zooplankton community is described by porcentual values of the commonest taxa. The most abundant taxa were copepods and tintinnids. The distribution of the zooplankton groupings presents a gradient that goes from 5 and 9 in the most eutrophic areas to 8 and 11 in the those of a lesser continental influence. Fourteen among the 24 taxa that were found reached their maximum values in these areas of less eutrophy (Fig. 2 and 3).

On the contrary 7 taxa present an opposite gradient showing minimum values and even disappearance in these areas (Fig. 2 and 4). Only in the case of the Appendicularians and bivalve and holoturian larval forms are particular preferences not found. The taxa belonging to more open waters correspond to heliozoans, siphonophors, salps, doliolids and chaetognaths. Nematods, phoronid and ascidian larvae might mean that their specific composition is better suited to the eutrophic conditions of the zone.

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