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The distribution of Polychaeta and Crustacea fauna found in Posidonia oceanica Meadows of Aegean Coast of Turkey

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RESUME: Cette étude présente la faune de Polychètes et Crustacés trouvée dans les herbiers de Posidonie de la côte Egéene de Turquie. Les résultats de ces recherches nous ont permis de déterminer 63 espèces de Polychètes et 35 de Crustacés.

SUMMARY: In this study the Polychaeta and Crustacea fauna found in the Posidonia oceanica meadows of the Aegean coast of Turkey have been investigated. As a result of this investigation 63 Polychaetes and 35 Crustacean species have been determined.

INTRODUCTION: P.oceanica shows wide distribution in the infralittoral zone of the Aegean coasts of Turkey. The distribution of this species in this region has been studied by GÜNER (1975). Flowering of P.oceanica in the İzmir Bay and its' cartography around Urla has been shown by PERGENT and PERGENT (1983,1985). The Polychaeta fauna of P.oceanica meadows of İzmir Bay has been studied by ERGEN (1986).

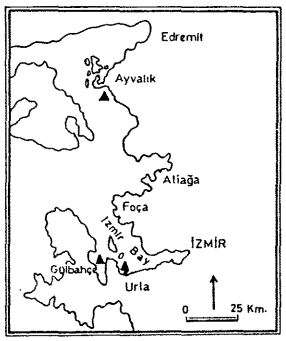

Fig.1: The sampling stations

In this research work the Polychaeta and Crustacea fauna found in P.oceanica meadows of the Aegean coasts have been investigated and a total of 98 species of which 63 are Polychaetes and 35 are Crustaceans have been determined.

METHODS: In order to identify the Polychaeta and Crustacea species found P.oceanica meadows three samplings have been made from three different stations (Fig.1). Sampling area used has been 400 cm^2. The diversity index has been calculated by using Margalef's method and relative dominancy of the species have been determined.

RESULTS AND DISCUSSION: From the three stations chosen which are Urla, Gülbahçe and Ayvalık along the Aegean coasts of Turkey, 1691 individuals belonging to the 63 Polychaeta species and 1186 individuals belonging to the 35 Crustacean species have been collected. When the relative dominancy of 98 species from three stations are compared, 9,5% of Erichthonius brasiliensis, 7,0% of Amphithoe ramondi from Crustacea; 4,2% of Nereis zonata and 3,4% of Platynereis dumerillii values have been obtained from Polychaeta are most abundant.

When the stations are compared the number of species, number of individuals and diversity index (Table I), it can be observerved that the station of Urla is the

Table I: The total number of species and individuals at the stations and diversity indices.

Stations	Number of sampling	Number of species	Number of individuals	Diversity index
Urla	3	82	1713	10.87
Gülbahçe	3	62	502	9.81
Ayvalık	3	60	662	9.08

richest in number of species, individuals and has a higher diversity index. The reason of the high values at the station of Urla is probably because it is situated in the region affected by the polluted waters of the Izmir Bay and the presence of species which show adaptation both to clean and slightly polluted waters.

REFERENCES

ERGEN,Z.,1986 : The polychaeta fauna of Posidonia oceanica Meadows of İzmir Bay (Turkey). Rapp.Comm.Int.Mer.Medit. 30,2,19.

GÜNER,H.,1975 : Sea grasses found in muddy and sandy bottoms of İzmir Bay and Algae associated with them. TBTAK Kong.,5,19-24.

PERGENT,G. and PERGENT,C.,1983 : Florasion de P.oceanica (Linnaeus) Delile dans le golfe d'izmir (Turquie). Ege Univ.Fac.Sci.7(8):19-24.

PERGENT,G. and PERGENT,C.,1985 : Cartographie de l'herbier à Posidonia oceanica (L) de la Baie d'Urla-İskele (Turquie). Rapp.Comm.Int.Mer Medit. 29,5.

B-III5

Comparison between effects of marine diesel fuel and dispersant gold crew on Palaemon elegans and Mugil capito

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RESUME: Les tests de toxicité comparatifs ont amené à observer les effets du MDF (fuel diesel marin) et du dispersant Gold crew sur le Mugil capito et le Palaemon elegans. Les niveaux d'accumulation ont été déterminés à la fois quantitativement et qualitativement par le spectrofluorométré (Model 430 Turner) et la chromatographie en phase gazeuse (Model 428 Packard).

MATERIALS AND METHODS: The organisms P.elegans and M.capito have been chosen as test animals and collected from the Urla shore (İzmir, TURKEY). The laboratory experiments have been conducted in three sets of dispersant, dispersant + MDF using the semi-static system. The fish larvae were 4 cm in length and weighed 0.62 g on the average for 180 animals. The average length for P.elegans was 5.1 cm and had an average weight of 0.82 g for 180 test animals used in 1986 and 1987. The same tests were repeated three times with a total number of 30 fish larvae for each concentration in 1986 and three times with a total of 30 fish larvae for each concentration in 1987 late spring. A total number of 30 grass shrimp were used for each concentration amounting to 270 test animals in 1986 and 1987. The test was carried with three concentrations of MDF, MDF + dispersant and dispersant simultaneously for the definitive test after the effective range was found and repeated three times each year with a total 270 animals for determination of LC_{50} values. The temperature was kept at 18 $\pm$ 1°C, salinity of water 37.2 ‰ and pH 8. The tests were conducted in 4 liter solutions. Later the samples exposed to a concentration of 0.005 % which has been determined as the 72-hour LC_{50} value for MDF and MDF + Gold Crew were preserved. Only those exposed to 0.005% marine diesel fuel were extracted with methanol, benzol (1 : 1) with soxlets. 10 grams of P.elegans and M.capito larvae were preserved. The LC_{50} values for the toxicants were determined using the "Log concentration versus % of survival" method for both species.Later the samples exposed to a concentarion of 0.005 % were presved and accumulation was measured with the spectrofluorometer (TURNER,MODEL430) and peakes observed using the gas chomatography (PACKARD,MODEL428).

RESULTS: The 72-hour LC_{50} values for MDF and MDF+Gold Crew were determined as 0.005 % for M.capito and 0.0064 % and 0.007 % for P.elegans respectively. The confidence limits for M.capito were between (0.0047-0.0054 %) and (0.0066-0.0074 %) for P.elegans for 1987,1988. Thus test animals preserved for 0.005 % MDF which weighed 10 grams were measured for Polyaromatic hydrocarbons (PAH). It was observed that there was 0.38 ug/l in 10 g of P.elegans samples and 0.19 ug/l in 10 grams of M.capito. In P.elegans 3.9 % of C_{16}-C_{22}, 60.9 % of C_{24}-C_{30}, 11 % of C_{32}-C_{34}, and 24.2 % of the others have been determined. For M.capito 9.9 % of C_{16}-C_{22}, 55 % of C_{24}-C_{30}, and 34.8 % of others.

DISCUSSION : In both species it can be seen that accumulation is less when the number of C atoms are less (C_{16}-C_{22}) and most where the range is between C_{24}-C_{30}. P.elegans has a lipophilic cuticula for diffusion and thus a different way of uptake than M.capito which takes in the solution by its gills. In experiments conducted with 8 cm M.capito larvae it was seen that the 4 cm larvae and 8 cm larvae had the same 48 hour LC_{50} (0.0056%) which shows that M.capito are not dependable as monitor animals (1). The 4 cm larvae were not older than a few months whereas the 8 cm (7-14 cm) ones were much older. Salihoğlu (2) has also stated that with Hg no correlation was found between length, age and accumulation. The level of PAH in P.elegans was found to be higher as can be expected from the high amount of lipids it contains and it's being a mobile benthic form. Fish also accumulates polyaromatic hydro carbons most during spring when it is richer in lipids but doesn't take as much PAH through diffusion like the grass shrimp.

REFERENCES:

1- ÖZELSEL,S., Canlı Kaynaklar Üzerine Petrol Bileşiklerinin Etkileri. VIII. Ulusal Biyoloji Kongresi, Hidrobiyoloji ve Temel, Endüstriyel Mikrobiyoloji Tebliğleri Cilt 2, 1987 s.470-482.

2- SALIHOĞLU,I. and S.YEMENCIOĞLU., Chemical and Biological Distribution of Mercury in the North Levantine Meeting on the Biochemical Cycle of Mercury in the Mediterranean. FAO Fisheries Report No.325, 1986 supp. 140-149.