The Dynamics of the Benthic Molluscs in Inner Bay of the Izmir

Mustafa Palaz
The Ministry of Agriculture and Rural Affairs,
Profency Directory of Agriculture of the Canakkale, 17100 Canakkale/Turkey

Abstract: In the present study, the dynamics of the benthic molluscs in inner bay of the Izmir were studied in monthly periods from March to December. Five station were selected and monthly benthic sampling was carried out by Vanveen grap. A total of 1196 individuals belonging to 18 species were identified from all stations. The results of this research, demonstrated that both numbers of species and individuals decreased at selected stations on the inner part of the Bay where the water has been affected by pollution when compared with the result of previous studies. The number of species and of individuals increased at the outer parts of the Bay, where the waters has been affected by the waves.

Key words: Dynamics, benthic, molluscs

INTRODUCTION

This investigation was carried out in inner bay of Izmir, which is about 60 km in length. Izmir Bay has been divided into two parts, an inner and an outer Gulf. The inner Gulf is at the east of the Yenikale inlet and it is connected by a narrow channel to the outer gulf. The inner Gulf is more shaded than the outer gulf. According to benthic studies done in this region, a black mud which includes hydrogen sulphure has been observed to cover a large part of the bottom of the Gulf[1]. When the inner and the outer Gulf are compared, the effects of such environmental factors as industry, settlement and sea transport etc are seen to be much greater on the inner than the outer Gulf. pollution as a result of human activity is much less in the waters of the outer Gulf. To date Izmir Bay has been subjected to a number of investigations[1-6].

This study was carried out to investigate the effects of pollution on the dynamics of the *Mollusca phylum*.

MATERIALS AND METHODS

The present study was been studied between March and December with the help of research ship; RV K. *Piri Reis* (Fig.1). Sampling was not possible in July. The Benthic sampling was carried out by Vanveen grap and then examined according to standard methods[1]. Furthermore, systematic groups of the Benthic samples which were brought to the laboratory were identified and classified according to the abundance and dominance of individuals and species at the stations[1,7]. As a result of the quantitative assessment data were prepared for each station.
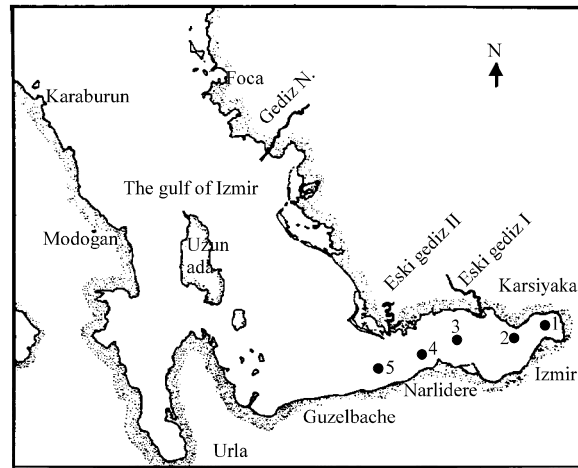

Fig. 1: The map of research area

RESULTS AND DISCUSSION

As a result of this study, a total of 1196 individuals belonging to 18 species were identified from the stations. When all the stations were examined in respect to the species and individuals numbers, they have been observed to have an abundance of molluscs in spring, though less in the summer months. When the stations were examined in respect of quality and quantity, these have changed depending on the distance from pollution source.

When present study is compared with the very detailed study of Kocatas[1], of the benthic works in Izmir Bay, there are quite close similarities in respect to the species and individuals numbers.

Corresponding Author: Mustafa Palaz, The Ministry of Agriculture and Rural Affairs,
Profency Directory of Agriculture of the Canakkale, 17100 Canakkale/Turkey

According to these results, when the dynamic of the *Corbula gibba,* the indicator of pollution[1], was taken under consideration, the pollution in the Izmir Internal Gulf can be said to have been converted into a constant pollution in during years.

One hundred eighty six individuals belonging to 2 species were identified in the samples involved in the process research period at this station which is at the inner part of the Izmir. According to the quantitative assessment, *Corbula gibba* has been observed to be in the first rank with an average of 20.22 of abundance and 98.37 of dominance (Table 1).

Three hundred ten individuals belonging to 2 species were identified in the samples during the research period at this station which is between Karşiyaka and Konak. According to the quantitative assessment, *Corbula gibba* was observed to be in the

first rank with an average of 27.66 of abundance and 80.3 of dominance (Table 2).

Three hundred twenty three individuals belonging to 14 species were identified in the samples during the research period at this station which is toward the Cakalburnu crawl. According to the quantitative assessment, *Corbula gibba* has been observed to be in the first rank with an average of 32.00 of abundance and 89.16 of dominance (Table 3).

Three hundred thirty six individuals belonging to 12 species were identified in the samples during the research period at this station which is in the neighborhood of Yenikale lantern. According to the quantitative assessment, *Corbula gibba* has been observed to be in the first rank with an average of 33.40 of abundance and 89.50 of dominance (Table 4).

Table 1: Distribution, abundance and dominance of the individuals according to months and species of mollusca

Station 1	March	Apr.	May	June	Aug.	Sep.	Oct.	Nov	Dec.	Presence	Abundance	Dominance
Pharus legumen	-	1	2	-	-	-	-	-	-	2	0.33	1.62
Corbula gibba	55	82	35	-	8	-	-	1	1	6	20.22	98.37

Table 2: Distribution, abundance and dominance of the individuals according to months and species of mollusca

Station 2	March	Apr.	May	June	Aug	Sep.	Oct.	Nov.	Dec.	Presence	Abundance	Dominance
Turitella ommunis	-	17	-	-	-	-	-	-	-	1	1.88	5.48
Dentallium sp.	-	2	-	-	1	-	-	-	-	2	0.33	0.96
Nuculana firagilis	-	1	-	-	-	-	-	-	-	1	0.11	0.32
Scapharca amygdalum	-	-	28	-	-	-	-	-	-	1	3.11	9.03
Anomia ephippium	-	-	12	-	-	-	-	-	-	1	1.33	3.87
Corbula gibba	131	50	12	11	17	-	14	14	-	7	27.66	80.30

Table 3: Distribution, abundance and dominance of the individuals according to months and species of mollusca

Station 3	March	Apr.	May	June	Aug.	Sep.	Oct.	Nov.	Dec.	Presence	Abundance	Dominance
Calyptera sp.	-	-	2	-	-	-	-	-	-	1	0.22	0.61
Dentallium sp.	2	1	-	-	-	-	-	-	-	2	0.33	0.92
Nucula sp.	1	-	-	-	-	-	-	-	-	1	0.11	0.30
Nuculana firagilis	1	-	-	-	-	-	-	-	-	1	0.11	0.30
Glycmeris sp.	-	-	-	-	-	-	2	-	2	2	0.44	1.23
Scapharca amygdalum	-	9	-	-	-	-	-	-	-	1	1.00	2.78
Mytilus galloprovincialis	-	2	-	-	-	-	-	-	-	1	0.22	0.61
Ostrea edulis	1	-	-	-	-	-	-	-	-	1	0.11	0.30
Dosina lupina	2	1	-	-	-	-	-	-	-	2	0.33	0.92
Abra alba	-	-	3	-	-	-	-	-	-	1	0.11	0.30
Abra pellucide	1	-	-	-	-	-	-	-	-	1	0.33	0.92
Tellina sp.	1	-	-	-	-	-	-	-	-	1	0.11	0.30
Tellina pulchella	4	-	-	-	-	-	-	-	-	1	0.44	1.23
Corbula gibba	279	7	-	-	-	-	-	2	-	3	32.00	89.16

Table 4: Distribution, abundance and dominance of the individuals according to months and species of mollusca

Station 4	March	Apr.	May	June	Aug.	Sep.	Oct.	Nov.	Dec.	Presence	Abundance	Dominance
Turitella communis	-	-	-	2	-	-	-	-	-	1	0.22	0.69
Dentallium sp.	-	-	-	1	-	-	-	-	-	1	0.11	0.29
Nucula sp.	-	-	1	-	-	-	-	-	1	2	0.22	0.59
Nuculana firagilis	-	-	-	-	-	-	-	-	2	1	0.22	0.59
Glycmeris sp.	-	-	-	-	-	-	-	-	-	1	0.22	0.59
Scapharca amygdalum	-	2	-	-	-	2	--	-	-	2	0.44	1.19
Ostrea edulis	-	-	-	-	-	-	-	-	1	1	0.11	0.29
Dosina lupina	-	-	-	-	-	-	-	-	1	1	0.11	0.29
Tellina sp.	-	1	-	1	-	2	-	-	-	2	0.44	1.19
Tellina pulchella	-	2	-	-	-	5	2	1	4	5	1.55	4.16
Pharus legumen	-	2	-	-	-	-	-	-	-	1	0.22	0.59
Corbula gibba	-	150	75	57	-	6	6	7	-	6	33.44	89.50

Table 5: Distribution, abundance and dominance of the individuals according to months and species of mollusca

Station 5	March	Apr.	May	June	Aug.	Sep.	Oct.	Nov.	Dec.	Presence	Abundance	Dominance
Nucula sp.	-	-	-	-	-	1	-	-	-	1	0.11	2.43
Nuculana firagilis	-	-	-	-	-	2	-	-	-	1	0.22	4.87
Glcmeris sp.	-	-	-	-	-	-	-	1	-	1	0.11	2.43
Ostrea edulis	-	-	-	-	-	1	-	-	1	2	0.22	4.87
Dosina lupina	1	-	-	-	-	-	-	-	-	1	0.11	2.43
Circomphalus casinus	-	-	-	-	-	2	-	-	-	1	0.22	4.87
Tellina sp.	1	8	9	2	-	1	-	-	1	6	2.44	53.65
Tellina pellucida	-	-	-	-	-	3	-	-	-	1	0.33	7.31
Corbula gibba	1	-	1	-	-	4	-	-	1	4	0.80	17.07

Forty one individuals belonging to 9 species were identified in the samples during the research period at this station which is in the neighborhood of Pelikan lantern. Different from the other station in quantitative assessment, *Tellina* sp. has been observed to be in the first rank with an average of 2.44 of abundance and 53.65 of dominance (Table 5).

REFERENCES

1. Kocatas, A., 1981. Evolution Cyclique du Benthos dans les Zones de Pollution du Golfe d'Izmir (Turquie). V. J. Etud. Pollutions. CISEM, Cagliari.
2. Demir, M., 1977. On the presence of *Arca* (*Scapharca*) *amygdalum* Philipp., 1847 (*Mollusca bivalvia* (in the harbour of Izmir, Turkey Ist. Univ. Fen Fak. Mec. Seri, B: 197-202.
3. Güner, H., 1981. Les espècies d' algues recueillies dans les zones polluées de la baie d'Izmir. CISEM.
4. Kocatas, A., 1978. Distribution et evolution des peuplements benthiques du Gole d'Izmir (partie des intérieure) soumis a'des multiples pollutions. IV J. Etud. Pollutions, CISEM, Antalya, pp: 417-421.
5. Kocatas, A. and R., Geldiay, 1980. effects of domestic pollution in Izmir Bay (Turkey). Helgolander Meeresunter, 33: 393-400.
6. Kocatas, A., Z. Ergen and T. Katagan, 1985. Changes in the Benthic Communities Due to Various Pollutants in Izmir Bay (Turkey). Meeting on the Effects of Pollution on Marine Ecosystems. Blanes, Spain-1985, FAO Fish Rep./ FAO Piches, 1352 Supil, pp: 12-122.
7. Pielou, E. C., 1977. Mathematical Ecology. John Wiley and Sons, New York, pp: 385.