

Θαλασσογραφικά- Thalassographica	(1983)	6	127-139
----------------------------------	--------	---	---------

PRELIMINARY STUDY OF SOFT SUBSTRATE
MACROZOOBENTHOS AND MARINE FLORA IN THE BAY
OF GERA (LESVOS ISLAND, GREECE).

By

A. DIAPOULIS and C. BOGDANOS

Institute of Oceanographic and Fisheries Research
Agios Kosmas-Elliniko, Athens, Greece.

1. INTRODUCTION

An ecological study of Gera bay was initiated during the summer of 1983, in order to assess the possible pollution effects deriving from the industrial effluents from a tannery.

So far only a few works by Bellan (1961, 1964), on the western coast of the island, Kisseleva (1961, 1963) and recently Koukouras and Sinis (1981) on the southern sea area of the island, have been concerned with the zoobenthos communities of the Mytilini area. The marine flora has been investigated by Candargy (1897-1898), Diannelidis (1950) and Haritonidis and Tsekos (1974) at the bay of Kalloni.

In the present work an attempt was made to assess the status of the benthic communities in the bay and to use these data in order to detect those effects on the communities, which could be attributed to pollution. It should be pointed out that no previous data of the benthic communities exist from this area.

2. MATERIALS AND METHODS

The zoobenthos sampling was carried out at six stations arranged on a transect line stretching from the outer reaches of the entrance to the village Dipi at the inner part of the bay and at depths ranging from 20 to 65m. (Fig. 1). Two samples were taken at each station by means of a 0.18m² Van Veen grab and the average abundance was estimated and expressed as individuals per 0.18m². Samples of bottom water were also taken by means of a Van Dorn bottle for the estimation of dissolved oxygen by the Winkler method. The sediment samples were washed through a 1mm sieve and the material in the sieve

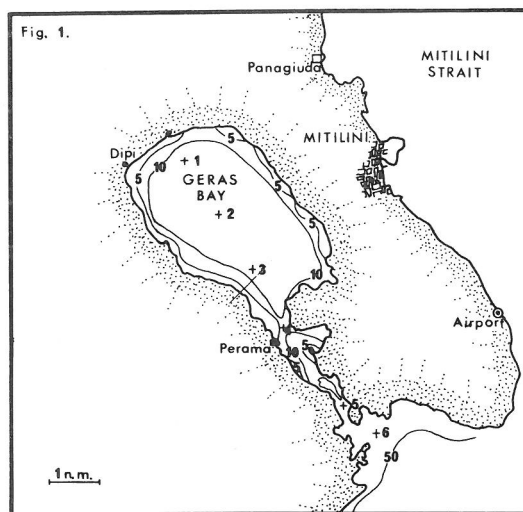


Fig. 1. Map of Geras bay showing the zoobenthos sampling stations

was transferred into plastic pots and preserved in a mixture of 5% formalin solution and Rose Bengal dye. On their return to the laboratory the bottom samples were washed with fresh water to reduce the formalin smell and a preliminary separation of lightweight animals by flotation, from the heavier ones i.e. bivalves, gastropods etc was carried out.

Sampling of the marine flora in the bay was also carried out. Five stations were sampled in depths ranging from; -30cm to -1m on hard substrate, where the highest variety of algae was found. The samples were placed in plastic pots with a 4% formalin solution and subsequently identified to species level.

The most important taxonomic works used for the determination of zoo and phytobenthos were Fauvel (1923, 1927), Tebble (1976), Day (1967), Jones (1976), Riedl (1970), Tortonesi (1965), Marinov (1977), Abbot and Hollenberg (1976), Hamel (1931-1939), Kylin (1956), Taylor (1937), Gayral (1966), Coppejans (1977), Ercegovic (1957).

3. RESULTS AND DISCUSSION

a. Macrozoobenthos

A total of 189 species was found and are given in phylogenetic order in Table I.

The fauna at station 2, 3 and 5 (Fig. 1) showed a similarity with a dominance of the gastropod *Turitella triplicata*. Station 4 located by the tannery was the least deep station (20m). It had a high species diversity and abundance represented by 109 species with 656 individuals per 0.18m². The fauna at station 1 was represented by 45 species with 114 indiv./0.18m². There were

no dominant species but the most common species was the bivalve *Gafrarium minimum* with 13 indiv./0.18m². The presence of two large individuals of the sedentary polychaete *Chaetopterus variopedatus*, contributed at least 80% to the total biomass at this station. At station 2 and 3, 30 and 43 species were identified with abundances of 331 and 485 indiv./0.18m² respectively. Station 5 had 70 species with 465 indiv. 0.18m². The last three stations (2, 3, 5) had high densities of the gastropods *Turitella triplicata* and *T. communis*. Station 2 and 3 had almost the same number of species, while station 5 had nearly twice as many species as any other station. Finally station 6 lying outside the bay at 65m of water, included 94 species with an abundance of 403 indiv./0.18m².

The high species diversity and abundance at station 4 was probably due to strong bottom currents. This could be deduced from the coarse sediments and the presence at this station of the short branched form of the coral *Cladocora caespitosa*. This form is usually found on bottoms swept by strong currents (Fredj, personal communication). Currents also ensure suspension of food particles and are responsible for elevated dissolved oxygen values which in the bottom layers of station 4 was 4.3ml/lit. Also the coarser sediment grains with larger interstitial spaces create a diversified environment and allow oxygenation of the deeper strata inhabited by endofaunal species (Sanders 1958)

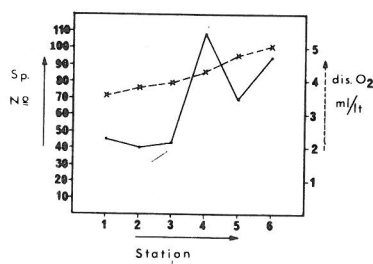


Fig. 2. Species number and dissolved O₂ values at each station

In general there is a fluctuating but overall increasing species richness from the inner bay (station 1) to the outside (station 6), while at the same time dissolved oxygen values show the same gradient starting from 3.6ml/lit at station 1 to 5.03ml/lit at station 6 (Fig.2).

b. Phytobenthos

A total of 70 species (Table II) was obtained from five (G₁ - G₅) phytobenthos station (Fig. 3). The flora at station G₁ located at the North-West side of the bay, comprised 8 Phaeophyceae, 6 Chlorophyceae, 10 Rhodophyceae and 1 Spermatophyte (*Cymodocea nodosa*). Station G₂ southwards of G₁ had 4 Phaeophyceae, 4 Chlorophyceae and 13 Rhodophyceae. Station G₃ located southwards of G₂ and near the tannery (Perama village) included, 5 Phaeophyceae, 2 Chlorophyceae, 13 Rhodophyceae and 1 Spermatophyte (*Cymodocea nodosa*). At G₅ located at

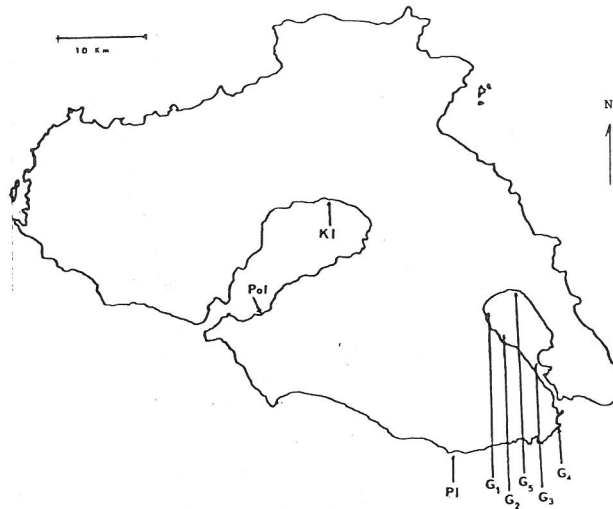


Fig. 3. Map of Lesbos island showing the phytobenthos sampling stations

TABLE 1.
Distribution of macrozoobenthos in Geras bay.

	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆
PORIFERA						
<i>Casospongia scalaris</i> , Schmidt	+					
<i>Suberites carnosus</i> , (Johnston)				+		
ANTHOZOA						
<i>Edwardsia</i> sp.				2		
<i>Cladocora caespitosa</i> , (L)				+		
POLYCHAETA						
Errantia						
<i>Arabella iricolor</i> , (Montagu)						1
<i>Autolytus aurantiacus</i> , (Claparede)			1	3		
<i>Eteone siphonodonta</i> , Delle Chiaje					1	1
<i>Eunice vittata</i> , (Delle Chiaje)	2	1	2	16		2
<i>Exogone hebes</i> , Webster et Benedict				14		4
<i>Glycera convoluta</i> , Keferstein			2	2	4	13
<i>Goniada maculata</i> , Oersted		1				1
<i>Goniada norvegica</i> , Oersted				1		
<i>Harmothoe antilopis</i> , Mac Intosh				7	1	
<i>Harmothoe lunulata</i> , (Delle Chiaje)	1			10		1
<i>Hermione hystrix</i> , Savigny						3
<i>Hyalinoecia brementi</i> , Fauvel					8	5
<i>Kefersteinia cirrata</i> , (Keferstein)				7		
<i>Lumbriconereis coccinea</i> , Renieri				7		
<i>Lumbriconereis gracilis</i> , (Ehlers)	2	1		17	12	12
<i>Lumbriconereis impatiens</i> , (Claparede)		3	2		2	
<i>Lumbriconereis latreilli</i> , Audouin et M. Edwards	3	3	9	108	22	10

	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆
<i>Lumbriconereis paradoxa</i> , Saint-Joseph				1		
<i>Lycidice ninetta</i> , Audonin et M. Edwards				4		
<i>Marphysa bellii</i> , (Audonin et M. Edwards)				4	1	2
<i>Marphysa sanguinea</i> , (Montagu)				2		
<i>Mystides borealis</i> , Theel						1
<i>Mystides limbata</i> , Saint-Joseph						2
<i>Nematonereis unicornis</i> , Schmarda				7		11
<i>Nephtys hystericis</i> , Mac Intosh		1	1	19		5
<i>Nephtys sphaerocirrata</i> , Wesenberg-Lund				7		2
<i>Nereis caudata</i> , (Delle Chiaje)	4	1		16		1
<i>Oligognathus bonelliae</i> , Spengel		2	1	5	1	3
<i>Ophiodromus flexuosus</i> , Delle Chiaje				3		
<i>Paralacydonia paradoxa</i> , Fauvel						12
<i>Phyllodoce lineata</i> , (Claparede)			1			1
<i>Phyllodoce mucosa</i> , Oersted				3		
<i>Pilargis verrucosa</i> , Saint Joseph					1	
<i>Podarke pallida</i> , Claparede				9		
<i>Pterosyllis formosa</i> , Claparede				1		
<i>Sigambra parva</i> , (Day)		1		6		
<i>Sphaerosyllis bulbosa</i> , Southern				10		4
<i>Sphaerosyllis ovigera</i> , Langerhans				4		
<i>Staurocephalus rudolphii</i> , Delle Chiaje				5		
<i>Sthenelais boa</i> , (Johnston)				5		1
<i>Syllis cornuta</i> , (Rathke)	2		1	6		3
<i>Syllis variegata</i> , (Grube)				3		
Sedentaria						
<i>Amaea trilobata</i> , (Sars)				7	2	1
<i>Ampharete grubei</i> , Malmgren					3	4
<i>Aonides oxycephala</i> , (Sars)				25		
<i>Aricidea fauveli</i> , Hartman				1	2	1
<i>Aricidea fragilis mediterranea</i> , Laubier	2	5	6	2	3	1
<i>Aricidea jefreysi</i> , (Mac Intosh)				1		3
<i>Aricidea suecica simplex</i> , Day					1	2
<i>Asyhis biceps</i> , (Sars)		1			6	3
<i>Audouinia tentaculata</i> , (Montagu)		1			3	
<i>Chaetopterus variopedatus</i> , (Renier)	2					
<i>Chaetozone setosa</i> , Malmgren				1	1	2
<i>Chone collaris</i> , Langerhans				1		3
<i>Chone duneri</i> , Malmgren				10	11	23
<i>Cirratulus cirratus</i> , (Müller)	1			1	1	2
<i>Cirrophorus branchiatus</i> , Ehlers			1	7	3	1
<i>Clymene collaris</i> , (Claparede)				5	2	
<i>Clymene lophoseta</i> , Orlandi	1					
<i>Clymene lumbricoides</i> , Quatrefages				4		
<i>Clymene oerstedii</i> , Claparede					6	
<i>Clymene Santanderensis</i> , Rioja	1			2		
<i>Cossura coasta</i> , Kitamori						5

	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆
<i>Dialychone acustica</i> , Claparede				1		3
<i>Euchone rosea</i> , Langerhans					2	2
<i>Heterocirrus alatus</i> , (Southern)				1		3
<i>Jasmineira caudata</i> , Langerhans						4
<i>Laonice cirrata</i> , (Sars)						2
<i>Magelona papillicornis</i> , Müller	2	1	6	10	4	21
<i>Maldane Sarsi</i> , Malmgren	4	7	4		2	
<i>Manayunkia aestuarina</i> , (Bourne)					2	
<i>Melinna palmata</i> , Grube	2	9	2			
<i>Myriochele heeri</i> , Malmgren				5	4	1
<i>Nicomache lumbricalis</i> , (Fabricius)		2		1	1	1
<i>Notomastus latericeus</i> , Sars	2		1	23	10	31
<i>Owenia fusiformis</i> , Delle Chiaje				2		
<i>Paraonis lyra</i> , Southern				26		4
<i>Pectinaria auricoma</i> , (Müller)				1		
<i>Pectinaria Koreni</i> , (Malmgren)		1	4	1		1
<i>Petaloproctus terricola</i> , Quatrefages	1					
<i>Phyllochaetopterus solitarius</i> , Rioja		1				
<i>Pista cristata</i> , (Müller)		1		2		1
<i>Polydora antennata</i> , Claparede					1	
<i>Polydora caeca</i> , (Oersted)					2	
<i>Pomatoceros triqueter</i> , L.					11	
<i>Prionospio ehlersi</i> , Fauvel				8	12	6
<i>Prionospio pinatta</i> , Ehlers					1	1
<i>Sabella pavonina</i> , Savigny	4					1
<i>Scalibregma inflatum</i> , Rathke						1
<i>Scolecopsis fuliginosa</i> , (Claparede)						2
<i>Serpula vermicularis</i> , L.	2					
<i>Sosane sulcata</i> , Malmgren						7
<i>Spiophanes bombyx</i> , (Claparede)					1	
<i>Sternaspis scutata</i> , (Renier)		2	1			
<i>Stylarioides plumosa</i> , (O.F. Müller)		2		3	1	1
<i>Tauberia gracilis</i> , (Tauber)		1		1	53	24
<i>Terebelides ströemi</i> , Sars	3	2	1	6		8
<i>Tharyx dorsobranchialis</i> , (Kirkegaard)	1	1		4	21	24
<i>Tharyx marioni</i> , (Saint-Joseph)				2		2
<i>Trichobranchus glacialis</i> , Malmgren				1		

SIPUNCULIDA

<i>Aspidosiphon muelleri</i> , (Blainville)					33	1
<i>Golfingia vulgaris</i> , (De Blainville)					1	
<i>Onchenezoma steenstrupi</i> , Koren et Danielssen				6	33	13
<i>Phascolion strombi</i> , (Montagu)			3		1	
<i>Phascolosoma granulatum</i> , (Leuckart)					1	

BRYOZOA

<i>Aetea truncata</i> , Landsbor					+	
<i>Cellepora pumicosa</i> , Hincks					+	
<i>Cribrilina radiata</i> , (Moll)				+		
<i>Schizoporella unicornis</i> , (Johnston)				+		
<i>Valkeria uva</i> , (L.)		+				

	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆
MOLUSCA						
Polyplacophora						
<i>Callochiton laevis</i> , (Montagu)				1		1
Gastropoda						
<i>Bulla</i> sp.			2			
<i>Calyptraea chinensis</i> , L				1		
<i>Crepidula</i> sp.				1		
<i>Natica alderi</i> (Forbes)	1		3			
<i>Odostomia conoidea</i> , (Brocchi)					1	
<i>Scaphander lignarius</i> , (L)						1
<i>Turitella communis</i> , Risso		60	20		13	
<i>Turitella triplicata</i> , (Brocchi)	2	128	307		118	
Scaphopoda						
<i>Dentalium agile</i> , M. Sars	1	1	1			
<i>Dentalium dentale</i> , L.	1		2			
Bivalvia						
<i>Abra alba</i> , (Wood)	1		2	9		
<i>Cardium echinatum</i> , L.				2		
<i>Corbula gibba</i> , (Olivi)	11	52	29	2	1	2
<i>Cultellus pellucidus</i> , Philippi	1	2		1	5	4
<i>Dosinia exoleta</i> , (L)			7	1		
<i>Gafraria minimum</i> , (Montagu)	13	3	4	8		1
<i>Gastrochaena dubia</i> , (Pennant)				1		
<i>Leda fragilis</i> , (Chemnitz)					1	
<i>Leda pella</i> , (L)	1					
<i>Lima inflata</i> , (Chemnitz)				1		1
<i>Loripes lacteus</i> , (L)				5	1	5
<i>Macoma tenuis</i> , (Da Costa)		1				6
<i>Mysella bidentata</i> , (Montagu)	5		7	2		1
<i>Nucula nucleus</i> , (L)				1		
<i>Nucula sulcata</i> , Bronn	2		3			
<i>Nucula turgida</i> , Leckenby et Marshall	3		6			
<i>Pandora inaequalis</i> (L)	1		1			1
<i>Parvicardium scabrum</i> , (Philippi)				1	1	
<i>Saxicava arctica</i> , (L)	9		1	1		1
<i>Tellina pulchella</i> , Lamarck		2	7	2	1	
<i>Tellina serrata</i> , Brocchi			2			
<i>Thyasira flexuosa</i> , (Montagu)	6	8	23		7	
<i>Thracia papyracea</i> , (Poli)				2	1	
<i>Venus fasciata</i> , Da Costa				2		
<i>Venus gallina</i> , L.		2				

	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆
PHORONIDEA						
<i>Phoronis muelleri</i> , Selys Longchamp	1	6	1		1	
CRUSTACEA						
Cumacea						
<i>Bodotria scorpioides</i> , (Montagu)						2
<i>Diastylis rugosa</i> , Sars					1	2
<i>Iphinoe serrata</i> , Norman			3	3		
Mysidacea						
1 Undetermined sp.				6	2	
Isopoda						
<i>Apseudes latreilli</i> , (Milne Edwards)				3	3	7
<i>Leptochelia savignyi</i> , (Kröyer)						3
<i>Tanais cavolinii</i> , Milne Edwards				5		1
Isopoda						
<i>Anthura gracilis</i> , (Montagu)			1	5	1	
<i>Gnathia phallonaopsis</i> , Monod				1		
<i>Jaera</i> sp.				3		
Amphipoda						
<i>Ampelisca diadema</i> , (Costa)	2	8	2	11	6	2
<i>Corophium volutator</i> , (Pall)	1	1		3	2	2
<i>Gammarus olivii</i> , M. Edwards						4
<i>Harpinia</i> sp.				3	1	
<i>Hippomedon oculatus</i> , Chevreux et Fage						3
<i>Leucothoe spinicarpa</i> , (Abildg.)				1	3	
<i>Maera</i> sp.				5		
<i>Monoculodes gibbosus</i> , Chevreux				2		4
<i>Nototropis guttatus</i> , (A. Costa)						1
<i>Pthisica marina</i> , Slabber					2	12
<i>Westwoodilla rectirostris</i> , (Della Valle)			1			1
Decapoda						
<i>Alpheus glaber</i> , (Olivi)				4	1	1
<i>Galathea</i> sp.	3			8		
<i>Paguroidea</i> un. sp.				3	3	
<i>Pilumnus hirtellus</i> , (L)				6		
<i>Pisidia bluteli</i> , (Risso)				6		
Procecidiae un. sp.			1			

	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆
PANTOPODA						
<i>Nymphon</i> sp.					2	
ECHINODERMATA						
Ophiuroidea						
<i>Amphiura chiajei</i> , Forbes	2			27		4
<i>Amphiura filiformis</i> , O.F. Müller				2		3
<i>Ophiothrix fragilis</i> , Abild.	1					
<i>Ophiura albida</i> , Forbes						6
<i>Ophiura lacertosa</i> , (Pennant)	1					1
Echinoidea						
<i>Echinocyamus pussilus</i> , (O.F.Müller)						1
Holothuroidea						
<i>Cucumaria tergestina</i> , Sars	1	4		1		
<i>Labidoplax digitata</i> , (Montagu)		1			1	
ASCIDIACEA						
<i>Didemnum maculosum</i> , (Milne-Edwards)						1
<i>Microcosmus sulcata</i> , Coquebert	1					
Tot. number of ind. per 0.18m ² at each Station	114	331	485	656	465	403
Tot. number of species per Station	45	40	43	109	70	94

TABLE 2.
The distribution of marine algae along the coasts of Geras bay.

	G ₁	G ₂	G ₃	G ₄	G ₅
PHAEOPHYCEAE					
<i>Ectocarpus confervoides</i> (Roth) Le Jolis	+				+
<i>Feldmannia irregularis</i> (Kütz.) Hamel	+				+
<i>Feldmannia</i> sp.				+	+
<i>Giraudia sphacelarioides</i> Derbès et Sol.				+	+
Myrionemataceae ind.					
<i>Cladostephus verticilatus</i> (Ligh.) C.Ag.			+		
<i>Sphacelaria cirrosa</i> (Roth) C. Ag.	+	+	+	+	+
<i>Sphacelaria furcigera</i> Kütz.	+			+	+
<i>Sphacelaria tribuloides</i> Meneghini	+				
<i>Stypocaulon scoparium</i> (Lin.) Kütz.		+	+	+	+
<i>Dictyota dichotoma</i> (Huds.) Lamouroux			+		
<i>Dilophus mediterraneus</i> Schiffner				+	
<i>Padina pavonica</i> (Lin.) Thivy	+	+	+	+	+
<i>Cystoseira crinita</i> (Desf.) Bory	+	+		+	+

	G ₁	G ₂	G ₃	G ₄	G ₅
CHLOROPHYCEAE					
<i>Chaetomorpha aerea</i> (Dillw.) Kütz.	+	+			+
<i>Chaetomorpha capillaris</i> (Kütz.) Börg.					+
<i>Cladophora dalmatica</i> Kütz.	+	+		+	+
<i>Cladophora pellucida</i> (Huds.) Kütz.	+	+	+		
<i>Cladophora</i> sp	+			+	+
<i>Rhizoclonium riparium</i> (Roth) Harvey	+				
<i>Cladophoropsis modonensis</i> (Kütz.) Börg.					+
<i>Valonia utricularis</i> (Roth) Ag.				+	+
<i>Bryopsis hypnoides</i> Lamouroux					+
<i>Pseudochlorodesmis furcellata</i> (Zan.) Börg.			+	+	
<i>Halicystis parvula</i> Schmitz				+	
<i>Dasycladus clavaeformis</i> (Roth) Agardh				+	
<i>Enteromorpha compressa</i> (Lin.) Greville					+
<i>Enteromorpha ramulosa</i> (Smith) Hooker	+			+	+
<i>Enteromorpha</i> sp				+	
<i>Ulva rigida</i> (C.Ag.) Thuret		+			+
RHODOPHYCEAE					
<i>Acrochaetium crassipes</i> Börg.		+			
<i>Acrochaetium daviesii</i> (Dillw.) Näg.		+	+		
<i>Acrochaetium mediterraneum</i> Levring		+			
<i>Erythrotrichia carnea</i> (Dillw.) J. Ag	+			+	
<i>Chroodactylon ornatum</i> (C.Ag.) Drew et Ross	+	+	+		+
<i>Goniotrichum alsidii</i> (Zan.) Howe	+	+	+	+	+
<i>Gelidium crinale</i> (Turn.) Lam.	+	+	+	+	
<i>Gelidium melanoideum</i> (Shous.) Bornet		+	+	+	+
<i>Gelidiella panosa</i> (Feld.) Feld. et Hamel		+			+
<i>Corallina officinalis</i> Linné					+
<i>Dermatolithon pustulatum</i> (Lam.) Foslie				+	
<i>Fosliella farinosa</i> (Lam.) Howe	+	+	+	+	+
<i>Jania longifurca</i> Zanardini				+	+
<i>Lithophyllum incrustans</i> Philippi	+			+	
<i>Antithamnion cruciatum</i> (C.Ag.) Nägeli				+	
<i>Ceramium byssoideum</i> Harvey		+	+	+	
<i>Ceramium ciliatum</i> (Ell.) Ducl.					+
<i>Ceramium codii</i> (Rich.) Mazouer		+	+	+	+
<i>Ceramium fastigiatum</i> (Roth) Harvey	+				
<i>Ceramium rubrum</i> (Huds.) C. Ag.	+		+		
<i>Griffithsia barbata</i> (Smith) C. Ag.					+
<i>Griffithsia tenuis</i> C. Ag.					+
<i>Lejolisia mediterranea</i> Bornet					+
<i>Spyridia filamentosa</i> (Wulf.) Harvey				+	+
<i>Dasya corymbifera</i> J. Ag.				+	
<i>Dasya ocellata</i> (Grat.) Harvey		+			
<i>Heterosiphonia wurdemanii</i> (Bailey) Falk.			+		
<i>Chondria dasyphylla</i> (Wood.) C.Ag.				+	
<i>Chondria tenuissima</i> (Good. et Wood.) Ag.					+
<i>Börgeiseniella fruticulosa</i> (Wulfen) Kylin					+
<i>Dipterosiphonia rigens</i> (Schous.) Falken.				+	+

	G ₁	C ₂	G ₃	G ₄	G ₅
<i>Herposiphonia tenella</i> (C. Ag.) Ambronn	+		+	+	+
<i>Laurencia obtusa</i> (Huds.) Lam.				+	+
<i>Laurencia paniculata</i> (C.Ag.) J. Ag.	+				
<i>Lophosiphonia cristata</i> Falken.				+	+
<i>Lophosiphonia scopulorum</i> (Harv.) Worm.		+	+	+	+
<i>Polysiphonia opaca</i> (C.Ag.) Zanard.				+	
<i>Polysiphonia variegata</i> (C. Ag.) Zanard.			+		
SPERMATOPHYTES					
<i>Cymodocea nodosa</i> (Ucria) Aschers.	+		+	+	+
<i>Posidonia oceanica</i> (Linné) Del.				+	
Total number of species	25	21	21	39	39

the innermost bay were found 3 Phaeophyceae, 10 Chlorophyceae, 19 Rhodophyceae and 1 Spermatophyte (*Cymodocea nodosa*). Finally at station G₄ outside the bay were found 8 Phaeophyceae, 8 Chlorophyceae, 21 Rhodophyceae and 2 Spermatophyta (*Posidonia oceanica* and *Cymodocea nodosa*).

From the above data we conclude that station G₁, G₂ and G₃ (in the bay), had similar marine flora while G₄ (outside the bay) and G₅ (innermost part of the bay and nearly to submarine springs) showed and increased species diversity of Rhodophyceae.

Finally for comparative purposes samples were taken from three additional stations outside the bay, two of them in Kalloni bay (Kl, Pol) and the third in the area of Plomari (Pl). The results showed that the flora of Kl (7 Phaeophyceae, 4 Chlorophyceae, 16 Rhodophyceae) and Pol (5 Phaeophyceae, 7 Chlorophyceae, 19 Rhodophyceae, Spermatophyte) in Kalloni bay was similar to that of the stations G₁, G₂ and G₃ in Gera bay, while the sample from Plomari (10 Phaeophyceae, 9 Chlorophyceae, 33 Rhodophyceae, 1 Spermatophyte) had a noticeably richer flora.

4. CONCLUSIONS

Physicochemical measurements in Gera bay showed that the salinity was 39‰ a value slightly higher than average (38‰), but it is certainly not responsible for any anomaly in the composition of the communities.

The mean sea water temperature did not exceed 2°C over the temperature of the outside sea water (18°C).

The quantitative results of nine different trace metals measured at different marine organisms (*Crenilabrus* sp., *Trachurus trachurus*, *Scorpaena* sp., *Diplodus vulgaris*, *Mugil cephalus*, *Arca barbata*, *Venus verrucosa*), gave low

but normal values for Cr, Cd, Cu, Ni, Mn, Pb and Co and slightly higher values for Fe and Zn.

Taking into account the above data we could conclude that the zoobenthos and phytobenthos of Gera bay, compared with outside stations, are slightly degraded. This degradation is probably due to the fact that Gera bay is semi-enclosed, communicating with the open sea via a narrow and shallow strait, making the interchange of water masses difficult, rather than to pollution from the tannery at Perama, especially as in the last two years a treatment plant has been operating in the factory.

ACKNOWLEDGMENTS

The authors wish to thank Miss A. Niotaki for her help during field and laboratory work and typing; also the mayor of Mytilini Mr. S. Pallis for putting at our disposal a trawler and for additional facilities. Finally we would like to acknowledge the help of Miss V. Marouda with the drawings.

ΠΕΡΙΛΗΨΗ

Το πρώτο εξάμηνο του 1983 έγιναν δειγματοληψίες μακροζωοβένθους μαλακού υποστρώματος και υδρόβιας χλωρίδας στον κόλπο της Γέρας της νήσου Λέσβου. Μετά την ποιοτική ανάλυση των δειγμάτων βρέθηκαν 189 είδη ζωοβένθους και 70 φυτοβένθους.

Από τη μελέτη των παραπάνω δειγμάτων σε συνδιασμό με ορισμένες φυσικές χημικές παραμέτρους και σε σύγκριση με άλλες δειγματοληψίες εκτός κόλπου, (σταθμοί 6 και PI), προκύπτει ότι ο κόλπος είναι φυσιολογικά υποβαθμισμένος εξαιτίας κύρια της απομόνωσης του από το Αιγαίο Πέλαγος.

BIBLIOGRAPHY

- ABBOT I. and G. HOLLENBERG, 1976. — Marine Algae of California. *Stanford University Press*, 1-827.
- BELLAN G., 1961. — Campagne de la Calypso, Méditerranée nord orientale 4 Annelides Polychètes. *Ann. Inst. Ocean.*, T. 39, pp 161-178.
- BELLAN G., 1964. — Annelides Polychaetes 6, campagne de la Calypso, Méditerranée orientale (nord). *Ann. Inst. Ocean.*, T. XLI, Fasc. VI, pp 271-288.
- CANDARGY P.C., 1897-98. — Flore de l'île de Lesbos. *Bull. de la Soc. Bot. de France*, 44: 140, 145, 369, 449, 45: 108-181.
- CHEVREUX E. et L. FAGE, 1925. — Faune de France, Amphipodes. Vol. 9, Paris.
- COPPEJANS E., 1976-77. — Bijdrage tot de studie van de Wiederopopulaties (Chlorophyceae, Phaeophyceae, Rhodophyceae) van het fotofiel In-

- fralittoral in het noordweselijk mediterraan bekken, 1-3. *These Sci. nat., Univ. Gent.*
- DAY J., 1967. — A monograph on the Polychaeta of Southern Africa. Part 1 and 2. *Trust. of the Br. Mus. (Nat. Hist.)*, London.
- DIANNELIDIS TH., 1950. — Greek marine flora and its utilisation. *Pract. fo the Hell. Hydr. Inst.*, 3: 71-84.
- ERCEGOVIC A., 1957. — La flore sous marine de l îlot de Jabuca. *Acta Adriatica*, Split, 8(8):1-130.
- FAUVEL P., 1923. — Faune de france, Vol. 5, Polychaetes errantes, Paris.
- FAUVEL P., 1927. — Faune de France, Vol. 16, Polychaetes sédentaires, Paris.
- GAYRAL P., 1966. — Les algues des côtes Françaises. *Edition doin*, p. 632.
- HAMEL G., 1931-1939. — Phaeophycées de France. *Impr. Wolf*, Paris, p. 432.
- HARITONIDIS S. and I. TSEKOS, 1974. — A survey of the marine Algae of Thassos and Mytilene Islands, Greece. *Bot. marina Vol 18*: 203-221
- JONES N., 1976. — British Cumaceans. Synopses of the British Fauna, No 7, London.
- KISSELEVA I.M., 1961. — Repartition qualitative et quantitative du Benthos dans la region des Dardanelles en Mer Egeé (en Russe). *Trdy Sevast. biol. St.* 14, 135-146.
- KISSELEVA I.M., 1963. — Repartition qualitative et quantitative du Benthos de la Mer Egeé (en Russe). *Trudy Sevast. biol. St.* 16, 192-200.
- KOYKOYRAS A. and A. SINIS 1981. — Benthic fauna of the north Aegean sea. II Crinoidea and Holothuroidea (Echinodermata). *Vie et Milieu* 31 (3-4), 271-281.
- KYLIN H., 1956. — Die Gattungen der Rhodophyceen. *C.W.K. Gleerups, Förlag-Lund*, 673p.
- MARINOV T., 1977. — Fauna Bularica, 6, Polychaeta, Sofia.
- RIEDL R., 1970. — Fauna und Flora der Adria. *Hamburg und Berlin*.
- SANDERS L.H., 1958. — Benthic study in Buzzarda bay. 1 Animal sediment relationships. *Limn. Oceanogr.* 3, 245-258.
- STEPHEN A. and S. EDMONDS 1972. — The phyla Sipuncula and Echiurida. *Tras. of the Brit. Museum*, London.
- TAYLOR W.R., 1937. — Marine Algae of the Northeastern coast of North America. *Univer. of Michigan Press*, 405p.
- TEBBLE N., 1976. — British bivalve seeshells. *Trust. of the Brit. Museum*, London.
- TORTONESE E., 1965. — Fauna d'Italia, Echinodermata. *Ed. Calderini*, Bologna, 419p.