

# An analysis of biological data of the Georgian Black Sea coastal zone

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## Abstract

The aim of research is the following: identification of hydrochemical parameters, collection of phytoplankton, zooplankton, epifauna and benthic organisms, conservation, species identification, number and biomass determination, identification of dominant groups and species being essential for the state of ecosystems. In parallel with hydro-biological studies the hydrological and hydro-chemical indicators of sea water were determined. Hydrological parameters included pH, conductivity, and salinity.

## Introduction



Studying of taxonomic composition, quantity, biomass and productivity of macroalgae gives a chance to make a conclusion on each waterpond condition. Phytoplankton plays a key role in the water quality formation. Zooplankton being as one of the most important thing in the feeding chain the studying of it assists to get an assessment of the water ecological condition. Epifauna is not considered only as a food for hydrobiota but it intensively activates in biofiltration process of the coastal zone. Despite of its Mediterranean origin the benthofauna of the Black Sea is 4-5 times insufficient.

## Materials and methods

In the Georgian Black Sea coastal zone (Gonio, Kobuleti, Poti) seasonal surveys have been carried out. Collection of Phytoplankton was implemented by bathometer (V=1,0l). Zooplankton samples were fixed in 40% formalin. Later they were filtered in the laboratory and concentrates were placed in labeled small size glass containers.

Collection of epifauna (attached animals on stones and artificial hydrotechnical buildings) was carries out by the Frame Method (with an area 324 sm<sup>2</sup>) fixing by the formalin 40% and treating in the laboratory.

Benthos samples was collected by Van Veen Grab. According to the methodology it was necessary to undertake samples repeatedly (if the quantity of sediments is less than half of the hole volume of Grab).

## Results

Chlorophyll a. In surface layer waters this indicator varied within the wide diapason of 8.8-65.7 µg/L. The highest content of chlorophyll a was observed at spring and summer seasons, on the average 42.0-65.7 µg/L. autumn vertical distribution of chlorophyll a had normal nature and with the increase of depth the concentration of chlorophyll a was reducing.

Groups of phytoplankton	spring			summer			autumn			winter		
	Gonio	Kobuleti	Poti	Gonio	Kobuleti	Poti	Gonio	Kobuleti	Poti	Gonio	Kobuleti	Poti
Diatoms	143	163	215	184	482	516	503	651	550	120	127	78
Dinophyta	45	57	136	62	70	198	22	43	68	19	50	86
Chlorophyta	23	28	48	38	52	76	13	46	14	8	18	18

Table 1. Average Seasonal Quantity of Phytoplankton in Gonio-Kobuleti-Poti Region of the Georgian Black Sea Coast.

There were 91 species and subspecies observed in samples of four season during whole years. 37 species of them were Diatoms, 30-Dinophyta, 11-Chromophyta, 6-Chlorophyta and 7-Cyanophyta (Table 1).

Cyanophyta	101	79	109	292	316	470	-	-	-	81	121	195
Chromophyta	-	-	-	-	-	22	-	-	-	-	-	-
Total fitopl. n N=1x10 <sup>4</sup> cells/ L	312	332	508	576	920	1282	538	740	632	228	316	377

The study of zooplankton in the Georgian Black sea coast shows that: on 5m depth the biomass of zooplankton is higher in Gonio region, and on 20m izobath the biomass of zooplankton is higher in Poti region (Fig. 1).

Quantity of zooplankton on 5 m depth is higher in poti region and on 20m depth the quantity of zooplankton species is higher in Gonio research region (Fig. 1).

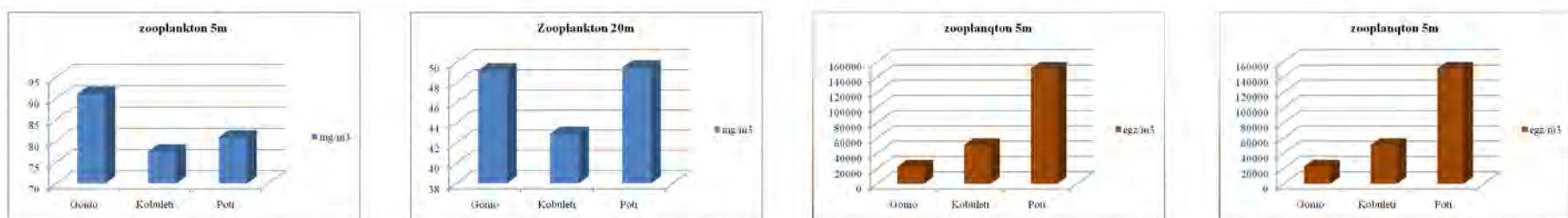


Fig. 1 Zooplankton Biomass (mg/m<sup>3</sup>) and Quantity (egz/m<sup>3</sup>) of the Georgian Shelf Zone (Gonio, Kobuleti, Poti).

There were identified 46 species of zoobentos, in the bottom samples. They are presented by groups of Mollusks with 18 species, which is 39% of zoo benthic species composition. Polychaeta is presented by 13 species, Crustacea - is presented by 10 species and is 28 and 21 %. The diversity of Polychaeta, Mollusks and Crustaceans basic groups distributed on 20 isobaths of the Georgian shelf, also their seasonal dynamic, quantity and biomass is not quite different. Dominant species of this bottom settlement are: N. Cirrosa, from mollusca Ch.gallina and C. Cornea, arthropods C.pestai and B.improvisus (Fig. 3).

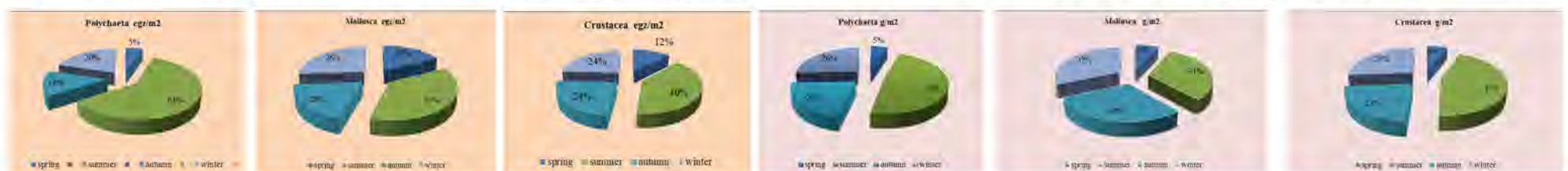


Fig 3. Quantity (egz/m<sup>2</sup>) and Biomass (g/m<sup>2</sup>) of the Georgian Shelf Zone (Gonio, Kobuleti, Poti) Main Zoobentic Groups.

## Conclusions

With the result which we received by the study of phytoplankton we can conclude: There were 91 species and subspecies observed in samples of four season during whole years. 37 species of them were Diatoms, 30-Dinophyta, 11-Chromophyta, 6-Chlorophyta and 7-Cyanophyta. Dominant species mostly are fixe from Diatom group: Skeletonema coststum, Leptocylindrus minimus, Chaetoceros lorenzianus, Ch.affinis, Thalassionema nitzschoides.

Baseds on Epifauna samplings we can conclude that main groups composed of epifauna are Mollusca, Artropoda, Annelides, Platyhelminthes, Sarcodina, Tentaculata. The most abundant species were Mollusca (Bivalvias), Artropoda (Cructaceans) and Annelides (Popychaeta). Samples were collected in three stations: Tsikhisdziri, Green Cape and Kvriati. In Kvriati samples were more diverse then others collected in Tsikhisdziri and Green Cape.

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