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The State Of The Environment On The Georgia Coast

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The project consortium consists of 4 partners:

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P1- *Sinop University, Sinop, Turkey*

P2- *Chamber of Agriculture of Trabzon, Turkey*

P3- *International Center for Social Research and Policy Analysis in Tbilisi, Georgia.*

According to the Project Implementation Plan, within the activity *T2.1 Development of “Pollution and solutions in BSB - Manual for everyone”* we made a manual. This manual contains several topics. Through these newsletters we present these topics. Today we choose to present you:

The State Of The Environment On The Georgia Coast

Georgia is a mountainous country with a complex mountain terrain, situated to the south of the Caucasus Range between the Black Sea and the Caspian Sea. Its total area is 69.7 thousand km². Population of Georgia is 4.6 million people, of which the urban population is 2.4 million. Georgia is characterized by a great variety of climatic zones which range from subtropical to arid.

Georgian Coastal Zone encompasses part of the Black Sea on 326 km of length from the mouth of the River Psou (state border with the Russian Federation) to Kelenderi Cape (border with Turkey). The Hydrometeorological Service of Georgia officially was formed in May 14, 1844, when founded Observatory of Tbilisi.

Common borders. Common solutions.



Fig.1. General map of Georgia

The Black Sea coast of Georgia is located in the south-eastern and eastern part of the Black Sea, on the river. Between the confluence of the Sarpi and the Psou. Along the Caucasus ridge it is protected from north winds. Average lowest wind speeds are found in Batumi. The tidal values are insignificant for the coast of Georgia. For example, in Poti it is 8-9 cm and is half-hourly. Compared to the oceans, the Black Sea, as the inland sea of the continent, has less turbulence. Storm events occur in the event of cyclonic impacts. The action of south and southeast winds is related to the passage of Mediterranean cyclones. Atlantic cyclones cause the emergence of westerly winds and waves, which reach the coast of Georgia in the form of strong ridges.

The bottom of the Black Sea runs quite steeply from the coast of Georgia. The underwater relief of the seabed is widened by ravines and deltas that extend into the surface valleys of all major rivers. In the relief of the seabed there is a shelf, a continental shelf, a sea basin. The shelf off the coast of Georgia is presented in the form of a narrow, dotted strip. The temperature of the sea in the Black Sea of Georgia varies from 9 to 11 degrees in winter (in the south), and 60 km away from the coast, on the contrary, the water temperature rises in the north: from 19.4 to 20.7 degrees. The average temperature on the Black Sea coast of Georgia is 4-7 ° C, July - 22-23 ° C, precipitation is abundant all year round. It is especially rainy. The southern part of Kolkheti, where more than 2500 mm of rainfall falls annually. Precipitation in the north decreases from 1650 mm (in the central part) to 1400 mm (in the north-western part).

Georgia's coastal geomorphology is affected by up to 150 rivers in the region (including small rivers). The total annual tributary is 50 km³. Rivers from the territory of Georgia discharge 16% of the entire continental runoff into the sea. The rivers Bzipsi, Kodori, Enguri, Rioni, Khobi, Supsa, Natanebi, Chorokhi and many other small rivers join the Black Sea in this area.

The most waterlogged river in Georgia is the Rioni, the largest river that flows entirely in Georgia. Length 327 km, basin area 13400 km². Rio enters the Black Sea annually with a large amount of solid runoff, averaging 4.7 million tons per year.

Georgian shelf area

Research on zooplankton biodiversity of the south-eastern Black Sea was limited. The data from pristine phase 1955-1957 (Table 6.10) indicated edible zooplankton biomass around $100 \pm 50 \text{ mg m}^{-3}$ within the upper 25 m layer, of which 70-80% was produced during the spring-summer months. Owing to more enhanced production, abundance and biomass of trophic zooplankton formed mainly by Protozoa, Copepoda, and Cladocera increased two-folds during the 1990s but they were subject to high year-to-year variations (Fig. 6.20). The *N. scintillans* contribution to the total zooplankton biomass reduced from 50% in 1995 to 5% in 2002. The data further showed reappearance of Pontellidae *Pontella mediteranea* after 2002 that indicated recovery of the regional ecosystem.

The comparison of annual-mean biomass of the upper 100 m layer from 1950s with the recent data from the 1990s and early 2000s suggested an increase from less than 75 mg m^{-3} up to a minimum of $\sim 150 \text{ mg m}^{-3}$ during 1996 and 2002 and a maximum of around 500 mg m^{-3} during 1998-1999 corresponding to the strong Beroe impact on *Mnemiopsis* population. The edible zooplankton biomass reduced gradually in the following years up to $\sim 130 \text{ mg m}^{-3}$ at 2002. However, even this minimum biomass registered in 2002 was higher than the maximum biomass measured at Galata.

Marine Ecology and Fisheries Research Institute (MEFRI) and Georgian Fisheries Trust data focused on monitoring the distribution of invasive species starting by 1949. These data sets suggested that *Rapana* invasion caused sharp decline in the oyster *Ostrea edulis* stock due to the presence of roughly 30 *Rapana*s per 1 live oyster. The data in 1950 further showed considerable spreading of *Rapana* along the entire Georgian coastal waters. This was followed by the reduction of other commercial mollusks as the abundance of *Rapana* continued increasing.

In 1978-1979, the new opportunistic species filtering mussel *Cunearca cornea* was found initially with sizes 1.0-2.5 cm, and 6-8 cm individuals in the vicinity of the Chorokhi River mouth. This bivalve was especially abundant on the Anaklia bank where mussel collectors were installed in 1978-80. Presently, *Cunearca cornea* is widely distributed in Georgian waters (Gogmachadze, 2005).

The last study of benthic communities was conducted in 2003-2004 on a seasonal basis by monitoring 16 stations along the Georgian coast (Table 8.7). In these studies, new exotic species *Anadara inaequivalvis* and *Mnemiopsis leidyi* were found together with significant changes in zoobenthos biodiversity in comparison with previous data (Gogmachadze & Mickashavidze, 2005; Mickashavidze, 2005). Out of 65 macrozoobenthos species recorded, 27 were Molluscs (41%), 18 Crustacean (28%), 20 Polychaeta (31%). Both the zoobenthos species diversity and total abundance were highly variable regionally and seasonally. The species diversity increased as compared to 1990 for all these groups.

For more informations please visit our website <https://www.spiritbsb.online/>.

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