



Contributions to the knowledge of the Danube waters impact on the Black Sea

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Rivers usually have a positive impact on marine areas where they discharge their waters, fertilizing them and supporting high biological productivity, the Danube River being a good example in this respect. Given the conditions of chaotic industrialization and the discharge into rivers of many chemicals, some of high toxicity, the eutrophication influence changed its beneficial nature, turning into a toxic polluting influence, with catastrophic effects on the structure and functioning of coastal ecosystems, which is a situation well-known and in the area of the Danube mouths for the period 1970-1990. After 1990, under major political changes in socio-economic systems, the environmental pressures with impact on marine coastal ecosystems diminished; these pressures had been maintained by hydrological systems opening to the marine areas. What is the current situation of these pressures? What are the major characteristics of the organisms associations under the direct influence of the Danube? In this paper, the authors try to give some answers to these questions.

In the framework of the lower Danube monitoring program, conducted by GeoEcoMar during 2009-2012, measurements were made and samples collected in more than 230 stations along the Romanian sector of the Danube River.

The main aspects related to the ecological state of the River were:

- Physico-chemical and biological (phytoplankton);
- Sediment granulometry and inorganic chemistry – CaCO_3 , Fe_2O_3 , TiO_2 , Zr, Ba, Rb, Zn, Ni, MnO , Cr, V, Co, Pb;
- Ammonia, TOC, total cyanide, organochlorine pesticides in sediments;
- Physico-chemical analyses of water samples.

According to the results, the areas suspected of pollution from anthropogenic sources and also from other activities, could be outlined as follows:

- The stretch between km 1072 (Danube entry to Romania) and km 1039 - downstream the mining sector Moldova Veche;
- Sector between km 957-947, near the Iron Gates I dam;
- Danube - Black Sea Canal (the NPP Cernavoda zone);
- Brăila sector, from km 174 - this stretch was considered to be under local anthropogenic pollution influence in the past too;
- St. George mouth to the Black Sea.

Based on the experience of GeoEcoMar researchers and data from the literature, this paper briefly presents the environmental status of marine populations in the predeltaic area.

Finally the authors propose some measures, scientifically substantiating the lower Danube protection.

Keywords: the Danube River, the Black Sea, loading, nutrients, phytoplankton, benthic ecosystem state