EFFECTS OF THE EXCESS NUTRIENTS ARRIVED IN THE BLACK SEA INTAKE BY THE DANUBE RIVER IN THE DANUBE DELTA

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It is well known that about 60-65% of the pollutants arrived in the Black Sea are brought by the shedding of the Danube river, that have the maximum concentration level in the marin predeltaic space, where the current cost from north to south, generated by the regional dominant winds, sperad this waters south.

Over the years, the appereance and the signing of the **Convention on the Protection of the Black Sea Against Pollution** in 1992 at Bucharest, the improvement of the environmental legislations in the Pan Pontics countries and over the main course of the Danube, led to the reduction of the pollutant state of the Black Sea, establishing in the romanian marine waters a state of recovery of the ecosystem, with slowly but steady trend.

Above the positive effects of the new regional environmental politics accomplished in the last two decades, competed at the recovery of the marine environment, including the predeltaic one, the decline of the economy in this space, with the disappearance of coastal industries highly polluted, the decrease of the naval traffic, of the harbour activities and the fishing industry. The economical recovery in some points of the coastal system may pose a threat, in case of weakening the environmental requirements.

In the danubian region, upstream the Maritime Danube –Delta, the practice of intensive agriculture, with an excessive use of chemicals, was associated with sustained drainage works, with adjoining hydro construction, that have profoundly changed the floodplain area of the Danube. It is estimated that the drainage programme took out from the hydrografic circuit aproximately 1 milion Ha for the new agricultural land, former wet lands, traditional keept for floodplains – water withdraw. (Brezeanu and collab,2011).

Hydrotechnical activities

Foto: Silviu Covaliov
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Pond culture (maize)

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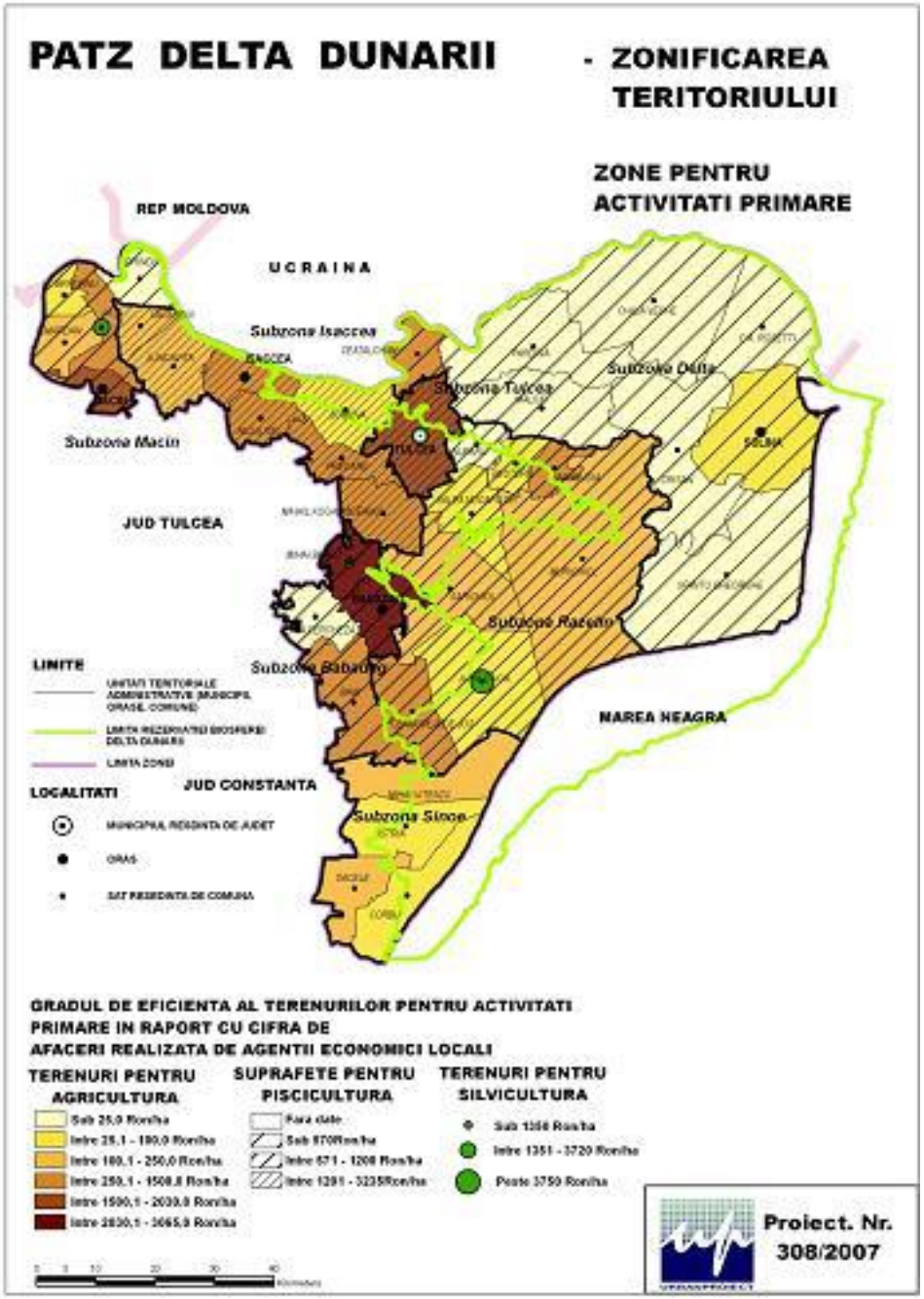
The Danube Delta, in the limits of Danube Delta Biosphere Reserve, has a 5800 km^2 area, in which: 3446 km^2 aquaculture ponds and brake, 615 km^2 various lands use in agriculture (pasture and embankment lands), 228 km^2 forests and 65 km^2 of embanked forest. Add to these Danube Delta Biosphere Reserve, the second delta at Chilia, summing 46402,9 Ha, strong anthropogenic. (TACIS, 2004).


PATZ DELTA DUNARII
- ZONIFICAREA TERITORIULUI
ZONE PENTRU ACTIVITATI PRIMARE
REP MOLDOVA
UCRAINA
Subzona Isaccea
Subzona Tulcea
Subzona Delta
Subzona Macin
JUD TULCEA
Subzona Razim
Subzona Sinoe
MAREA NEAGRA
JUD CONSTANTA
LIMITE
LOCALITATI
GRADUL DE EFICIENTA AL TERENURILOR PENTRU ACTIVITATI PRIMARE IN RAPORT CU CIFRA DE AFACERI REALIZATA DE AGENTII ECONOMICI LOCALI
TERENURI PENTRU AGRICULTURA
SUPRAFETE PENTRU PISCICULTURA
TERENURI PENTRU SILVICULTURA
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The entire area of Danube delta, reed, willow and poplar groves flooded, lakes and channels, with swamp vegetation are the natural filters that take and stop the pollutants to be brought by the Danube at sea.

A part of the Delta wet lands was taken in the years 70-80 and changed into agriculture and aquaculture areas: - efforts are beeing made in re-giving the natural course, for revegetation and establishing the ecological balance for this areas, two institutions have an important role: - Danube Delta Biosphere Reserve Authority and Danube Delta - National Institute for Research and Development. In the romanian historical past an important role was the establishment of the hydrological equilibrum of Danube basin by reducing the effects of the transport of pollutants to the marine environment, the wide band of ponds and grass, shrubes and tree vegetation from the Danube wide area of wet lands, the stretched space with the role to buffer floods, the danger of catastrophic river flow.

Reedbeds - areas covered by reed

Foto: Silviu Covaliov
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Delta flooded forest / Danube meadow

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The Danube Delta and the upstream wet land on the entire romanian route of the river, where recognized as important areas in regulation of river flows, creating spaces for reproduction of freshwater ichthyofauna, adjustment of steam/regime rainfall / river anomalies, low flow or flood. Properly all had repercussions in the predeltaic marin surface and beyond it, adjusting the salinity, also the nutrient contributions. (Antipa, 1910,1921)

In the last decade, at the end of the 20 century and beginning of 21 century, the romanian marine region felt entirely the global climate changes, with the reduction of seasons at two extended periods, a hot and cold season. The hot period is more extended, with a hot summer, arid, with the presence of sub Saharian air masses, and in the winters with peak loads, low Siberian temperatures in February, with the freezing sea to the horizon line, or with mediterranean moderate winters.

In this time it can be strongly felt the lack of water refuge space in the Danube may flood, the normal circulation on hystorical route conquered by the waters, with buffer takeover possibilities on bodies of water of arms.

The climate changes and the secondary effects that train, and give a haotic pulse to the Danube hydrological regime, with major floods, also upstream and downstream of Izmail Ceatal, engaging the circuit of pollutants in the historical nutrients deposits off the agriculturale areas, passed away from the waters wash, and extending in the sea and south the plume of river water, impediment for marine gregarious species, reason for disorientation the migration of anadromus species, that have a great economical values and severe fenomenas in destroying the marine benthic epibiontic fauna.


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The arid summer season the Danube influence is drastically reduced, growing the Delta role of buffer between the river and the sea.

It is remarkable that in the hot periods of the year, pronunced in the arid period, with low atmospheric circulation, with stagnant waters and periods of daytime insolation is occurring intense algal bloom periods, favored by excess nutrients due to chronic eutrophication. In the years 2000 the phenomenon didn’t have such a big amplitude as in the years ’80-’90, the flowering duration is not very long, with hypoxia and extreme anoxia. It causes mass mortalities of the benthonic fauna, including the juvenille fish and the benthic species.

In order to establish the ecological balance on the romanian and bulgarian route of danube, maritme Danube and Danube Delta, including the adjacent marine area it is important to take, amplify and approch in a constructive way the issue of renaturalization of the danube wet land and the entire area of Danube Delta, the output filter for the river water.

We suggest that is important the coordination of the Romanian and Bulgarian effort in a border initiative, with bilateral interest for the romanian - bulgarian Danube segment/part, in the same time continuing the romanian-ucrainian bilateral projects for Danube Delta.

We consider that it is welcomed the initiative of promoting a regionl Confrence, with a trilateral effort Romania-Bulgaria-Ukraine, with a start in 2014 or 2015.

Questions?

Thank you for your attention!