MINISTRY OF ENVIRONMENT, WATERS AND FORESTS

No.: DEICP/120749/24.06.2021

To: Mr. Roman ABRAMOVSKY, Minister

Ministry of Environmental Protection and Natural Resources of Ukraine

Cc: Ms. Iryna STAVCHUK, Deputy Minister for European Integration

Ref: Notification for the project „Arrangement of the deep-water navigable channel Danube river - Black Sea within the Ukrainian part of the delta" and

Research Report of the Ministry of Ecology and Natural Resources of Ukraine - Research Institution "Ukrainian Scientific Research Institute of Ecological Problems" (USRIEP) - Contract No. 1035/1. 1/60-B-ФДЛ-19 dated 27.02.2019 on "Analysis of the impact of the environment of Danube River Delta which follows from the already implemented work related to the project "Danube-Black Sea Deep- Water Navigation Channel on the Ukrainian section of the Delta" (stage 1 and on fill development) with the development of compensatory measures and measures to mitigate the likely impact based on the materials of integrated environmental monitoring 2004 - 2017 and the results of field monitoring observations (at least in a transboundary context)

Dear Minister Abramovsky,

Following-up your letter no.25/4-15/6707-21 from 1st of April 2021 regarding the Notification and Research report (Contract No. 1035/1. 1/60-B-ФДЛ-19 dated 27.02.2019) for the project „Arrangement of the deep-water navigable channel Danube river - Black Sea within the Ukrainian part of the delta", I have the pleasure to forward, in accordance with the provisions of the Espoo Convention, several comments and proposals prepared by the Romanian institutions and the Romanian experts on the contents of the above documents. I sincerely hope that all these comments and proposals can be duly taken into account in order to ensure that the Danube Delta is not negatively impacted by the Ukrainian project.

With regard to the Notification for the project „Arrangement of the deep-water navigable channel Danube river - Black Sea within the Ukrainian part of the delta, we would like to convey to you that Romania, by the letter no. DEICP/5496 dated 4th of August 2020, has already submitted explicit and detailed comments and proposals on the Notification, as well as for the containing of the environmental impact assessment documentation.

Considering the submitted relevant informational documents, in particular the Research Report "Analysis of the impact of the environment of Danube River Delta which follows from the already

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implemented work related to the project "Danube-Black Sea Deep- Water Navigation Channel on the Ukrainian section of the Delta" (stage 1 and on fill development), we would like to communicate you the following observations:

The research report submitted and prepared by the Ukrainian Party, through the Ministry of Ecology and Natural Resources of Ukraine - Research Institution "Ukrainian Scientific Research Institute of Ecological Problems" (USRIEP) - Contract No. 1035/1. l/60-B-ФДЛ-19 - 27.02.2019, is a synthesis of research results:

- "Integrated environmental monitoring of the environment during the operation of the Danube-Black Sea Deep Water Navigation Canal (DWNC) in 2017. The area of the sea access channel with the development of the project "Implementation of operation dredging" and taking into account the materials:

- Report "On the likely significant adverse transboundary impacts of the Danube-Black Sea navigation route at the border of Romania and Ukraine", Espoo Inquiry Commission, July 2006, UN Economic Commission for Europe (UNECE);

- "Assessment of possible transboundary environmental impacts of the Danube-Black Sea DWNC in the Ukrainian section of the delta. The second edition of the annex to the EIA as part of the working draft "Creating a deep water navigation channel Danube-Black Sea in the Ukrainian section of the Delta. Full development "as well as the results of large-scale monitoring observations during the stoppage of work on the implementation of the project of the Danube-Black Sea DWNC project".

- Studies on the environmental impact assessment of the Deep-Water Navigation Channel in the Ukrainian section of the Danube Delta (Danube-Black Sea DWNC project), conducted by the Ukrainian Scientific and Research Institute of Ecological Problems (USRIEP) and co-contractors, since 2002, confirm the absence of possible negative environmental impacts of the project. In addition, these works confirmed the environmental safety of the construction and operation of the Danube-Black Sea DWNC and the feasibility of the implementation of the route variant on the Bystriy branch, as the most environmentally safe by a set of criteria.

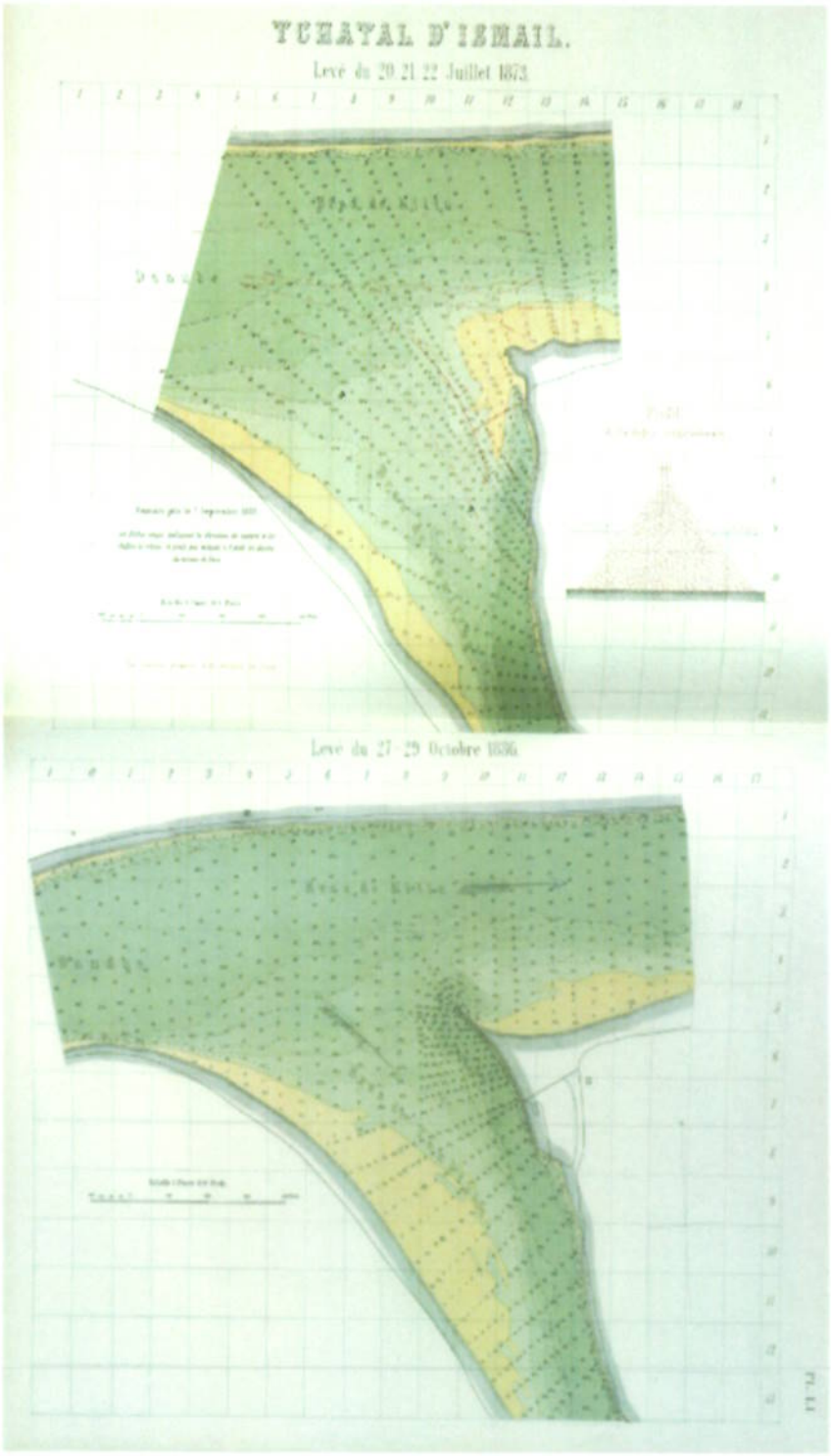
Chapter 1 Introduction

At page 5 from the report, you state that: "In the course of the work, a strategy for managing the environmental safety of DWNC was proposed, which is aimed on improvement of design solutions according to the criteria of the state of the Delta biota; recommendations on environmentally friendly dredging technology have been developed." From your previous statement, we note that a strategy for managing the environmental safety of environmental safety management strategy of DWNC has been elaborated, without being presented. Nor the dredging technologies have not been described. In this respect, please present us the environmental safety management strategy for DWNC, with the description of the dredging technologies.

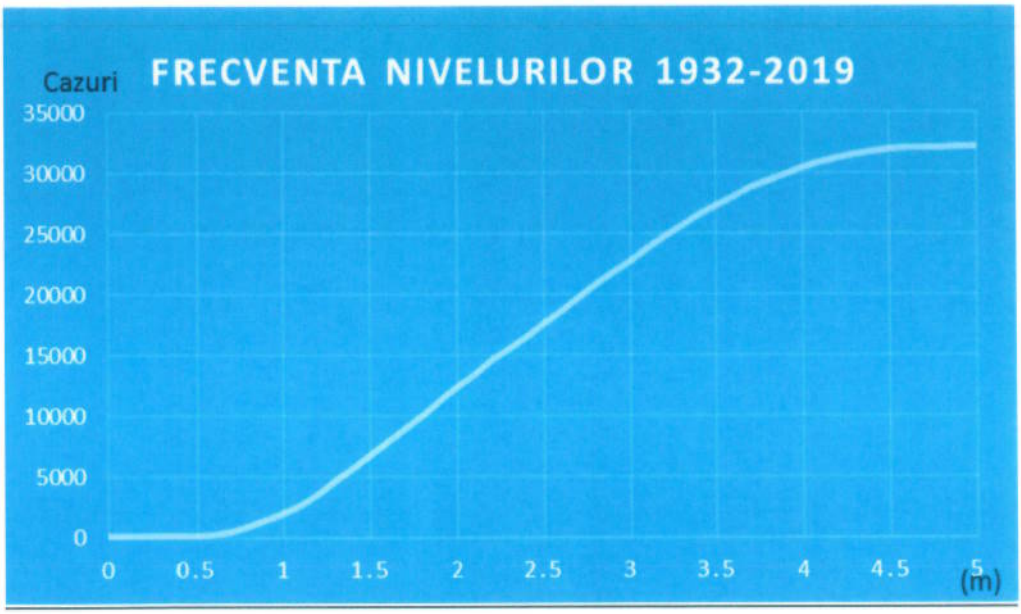
Sub- chapter 1.1 Impact of the redistribution of water flow between the branches of the Danube and the branches of the Chilia Delta

At page 8 you declare that: "The development of the marine Chilia Delta is influenced by the constant decrease in water flow at the source of the Chilia branch." We would like to mention that the decrease in water flow in the secondary Delta of Chilia, is due to the anastomosis process, influenced by the increase of the Black Sea level, as well as to the anamorphosis process of the Chilia arm in the upper part, towards Ceatal Chilia.

Thus, the hydrotechnical works referred, were carried out in 1886 by the European Commission of the Danube, in order to ensure navigation and provides flow intake only at low water, when the Danube has a low level.

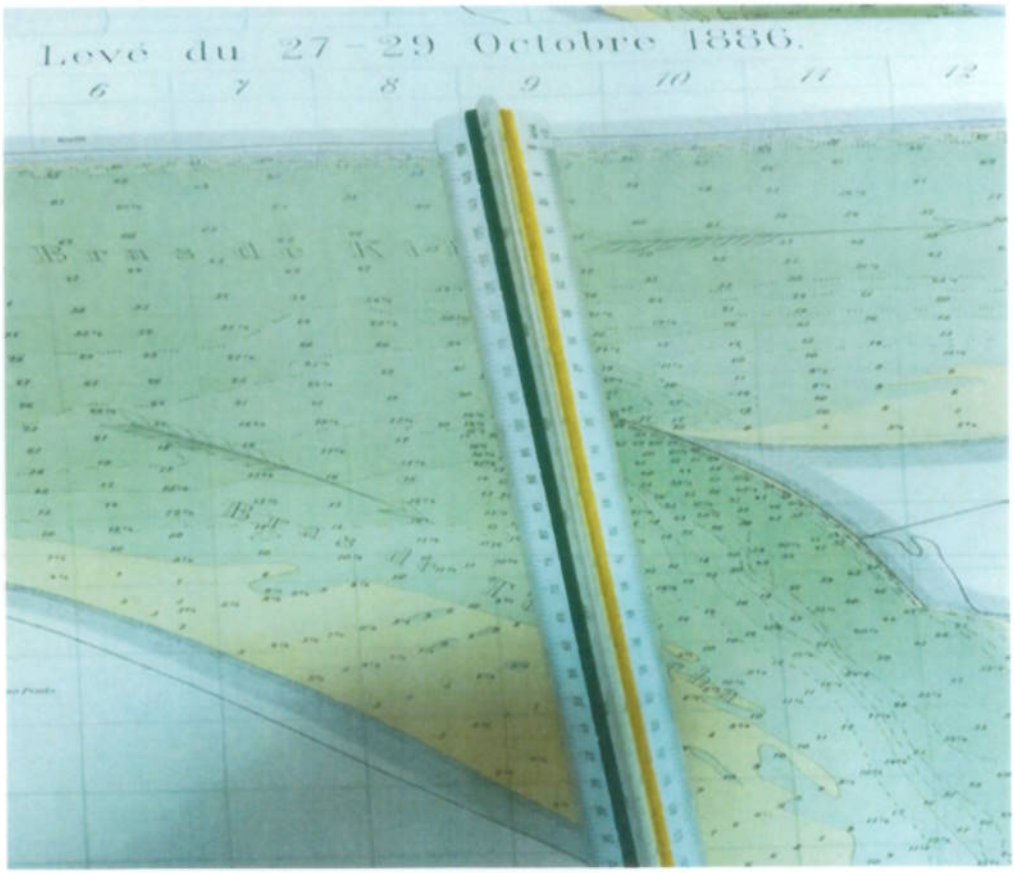


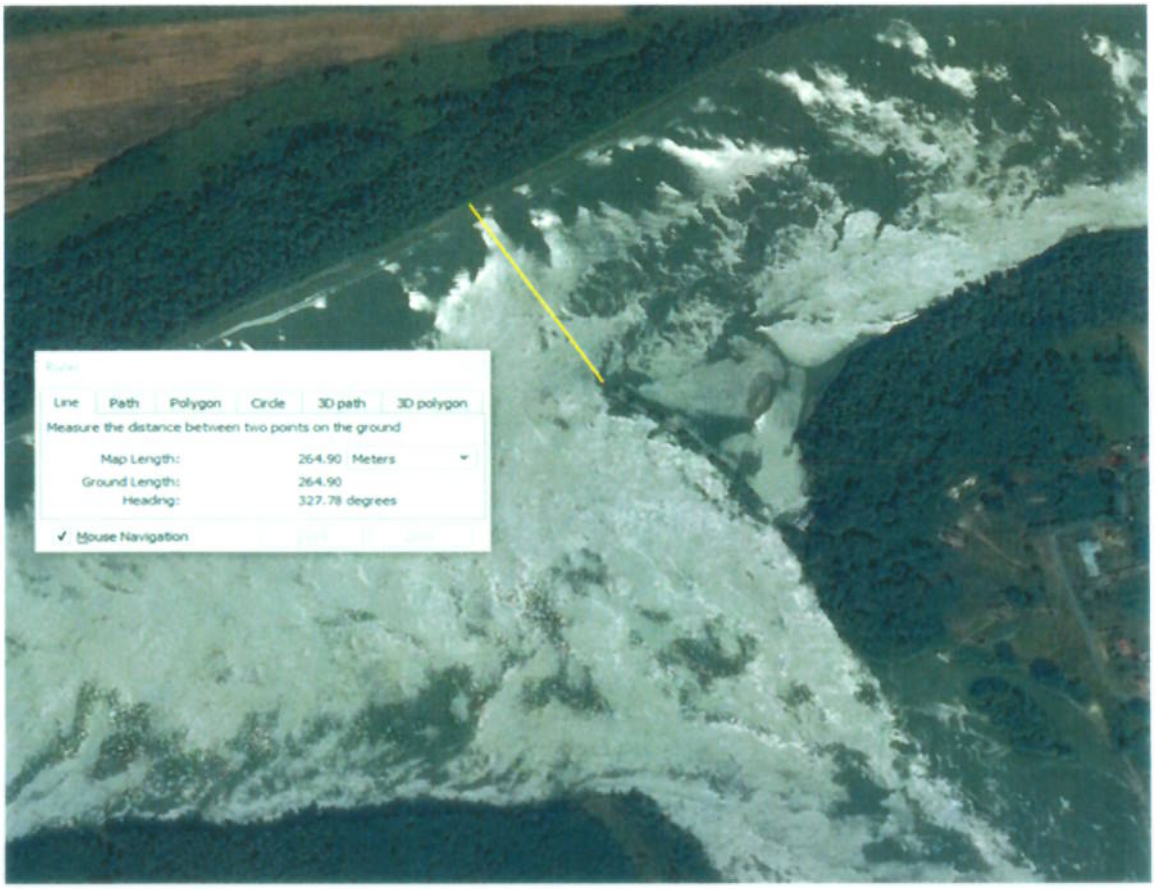
The statement that the flow taken by the Chilia arm is 47.1%, is valid only for small waters. When the Danube exceeds this value, the Chilia arm takes a higher flow.



Cases/ Level frequency 1932-2019

The decrease in flow at low water is due to the phenomenon of anamorphosis in the section, from Ceatal to Izmail. Thus at Ceatal Izmail the terrestrial zone on the Ukrainian shore has increased by 240 m compared to the situation from 1876 through sediment deposition, which has produced a bottleneck that limits the transit of water. This phenomenon is natural for a watercourse in the northern hemisphere (as it is known, most of the kinetic energy is consumed by the watercourse to overcome the resisting forces, in this case this 240 m bottleneck which limited the minor riverbed by the 240 m, constitutes the limitation of the mass of water transited).





From our point of view, it is not clear how the change in water flow from the Bystry channel influences the flow of water from the other channels (Chilia, Ochakov, Starostambulsky, Kiliysky, Tulchinsky etc). It states about a decrease in the flow on the Chilia branch in the Valkovo region by 2015 to 47.1%, but does not present the causes, although it is known the upstream hydraulic effect induced by changes in the flow cross-section of a channel, in the case of branching and/or changes in direction, i.e. the occurrence of hydraulic load losses.

Sub-chapter 1.2. Impact on the quality of the aquatic environment in places of dredging and dumping of soil (suspended substances, biogenic substances, polluants, etc.)

The impact on the quality of the aquatic environment as a result of the monitoring activities is assessed in terms of concentrations of chemical oxygen consumption, nitrates, nitrites, phosphates, phenols, total iron, suspended solids, pH, 5-day biochemical oxygen consumption, dissolved oxygen, ammonium, without reference to the other indicators, i.e. metals and organic micro pollutants.

Based on data from the monitoring programme of the Danube Delta in the period 2004-2008, it was concluded that the impact of dredging activity on the quality of Danube and coastal waters had a local character. In order to express an opinion on water quality, it would have been necessary to analyse the impact on a more recent dataset.

Sub- chapter 1.3 Impact on the dynamics of the Delta seaside, costal neoplasms

At page 10 from the report, we consider that you should have been addressed the modification of coastal lagoon habitats by the hydrotechnical works carried out for the protection of the Bystry channel, respectively, of the jetty on the northern side of the channel.

As regards the impact of the works on ichthyological fauna, the report contains summary information. It states that monitoring of fish fauna has been carried out, but does not specify the species monitored, apart from sturgeons. The dynamics of the species caught are also mentioned, but without recent data being presented. For these reasons, we suggest including more detailed information on the ichthyofauna present in the area.

Sub- chapter 1.4. Impact of shipping and dredging works on biodiversity, in particular aquatic and coastal ecosystems of the Danube Biosphere Reserve

For the zooplankton component, there is no information on method of sample collection (fillet type, mesh size) and the modality in which they were preserved and subsequently analyzed. It would also have been necessary to provide a list of the species identified, together with a graphical display of the quantitative assessment. No information is provided on the indicators applied (what these indicators suggest, whether they meet the requirements of the DCSMM, what are the threshold values set). Furthermore, in the section of conclusions lacks information on the state of the zooplankton community.

In addition to the other biological components already analyzed in this report, the analysis of submerged vegetation (with reference to both macroalgae and aquatic phanerogams) would also be necessary, because this component is also a suggestive indicator of the ecological status of the aquatic and marine environment. Also, the phytobenthic component is not considered in this report. In order to determine the impact of anthropogenic activities on biodiversity, it is absolutely necessary to analyse macrophyte communities. In this respect, phytobenthic samples need to be collected for qualitative and quantitative analysis. It is also important to establish the type of phytobenthic associations in the area of interest, the degree of dominance of opportunistic species, or where appropriate, of perennial species, together with quantitative assessments of the fresh biomass

developed by these components. Supplementary, it is necessary the application of suggestive indicators for a proper assessment of the ecological status of coastal ecosystems.

With regard to Macrozoobenthos - To analyse the impact of a project's activities on the marine environment, it is necessary the knowledge of magnitude and sensitivity of the receptor. The report does not provide enough information in order to perform an objective analysis of the impact. Dredging activities have a direct impact on zoobenthic communities through the removal of substrate and associated fauna. The indirect effect is due to increased sedimentation rates through re-suspension of sediments, which can lead to mass mortalities in benthic communities, particularly among filter-feeding species. In the event that the zoobenthic community is not predominantly composed of sensitive and rare species, the destroyed areas can be repopulated by organisms from neighbouring areas. In general, according to the faunal description, in the marine area, opportunistic species, adapted to a high sedimentation rate, are dominant in the zoobenthic communities.

Species such as Heteromastus filiformis, Nephtys hombergii, Polydora cornuta and Mya arenaria are common and abundant species in front of the mouths/spillways (gurilor de varsare) of the Danube. In the macrozoobenthic chapter, 16 species of molluscs (filter-feeding species) and 9 species of crustaceans are also mentioned. The lack of a species list does not allow us to have a clearer picture of the faunal composition in the project area. The direct effects of dredging activity can be considered to have local effects, but the resuspension of fine sediments, terrigenous which leading to an increase in sedimentation rates, may have transboundary effects. Strong currents, which usually have a north-south direction, could transport sediments on long distances, leading to increased sedimentation rates in Romanian waters and consequently to changes in the composition of benthic fauna. In the report, the absence of transboundary impacts is justified only by the lack of changes in concentration of suspended matter and pollutant, which was observed during monitoring in 2019. Therefore, this affirmation is not conclusive. In order to know this, at least three monitoring campaigns (before, during and after) should have been carried out in which all environmental components were analysed. We also consider that the changes observed in benthic communities after dam construction (e.g. marine faunal communities replaced by those typical of freshwater) will be local but permanent.

Sub- chapter 1.5. Effect on icthyofauna, its composition, spawning conditions, industrial stocks

We would like to mention that a very important role in maintaining fish stocks is represented by reproductive success, which is influenced by the environmental factors. Invasive species are mentioned without being presented a list of them. Therefore, saltwater habitats, such as those in front of the Bystry channel, are unique ecosystems, which are a priority and are protected under the Natura 2000 Habitats Directive, as follows:

Habitat types present on the site and the assessment of the site in relation to them:

Cod	*Denumire habitat*	*%*	*Reprez.*	*Supr. rel.*	*Conserv.*	*Global*
1110	Bancuri de nisip acoperite permanent de un strat mic de apă de mare	1	B	C	B	B
1150 *	Lagune costiere	2	B	A	B	B

The ichthyofauna of the Chilia arm in 2021 comprises a number of 42 fish species, of which 41 species are found upstream of the Bystry arm, but downstream of the Bystry arm the number of fish species is almost halved (24), while a surprising qualitative and quantitative increase in the number of limnophilous (still water) species such as Petroleuciscus borysthenicus is observed, Rhodeus amarus, Esox lucius downstream of the Bystry arm, which shows that most of the water is taken up by the Bystry arm, and that the Stanbulul Vechi arm remains with static water or very slightly flowing water, the fact which is reinforced by the absence of reophilic species such as Zingel streber, Z. zingel, Ballerus sapa, Barbus barbus, Gymnocephalus baloni that no longer reach downstream of the mouth of the Bystry arm on the Stanbulul Vechi arm (Table 1).

Table 1 Species richness of fishes in the Danube and its arms in 2021 (Symbols: 1=presence of species, Family: Ac=Acipenseridae, Sa=Salmonidae, At=Atherinidae, Cy=Cyprinidae, Pe=Percidae, Go=Gobiidae, Ga=Gasterosteidae, Es=Esocidae, Si=Siluridae, Od=Odontobutidae, Ce=Centrarchidae, Co=Cobitidae, Cl=Clupeidae, Sy=Sygnathidae, As=Astacidae);

Family	Species	Common name/Popular name	Chilia Arm	Upstream Bystry arm	Downstream Bystry Arm
Cy	*Abramis brama*	Flounder/plătica	1	1	
Ac	*Acipenser ruthenus*	Cega/Cega	1	1	
Ac	*Acipenser stellatus*	Hake/Păstruga	1	1	1
Cy	*Alburnus alburnus*	Oblete/Oblete	1	1	1
Cl	*Alosa immaculata*	Danube plaice/Scrumbia	1	1	1
Cl	*Alosa tanaica*	Rizeafca/Rizeafca	1	1	1
As	*Astacus leptodactylus*	Crawfish/Rac	1	1	
At	*Atherina boyeri*	Aterina/Aterina	1	1	1
Go	*Babka (Neogobius) gymnotrachelus*	Mud Guvid/Guvid	1	1	1
Cy	*Ballerus sapa*	Flatnose Crayfish/Cosac	1	1	
Cy	*Barbus barbus*	Mreana/Mreana	1	1	
Go	*Bentophilus nudus (stellatus)*	Swell/Umflătura	1	1	
Cy	*Blicca bjoerkna*	Batca/Batca	1	1	1
Cy	*Carassius gibelio*	Caras/Caras	1	1	1
Cy	*Chondrostoma nasus*	Scobar/Scobar			
Cl	*Clupeonella cultriventris*	Ginger/Gingirică	1	1	
Co	*Cobitis elongatoides (taenia)*	Zvârluga/Zvârluga	1	1	
Cy	*Ctenopharyngodon idella*	Sewer/Cosaș	1	1	
Cy	*Cyprinus carpio*	Carp/Crap	1	1	1
Cy	*Cyprinus carpio rasa. Aischgrund*	Mirror carp/Crap oglindă			
Es	*Esox lucius*	Whelk/Știucă	1	1	1
Pe	*Gymnocephalus baloni*	Danube Gurnard/Ghiborț	1	1	
Pe	*Gymnocephalus cernuus*	Common Grebe/Ghiborț			
Pe	*Gymnocephalus schraetzer*	Red snapper/Răspăr			
Cy	*Hypophthalmichthys molitrix*	Blood/Sânger	1	1	1
Cy	*Hypophthalmichthys nobilis*	Novac/Novac	1	1	
Ce	*Lepomis gibbosus*	Sorete/Sorete	1	1	
Cy	*Leucaspius delineatus*	Plevușca/Plevușca			
Cy	*Leuciscus aspius*	Avat/Avat	1	1	1
Cy	*Leuciscus idus*	Widow/Văduvița			
Co	*Misgurnus fossilis*	Scream/Țipar	1	1	
Go	*Neogobius fluviatilis*	Guvid/Guvid	1	1	1
Go	*Neogobius melanostomus*	Stronghil/Stronghil	1	1	1

Cy	*Pelecus cultratus*	Sabiță/Sabiță			
Pe	*Perca fluviatilis*	Bass/Biban	1	1	1
Od	*Perccottus glenii*	Amur guvid/Guvid			
Cy	*Petroleuciscus borysthenicus*	Kestrel/Cernușcă	1		1
Go	*Ponticola (Neogobius) eurycephalus*	Guvid jawbill/Guvid	1	1	
Go	*Ponticola (Neogobius) kessleri*	Mitroace/Mitorace	1	1	1
Go	*Proterorhinus marmoratus*	Common Pochard/Moacă	1	1	1
Cy	*Pseudorasbora parva*	Puddled Murgoi/Murgoi	1	1	1
Ga	*Pungitius platygaster*	Osar/Osar			
Cy	*Rhodeus amarus*	Boar/Boarța	1	1	1
Cy	*Romanogobio (albipinnatus) vladykovi*	Porcupine/Porcușor	1	1	1
Cy	*Romanogobio kessleri*	Sand hogget/Porcușor			
Cy	*Rutilus rutilus*	Babushca/Babușca	1	1	1
Co	*Sabanejewia (aurata) bulgarica*	Dunariță/Dunăriță			
Sa	*Salmo labrax*	Black Sea Trout/Păstrăv			
Pe	*Sander lucioperca*	Saithe/Șalău	1	1	1
Pe	*Sander volgensis*	Striped sand eel/Șalău			
Cy	*Scardinius erythrophthalmus*	Redfish/Roșioara	1	1	1
Si	*Silurus glanis*	Somn/Somn	1	1	
Sy	*Syngnathus abaster*	Undrea/Undrea			
Cy	*Tinca tinca*	Flax/Lin			
Cy	*Vimba vimba*	Morunaș/Morunaș	1	1	
Pe	*Zingel streber*	Fusar/Fusar	1	1	
Pe	*Zingel zingel*	Pietrar/Pietrar	1	1	
15	57		42	41	24

Your conclusions are that the dredging of the Bystry arm does not significantly affect the fish resource or fish productivity, and you specify that the exotic species and navigation for the negative effects on ichthyofauna.

In our view, both the presence of exotic non-native species and navigation have an impact on ichthyofauna, but with a low intensity. The exotic non-native fish species present in the area are: Hypophthalmichthys molitrix, Hypophthalmichthys nobilis, Ctenopharyngodon idella, Lepomis gibbosus, Pseudorasbora parva, Perccottus glenii, but with invasive potential can only be considered Perccottus glenii (for which the impact of this species on native species is not yet known), the species using the Danube arms only for transition to the lake complexes.

It should not be forgotten that the Bystry arm represent an important access route for anadromous migratory species from the sea to their breeding sites on the Danube, and the hydro-technical works on this arm have a significant impact on their life cycle. At the same time, the marine species that migrate to land for breeding and feeding are also affected to a greater or lesser extent.

Sub-chapter 1.6. Impact of shipping and dredging works on biodiversity, in particular aquatic and costal ecosystems of the Danube Biosphere Reserve

According to the report, the changes that can be mentioned to be observed are evident at the biodiversity group level and ecosystems:

- desalination of the zones adjacent to the "Bystry" estuary area did not lead to significant modifications in macrozoobenthos composition.

- Crustaceans belonging to the Ponto-Caspian time fauna characterized by high productivity are also mentioned to have been recorded in the area of the bar formed in front of the Bystry.

- With all these observations is mentioned, however, that the number of species recorded shows modifications characterized as being within "insignificant limits", indicating indirectly minor modifications in environmental conditions.

In terms of general considerations, in which invertebrate species can also be assimilated, the following aspects are mentioned:

- is indicated the absence of significant impacts of navigation and dredging activities on biodiversity, in particular on aquatic ecosystems and coastal ecosystems in the Danube Delta Biosphere Reserve.

- Also it is indicated the lack of significant impact on the status of the Danube ecosystem (riverine) and transboundary impact on biological indicators.

On the other hand, there is mention the construction of the bar in the right of the channel (subchapter 1.7) which functions as an "artificial reef", leading to a local impact on the macrozoobenthos. As the appearance of a new type of biotope (substratum) in this area is mentioned, there is also a "relocation" of organisms belonging to different taxonomic groups.

Sub- chapter 1.7. The environmental impact of the construction of the dam of the sea access channel

The aspects **of the influence of the protection dam**, are leading to a change of the coastal saltwater lagoon habitat.

Chapter 2 Control observation during the stoppage of work on the implementation of the DWNC Danube -Black Sea project

Sub- chapter 2.1.1. Hydrochemical characteristics of the sea waters in the areas of the navigation course and the sea dump after stopping dredging

The indicators that were measured were salinity, oxygen regime, suspended matter, nutrients, pH which were reported to quality standards. Reference is made to the concentration of metals, but it is not named which metals were analysed. In this respect, please complete the subchapter with the metals which were analysed.

Transboundary impacts in the Romanian area were not observed, as confirmed by the concentrations of pollutants compared to the baseline (page 37).

The conclusions of the document refer only to total hydrocarbons and some heavy metals, but it is not very clear whether the hazardous substances covered by Directive 2013/39/EU, which amends Directives 2000/60/EC and 20088/105/EC, were also measured. On the other hand, information on water toxicity testing with a toxicity test on Artemia salina species is presented, with no adverse effects observed (page 24), but it is not argued why this species with a high resistance and tolerance to changes in salinity was used, and other more sensitive species which actually live in the analysed area, have not been chosen.

Sub-chapter 2.1.2 Hydrochemical characteristics of the Danube water during the period of dredging work stop

In this sub-chapter are presented the ranges of variation of salt concentrations (calcium, bicarbonates, chlorides, sulphates, sodium, potassium), silica, suspended matter, transparency. For the indicators dissolved oxygen, carbon dioxide, pH, 5-day biochemical oxygen consumption, permanganate index, chemical oxygen consumption, ammonium, nitrites, nitrates, mineral phosphorus, total phosphorus, detergents, phenols, petroleum products and hexavalent chromium, concentration ranges and quality classes are presented. No reference is made to total nitrogen, thus implicitly organic nitrogen, metals other than hexavalent chromium and organic micropollutants (pesticides). In this regard, we request to complete the document with these indicators.

In subchapter 2.2.2. Status of hydrobiont groups of freshwater ecosystems of the Danube Delta watercourse

for the area of flowing water ecosystems (channels) are also presented biodiversity data for:

1. Zooplankton

- Are presented qualitative characteristics (taxonomic groups, species) - 9 taxons; but also quantitative characteristics (abundances, biomass). Based on these data it is indicated:

- Species composition and quantitative development of zooplankton are similar to the data collected in the same period of the previous year.

- The number of species in the observation points varies from complete absence (in 4 points) to 3 (maximum value) in point R 06 ("below Izmail").

2. Macrozoobenthos:

- The composition of the species list (in July 2019) totals a number of 6 species, belonging to two systematic groups.

Compared to previous research, between the points of study, significant differences are observed in the number of species, the composition of the species list or their quantitative indicators.

On mammals:

- In the report of the study "Analysis of the environmental impact in the Danube Delta resulting from the works already implemented in connection with the Danube-Black Sea Deep Waterway project on the Ukrainian side of Delta" it is repeatedly stated that the impact of the works is local, that the species have adapted to the changes that have occurred and there is no negative impact on biodiveristy or transboundary consequences.

- In the case of large-scale hydro-technical works that cause significant changes in the flow regime, not only the short-term and local impact is worrying, but more importantly the long-term and regional impact on the habitats of bird species in the area.

The bird species found on both the Ukrainian and Romanian sides of the Danube Delta are part of the same populations, and the impact on such a population means that there is a transboundary impact.

It is stated that colonial waterbirds have been affected by the access of predatory mammals due to accelerated sedimentation, but the birds have moved to the other two islands, Taranova and Novaia Zemlia. It should be specified that the same accelerated phenomenon of sedimentation is leading to increased accessibility to predators and on these last two islands, Taranova and Novaia Zemlia, which means the decline (or worse) of the very important colonies here.

There is a lack of information regarding the nesting and wintering period, so no positive, neutral or negative correlation cannot be substantiated, of the status of the ornitofauna determined by the renovation works of the deep waterway on the Chilia and Bystry arms.

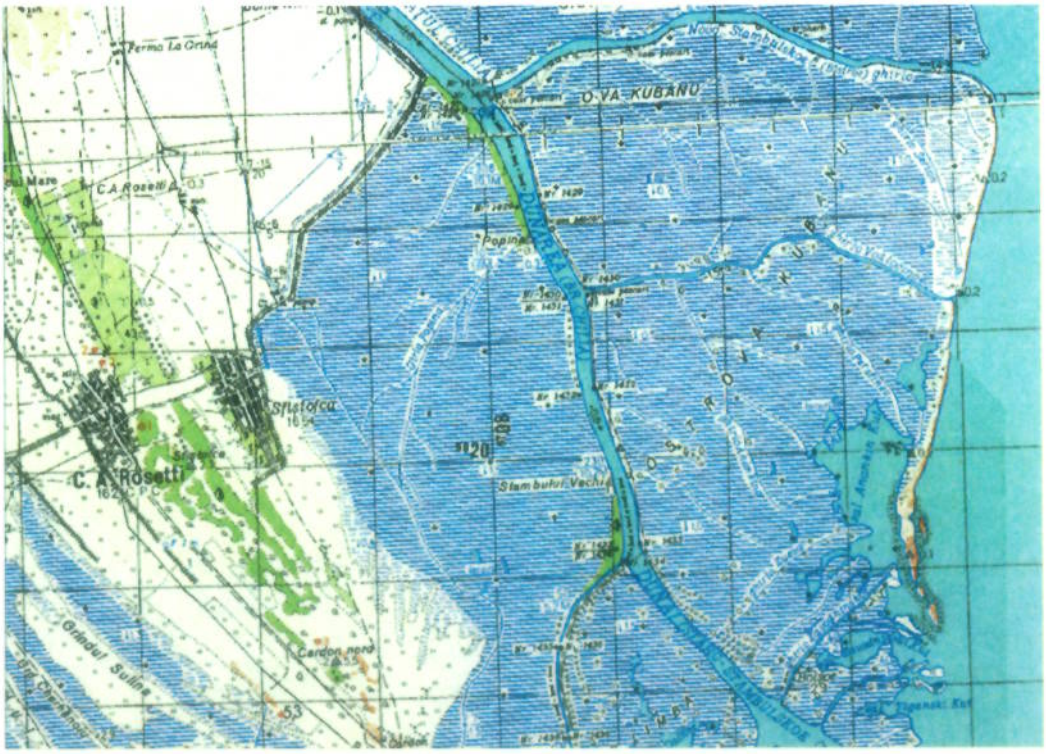
As we stated in our previous points of views, it would have been necessary to use ornithological monitoring data in the area carried out by the field staff of the Danube Delta Biosphere Reserve (Vilkovo, Ukraine).

The assessment of a negative/adverse impact on birds should be made by analysing ornithological monitoring data and correlating them with hydromorphological and water and sediment chemistry data and interpretations, and not by assuming that there have been no negative consequences for ornitofauna.

Given the fact that in the border area of Romania with Ukraine in the immediate vicinity of the new works we have noted the presence of the European mink (Mustela lutreola), a globally critically endangered species, so we consider it necessary to investigate the status of this species in the study area and to detail the potential impact of the works on this species.

Sub-chapter 2.4. Analysis of the dynamics of channel processes and suspended solids in the Danube Delta and in the coastal part of the Black Sea based on satellite imagery"

The degree of detail of the figures with satellite image is low. The plans should be at a scale at which the targeted processes can be better observed. There are some plans where the scale is missing making it difficult to read and interpret the data. Given that the study area is on the territory of Ukraine, the names of canals, islets and others presented in the text, should have been shown on the plans from the report. It is necessary to present some toponyms on plans for easier reading. These names were hardly identified on the military maps from 1985.



The aspects presented in this sub-chapter (the Ermakov Ostrov part) has no analysis.

Summer satellite images (LANDSAT) from different years are listed, without any comparison between them, without measuring certain areas and without any reference to the water levels of the Danube.

Sub-chapter 2.4.1. The influence of ground storage of dredging soils on the ecosystem of the Island of Ermakov and

Sub-chapter 2.4.2. The dynamics of the distribution of suspended solids in the area of the mouth of the Bystry

The text is poor, presenting a conclusion unsupported by the satellite image analyses: no measurements are presented on the plume of turbid water entering from the channel into the Black Sea (width, length, surface, etc.).

Given the fact that you have used the satellite imagery only from 2019, our recommendation was to have used Sentinel imagery (their resolution is 10 m compared to LANDSAT 15 m) which has 2.25 better resolution than LANDSAT. The text contains some statements that are not based on detailed analysis, as follows:

- page 28, raw 8 - The statement regarding: "According to satellite imagery, the intensive removal of suspended matter from the Bystrye mouth was observed on May 3, 28 and June 13, 22 in a

southeastern direction over considerable distance"- we cannot know how considerable is the distance without an analysis;

- page 28, raw 10 - The statement on: "on July 2, the outflow direction is northeastern, the suspension of suspended solids is intense" - we cannot know how intense it is unless we have data on the size of the turbid water plume or data on the concentration of suspended matter;
- page 28, raw 14 - The affirmation on: "It should be noted that an unequivocal relationship between dredging and removal of suspended solids for this period was not found" - there is no correlative analysis to support the assertions.

Several Landsat images have been presented (Landsat 5, 7 and 8 are mentioned in the text). Due to the lack of clear references, the images cannot be taken into account for quantitative determinations, in the absence of time reference. Date and time should be specified for each image. Also, the method of analysis is not presented, the processing software and clear/quantifiable results, changes in the shoreline/NDVI, etc. - are not presented. We believe that joint monitoring activities/in joint Romanian-Ukrainian teams in the framework of monitoring actions in the transboundary area would lead to in-situ validation of the assessments carried out, based on satellite images, with much better resolution than those presented in this report (Landsat images, panchromatic sensor with 15m resolution).

For example:

- Ikonos images, Satellite Sensor 0.82m;

- WorldView-3 images, Satellite Sensor 0.31m- 31 cm panchromatic resolution, 1.24 m multispectral resolution

- Pleiades-1B images, Satellite Sensor 0.5m.

The study of the dynamics of the freshwater plume and the turbulence field created in the coastal zone of the secondary delta of the Chilia arm, with the presentation of Landsat images is qualitative and, in the absence of local algorithms for processing satellite images and in-situ measurements on turbidity, respectively on suspended sediment transport on the water column, cannot provide quantitative determinations on the hydro-morphological changes induced in the coastal zone.

Overall conclusions on the submitted Research Report

The overall conclusion is that the Research Report submitted and elaborated by the Ukrainian Party, through the Ministry of Ecology and Natural Resources of Ukraine - Research Institution "Ukrainian Scientific Research Institute of Ecological Problems" (USRIEP) - Contract No. 1035/1. l/60-B-ФДЛ-19 - 27.02.2019, is a synthesis of the results of previous research work.

All interventions aimed at modifying the cross and longitudinal section of the river are of major importance within the studied area of ecosystems and natural habitats and are the most likely to generate significant impacts for most of the Natura 2000 components.

However, it should be stressed that these interventions may generate impacts on protected aquatic species (especially in the case of species with reduced mobility) which should be subject to appropriate impact avoidance and mitigation measures, and the implementation of these activities should preferably to not be based on constructive solutions requiring continuous human intervention (e.g. DNC maintenance).

No physical intervention should be undertaken without sufficient knowledge on the distribution and assessment of the conservation status of biodiversity components, in particular Natura 2000 components, without a predictive model for water flow and sedimentation processes or without knowledge of the carrying capacity of ecosystems and their main resources (fish, habitats, water resource availability, etc.), including interdisciplinary and transdisciplinary approaches.

The development and implementation of a modern/efficient monitoring system and a predictive model for sedimentation dynamics in the Danube River is an essential element, and without it, inadequate management will continue in terms of DNC maintenance actions through de-silting, dredging and sediment deposition management.

Due to the complexity of the interactions between biotic and abiotic factors, in addition to the specific aspects of the complexity of human society in the study area, we support the need for a monitoring programme that requires tools, methods and techniques that will generate a sufficient volume of usable data to assess the ecological impact on the environment in the short, medium and long term.

Reviews the monitoring activities of the Ukrainian section of the Danube Delta and the assessment of the impact of dredging and storage of dredged material in the period 2004-2019 with the following remarks:

- the impact on the quality of the aquatic environment is assessed, as a result of the above activities, in terms of concentrations of chemical oxygen consumption, nitrates, nitrites, phosphates, phenols, total iron, suspended solids, pH, 5-day biochemical oxygen consumption, dissolved oxygen, ammonium, **without reference to the other indicators, i.e. metals and organic micropollutants;**

- reference is made to the concentration of metals, **but no mention is made of which metals were analysed;**

- **no reference is made to the total nitrogen, thus implicitly organic nitrogen**, metals other than hexavalent chromium and organic micropollutants (pesticides);

- the decrease of water flow in the Secondary Chilia Delta is highlighted, but this is due to the natural anastomosing processes, influenced by the increase of the Black Sea level, as well as the anamorphic process of Chilia arm in the upper part, towards Ceatal Chilia.

The overall conclusion, based on the multi-year surveys conducted and those conducted in July 2019, on zooplankton and other benthic groups, shows that there is no direct impact in the exploitation and restoration areas with the exception of the areas where hydraulic works have been carried out, both in terms of qualitative and quantitative data, but **for a better presentation of the data it is necessary to attach to the report, the field data with observations of invertebrate species in comparison with data from previous years in order to detect the qualitative and quantitative evolution of the invertebrate fauna in the area where the Chilia arm spills into the sea.**

In the report of the study "Analysis of the environmental impact in the Danube Delta resulting from the works already implemented in connection with the Danube-Black Sea Deep Waterway project on the Ukrainian side of the Delta" it is repeatedly stated that the impact of the works is local, that the species have adapted to the changes and there is no negative impact on biodiveristy or transboundary consequences, and it is well known that **in the case of large-scale hydro-technical works that cause significant changes in the flow regime, not only the short-term and local impact is of concern, but above all the long-term and regional impact on the habitats of bird species in the area.**

The conclusions of the report on ichthyofauna are that the dredging of the Bystry arm does not significantly affect the fish resource or fish productivity and you stipulate that the exotic species and navigation have a negative impact on ichthyofauna. From our point of view, **both the presence of exotic non-native species and navigation have an impact on ichthyofauna, but with a low intensity and it should not be forgotten that the Bystry arm represent an important access route for anadromous migratory species from the sea to their breeding sites on the Danube, and the hydrotechnical works on this arm have a significant impact on their life cycle. At the same time, the marine species that migrate to land for breeding and feeding are also affected to a greater or lesser extent.**

The bird species found on both the Ukrainian and Romanian sides of the Danube Delta are part of the same populations, and the impact on such a population means that there is a transboundary impact. It is claimed that colonial waterbirds have been affected by the access of predatory mammals due to accelerated sedimentation, but the birds have moved to the other two islands, Taranova and Novaia Zemlia. **It should be noted that the same accelerated sedimentation is leading to increased accessibility to predators also on these last two islands, Taranova and Novaia Zemlia, which means the decline (or worse) of the very important colonies here.**

The material presented in the reconstruction part of the Ermakov Ostrov has no analysis, satellite images (LANDSAT) of summer from different years are listed without a comparison between them, without measuring certain areas and without making any reference to the water levels of the Danube, **the text is poor presenting a conclusion unsupported by the analysis on satellite images;**

No measurements are presented on the plume of turbid water entering from the channel to the Black Sea (width, length, surface area, etc.). There is no correlative analysis to support the claims.

- Given the fact that satellite imagery has only been used since 2019, **our recommendation is to use Sentinel imagery** (their resolution is 10 m compared to LANDSAT 15 m) which has 2.25 better resolution than LANDSAT,

- the development and implementation of a modern/efficient monitoring system and a predictive model for sedimentation dynamics in the Danube River is an essential element, and without it there will continue to be inadequate management in terms of DNC maintenance actions through de-silting, dredging and sediment deposition management.

- due to the complexity of the interactions between biotic and abiotic factors to which is added the specific aspects of the complexity of human society in the study area, **we support the need for a monitoring programme that requires tools, methods and techniques that will generate a sufficient amount of usable data for environmental impact assessment in the short, medium and long term.**

I sincerely hope that this transboundary environmental impact assessment will become a showcase for the proper implementation of the EU directives and will be used as an example in future such cases.

Please accept, Minister Abramovsky, the assurance of my highest consideration.

Barna TÁNCZOS

Minister