EU Strategy for the Danube Region (EUSDR)

Second Stakeholder Seminar of the Water Quality (PA4) and the Environmental Risks (PA5) Priority Areas

"*EUROPEAN FUNDING OPPORTUNITIES IN THE WATER SECTOR*"

ROMANIA

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NATIONAL INSTITUTE FOR RESEARCH AND DEVELOPMENT IN ENVIRONMENTAL PROTECTION

COUNTRY Situation Romania

- **What are the prioritized water needs?**

  In Romania, **national water strategy and policy in the water resources** are carried out by:

  - Water resource management: The Ministry of Environment, Waters and Forests
  Official website: http://www.mmediu.ro/

  The implementation of **the national water strategy and policy, the quantitative and qualitative water management as well as the operation of the water management structures** is carried out by:

  - National Administration "Apele Romane" (NARW). This Authority has 11 regional branches organized according to hydrographic river basins of Romania. NARW has responsibilities for issuing licenses and permits as well as for the monitoring of water quality and emissions. Official website: http://www.rowater.ro/default.aspx

INCDPM and other relevant institutions develops specific research activities on implementing the Water Framework Directive, such as flood studies and impact studies, by elaborating preventive solutions, flood risk maps, monitoring the environmental impact of hydro-technical constructions, monitoring sturgeons migrations, etc.

INCDPM-Introduction of the institution

National Institute for Research and Development in Environmental Protection

The National Institute for Research and Development in Environmental Protection – INCDPM is an independent entity for research and development, with 50 years experience in the field, which currently operates under the GD 235/2015.

The specific goals of INCDPM activities are:

- Participating and performing of international research projects, with assumed results
- Participating and performing of national research projects, with assumed solutions
- Scientific publications (ISI and other) and trainings for specializing and advancing
- Development of collaboration relations with other research institution, with expertise at national and international level
- Development of collaboration relations with public institutions (Ministries, County Councils, Municipalities, etc.) and with private companies having similar profile
- Promoting and responsibility of young researchers on results and solutions elaborated.

Official website: http://incdpm.ro/production/en/

INCDPM-Introduction of the institution

Competencies

- Research-development in the environmental protection
- Development of strategies and politics for environmental protection
- Monitoring of environmental factors - air, soil, water, noise and biodiversity (focusing on sturgeon species)
- Development and use of GIS, remote detection and remote sensing
- Numerical modelling/ Numerical simulations, prognosis of natural phenomena dynamics and impact of anthropogenic
- Using scenarios of climate change aiming to forecasting the impact of this phenomenon on water resources
- Assessment of coastal and river construction corrosion
- Impact of hydro-technical constructions on the environment
- Flood studies/ Feasibility studies for elaborating environmental-friendly preventive solutions/ Water management studies
- In-situ measurements (3D/2D bathymetry, hydro-dynamic parameters, topographic and electrometric measurements, measurement on physical- chemical parameters on water
- Environmental impact studies/ risk assessment/ preventive solutions

INCDPM-Introduction of the institution

National Institute for Research and Development in Environmental Protection

Departments

- Waste Management
- Engineering for Environmental Protection and Impact Assessment
- Impact of the built environment and Nanomaterials
- Climate Change and Sustainable Development
- Biodiversity and Ecosystem Dynamics
- Natural Resources Management and Green Energies
- Natural and Technological Hazards
- Environmental Quality Assessment
- Numerical Modelling and Geographic Information System (GIS)
- Laboratories
- Research and technology transfer center

INCDPM- experience with funding programmes, successful projects, experiences- Danube monitoring between Calarași and Braila (km375- km 175)

INCDPM Project: ***Monitoring the environmental impact of the works regarding the improvement of the navigation conditions on the Danube River between Calarasi and Braila, km 375 and km 175" (March 2011 – April 2019)***

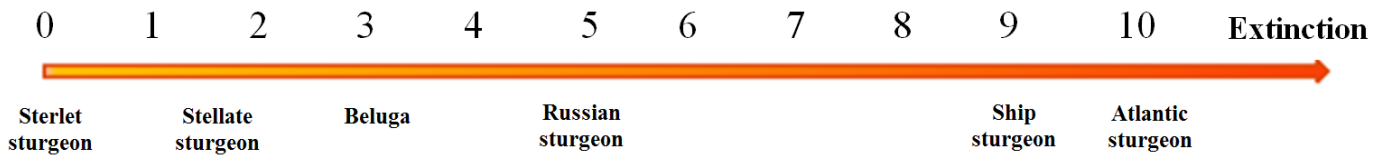
Funding programmes: Sectoral Operational Programme Transports of the Romanian Ministry of Transport according to project agreement POS-T 2012/3/3/004, code SMIS 37136

Beneficiary: River Administration of the Lower Danube, Galati.

General objective of the project is monitoring the impact of hydro-technical works that are carried out on the Calarasi-Braila sector of the Danube River during 2011-2017, between 375 km and 175 km on the environmental factors evolution.

One of the **specific objective** is to ensure the effective monitoring of environmental factors, especially sturgeons migration routes and accomplishing numeric simulation for different hydrodynamic scenarios for ensuring the possibility of implementing preventing solutions, if it is necessary. Also, the monitoring of water quality indicators is a specific objective which add up the data base together with the above information.

INCDPM team *has developed and unique in Europe and complex data base, during the project implementation, regarding the migration routes of over 300 sturgeon and periods and limits of migration which help the experts to establish the best solutions for the protection and conservation of this extinction species.*



Extinction risk of sturgeon species

INCDPM- experience with funding programmes, successful projects, experiences- Danube monitoring between Calarași and Braila (km375- km 175)

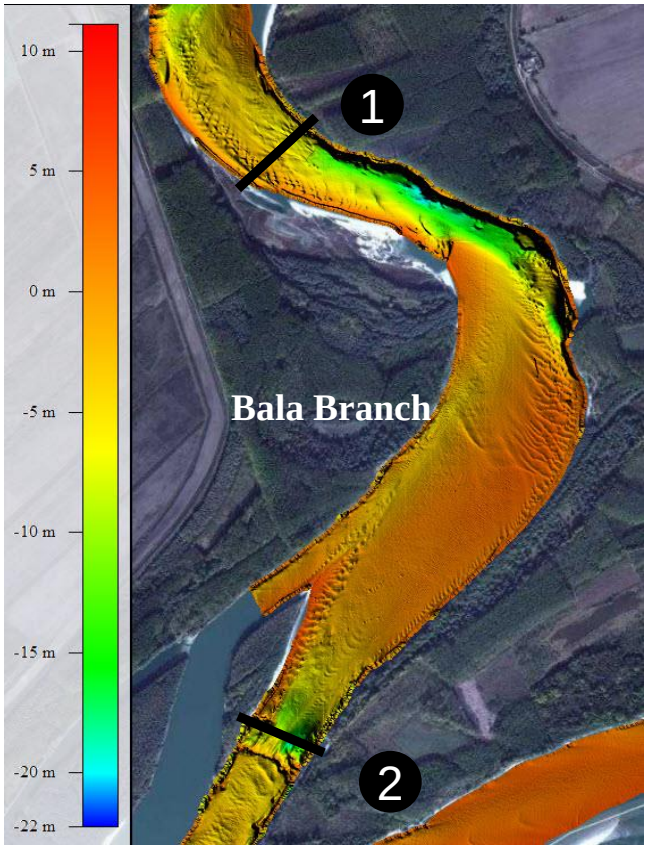
The sturgeons are key indicators for the ecological state of the Danube River, which it is strengthen through the transnational migrations maps.

Sturgeon migration monitoring methodology

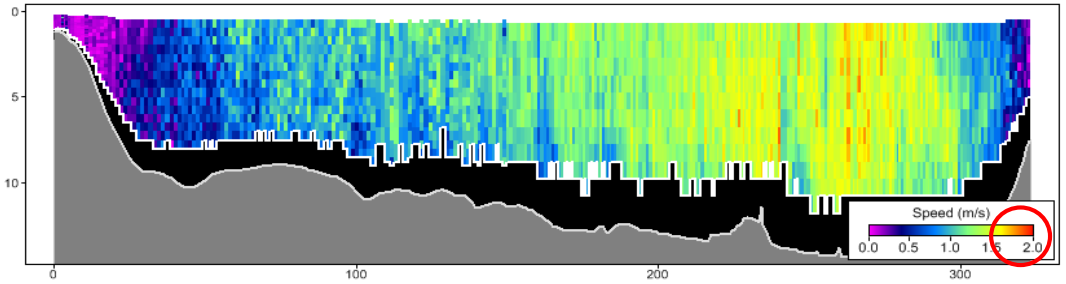
Implanting acoustic transmitter

INCDPM- experience with funding programmes, successful projects, experiences- Danube monitoring between Calarași and Braila (km375- km 175)

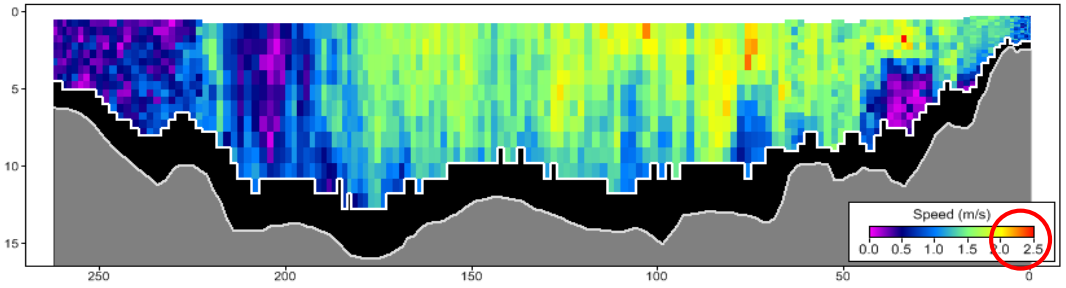
Measurements of water flows, velocities and bathymetry were performed on Bala Branch nearby the old bottom sill (km 9.5) and at km 7.5 where the reception station recorded the sturgeon specimens. Results showed that water velocity reached values over 2 m/s at flows of 3000 m³/s in November 2011, when recording showed a sturgeon passed the old bottom sill.



1 **Section 1** - velocities measured on Bala Branch at km 7.5

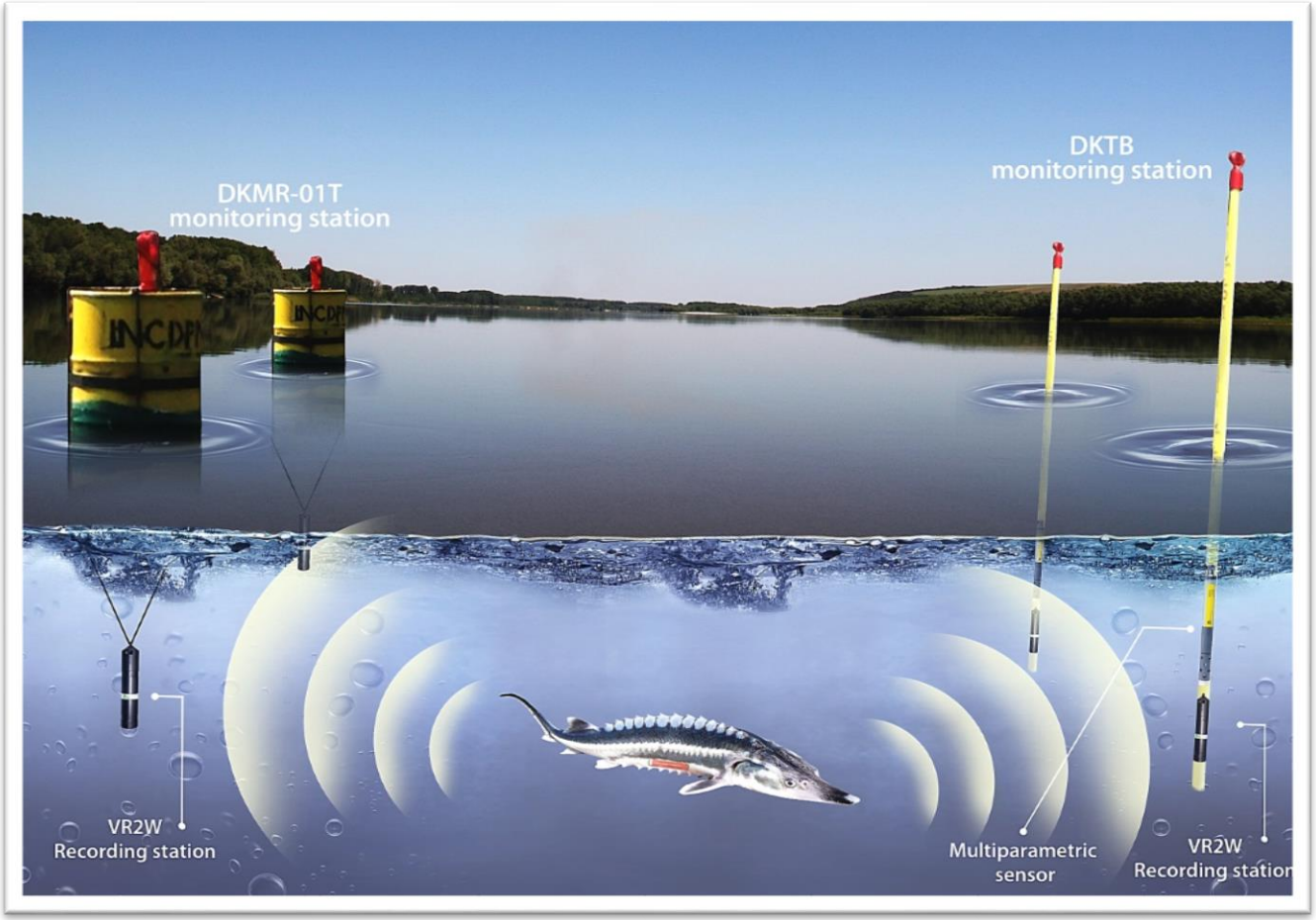


2 **Section 2** - measured velocities in the area of the old bottom sill when the construction of the new one had not been started



INCDPM- experience with funding programmes, successful projects, experiences- Danube monitoring between Calarași and Braila (km375- km 175)

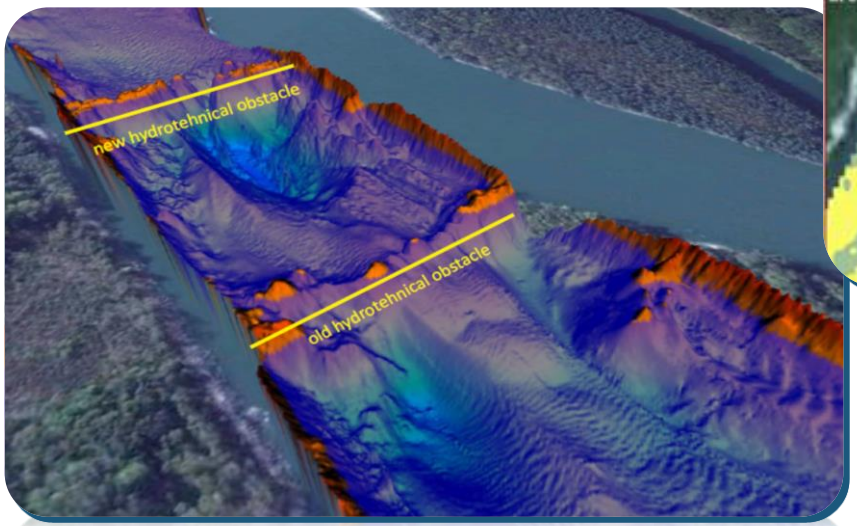
The most efficient method for sturgeons` behavior monitoring and routes determination in Lower Danube hydrologic conditions is: *sturgeons' monitoring using Acoustic Telemetry*

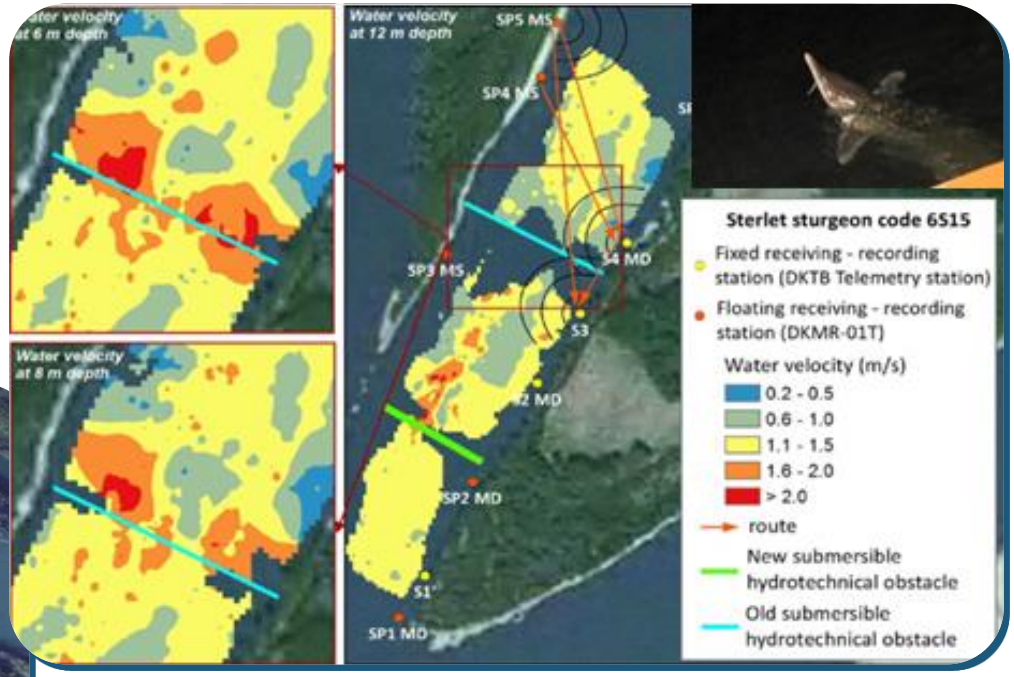


INCDPM- experience with funding programmes, successful projects, experiences- Danube monitoring between Calarași and Braila (km375- km 175)

Sterlet sturgeon specimens' behavior nearby bottom sills on Bala Branch

In the fall of 2013, after an intensive monitoring carried out on Bala Branch, it was performed a detailed analysis of the sterlet specimen's behavior within a period of 11 days.





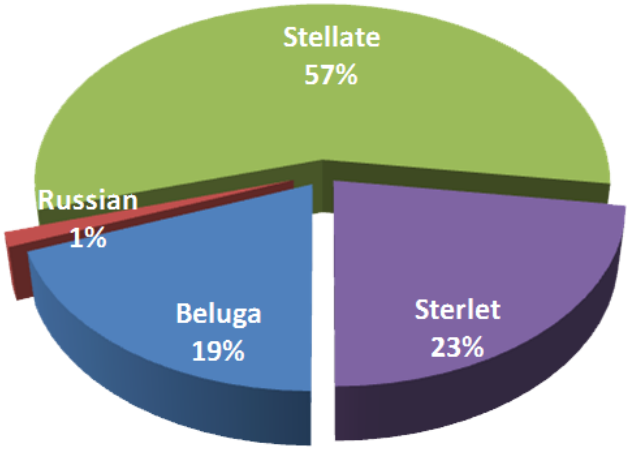
The reception stations recorded the sspecimen at depths ranging between 5-20 m and the data indicates that the sterlet passed upstream the old submersible hydro-technical obstacle, area where the water velocity reached values above 2 m/s.

INCDPM- experience with funding programmes, successful projects, experiences- Danube monitoring between Calarași and Braila (km375- km 175)

- Total number of tagged and captured sturgeons during 2011-2015 is more than 300 specimens of all four species that can be found on the Lower Danube basin, representing an unique database in Europe.

- The innovative solutions developed by INCDPM team, DKTB and DKMR-01T monitoring stations, were designed to obtain useful information for the protection of the wild sturgeon populations and the monitoring of the Danube ecological conditions.

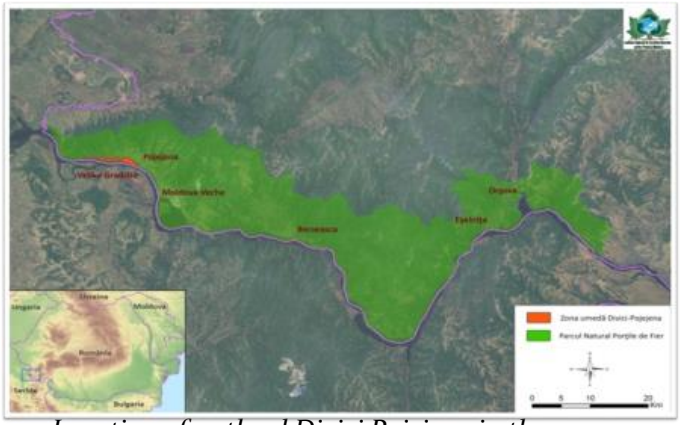
- Also, establishing sturgeons` upstream swimming potential and upstream swimming velocity, it can be adopting proper preventive solutions for these species conserving, based on scientific knowledge.



INCDPM- experience with funding programmes, successful projects, experiences-
Divici- Pojejena project (km 1065- km 1055)

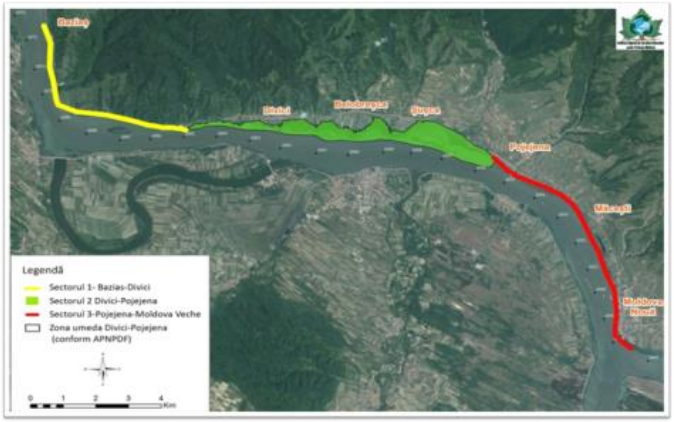
The project "STUDY OF FLOODING FOR SHORE PROTECTION" was carried out under the contract EuropeAid/134910/4/SER/RO, CODE 1344, funded by IPA Cross-border Co-operation Programme Romania-Republic of Serbia

Beneficiary: Caras-Severin County Council



Location of wetland Divici Pojejena in the Iron Gates Natural Park

Wetland Divici-Pojejena, resulting from raising the Danube level after building the Energetic and Navigation system Iron Gates I, is located in the south-western county of Caras-Severin at the border with Republic of Serbia, occupying an area of 498 ha on the territory of Pojejena commune.



The location of the area of interest, including wetland Divici-Pojejena

GENERAL OBJECTIVES

➡ Developing studies related to the shore protection by selecting appropriate technical solutions in accordance with sustainable development principles to protect the ecosystem and human settlements in the area of wetland Divici - Pojejena;

➡Establishing environmental impact of selected technical solutions in order to identify best preventive solution against risk arising from the flooding.

SPECIFIC OBJECTIVES

1. ***Investigation on wetlands and associated natural and technological risks***
2. ***Land studies***
3. ***Study of flooding for shore protection***
4. ***Feasibility study***
5. ***Study of impact***
6. ***Plan for sustainable development of tourism in cross-border wetlands***

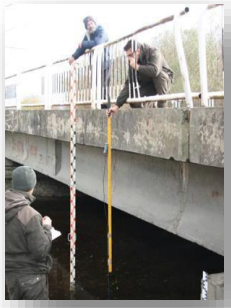
INCDPM- experience with funding programmes, successful projects, experiences-
Divici- Pojejena project (km 1065- km 1055)

➡ ***Land studies***

- ❖ In order to achieve the project objectives, were conducted a series of studies and field investigations for the quantification of biotic and abiotic parameters on habitat and biodiversity in the area of interest
- ❖ This has allowed a detailed characterization from the physical-geographical point of view of the study area, in order to provide the necessary data input for the flooding, feasibility and impact studies.

Measurements of electrometrical, bathymetric and determining the water level

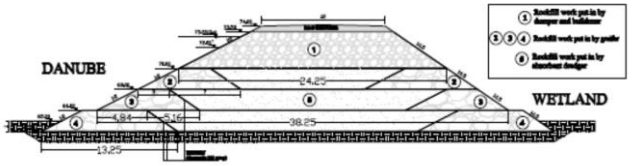
Intersection bands for tributaries and Danube flooding



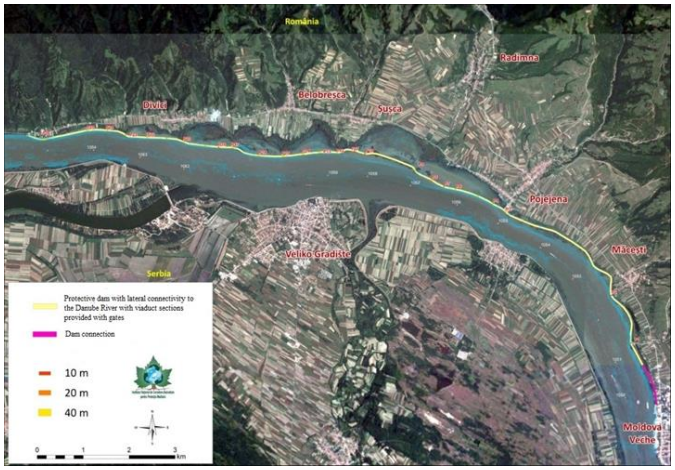
➡ **Study of flooding**

It had the aim of establishing exposure to flooding in the area of interest, in order to implement the best solution to protect the population and the ecosystem of the wetland, in case of floods with a low probability of return.

INCDPM- experience with funding programmes, successful projects, experiences-
Divici- Pojejena project (km 1065- km 1055)

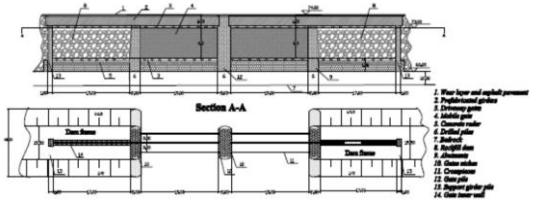


Protective dam section



Location area of the proposed dam with gates with bridges of various openings (10, 20, 30, 40 m)

Model layout for floods (closed gates)



Plan view, 40 m viaduct opening

➡ ***Feasibility study***

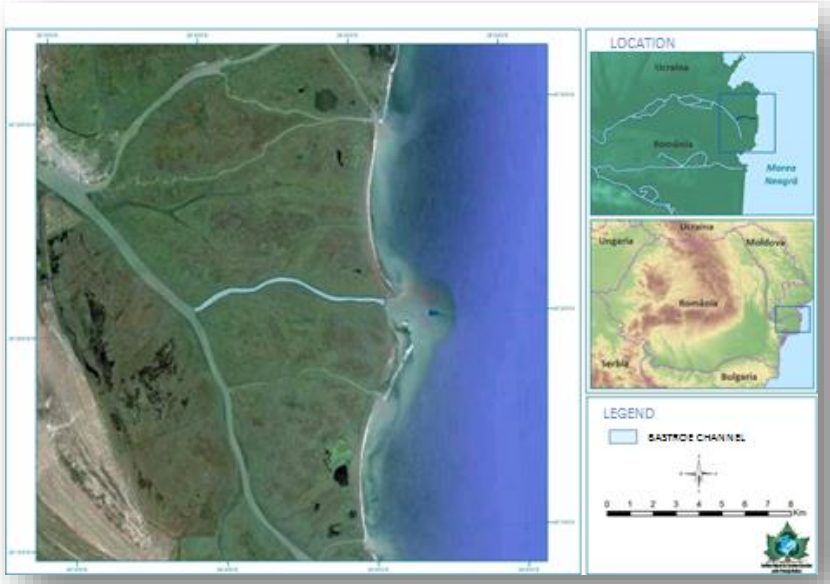
The study focused on finding solutions for sustainable development that takes into account the protection of the population and the ecosystem of the wetland Divici - Pojejena in the context of climate change where extreme events increase in intensity exercising a higher pressure on the environment in the area.

Model layout for normal flows (open gates)

INCDPM- experience with funding programmes, successful projects, experiences- The issue of Bastroe channel

Study on monitoring the quality of physical, chemical and biological components of the Danube Delta and adjacent coastal area in the context of transboundary impact caused by the Bâstroe channel

Over time, the Romanian authorities have confronted with the danger of breaking crises with complex implications in the external security environment. *In 2004, Ukraine started the execution of the Danube-Black Sea high depth waterway,* **without notifying Romania and considering that the project does not have transboundary implications**. In April 2007, navigation was rendered entirely to an area located in Ukraine.



Location of Bastroe Channel

From the start, the Romanian side, through the Ministry of Foreign Affairs, have started bilaterally and multilaterally actions on the Ukrainian project, in order to underline the need for an attitude of Ukraine in accordance with the international law.

INCDPM- experience with funding programmes, successful projects, experiences-
The issue of Bastroe channel

Sturgeon migration on Chilia branch
spring 2012

In the spring of 2012, recordings of monitoring systems on Isaccea and Tulcea branch's indicated that sturgeon marked on the sector Calarasi-Braila of the Danube migrated to the Black Sea at the end of reproducing period, at a rate of 47% to Tulcea branch and 53% on Chilia branch.

INCDPM- experience with funding programmes, successful projects, experiences-
The issue of Bastroe channel

Sturgeon migration on Chilia branch
autumn 2013 - spring 2014

In the fall of 2013, in order to confirm the results obtained in 2012 and getting some clear results, were installed two monitoring systems, one upstream from the confluence with Bastroe branch and one downstream. Results showed that 31% of sturgeon marked and monitored during the autumn, descended in the sea on Chilia branch. In spring of 2014, were also reported seaward ascents of the previously marked specimens.

INCDPM- experience with funding programmes, successful projects, experiences- The issue of Bastroe channel

Sturgeon migration on Chilia Branch

Nr. Crt.	COD	Tagging period	Species	Records Chilia branch	Migration type
1	2S5	A. 2011	Stellate sturgeon	24.03.2014	↗
2	3S48	S.2012	Stellate sturgeon	24.04.2014	↗
3	5S9	S.2013	Stellate sturgeon	04.05.2014	↗
4	6S11	A. 2013	Beluga	02.05.2014	↗
5	6S12	A. 2013	Beluga	15-16.11.2013	↙
6	6S14	A. 2013	Beluga	13-14.11.2013	↙
7	6S21	A. 2013	Beluga	24.11.2013	↙
8	6S22	A. 2013	Beluga	03.12.2013	↙
9	7S1	S. 2014	Beluga	07.05.2014	↙
10	7S28	S. 2014	Stellate sturgeon	23.06.2014	↙
11	7S32	S. 2014	Stellate sturgeon	01.05.2014	↙
12	7S33	S. 2014	Stellate sturgeon	24.06.2014	↙
13	7S42	S. 2014	Stellate sturgeon	13.05.2014	↙

Spring migration 2014 (Returns tagging sturgeon in 2011, 2012, 2013)

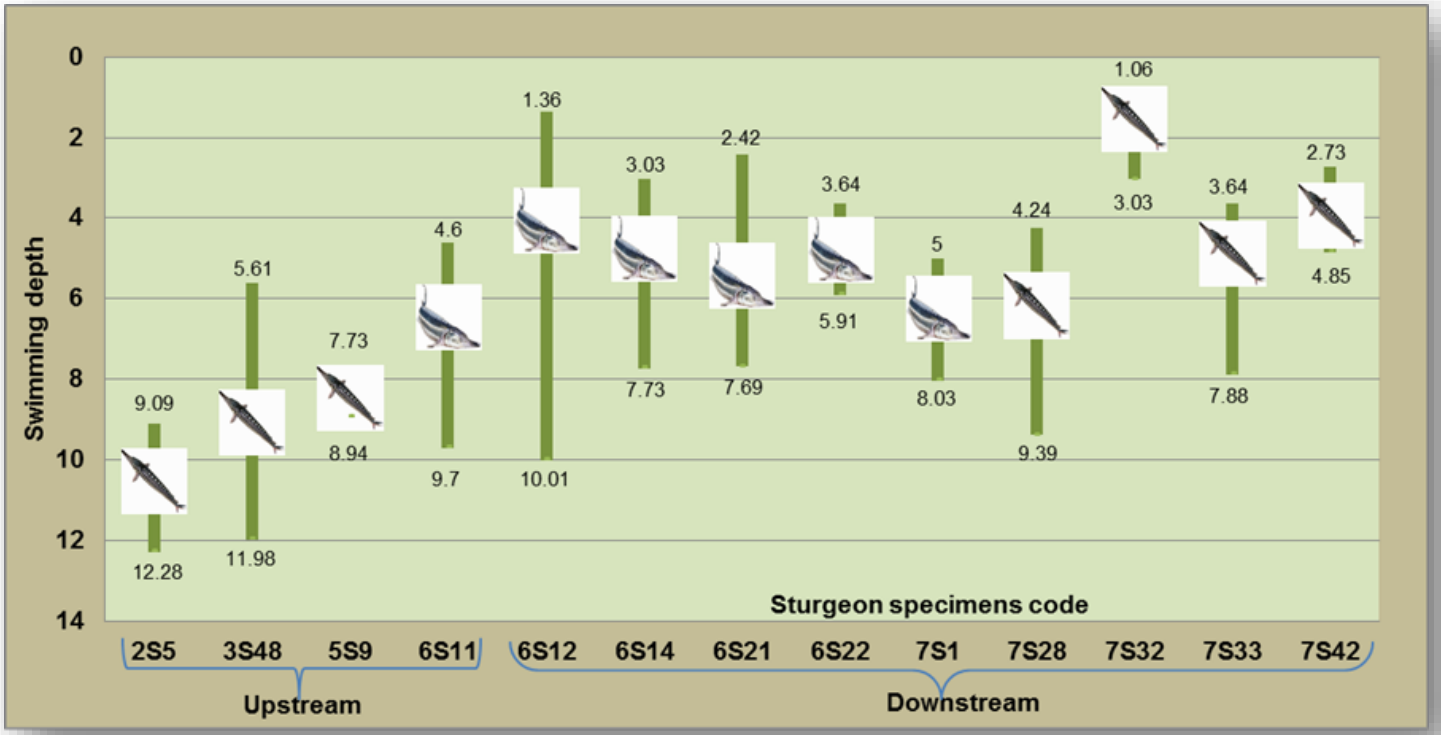
Autumn migration 2013 (Tagging sturgeon in 2013)

Spring migration 2014 (Tagging sturgeon in 2014)

A. = autumn
S. = spring
↗ = upstream migration
↙ = downstream migration

INCDPM- experience with funding programmes, successful projects, experiences- The issue of Bastroe channel

The research performed on sturgeon swimming behavior showed that they prefer deep water for upstream migration because the water velocity is lower than in shallow waters, decreasing the energy consumption. For the downstream migration sturgeons prefer the shallow water because of the high water velocity. The graph presented below highlights the sturgeon specimens that passes through Chilia branch for both upstream and downstream migration.



INCDPM- forseen projects with transboundary character, need for foreign partner

Title	*Strategy for the ecotourism development in the Danube region wetlands*
Main objective	The main objective is to improve the involvement of local communities and relevant stakeholders in heritage sites management represented by wetlands for sustainable ecotourism development in Danube Region, based on elaborating a common strategy.
Results	The strategy aims to ensure the involvement of key tourism stakeholders and decision makers to enhance the quality of life for local communities together with improving the tourism product and service leading to socio-economic benefits.
	The strategy will improve transnational cooperation between the countries within the Danube Region by developing cooperation actions taking into consideration the Ecotourism and capitalizing of the natural, cultural and traditional heritage
	On long term, the implementation of the strategy will foster sustainable use of natural and cultural heritage, in the Danube Region wetlands.

INCDPM- forseen projects with transboundary character, need for foreign partner

Title	***Conservation strategy regarding the natural heritage represented by sturgeon species on the Danube basin in the context of protection management and sustainable use of natural aquatic resources - sturgeon habitat index on the Danube***
Context	Sturgeons from the Danube basin represents flagship species at European level, critically endangered nowadays. The protection measures developed so far are not supported by relevant database of sturgeons' current situation.
Main objective	This project aims to develop a sturgeon conservation strategy based on the harmonization of CITES resolutions, Habitat directive and national legislation.
Results	The novelty is represented by an on-line platform that includes the habitat index tool, a dynamic instrument with permanent update both necessary to authorities, scientists and public.
	This index tool includes an accessible database with information on periods and migration limits, maps, habitats location, sturgeon species genetic, specific biotic and abiotic parameters
	The strategy will encourage the use of scientific fishing to determine sturgeons' current status and identify methods of regenerating the juvenile sturgeons by using aquaculture in order to improve the effectiveness of heritage sites management

INCDPM- forseen projects with transboundary character, need for foreign partner

Title	***Strategy for monitoring the hydrodynamics and sediment transport on the Danube River by integrated numerical modelling prognosis tool and implementation of actions to maintain the navigation conditions and sturgeons' migration routes***
Objectives	Creation of a decisional tool based on an online monitoring system integrated in hydrodynamic numerical models on the Danube River
	Elaboration of climate change scenarios and development of prognosis for the hydrodynamics and sediment transport
	Assessment of the impact on the navigation and sturgeons' migration routes based on medium and long-term prognosis
	Achievement of the command centers equipped with decisional tools in the riverine countries from the Danube River – Strategy for monitoring
	Elaboration of preventive solutions needed for avoiding the situations of risk on the waterways or on the sturgeons' migration routes
Results	Efficient insurance of the navigation conditions through permanent monitoring
	Strategy for integrated monitoring of the Danube River in order to ensure the navigation conditions and the sturgeons' migration routes in the context of climate change
	Insurance of the sturgeons' migration routes in win-win conditions
	Achievement of command centers and of an interconnected decisional tool between the riverine countries to the Danube River

Thank you

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