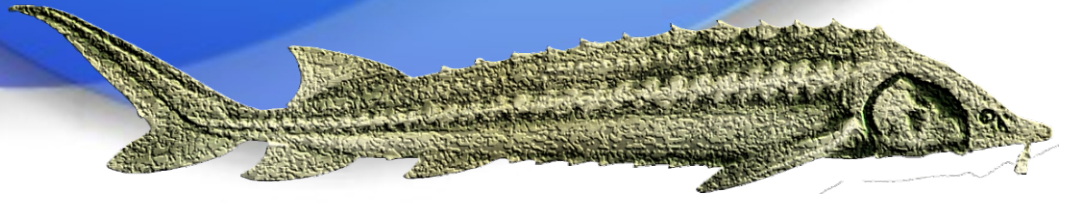

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Galați 2018

INTERNATIONAL STATION FOR DANUBE STURGEONS CONSERVATION AND MIGRATORY FISH RESEARCH

Conceptual Note

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Content

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I. Introduction

The order of Acipenseriformes is represented by 27 species occurringthroughout the whole Northern Hemisphere (Bemis & Kynard, 1997). The special importance of the Danube in this context is given by the fact that it represented the habitat for 6 of these species of sturgeon (Bacalbasa, 1997), and being among the last natural water habitats, where these species can be found and reproduce in the wild. Two Danubian species, the Sterlet (*Acipenser ruthenus*) and the Ship Sturgeon (*A.nudiventris*) are fresh water species respectively forms, they live and reproduce in the Danube. Four species, the Beluga Sturgeon (*Huso huso*), the Russian Sturgeon (*Acipenser gueldenstaedtii*), the Starry Sturgeon (*A. stellatus)* and the European Sturgeon (*A. sturio*) are anadromous species, which reproduce in the Danube and live in the Black Sea (Fig.1). All of these species are critically endangered or extinct in the Black Sea Basin. They are also species of common interest, being a priority at international level and with protection measures and recommendations having been adopted both at international and EU levels.

Figure1
a) Sterlet (Acipenser ruthenus); b) Ship or Spiny sturgeon (A. nudiventris); c) Beluga sturgeon (Huso huso); d) Russian sturgeon (Acipenser gueldenstaedtii);e) Starry sturgeon (A. stellatus); f) European sturgeon (A. sturio),
Personal adaptation after Antipa, 1909)

These "living fossils" in the Black Sea basin, declared as "Danube Sturgeons – the flagship species of the Danube River Basin" (ICPDR, 2016) represent a component unique for the biodiversity of the aquatic ecosystem in this area, and their importance, both from a scientific and a socio-economic perspective, is indisputable at international level.

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The sturgeon species are classified in the IUCN Red List as being critically endangered (IUCN, 2009), and are also included in the following international regulations and in the report of some official meetings:

- The ICPDR Sturgeon Strategy (https://www.icpdr.org/main/icpdr-adopts-sturgeon-strategy-annual-ordinary-meeting-vienna)
- Vienna declaration on global sturgeon ISS8 (WSCS, 2018)
- The International High Level Conference for the Protection of Sturgeons (https://icpdr.org/main/high-level-conference-for-the-protection-of-sturgeons)
- Annex 5 of the EC Directive for Habitats (Directivă, 1992)
- Annex 2 of the Convention on International Trade with Endangered Species of Wild Fauna and Flora (CITES, 1973)
- Ramsar Declaration on Global Sturgeon Conservation (Ramsar Declaration on Global Sturgeon Conservation, 2005)
- Action plan for the conservation of sturgeons in the Danube basin approved by the Berne Convention in 2005 (Bloesch, et al., 2006)
- Appendix II - Convention on the Conservation of Migratory Species of Wild Animals (CMS, 2018)
- Convention on Biological Diversity (CBD, 1992)
- RAMSAR Convention (RAMSAR, 1975)
- Black Sea Convention on the Protection of the Black Sea against pollution (BSC, 2009)

II. General Framework

In the current environmental context, the need for conservation and fundamental research of sturgeon species and their habitats is an international priority. Ex-situ conservation to support populations is indispensable for ensuring sustenable biodiversity of wild sturgeon stocks, as currently they are in a dramatic decline (Fig.2). It is also necessary to discover /analyse the causes that directly and indirectly affected aquatic habitats and wild sturgeon populations, as well as to research /understand the sturgeon life-cycle including specific behavior at all development stages, to identify the conditions indispensable for developing optimal solutions for the recovery of sturgeon populations in the Black Sea Basin, on short, in the future**, to can treat causes rather than effects**. But until then, when all the causes will be identified, we must urgently and quickly establish "a live gene bank", a special facility dedicated to ensuring the future of these species by preserving genetic biodiversity.

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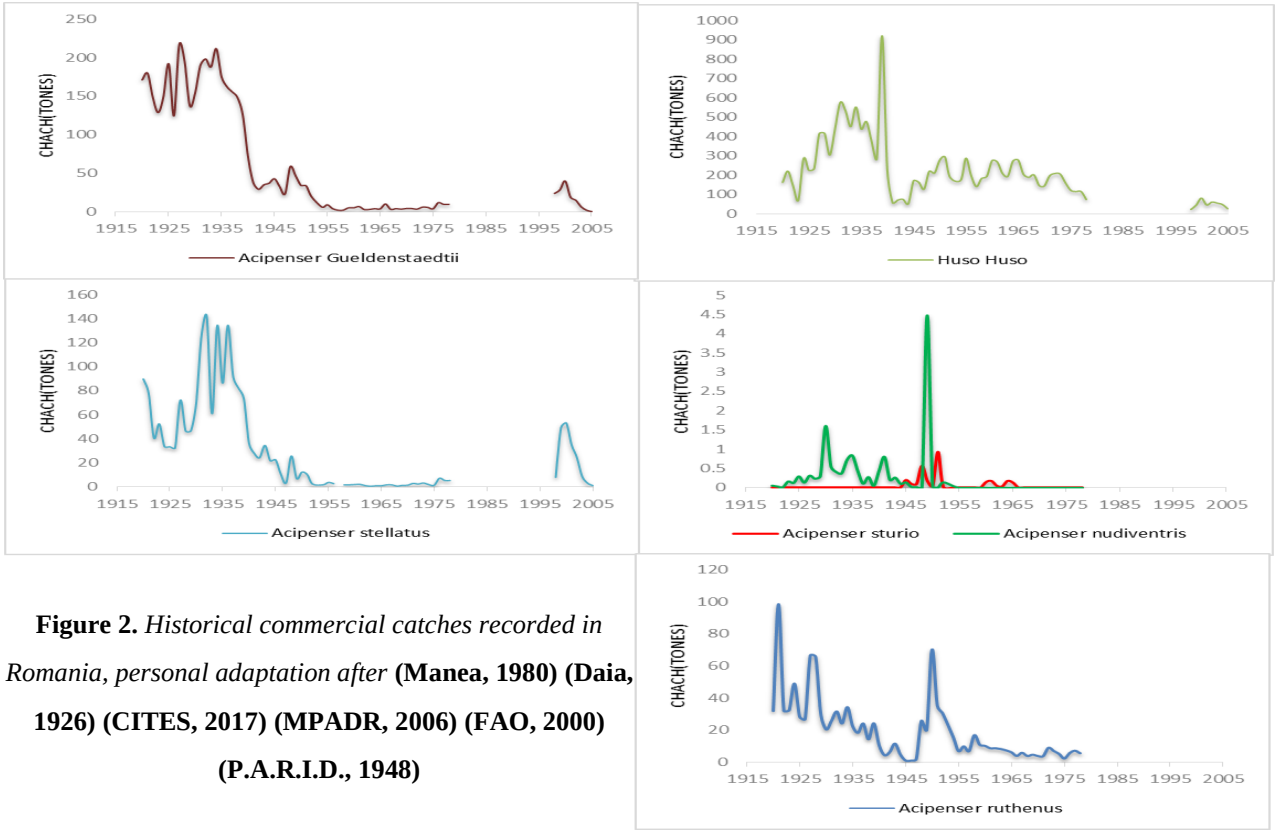

Figure 2. *Historical commercial catches recorded in Romania, personal adaptation after* **(Manea, 1980) (Daia, 1926) (CITES, 2017) (MPADR, 2006) (FAO, 2000) (P.A.R.I.D., 1948)**

All these aspects can be treated in a dedicated facility, incorporating and efficiently integrating all the elements necessary for conservation of sturgeon species and research and monitoring the migratory fish from the Danube and Black Sea. For this purpose, the establishment of an ***International Station for Danube Sturgeons Conservation and Migratory Fish Research*** in the Northwest Black Sea, at the mouth of St. George's Arm, would be a unique opportunity at both national and European levels. This is due to the ideal position from both the geographical and functional points of view.

The whole potential of such a station with its unique geographic position, granting access to the Black Sea, the Delta and the Danube and their wide variety of marine, estuarine and riverine habitat, will make it a best facility for IN-SITU research and monitoring and EX-SITU conservation. Through regional and international scientific collaboration for study of migratory fish and aquatic habitats will make it a top unit on a worldwide scale (Reinartz, 2002, Bloesch, et al., 2006, ICPDR, 2018).

The resort will be organized in two distinct directions, however closely related and interconnected by the specific nature of its main objective, the recovery of wild sturgeon populations (Sandu, et al., 2013):

- The **first** direction will be the EX-SITU conservation of the sturgeon biodiversity, by creating a "live gene bank" (Reinartz, et al., 2016), consisting of specimens belonging to species that either still can be found in the Black Sea and the Danube, or for species that are extinct or on the brink of extinction (European Sturgeon, Ship Sturgeon, Danube Sturgeon) and som species have to be relocated from other areas, forming a broodstock of high genetic diversity in time (Williot, et al., 2009). The uniqueness of this "bank" will be the completely new approach to the EX-SITU conservation concept, in that the conservation unit will include facilities adapted to each life cycle, specific to the respective sturgeon species, and at the same time respecting the parameters of the natural aquatic habitat. Depending on the situation of each species and the specific needs to support the wild populations identified by rigorous studies, it will be stocked with sturgeon fingerlings obtained by controlled propagation in a specialized facility (conservation unit). Conditions as close as possible to the natural environment (the preferred habitats) will be created so that adaptability to the wild life of these

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juveniles is natural and their propagation will follow all the genetic principles to ensure a high genetical diversity. The design of the facility will, in time, ensure the support of the conservation of broodstock with different genotypes and ages, so that the specimens will resemble the wild ones in every important aspect.

- The **second** direction will be RESEARCH and MONITORING, including studies of fundamental interest on the factors that affected and are still affecting wild sturgeon populations and their life-cycle, as well as the IN-SITU behaviour of wild sturgeons, in the context of current ecosystem research, at all developmental stages. These studies have the purpose of filling deficits in knowledge concerning the synergic action of the factors responsible for the increasingdecline of sturgeons in order to generate

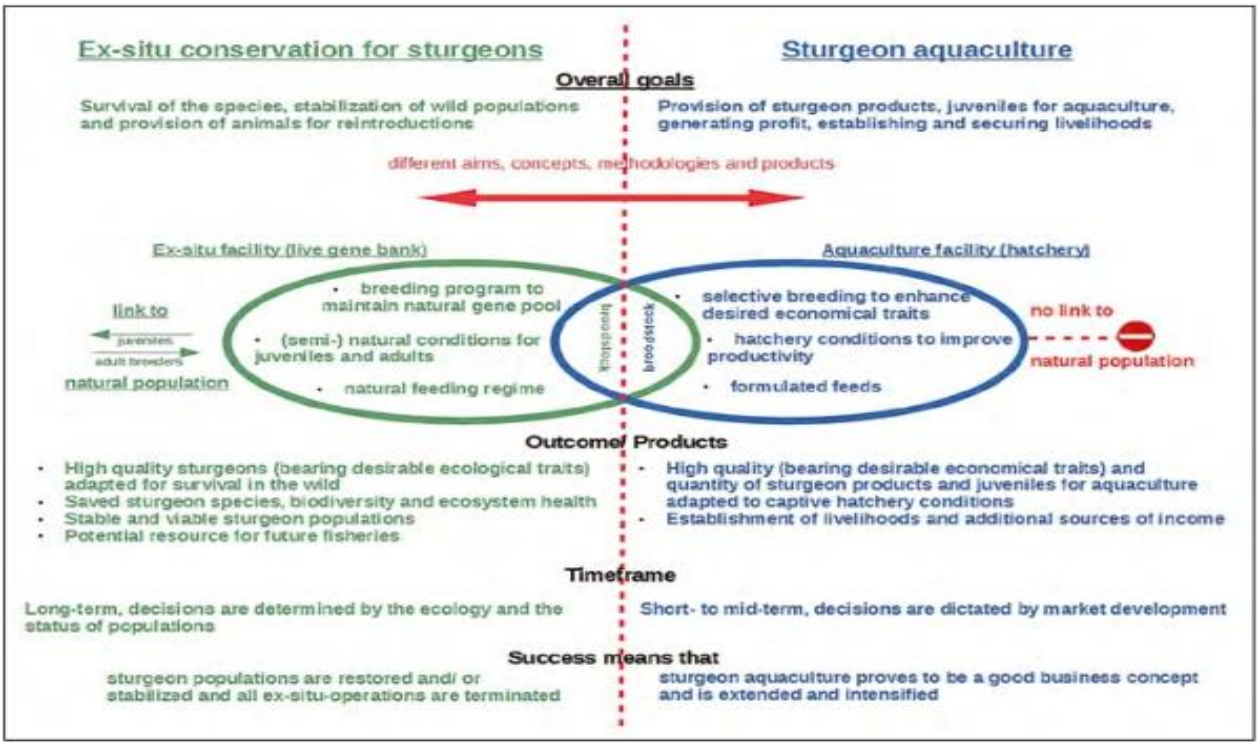

Figure3 Main differences between ex-situ measures for sturgeons and sturgeon aquaculture **(Reinartz, et al., 2016)**

the correct solutions of IN-SITU protection for these species and also the continues monitoring of migratory fish

Through this concept, this facility differs from an commercial aquaculture focused on caviar/fish production for customers through different purposes, concept, methodology and product, and with the destination and criteria for selecting the biological material being different as they are presented in Fig. 3. (Reinartz, et al., 2016).

The interconnectivity and complementarity of the two directions of the ***International Station for Danube Sturgeons Conservation and Migratory Fish Research*** , makes this facility a complete unit that will have all the necessary conditions to approach In-SITU and Ex-SITU fundamental research and monitoring, incorporate international novelties and to look at the ideal technical, scientific and practical conditions for the establishment of a" live gene bank", unique even at an international level.

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III. International Station for Danube Sturgeons Conservation and Migratory Fish Research

A. EX-Situ Conservation facility

For the range countries of the Danube and the Black Sea, the establishment of a biodiversity conservation unit for the native sturgeon species (aka as sturgeon conservation hatchery) is urgently needed (Bloesch, et al., 2006, ICPDR, 2018, WSCS, 2018). The ideal opportunity and geographic position empowers and honours Romania to be the host of this sturgeon conservation unit that will combine the scientific and ecological needs and potential of the riparian countries of the Black Sea and the Danube with regard to the **protection, conservation, recovery, monitoring and research** of sturgeons under its aegis.

The EX-situ facility (Conservation Unit) of the ***International Station for Danube Sturgeons Conservation and Migratory Fish Research***, will be a facility dedicated to the conservation of sturgeon stocks (Fig.3), which will incorporate the latest techniques, methodologies and technologies for the formation of a unique live gene bank at European level. As this unit will develop into a Station with the latest research facilities and concerns, it will be possible to elaborate the best techniques and methods of producing fingerlings for the support of wild sturgeon populations (Chebanov, et al., 2011). This will also ensure a product of high ecological quality rather than quantity and will help to avoid problems that already occurred in the Caspian and Azov Seas due to detrimental practices in controlled propagation of sturgeons and massive releases of juveniles to support wild populations (Chebanov & Savelyeva , 1999; Chebanov & Billard, 2001; Secor, et al., 2008; Maltsev, 2009).

The unit will consist of all the facilities necessary for sturgeon conservation in all developmental stages and necessary for the establishment of a broodstock, representing the "live gene bank". Also an experimental pilot facilities for propagation (Kynard, et al., 2011; Chebanov, et al., 2011) in compliance with all scientific regulations in the field, using low stocking densities, natural photoperiod and reducing other stressors will be included (Chebanov, 2013).

The design of this conservation unit needs to include:

- Broodstock ponds
- transportation and unloading of broodstock
- pre-spawning holding of broodstock (including long-term holding)
- hormonal stimulation of broodstock and production of gametes,
- egg fertilization and de-adhesion (unsticking)
- egg incubation
- holding of prelarvae and grow out of larvae in tanks,
- rearing of fry in the grow-out ponds
- pilot facilities for propagation(containers in breeding areas for hatching, and proper prelarvae and larvae development)

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- culture and fishing of live food (Chebanov, 2013).
- systems that provide beck-up for water and electricity supply

A good example of the operating scheme of such a facility is "State Regional Centre for Sturgeon Gene Pool Conservation Kubanbioresursi" Fig.4.

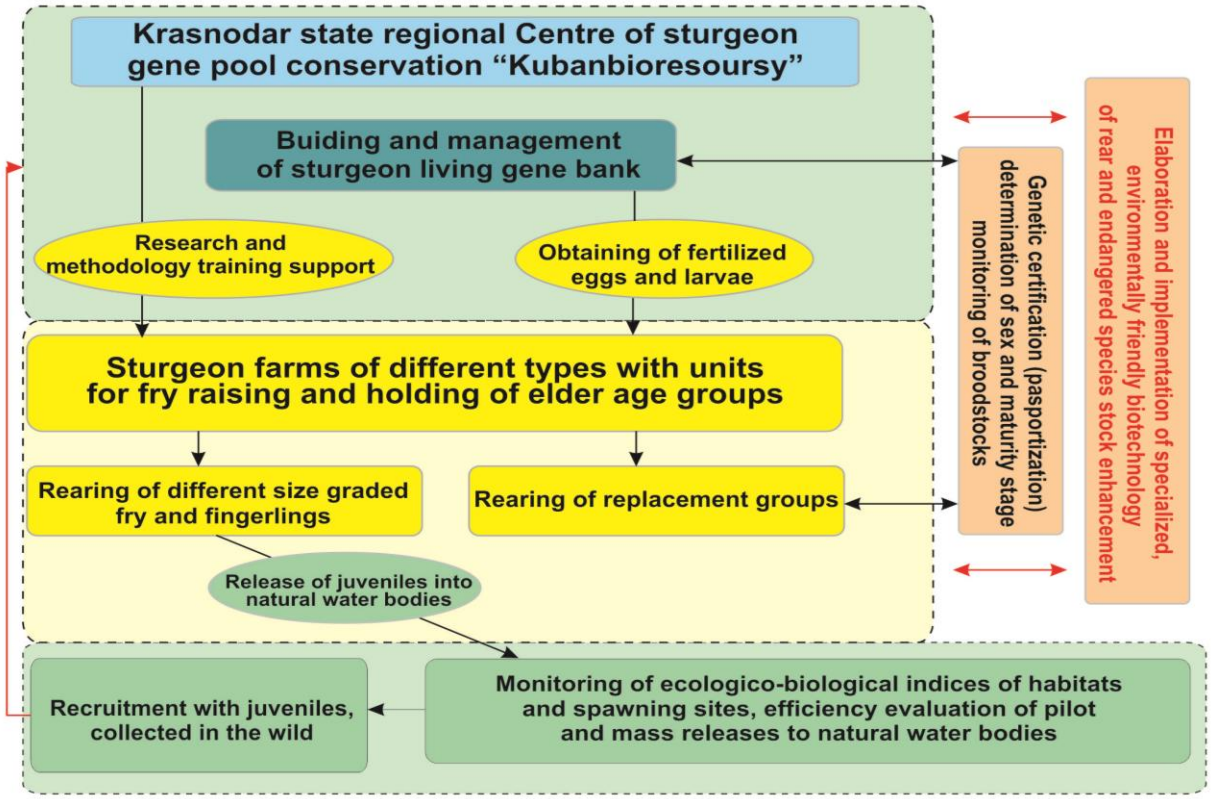

Figure *4 Scheme of «Centre for conservation of gene pool» activity (Chebanov, 2018)*

The facility will have the advantage of being able to work with water from the sea and from Danube, thus replicating the natural environment. Sturgeons will be able to grow in basins of varying salinities corresponding to species and their respective stage of development (Williot, et al., 2009). The growth and health parameters of sturgeon in marine water are superior to those regarding the farming in fresh water (Zaharia, et al., 2011). This facility will also have the advantage to having access to adult and sub-adult sturgeons from the Black Sea, necessary to start immediately, after the finishing of the construction, the sturgeon broodstock.

B. Research and Monitoring Direction

Migratory fish still bear many unsolved enigma and some aspects of their behaviour in the wild remain unknown until today. Over the last 100 years, a sum of factors has affected and intensified the dramatic decline in wild sturgeon populations. These can be classified in direct, indirect and theoretical causes. The main direct causes: overfishing, dams (disruption of migration routes), poaching and bycatch, pollution, sediment excavation, hydro morphological alterations of Danube. The main theoretical causes: the influence of the geo-

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political factors on the catches, insufficient or inaccurate commercial catches data, the economic part and the luxury product. The main indirect causes: rivers hydrotechnical constructions (dikes and dams that have qualitatively changed the water geochemistry of Danube and main tributaries). The discovery and understanding of these life-cycle events and mechanisms could facilitate the identification of important causes that lead to a drastic decrease in populations and could generate optimal solutions for the restoration of wild populations. It is increasingly obvious, that besides the overfishing which is the main cause of the sturgeon stocks decline in the last century , the deterioration of aquatic ecosystems by anthropogenic factors caused major changes in the physico-chemical, biological and hydromorphological parameters of the Danube and the Black Sea and indirectly affect sturgeon populations (COCIASU, et al., 1996, Humborg, et al., 1997, Garnier, et al., 2002, Tockner, et al., 2009, Bondar & Iordache, 2016, Saliot, et al., 2002). These indirect major causes have affected, in time, the natural productivity of the sturgeons. However, the exact cause-effect relations are still unknown, requiring a more detailed investigation of these elements for a better management of sturgeon population.

Lately, fundamental sturgeon research carried out at international level has made progress e.g. concerning the establishment of the biochemical elements of the larval nervous system, responsible in the first days of life for the olfactory imprinting of clues from spawning grounds (Kasumyan, 2004; Camacho, et al., 2010; Kasumyan, 2018).

Research and monitoring of migratory fish in Danube and Black Sea, has also made some progress lately, but there still is much to be clarified, such as e.g.:

- identification and characterization of feeding sites for each species;
- feeding migration in the sea (Morteza, et al., 2016);
- "Open Water" orientation (Kjell & Ole , 2003, Steven, et al., 2008, William, et al., 2017);
- endocrine and hormonal transformations during the open water migration;
- "homing" phenomenon and which are its underlying clues (Ishizawa, et al., 2010, Vrieze, et al., 2010, Ueda, 2012, Matthew, et al., 2013)
- up-stream migration-identification and specificity of sites for spawning and early development (Gessner & Bartel, 2000)
- physicochemical, biological and mechanical characterization of ecosystems (Yamamoto, et al., 2013)
- thus identifying the causes that affected the sturgeon's natural productivity
- endocrine transformations during the downstream migration of the sturgeon YOY
- telemetry for monitoring the migration along the Danube (marking with acoustic tags directly in the Black Sea would remove the intervention on the sturgeons during the migration and thus would be avoided the stress and physiological changes generated by it)
- the cycles of the period among reproductions (Bacalbasa, 1997)

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- the interspecific behavioural differences (Kynard, et al., 2002)
- genetical study of lack Sea population of sturgeon (Ionescu, et al., 2018),
- bioacoustics (Carol & Catherine, 2003, Michaela, et al., 2010, Michaela, et al., 2012, , Bocast, et al., 2014).
- identifying the risks / hazards that affect each life cycle
- determining the causes that affected and affecting the sturgeon populations
- Increased monitoring and research of these species in the sea, feeding migration, distribution
- Migratory species continues monitoring

Fundamental progress in answering these questions could be made by the development and instalment of such a station, as it would provide the opportunity to validate results from in-situ research directly by experiments in its ex-situ facilities, making use of its ideal geographical location and the biological material that is readily available. This underlines the complementarity of the two different branches (IN-SITU and EX-SITU) for the validation of certain assumptions.

Certain studies and researches that have been carried out at an international level already, can additionally serve as models for the future concept of such an endeavour (Gessner, et al., 2009, Kynard, et al., 2012).

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IV. Design of the ISRCDS

A. Location

The ideal location for building the ***International Station for Danube Sturgeons Conservation and Migratory Fish Research*** is in the Northwest of Black Sea (Fig. 5), at the mouth of the St. George's Arm, on the Central Canal between Sf. Gheorghe and Sulina on the shore of the Black Sea on a marine liman (this potential site **has already been secured** from Sf. Gheorghe hall).

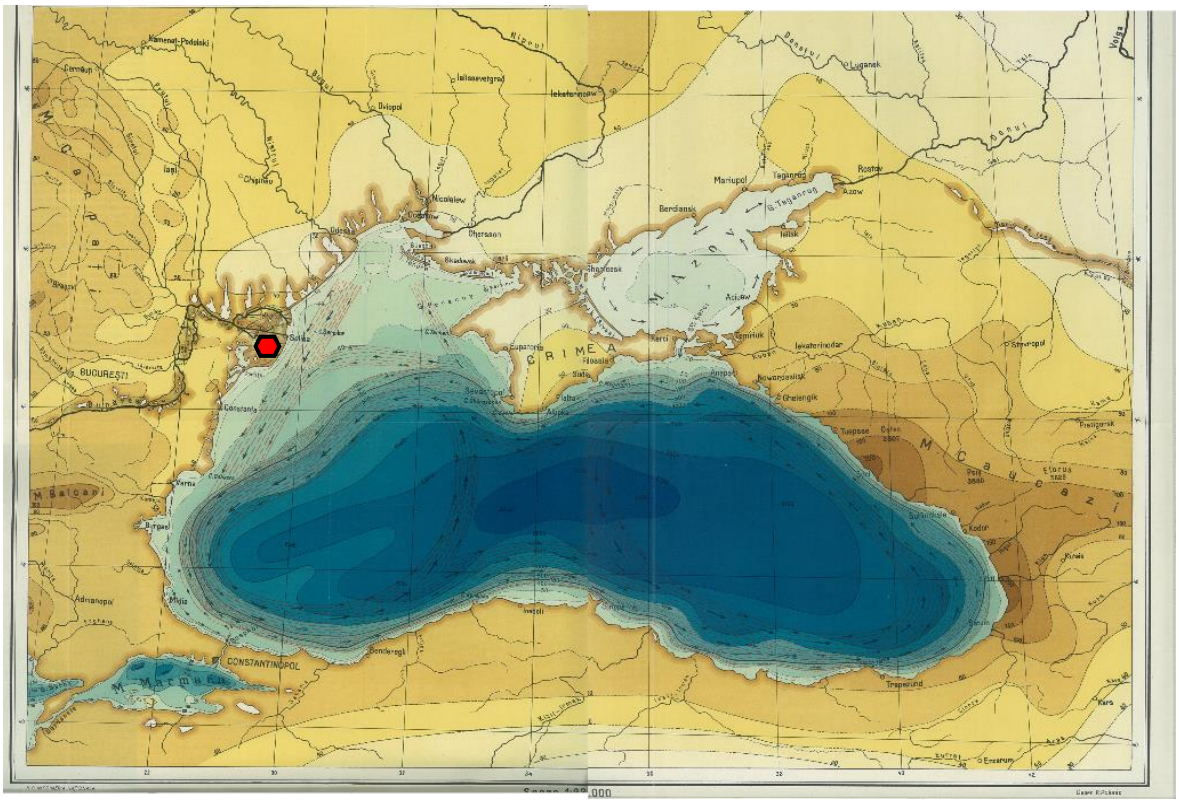

Figure 5 Black Sea **(***Antipa, 1941***)**

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In addition to the remarkable geographic position, the choice of these locations also has a historical and scientific connotation since Sf. Gheorghe village has a tradition of sturgeon fishing, also called the "European Sturgeon Capital". In the last 100 years, when sturgeon fishing was still legal, the largest amount of sturgeon from Romania resulted from commercial fishing in this area (Fig.6). The designated location is in the seaside area, near the Sf. Gheorghe village, bordered to the East by the Black Sea and to the West by the Central Canal, which connects Sf. Gheorghe and Sulina (Fig. 7 and 8).

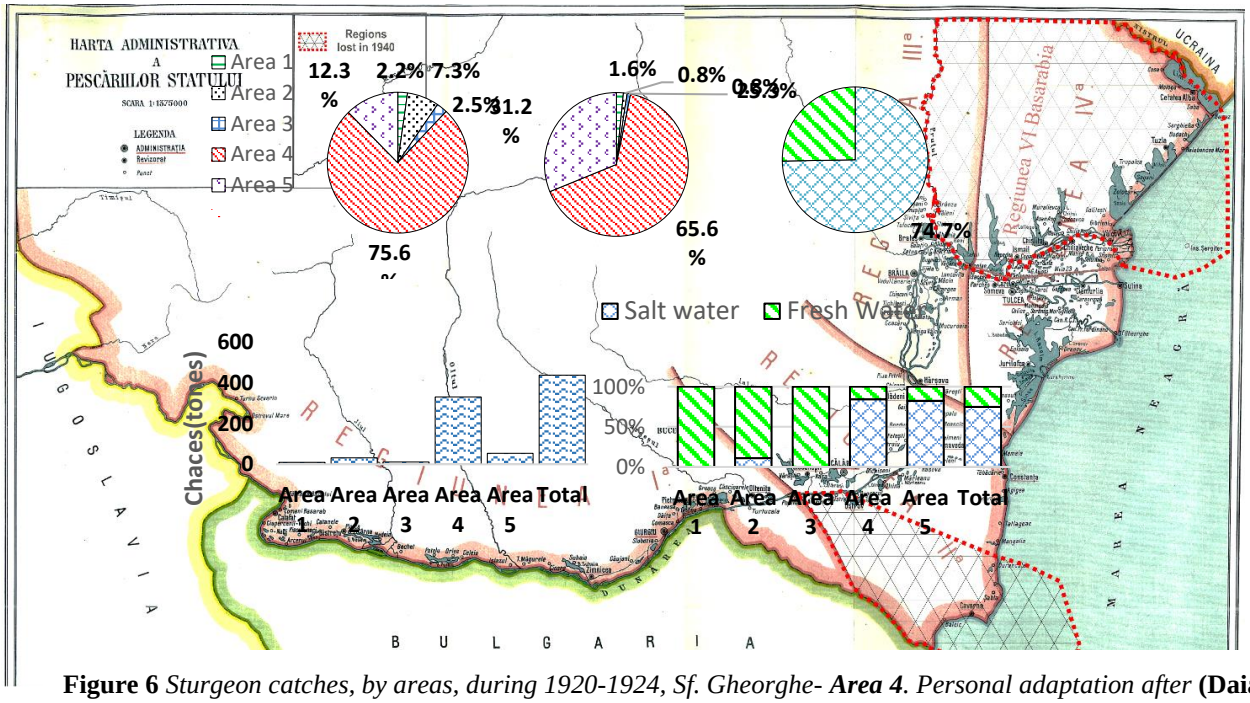

Figure 6 *Sturgeon catches, by areas, during 1920-1924, Sf. Gheorghe-* ***Area 4****. Personal adaptation after* **(Daia, 1926)**

Figure 7 *Land for the location of the International Station for Research and Conservation of Danube Sturgeon (Foto Original)*

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Figure 8 *Potential future site on the Central Canal between Sf. Gheorghe and Sulina on the shore of the Black Sea*

B. Construction

The ***International Station for Danube Sturgeons Conservation and Migratory Fish Research*** will be composed of the following elements:

1. **The facility for conservation** of sturgeon (Conservation Unit) will consist of five main elements:

- **Ponds for conservation and growth** - earthen ponds covered by a special geomembrane (if it is found that the land has high permeability), with different sizes and shapes, for the various species and classes of size/age. They will be endowed with specific equipment for water discharge and supply to ensure an appropriate hydrodynamic regime and system and fail-safe systems for flooding's and electrical power outage;

- **Facilities for breeding and pre-development of sturgeon** - The breeding station will have facilities for egg incubation, holding of pre-larvae, grow out of larvae in tank sand rearing of fry in the grow-out ponds, equipped with all technical monitoring elements. It will also include experimental outdoor basins simulating conditions of the migration period by entering varying amounts of Danube water (Kynard, et al., 2011; Chebanov, et al., 2011). Other facilities and installations will enable a simulation of the natural environment and will allow experiments and research to be carried out in a multifactorial approach also with regard to the development of ecologically sustainable methods for controlled propagation under hatchery conditions, as well as for egg incubation in an adhesive state. Additionally, an artificial spawning ground will be developed ensuring optimal hydrological conditions for a simulated pseudo-migration of broodstock and including the possibility of annual renewal of artificial substrate and in-situ rearing of larvae. (Chebanov, et al., 2011). Thorough research will also go into the possible deployment of special **egg incubation stations** for the purpose of supportive stocking or reintroductions. Here, fertilized eggs will be hatched and reared to juveniles in the direct vicinity of natural reproduction sites for the sturgeon to be released;

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- **Facilities for the culture, procurement and preservation of natural live food-** which will consist of fishing units equipped with the necessary tools for catching live food (fish, crustaceans, shells) in the Black Sea, equipment for the culture of live food (e.g. Daphnia, Artemia, Oligochaeta) and a station for briquetting, fast freezing and storage. This technological process will greatly reduce the possibility of food contamination and thus also the loss of priceless biological material;

- **Water supply and discharge installations** - the technological facilities will be supplied with water from the Sea and the Danube, which will be directed to the Conservation Unit through the supply/ discharge systems made up by a network of pipelines, connectors, control elements, pumps, etc.(flow-through systems) The supply water will be conditioned, so that all the water quality parameters are maintained optimally throughout the year, regardless of the fluctuations caused by climatic factors. In addition, the removed wastewater will be treated before being discharged with ecological methods (e.g. reed). The installation will be equipped with system and fail-safe systems for flooding's and electrical power outage;

- **Power supply unit -** In addition to the power supply of the medium voltage network, green energy systems will also be deployed (solar panels and wind turbine). The facility will also have a safety system for producing energy with fuel;

The administrative and research building will be composed of by 3 wings**:**

- **The eastern side of the building**, the research and monitoring sector, restricted to researchers only, is made up of laboratories specifically endowed for being carrying out the In-Situ and Ex-Situ fundamental research;

- **The western side of the building**, intended for accommodation facility, conference room and offices necessary for employees, researchers and guests;

- **The middle side of the building** will be arranged as a fishing museum with live transmission from the sturgeon ponds and objects that characterize the fishing communities, for a better awareness of the importance of sturgeons and their habitats. This will increase visibility and provide the Danube Delta with a new tourism objective;

All the materials used for the construction of this unit will be in accordance with the specificity of the area and the concrete will be used only for the resistance structure.

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V. Strengths

The strengths of the ***International Station for Danube Sturgeons Conservation and Migratory Fish Research*** are:

The perfect place for sturgeons	• Unique area to build a "Live gene bank". The facility to have conditions close to the natural ones (without stress on fry and broodstock, by using low stocking densities, natural photoperiod, natural food, natural cycles of live, salt and fresh water)
Wild sturgeon with high genetic diversity	• Access to sturgeon adults and sub-adults from the Black Sea without intervening in the River during migration
Free sturgeon juvenile for the recovery of wild sturgeon populations from Danube	• The artificial reproduction will support an free annual sturgeon stocking program in Danube, with high genetically diversity of sturgeon fingerlings for each species, depending needs resulting from the research. The Station, through the research direction, will be able to make a continuously monitoring of these sturgeon in the Black Sea(Post-socking monitoring)
Danube water supply is very close and research facilities	• artificial spawning ground with hydrological conditions of pseudo-migration of broodstock with the possibility of annual clearance of artificial substrate, rearing of larvae (controlled maturation without exogenous hormonal stimulation- development of ecologically sustainable methods for simulating artificial reproduction under the hatchery conditions)
Ponds for growth and conservation	• Extensive system of growth and conservation as similar as possible to wild conditions
Easy to obtain; short time between capture and processing	• Feeding with natural live food from the Black Sea, depending on species and age. Creating a facility for food preservation by quick freezing for avoiding contamination.
Development of interdisciplinary studies and fundamental research and continuous monitoring	• Full access to In-Situ and Ex-Situ monitoring and research of marine and fluvial aquatic ecosystem and migratory fish species
Low costs incurred with the building	• this potential site has already been secured from Sf. Gheorghe hall (30 ha). Also this location have the access to utilities, access by boat to the Central Canal and the Black Sea, access to the road connecting Sf. Gheorghe and Sulina, access in the western part of the land to the medium voltage power line

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VI. Final Considerations

Envisioning and planning such an investment must consider the following aspects:

- This Station will be dedicated for the conservation of biodiversity of wild sturgeons from the Danube and the Black Sea **"Live Gene Bank"** and for the research and monitoring of migratory fish species in the North-West Black Sea and the Danube River ;
- Objectives of this Station need to be calculated for **medium and long term** (minim 20 years);
- This Station must support a **free annual sturgeon-stocking program** in Danube (Including containers located near to natural spawning site for river natural stream water smell to imprinting of yolk-sac larvae) and a **post-socking monitoring**;
- This Station it is a **strategic investment** for Danube Sturgeon and this aspect should be regarded as a matter of National, Regional and European Interest (the common aquatic resource of Danube and Black Sea riparian countries)
- The station must be state-owned/European, set up by an **international partnership** (access grants required for the construction and ensuring maintenance) that includes state institutions from the countries concerned: Universities / Research Institutes (e.g. DJUG, DDNI, etc.), Agencies/Ministries (e.g. NAFA, DDBRA, etc.), NGOs and organizations (e.g. WSCS, WWF, ICPDR , IAD, etc.), Fishing Association;
- The Station should be run by an **International Board** (maximal seven people) and **International Scientific Council** (members from each partner and international sturgeon experts), according to national and European law.
- **The administration of the Station** should be carried out by a staff headed by a director who will be supervised by the International Board and International Scientific Council;
- The design, construction and operation of this Station must be oversee by the international **key experts** fully involved
- The station must have **cooperation and partnerships** with international and national institutions with concern in conservation area or related fields. (e.g. National Research Institute of Science and Technology for Environment and Agriculture (IRSTEA), State Regional Centre for Sturgeon Gene Pool Conservation "Kubanbioresursi"; Leibniz-Institute of Freshwater Ecology and Inland Fisheries (IGB); Sturgeon Monitoring Station from Isaccea; Research Centre "Danubius" Murighiol Subsidiary (INCDSB) etc.);
- The station must have a **collaborative projects (grants) for research and monitoring** of migratory fish species, implemented with entities from the riparian countries the Black Sea and the Danube

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- The station must function according to the **principle of a "living gene bank"**: molecular genetic characterization of breeders, a breeding plan, non-invasive techniques for monitoring of breeders, optimization of animal welfare, rearing and propagation with prolonged season of spawning, respecting the ecological requirements of the Danube and the Black Sea;
- This Station will be in accordance with the new **Pan-European Action Plan;**
- The development process must **start in early 2019** (geotechnical, hydrogeological studies, etc.) and the completion of the construction must not exceed 2022
- Forming **international partnership** should begin by the end of 2018.
- Funding should be made **by European funds (Eu Grants)/ or**. The financing line must be identified until by the middle of 2019 and the submission must be no later than the end of 2019;
- The cost of this **investment is between 6-10 million euros** depending on the construction solution(after the geotechnical, hydrogeological studies we can approximate the amount that will needed)
- **Maintenance / year** will be approximately between 3-500 000 Euros (e.g. at the Kubanbioresursi the costs/year with maintenance are between 0.5-1 million Euro/year for a 100 specimens of sturgeon broodstock, Chebanov, 2018), from which DJUG will support part of maximum 200,000 Euros / year during 20 year. See **Annex 1-Letter Of Commitment**. This financial effort for annual maintenance must be multinational, with the involvement of the governments / European Union / Partners.

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I am thankful for the helpful comments and opinions to Jürg Bloesch, Mikhail Chebanov, Jörg Gessner, Boyd Kynard and Ralf Reinartz;

VII. ANNEXE 1-Letter of commitment

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LETTER OF COMMITMENT

With this letter I, Prof. Dr. Eng. Iulian Gabriel Bîrsan, in my capacity as legal representative of "Dunarea de Jos" University of Galati, hereby declare that our institution commits itself to participate in and contribute to the establishment and maintenance of the ***"International Station for Danube Sturgeons Conservation and Migratory Fish Research"***. This facility will be dedicated for the conservation of biodiversity of wild sturgeons from the Danube and the Black Sea "Live Gene Bank" and for the research of migratory fish species in the North-West Black Sea and the Danube River (Conceptual Note of Tudor Ionescu).

The participation and the contribution to the above will be provided in accordance with national and European law.

In particular,"Dunarea de Jos" University of Galati commits itself:

- To form an international partnership to access grants required for the construction of this facility and to support co-financing if necessary
- To support the foundation of an international board of key experts to oversee the design, construction and operation of this facility
- To support such an investment by providing a part of the maintenance, after the construction will be finished, maximum 200,000 Euros / year during 20 years
- To provide the necessary site for this construction in the area of Sf. Gheorghe on the Central Canal between Sf. Gheorghe and Sulina, on the shore of the Black Sea
- To start the development process in 2019 (geotechnical studies, hydrogeological studies, etc.)
- To support and encourage any research projects that will be carried out through this investment (Post Implementation Project), international collaboration, and also to attract money for the maintenance of this facility (however, if not available, the University will finance part of the costs, see bullet 3)
- To ensure that this facility will function according to the principle of a living gene bank for Pontian sturgeons we will implement their release including molecular genetic characterization of breeders, a breeding plan, non-invasive techniques for monitoring of breeders, optimization of animal welfare, as well as rearing and propagation with prolonged season of spawning, respecting the ecological requirements of the Danube and the Black Sea

The Research and Development Centre for Sturgeon, Aquatic Habitats and Biodiversity, affiliated to our institution, is authorized, through its director Tudor Ionescu, to make contact with the involved institutions and organizations, in order to start the activities outlined in this letter.

Galati, 03.10.2018

"Dunărea de Jos" University of Galati
RECTOR
Prof. Dr. Eng. Iulian Gabriel Bîrsan

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