

# Assessment Of The Survival And Spread In The Black Sea Of The Critically Endangered Sturgeon Juveniles Released In The Lower Danube – Pilot Project

The activity carried out by the institute in this partnership consisted of the monitoring sturgeon juveniles routes produced in aquaculture and released into the Danube to restocking the populations of wild sturgeons using the ultrasonic telemetry method. INCDPM experts, in addition to the experience gained in over 5 years of monitoring the migration of adult sturgeon based on ultrasonic telemetry, have also consulted the specialized bibliography in order to find the best method of tagging and monitoring sturgeon juveniles which do not affect or influence their life. In this respect, the tags used for the juveniles tagging were of small size and after their abdominal insertion a tissue adhesive was used to protect the incision area from possible infections.

Thus, in order to accomplish this activity, INCDPM experts tagged, in the sturgeon farms, with ultrasonic tags, over 100 specimens of sturgeon juveniles of the three anadromous migratory species (*Acipenser stellatus* – stellate sturgeon, *Acipenser gueldenstaedtii* – russian sturgeon și *Huso huso* – beluga) and have installed monitoring stations equipped with receivers capable of receiving the signal transmitted by the tags implanted into the abdominal cavity of the sturgeon juveniles on the Danube section between the Iron Gates and the Black Sea.

After tagging, the specimens were observed on the farms for one week to monitor their behavior in relation to the tagging technique used, the result being more than satisfactory because the fishes did not show any behavioral changes and no mortality was recorded.

The results are unique and represent a premiere at the level of Danube river basin.

In addition to monitoring with the fixed stations, mobile monitoring was carried out using a mobile receiver located on a boat, where an expert team has crossed the section between the release of the tagged juveniles and the spilling into the Black Sea, tracking in real time their migration.



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## Objectives

### General

Tagging and monitoring through ultrasonic telemetry of sturgeon juveniles behavior produced in aquaculture and released for restocking along the Danube to support wild populations.

### Specific objectives:

1. Identification of the sturgeon juveniles behavior in relation to the tagging technique used for monitoring.
2. Determination of sturgeon juveniles migration routes and their distribution on the three main branches of the Danube Delta (Chilia, Sulina and Sf. Gheorghe).
3. Evaluation of the success rate defined by the number of specimens arriving in the Black Sea from the total number of ultrasonically tagged sturgeon juveniles.

## Results

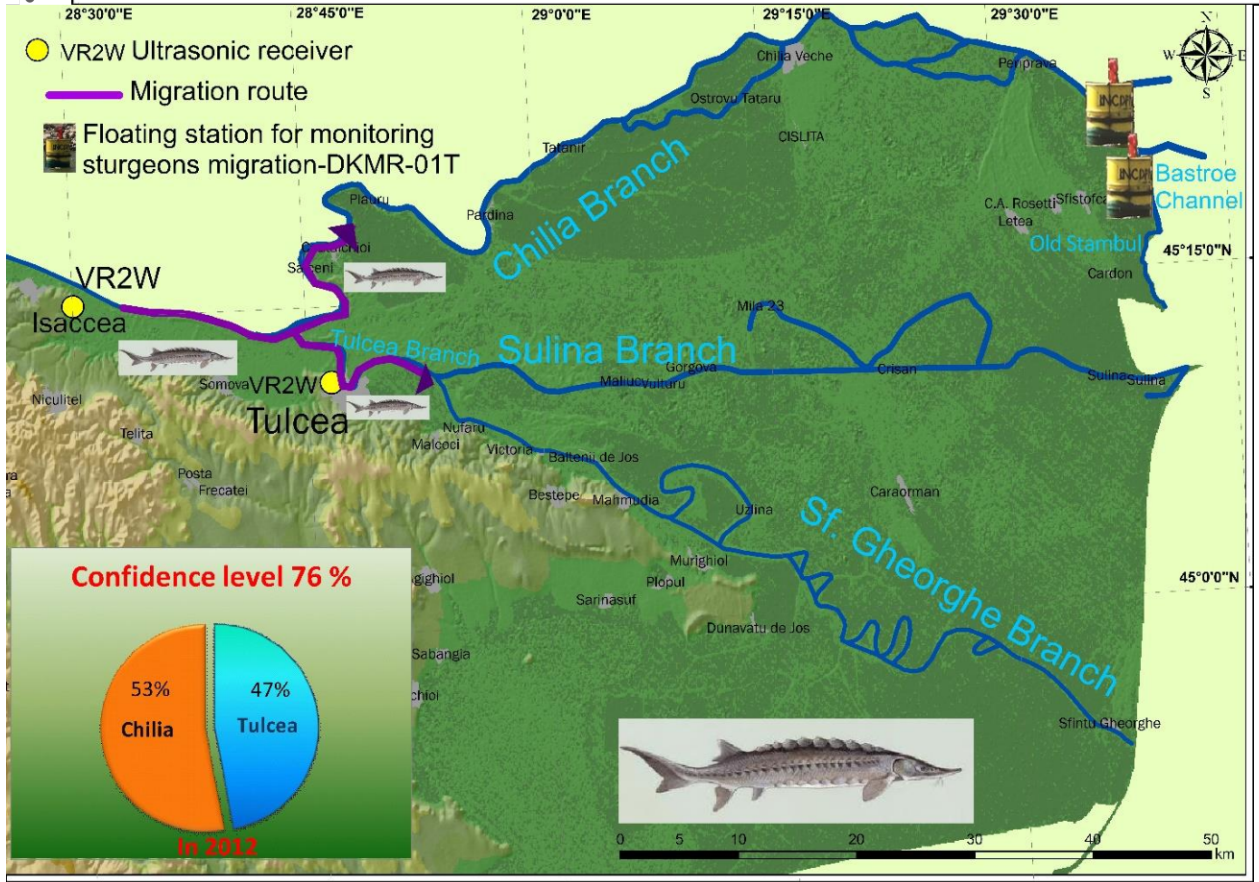
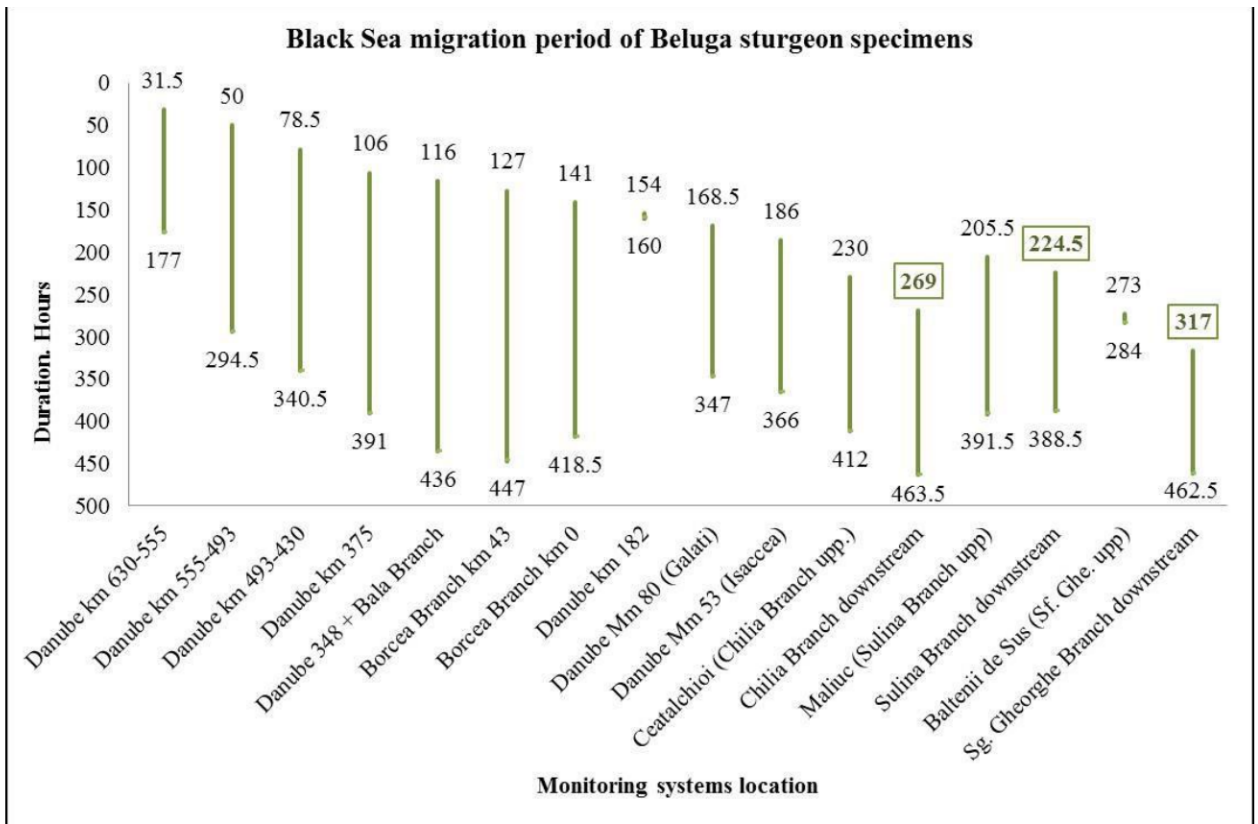
Monitoring of the sturgeon juveniles was realized through acoustic telemetry on the sector between Corabia, km 633 of the Danube and up to the spilling into the Black Sea on the three branches: Chilia, Sulina and Sf. Gheorghe. The installation of the receiver stations was done using monitoring systems developed by experts INCDPM and presented in several scientific papers (Bădiliță A.M., et.al., 2013; Deák Gy., et.al., 2013, 2014; Raschi M.C., et.al., 2016) which incorporates these equipments and which have been mounted in such a way as to be able to capture as best as possible the sound signal transmitted by the tags through the water. The two monitoring systems are of two types: floating (DKMR-01T) and fixed (DKTB) types, both proposed for patent at the Office for Inventions and Trademarks (OSIM).

By monitoring the behavior of ultrasonically tagged sturgeon juveniles, a unique database was obtained at the level of the Danube river basin, and by processing it obtained results such as:

- Establish the main sturgeon juveniles migration routes with an emphasis on their favorite routes on their way to the favorable habitats from the Black Sea;
- Distribution of ultrasonically tagged sturgeon juveniles at the Danube Delta level, observing their preference for a particular branch;
- The time elapsed since the release of the tagged sturgeon specimens until their arrival at the Black Sea;
- Daily/nocturnal distribution of ultrasonically tagged sturgeon for observation of their migration intensity according to daytime;
- Establishing the debits in the areas of interest and highlighting their influence on the sturgeon juveniles migration;
- Maps with of sturgeon juveniles migratory routes.







### Black Sea migration period of Stellate sturgeon specimens

