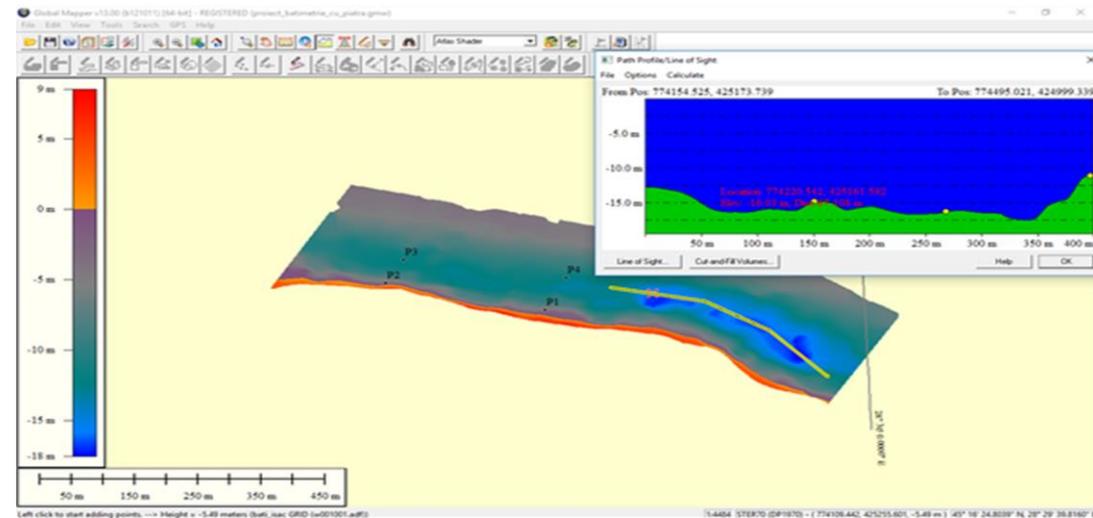
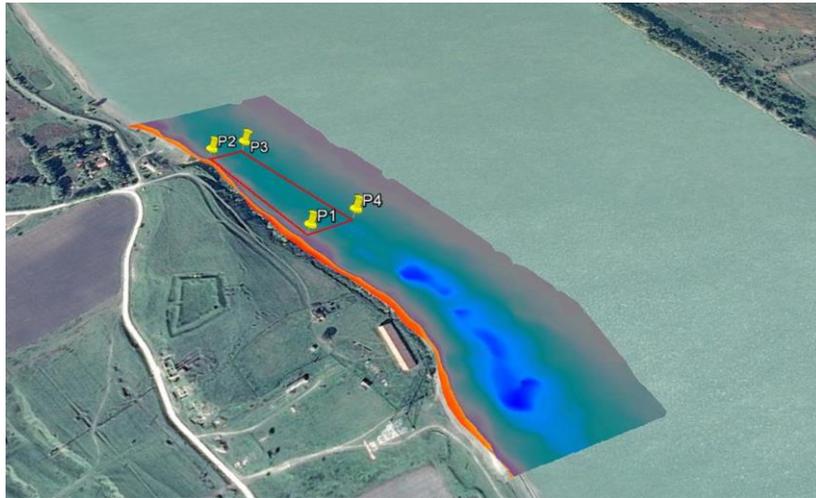


# Habitat de sturioni în bazinul Dunării de jos și în NV Mării Negre: stadiul cunoașterii și perspectivele de restaurare”



Marian Paraschiv, Marian Iani, Stefan Honț – Danube Delta National Institute Tulcea (DDNI)  
Radu Suci – DSTF and IAD Romania

# Cuprins:



1. Sturionii din Dunăre
2. Importanta habitatelor din mediul dulcicol si marin pentru supraviețuirea sturionilor
3. Habitatele de iernare a sturionilor din marea Neagra si din Dunărea inferioara
4. Habitatele de reproducere
5. Habitatele de creștere pentru juvenili din Dunăre
6. Habitatele de hrănire pentru juvenili, sub-adulti si adulți din Marea Neagra
7. Restaurarea conectivității longitudinale in zona barajelor de la Porțile de Fier, pentru a permite accesul sturionilor la locurile de reproducere istorice

# 1. Sturgeons of the Danube River: historically 6 species; now only 5 species



Beluga Sturgeon

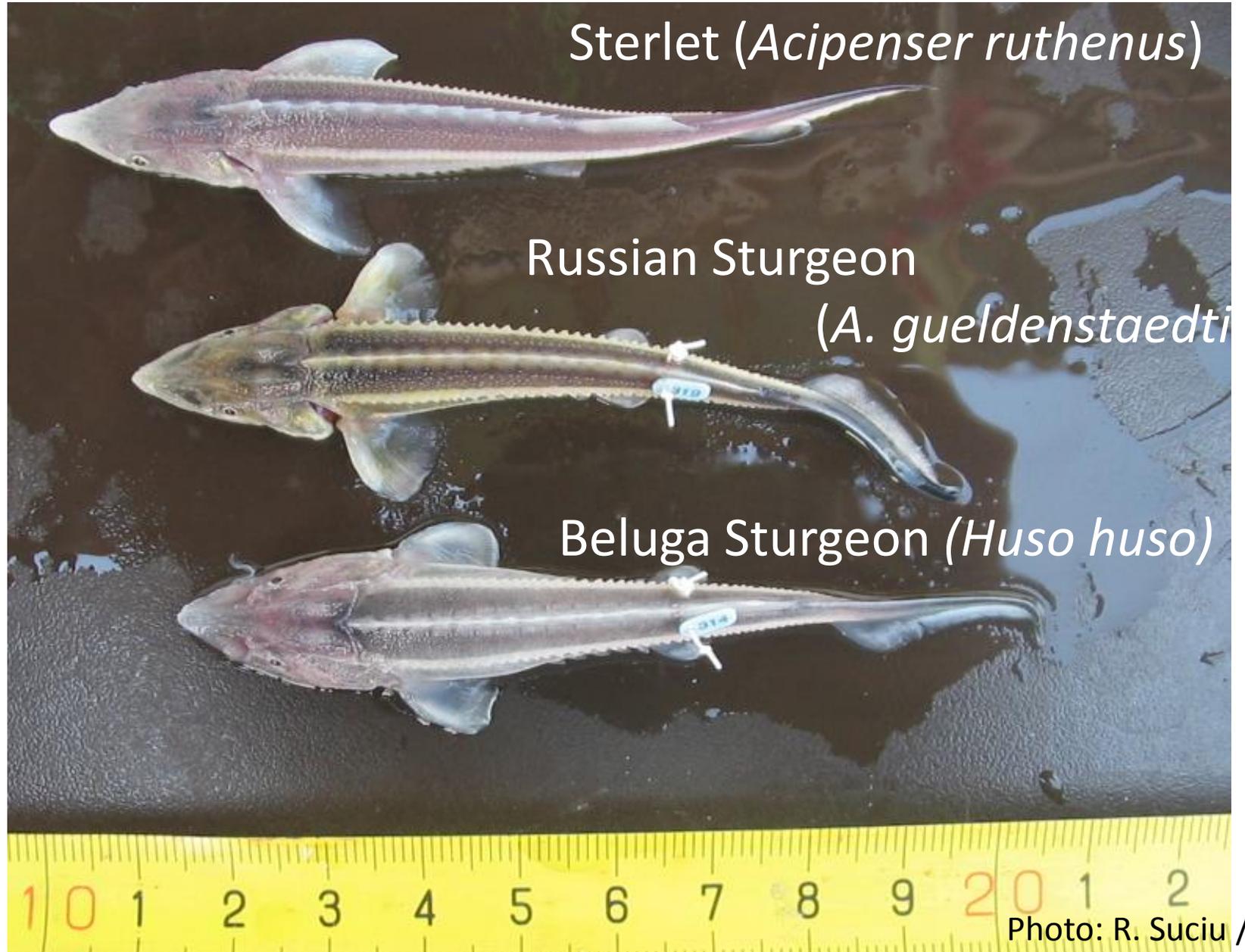
Stellate Sturgeon

Russian Sturgeon

Photo R. Suciú / DDNI

Juveniles captured in the Black Sea coastal waters / Ciotica (Sept, 1995)

Young of the year captured in the LDR at rKm 123 on June 16, 2005



Sterlet (*Acipenser ruthenus*)

Russian Sturgeon  
(*A. gueldenstaedti*)

Beluga Sturgeon (*Huso huso*)



Stellate sturgeon (*Acipenser stellatus*)



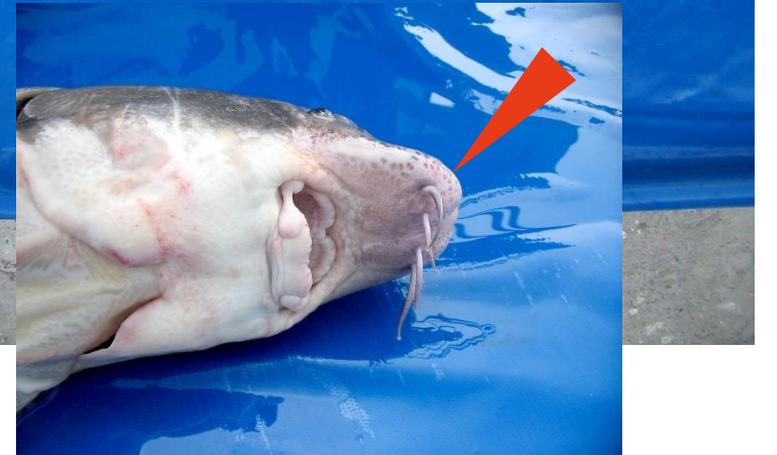
Adult

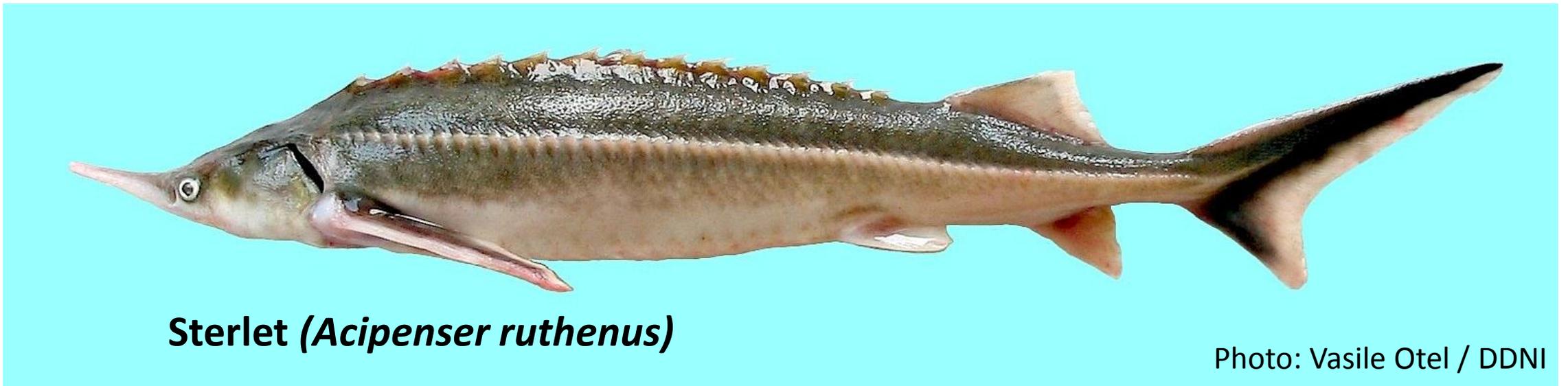
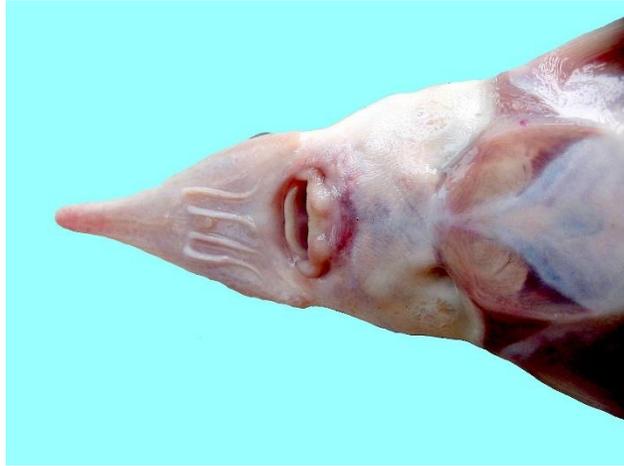


Young of the year (YOY)



Russian sturgeon (*A. gueldenstaedtii*)





**Sterlet (*Acipenser ruthenus*)**

Photo: Vasile Otel / DDNI

The only sturgeon species left in the Middle and Upper Danube River (and some tributaries)

# Beluga sturgeon (*Huso huso*)



# Beluga sturgeon (*Huso huso*)



**Beluga sturgeon female**

**TW ≈ 210 Kg**

**TL = 2.95 m**

**Location: Isaccea Hatchery of  
Kaviar House Ltd  
Isaccea**

**Date: April 2006**

Photo: Radu Suci / DDNI

# Ship sturgeon (*Acipenser nudiiventris*)

possibly extinct in the LDR but survives in the MDR, Drava and Mura Rivers (?)



Photo: Predrag Simonovic

**Serbia:** Danube River Km 1390 - Apatin, Oct. 31, 2003



Photo: Mikhail Cebanov

Sturgeon Live GenBank of the Russian Federation  
Krasnodar (2001)



Photo: Marieta Suciù

Donauinsel Vienna, BOKU Life Sterlet Project, 10 Sept. 2017

## 2. Peculiarities and importance of riverine and marine habitats for the survival of sturgeons

- All sturgeons are long-living freshwater fish adapted to live in **deep water**, on the bottom of rivers, i.e. they almost never swim at the surface of water;
- Many species **adapted to feed as juveniles and adults in the sea**;
- All their life stages in the river and in the sea are bound to habitats located in **deep water**;
- Most sturgeons are **lithophilic / hard substrate spawners**, i.e. *they lay their eggs on hard substrate and after hatching their free embryos hide in crevices*;
- Sturgeons are **migratory fish**, i.e. at sexual maturation they migrate in rivers to spawn on the same grounds where they were borne (phenomenon called **homing**);
- **Blocking the access** of adult sturgeons to their home ranges for spawning is causing severe declines of populations / *declines of catches* and even extinction;

# *Studiu de caz:* Bararea Dunarii in zona Portilor de Fier

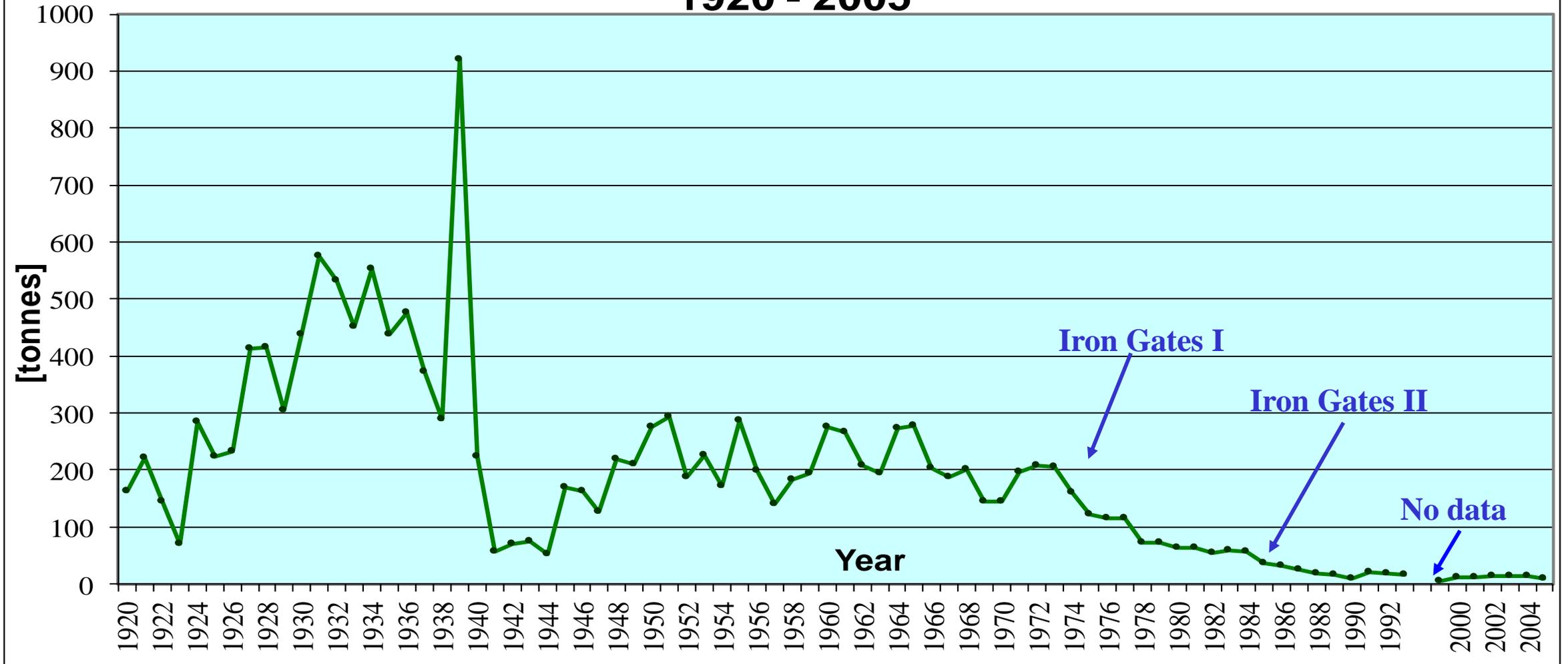
- 1974 – PF I / Km 943



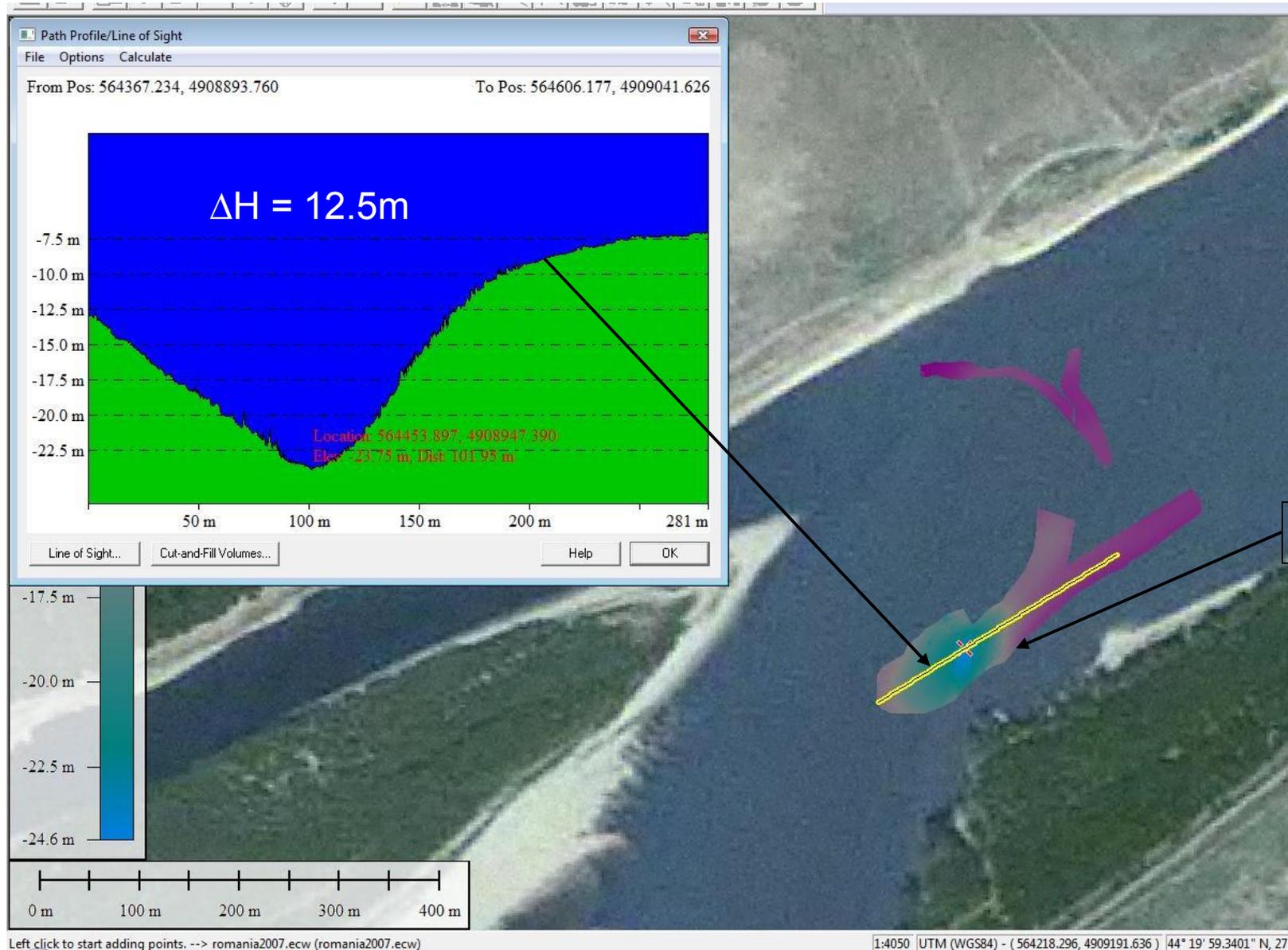
- 1984 – PF II / Km 863

# Impactul bararii Dunarii la Portile de Fier

## Catches of beluga sturgeon recorded in Romania during 1920 - 2005



### 3. Habitatele de iernare din mare si din Dunarea Inferioara

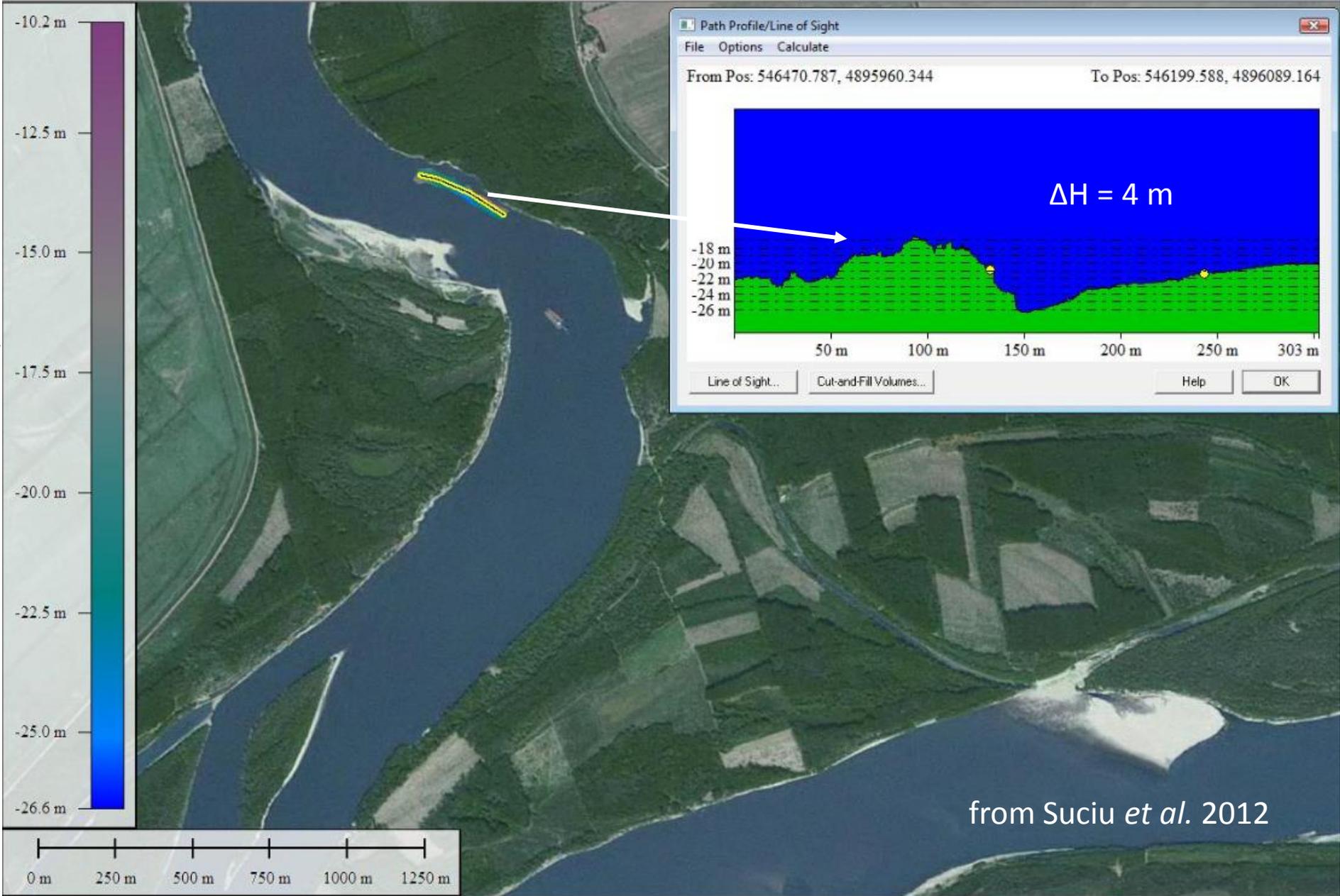


batimetrie 3D

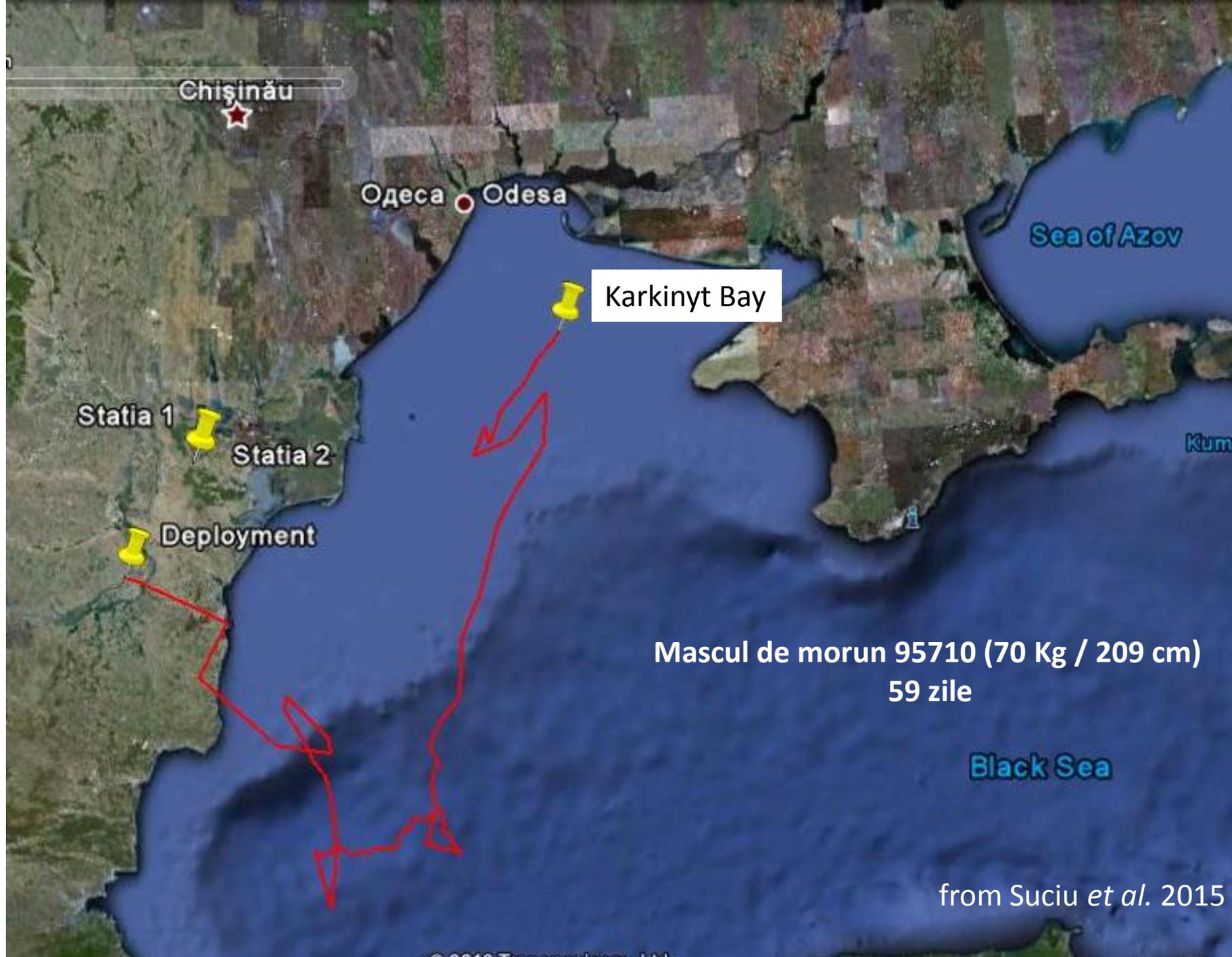
Bratul Borcea Km 49 /

# Wintering habitat at Km 7.7 on Danube branch Bala

3D bathymetric survey



from Suciú *et al.* 2012



**Wintering site** of adult Beluga sturgeons in the NW Black Sea, Karkinyt Bay

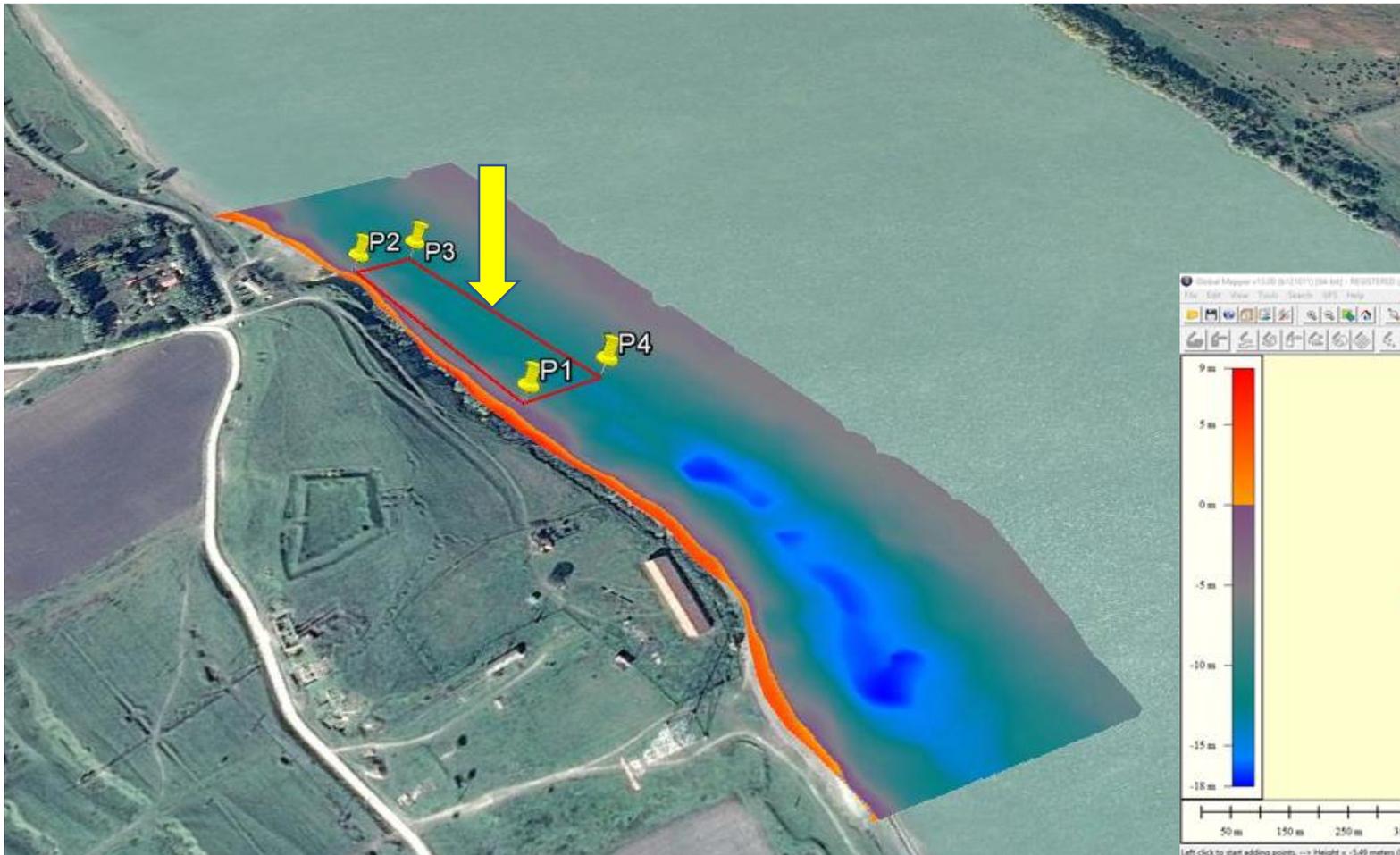
As tracked by satellite transmitters MK 10 - PAT



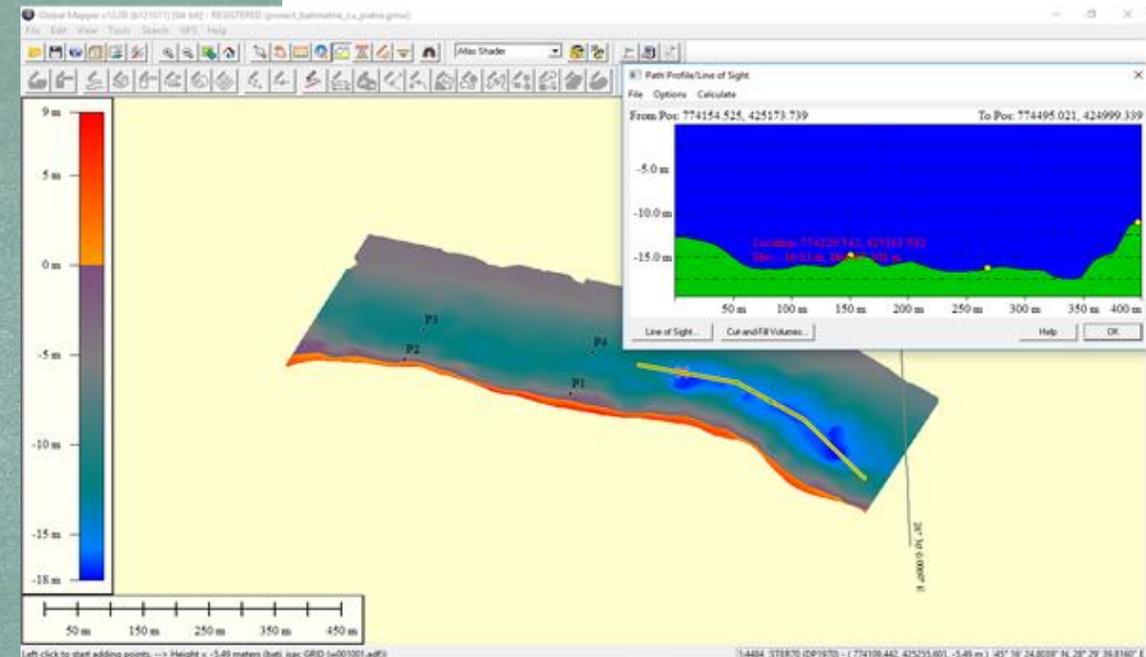
# 4. Spawning habitats

Grounds with hard substrate are found where the river meets rocky banks, which often deviate the current and cause counter currents / eddy

Spawning habitat for beluga and sterlet at Rkm 100.5 / Noviodunum confirmed by capturing larvae in 2008, 2013, and 2015



Longitudinal section through the waiting site downstream of the spawning habitat at Noviodunum



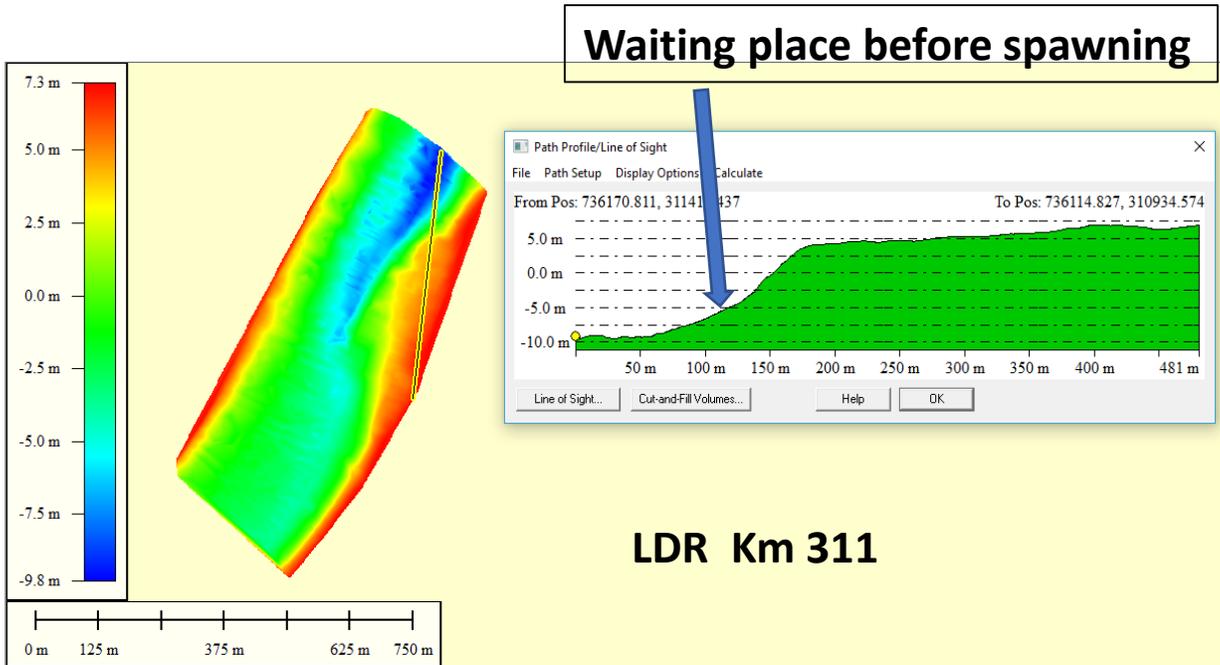
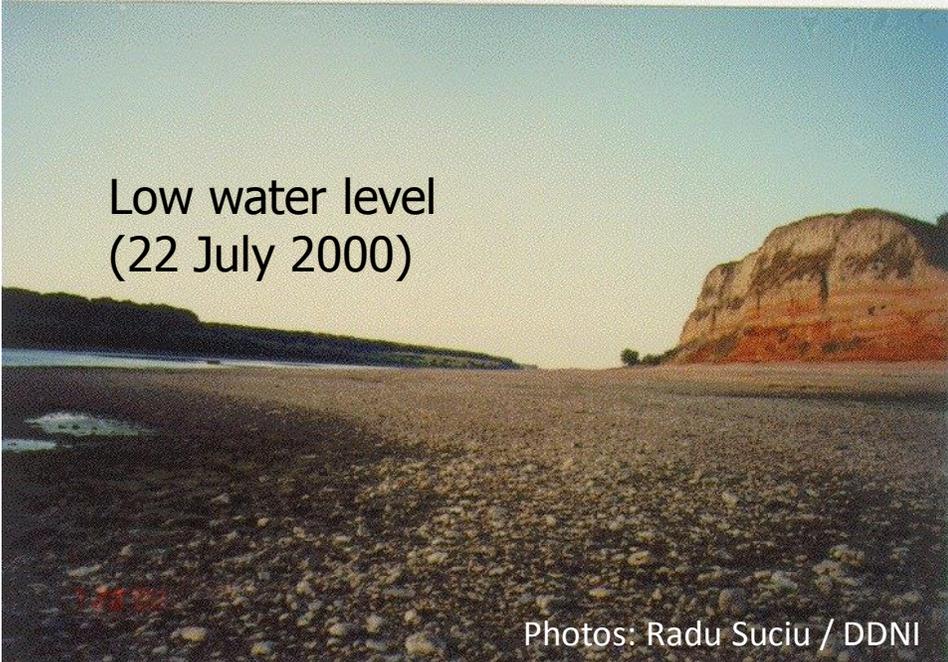
3D bathymetric map of the spawning habitat for sturgeons atLDR Km 100.5 / Noviodunum (Isaccea)

# Location of potential spawning grounds - where the river meets rocky banks

 ***Narrowing effect of rocky banks***



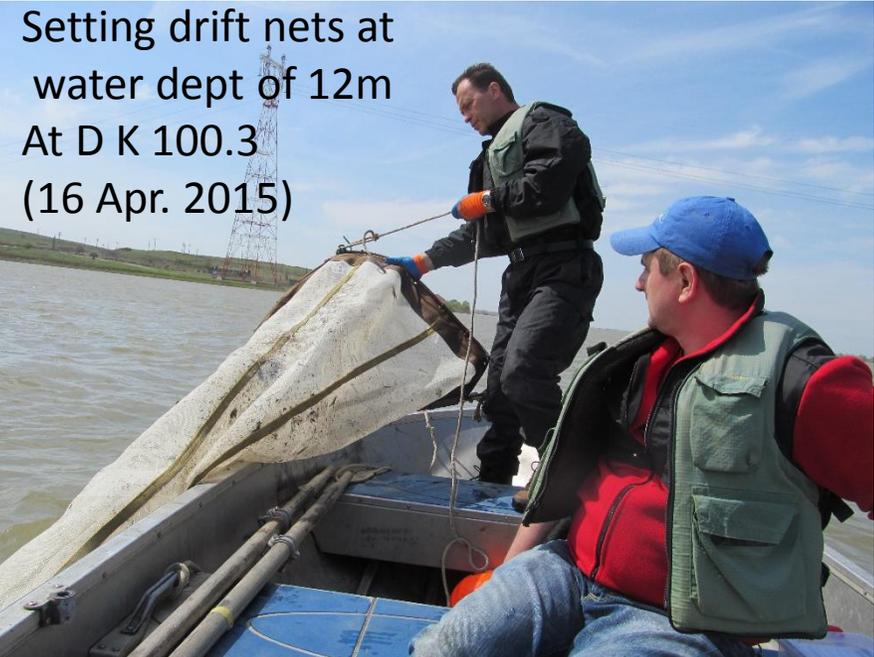
Spawning habitat for beluga and sterlet at Rkm 311, "The Red Rock", confirmed by capturing fertilized eggs and larvae in 2004, 2007, and 2009



3 D bathymetric map and profile by Global Mapper v.13.00

# Confirming spawning habitats by capturing larvae :

Typical setup of floats at the anchor and the D-shaped drift net



Setting drift nets at water dept of 12m  
At D K 100.3  
(16 Apr. 2015)

**12 - 14 day old feeding larvae captured at:**



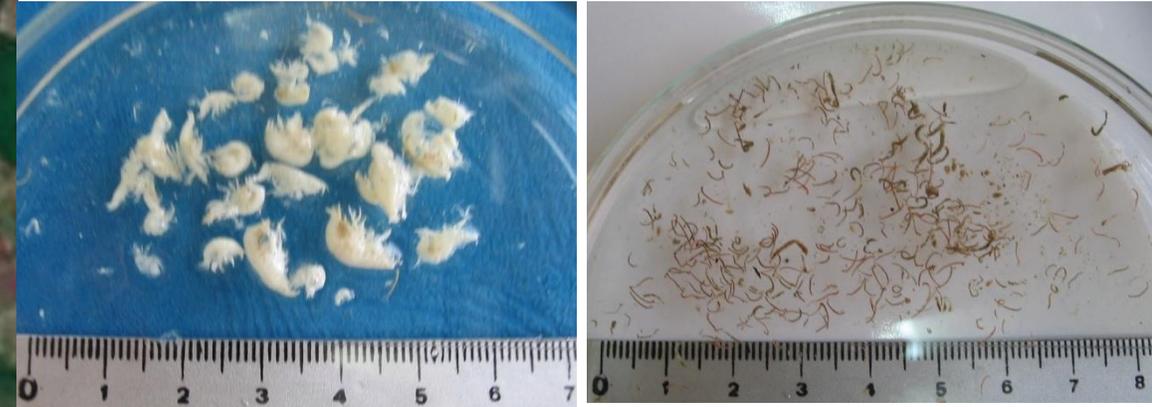
Sterlet (29. April 2009)  
**D Km 310.8**



Beluga sturgeon (13 May 2013)  
**D Km 100.3**

# 5. Nursery habitats

Location can be demonstrated by capturing YOY sturgeons and extracting their stomach content



Stomach content of YOY *sterlets* captured on nursery habitat at D Km 123



**Nursery habitats are ideal locations to monitor annual recruitment from the wild**



# Capturing YOY:



Fishing gear:  
bottom drifting trammel net



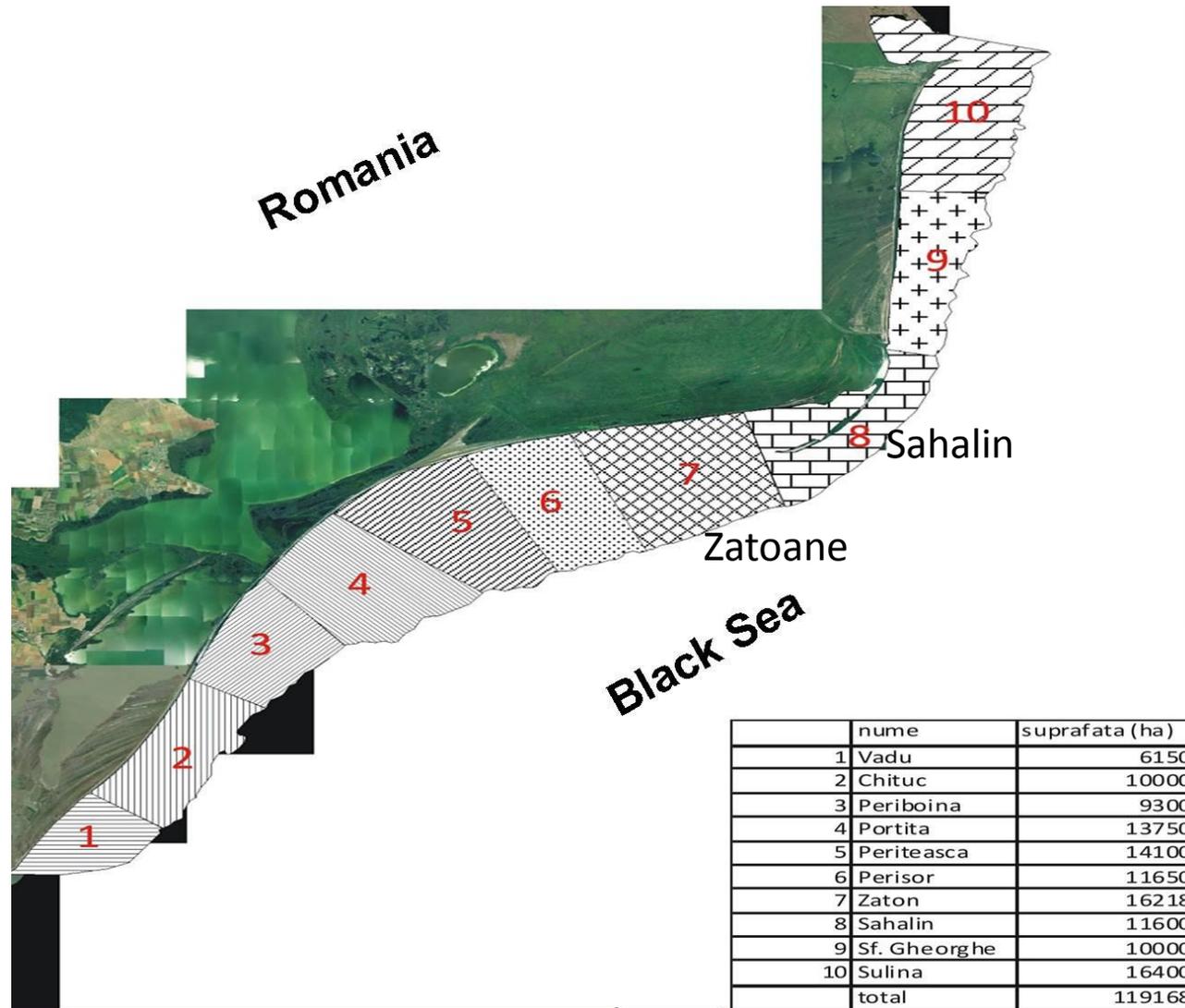
YOY beluga of June 2013



Timing: June – July (5d / week)



## 6. Feeding habitats for juveniles, sub-adults and adults in the Black Sea



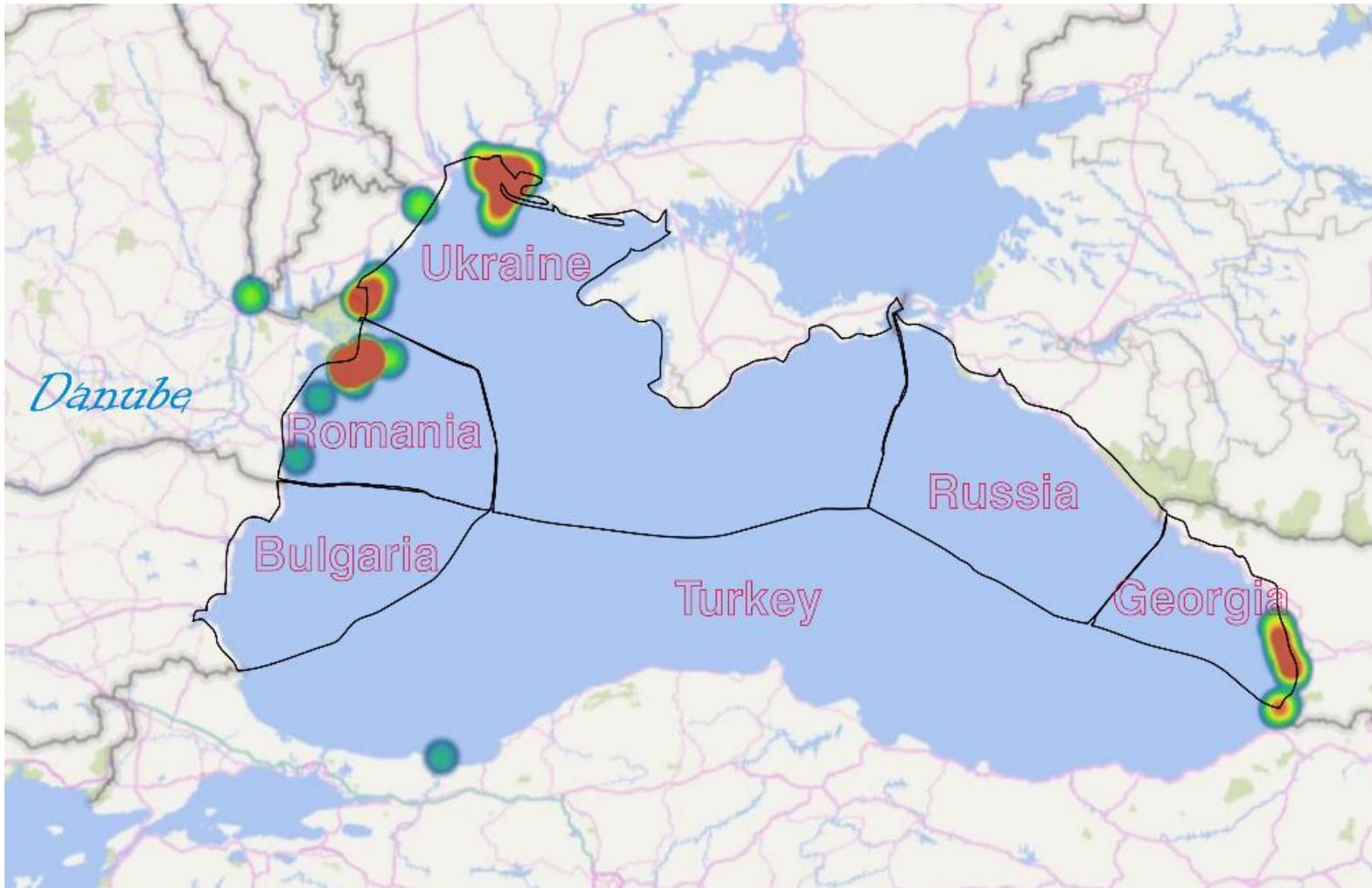
**86.5 % of all YOY and juvenile sturgeons**

captured during year 2012 in 10 marine areas of the Danube Delta Biosphere Reserve were captured in areas 8-SAHALIN and 7-ZATOANE



most important feeding habitats for young sturgeons on the Black Sea continental shelf in Romania

# Feeding habitats for juveniles, sub-adults and adults in the Black Sea



Locations of feeding habitats in the NW Black Sea continental shelf were YOY and juvenile sturgeons (**N = 1627**) were captured during 2014 - 2016



## 7. Restoration of longitudinal connectivity at Iron Gate dams to provide access to historical habitats

- Completion in year 1974 of the Iron Gate I dam at R Km 943 (without any fish passage) has reduced by half essential spawning and rearing habitats for anadromous sturgeons in the Danube River;
- This dam was followed by a second, Iron Gate II, completed in year 1984 at D Km 863;
- In May 2011 FAO has organized a technical support expert mission (5) to the Iron Gates dams, in RO and SERB, which concluded that *construction of fish passages at IG is possible*;
- In year 2014, on behalf of the EC, the EIB of Luxemburg commissioned DDNI Tulcea to conduct a preparatory study for a large scale fish behavior study at the Iron Gate dams;
- In September 2018 EC -DG Regio has announced a grant to ICPDR Vienna, DDNI Tulcea and the Sinisa Stancovic Institute of Belgrade to conduct the large scale fish behavior and hydraulic study needed for the feasibility study on fish passages at the Iron Gate dams.

# Vă mulțumesc pentru atenție !

