



DASTMAP

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Development of an identification method for and a genetic assessment of Danube River (and Black Sea) sturgeon stocks as a prerequisite for sustainable fisheries and conservation management

Duration: 01-04-2015 till 31-10-2018

Partner overview

Romania:

Danube Delta National Institute (DDNI), Tulcea

Dr. Radu Suciu



Turkey:

Central Fisheries Research Institute (CFRI), Trabzon

Dr. Oguzhan Eroglu



Istanbul University, Faculty of Fisheries (IUFF), Istanbul

Prof. Dr. Devrim Memis



Germany:

Leibniz-Institute of Freshwater Ecology and Inland Fisheries (IGB), Berlin

Dr. Klaus Kohlmann



Total funding: 270,900.00 €

Germany - Federal Ministry of Food and Agriculture (BMEL) through the Federal Office for Agriculture and Food (BLE):

67,000.00 €



Romania - Executive Agency for Higher Education, Research, Development and Innovation Funding (UEFISCDI):

163,900.00 €



Turkey - Republic of Turkey, Ministry of Food, Agriculture and Livestock:

40,000.00 €



Background

Danube sturgeon stocks massively declined since the 1960s

Major reasons are

- **overfishing and the illegal caviar market**
- **disruption of spawning migrations by dams**
- **habitat loss due to inland navigation development and flood protection**

To prevent extinction of the 4 native Danube sturgeon species *Acipenser gueldenstaedtii*, *A. stellatus*, *A. ruthenus* and *Huso huso* measures have been taken at national as well as international levels

To increase the effectiveness and success of these measures data on the genetic structure of these species in the Romanian part of the Danube are urgently needed but not available so far

Objectives

Marker development (microsatellite loci and mitochondrial DNA)

Their application to

- **verify and distinguish between long and medium distance migrants of the spring and fall races of all 4 Danube sturgeon species**
- **separate sturgeons originating from the Danube from fish endemic in Turkish rivers**

Obtained population genetics data will be used to

- **identify management units for each species**
- **provide recommendations for sustainable sturgeon fisheries**
- **establish breeding schemes for supportive stocking that**
 - **maximize genetic variability within stocks**
 - **maintain their genetic integrity by avoiding hybridization between sub-populations**

Status

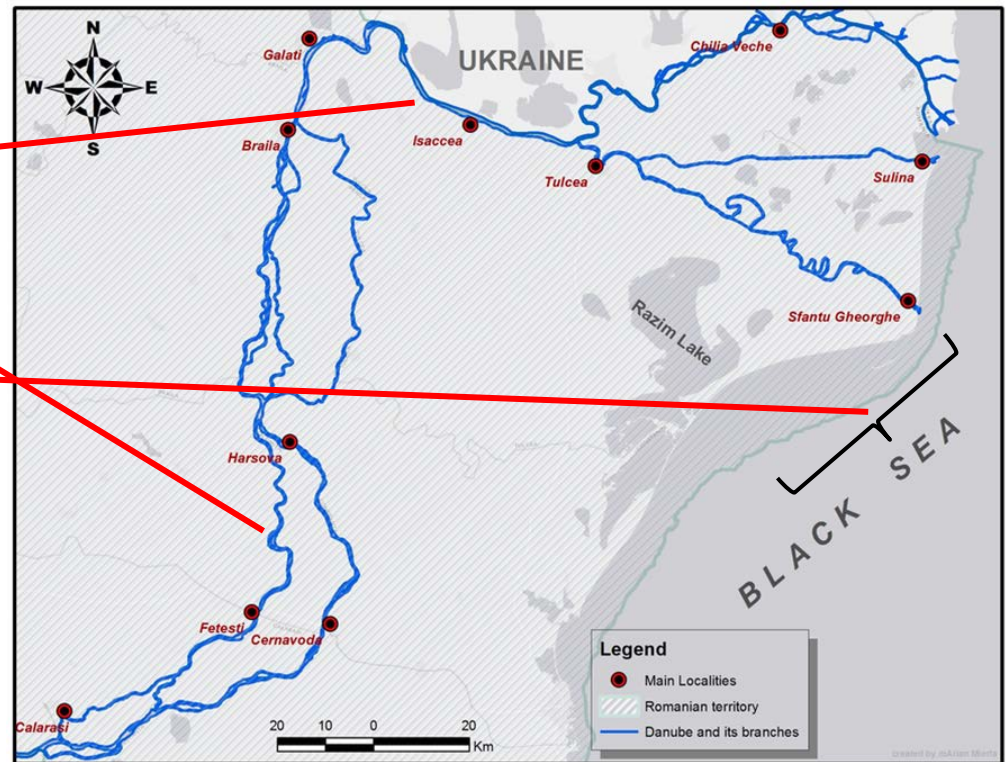
WP1: Sample collection in Romania and Turkey

Partner: DDNI and CFRI, IUFF

Danube km 123

Borcea Branch

Foredelta



Actual number of samples:

Romania (aim: at least 160/species):

A. gueldenstaedtii – 63

A. stellatus – 95

A. ruthenus – 168

H. huso – 182

Turkey: approx. 30 from bycatch of commercial fisheries and in-river sampling

Status

WP2: Isolation of species-specific microsatellite loci

Partner: IGB (subcontracting a commercial service: **GenoScreen, France**)



Number of bioinformatically validated primer pairs for PCR amplification of microsatellite loci:

***A. gueldenstaedtii* – 198**

***A. stellatus* – 253**

***A. ruthenus* – 161**

***H. huso* – 88 (+ 33 designed on imperfect microsatellite motifs)**

Status

WP3: Developing panels of 12-15 microsatellite loci per species for routine genotyping

Partner: IGB

 **60 PCR primer pairs tested in all 4 sturgeon species**

- ***A. stellatus*: 18 suitable loci identified; 6 multiplex PCR sets optimized; publication in preparation**
- ***A. ruthenus*: 15 suitable loci identified; 5 multiplex PCR sets in development**
- ***H. huso*: tests of additional primer pairs necessary due to low levels of variability**
- ***A. gueldenstaedtii*: tests of further primer pairs necessary due to high proportion of tetrasomic loci**

Status

WP4: Microsatellite genotyping of Romanian sturgeon samples

Partner: IGB and DDNI

WP5: Microsatellite genotyping of Turkish sturgeon samples

Partner: CFRI and IGB



Both scheduled for 2017-2018

Status

WP6: Developing species-specific primers for sequencing the target mtDNA regions

Partner: DDNI



PCR primers to amplify D-loop, NADH-5, and cytochrome b are available for all 4 species

WP7: Mitochondrial DNA sequencing of Romanian and Turkish sturgeon samples

Partner: DDNI and CFRI



**DDNI: ca. 130 D-loop samples from 3 species sent for sequencing
CFRI: no analyses so far because of small sample size**

Status

WP8: Population genetic analyses of data; identification of management units

All partners

 **scheduled for 2018**

Events

- **Kick-off meeting at IGB, Berlin, postponed to 23-27 May 2016 due to delayed start of the project in November 2015**
 - **Get together of partners**
 - **Discussion of technical aspects and schedule**

- **Midterm meeting scheduled for autumn 2017 at DDNI, Tulcea**
 - **Presentation and discussion of results obtained so far**

- **Final meeting scheduled for autumn 2018 at CFRI, Trabzon**
 - **Final discussion on data interpretation and consequences from the data**
 - **Dissemination of methods and results**
 - **Conclusions and recommendations for fisheries and conservation management to be drafted**

Expected impact

Obtained data on the stock structure and differentiation between them will finally be used to

- **define management units,**
- **provide recommendations for fisheries and conservation management,**
- **establish captive breeding schemes that maximize genetic variability of stocks while maintaining their genetic integrity.**

Dissemination

- **up to 4 methodological papers (2 already in preparation)**
- **up to 4 papers on population structures and recommendations for *in situ* and *ex situ* conservation management**

Experience with transnational projects

 **Transnational cooperation is essential for this project**

Benefits:

- **Maximize synergy effects, reduce costs and minimize the risk of failure by distributing WPs among project partners according to their professional expertise and technical abilities**
- **Provide a sound basis for exchange and integrative management**

Challenges:

- **National approval following the general acceptance**
- **Country-specific conditions for financial support, e.g. type of costs that are eligible for funding**

Thank you very much for your attention!



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