

3rd Meeting of Danube Sturgeon Task Force

11-12 April 2013

Munich, Germany

Fostering of in-situ conservation of sturgeons (*Acipenseridae*) in the Middle Danube River Basin with regard to the Program "Sturgeon 2020"

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The Middle Danube



Devin Gate - Iron Gate

length: 940 km

Discharge at Budapest:

$Q: 2.340 \text{ m}^3 \text{ s}^{-1}$,

$Q_{95\%}: 1.000 \text{ m}^3 \text{ s}^{-1}$,

$Q_{1\%}: 10.500 \text{ m}^3 \text{ s}^{-1}$

Discharge at the Iron Gate:

$Q: 6.500 \text{ m}^3 \text{ s}^{-1}$,

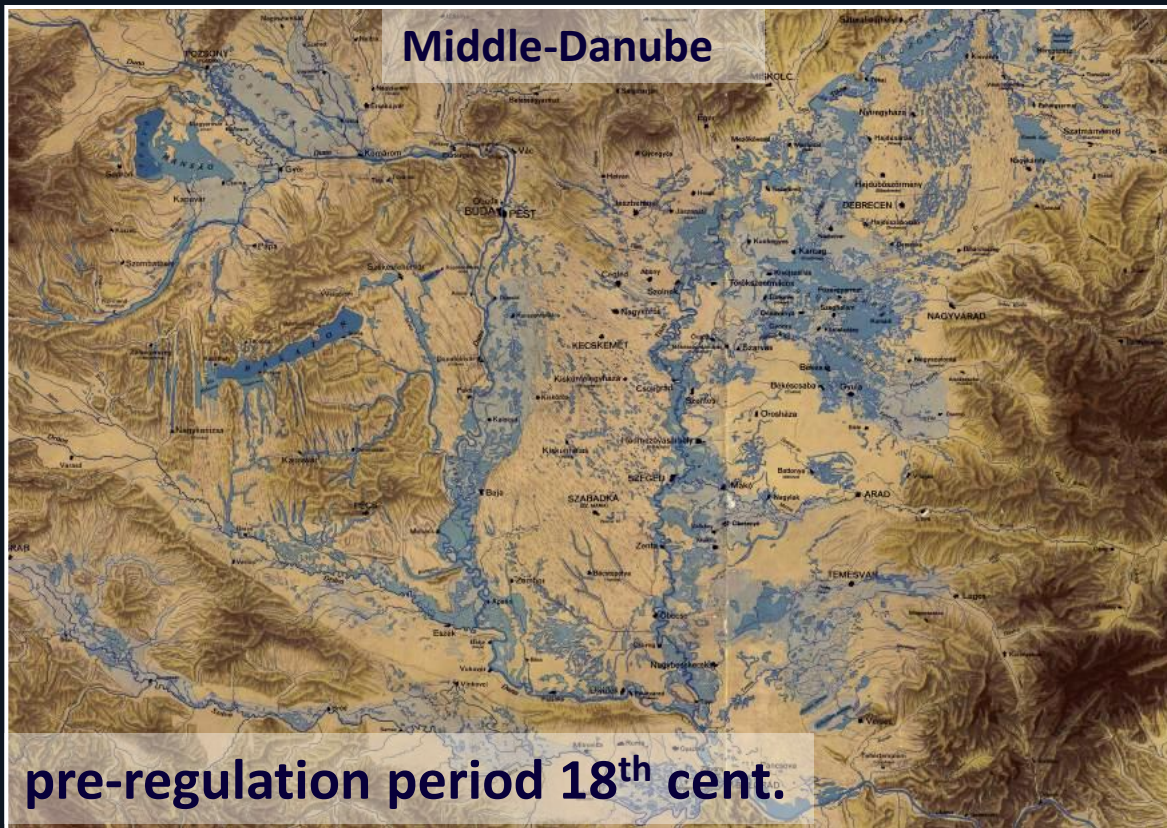
gradient: $5\text{-}40 \text{ cm km}^{-1}$

flow velocity: $0,6\text{-}3,0 \text{ m s}^{-1}$

historical floodplain in Hungary

22.000 km^2

flood-free (93%): 20.500 km^2



pre-regulation period 18th cent.

Special problems and conditions of sturgeon conservation in the Middle Danube

5 native sturgeon species:

Huso huso

Acipenser stellatus

Acipenser gueldenstaedti

Acipenser nudiiventris

Acipenser ruthenus

practically extinct

resident form (?)

non-Danubian broodstock in hatcheries
accidental stocking can happen

critically endangered !!!

subject of fishery

Decline in the 1950s

Increase in the 1970s

Decline from end of the 1990s (?)

Focus of in-situ conservation

Special problems and conditions of sturgeon conservation in the Middle Danube 1

Reasons of population decline of sterlet

- **Habitat modification by alteration of hydromorphologic processes**
- **Increasing mortality by high floods – lack of refuge habitat?**
- **Low recruitment – Lack of spawning and nursery habitats?**
- **Increasing predation by cormorants – lack of refuge habitat?**
- **...?**

Insufficient knowledge about:

- location of key habitats**
- habitat use**
- population dynamics (mortality)**

Direct surveys → data for planning of conservation measures

Special problems and conditions of sturgeon conservation in the Middle Danube 2

Reasons of population decline of ship sturgeon?

- Available knowledge and possibility of direct observation is limited.

→ Lack of data for planning of conservation measures

Conservation measures developed for sterlet
may improve habitat conditions for ship sturgeon

Objectives of sturgeon conservation in the Middle Danube

General objective:

Secure viable populations of sturgeons (and native fluvial fish species) in
the Middle Danube Basin

Specific objectives:

1. Assessment of habitat conditions and population dynamics
of sterlet
2. Elaboration of effective in situ measures, such as restoration of key
habitats (spawning, nursery, wintering, feeding and refuge) and
rehabilitation of migratory routes between these habitats

Project activity - Assessment of habitat conditions

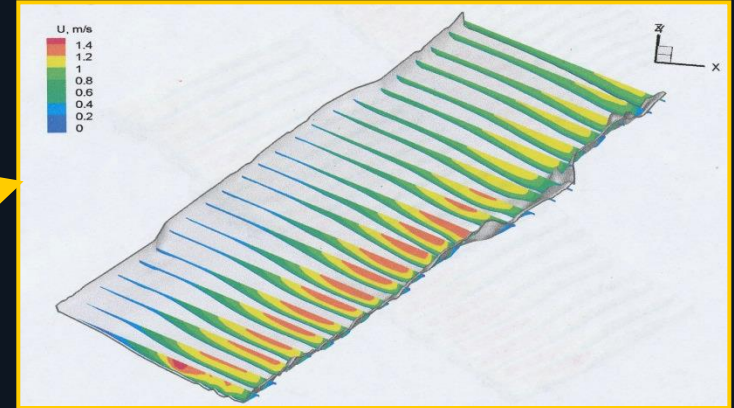
- 1) **Localisation of key habitats –**
by telemetry study of fish migration



- 2) **Habitat and population survey**
by sonar image processing



- 3) **Hydraulic surveys – development**
2D and 3D **hydraulics models**



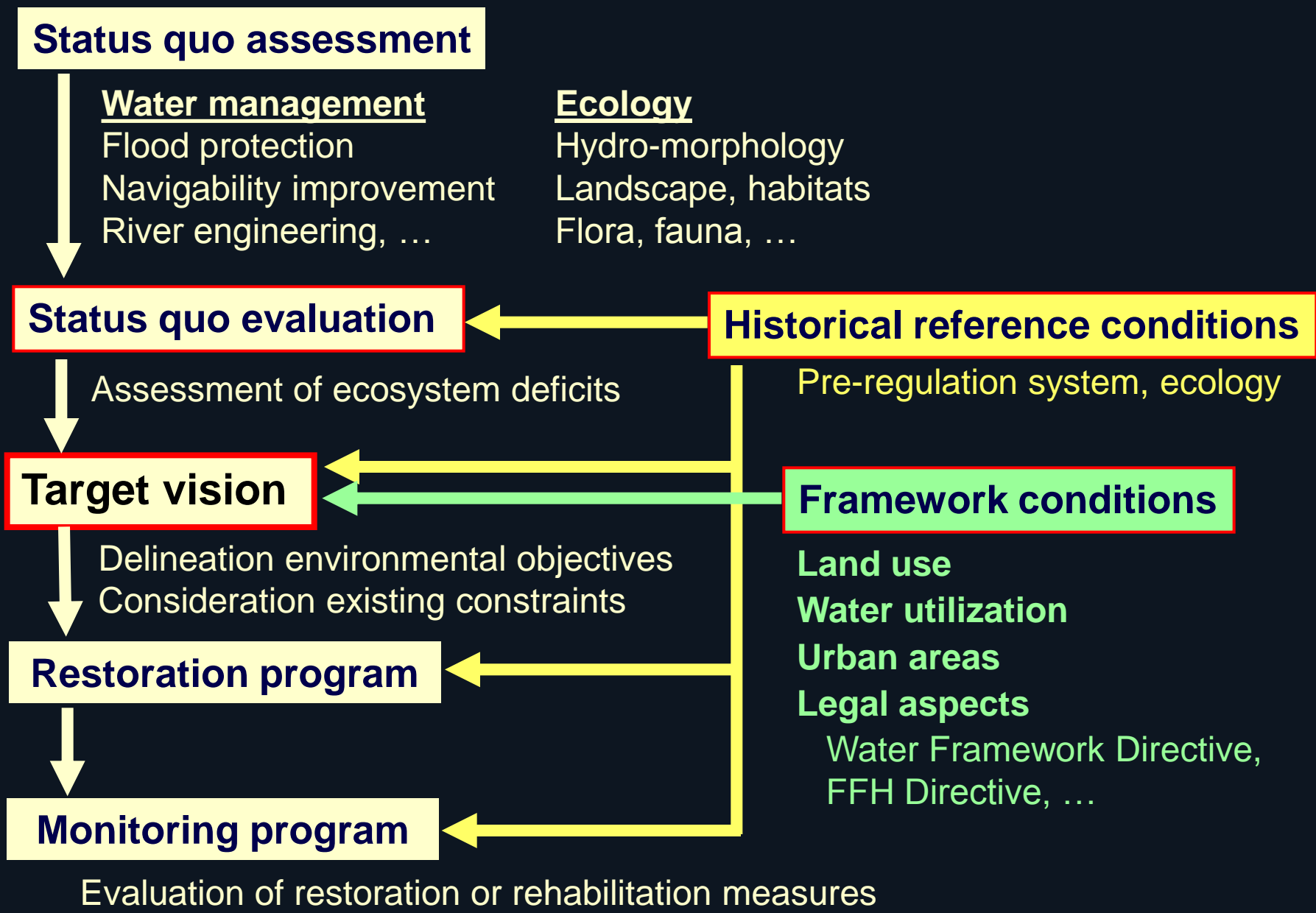
- 4) **Special habitat conditions –**
local hydro-morphol. processes



**Delineation of environ. objectives
for sturgeon habitat restorations**

Improvement ecological integrity
Conservation of endangered species

Project activity - Strategy for planning of habitat restoration



Project partners – preliminary proposal

Upper Danube

**Institute of
Hydrobiology
Aquatic Ecosystem
Managmt. BOKU
(Austria)**



Middle Danube

**Institute of
Zoology. SAV
(Slovakia)**

**Danube
Research
Institute, HAS
(Hungary)**

**Institute of
Biological
Research
(Serbia)**

Lower Danube



**Danube Delta
National Institute
(Romania)**