LIFE10NAT/SI/142

LJUBLJANICA CONNECTS

Restoration of the Ljubljanica River corridor and improvement of the river's flow regime

GEATEH
Načrtovanje in izvajanje, d.o.o.

University *of Ljubljana*
Faculty *of Civil and Geodetic Engineering*

PURGATOR

Riverine LIFE Platform Meeting

Tartu, 10. 9. 2014

THE LJUBLJANICA RIVER

- Ljubljanica River is 42 km long, total basin area is 1884 km² of which 1100 km² is karstic.
- It is known also as River with seven names – because of mainly karstic basin river has a large number of streams with different names.
- It is the deepest Slovenian River with a section which is 8 m deep.

The last river spring near Vrhnika

The river in the city Ljubljana

Ljubljanica in Zalog – lower part

THE INITIAL SITUATION

The heavily degraded area of the Ljubljanica River corridor upstream and downstream of the Ljubljana urban area is an important habitat for the fragmented and heavily endangered fish population.

The water level upstream of the weir on the Ljubljanica River is too low, therefore during low flow conditions the main Ljubljanica River channel is not connected to its tributaries. This represents a great obstacle for the habitat connectivity along the river reaches which is worsened by the improperly working fish passes.

TARGETED SPECIES

Danube Salmon (*Hucho hucho*)

Danube Roach (*Rutilus pigus*)

Striped Chub (*Leuciscus souffia*)

THE PROJECT OBJECTIVES

- Restoration of biodiversity of Ljubljanica River corridor
- Improving the ecological functions of the area
- Promotion of relatively simple river restoration measures for improving the ecological status of the river
- Raising the awareness of general public to consider the Ljubljanica River a vital element of the environmental quality and not a threat

Concrete Restoration Actions

Ecohydrological Monitoring

Fish Monitoring

Concrete Restoration Actions

RECONSTRUCTION OF THE SILL

Concrete Restoration Actions

RECONSTRUCTION OF THE SILL

Concrete Restoration Actions

RECONSTRUCTION OF THE SILL

Before reconstruction

After reconstruction

Concrete Restoration Actions

RECONSTRUCTION OF THE FISH PASSES

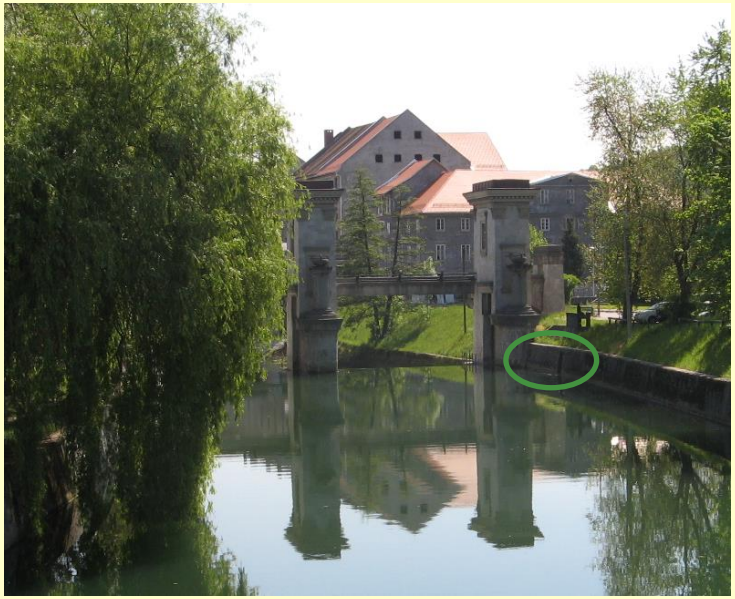
Fish pass No.1 at the beginning of the project

Collapse of the fish pass No.1 in November 2013 due to high water discharge

Concrete Restoration Actions

RECONSTRUCTION OF THE FISH PASSES

Inflow and outflow of the fish pass No.2

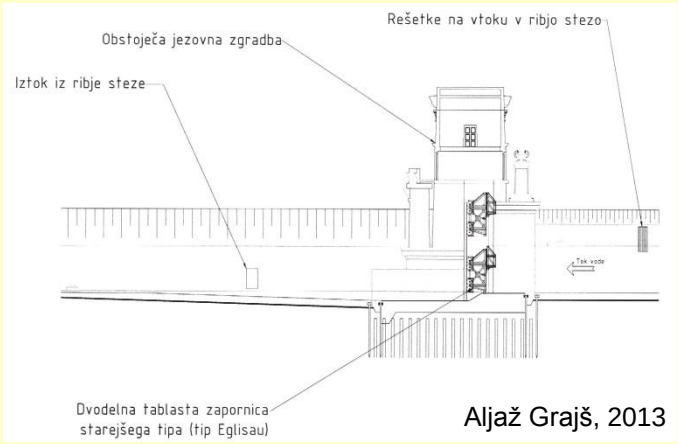


Interior of the fish pass No.2

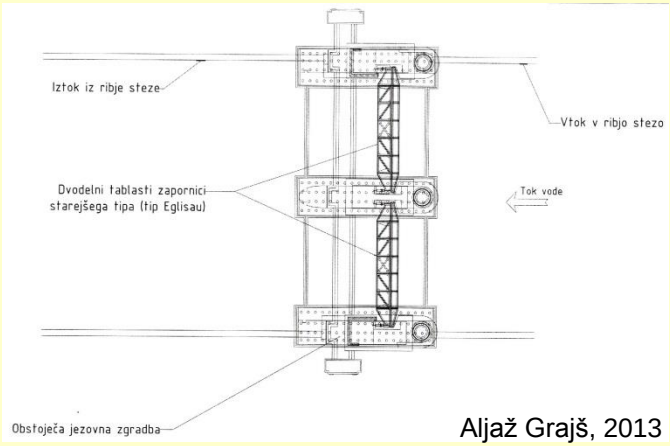
Concrete Restoration Actions

MODERNIZATION OF BARRIER'S LIFTING SYSTEM

System of two barriers
on the Ljubljanica River



Aljaž Grajš, 2013



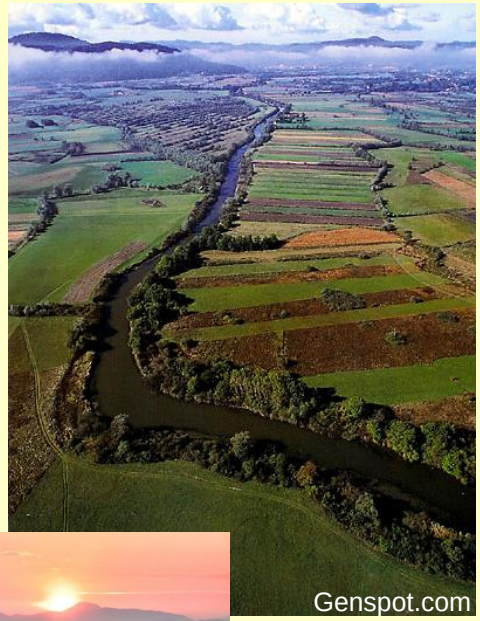
Aljaž Grajš, 2013

Sketches of the initial situation

Concrete Restoration Actions

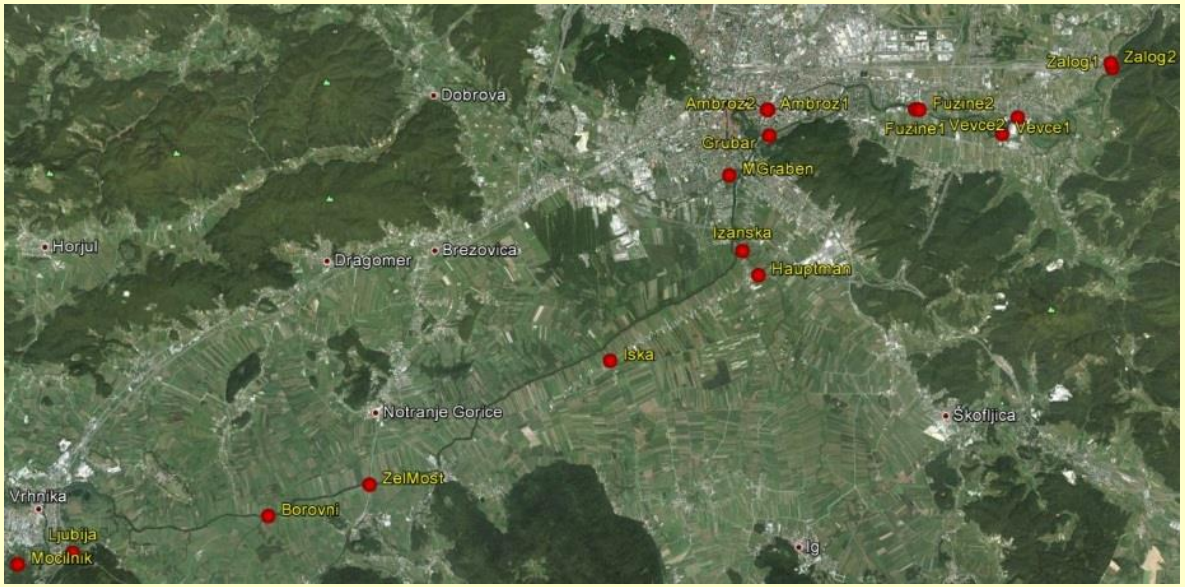
MODERNIZATION OF BARRIER'S LIFTING SYSTEM

Influence of water level regulation on the upstream wetland Ljubljansko Barje

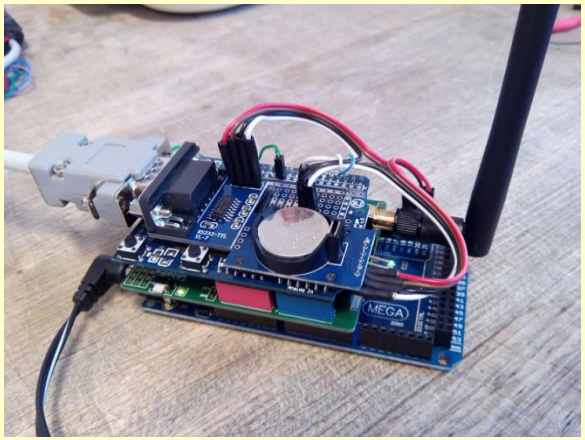


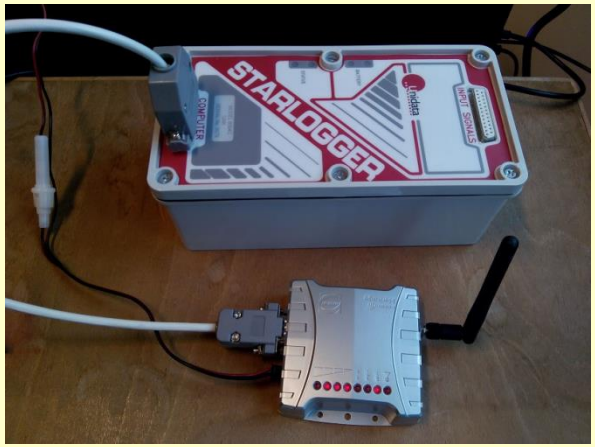
Ecohydrological Monitoring

17 NEWLY CONSTRUCTED WATER STATIONS



Locations of measurement stations
on 3 locations stations with online connection will be installed

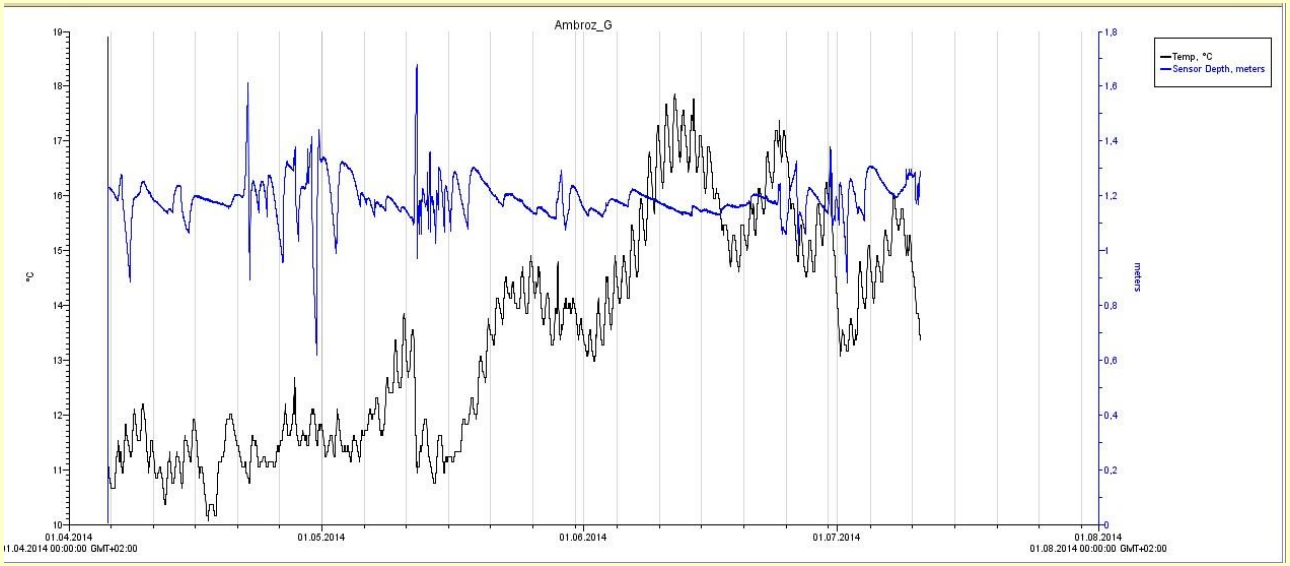




Development of equipment for
remote access to the data

Ecohydrological Monitoring

DATA ANALYSIS

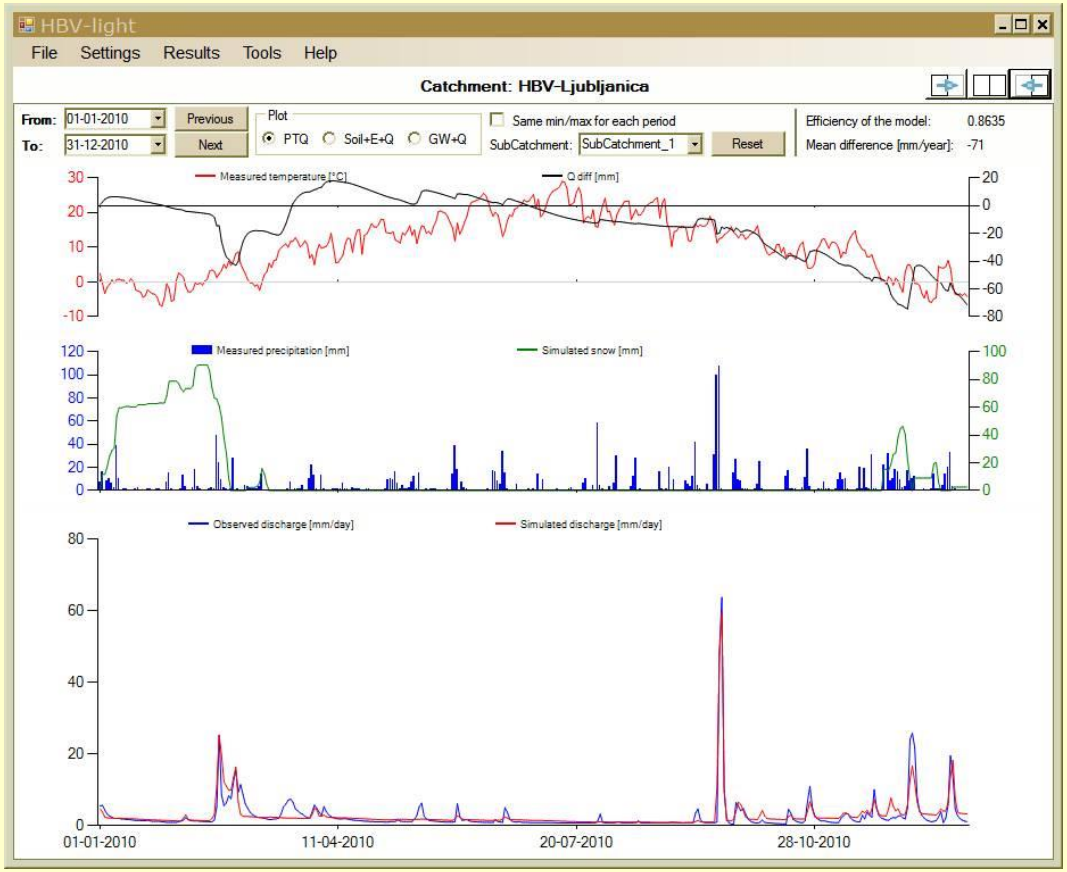


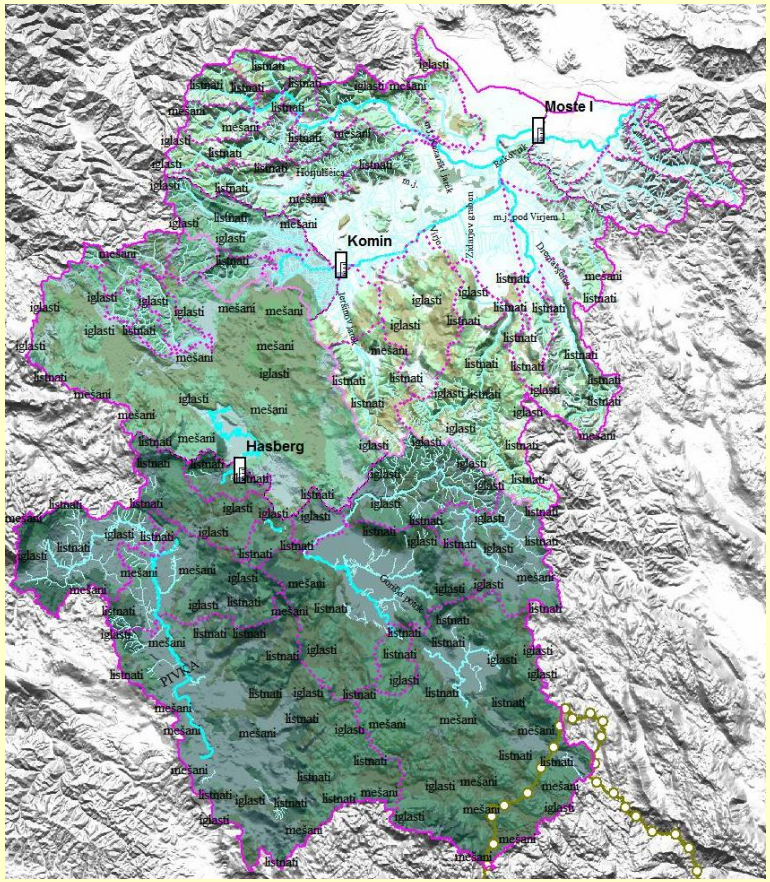
Fluctuations in temperature and water level on measurement station near the barrier

Collecting the data

Ecohydrological Monitoring

HYDROLOGICAL MODEL OF LJUBLJANCA RIVER



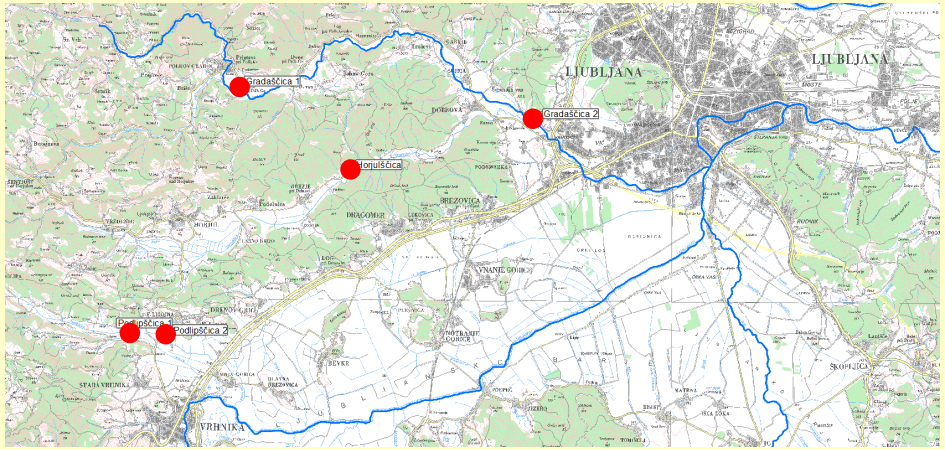


Ecohydrological Monitoring

DISCHARGE MEASUREMENTS

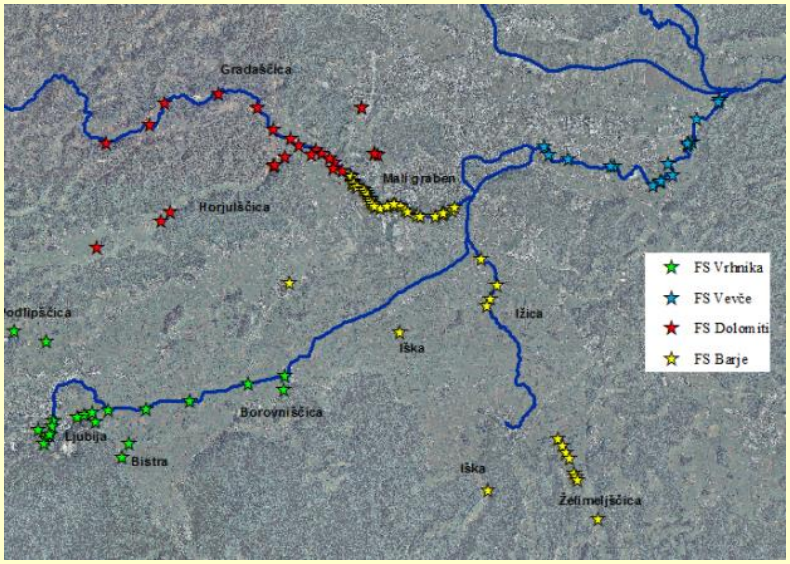
Fish Monitoring

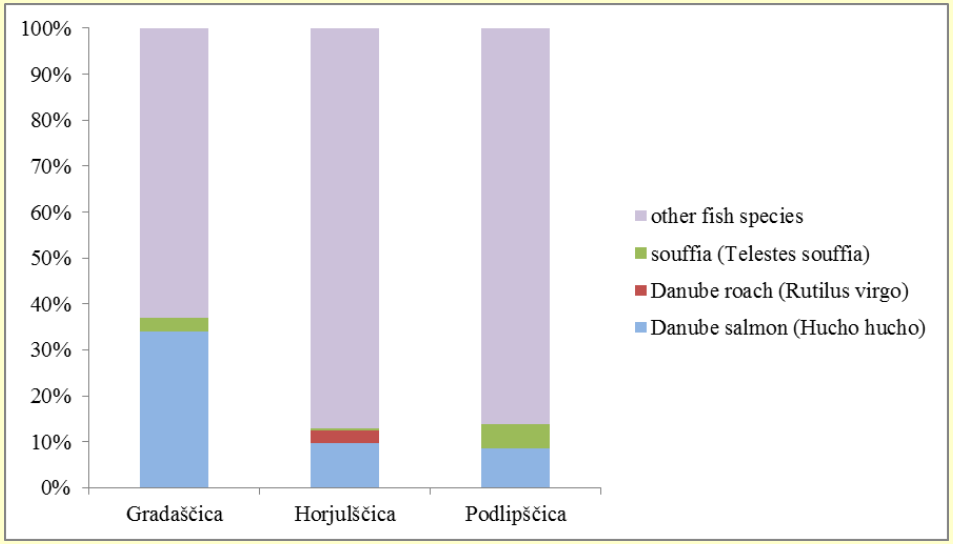
STUDY OF THE HABITAT AND ESTIMATION OF FISH POPULATION



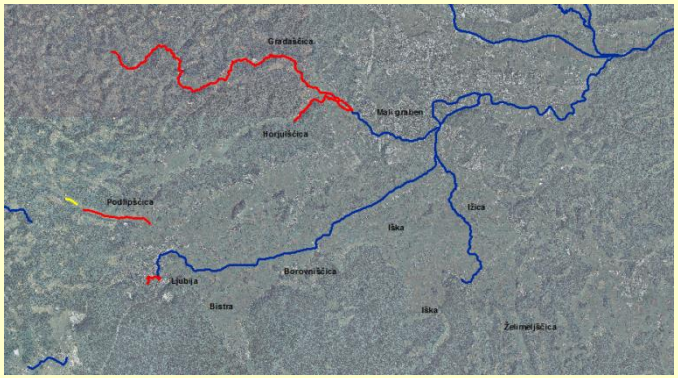
Fish Monitoring

STUDY OF THE HABITAT AND ESTIMATION OF FISH POPULATION





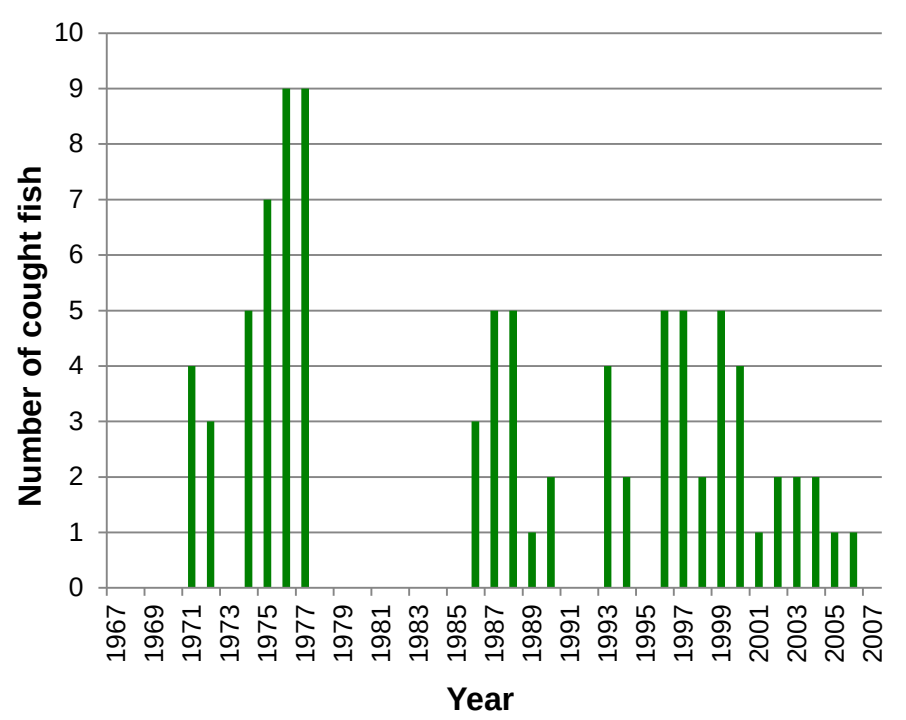
Percentage of Danube Salmon, Danube Roach, Striped Chub and other fish species caught in streams near Ljubljanica River



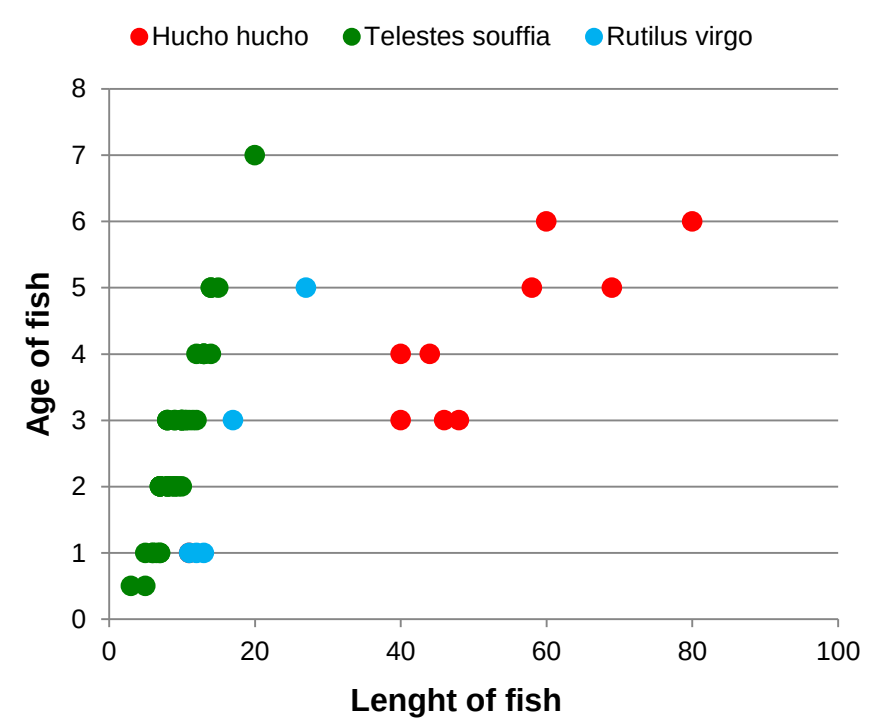
Result of habitat study: maps with spawning and nursery places of targeted species, their distribution by fishermen information and their potential locations

Fish Monitoring

STUDY OF THE HABITAT AND ESTIMATION OF FISH POPULATION



Catch of Danube Salmon in Ljubljanica River from the dam at Ambrožev trg to the dam in Vevče paper factory from 1967 to 2007



Characteristics of caught fish

Fish Monitoring

MONITORING OF FISH MIGRATION

Catching the fish

Measuring the fish

Tagging of fish before releasing them into the water

LJUBLJANICA CONNECTS WORKSHOP

TO SEE ALL THREE RESTORATIONS FINISHED …

VISIT LJUBLJANA ☺

9. - 10. SEPTEMBER, LJUBLJANA, SLOVENIA

http://ksh.fgg.uni-lj.si/ljubljanicaconnects/