

Jun 22nd, 4:15 PM - 4:30 PM

## Session A3: Ljubljana Connects - Enabling Fish Migration

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Zabret, Katarina; Secnik, Matej; and Vidmar, Andrej, "Session A3: Ljubljana Connects - Enabling Fish Migration" (2015).  
*International Conference on Engineering and Ecohydrology for Fish Passage*. 18.  
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LIFE10NAT/SI/142

# LJUBLJANICA CONNECTS

## enabling fish migration

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

Katarina ZABRET, Matej SEČNIK, Andrej VIDMAR



# FISH PASSAGE 2015

Groningen, 22 June 2015

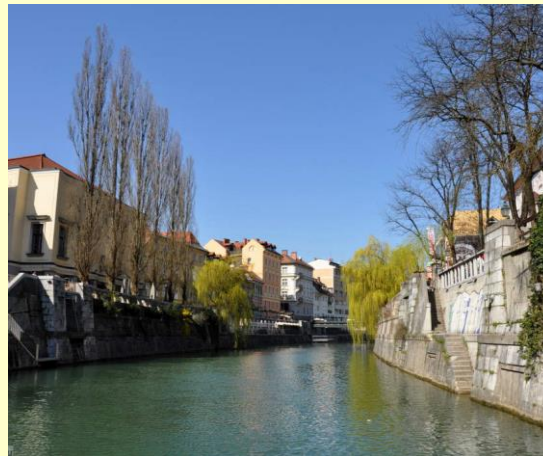
# THE LJUBLJANICA RIVER



- Ljubljana River is 42 km long, total basin area is 1884 km<sup>2</sup> of which 1100 km<sup>2</sup> is karstic.
- It is known also as River with seven names – due to 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



Ljubljana in Zalog before confluence



# THE OBSTACLES



## TARGETED SPECIES



Danube Salmon  
(*Hucho hucho*)

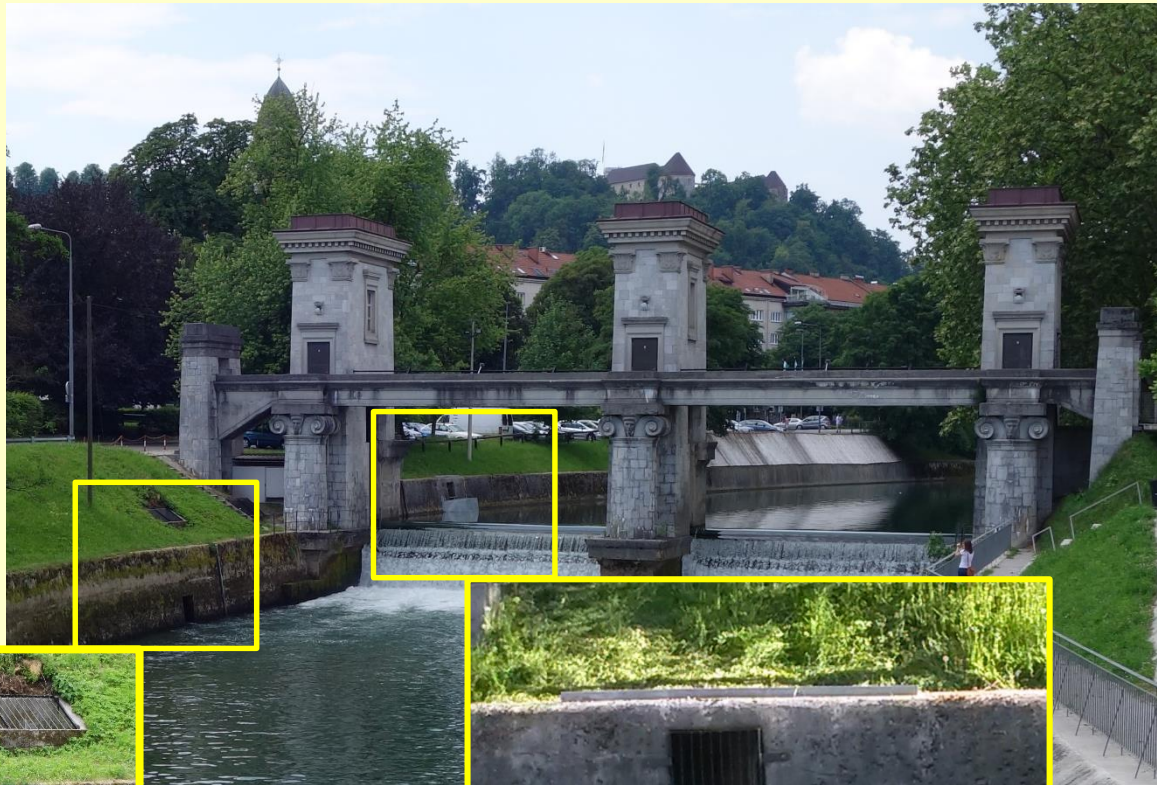


Danube Roach  
(*Rutilus pigus*)



Striped Chub  
(*Leuciscus souffia*)

# FISH PASS AMBROŽEV TRG



Entrance to  
the fish pass



Exit from the fish pass





# FISH PASS AMBROŽEV TRG



The damaged interior of the fish pass

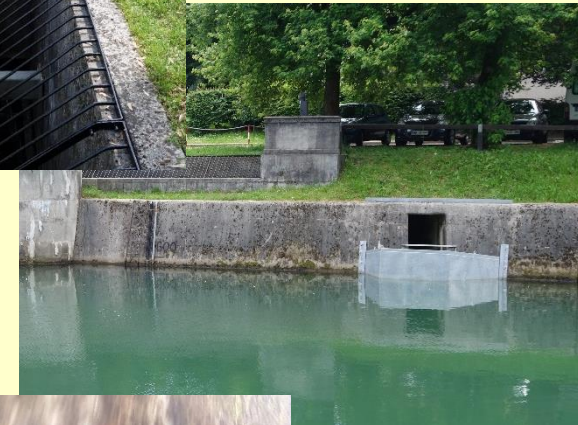
Floating debris on the barrier at the exit from the fish pass



Water falling over the barrier makes it difficult to find the entrance to the fish pass



Barriers on the openings above the fish pass were restored



Element for preventing accumulation of floating debris



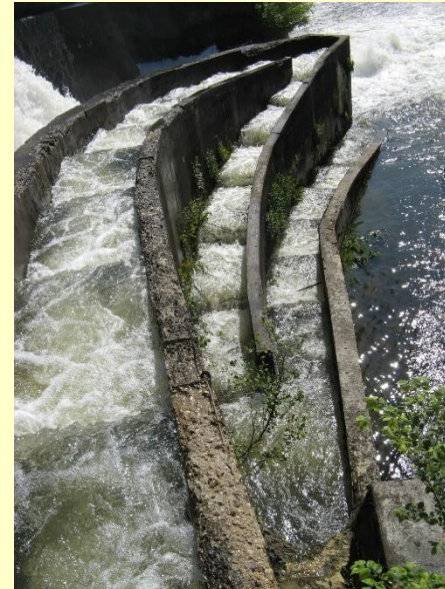
The new pipe which attracts fish to the entrance



# FISH PASS FUŽINE



Videokopter.si



Fish pass has collapsed during the high flow in November 2013



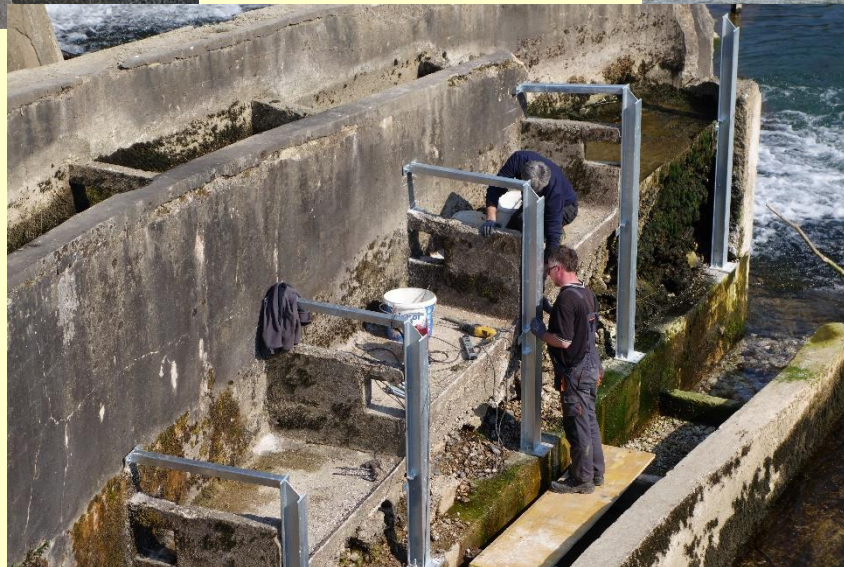
# FISH PASS FUŽINE



Cleaning of the fish pass

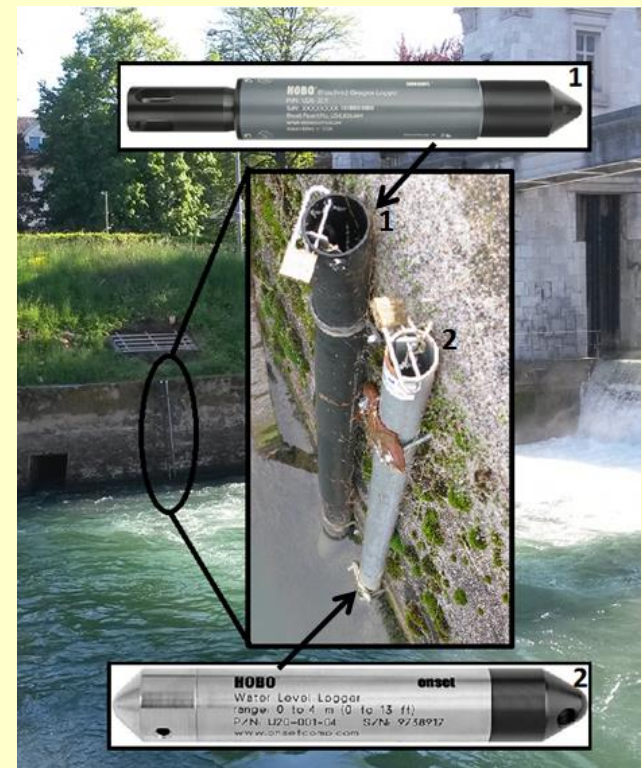
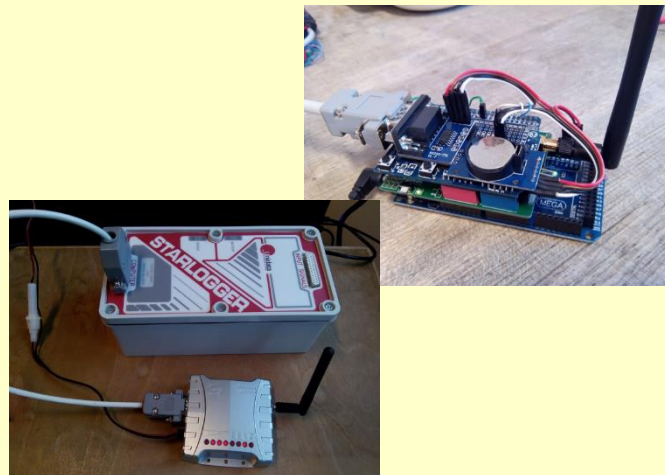


The collapsed part of fish pass was reconstructed using steel pylons filled with wood wall





# ECOHYDROLOGICAL MONITORING



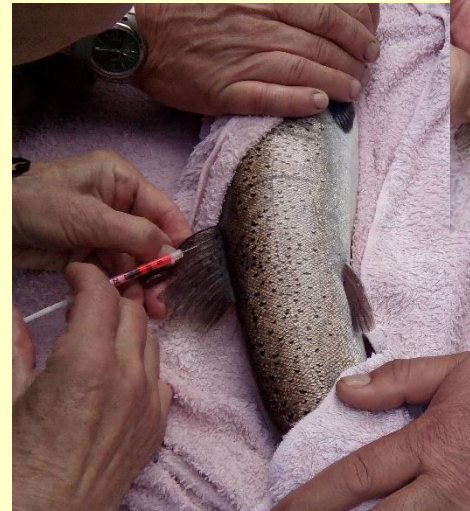
Measurements of temperature and oxygen concentration (1) and of water level (2)



# MONITORING OF FISH MIGRATION



Electrofishing



Tagging of fish with VIE  
(Visible Implant Elastomer  
Tags )





# MONITORING OF FISH MIGRATION



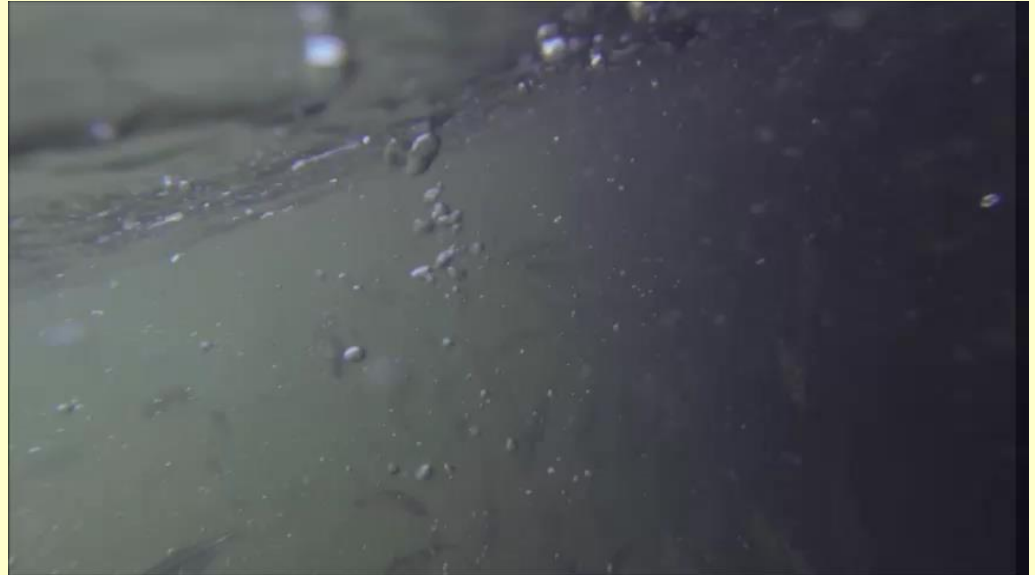
Camera for monitoring migration of fish through the fish pass



Installation of camera in the fish pass



# MONITORING OF FISH MIGRATION



Camera in the fish pass:

[http://ksh.fgg.uni-lj.si/ljubljanaconnects/ANG/12\\_camera/default.htm](http://ksh.fgg.uni-lj.si/ljubljanaconnects/ANG/12_camera/default.htm)



# INSTEAD OF CONCLUSIONS ...

