



## LIFE GoodWater IP: Importance of field surveys in identification of potentially most efficient restoration measures in project rivers

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“Implementation of River Basin Management Plans of Latvia towards good surface water status”



## Introduction

- The aim of LIFE GoodWater IP project is to improve ecological quality of water bodies at risk.
- According to 3rd cycle RBMP hydromorphological pressure is the most important pressure affecting Latvian rivers.
- Hydromorphological assessment in rivers usually is done in water body level, but restoration measures must be done in site or reach level →
- We had funding for restoration measures but we didn't know where exactly to spend it.

## Field surveys vs cameral assessment

- Field surveys
  - Activities can be planned on site level;
  - Extensive amount of data;
  - Possible to map small features and hymo modifications;
  - Time consuming field surveys;
  - Field surveys can be done only during summer.
- Cameral assessment
  - Activities can be planned on water body level;
  - No field surveys and assessment is relatively fast;
  - Not possible to recognize smaller obstacles.

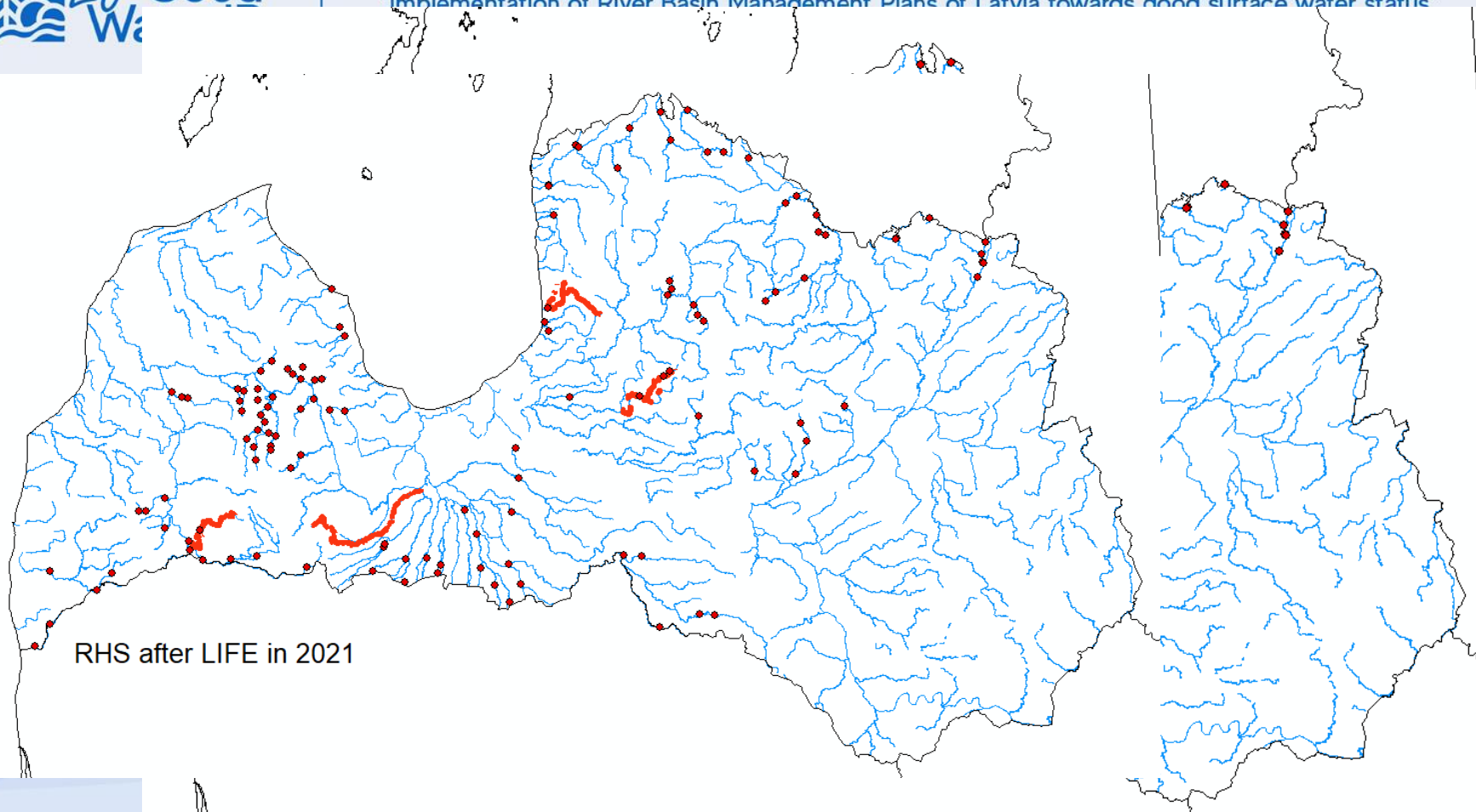
## Field surveys and artificial obstacles: Mergupe River



Rapids or obstacle  
(Mergupe)?



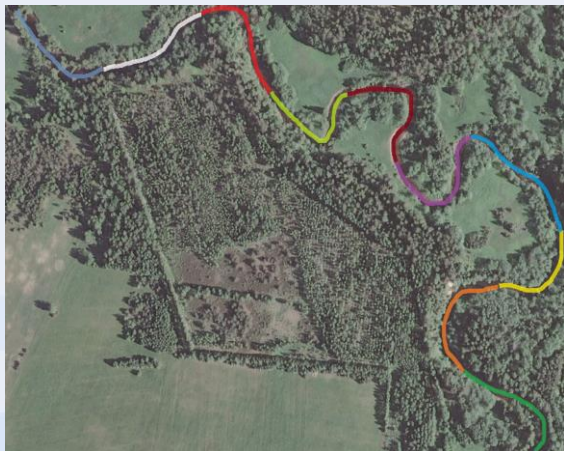
Auce River at Nākotne



RHS after LIFE in 2021



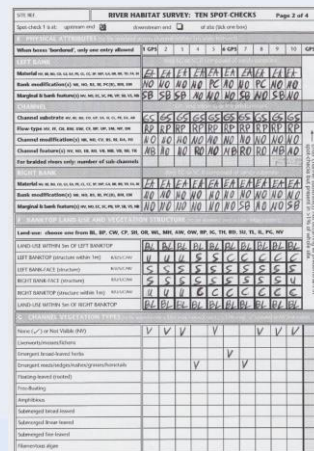
## RHS field work



River = 10\*50 m



Step by step all 200 km  
~ 4 km/day in natural sites and  
6 km/day in straightened sites



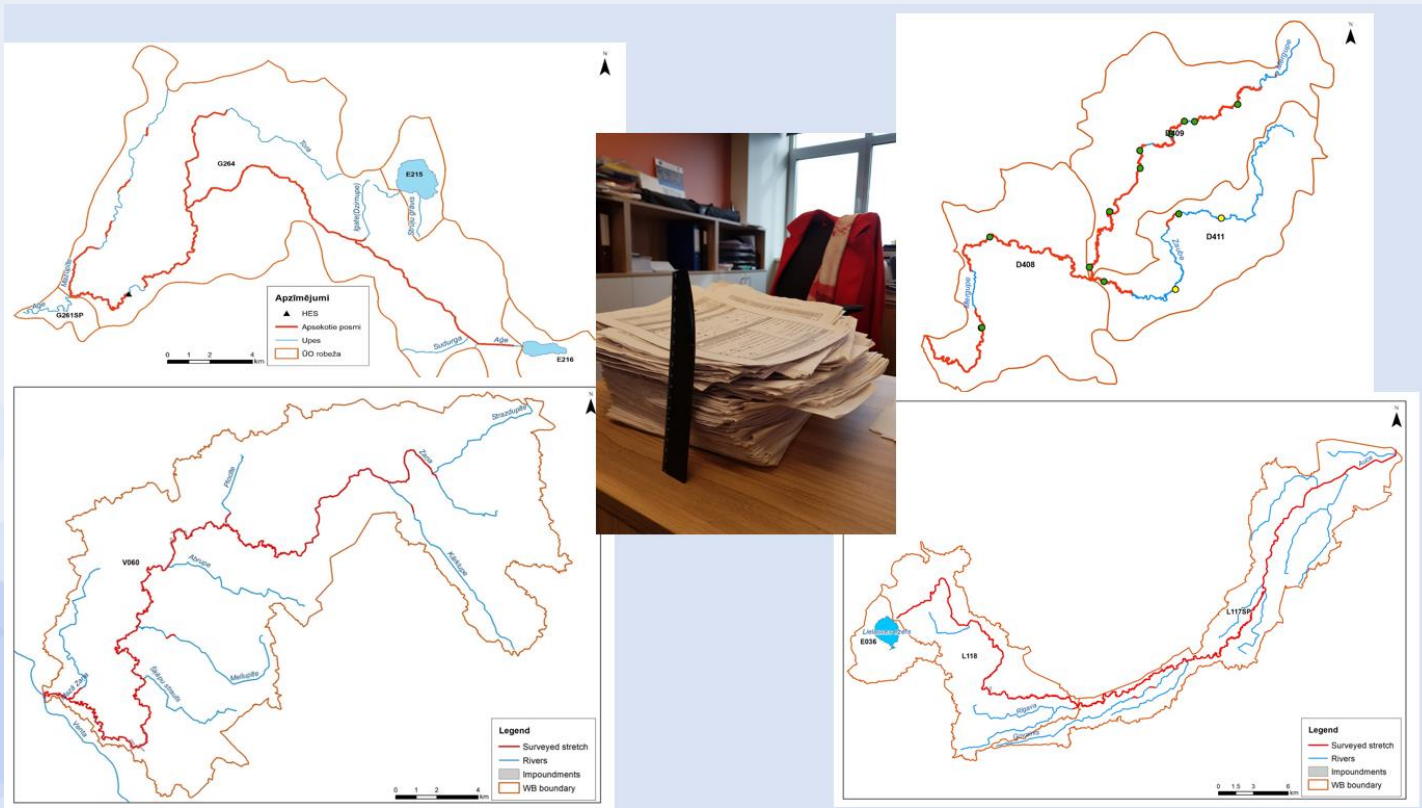
Form titled "RIVER HABITAT SURVEY: TEN SPOT CHECKS" with various sections for recording data on river habitat quality, including sections for "Ten Spot Checks", "Channel characteristics", "Bank characteristics", "Riverbank characteristics", and "Riverbank vegetation".



Form titled "RIVER HABITAT SURVEY: 500m SWEEP-UP" with various sections for recording data on river habitat quality, including sections for "500m Sweep-Up", "Channel characteristics", "Bank characteristics", "Riverbank characteristics", and "Riverbank vegetation".

Field protocol on 4 pages, more  
than 20 hymo indices

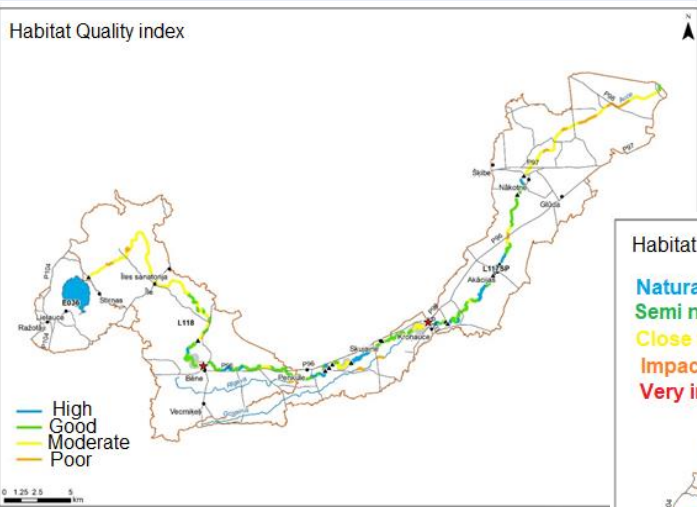
## Field surveys within LIFE GoodWater IP



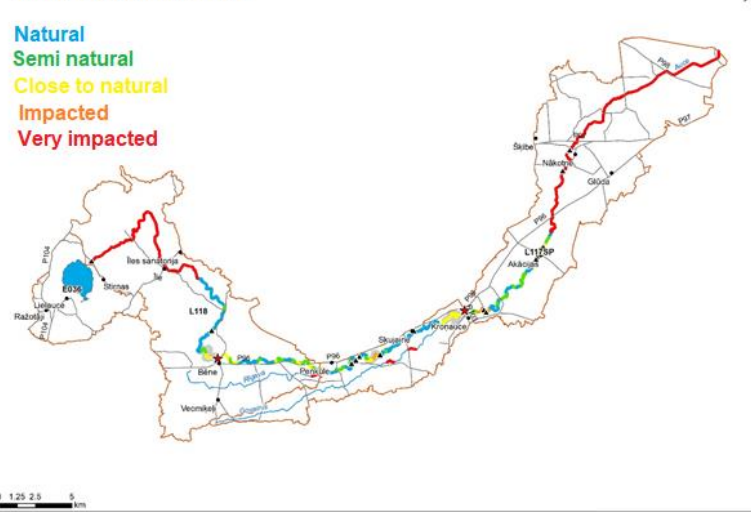
- r. Auce -100%
- r. Aģe-95%
- r. Mergupe-70%
- r. Zāņa-96%
- And tributaries
- Surveyed more than 200 km

# Hydromorphological quality: Auce river

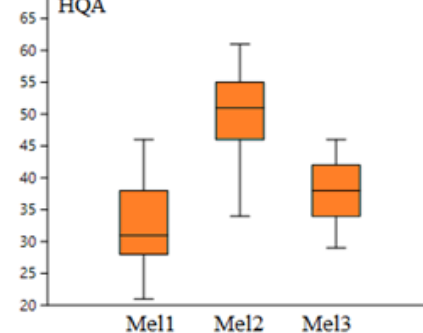
Habitat Quality index



Habitat Modification Score



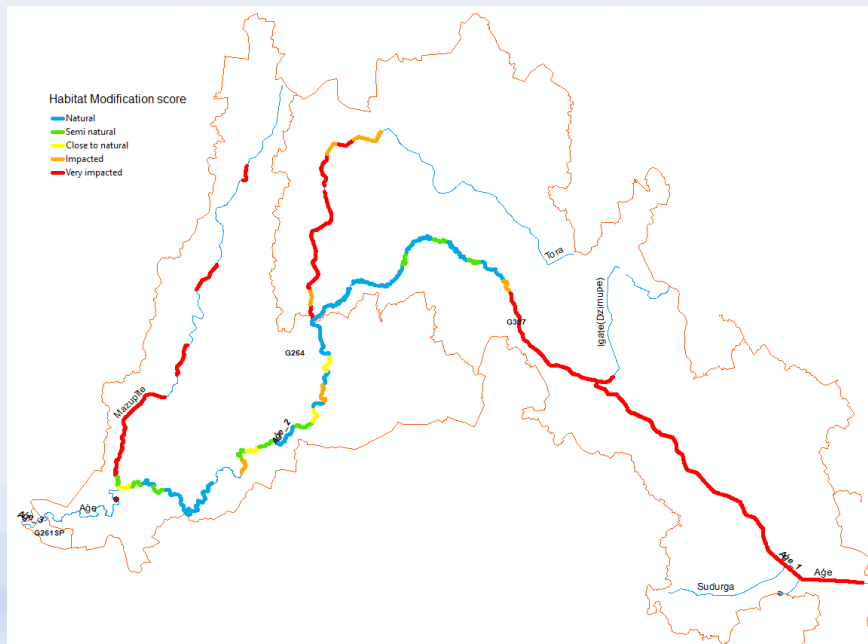
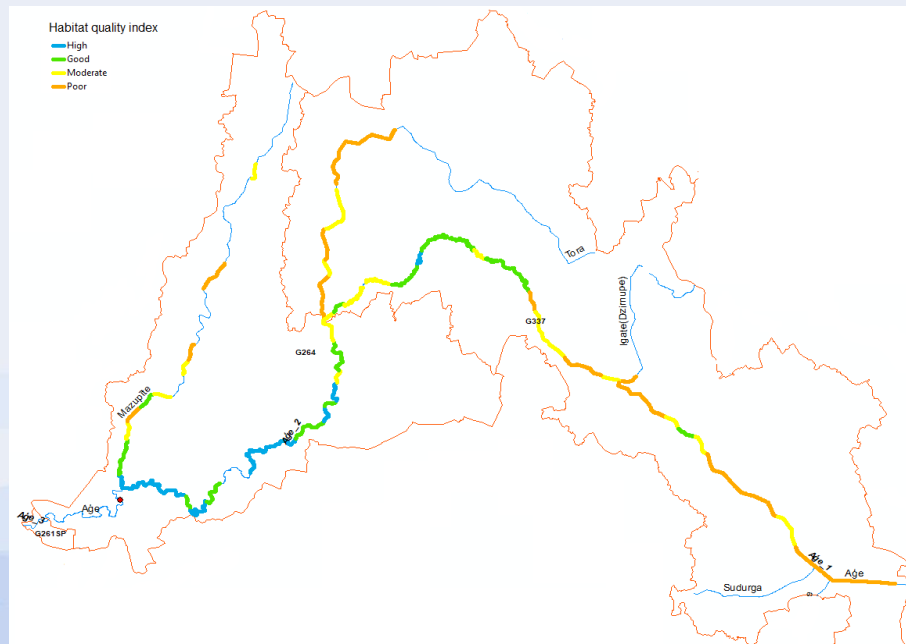
HQA



Large hymo quality differences in channelised downstream reaches.

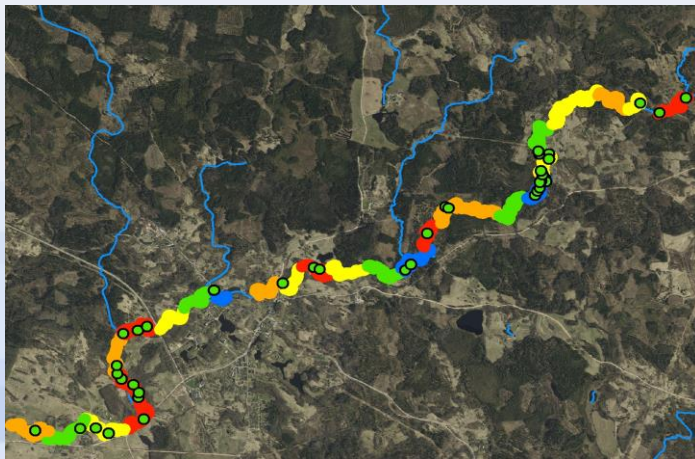


# Hydromorphological quality: Aģe river

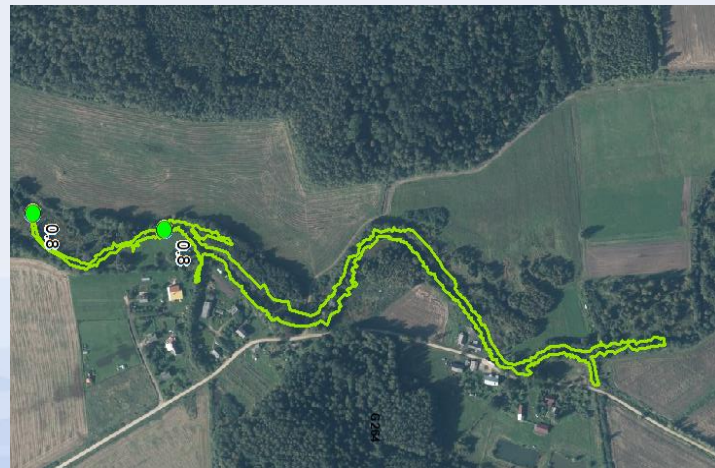


## Beaver dams

- Impacts of beaver dams in different were examined. We mapped each beaver dam and measured it's height. The flooded area of each beaver dam was modeled and the total flooded area was calculated.



Beaver dams in Mergupe River



Flooded area of two beaver dams. 10

## Restoration measure maps were created for all rivers



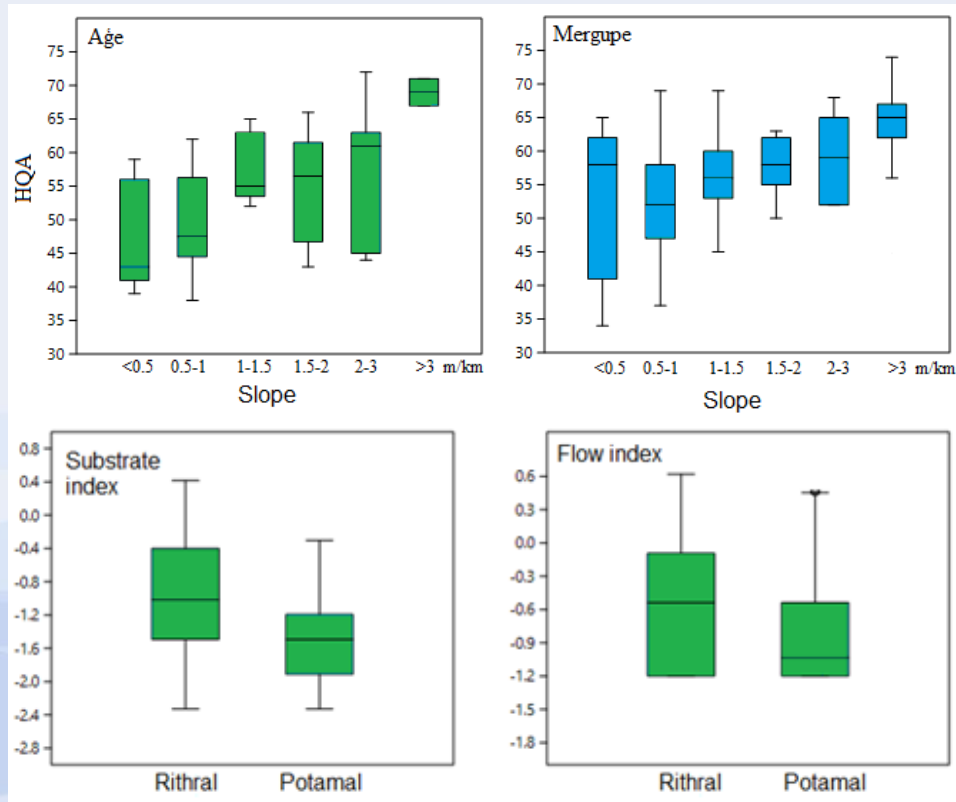
- Direct location of planned measure.
- Priorities to facilitate the decision-making process.

## River typology-key factor for ecological assessment

- According to Latvian river typology rivers are divided into 7 types, based on their slope and catchment area.
- Rithral or fast flowing rivers have slope larger than 1 m/km.
- Potamal or slow flowing rivers have slope smaller than 1 m/km.
- Rithral rivers usually are salmonid type and have higher water quality standards.

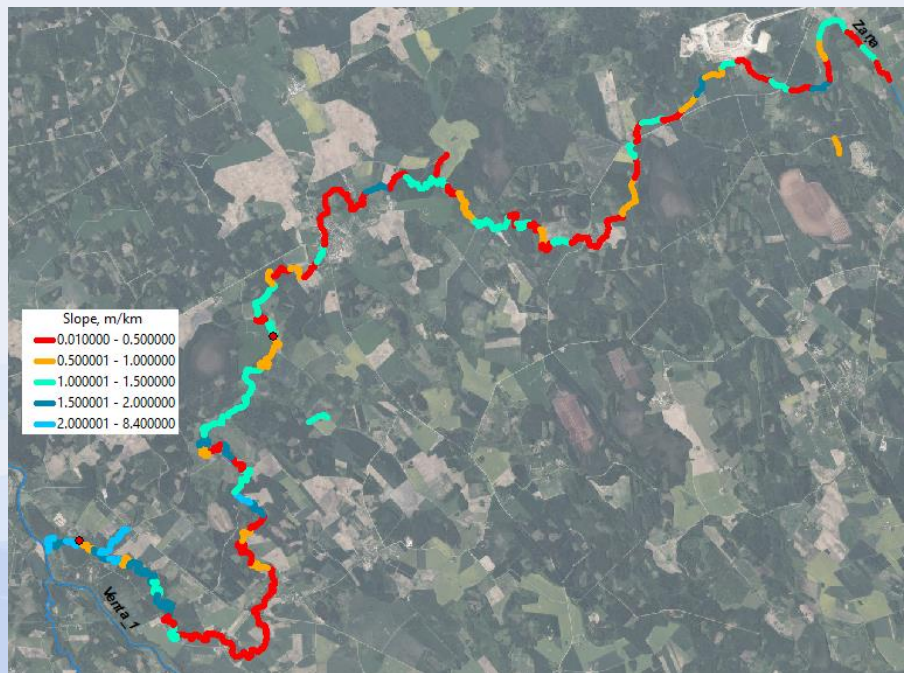


## Differences between natural rithral and potamal rivers



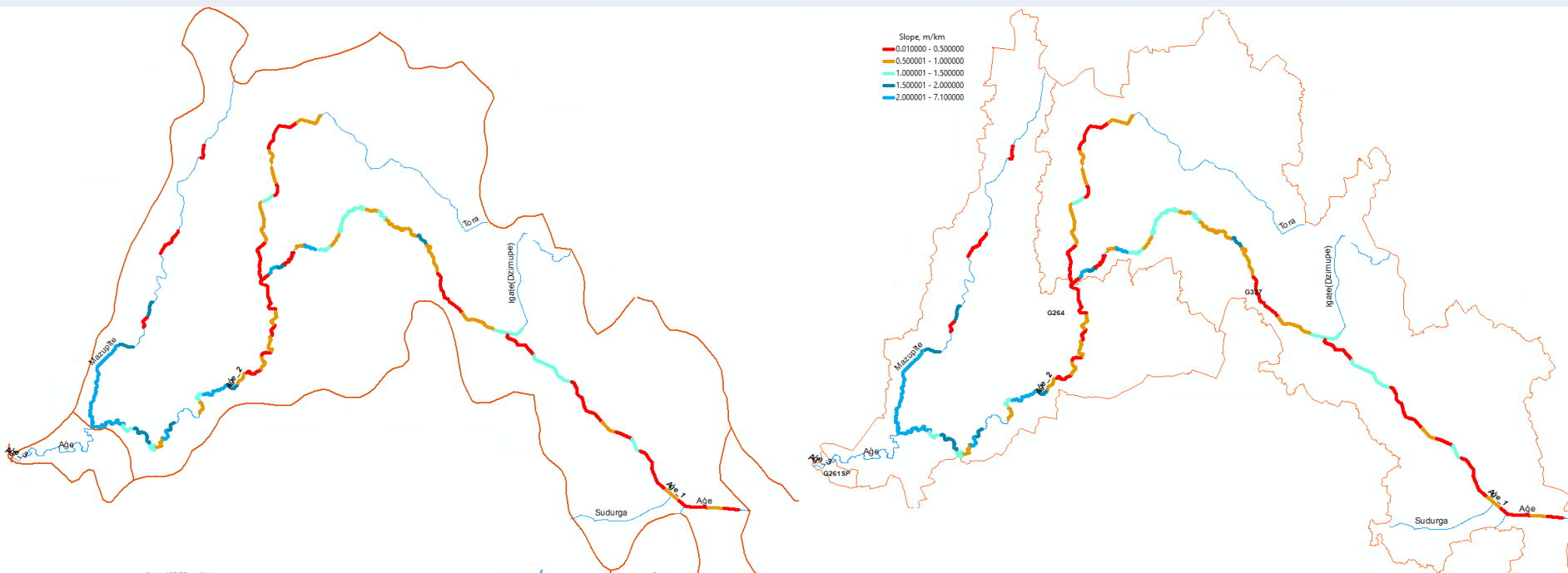
- We found out that natural rithral rivers are naturally more diverse than potamal rivers.
- It must be taken into account when restoration measures are planned, and it must be done separately for both types of rivers.

## National river typology +/-



- LIFE case study Zāņa River belongs to type R3- rithral river with cathment area 100-1000 km<sup>2</sup>.
- In reality, the rithral is only the lower reache of the river.
- Water body typology can't be used for planning of mitigation measures.

## Assessment results and RBMP



## Conclusions

- Cameral surveys without validation on field is not enough to determine most important pressures and set ecological targets.
- River hydromorphological quality and typology is very important factors for planning of restoration measures.
- River Habitat Survey can be used as suitable tool for catchment scale planning of hydromorphological mitigation measures.
- This is the first time in Latvia that measures to reduce hydromorphological changes were based on the results of research conducted at the river scale.



# Thank you!

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[www.goodwater.lv](http://www.goodwater.lv)

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