Interreg
Latvija–Lietuva
European Regional Development Fund

EUROPEAN UNION

Trans WAT

Joint management of Latvian – Lithuanian transboundary river and lake water bodies (TRANSWAT)

Results of habitat surveys in Latvia

Jolanta Jēkabsone

Latvijas Vides, ģeoloģijas un meteoroloģijas centrs

Transwat Final conference, 06.09.2022.

LATVIJAS VIDES, ĢEOLOĢIJAS UN METEOROLOĢIJAS CENTRS

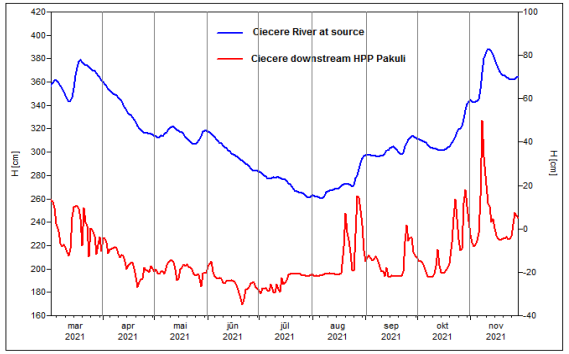
LITHUANIAN ENERGY INSTITUTE

BIOR
INSTITUTE OF FOOD SAFETY, ANIMAL HEALTH AND ENVIRONMENT

UNIVERSITY OF LATVIA

MesoHABSIM concept

Hydrological data

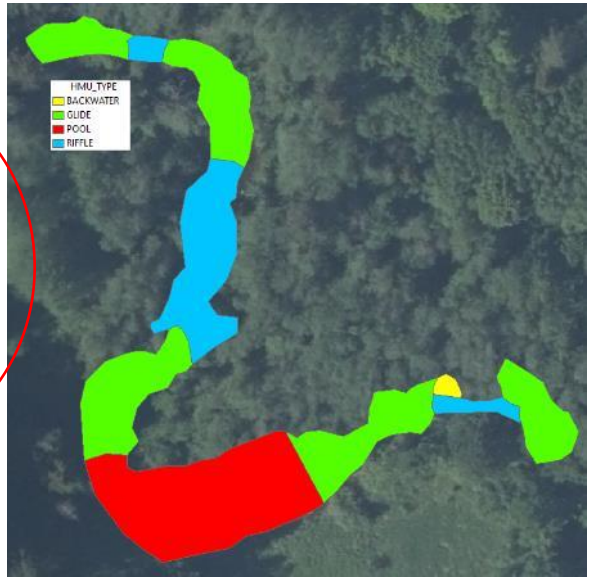


Ecological flow

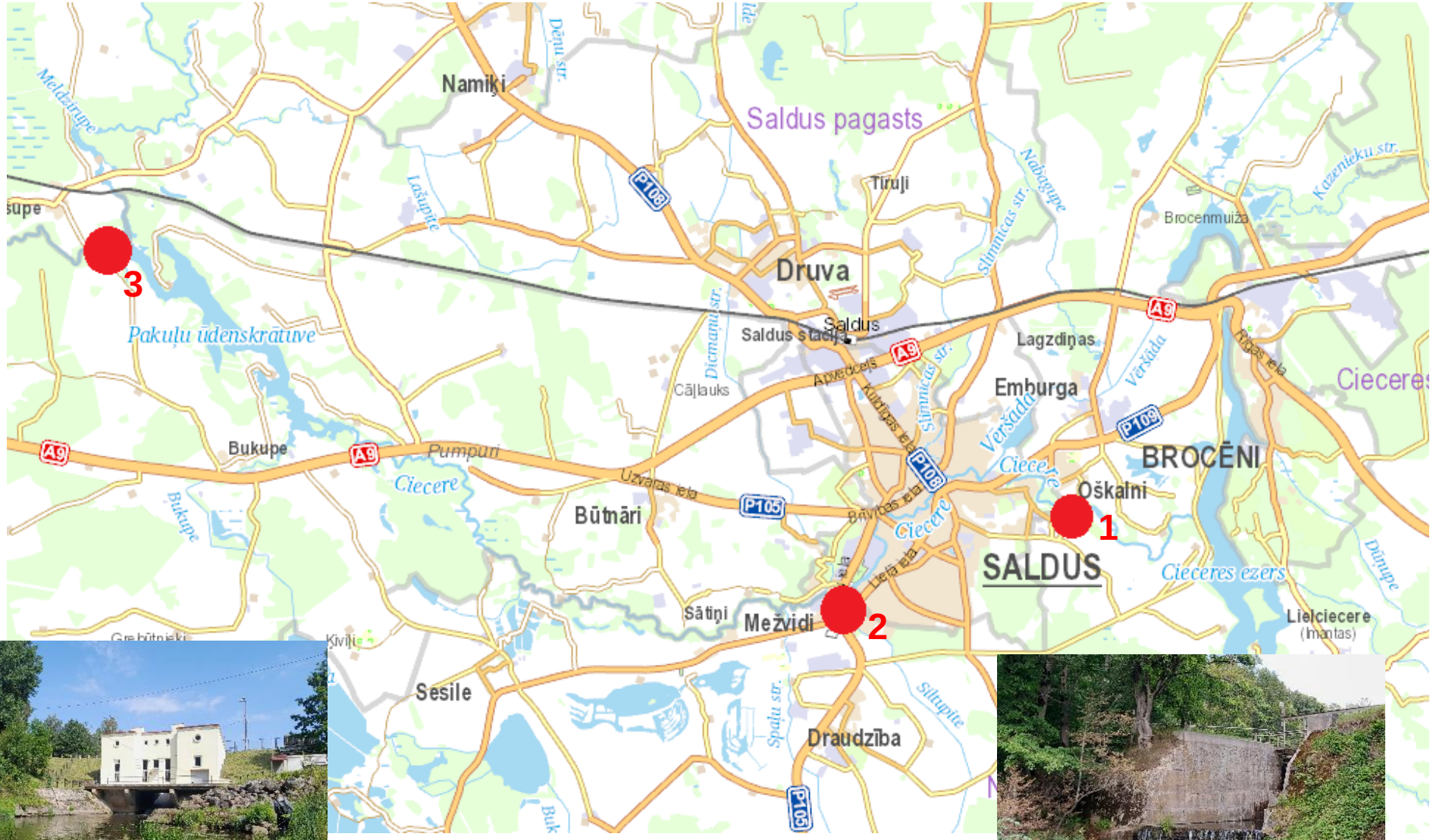
Fish model

Salmo trutta JUVENILES
Presence
IF
[D_15+D15_30+D30_45+D45_60+D60_75]>0.3
AND
[CV15_30+CV30_45+CV45_60+CV60_75+CV75_90]>0.3
AND
[MESOLITHAL+MICROLITHAL +AKAL]>0.3
AND
[WOODY_DEBR=1 OR BOULDERS=1]

Habitat maps



Case study1: Ciecere River



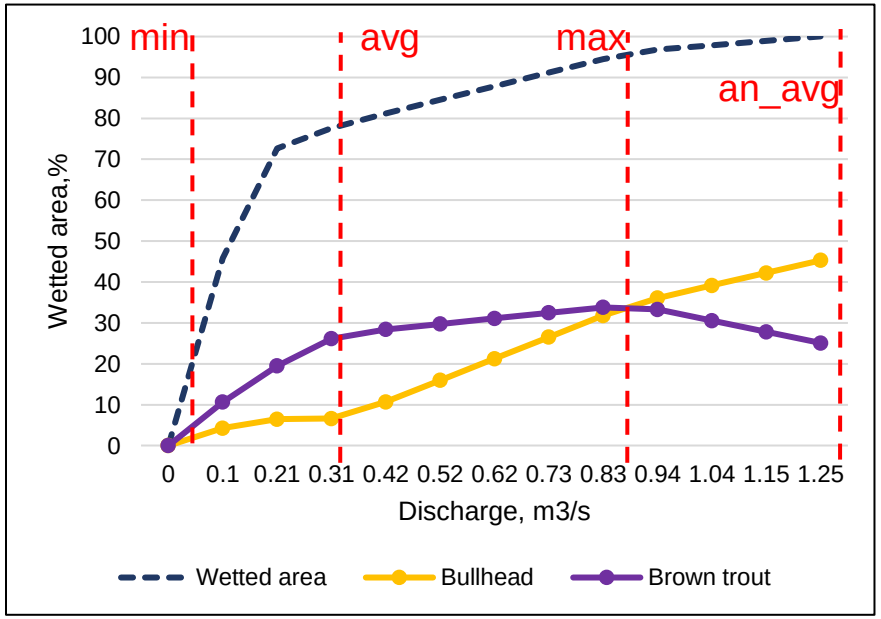
- Site Ciecere 1, below Ciecere HPP; 55 km from river mouth
- Site Ciecere 2, below Dzirnavnieki HPP; 49 km from river mouth
- Site Ciecere 3, below Pakuli HPP; 32 km from river mouth

Case study 2: Losis River

- Site Losis 1, below Lejnieki HPP; 2 km from river mouth
- Site Losis 2, below Grantini HPP; 7.5 km from river mouth. Transboundary site.

Surveyed sites

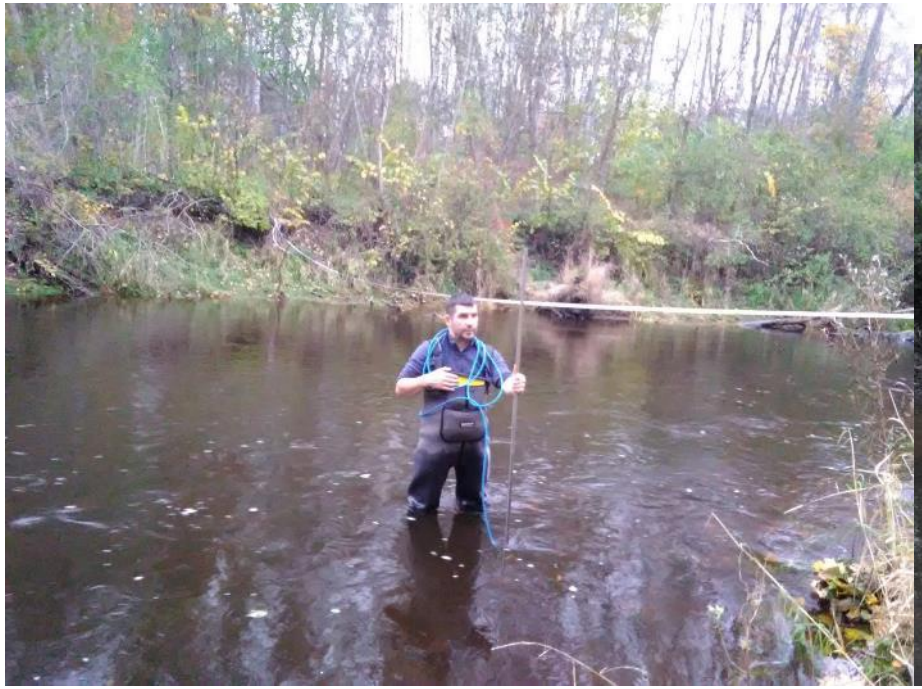
River site	Length of surveyed reach, m	Mapped area, m²	Distance to HPP, km
Ciecere 1	120	710-1015	1.40
Ciecere 2	160	1394-1745	0.45
Ciecere 3	280	2860-3860	0.35
Losis 1	215	2034-2700	0.18
Losis 2	195	1700-1952	2.5

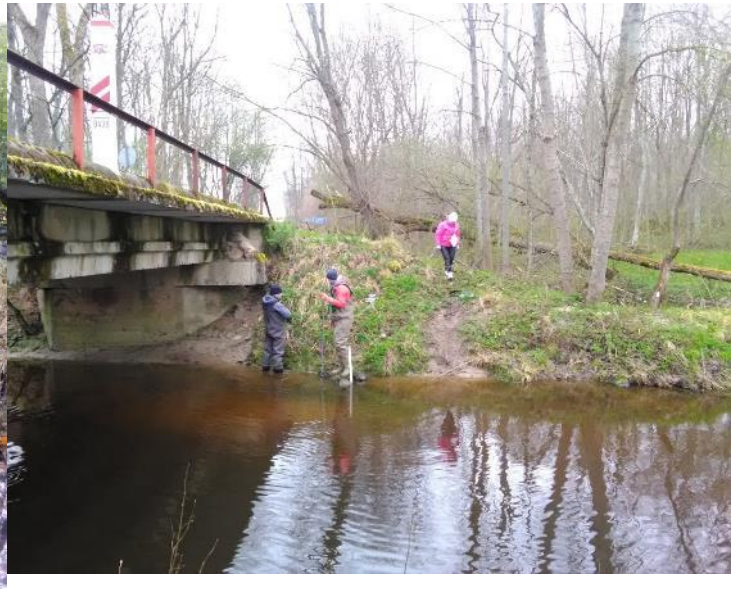


Each site was assessed 4 times during different flow regime:
summer low flow minimum,
low flow average,
low flow maximum,
annual average flow.

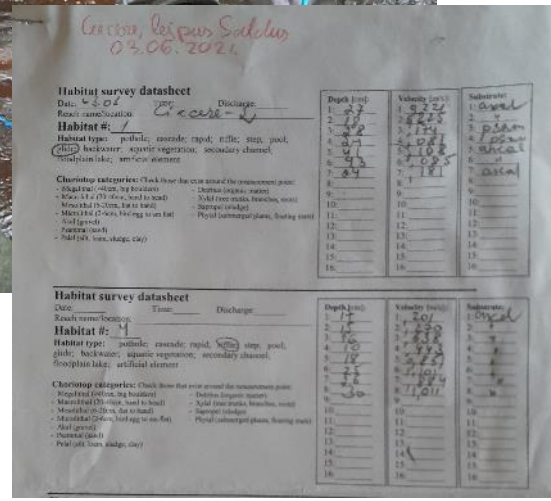
Equipment

- Flow velocity meter (electromagnetic)
- Field computer,
- TruPulse 360 range finder
- ESRI ArcPad software





Field team: 4 experts

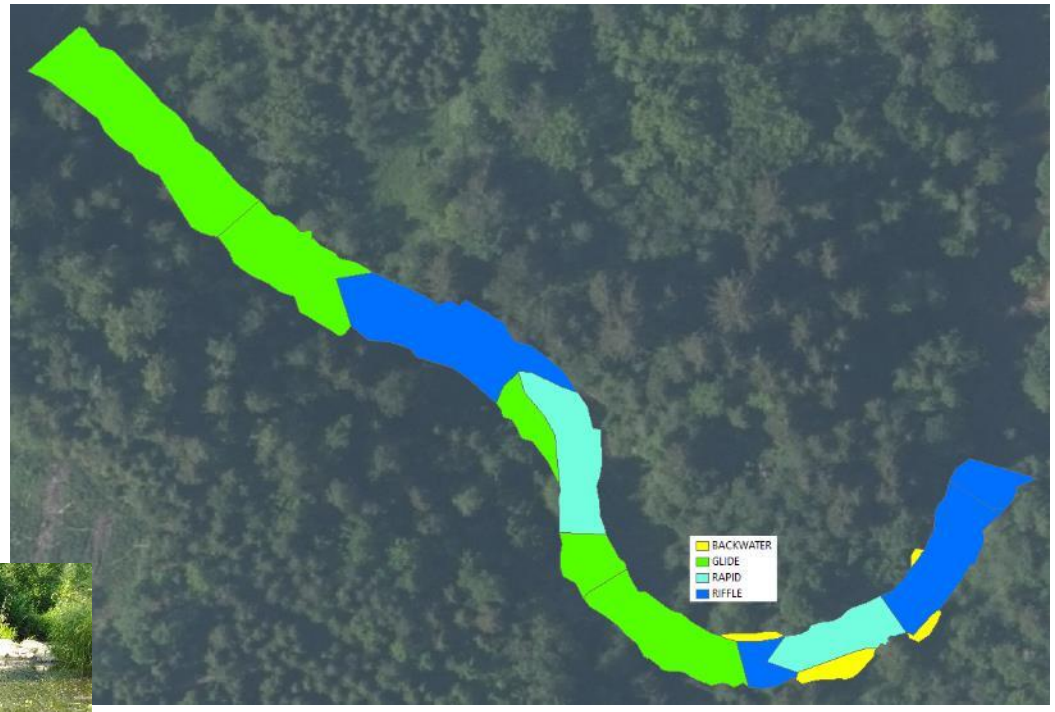


2 people are working with cartography and 2 people are measuring habitats

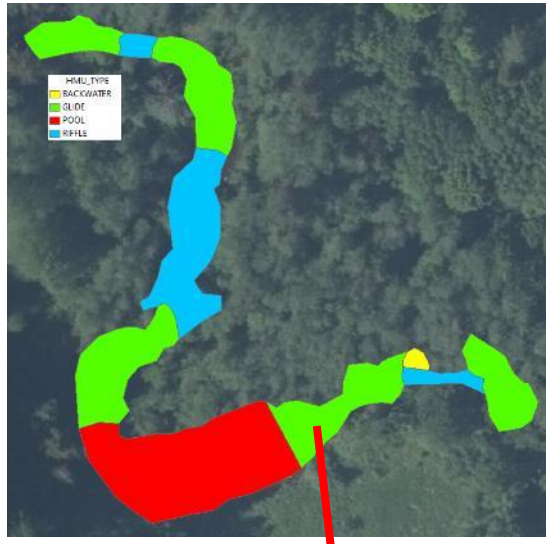
Field measurements

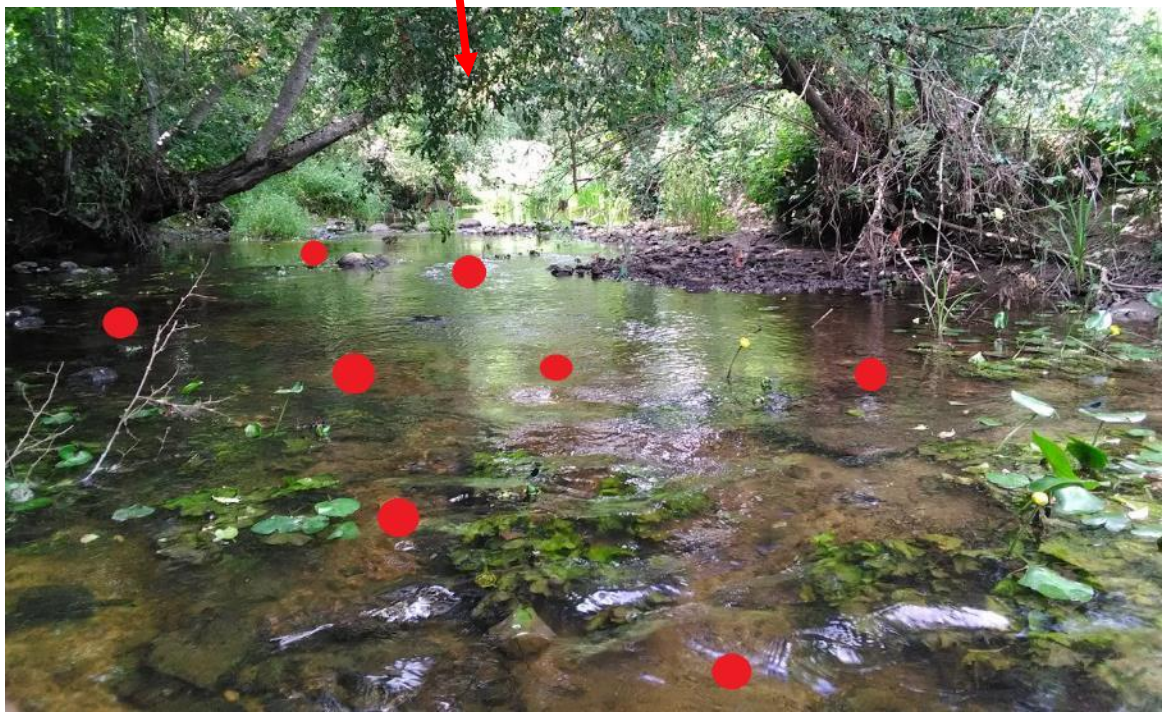
summer low flow minimum
low flow average
low flow maximum
annual average flow

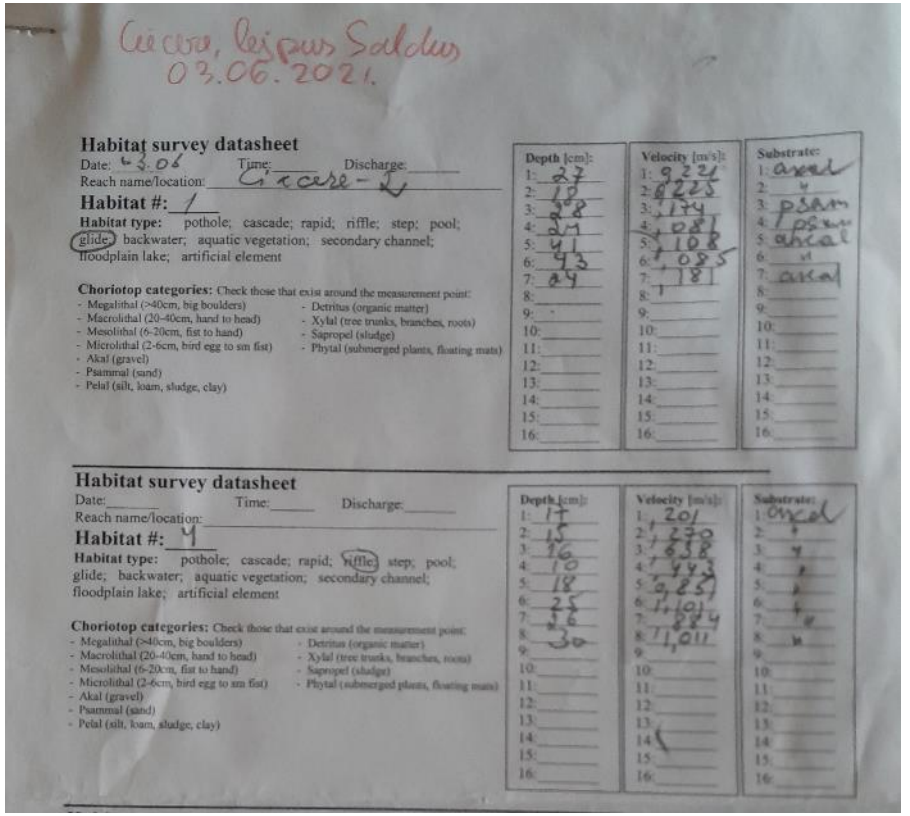
Hydromorphological units



Field measurements







Habitat survey datasheet

Date: 4.06 Time: Discharge:

Reach name/location: Cicera - L

Habitat #: 1

Habitat type: pothole; cascade; rapid; riffle; step; pool; glide; backwater; aquatic vegetation; secondary channel; floodplain lake; artificial element

Choriotop categories: Check those that exist around the measurement point:
- Megalithal (>40cm, big boulders)
- Macrolithal (20–40cm, hand to head)
- Mesolithal (6–20cm, fist to hand)
- Microlithal (2–6cm, bird egg to sm fist)
- Akal (gravel)
- Psammal (sand)
- Pelal (silt, loam, sludge, clay)
- Detritus (organic matter)
- Xylal (tree trunks, branches, roots)
- Sapropel (sludge)
- Phytal (submerged plants, floating mats)

	Depth [cm]	Velocity [m/s]	Substrate
1	27	0.224	axal
2	10	0.225	"
3	28	0.174	psam
4	21	0.081	psam
5	41	0.108	akal
6	43	0.085	"
7	24	0.181	akal
8		1	
9			
10			
11			
12			
13			
14			
15			
16			

Habitat survey datasheet

Date: Time: Discharge:

Reach name/location:

Habitat #: 4

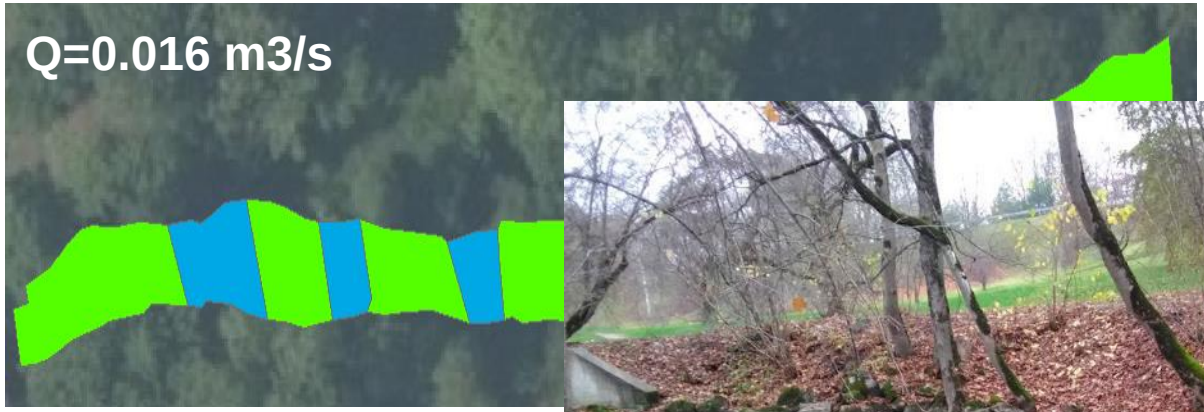
Habitat type: pothole; cascade; rapid; riffle; step; pool; glide; backwater; aquatic vegetation; secondary channel; floodplain lake; artificial element

Choriotop categories: Check those that exist around the measurement point:
- Megalithal (>40cm, big boulders)
- Macrolithal (20–40cm, hand to head)
- Mesolithal (6–20cm, fist to hand)
- Microlithal (2–6cm, bird egg to sm fist)
- Akal (gravel)
- Psammal (sand)
- Pelal (silt, loam, sludge, clay)
- Detritus (organic matter)
- Xylal (tree trunks, branches, roots)
- Sapropel (sludge)
- Phytal (submerged plants, floating mats)

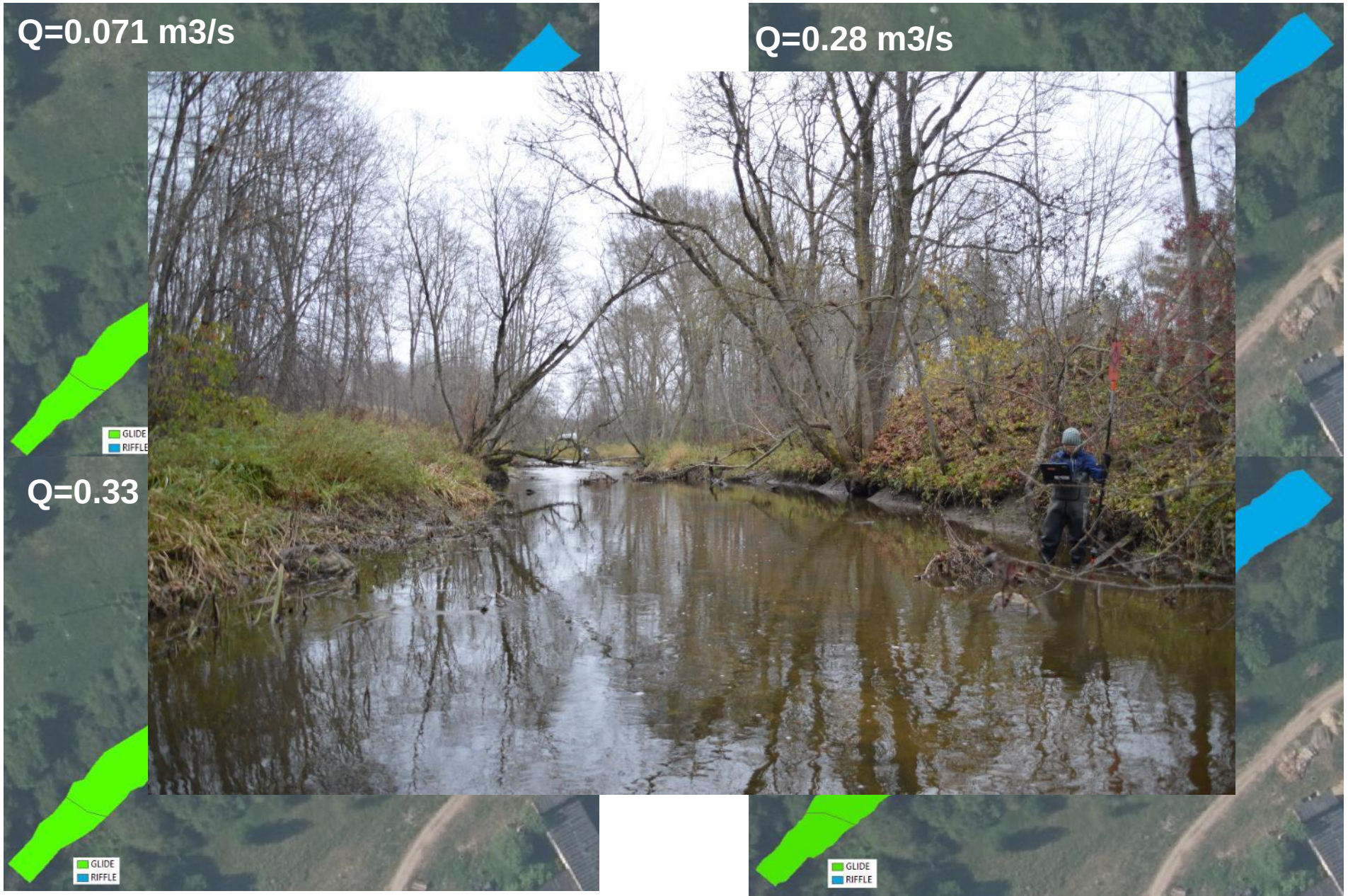
	Depth [cm]	Velocity [m/s]	Substrate
1	17	0.201	akal
2	15	0.270	"
3	26	0.658	"
4	10	0.443	"
5	18	0.257	"
6	25	0.101	"
7	26	0.884	"
8	30	1.011	"
9			
10			
11			
12			
13			
14			
15			
16			

- In each hymo unit at least 7 point measurements, including **depth, velocity,substrate**, were done

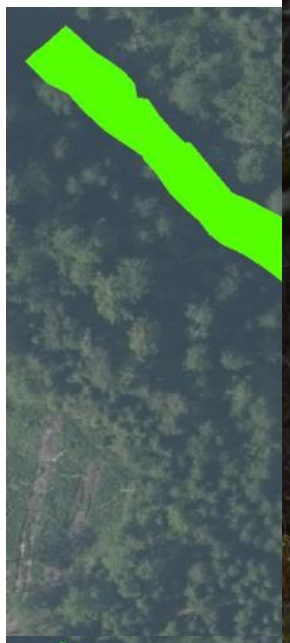
Hydromorphological units: Ciecere 1



Hydromorphological units: Ciecere 2



Hydromorphological units: Ciecere 3



Hydro


Q=0.

From field work to modelling

1. Field work

2. Data processing

Ciecere_1_016_23_09_2021.txt - Notepad

File Edit Format View Help

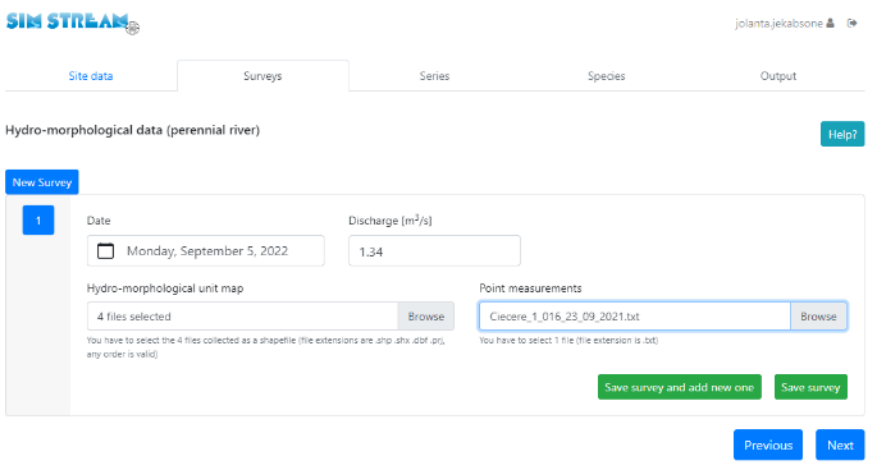
HMU_NUM	HMU_TYPE	PNTNUM	DEPTH	VELOCITY	SUBSTRATE
1	GLIDE	1	0.18	0.125	AKAL
1	GLIDE	2	0.17	0.209	MESOLITHAL
1	GLIDE	3	0.2	0.338	MESOLITHAL
1	GLIDE	4	0.14	0.281	MICROLITHAL
1	GLIDE	5	0.16	0.153	MESOLITHAL
2	RIFFLE	1	0.14	0.569	MICROLITHAL
2	RIFFLE	2	0.12	0.389	AKAL
2	RIFFLE	3	0.1	0.429	MESOLITHAL
2	RIFFLE	4	0.11	0.715	MICROLITHAL
2	RIFFLE	5	0.1	0.343	MESOLITHAL
3	GLIDE	1	0.16	0.185	AKAL
3	GLIDE	2	0.17	0.117	MESOLITHAL
3	GLIDE	3	0.07	0.018	MICROLITHAL
3	GLIDE	4	0.14	0.155	MESOLITHAL
3	GLIDE	5	0.12	0.152	MESOLITHAL
4	RIFFLE	1	0.13	0.341	MESOLITHAL
4	RIFFLE	2	0.07	0.273	MESOLITHAL
4	RIFFLE	3	0.1	0.395	MICROLITHAL
4	RIFFLE	4	0.09	0.291	MICROLITHAL
4	RIFFLE	5	0.11	0.311	MESOLITHAL
5	GLIDE	1	0.11	0.141	AKAL
5	GLIDE	2	0.1	0.281	MICROLITHAL
5	GLIDE	3	0.08	0.093	MICROLITHAL
5	GLIDE	4	0.2	0.202	MESOLITHAL
5	GLIDE	5	0.12	0.141	MICROLITHAL
6	RIFFLE	1	0.16	0.141	MESOLITHAL
6	RIFFLE	2	0.1	0.335	MESOLITHAL
6	RIFFLE	3	0.09	0.245	MESOLITHAL
6	RIFFLE	4	0.08	0.178	MESOLITHAL
6	RIFFLE	5	0.09	0.182	MICROLITHAL
7	GLIDE	1	0.16	0.253	MICROLITHAL

Losis2_134_20_10_2020

	FID	Shape *	HMU_NUM	HMU_TYPE	Z_MAX	Z_MIN	CONNECTIV	BOULDER	CANOP_SHAD	COMM
▶	0	Polygon ZM	1	GLIDE	0.15	0.1	False	False	True	
	1	Polygon ZM	2	RIFFLE	0.15	0.1	False	True	True	
	2	Polygon ZM	3	GLIDE	0.15	0.1	False	True	True	
	3	Polygon ZM	4	GLIDE	0.15	0.1	False	False	True	

OVERHA_VEG	ROOTS	SUBMER_VEG	EMERG_VEG	UNDERC_BAN	WOODY_DEBR	RIPRAP	SHALL_MARG
True	True	True	True	False	False	True	True
True	False	True	False	False	False	True	True
True	True	True	True	False	True	True	True
True	True	True	True	False	False	True	True

3. Modelling



Thank you!

Contact me:

jolanta.jekabsone@lvgmc.lv

LATVIJAS VIDES, ĢEOLOĢIJAS UN METEOROLOĢIJAS CENTRS

LITHUANIAN ENERGY INSTITUTE

UNIVERSITY OF LATVIA

BIOR
INSTITUTE OF FOOD SAFETY, ANIMAL HEALTH AND ENVIRONMENT

NATURE RESEARCH CENTRE

Trans WAT

Joint management of Latvian – Lithuanian transboundary river and lake water bodies (TRANSWAT)