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MONITORING RESULTS SHOW SLOW RECOVERY OF LAMPREY REPRODUCTION AFTER CONSTRUCTION OF A COUNTRY WISE FIRST NATURAL FISH PASSAGE



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EUROPEAN RIVER LAMPREY

Anadromous species

Spawns in fast flowing sections

Larval development in rivers (3–5 years)

Feeding in the sea (1–3 years)

Protected species

In Latvia – a local delicacy

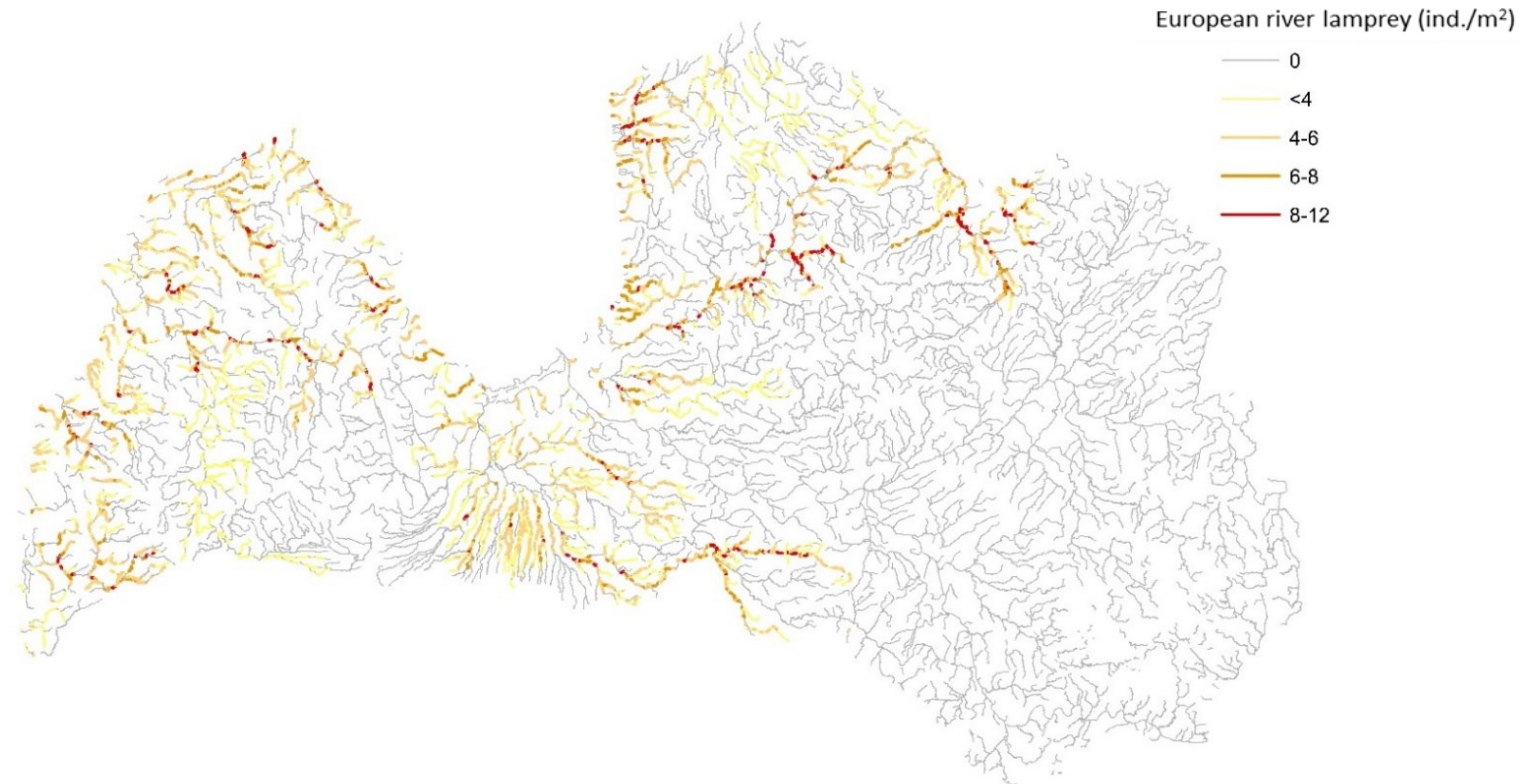


Adult European river lamprey *Lampetra fluviatilis*



DISTRIBUTION IN LATVIA

There are >1300 migration barriers in Latvian rivers...



A model of the current distribution and density of European river lamprey in Latvian rivers

MIGRATION BARRIERS

One of the main threats to anadromous fish species



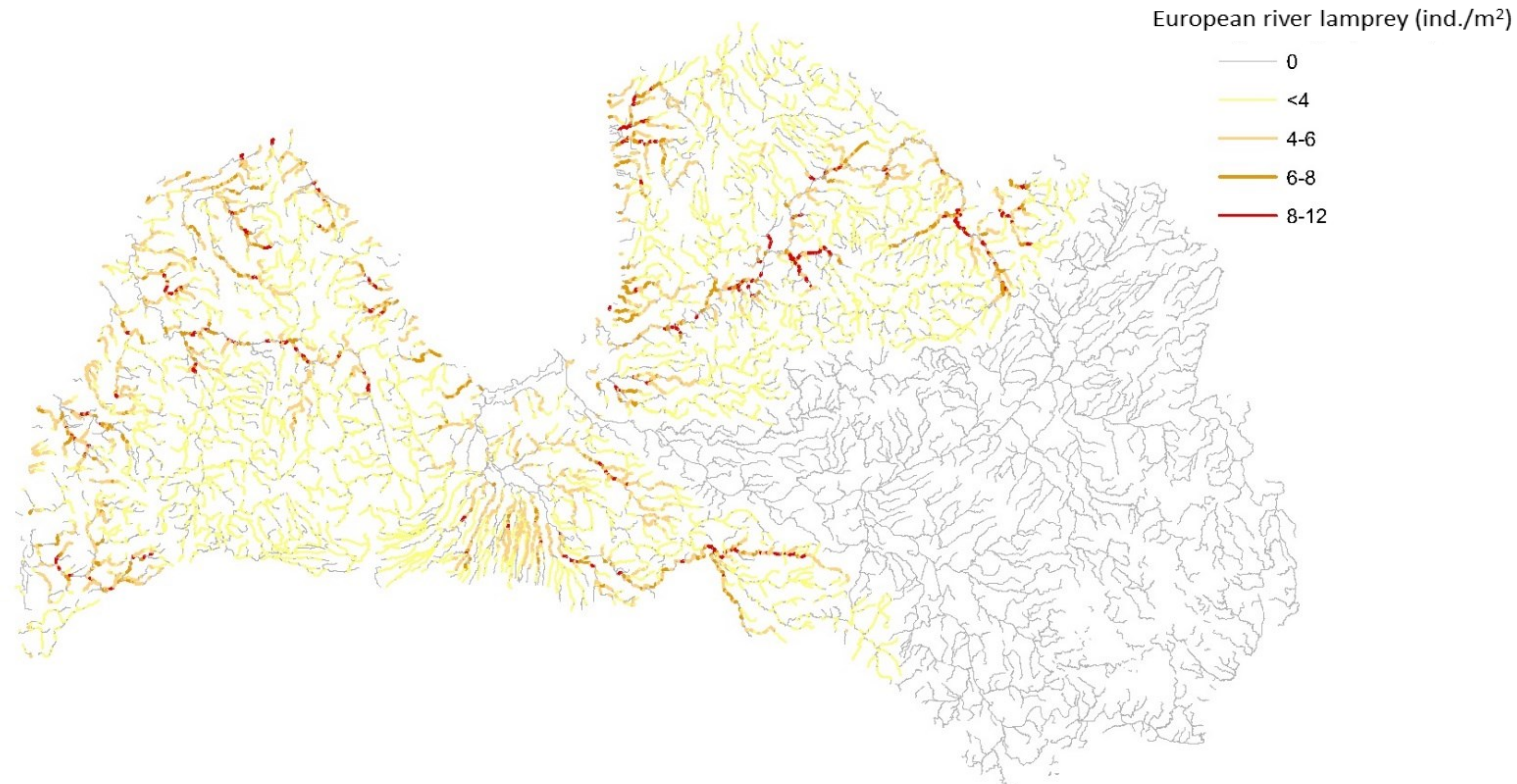
Lube mill on Roja river



Vecogres HPP on Ogre river

DISTRIBUTION IN LATVIA

If most of the migration barriers would be gone...



A model of the distribution and density in situation where only waterfalls and Daugava HPP cascade remained

RĪVA RIVER

Located in the Western part of Latvia

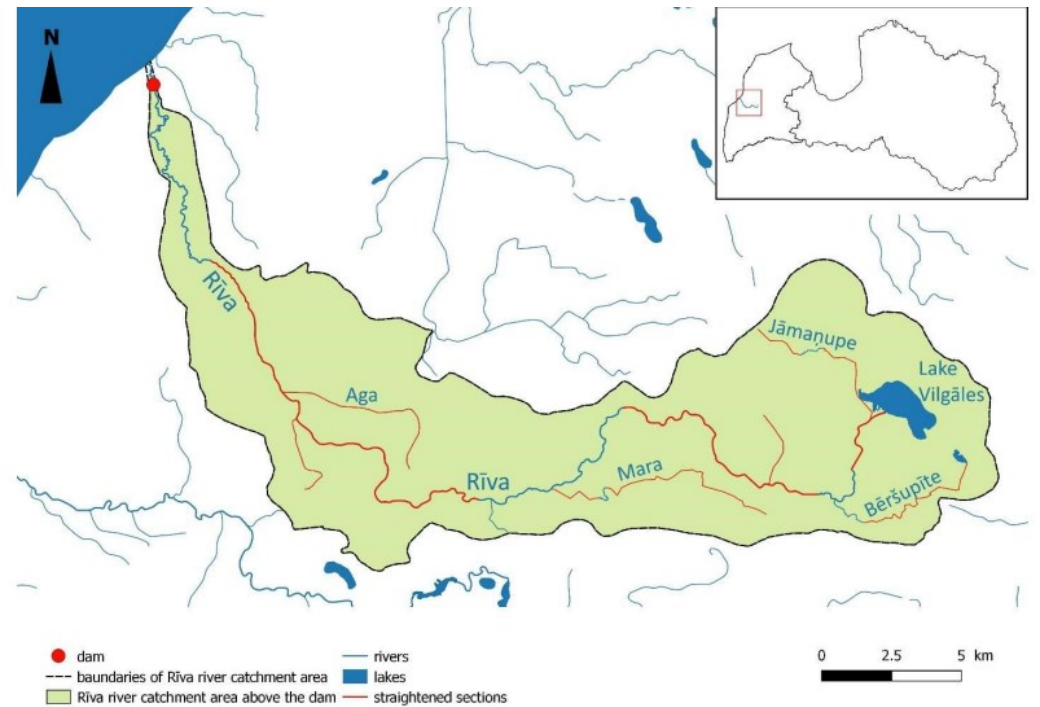
Middle sized rithral river

Slope ~ 1 m/km, length ~ 61 km,
catchment area ~ 235 km²

Suitable for lamprey reproduction
according to LAMPREY*

*Cross-boundary evaluation and management of lamprey stocks
in Lithuania and Latvia LAMPREY LLI-310

15.04.2024



THE BARRIER

Remains of a paper mill dam

Affects migration of salmon, sea trout and river lamprey

Incorporated in the replica of a historically important bridge

Located ~1,2 km from the river mouth

Approximately 98% of the riverbed is upstream the migration barrier



FISH PASSAGE

Built in 2020 within the RETROUT* project

Length 110 m, slope 20 m/km

Includes several reinforced concrete structures

The impact of the concrete structures on migration is unknown

*Development, promotion and sustainable management of the Baltic Sea Region as a coastal fishing tourism destination (R065)

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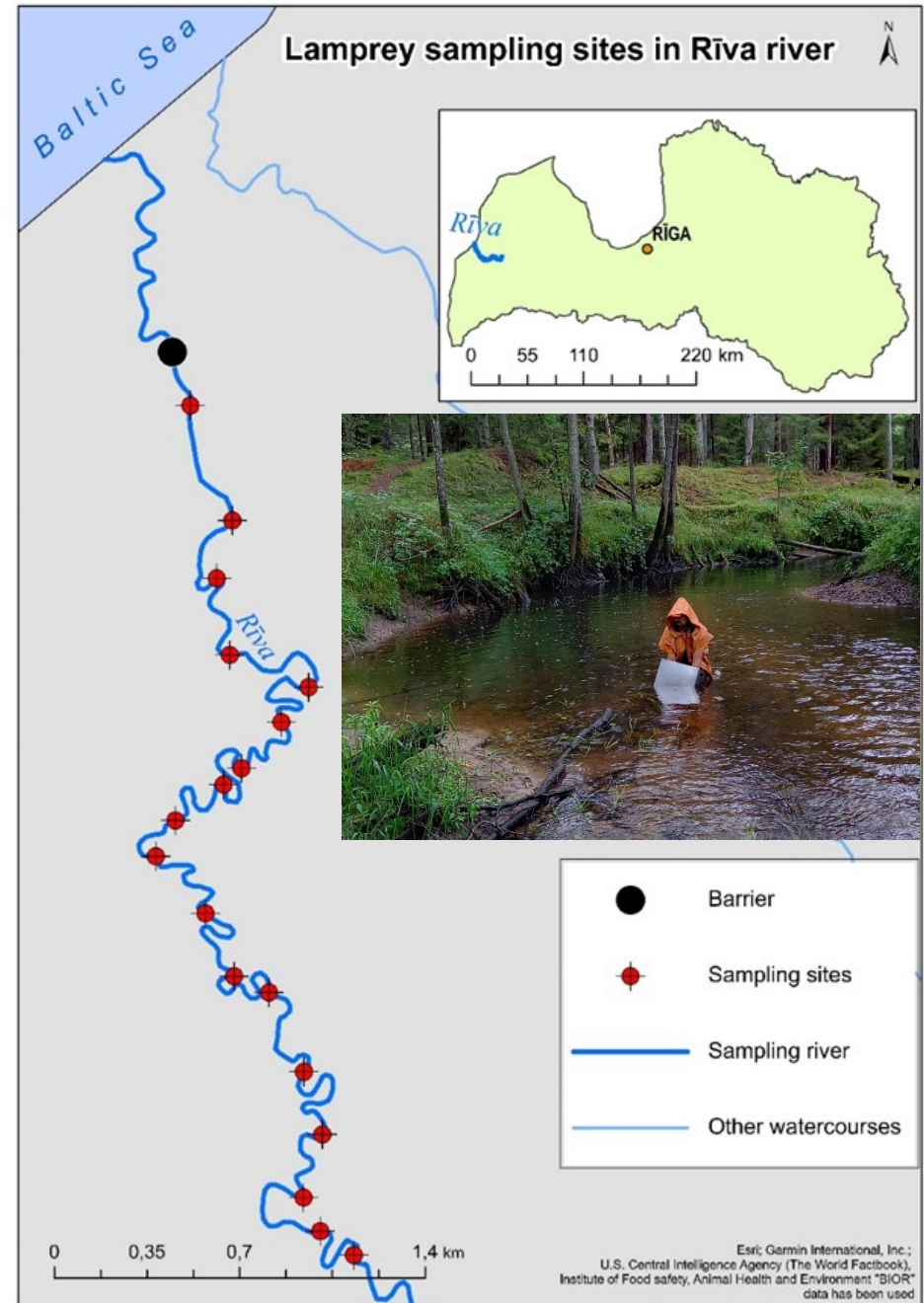
MONITORING

18 sampling sites, located 0.2–8.2 km upstream fish passage

Bottom sampling, stainless steel box (30 x 40 x 55 cm)

Length of the larvae (mm) was measured and age group (0+, 1+, >1+) was determined

After measurement the larvae were released back into the river





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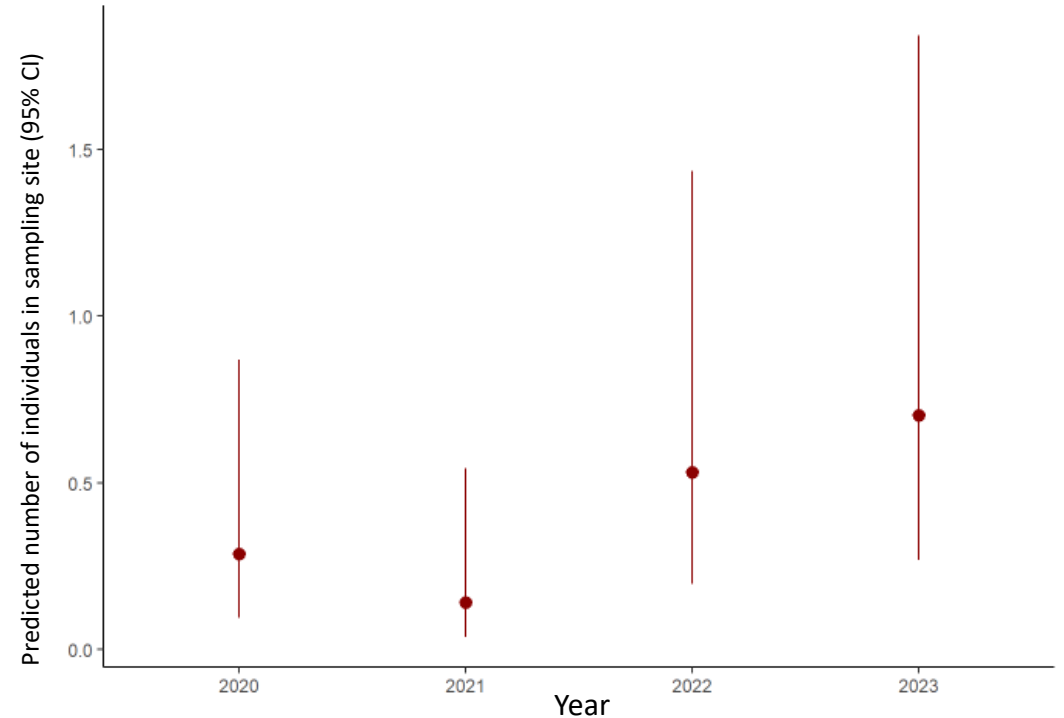
RESULTS

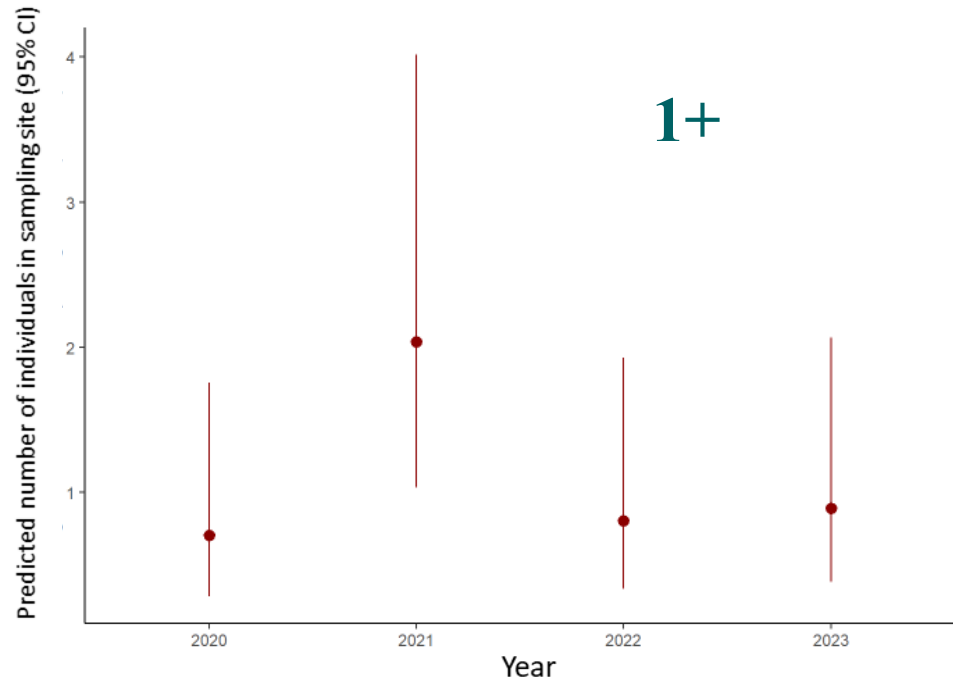
For 0+ age group slight increase of number of specimens was detected

$IRR_{2020\text{vs.}2022}=1.85$ (95% CI 0.60–5.73)

$IRR_{2020\text{vs.}2023}=2.44$ (95% CI 0.79–7.50)

The increase is not statistically significant
($p_{2020\text{vs.}2022}=0.288$, $p_{2020\text{vs.}2023}=0.120$)



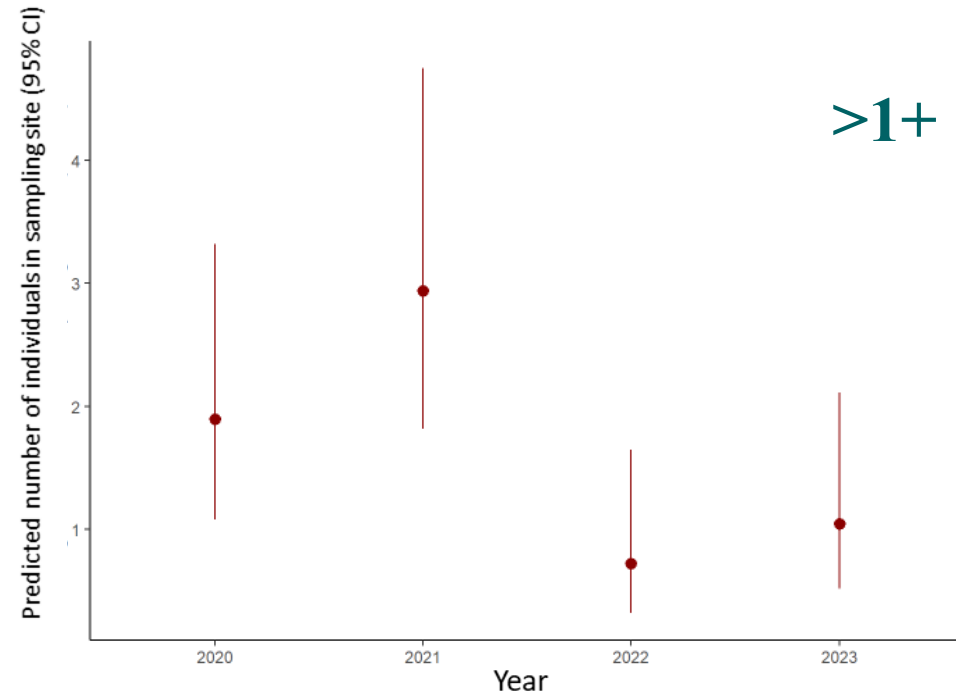


$$IRR_{2020\text{vs.}2022}=1.15 \text{ (95\% CI 0.44–2.99)}$$

$$IRR_{2020\text{vs.}2023}=1.27 \text{ (95\% CI 0.48–3.36)}$$

$$p_{2020\text{vs.}2022}=0.778$$

$$p_{2020\text{vs.}2023}=0.627$$



$$IRR_{2020\text{vs.}2022}=0.38 \text{ (95\% CI 0.16–0.93)}$$

$$IRR_{2020\text{vs.}2023}=0.25 \text{ (95\% CI 0.25–1.24)}$$

$$p_{2020\text{vs.}2022}=0.034$$

$$p_{2020\text{vs.}2023}=0.150$$

CONCLUSIONS

1. The spawning success of river lamprey upstream the fish passage has improved, but the increase is smaller than expected;
2. Monitoring should be continued to evaluate further changes in the density of lamprey larvae of all age groups;
3. The results indicate only changes in reproductive success, not overcoming the obstacle, so telemetry studies are also needed.



THANK YOU!



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