Interreg
Latvija–Lietuva
European Regional Development Fund

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Trans WAT

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

Fish communities in transboundary lakes

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LATVIJAS VIDES, ĢEOLOĢIJAS UN METEOROLOĢIJAS CENTRS

LITHUANIAN ENERGY INSTITUTE

BIOR
INSTITUTE OF FOOD SAFETY, ANIMAL HEALTH AND ENVIRONMENT

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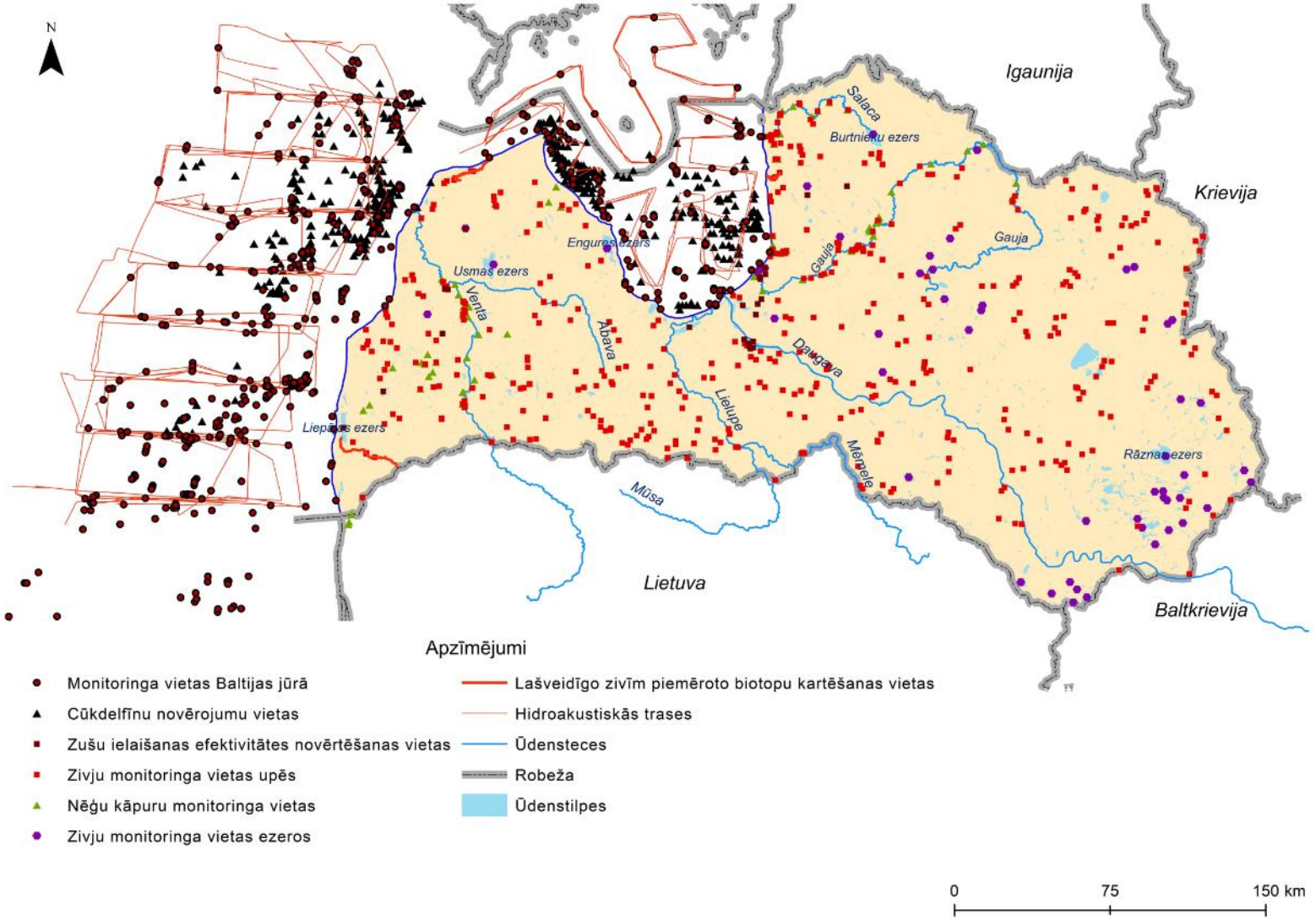
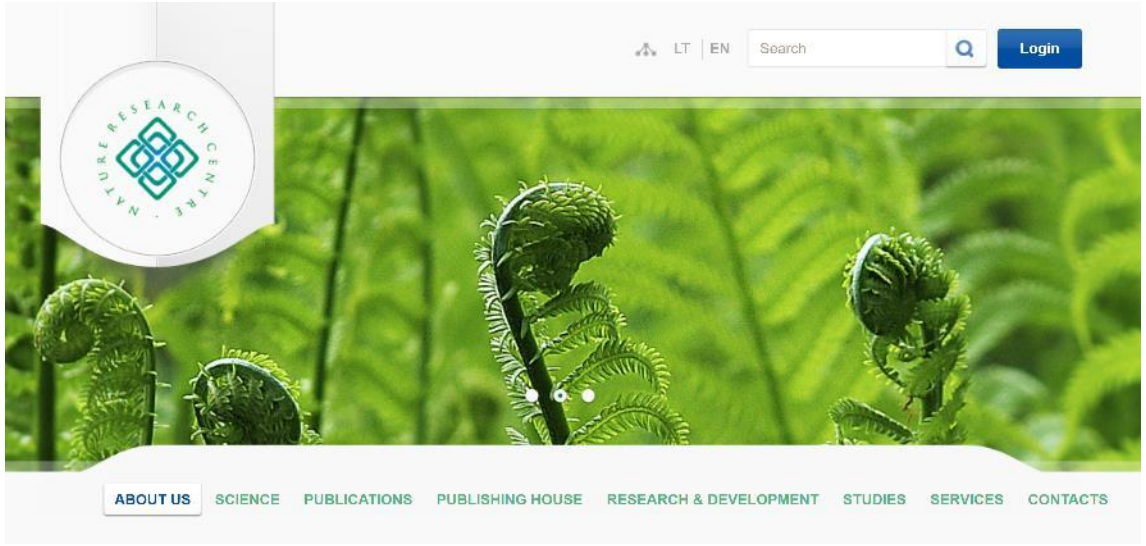
BIOR

- The assessment of fish resources in lakes has been started by the Scientific Institute of Food Safety, Animal Health and Environment BIOR as early as 1986 (at that time the Baltic Fisheries Scientific Research Institute);
- BIOR researchers have carried out fish surveys in almost all the largest lakes of Latvia.



The Nature Research Centre

- The Nature Research Centre carries out long-term research in a wide range of biotic and abiotic natural areas. The Fish Ecology Laboratory studies the patterns and mechanisms of adaptive processes in natural fish populations and communities, and the patterns of variability of populations and communities in response to natural and anthropogenic pressures.



Fish as an indicator of water quality

- Fish population characteristics can be used as indicators of environmental health. This is a simple method to assess fish population responses to environmental degradation and climate change.
- The Water Framework Directive 2000/60/EC lists the following indicative parameters for the fish fauna: taxonomic composition, abundance, and sensitive species.
- EQS (Ecological Quality Ratios) values can be calculated for all lakes.

One of the Project tasks was: Ecological quality and ecosystem health assessment of transboundary lakes.

BIOR and Nature research centre were responsible for fish survey.

Sampling sites

- The ecological quality of five transboundary lakes was assessed:
- Lielupes river basin (Ilzu (Garais)/Ilgė)
  - Daugavas/Dauguva river basin
    - Galiņu/Salna,
    - Lauceses/Laukesas,
    - Lielais Kumpinišķu/Kampiniskiai
    - Skirnas.

Fish sampling

- A modified version of the European standard EN 14757 was used in Latvia;
- National Lake Fish Index (“Ežero žuvų indeksas”; EŽI) is adopted for assessing the status of lakes (Virbickas et al. 2016; TAR, 2016-08-09, Nr. 21814) is used in Lithuania
  - Nets of different mesh sizes were used
  - Nets were deployed in shallow and deeper areas;
  - Total sampling duration was 12 hours, including dusk and dawn;
  - Fish were counted separately from each mesh size net.

EQR

- Biomass and number of fish were calculated per fishing gear height and length, or scientifically - per effort unit (CPU);
- Calculates the EQR or Lake Quality Index.

Ecological status based on LVFI	LVFI	LTFI
High/Good	0.76	0,86
Good/Moderate	0.57	0,61
Moderate/Poor	0.40	0,37
Poor/Bad	0.17	0,18

Results

Ilzu (Garais) Ilgė

Indicators	Latvia	Lietuva
Dominant species	Bream and Roach	Bream and Roach
By count	93,1%	84,8%
By biomass	84,6%	72,1%
Predators	Perch	Perch
By count	8,5 %	Very low
By biomass	14,21 %	Very low
Total EQR	0,35	0,39
Quality assessment	bad	average

The main fish species: bream, roach, crucian carp, Prussian carp and perch.

Galiņu/ Salna

Indicators	Latvija	Lietuva
Dominant species	Silver bream and roach	Silver bream and roach
By count	77,1%	85,8%
By biomass	69,5%	80,4%
Predators	perch	Pike and perch
By count	19,2%	10%
By biomass	23,9%	12,5%
Total EQR	0,50	0,67
Quality assessment	average	good

The main fish species: pike, bream, roach and perch.

Laucesas/Laukesas

Indicators	Latvija	Lietuva
Dominant species	Roach	Roach and silver bream
By count	41,9%	-
By biomass	52,0%	52,7% ??
Predators	perch	perch
By count	26,4%	-
By biomass	27,9%	40,7
Total EQR	0,83	0,76
Quality assessment	high	high

The main fish species: pike, bream, silver bream, roach and perch.

Lielais Kumpiniškų/ Kampiniskiai

Indicators	Latvija	Lietuva
Dominant species	Roach and bream	Roach, silver bream and perch
By count	65,5%	87,3%
By biomass	45,6%	3,3% (silver bream) and 14,8% (roach).
Predators	perch	perch
By count	26,7%	-
By biomass	45,3%	40,7%.
Total EQR	0,83	0,76
Quality assessment	Very high	high

The main fish species: pike, bream, roach and perch.

Lake Skirnas

Indicators	Latvija	Lietuva
Dominant species	Roach	Roach
By count	62.3%	55.4%
By biomass	62.8%	46.8%
Predators	perch	perch
By count	27.2%	35.3%
By biomass	23.9 %	27%
Total EQR	0.69	0.88
Quality assessment	Good	High

The main fish: perch, pike, tench, bream, roach, rudd.

Main conclusion

- The abundance of fish increases in lakes with lower EQR;
- Despite the fact that anglers want more fish, we must take care of the water quality in natural water bodies.

Notes

- On the Latvian side, all Project lakes are public.
- Licensed fishing is not organized in these lakes in Latvia. Therefore, they operate under general fishing regulations;
- In Lithuania, Laucesa, Skirna, Galinu and Ilzu/Garais lakes are leased for the organization of licensed fishing;
- Lake Kumpiniški is also a public lake on the Lithuanian side, to which only general fishing regulations apply.

Thank you for your attention!

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