



Interreg
Latvija-Lietuva

Eiropas Reģionālās attīstības fonds



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Ecological flow estimation in Latvian – Lithuanian

Transboundary river basins (ECOFLOW) LLI-249

List of specific species for Lielupe RBD

Riga 2018



List of specific species for Lielupe RBD

The field research was done in the period from 1992 to 2017. 211 sites in 55 rivers were surveyed.

The rivers surveyed belong to all of the 6 defined river types in Latvia's river typology.

The River Lielupe streams belong to lowland river type with slopes mostly less than 1 m/km. Largest part of these rivers pass the agriculture lands, they are lined and deepened. Water quality is low, with high nitrogen and phosphorus saturation. There are only few rivers and sites with good or moderate quality, reference status rivers are absent in the Lielupe RBD.

There is no wild Salmonidae fish population in the river Lielupe, anadromous fish are represented by vimba, smelt and river lamprey. Rivers in the Lielupe RBD are mostly inhabited by cyprinids and species, which prefer slow running or standing waters.

All together at least 31 fish and 2 lamprey species have been found in the River Lielupe RBD in last decade, from which 25 species were regularly recognized in the monitoring (Table 1). Most typical species are bleak, groundling, gudgeon, perch, minnow and roach.

Table 1

Fish and lamprey occurrence and abundance in the Lielupe RBD rivers

Species	N_rivers	N_rivers%	N_Sites	N_Sites%	SUM_N	SUM_N%
Abramis brama	5	9.09	7	3.32	8	0.02
Alburnoides bipunctatus	9	16.36	42	19.91	1010	2.95
Alburnus alburnus	20	36.36	71	33.65	2338	6.84
Anguilla anguilla	3	5.45	3	1.42	3	0.01
Aspius aspius	1	1.82	1	0.47	1	0.00
Barbatulus barbatulus	45	81.82	140	66.4	5400	15.79
Blicca bjoerkna	10	18.18	30	14.2	269	0.79
Carassius carassius	5	9.09	5	2.4	19	0.06
Carassius gibelio	7	12.73	8	3.8	43	0.13
Cobitis taenia	24	43.64	78	37.0	357	1.04
Cottus gobio	12	21.82	38	18.00	180	0.53
Esox lucius	46	83.64	133	63.03	566	1.66
Gasterosteus aculeatus	7	12.73	13	6.16	820	2.40
Gobio gobio	31	56.36	111	52.61	3036	8.88
Gymnocephalus cernua	6	10.91	7	3.32	22	0.06

Species	N_rivers	N_rivers%	N_Sites	N_Sites%	SUM_N	SUM_N%
Lampetra fluviatilis	3	5.45	4	1.90	5	0.01
Lampetra planeri	19	34.55	34	16.11	60	0.18
Leucaspius delineatus	31	56.36	61	28.91	1175	3.44
Leuciscus cephalus	24	43.64	81	38.39	1400	4.09
Leuciscus idus	5	9.09	9	4.27	12	0.04
Leuciscus leuciscus	19	34.55	40	18.96	439	1.28
Lota lota	24	43.64	46	21.80	147	0.43
Misgurnus fossilis	19	34.55	23	10.90	49	0.14
Perca fluviatilis	38	69.09	116	54.98	2283	6.68
Phoxinus phoxinus	29	52.73	88	41.71	5629	16.46
Pungitius pungitius	27	49.09	47	22.27	1635	4.78
Rhodeus sericeus	12	21.82	37	17.54	606	1.77
Rutilus rutilus	38	69.09	130	61.61	5871	17.17
Salmo salar*	1	1.82	3	1.42	11	0.03
Salmo fario*	1	1.82	1	0.47	2	0.01
Salmo trutta*	1	1.82	2	0.95	28	0.08
Sander lucioperca	0	0.00	0	0	0	0.00
Scardinius erythrophthalmus	6	10.91	19	9.00	402	1.18
Tinca tinca	27	49.09	50	23.70	114	0.33
Vimba vimba	3	5.45	21	9.95	252	0.74
					34192	100.00

More than 70% from the rivers

More than 70% from the sites

More than 5% from the number of fish

*- hatchery reared fish

The number of species and their diversity in the river is determined by numerous ecological and anthropogenic factors. To determine the RBD river's specific species list only the data from the sites with high and good ecological status is used. Ecological status class is determined by Latvian Fish index for cyprinid rivers. Index based on deviation from modelled and predicted reference conditions that is based on the evaluation of observed and expected status of fish community.

Table 2

Specific species list for good and high quality cyprinid rivers/sites

Species	N_rivers (n=22)	N_rivers%	N_Sites (n=49)	N_Sites%	SUM_N	SUM_N%
N Abramis brama	1	4.55	1	2.04	2	0.01
Alburnoides bipunctatus	19	86.36	28	57.14	808	5.58
Alburnus alburnus	10	45.45	23	46.94	1005	6.95
Anguilla anguilla	1	4.55	1	2.04	1	0.01
Aspius aspius	1	4.55	1	2.04	1	0.01
Barbatulus barbatulus	22	100.00	47	95.92	3559	24.60
Blicca bjoerkna	5	22.73	6	12.24	87	0.60
Carassius gibelio	2	9.09	2	4.08	1	0.01
Chondrostoma nasus	0	0.00	0	0.00	0	0.00
Cobitis taenia	14	63.64	28	57.14	153	1.06
Cottus gobio	8	36.36	21	42.86	100	0.69
Esox lucius	13	59.09	27	55.10	117	0.81
Gasterosteus aculeatus	1	4.55	3	6.12	105	0.73
Gobio gobio	13	59.09	44	89.80	1741	12.03
Lampetra fluviatilis	2	9.09	3	6.12	2	0.01
Lampetra planeri	8	36.36	21	42.86	24	0.17
Leucaspis delineatus	3	13.64	8	16.33	213	1.47
Leuciscus cephalus	10	45.45	33	67.35	891	6.16
Leuciscus idus	1	4.55	5	10.20	7	0.05
Leuciscus leuciscus	7	31.82	27	55.10	313	2.16
Lota lota	5	22.73	11	22.45	36	0.25
Misgurnus fossilis	1	4.55	3	6.12	3	0.02
Perca fluviatilis	10	45.45	23	46.94	278	1.92
Phoxinus phoxinus	10	45.45	40	81.63	2946	20.36
Pungitius pungitius	4	18.18	13	26.53	36	0.25
Rhodeus sericeus	6	27.27	14	28.57	124	0.86
Rutilus rutilus	10	45.45	35	71.43	1705	11.78
Salmo salar*	0	1.00	3	6.12	11	0.08
Salmo trutta*	0	0.00	1	2.04	19	0.13
Scardinius erythrophthalmus	0	1.00	1	2.04	7	0.05
Tinca tinca	0	3.00	7	14.29	8	0.06
Vimba vimba	0	2.00	10	20.41	165	1.14
					14468	100.00

More than 70% from the rivers

More than 70% from

the sites

More than 5% from the number of fish

* - hatchery reared fish

According to Latvian fish index, Cyprinid sites are:

- potamal sections of large and medium-sized rivers with dominating roach, perch, chub and gudgeon;
- small and medium-sized warm-water rivers with dominating stone loach, minnow, dace and pike.

In fish assemblages at good and moderate quality sites in the Lielupe RBD dominating by species reproducing in running waters and species requiring lithophilic reproduction habitat: riffle minnow, gudgeon, chub and minnow. Other cyprinid rivers specific species are bleak and roach.

Average number of fish per 100 m² in the Lielupe RBD rivers are 67±87, from 0 (no fish) to 692 individuals. The list of fish species by numbers is presented in Table 3.

Table 3

Number of fish per 100 m² in first electrofishing run
(number of rivers 49)

	Frequency	Average n/100 m²	Stdev
Abramis brama	2.04	0.41	0.29
Alburnoides bipunctatus	57.14	8.80	16.95
Alburnus alburnus	46.94	12.04	19.41
Anguilla anguilla	2.04	0.30	0.18
Aspius aspius	2.04	0.67	
Barbatulus barbatulus	95.92	14.2	28.56
Blicca bjoerkna	12.24	2.74	5.66
Carassius carassius	0.00	3.00	2.57
Carassius gibelio	4.08	3.51	3.63
Cobitis taenia	57.14	1.38	1.78
Cottus gobio	42.86	1.84	2.53
Esox lucius	55.10	1.66	1.57
Gasterosteus aculeatus	6.12	30.96	73.08
Gobio gobio	89.80	11.58	21.59
Gymnocephalus cernua	0.00	1.45	1.85
Lampetra fluviatilis	6.12	0.40	0.14
Lampetra planeri	42.86	0.70	0.49
Leucaspis delineatus	16.33	11.80	22.60
Leuciscus cephalus	67.35	6.84	10.77
Leuciscus idus	10.20	0.54	0.39
Leuciscus leuciscus	55.10	5.08	9.29
Lota lota	22.45	1.54	2.20
Misgurnus fossilis	6.12	1.35	1.24
Perca fluviatilis	46.94	7.27	13.81

	Frequency	Average n/100 m²	Stdev
Phoxinus phoxinus	81.63	30.33	53.18
Pungitius pungitius	26.53	25.53	101.67
Rhodeus sericeus	28.57	5.31	7.17
Rutilus rutilus	71.43	16.14	18.19
Salmo salar	6.12	1.93	2.26
Salmo fario	0.00	0.40	
Salmo trutta	2.04	9.40	4.98
Scardinius erythrophthalmus	2.04	3.72	4.73
Tinca tinca	14.29	0.91	0.76
Vimba vimba	20.41	5.09	10.70
	N=49	67.77	87.75

List of species and average densities per 100 m² in the rivers and sites with good and moderate ecological quality is presented in Table 4.

Table 4

Number of fish per 100 m² in first electrofishing run in selected good and moderate ecological status rivers

Species	Frequency (%)	Average n/100m²	Stdev
Abramis brama	2.04	1	
Alburnoides bipunctatus	57.14	12.33	21.21
Alburnus alburnus	46.94	19.50	21.42
Anguilla anguilla	2.04	0.20	0.0
Aspius aspius	2.04	0.67	0.0
Barbatulus barbatulus	95.92	29.45	46.37
Blicca bjoerkna	12.24	6.53	11.81
Carassius gibelio	4.08	1.36	1.40
Cobitis taenia	57.14	1.80	2.44
Cottus gobio	42.86	1.43	1.47
Esox lucius	55.10	1.69	1.33
Gasterosteus aculeatus	6.12	16.76	24.89
Gobio gobio	89.80	19.99	33.24
Lampetra fluviatilis	6.12	0.47	0.06
Lampetra planeri	42.86	0.69	0.54
Leucaspis delineatus	16.33	16.71	37.76
Leuciscus cephalus	67.35	11.65	15.46
Leuciscus idus	10.20	0.64	0.51
Leuciscus leuciscus	55.10	5.64	10.77
Lota lota	22.45	1.80	1.58
Misgurnus fossilis	6.12	0.58	0.08
Perca fluviatilis	46.94	5.32	11.98

Species	Frequency (%)	Average n/100m²	Stdev
Phoxinus phoxinus	81.63	46.21	76.26
Pungitius pungitius	26.53	2.43	3.04
Rhodeus sericeus	28.57	3.94	5.63
Rutilus rutilus	71.43	17.12	18.08
Salmo salar	6.12	1.93	2.26
Scardinius erythrophthalmus	2.04	3.5	
Tinca tinca	14.29	0.86	0.49
Vimba vimba	20.41	8.90	14.86
		137.56	104.03