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**Ecological flow estimation in Latvian – Lithuanian Transboundary river
basins (ECOFLOW) LLI-249**

**LIST OF SPECIFIC SPECIES
FOR RIVERS OF LITHUANIAN PART OF VENTA
RIVER BASIN DISTRICT**



List of specific fish species for Lithuanian part of Venta river basin district

The main task of report is to design the list of specific fish species that should be typical in the rivers of Venta river basin at reference conditions. Typology of the rivers in Lithuania was based on analysis of characteristics of aquatic communities in the reference status sites. Five major river types were identified in the Venta river basin district (TAR, 2016). The main abiotic variables, driving aquatic communities in the rivers are catchment size and gradient slope (Table 1).

Table 1. Physiographic variables representing the river types (CS – catchment size, km²; SLO – gradient slope, m/km)

Variables	River types				
	1	2	3	4	5
CS	<100	100-1000		>1000	
SLO	-	<0,7	≥0,7	<0,3	≥0,3

Among biological elements, the greatest differences within different river types are in the structure and composition of fish assemblages. At reference status, small streams (Type 1) are predominated by salmonids (brown trout) and typical accompanying species (sculpin, minnow, etc.). Shallow and fast-flowing sections of larger rivers (Types 3 and 5) are inhabited by typical rheophilic fish species, the share of salmonids (salmon, brown trout, grayling) still being considerable. Presence of eurytopic fish species (bleak, roach, pike, etc.) are characteristic of deep and/or slow running sections of larger rivers (Types 2 and 4).

Unfortunately, at nowadays the reference status river sites are absent in the Venta river basin. There are only few river sites with good ecological status, too. Therefore, the list of fish species that should be theoretically present at reference status was based on data, collected in the reference sites of the neighboring Nemunas river basin. There are no differences in climatic or hydrological characteristics which could lead to very specific natural characteristics of the rivers in the Nemunas and Venta river basins. There are no substantial differences in the structure of fish communities between the rivers of the same type and the same ecological status, too (Ventos UBRVP, 2015). Only few minor differences are present, which were taken into account when developing the list of river type specific fish species. First of all, Nemunas river basin is the northern boundary of barbel (*Barbus barbus*) distribution area; therefore, this species was

excluded prior to developing the list. Another difference is presence of the Kuldiga waterfall in the lower reaches of the Venta River. Depending on the climatic conditions, this waterfall becomes the natural obstacle for migration of fish in the certain years or periods. This results are in year to year deviation of abundance (and also presence) of anadromous fish species. All the rest characteristics of fish communities do not differ between the rivers of Nemunas and Venta river basins.

The list of fish species that should be present in the Venta RBD rivers of different types at reference conditions is presented in the Table 2. Atypical and non-native fish species, which can occasionally occur (e.g. lake dwellers, common carp, etc.) are excluded.

References

Order of the Minister of Environment of 4 August 2016 No. D1-534 as concern order of 23 May 2005 No. D1-256 on "Description of the types of surface water bodies and approved of etalon conditions of surface water bodies". TAR, 09-08-2016, No. 21813 (Žin., 2005, No. 69-1481)

<https://www.e-tar.lt/portal/lt/legalAct/6f6760905df711e693cf945f20391699>

Venta river basin district management plan. 2015.

<http://vanduo.gamta.lt/files/VENTOS%20UBR%20VP1444379722963.pdf>

Table 2. List of type specific fish species at reference conditions per catch per unit of effort with electric fishing gear

(F – frequency of occurrence; N – actual abundance ind. ha⁻¹).

Species	Type 1		Type 2		Type 3		Type 4		Type 5	
	F (%)	N (mean ±SD)	F (%)	N (mean ±SD)	F (%)	N (mean ±SD)	F (%)	N (mean ±SD)	F (%)	N (mean ±SD)
Bream <i>Abramis brama</i>							8	3.7±9.1	8	3.8±8.6
Riffle minnow <i>Alburnoides bipunctatus</i>	15	13.0±41.1	78	348.9±490.5	50	228.1±424.1	100	799.0±569.5	100	357.7±193.1
Bleak <i>Alburnus alburnus</i>	5	3.0±13.4	28	24.4±66.0	19	12.2±48.0	77	547.6±515.0	33	138.7±267.2
Asp <i>Aspius aspius</i>							4	1.0±2.0	8	1.0±2.0
Stone loach <i>Barbatulus barbatulus</i>	80	98.0±125.6	56	41.1±52.0	88	403.4±748.9	46	73.9±103.8	100	157.6±88.8
Spined loach <i>Cobitis taenia</i>	5	0.5±2.2	33	12.2±25.1	16	5.9±21.8	38	47.4±77.5	8	0.7±1.7
Sculpin <i>Cottus gobio</i>	85	157.0±170.5	61	38.9±56.2	97	224.4±209.9	38	16.3±19.3	92	111.7±143.6
Pike <i>Esox lucius</i>	45	12.5±24.0	50	11.1±16.8	16	2.2±5.5	69	24.7±40.6	58	32.5±29.8
Three-spined stickleback <i>Gasterosteus aculeatus</i>	15	3.5±9.9	11	1.7±5.1	25	6.9±14.2	23	24.7±44.8	25	51.4±74.4
Gudgeon <i>Gobio gobio</i>	15	107.5±356.7	61	55.6±67.1	63	103.1±186.1	46	135.8±175.8	100	235.2±136.8
Lamprey <i>Lampetra sp</i>	15	5.5±16.7			28	6.9±15.1	4	1.0±2.6	33	7.0±8.3
Ide <i>Leuciscus idus</i>			6	0.6±2.4			8	3.7±9.1	17	22.1±42.7
Dace <i>Leuciscus leuciscus</i>	30	21.0±49.6	39	19.4±38.9	75	70.3±99.1	46	31.8±36.6	92	111.2±173.0
Burbot <i>Lota lota</i>	15	1.5±3.7	28	4.4±9.8	22	3.1±6.4	23	16.1±31.9	42	16.5±16.8
Perch <i>Perca fluviatilis</i>	15	6.5±16.9	61	35.0±37.9	34	8.8±19.3	69	61.9±107.5	33	13.3±18.8
Minnow <i>Phoxinus phoxinus</i>	85	630.5±800.1	67	232.8±313.2	97	625.6±741.3	38	305.0±453.9	92	214.8±134.0
Bitterling <i>Rhodeus sericeus</i>	10	3.5±10.9	17	1.7±3.8	9	14.4±57.0	69	226.4±224.9	17	52.1±116.6
Roach <i>Rutilus rutilus</i>	15	29.5±51.5	78	230.6±216.5	22	17.5±56.4	92	643.4±570.8	100	282.5±277.7
Brown trout <i>Salmo trutta</i>	100	177.0±86.9	17	2.2±5.5	97	132.5±167.9			33	4.9±5.4
Atlantic salmon <i>Salmo salar</i>	20	16.0±44.9			22	64.4±248.6			42	100.9±145.9
Chub <i>Squalius cephalus</i>	5	6.5±29.1	44	50.0±79.7	28	53.8±121.1	69	93.4±112.9	67	144.2±198.8
Grayling <i>Thymallus thymallus</i>	25	3.5±6.7	11	1.1±3.2	56	18.8±30.7			25	8.0±8.0
Vimba <i>Vimba vimba</i>					13	1.3±3.4			8	2.6±4.2