

**Environmental heterogeneity at different scales: key factors affecting caddisfly larvae assemblages in standing waters within a lowland river catchment**

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**Supplementary Tab. 1.** Numbers of specimens of caddisfly larvae collected in the River Krapiel and water bodies within its valley.

Taxon	Current habitats	River Krapiel Marginal pool sub-habitats	Total	Standing waters total
<i>Anabolia furcata</i> Brau.	0	1	1	0
<i>Anabolia laevis</i> (Zett.)	11	2	13	0
<i>Anabolia nervosa</i> (Curt.)	681	541	1222	12
<i>Anabolia</i> sp.	66	76	142	2
<i>Athripsodes albifrons</i> (L.)	13	3	16	3
<i>Athripsodes aterrimus</i> (Steph.)	1	7	8	0
<i>Athripsodes bilineatus</i> (L.)	5	0	5	0
<i>Athripsodes</i> sp.	2	1	3	0
<i>Beraea maurus</i> (Curt.)	0	0	0	19
<i>Beraea pullata</i> (Curt.)	0	0	0	1
<i>Beraeodes minutus</i> (L.)	1	0	1	0
<i>Brachycentrus subnubilus</i> Curt.	66	5	71	0
<i>Ceraclea dissimilis</i> (Steph.)	16	0	16	0
<i>Ceraclea nigronervosa</i> (Retz.)	5	0	5	0
<i>Ceraclea</i> sp.	5	0	5	0
<i>Chaetopteryx villosa</i> (Fabr.)	104	165	269	64
<i>Ernodes articularis</i> (Pict.)	1	0	1	0
<i>Glyphotaelius pellucidus</i> (Retz.)	5	13	18	32
<i>Halesus digitatus</i> (Schrank)	262	190	452	19
<i>Halesus radiatus</i> (Curt.)	1	0	1	0
<i>Halesus tessellatus</i> (Ramb.)	173	145	318	46
<i>Halesus</i> sp.	33	32	65	13
<i>Holocentropus stagnalis</i> (Alb.)	0	1	1	2
<i>Hydropsyche angustipennis</i> (Curt.)	2001	112	2113	2
<i>Hydropsyche incognita</i> Pitsch	11	13	24	120
<i>Hydropsyche pellucidula</i> (Curt.)	1164	98	1262	23
<i>Hydropsyche saxonica</i> McL.	197	2	199	1
<i>Hydropsyche siltalai</i> Doehl.	319	16	335	13
<i>Hydropsyche</i> sp.	116	2	118	1
<i>Ironoquia dubia</i> (Steph.)	26	17	43	3
<i>Lasiocephala basalis</i> (Kol.)	1	0	1	0
<i>Lepidostoma hirtum</i> (Fabr.)	142	61	203	2
<i>Limnephilus auricula</i> Curt.	4	1	5	7
<i>Limnephilus binotatus</i> Curt.	1	3	4	19
<i>Limnephilus bipunctatus</i> Curt.	7	2	9	3
<i>Limnephilus centralis</i> Curt.	6	5	11	3
<i>Limnephilus decipiens</i> (Kol.)	0	12	12	0
<i>Limnephilus extricatus</i> McL.	4	0	4	0
<i>Limnephilus flavicornis</i> (Fabr.)	251	112	363	352
<i>Limnephilus fuscicornis</i> Ramb.	0	1	1	0
<i>Limnephilus griseus</i> (L.)	15	0	15	2
<i>Limnephilus incisus</i> Curt.	0	6	6	0
<i>Limnephilus lunatus</i> Curt.	40	160	200	45
<i>Limnephilus marmoratus</i> Curt.	0	2	2	35
<i>Limnephilus nigriceps</i> (Zett.)	2	21	23	1
<i>Limnephilus rhombicus</i> (L.)	27	41	68	9
<i>Limnephilus stigma</i> Curt.	19	3	22	26
<i>Limnephilus subcentralis</i> Brau.	0	1	1	0
<i>Limnephilus</i> sp.	47	48	95	96
<i>Lype reducta</i> (Hag.)	7	3	10	0

<i>Molanna angustata</i> Curt.	1	0	1	0
<i>Mystacides azurea</i> (L.)	2	10	12	0
<i>Neureclipsis bimaculata</i> (L.)	0	1	1	0
<i>Oecetis furva</i> (Ramb.)	0	2	2	1
<i>Oecetis notata</i> (Ramb.)	1	2	3	0
<i>Oecetis testacea</i> (Curt.)	1	1	2	0
<i>Oligostomis reticulata</i> (L.)	13	8	21	0
<i>Phryganea grandis</i> Retz.	0	2	2	0
<i>Plectrocnemia conspersa</i> (Curt.)	5	0	5	1
<i>Polycentropus flavomaculatus</i> (Pict.)	10	3	13	0
<i>Polycentropus irroratus</i> (Curt.)	11	6	17	0
<i>Potamophylax cingulatus</i> (Steph.)	1	1	2	0
<i>Potamophylax latipennis</i> (Curt.)	37	6	43	0
<i>Potamophylax nigricornis</i> (Pict.)	1	0	1	1
<i>Potamophylax rotundipennis</i> (Brau.)	4	1	5	0
<i>Potamophylax</i> sp.	9	3	12	0
<i>Psychomyia pusilla</i> (Fabr.)	0	0	0	1
<i>Rhyacophila fasciata</i> Hag.	114	2	116	0
<i>Rhyacophila nubila</i> (Zett.)	65	0	65	15
<i>Rhyacophila obliterated</i> McL.	1	0	1	0
<i>Rhyacophila</i> sp.	11	0	11	0
<i>Sericostoma personatum</i> (Spence)	13	1	14	1
<i>Silo nigricornis</i> (Pict.)	2	0	2	0
<i>Stenophylax vibex</i> (Curt.)	0	0	0	7
<i>Triaenodes bicolor</i> (Curt.)	1	3	4	0
<i>Trichostegia minor</i> (Curt.)	0	0	0	2
Total number of individuals:	6161	1976	8137	1005
Total number of sites studied:	28	17	45	38

**Supplementary Tab. 2.** Mean values of physicochemical parameters of water and sediment properties in the particular sub-catchments of the River Krapiel.

Parameter	Sub-catchments												
	K1	K2	K3	K4	K6	K7	K8	K9	K10	K11	K12	K13	K14
<b>Water</b>													
O <sub>2</sub> mg L <sup>-1</sup> *	9.02	6.17	7.42	5.74	3.96	3.22	2.37	4.71	5.55	7.60	2.78	7.70	9.70
BOD <sub>5</sub> mg L <sup>-1</sup> *	2.95	2.21	2.10	2.74	4.88	0.67	5.28	1.50	6.57	6.50	3.16	3.50	1.70
NH <sub>4</sub> mg L <sup>-1</sup> *	0.74	0.57	0.78	0.91	1.97	0.73	1.03	0.47	0.63	0.80	0.93	0.64	0.40
NO <sub>3</sub> mg L <sup>-1</sup> *	0.98	0.40	0.40	0.49	0.79	0.40	1.75	0.40	1.29	3.90	1.82	0.44	0.40
PO <sub>4</sub> mg L <sup>-1</sup> *	1.30	0.36	0.32	0.44	0.17	0.34	1.18	0.46	0.58	0.20	0.48	0.12	0.20
Conductivity μS cm <sup>-1</sup> *	167.03	96.68	282.50	150.06	267.53	273.91	248.33	210.50	282.32	227.00	280.14	223.50	284.00
Turbidity mg L <sup>-1</sup>	47.49	11.82	8.10	20.65	16.19	28.73	48.58	38.73	154.17	39.70	30.12	67.00	3.30
Hardness mg L <sup>-1</sup>	142.89	94.53	134.33	118.19	264.33	110.82	188.17	139.50	153.68	149.50	185.77	153.00	144.00
pH *	7.00	6.40	7.02	6.49	5.91	4.52	5.86	5.45	6.68	7.60	4.13	7.50	6.70
Fe mg L <sup>-1</sup>	0.12	0.15	0.07	0.07	0.06	0.07	0.49	0.17	0.17	0.10	0.21	0.08	0.05
Temperature °C	13.61	10.10	15.03	14.45	17.65	13.30	17.67	17.35	15.82	14.60	11.85	12.60	19.20
Insolation %	87.00	34.17	45.39	35.90	13.83	36.25	97.82	100.00	99.65	48.00	55.86	36.00	97.59
<b>Sediments</b>													
Organic %	55.11	16.56	37.24	75.86	44.93	54.63	24.88	60.64	10.07	0.30	10.43	1.49	17.27
Mineral %	44.89	83.44	62.76	24.14	55.07	45.37	75.12	39.36	89.93	99.00	89.57	12.80	82.73
M (mean sediment grain size)	0.43	2.27	0.75	0.27	1.12	0.23	0.85	0.25	1.69	2.26	1.91	0.27	0.14
W (sediment sorting)	1.01	1.51	1.85	1.07	1.95	1.48	1.72	1.03	1.33	0.7	1.47	0.21	0.70

**Supplementary Tab. 3.** Mean values of physicochemical parameters of water and sediment properties in three sub-catchments types with different land use.

Parameter	Catchment: MIX- FOR	Catchment: MIX- AGR	Catchment: AGR
<b>Water</b>			
O <sub>2</sub> mg L <sup>-1</sup> *	6.92	4.64	3.65
BOD <sub>5</sub> mg L <sup>-1</sup> *	2.31	3.25	4.08
NH <sub>4</sub> mg L <sup>-1</sup> *	0.62	1.30	0.84
NO <sub>3</sub> mg L <sup>-1</sup> *	0.57	0.59	1.64
PO <sub>4</sub> mg L <sup>-1</sup> *	0.65	0.32	0.54
Conductivity μS cm <sup>-1</sup> *	151.31	215.77	278.70
Turbidity mg L <sup>-1</sup>	26.15	20.19	60.44
Hardness mg L <sup>-1</sup>	119.24	174.20	176.79
pH *	6.49	5.95	4.94
Fe mg L <sup>-1</sup>	0.14	0.06	0.21
Temperature °C	12.67	15.52	13.43
Insolation %	60.77	27.32	70.59
<b>Sediments</b>			
Organic %	36.50	60.37	11.52
Mineral %	63.50	39.63	88.48
M (mean sediment grain size)	1.28	0.52	1.72
W (sediment sorting)	1.32	1.48	1.43

AGR - agricultural landscape type, MIX-AGR – mixed landscape type with dominance of cropland, MIX-FOR - mixed landscape type with dominance of forests; \*parameters defining water purity in Poland.