S1 Description of study sites

Table S1 compiles information on the pilot study sites. The primary reach-scale pilot site, Ritobäcken catchment (Figure S1), represents Finnish clay-silt agricultural areas, with surface or sub-surface drained agricultural fields comprising 11.7% of the 10.3 km^2 catchment area. The remaining non-agricultural catchment is comprised of forests and heaths, partly drained by open ditches, and rock (80.5%); constructed area (4.9%); water areas (2.9%); and wetlands and fens (0.1%; Figure S2). According to the watershed-scale WSFS-VEMALA model operationally run by the Finnish Environment Institute for the main Finnish watersheds [88], 70% of the SS and 65% of the total P loads at Ritobäcken originate from the agriculture (excluding natural background load) while natural background load from forested areas generates 27% of SS and 20% of P loads. The dispersed settlements with 150 residents are estimated to generate 0% of SS and 10% of TP loads while the households are required to have an efficient wastewater treatment system. The dominant superficial deposits in the catchment are clays. The non-agricultural areas are mainly covered by rocky ground covered by a less than one metre thick soil layer. The soil type is Leptosol.

The mean annual precipitation is approximately 630 mm/a and the mean annual temperature +6 °C, as derived from records of Finnish Meteorological Institute for Harabacka, Porvoo, located at a 20 km distance in a similar geographical area. Due to the permeable soils and low rain intensities, sub-surface runoff is the dominant runoff type in the area, and only small amounts of surface runoff have been observed [13]. The annual minimum and mean discharges are ~0.001 m^3/s and 0.12 m^3/s, respectively, while the highest observed discharge during the 2.5-year monitoring period was 1.5 m^3/s [23]. The two-stage channel has a total width of 10 m and additional 3 m wide buffer strips, and a bottom slope of 0.001-0.002.

Table S1. Description of pilot-scale two-stage channel (TSC) study sites.

Name of channel	Location of catchment outlet/downstream end of TSC	Catchment size (km^2)	TSC length (m)	Construction year	Soil type	Type of site for the present paper
Ritobäcken	60.334687 N, 25.220518 E	10.3	820	2010	Clay, silt	Primary reach-scale pilot site
Kaukanaronoja	61.093819 N 22.339602 E	5,8	700	2017	Silt, fine sand	Supplementary reach-scale pilot site
Luvalahdenoja	61.097941 N, 22.210012 E	NA	440	2020	Clay, fine-grained till	Supplementary reach-scale pilot site
Hardombäcken	60.518634 N, 26.137433 E	4	300	2017	Clay	Supplementary reach-scale pilot site
Uuhikonoja	60.763729 N, 23.709928 E	6	2 340	2020	Clay, sandy till, peat	Supplementary reach-scale pilot site
Leppioja	64.803001 N, 25.562390 E	40	1 000	2012	Fine sand, peat	Supplementary reach-scale pilot site
River Perniönjoki	60.144804 N, 23.127418 E	255	14 800 (assumed)	NA	Clay, sandy till	Catchment-scale pilot site

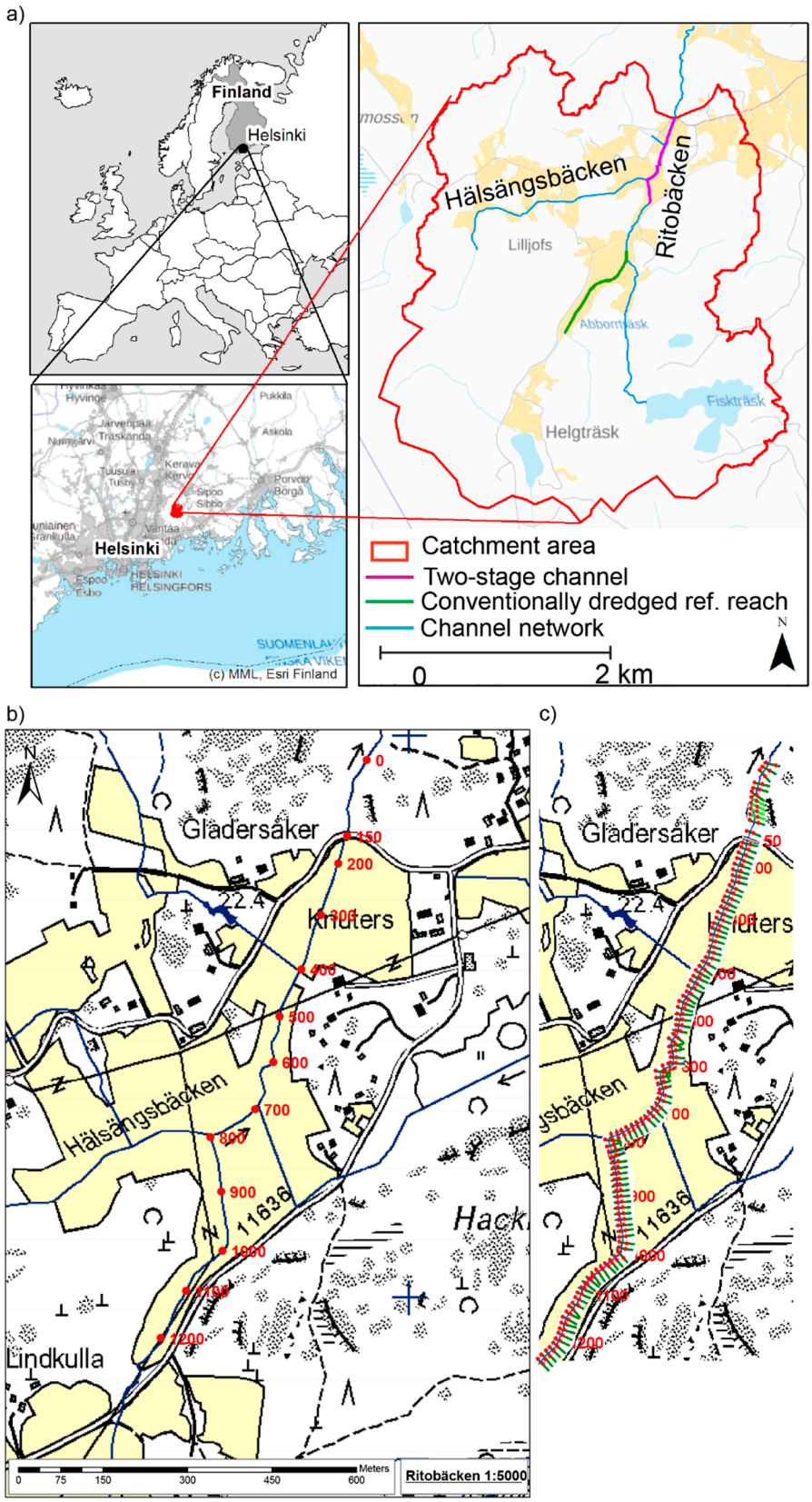


Figure S1 The Ritobäcken catchment area with the two-stage channel and conventionally dredged reference reaches; agricultural land use is indicated in yellow (a). A more detailed map showing the surroundings of the 820 m long two-stage channel located at chainage (main channel distance) 150 m - 970 m (b, the chainage shown in red numbers). The schematization in HEC-RAS shows the included cross-sections in green and the overbank stations with red (c).

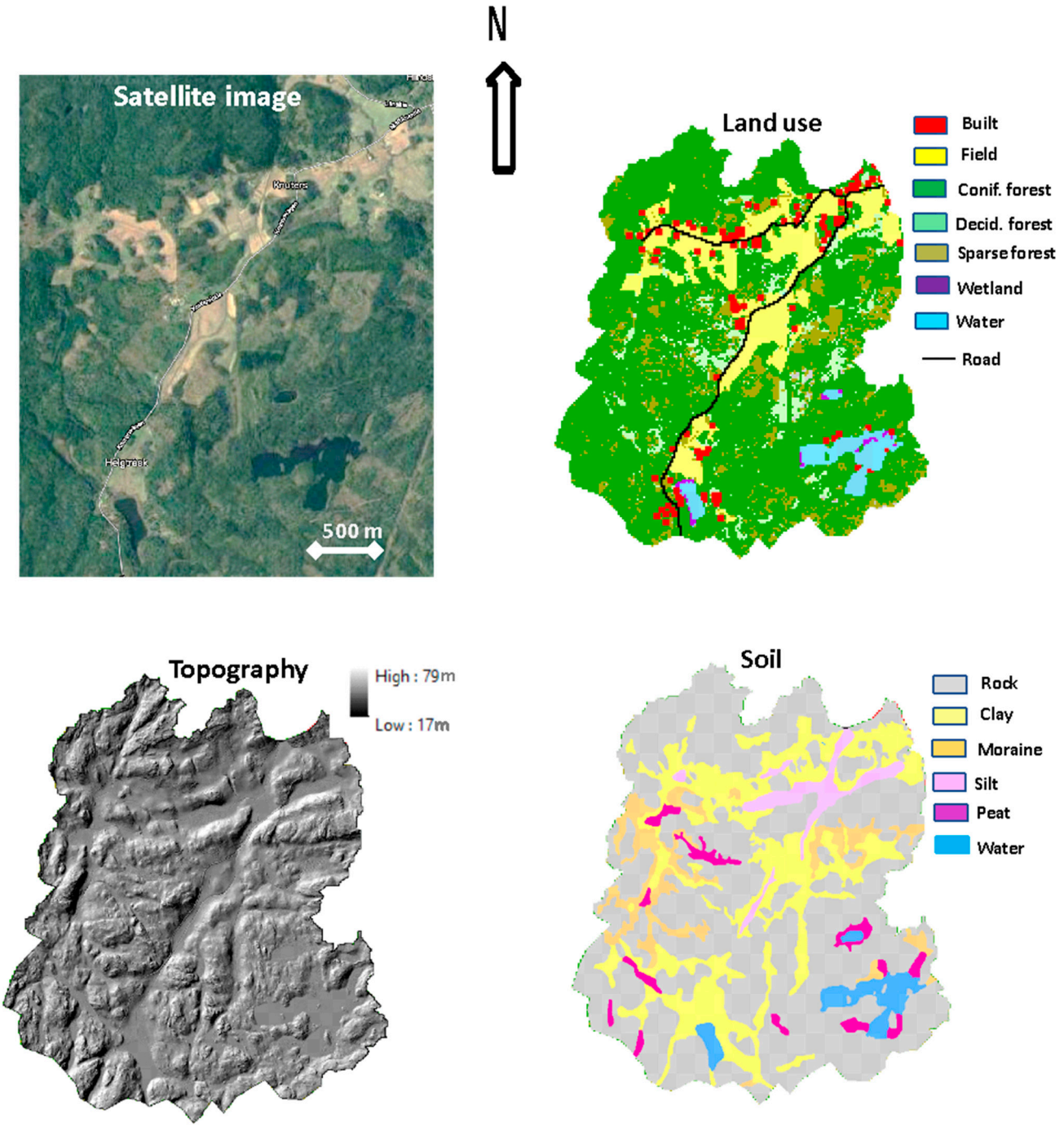


Figure S2. Aerial view, land use, topography and soil types at the primary reach-scale pilot site (Ritobäcken, Finland). Source: GIS database of Finnish Environment Institute.

Figure S3 The reach-scale pilot site during autumn (top) and spring snowmelt (bottom) conditions.

S2 Cross-sectional data (original source: [23])

Cross-section 6

Distance from right bank (m)	Elevation, year 2010 (m)	Elevation, year 2012 (m)
0.265	NA	17.340
0.465	17.302	17.325
0.665	17.251	17.274
0.865	17.197	17.209
1.065	17.113	17.125
1.265	17.049	17.062
1.465	16.978	16.953
1.665	16.893	16.869
1.865	16.802	16.796
2.065	16.746	16.736
2.265	16.650	16.681
2.465	16.633	16.679
2.665	16.641	16.686
3.065	16.667	16.670
3.465	16.653	16.666
3.865	16.662	16.654
4.265	16.642	16.644
4.665	16.657	16.659
5.065	16.645	16.655
5.465	16.653	16.665
5.865	16.632	16.644
6.265	16.634	16.651
6.665	16.593	16.597
7.065	16.522	16.500
7.265	16.443	16.481
7.465	16.441	16.450
7.665	16.484	16.419
7.865	16.324	16.276
8.065	16.155	16.140
8.265	16.128	16.144
8.465	16.140	16.135
8.665	16.136	16.127
8.865	16.191	16.207
9.065	16.243	16.314
9.265	16.318	NA
9.465	16.593	16.756
9.665	16.846	NA
9.865	16.885	16.890
10.065	16.945	NA

Cross-section 7

Distance from right bank (m)	Elevation, year 2010 (m)	Elevation, year 2012 (m)
0.465	17.334	17.350
0.665	17.298	17.307
0.865	17.225	17.240
1.065	17.180	17.172
1.265	17.105	17.102
1.465	17.032	17.024
1.665	16.951	16.919
1.865	16.876	16.790
2.065	16.786	16.757
2.265	16.725	16.775
2.465	16.669	16.720
2.865	16.673	16.672
3.265	16.662	16.688
3.665	16.672	16.676
4.065	16.652	16.668
4.465	16.645	16.653
4.865	16.643	16.650
5.265	16.669	16.673
5.665	16.645	16.642
6.065	16.628	16.632
6.465	16.576	16.604
6.665	16.562	16.595
6.865	16.545	16.558
7.065	16.480	16.511
7.265	16.417	16.399
7.465	16.222	16.125
7.665	16.177	16.103
7.865	16.182	16.097
8.065	16.156	16.118
8.265	16.204	16.180
8.465	16.247	16.289
8.665	16.361	16.375
8.865	16.448	NA
9.065	16.507	16.523
9.265	16.476	NA
9.465	16.494	16.551
9.665	16.615	NA
9.865	16.668	16.693
10.065	16.748	NA
10.265	16.760	16.781

Cross-section 14

Distance from right bank(m)	Elevation, year 2010 (m)	Elevation, year 2012 (m)
0.465	17.084	17.087
0.665	17.027	17.041
0.865	16.957	16.943
1.065	16.874	16.823
1.265	16.800	16.729
1.465	16.722	16.683
1.665	16.622	16.676
1.865	16.547	16.575
2.065	16.454	16.489
2.265	16.423	16.452
2.665	16.423	16.460
3.065	16.445	16.476
3.465	16.443	16.475
3.865	16.438	16.468
4.265	16.458	16.485
4.665	16.427	16.464
5.065	16.438	16.430
5.465	16.408	16.453
5.865	16.425	16.483
6.265	16.422	16.462
6.465	16.421	16.457
6.665	16.375	16.398
6.865	16.334	16.319
7.065	16.195	16.236
7.265	16.070	15.944
7.465	15.962	15.844
7.665	15.832	15.796
7.865	15.796	15.793
8.065	15.804	15.844
8.265	15.835	15.852
8.465	16.136	15.880
8.665	16.522	16.449
8.865	16.562	NA
9.065	16.582	16.599
9.265	16.717	NA
9.465	16.767	16.757
9.665	16.781	NA
9.865	16.786	16.799
10.065	16.822	NA
10.265	16.830	16.844

Cross-section 15

Distance from right bank(m)	Elevation, year 2010 (m)	Elevation, year 2012 (m)
0.265	NA	17.072
0.465	17.068	17.066
0.665	17.009	17.014
0.865	16.936	16.929
1.065	16.852	16.789
1.265	16.776	16.700
1.465	16.702	16.692
1.665	16.612	16.686
1.865	16.537	16.669
2.065	16.470	16.581
2.265	16.440	16.449
2.665	16.418	16.428
3.065	16.422	16.420
3.465	16.425	16.425
3.865	16.444	16.459
4.265	16.457	16.469
4.665	16.453	16.448
5.065	16.430	16.425
5.465	16.409	16.427
5.865	16.394	16.417
6.265	16.404	16.418
6.665	16.424	16.451
6.865	16.422	16.435
7.065	16.429	16.395
7.265	16.316	16.348
7.465	16.229	16.185
7.665	16.061	15.953
7.865	16.016	15.863
8.065	15.989	15.865
8.265	15.965	15.848
8.465	15.989	15.872
8.665	16.002	15.938
8.865	16.466	16.401
9.065	16.549	NA
9.265	16.541	16.500
9.465	16.611	NA
9.665	16.665	16.681
9.865	16.741	NA
10.065	16.873	16.908
10.265	16.959	NA

Cross-section 18

Distance from right bank (m)	Elevation, year 2010 (m)	Elevation, year 2012 (m)
0.265	17.026	17.035
0.465	17.025	17.026
0.665	16.963	16.981
0.865	16.894	16.902
1.065	16.831	16.825
1.265	16.756	16.736
1.465	16.679	16.708
1.665	16.620	16.653
1.865	16.555	16.577
2.065	16.480	16.478
2.265	16.409	16.408
2.465	16.359	16.369
2.665	16.344	16.345
3.065	16.338	16.340
3.465	16.328	16.344
3.865	16.359	16.376
4.265	16.335	16.350
4.665	16.328	16.342
5.065	16.325	16.348
5.465	16.327	16.348
5.865	16.344	16.367
6.265	16.359	16.412
6.465	16.344	16.384
6.665	16.260	16.205
6.865	16.080	16.080
7.065	16.139	16.130
7.265	15.882	15.850
7.465	15.849	15.807
7.665	15.872	15.798
7.865	15.887	15.784
8.065	16.057	16.073
8.265	16.335	16.162
8.465	16.170	16.428
8.665	16.477	16.504
8.865	16.504	NA
9.065	16.613	16.598
9.265	16.694	NA
9.465	16.718	16.713
9.665	16.816	NA
9.865	16.814	16.842
10.065	16.893	NA
10.265	16.920	16.923

Cross-section 19

Distance from right bank(m)	Elevation, year 2010 (m)	Elevation, year 2012 (m)
0.265	17.026	17.029
0.465	17.029	17.026
0.665	16.977	16.977
0.865	16.914	16.912
1.065	16.848	16.845
1.265	16.772	16.761
1.465	16.703	16.699
1.665	16.623	16.600
1.865	16.564	16.547
2.065	16.479	16.482
2.265	16.411	16.392
2.465	16.340	16.338
2.665	16.336	16.335
3.065	16.333	16.323
3.465	16.317	16.307
3.865	16.343	16.349
4.265	16.361	16.346
4.665	16.351	16.362
5.065	16.363	NA
5.465	16.363	16.371
5.865	16.372	16.375
6.265	16.385	16.388
6.465	16.348	16.362
6.665	16.313	16.355
6.865	16.267	16.383
7.065	16.144	16.056
7.265	16.022	15.950
7.465	15.979	15.865
7.665	15.934	15.747
7.865	15.788	15.678
8.065	15.808	15.679
8.265	15.830	15.764
8.465	15.902	16.002
8.665	16.185	16.226
8.865	16.223	NA
9.065	16.455	16.464
9.265	16.534	NA
9.465	16.700	16.589
9.665	16.568	NA
9.865	16.577	16.594
10.065	16.579	NA
10.265	16.605	16.691

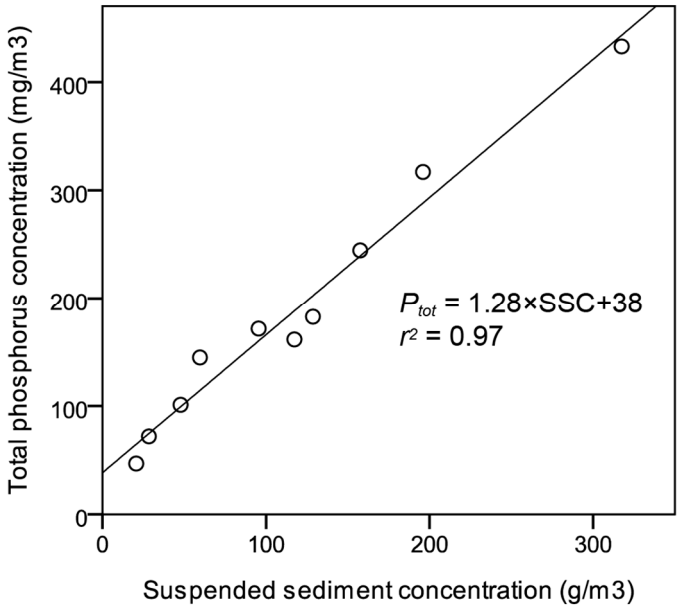


Figure S4 Linear regression between suspended sediment and total phosphorus concentrations at the primary reach-scale pilot site (Ritobäcken, Finland; original source: [38]). The units of the regression equation are (µg/L) for P_{tot} and (mg/L) for SSC.

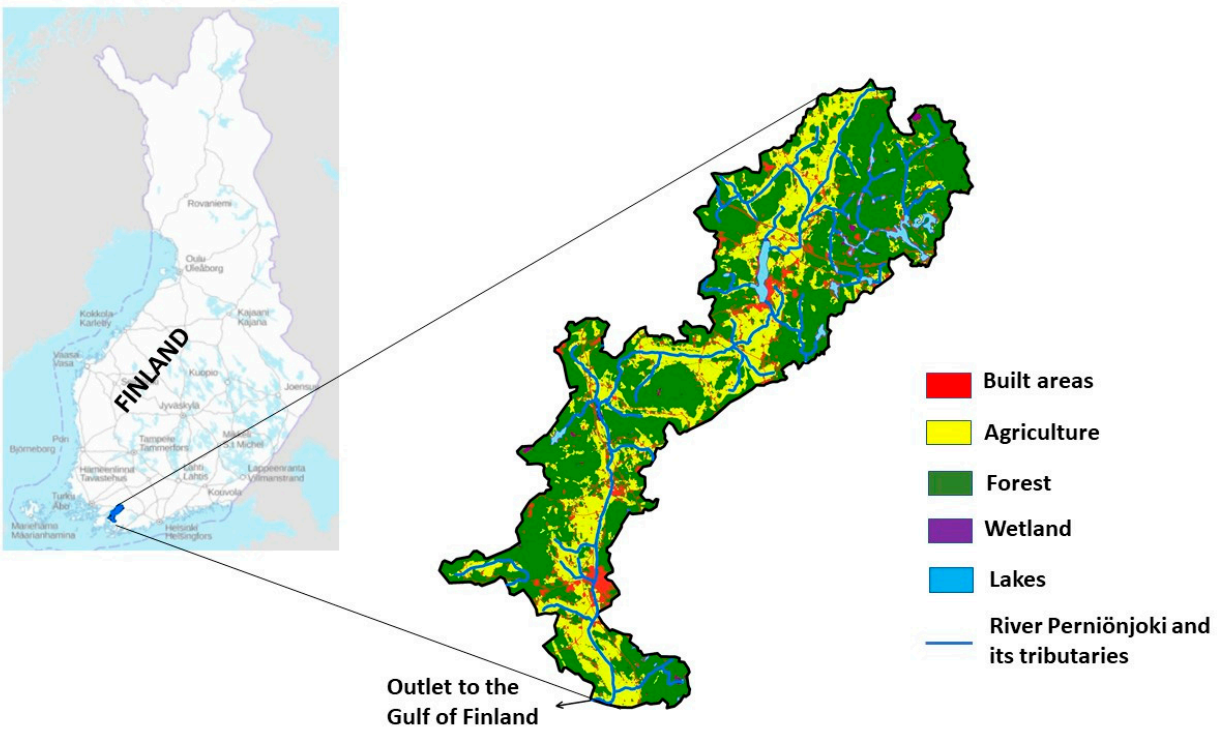


Figure S5 The land use and network of major channels at the catchment-scale pilot site (River Perniönjoki).

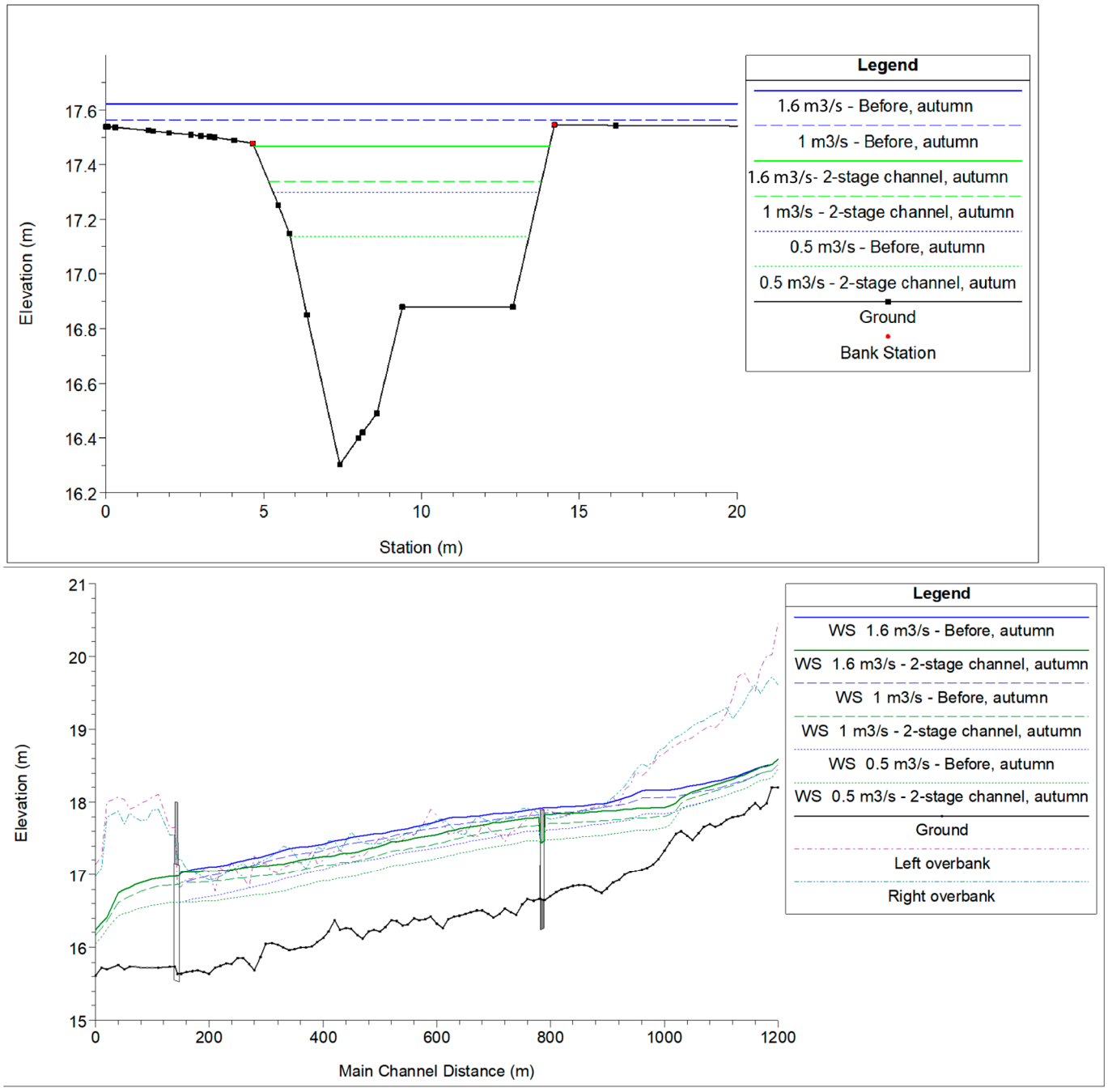
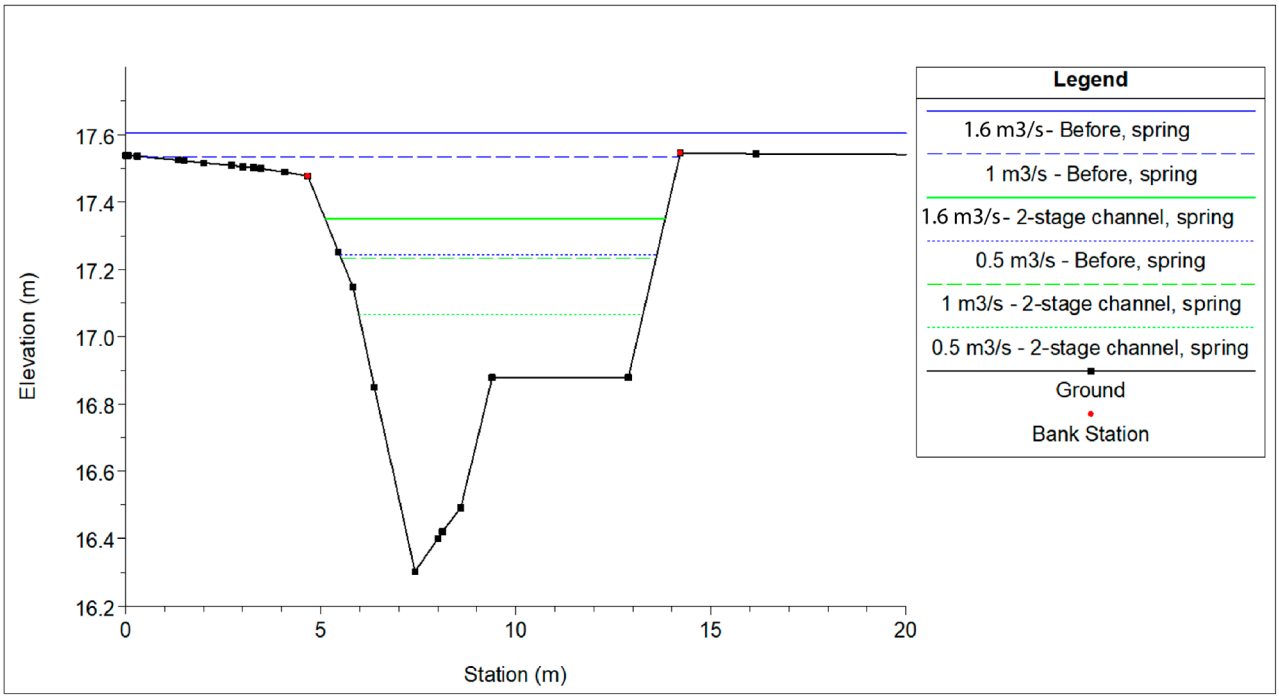


Figure S6 Simulated water levels at selected discharges before and after two-stage channel construction under autumn-summer conditions. 1.6 m^3/s represents 1-in-5-year flow. a) A view of a representative cross-section, b) Longitudinal profile.



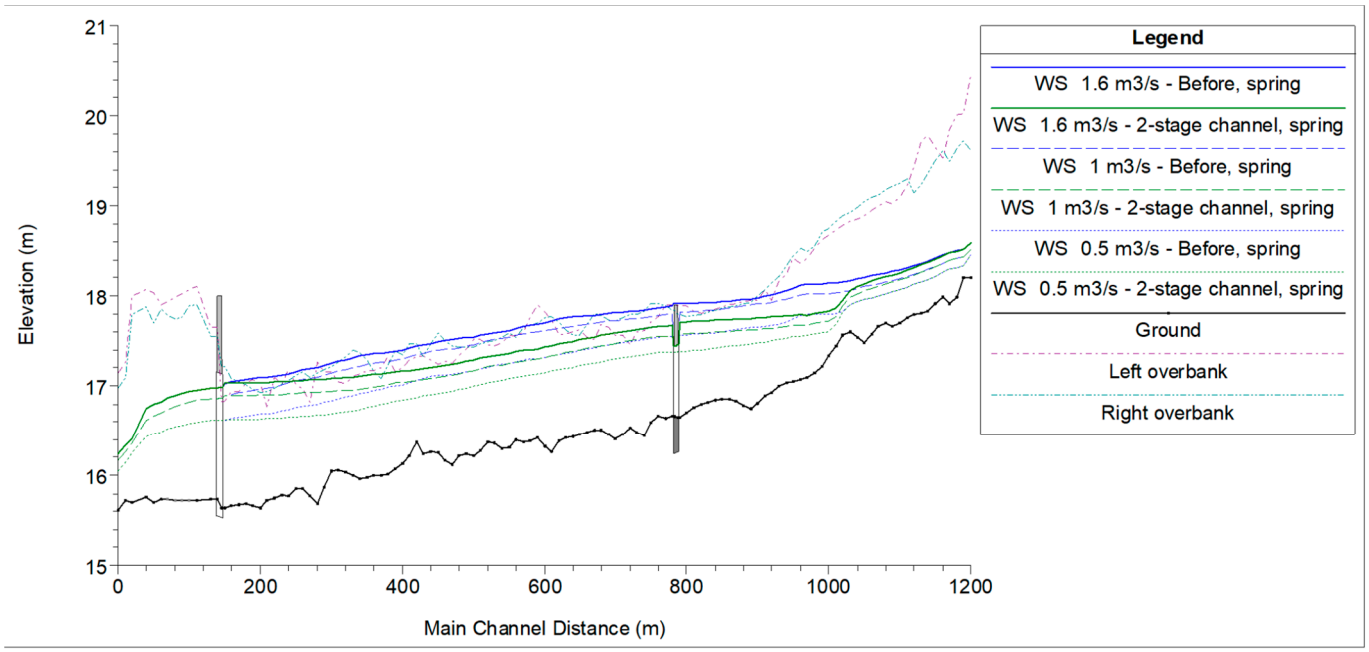


Figure S7 Simulated water levels at selected discharges before and after two-stage channel construction under spring-winter conditions. 1.6 m^3/s represents 1-in-5-year flow. a) A view of a representative cross-section, b) Longitudinal profile

Table S2. Plant species found in the study areas; Ritobäcken (relative frequency, mean and maximum cover) and Immersbybäcken and Häsängsbäcken (relative frequency).

	Ritobäcken, two-stage channel, bank			Ritobäcken, two-stage channel, floodplain			Ritobäcken, conventionally dredged			Immersbybäcken, conventionally dredged	Hälsängsbäcken, conventionally dredged
	rel. freq.	cover mean	cover max	rel. freq.	cover mean	cover max	rel. freq.	cover mean	cover max	rel. freq.	rel. freq.
Achillea millefolium	35	3	10	6	1	1	32	1	1	100	60
Achillea ptarmica	56	2	10	74	2	6	18	1	2	100	40
Aegopodium podagraria	35	5	20	3	1	1	100	13	30	80	100
Agrostis capillaris	18	1	1	12	1	1	4	1	1		20
Alchemilla sp.	6	1	1								
Alopecurus pratensis	88	12	60	68	7	30	93	24	40	100	80
Angelica sylvestris	100	9	30	68	2	4	57	2	6	100	60
Anthriscus sylvestris	97	10	40	15	2	4	93	7	10	40	100
Artemisia vulgaris	74	3	10				4	1	1	100	
Athyrium filix-femina							4	1	1		
Avenula pubescens	3	1	1								
Bidens tripartita	3	1	1								
Calamagrostis canescens	53	9	60	94	39	90	54	10	20	80	40
Calamagrostis epigejos							4	1	1		
Calamagrostis phragmitoides	9	4	6	47	17	50	11	6	10		20
Caltha palustris	3	1	1	12	1	1					
Campanula patula										40	
Capsella bursa-pastoris											20
Cardus crispus							4	1	1		
Carex acuta				24	4	10					
Carex vesicaria				3	1	1					
Centaurea jacea	9	1	1	12	1	1	4	2	2	20	
Chamaenerion angustifolium	47	7	30	24	4	10	29	10	40	100	40
Cirsium arvense	97	6	25	26	1	1	93	4	10	100	60
Cirsium heterophyllum	68	5	15	26	1	1	14	2	6		
Comarum palustre				3	1	1					
Convolvulus sepium											
Dactylis glomerata	3	1	1								
Deschampsia cespitosa	35	2	4	56	1	4	18	1	2	80	100
Elytrigia repens	71	7	30	21	1	2	96	22	60	100	100
Epilobium adenocaulon	6	1	1	6	1	1					40
Equisetum arvense	9	3	6	3	1	1	46	2	6	40	60
Equisetum fluviatile				6	1	1					
Equisetum palustre	47	2	6	21	2	6					
Equisetum sylvaticum							11	1	2		
Festuca ovina group	3	1	1				11	2	2	40	20

Festuca rubra group							11	1	1		
Filipendula ulmaria	71	11	40	100	20	80	68	4	20	40	20
Galeopsis bifida	3	1	1	3	1	1	11	1	1		
Galeopsis speciosa	21	1	2	21	2	6	21	1	1	100	100
Galium album	97	4	20	53	1	1	7	1	1	100	40
Galium boreale				12	1	1	18	2	4		
Galium palustre				26	1	2					20
Galium spurium											20
Galium uliginosum	3	1	1	9	1	1					
Geranium sylvaticum							4	1	1		
Gnaphalium uliginosum											
Hieracium umbellatum	15	1	1	3	1	1	4	2	2	20	
Hypericum maculatum	24	1	1	3	1	1	11	1	2	80	
Iris pseudacorus				21	1	2					
Juncus effusus	3	1	1	18	2	2					60
Juncus filiformis				3	1	1					
Lamium sp											20
Lapsana communis	9	1	1				29	1	1	40	80
Lathyrus pratensis	50	3	15	68	2	10	32	1	2		
Leontodon autumnalis											20
Linaria vulgaris	53	1	4	15	1	1	7	2	2	20	20
Lolium multiflorum	6	1	1								40
Lupinus polyphyllus	26	4	8	21	2	6					
Lychnis flos-cuculi	9	1	1	41	1	1	4	1	1		
Lysimachia vulgaris	35	1	2	97	9	40	86	2	10	100	100
Lythrum salicaria				32	2	4					
Mentha arvensis	3	1	1								20
Myosotis arvensis	3	1	1				7	1	1		20
Myosotis laxa				24	1	1					40
Myosotis scorpioides	3	1	1	9	1	1					
Persicaria amphibia	32	2	4	26	2	4					60
Peucedanum palustre	3	1	1	15	2	4	4	1	1	20	
Phalaris arundinacea										80	
Phleum pratense	88	13	30	12	3	6	21	5	15	20	20
Pilosella sp.										20	
Poa palustris	76	3	10	68	3	20	43	1	4	20	100
Poa pratensis group	32	1	2	3	1	1	57	1	2	40	
Poa trivialis	3	1	1				6	1	1		
Ranunculus acris							4	1	1		
Ranunculus repens	56	1	4	29	1	1	57	1	2	100	100
Rubus idaeus	35	3	6				25	1	2	60	40
Rumex longifolius				3	1	1					
Rumex thyrsiflora										20	
Schedonorus pratensis	38	2	4				11	1	1	40	
Scirpus sylvaticus	26	1	2	59	1	4	43	1	2	40	100
Scorzoneroides autumnalis											

Scutellaria galericulata				12	1	1	7	1	1		
Senecio viscosus										20	
Silene dioica	3	1	1								
Solidago virgaurea	15	1	1							20	
Sonchus arvensis	15	1	1				4	1	1	20	80
Spergula arvensis											40
Stachys palustris				3	1	1					40
Stellaria graminea	15	1	1	12	1	1				20	
Stellaria media											80
Stellaria sp.										60	20
Taraxacum sp.	35	1	2				7	1	1	100	80
Trifolium hybridum	18	1	1	12	1	1					
Trifolium medium	44	3	10	44	1	4	75	4	10		
Trifolium pratense	29	2	10								
Tripleurospermum inodorum	18	1	2	3	1	1					100
Tussilago farfara	18	4	10	3	2	2	43	8	30		
Typha latifolia										20	20
Urtica dioica	59	6	30	47	2	6	68	9	50	60	40
Valeriana officinalis	21	2	4	50	2	6					
Veronica chamaedrys	12	1	1								
Veronica officinalis	3	1	1	6	1	1					
Vicia cracca	88	2	10	94	2	10	32	1	1	40	20

Table S3. Number of plant species in the two-stage bank and floodplain and conventionally dredged 20 m long plots.

Channel part	Mean	Standard error	Minimum	Maximum
Bank of two-stage channel	21.85	4.09	19	29
Floodplain of two-stage channel	17.03	4.57	13	25
Conventionally dredged channel	16.14	3.77	14	24

S3 Plant biodiversity results at reach-scale pilot site

Altogether, 101 species were recorded in the study areas (Table S2). The vegetation in the Ritobäkcen ditch banks is dominated by common graminoids, such as *Elytrigia repens*, *Alopecurus pratensis* and *Calamagrostis canescens,* and by flowering herbs, such as *Chamaenerion angustifolium*, *Filipendula ulmaria* and *Cirsium arvense*, all growing clonally, rather tall and 'weedy' and common in various agricultural areas. Some smaller copiously flowering herbs, such as *Trifolium medium, Vicia cracca, Lathyrus pratensis* and *Galium album,* were common but sparse. Since the studied areas are not mown, annual species were lacking. The overall species richness compares well with studies of meadows in Estonia (40 species, [89]), ditch banks in the Netherlands (50 species, [90]) or 2-stage banks and floodplains in England (48 species, [91]).

Species found only in the two-stage channel area, floodplain or bank included some with high relative frequency (*Lythrum salicaria*: relative frequency 32; *Carex acuta*: 24; *Iris pseudacorus* 21; *Valeriana officinalis* 50; *Equisetum palustre*: 47; *Veronica chamaedrys*: 12). The most frequent species found only in the two-stage channel sections, in addition to the ones mentioned above, were forbs (*Galium palustre*, relative frequency 26; *Myosotis laxa*, 24; *Persicaria amphibia*, 26; *Juncus effesus*, 18; and *Stellaria graminea*, 15). Species found only or mainly in the two-

stage sections are primarily herbs of wet meadows or riparian areas not usually found in agricultural ditch banks in Finland [92]. The studied area in the conventionally dredged ditch went down to the water edge, but only a few wet meadow species were found, such as *Lysimachia vulgaris*, *Calamagrostis canescens* and *Scirpus sylvaticus*, and these were also common in the two-stage channel area. The results are less representative for Hälsängsbäcken and Immersbybäcken because of the notably smaller number of study plots (see Section 2.2.2).

Table S4. Number of species, Shannon's diversity index and Simpson's evenness of the plant species.

Indicator	**Conventionally dredged channel**	**Floodplain of two-stage channel**	**Bank of two-stage channel**
Number of species (*R*)	54	62	68
Shannon's diversity index (*H'*)	3.51	3.63	3.84
Simpsons evenness (*E*)	0.43	0.37	0.52

S4 Pollinator results at reach-scale pilot site

A total of 1083 pollinator individuals and 48 species were recorded in the transect counts along the two-stage reach and the conventionally dredged reach (Table S5). The material included 20 species of butterflies, 15 species of day-active moths and 12 species of bumblebees, as well as the honeybee (*Apis mellifera*) and a small number of solitary bees that could not be identified to species in the field. The total numbers of individuals and species recorded were very similar in the two kinds of reaches (Table S6).

No significant differences were found between the two kinds of reaches in terms of the average species numbers and abundances of different pollinator species groups based on 2 × 8 replicates of 50 m transects and one-way ANOVA. However, the average number of flowering nectar plant species groups was significantly higher in the two-stage reach than in the conventional reach (Table S7). Most pollinator variables did not correlate significantly with the number of flowering nectar plant species groups, with the exception of bumblebees.

We further evaluated the role of the floodplain in determining the occurrence of pollinators by testing the difference in pollinator species richness and abundance between the floodplain and the adjoining buffer strip. All pollinator variables showed a tendency towards more pollinators in the buffer strip (drier habitat) than in the floodplain (wetter habitat; Table S8). This difference was statistically significant for the average total species richness of pollinators, as well as for the average abundances of day-active moths, bumblebees, all pollinators (combined) and the honeybee based on paired t-tests (Table S8). The average flowering nectar plant richness did not differ between the floodplain and the buffer strip, but the coverage of flowering nectar plants was much higher in the buffer strip than in the floodplain ($p < 0.001$; Table S8).

Table S5. Summary of observed pollinator species and their abundances during the five replicated pollinator counts along the Ritobäcken two-stage channel and the near conventionally dredged channel.

Species	Two-stage channel (field margin)	Two-stage channel (floodplain)	Two-stage channel (field margin + floodplain)	Conventional channel	Total (two-stage + conventional channel)
Honeybee, *Apis mellifera*	125	15	140	67	207
Solitary bees	9	4	13	5	18
Bumblebees					
Bombus lucorum	55	20	75	41	116

Bombus pascuorum	9	7	16	33	49
Bombus pratorum	5	1	6	16	22
Bombus lapidarius	7	5	12	2	14
Bombus hortorum	2	10	12	2	14
Bombus veteranus	2	3	5	2	7
Bombus hypnorum	3	1	4	2	6
Bombus soroeensis	3	0	3	1	4
Bombus terrestris	1	0	1	2	3
Bombus ruderarius	1	0	1	1	2
Bombus subterraneus	0	0	0	1	1
Bombus bohemicus	1	0	1	0	1
Butterflies					
Aphantopus hyperantus	29	13	42	61	103
Thymelicus lineola	21	10	31	66	97
Brenthis ino	10	14	24	32	56
Nymphalis urticae	20	7	27	19	46
Gonepteryx rhamni	3	7	10	3	13
Argynnis adippe	1	5	6	6	12
Polyommatus semiargus	2	0	2	8	10
Coenonympha glycerion	0	0	0	9	9
Pieris napi	1	3	4	1	5
Ochlodes sylvanus	0	1	1	3	4
Polygonia c-album	1	0	1	1	2
Leptidea juvernica	0	1	1	0	1
Aporia crataegi	0	0	0	1	1
Polyommatus amandus	1	0	1	0	1
Lycaena hippothoe	1	0	1	0	1
Vanessa atalanta	0	0	0	1	1
Apatura ilia	1	0	1	0	1
Plebejus argus	0	0	0	1	1
Nymphalis io	0	0	0	1	1
Argynnis paphia	1	0	1	0	1
Diurnal moths					
Scotopteryx chenopodiata	30	14	44	53	97
Odezia atrata	17	6	23	57	80
Polypogon tentacularius	8	5	13	20	33
Idaea serpentata	0	1	1	8	9
Xanthorhoe montanata	3	0	3	5	8
Scopula immorata	1	0	1	5	6
Scopula immutata	1	2	3	3	6
Epirrhoe alternata	4	0	4	0	4
Semiothisa clatharata	1	1	2	1	3
Siona lineata	0	0	0	2	2
Idaea pallidata	0	1	1	0	1
Euclidia glyphica	1	0	1	0	1
Itame brunneata	0	0	0	1	1

Autographa chrysitis	1	0	1	0	1
Cabera pusaria	0	1	1	0	1
Total	382	158	540	543	1083

Table S6. Summary of total observations in the pollinator counts.

Pollinator group	Floodplain		Buffer strip		Two-stage reach		Conventional reach		Total	
	Individuals	Species	Individuals	Species	Individuals	Species	Individuals	Species	Individuals	Species
Butterflies	61	9	92	13	153	15	213	15	366	20
Day-active moths	31	8	67	10	98	13	155	10	253	15
Bumblebees	47	7	89	11	136	11	103	11	239	12
Solitary bees	4	-	9	-	13	-	5	-	18	-
Honey bee	15	-	125	-	140	-	67	-	207	-
All pollinators (without the honey bee)	143	25	257	35	400	40	476	37	876	48
All together	158	26	382	36	540	41	543	38	1083	49

*Table S7. Comparison of pollinator results from the Ritobäcken two-stage reach and the nearby conventionally dredged reach. The pollinator mean values are based on combining five replicated counts on eight separate 50-m transects along the two types of reaches. The difference in means between the two types of habitat was tested using one-way anova. Significance: * P < 0.05, ** P < 0.01, *** P< 0.001*

Pollinator group	Number of species					Number of individuals				
	Two-stage reach		Conventional reach		Signific.	Two-stage reach		Conventional reach		Signific.
	mean	SD	mean	SD		mean	SD	mean	SD	
Butterflies	6.3	1.3	6.4	1.2	ns	19.1	6.9	26.6	7.2	ns
Day-active moths	4.8	0.9	4.8	1.3	ns	12.3	3.1	19.4	11.3	ns
Bumblebees	5.1	2.0	3.6	1.7	ns	17.0	10.7	12.9	9.8	ns
Solitary bees	-		-			1.6	2.2	0.6	1.1	ns
Honey bee	-		-			17.5	6.0	8.4	8.0	*
All pollinators (without the honey bee)	16.1	3.0	14.8	3.2	ns	50.0	18.5	59.5	23.4	ns
	Number of flowering nectar species groups									
	16.0	1.4	11.4	1.8	***					

*Table S8. Comparison of pollinator results from the floodplain and the adjoining buffer strip of the Ritobäcken two-stage reach. The pollinator mean values were obtained by combining five replicated counts on eight separate 50 m transects along the two-stage reach. The difference in means between the two types of habitat was tested using the paired t-test. Significance: * P < 0.05, ** P < 0.01, *** P< 0.001*

Pollinator group	Number of species					Number of individuals				
	Floodplain		Buffer strip		Signific.	Floodplain		Buffer strip		Signific.
	mean	SD	mean	SD		mean	SD	mean	SD	
Butterflies	4.1	1.5	5.1	1.2	ns	7.6	4.6	11.5	4.6	ns
Day-active moths	2.1	1.1	3.6	1.2	ns	3.9	1.9	8.4	3.9	*
Bumblebees	2.9	1.6	4.0	1.7	ns	5.9	4.6	11.1	7.2	*
Solitary bees	-		-			0.5	0.8	1.1	1.6	ns
Honey bee	-		-			1.9	2.3	15.6	4.7	***
All pollinators (without the honey bee)	9.1	3.0	12.8	2.6	*	17.9	8.4	32.1	11.7	**
	Number of flowering nectar species groups					Coverage of flowering nectar species groups (%)				
	11.6	1.7	13.4	1.6	ns	17.4	8.3	49.9	14.6	***

Table S9. Construction costs, value of lost fields and value of lost crops at the reach-scale TSC pilot sites.

Pilot Site	**Excavated soil volume (m^3)**	**Lost field area (ha)**	**Lost field area per channel length (m^2/m)**	**Unit construction cost per channel length (€/m)**	**Unit construction cost per excavated soil volume (€/m^3)**	**Const-ruction cost ratio [1]**	**Value of lost field per channel length (€/m)**	**Value of lost crops per channel length (€/yr/m)**	**Sources of financing for construction[2]**
Ritobäcken	2 000	0.33	4.0	18	7.5	3.7	3.8	0.28	ELY 100%
Kaukan-aronoja	2 600	0.26	3.8	11	3.0	2.3	4.3	0.26	no data
Luvalahden-oja	1 700	0.17	3.8	14	3.8	2.9	4.3	0.25	no data
Hardom-bäcken	1 400	0.08	2.6	23	4.8	4.6	2.4	0.17	Pr 90%, Ow 10%
Uuhikon-oja	9 800	0.94	4.0	35	8.4	4.3	3.6	0.27	ELY 48%, Pr 36%, Ow 16%
Leppioja	7 100	0.40	4.0	25	3.5	4.9	3.1	0.28	no data
Mean	**4100**	**0.36**	**3.7**	**21**	**5.2**	**3.8**	**3.6**	**0.25**	**ELY 49%, Pr 42%, Ow 9%**

[1] Depicts how many times more expensive the two-stage channel is to construct compared to one-time conventional maintenance dredging

[2] ELY = Regional State Authority, Pr = Externally funded project, Ow = Land owners

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