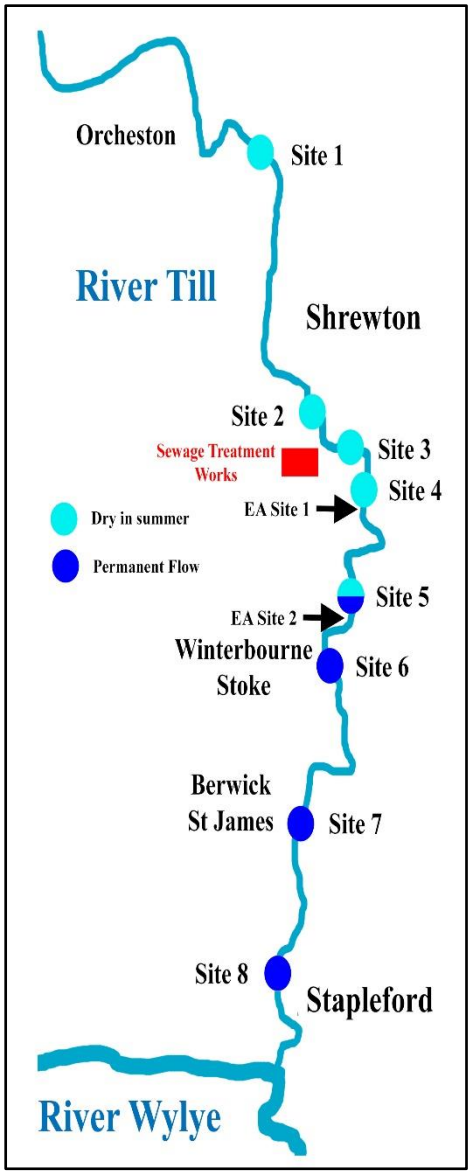
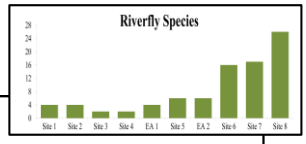
Till The River Runs Dry

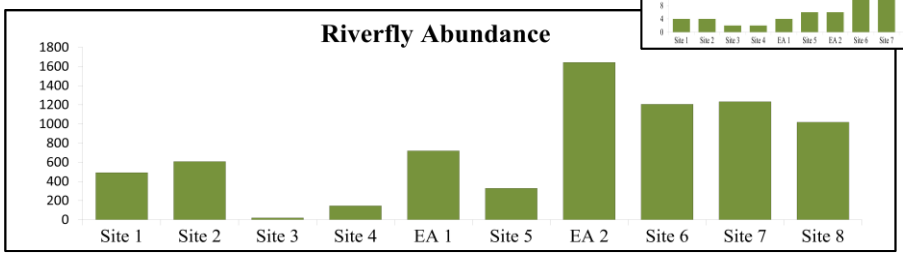
An Invertebrate 'Benchmark' Survey of the River Till – a SSSI Chalk Stream Winterbourne

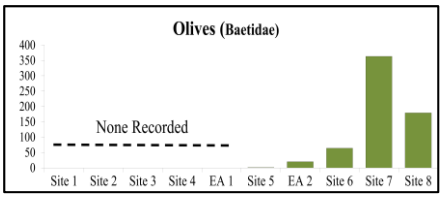
The River Till rises near Tilshead on the Salisbury Plain and flows nine miles south passing through Orcheston, Shrewton, under the A303 at Winterbourne Stoke and on to Berwick St James and Stapleford where it joins the river Wylye. In its upper reaches it's a Winterbourne, flowing only in the winter and spring with crystal clear water from the chalk aquifers. It's designated as a Special Site of Scientific Interest (SSSI) due to the unique range of freshwater life found in this habitat.

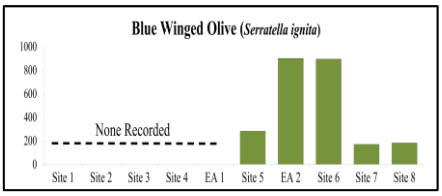
Standard three-minute samples were taken at 8 sites during mid/late April 2022; two additional sites were monitored by the Environment Agency. Full data is appended.

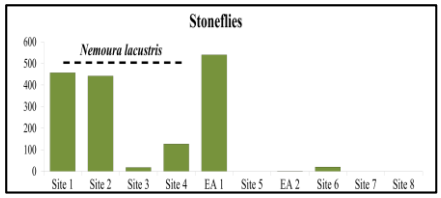


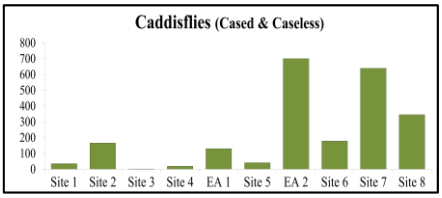


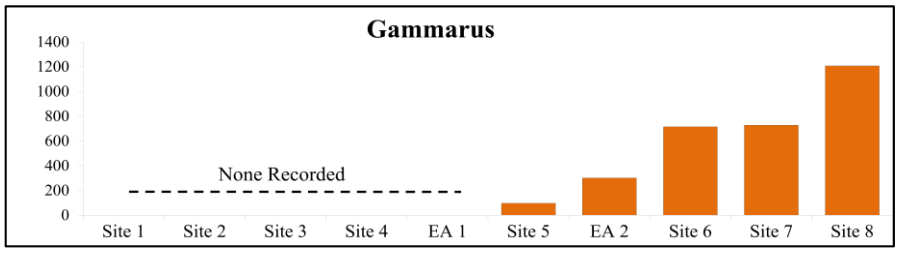


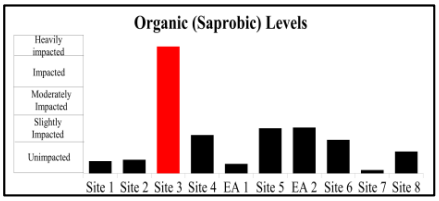


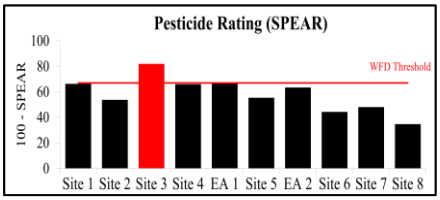












Whilst a normal invertebrate community is present where there is a permanent flow (900 Blue Winged Olives were recorded at Site 6 & EA Site 2), only a few species that are adapted to a long dry period are present at sites 1-4. This includes the stonefly *Nemoura lacustris* (a new species to the British Isles) and *Paraleptophlebia werneri*, a rare mayfly recorded at only a very few Winterbourne sites. Some caddisfly species have an adult diapause which enables them to delay egg laying until the autumn.

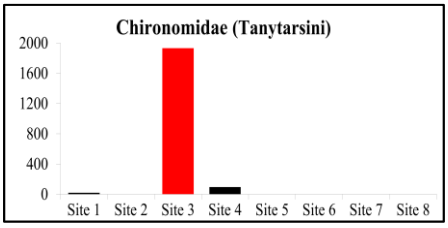
The extremely low Riverfly populations downstream of the Sewage Treatment Works (Site 3) correlates with high organic levels at this site together with a significant pesticide rating (SPEAR). We may also be in danger of losing the large population of the rare mayfly *Paraleptophlebia werneri*, normally found on the Till.

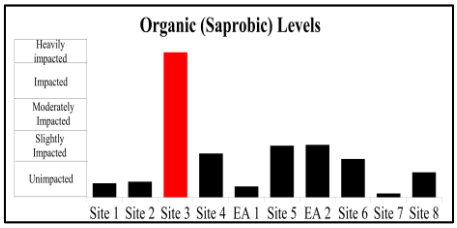
Downstream of Shrewton Sewage Treatment Works

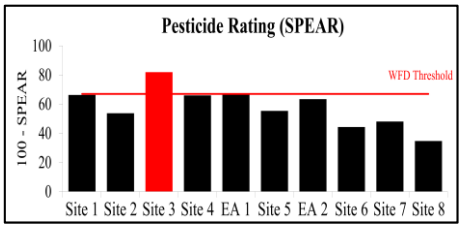
Site 2 – Riverbed (Upstream of STW)

Site 3 - Riverbed (Downstream of STW)

Large deposits of silt and organic debris at Site 3 (downstream of the STW) made invertebrate sampling difficult, and large populations of Chironomid adults were swarming along the riverbank. This was reflected in the sample taken at this site, with nearly 2000 organic-tolerant Chironomid (*Tanytarsini*) together with significant numbers of Simuliidae and a very reduced population of *Nemoura lacustris*; all of which correlated with high organic (saprobic) and pesticide (SPEAR) levels.







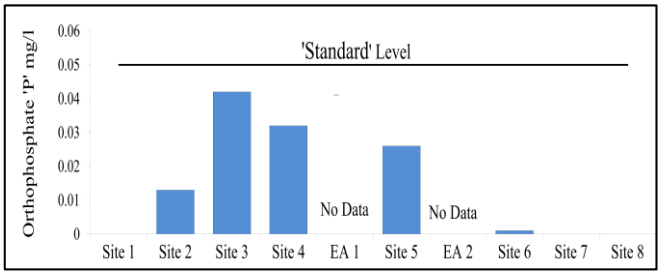
The release of untreated sewage from the storm overflows (Combined Sewer Overflows) has been reported from the Shrewton STW* and the high pesticide rating (SPEAR) correlates with the Environment Agency data (2019) showing a chemical failure.

Section	Ecological Status	Chemical Status	Overall Status	Length	Catchment	Channel
Till (Hampshire Avon)	Good	Fail	Moderate	13.993 km (8.695 mi)	127.785 km^2 (49.338 sq mi)	

Riverfly populations recover downstream with 540 Nemoura (presume *Nemoura lacustris*) and 50 Leptophlebiidae (presume *Paraleptophlebia werneri*) recorded at EA Site 1. As this suggests that *P. werneri* may be just clinging on at the lower end of the Winterbourne area, a further intensive survey was carried out at Site 4 which revealed nine larvae. Both *N. lacustris* and *P. werneri* are highly sensitive to organic pollution.

Phosphate levels entering the river at the STW outflow were measured at 0.16 mg/l, with 0.042mg recorded at Site 3 and decreasing downstream.

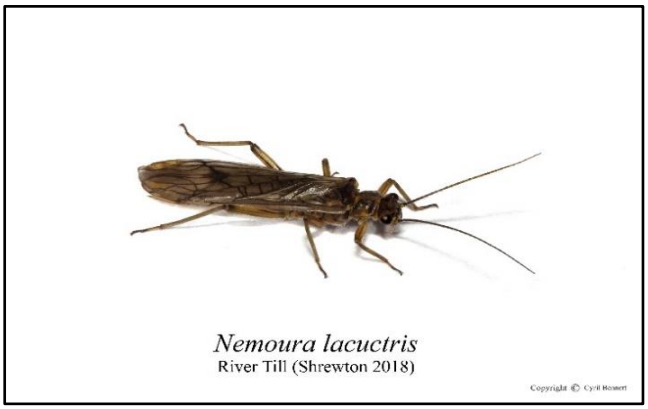
STW Outflow – upstream of Site 3

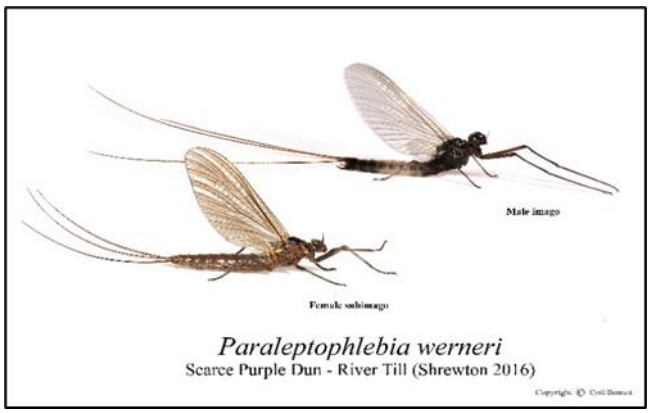


Conclusions

It's unclear why the two EA surveys were carried out at some distance downstream of the STW as this misses the problem at Site 3 and doesn't allow any comparisons to be made with invertebrate populations upstream of the STW.

The huge drop in Riverfly populations below the STW clearly shows a significant organic problem with a much-reduced population of *Nemoura lacustris* and no *Paraleptophlebia werneri*, both of which are highly sensitive to organic pollution. Although *P. werneri* appears to be clinging on at the lower end of the Winterbourne area, there's a real danger that this rare mayfly will be lost from the Till, which is one of only a few Winterbourne sites where it has been recorded.





There are less than 200 chalk stream Winterbournes worldwide (most of which are in England) and the River Till flows through some of our loveliest Wiltshire villages. We have a responsibily for protecting these ecologically delicate habitats containing a host of rare species and we are in danger of losing this one.

The River Till at Shrewton

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May 2022

References:

***2021 The Times Wednesday November 8th, 2021 – "Sewage dumped in rivers for months on end".**
Between July 2019 & June 2020, the Shrewton treatment works operated by Wessex Water spilt sewage into the River Till (a highly vulnerable Chalk Stream) for more than 7 months.

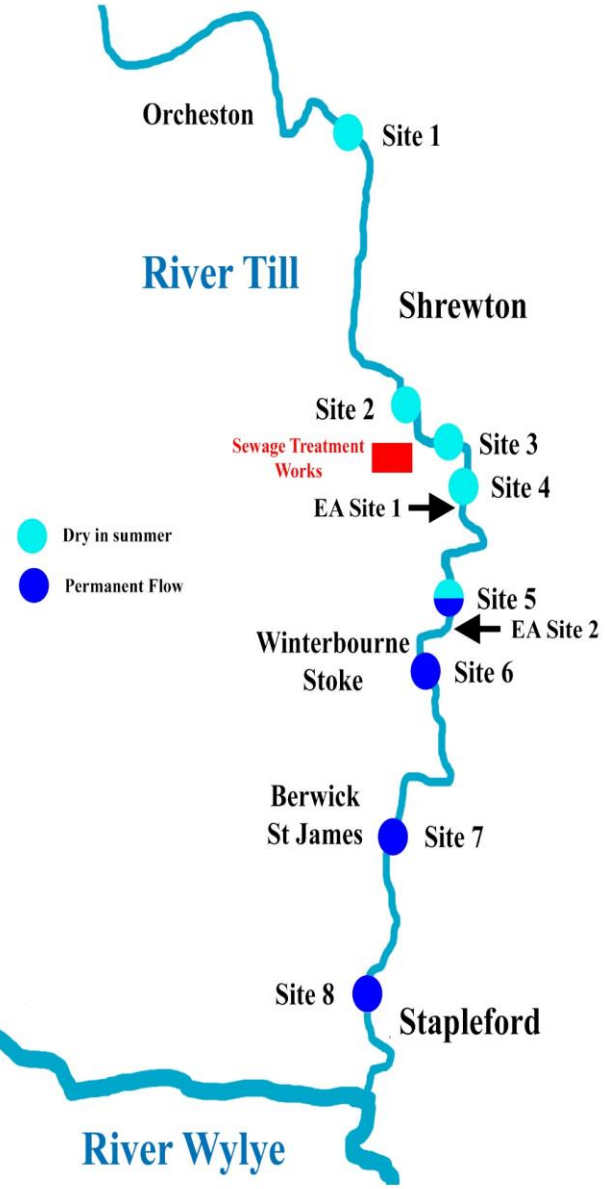
***2021 The Rivers Trust Sewage Map**
Shrewton Water Recycling Centre (Wessex Water - Permit number 40080). Sewer storm overflow spilled 184 times for a total of 4269 hours, discharging into the River Till.

Site 1 (SU 06709 44711)

Site 2 (SU 06849 43216)

Site 3 (SU 07562 42584)

Site 4 (SU 07970 42279)



Site 5 (SU 07820 41216)

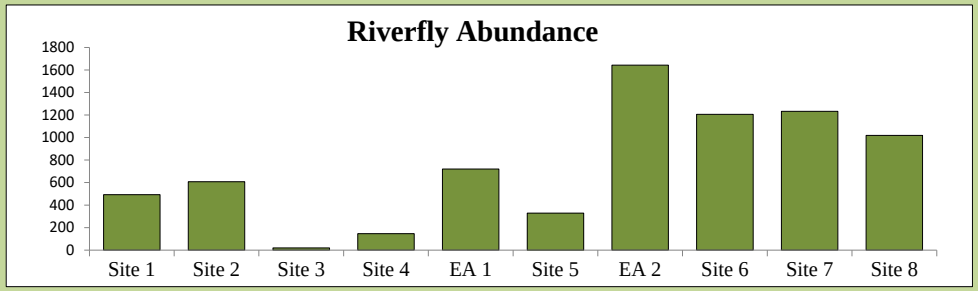
Site 6 (SU 07691 40924)

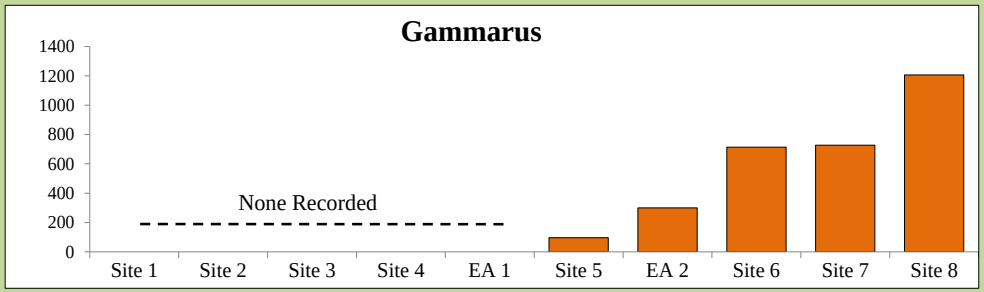
Site 7 (SU 07141 38943)

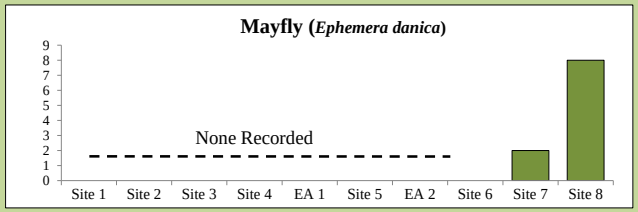
Site 8 (SU 06937 37608)

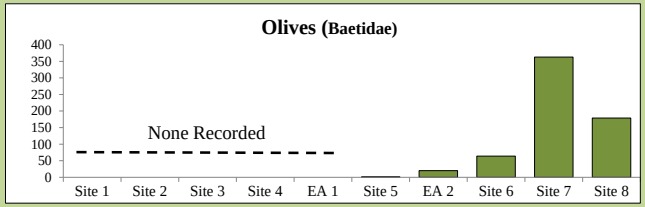
River Till

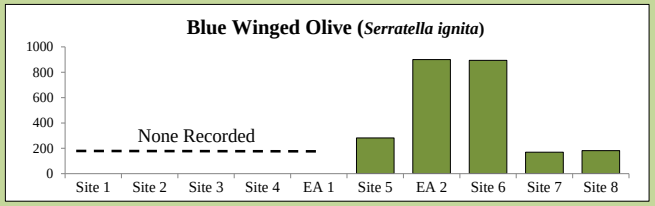
April 2022

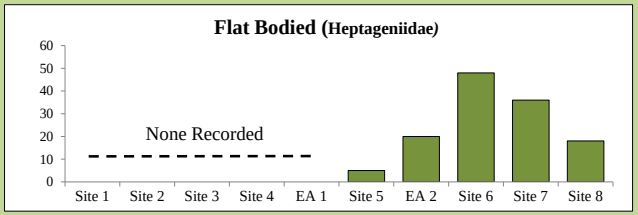


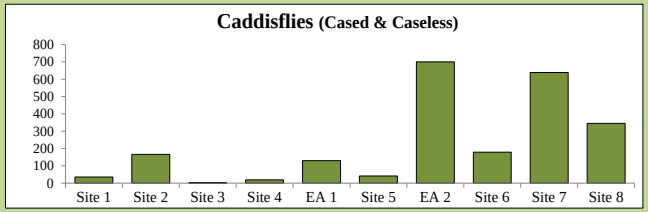


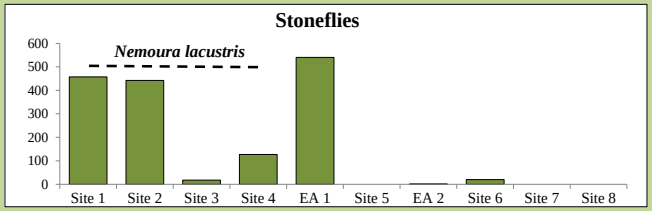




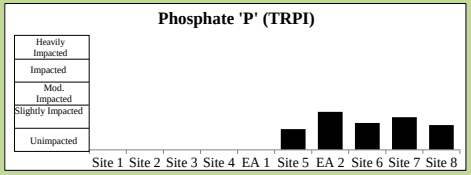


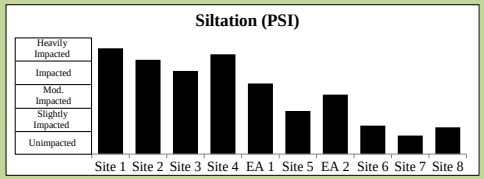


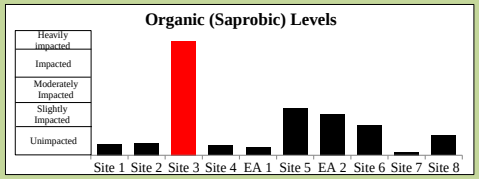


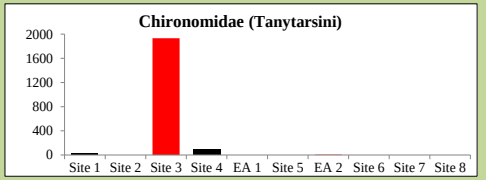


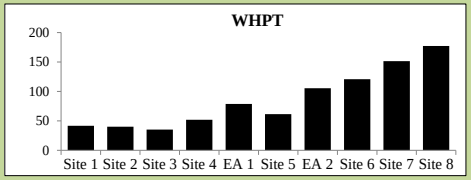
Biometrics

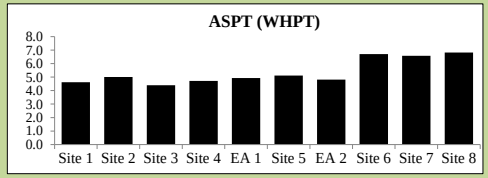


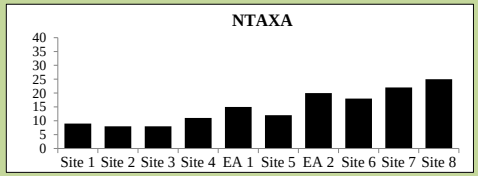


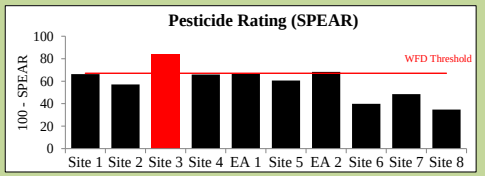












River Till

April 2022

Caddisflies	Site 1	Site 2	Site 3	Site 4	EA 1	Site 5	EA 2	Site 6	Site 7	Site 8
Limnephilus sp.	18	5	2			1		13	1	22
Glyphotaelius pellucidus	13	1								1
Chaetopteryx villosa										33
Halesus radiatus								2		4
Lepidostoma hirtum								1		11
Anabolia nervosa										2
Limnephilus lunatus	4	160		19		38		62		1
Potamophylax latipennis								1	4	2
Sericostoma personatum								3	47	30
Odontocerum albicorne										17
Agapetus fuscipes						2		80	487	183
Athripsodes sp.										1
Athripsodes albifrons								1	3	
Drusus annulatus								12	1	1
Silo nigricornis									4	4
Hydroptilidae										1
Limnephilidae					130		700			
Hydropsyche pellucidula										4
Hydropsyche siltalai									84	14
Rhyacophila dorsalis									7	4
Polycentropus flavomaculatus								1	1	10
Plectrocnemia conspersa								3		

Molluscs	Site 1	Site 2	Site 3	Site 4	EA 1	Site 5	EA 2	Site 6	Site 7	Site 8
Sphaeriidae	0	0	2	1		0		0	6	
Radix balthica	41	0	0	2		0		0	0	
Anisus vortex	74	30	0	1		0		0	0	
Ancylus fluviatilis	0	0	0	0		0		0	22	
Pisidium					30		100			
Valvatidae							3			
Lymnaeidae							30			
Planorbidae					20					

Damsels & Dragons	Site 1	Site 2	Site 3	Site 4	EA 1	Site 5	EA 2	Site 6	Site 7	Site 8
Calopteryx splendens										
Calopteryx										

Mayflies	Site 1	Site 2	Site 3	Site 4	EA 1	Site 5	EA 2	Site 6	Site 7	Site 8
Ephemera danica								0	2	8
Baetis						1	20	48	331	167
Baetis rhodani								16	32	12
Baetis scambus										
Baetis muticus										
Baetis niger										
Baetis vernus										
Baetis fuscatus										
Heptagenia sulphurea						0		0	30	12
Ecdyonurus dispar						5		48	6	6
Heptageniidae							20			
Serratella ignita						282	900	894	170	182
Caenis rivulorum							2	1	23	287
Caenis luctuosa										
P. submarginata										
Leptophlebiidae					50					

Stoneflies	Site 1	Site 2	Site 3	Site 4	EA 1	Site 5	EA 2	Site 6	Site 7	Site 8
Leuctra fusca										
Nemoura lacustris	457	442	18	127		0		0	0	
Nemoura cinerea	0	0	0	0		0		20	0	
Nemoura					540		1			

Beetles & Bugs	Site 1	Site 2	Site 3	Site 4	EA 1	Site 5	EA 2	Site 6	Site 7	Site 8
Dytiscidae	9	6		7	5	1	1	0	0	0
Elmis aenea					3	3	3	11	68	15
Limnius volckmari								2	17	39
Orectochilus villosus									5	25
Riolus subviolaceus									1	0
Haliplidae										3
Corixidae							1			
Hydrophilidae					1					

Biometrics	Site 1	Site 2	Site 3	Site 4	EA 1	Site 5	EA 2	Site 6	Site 7	Site 8
BMWP	**36**	**35**	**33**	**42**	**70**	**67**	**97**	**118**	**140**	**165**
ASPT	**4**	**4.38**	**4.13**	**3.82**	**4.67**	**5.58**	**4.85**	**6.56**	**6.36**	**6.60**
WHPT	**41.6**	**40.1**	**35**	**52**	**79**	**61**	**106**	**121**	**151**	**177**
ASPT	**4.62**	**5.01**	**4.40**	**4.72**	**4.93**	**5.12**	**4.81**	**6.71**	**6.58**	**6.82**
Number of Taxa	**9**	**8**	**8**	**11**	**15**	**12**	**20**	**18**	**22**	**25**
Riverfly - species	**4**	**4**	**2**	**2**	**3**	**6**	**6**	**17**	**17**	**26**
Riverfly - numbers	**492**	**608**	**20**	**146**	**720**	**329**	**1643**	**1205**	**1233**	**1019**
CCI	**4.5**	**5**	**1.00**	**1.00**	**3.00**	**3.38**	**7.86**	**8.50**	**14.91**	**13.52**
LIFE	**6.38**	**6.5**	**6.86**	**6.75**	**6.67**	**7.42**	**7.11**	**7.88**	**8.46**	**8.20**
PSI	**9.09**	**19.05**	**28.57**	**14.29**	**39.39**	**62.96**	**48.94**	**75.51**	**84.13**	**77.03**
SPEAR	**33.73**	**42.93**	**15.92**	**34.05**	**33.37**	**39.42**	**31.72**	**60.17**	**51.50**	**65.29**
TRPI						**81.82**	**66.67**	**76.47**	**71.43**	**78.26**
Saprobic	**1.58**	**1.6**	**3.25**	**1.56**	**1.53**	**2.16**	**2.07**	**1.88**	**1.45**	**1.72**

True Flies	Site 1	Site 2	Site 3	Site 4	EA 1	Site 5	EA 2	Site 6	Site 7	Site 8
Chironomidae		6	5			5		85 #	3 #	1
Tanytarsini	20		1932	95			5			0
Tanypodinae			3		100		4		1	1
Simuliidae	6	65	390	17	110	167	100	104	95	6
Antocha										1
Tipulidae		8			1			1		0
Dicranota									3	3
Ceratopogonidae					5		20			
Muscidae					2					
Limoniidae							1			
Orthocladiinae							100			

Alderfly	Site 1	Site 2	Site 3	Site 4	EA 1	Site 5	EA 2	Site 6	Site 7	Site 8
Sialis lutaria							100			

Crustaceans	Site 1	Site 2	Site 3	Site 4	EA 1	Site 5	EA 2	Site 6	Site 7	Site 8
Gammarus pulex	0	0	0	0		96	300	714	727	1206
Asellus aquaticus	0	0	32	3	15	87	50	11	19	1
Niphargidae					15		1			
Unidentified	4	1	0	0						
Ostracoda	0	0	10	0	40		10			

Leeches & Worms	Site 1	Site 2	Site 3	Site 4	EA 1	Site 5	EA 2	Site 6	Site 7	Site 8
Helobdella stagnalis										
Glossiphonia complanata	0	0	4	0	1	0	3	2		
Theromyzon tessulatum										
Erpobdella octoculata	1	0	4	1		16	30	0	3	2
Haplotaxis gordioides										
Helobdella stagnalis										1
Oligochaeta	9	16	0	2	30	0	400			
Planariidae							1			