

South Cumbria Rivers Trust Riverfly Initiative 2017 Report



A project funded by CaBA & Natural Course

Contractor

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Unrestricted

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1. Introduction

South Cumbria Rivers Trust (SCRT) supported by a wide volunteer network, undertake a number of riverfly (invertebrate) surveys as an indicator of water quality. Riverflies spend the majority of their lives in water and are vital components of the food chain, on which fish, birds and mammals depend. The common characteristics amongst riverflies of limited mobility, relatively long life-cycles, presence throughout the year (generally) and specific tolerances to changes in environmental conditions make them good indicators for monitoring water quality. Furthermore, different species of invertebrates demonstrate different tolerances to the various forms of ecological stress and are often amongst the most sensitive aquatic species to pollutant stresses.

The riverfly monitoring initiative, under the national riverfly partnership, was originally designed to engage anglers with the water quality of local rivers. Although, anglers are still a major and valued part of the initiative it now engages a much wider range of volunteers from a variety of different backgrounds across the UK, including here in South Cumbria. Sampling allows volunteers to monitor the health of a local beck, thereby establishing a population baseline and highlighting any deterioration in water quality, it is also a great way to engage with the local area. Any serious declines in water quality are reported to the local hub and Environment Agency for further investigation.

Project Aims:

- 1) Develop a robust scientific evidence base and on-going monitoring programme
- 2) Support the national riverfly programme
- 3) Assess invertebrate populations and water quality to support the catchment plans
- 4) Increase community engagement across South Cumbria
- 5) Provide opportunities for people to increase their knowledge of their local area
- 6) Share data with the Becks to Bay partnership and wider public

2. Methodology

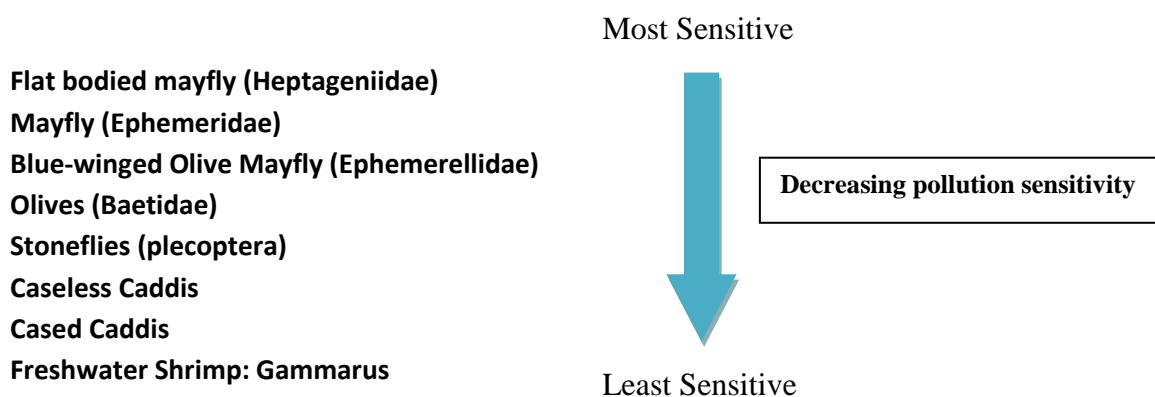
2.1. Site Selection

Existing volunteers continued to survey the same sites contributing to an already established dataset. Any new volunteers were allocated a site to suit them based on their location and the contribution to SCRT's work and monitoring programme. All sites are checked with the Environment Agency (EA) to ensure there is no duplication of EA sampling sites and to co-ordinate with historic sites.

2.2 Sampling Method

Sampling is undertaken monthly between April and September. In South Cumbria, this is restricted to the summer months so as not to disturb spawning fish, for much of the area is protected.

The number of individuals within 8 specific riverfly groups collected in a kick sample are recorded, including Mayflies (*Ephemeroptera*), Caddis-flies (*Trichoptera*) and Stoneflies (*Plecoptera*). The methodology used is the same as the Environment Agency's routine sampling method for invertebrates. It involves a three-minute kick-sample, augmented by a one-minute hand search of the substrate and vegetation. The total sampling time is split proportionally relative to the areas of habitat at the sampling site, i.e. it may be split between pool, riffle and in-river vegetation with relative coverage of each area. This allows comparable samples to be taken over time. However, where the EA will aim to identify all invertebrate families present, the riverfly initiative is focussed around 8 target groups:



These target groups are based on the different tolerances of invertebrate families to pollution, particularly organic pollution, facilitating an assessment of how degraded a river system is and highlighting any specific pollution events.

A relative abundance assessment is made for each of the target groups which then equates to a particular score:

Abundance	Score	Estimated Number
1-9	1	Quick Count
10-99	2	Nearest 10
100-999	3	Nearest 100
Over 1000	4	Nearest 1000

The total score for the site is calculated and compared to a 'trigger level'. Trigger levels are set on a site by site basis but are generally a value of 4 for South Cumbria. They are set to provide an indication of when a watercourse may be failing to meet water quality objectives. However, in the Duddon Valley, in particular, certain becks in the upper catchment where invertebrate populations are stressed by acidic conditions or other natural factors the trigger level may be adjusted. If the total score falls below the trigger level and it is believed that this is due to a pollution event wiping out the invertebrate community then the local co-ordinator is contacted. The local co-ordinator will follow this up by a further sample to confirm the score, before reporting this to the EA as a pollution incident.

Stretches of river with good water quality will contain most of the pollution sensitive invertebrates listed above. However, it must be noted that there are temporal variations and therefore a decline in one species does not necessarily represent a pollution event. For example, Blue Winged Olives (*Ephemerellidae*) are generally only present in late spring and summer.

3. Results

3.1 South Cumbria Overview:

The riverfly programme continues to prove popular with volunteers, with each year seeing new volunteers joining the programme and becoming part of the community. However, we do inevitably lose a few volunteers who have signed up in previous years. The table below shows the number of sites and volunteers engaged with riverfly surveys across the five catchments of South Cumbria, during 2017. Data from 2016 is also provided for comparison.

Table 1. The number of active volunteers, number of sites surveyed and the number of returns received in 2017.

Catchment	No. of Sites	No. of Returns	No. of Volunteers
Bela	1	5	1
Crake	13	57	20
Duddon	21	53	8
Kent	7	31	11
Leven (Inc. River Eea)	3	9	3
Total	45	155	43

Table 2. The number of active volunteers, number of sites surveyed and the number of returns received in 2016.

Catchment	No. of Sites	No. of Returns	No. of Volunteers
Bela	1	7	1
Crake	16	63	26
Duddon	22	55	2 & 2 National Trust Staff *
Kent	11	31	11
Leven (inc. River Eea)	10	19	5
Total	60	175	47

**Note due to the acidic conditions on the Duddon catchment and generally low invertebrate numbers a reduced sampling programme with wider coverage is operated. A total of 33 sites on the Duddon have been agreed and there are a further 4 volunteers trained who due to complications in arranging access permissions with landowners during 2016 will now start their surveys at the beginning of the next season in 2017.*

During 2017 funding was limited, especially in terms of running training sessions, therefore, the recruitment of new volunteers was also limited. However, looking towards the 2018 surveys new funding is being sought for 2018 and a more long-term solution is being discussed, please see 'Next Steps for 2018' for further information. Funding has already been secured for Barrow and Ulverston to engage communities with what's in their local becks. Additionally, SCRT are also looking to expand the scope of training, offering a training package with the aim of increasing interest for new volunteers and retaining engagement with those already signed up to the programme.

Similar to 2016, 2017 has also proved a good year for riverfly, with no breaches of the trigger level attributed to a pollution event. There were, however, two sites on the River Lickle which breached the trigger level at the beginning of August. It was believed this was due to natural background conditions: results prior to the breaches at these sites were frequently around the trigger level of 4. The 'Riverfly plus' scheme may offer more insight into this site; again, this is a scheme we are aiming to introduce in 2018. Furthermore, the number of returns in each catchment was affected by high water levels during 2017 which made it unsafe to survey on several occasions.

A full copy of the results can be found in the appendix. Results can also be accessed directly from the riverfly partnership website: <http://www.riverflies.org/graphs-target-group-abundance>

Additionally, following the registration of a number of volunteers on the National Riverfly Database last year, this year has seen an increasing number of people submitting records directly to the national database. The majority of results were submitted by this method, although a small number are still submitted direct to the trust. It has however, been noted that submitting direct to the national database has lost some of the local communication regarding results which often acted as a reminder to other volunteers to complete their survey; this is something we will aim to address in 2018.

3.2 Historic Comparisons

3.2.1 Coniston and Crake

The Coniston and Crake catchment has one of our longest running riverfly programmes, which is particularly important with the commencement of the delivery phase of Conserving Coniston and Crake this year. A number of the riverfly sites here are at sites proposed for project delivery or sites which have known to have previous issues. Currently the results are positive and the trends are similar to previous years. See appendices for a full copy of the results.

3.2.2 Duddon

There was a greater number of surveys undertaken on the River Lickle this year, results shows that populations were frequently low and the trigger level was breached twice. It is not believed that these breaches were due to pollution events but rather were attributed to background conditions. Therefore, it is felt that more detailed monitoring, such as via 'Riverfly Plus' may be beneficial here and across many sites on the Duddon. Elsewhere in the Duddon catchment results were pretty variable (in line with the background conditions), sites in the upper valley in particular tend to record low scores.

3.2.3 Kent

The Kent Catchment Partnership was established in 2015 with volunteers being trained in 2016, therefore 2017 was the second year of surveying for a number of volunteers. Unfortunately, the number of volunteers continuing to survey declined from the previous year and this will need to be followed up and further work on engagement carried out. However, the riverfly results recorded were still positive and steady: comparable to those in 2016.

4. Catchment Management

Riverfly data provides extensive coverage across the catchments of South Cumbria which is really important in enabling us to monitor water quality over a relatively large area. This can then highlight any areas of potentially lower water quality which SCRT staff and partners may be then be able to follow up or investigate further. Additionally, this can be linked to wider catchment monitoring and projects to build up a more comprehensive picture. This is something which will be developed further in 2018.

5. Next Steps for 2018

2018 looks set to be an exciting year for riverfly. The current programme will continue to grow however, there is also the potential to establish a 'freshwater hub' and wider monitoring/ training programme. This will hopefully involve aspects such as 'riverfly plus' and wider ecological monitoring including algae identification. If you would like to be involved in any aspect please contact our Monitoring officer: Jayne Wilkinson on jayne@scrt.co.uk for more information or to express an interest.

It is also important that we maintain momentum, communication and engagement between and within each of the community catchment partnerships. Whilst also providing results and feedback to the national riverfly database. This will be reviewed in 2018 with new communications channels being established.

A continue development of the existing programme will help to fill in some gaps in monitoring, where there are only a few active volunteers. One such area is Barrow and Ulverston where we have been successful in being awarded funding from Tesco Bags of Help. This will involve training sessions and events days with arts and activities at the beginning of the survey season (i.e. April/May 2018). Please get in touch if you would like to be involved.

If you would like to become a riverfly volunteer in South Cumbria please contact Jayne Wilkinson (jayne@scrt.co.uk) to register your interest.

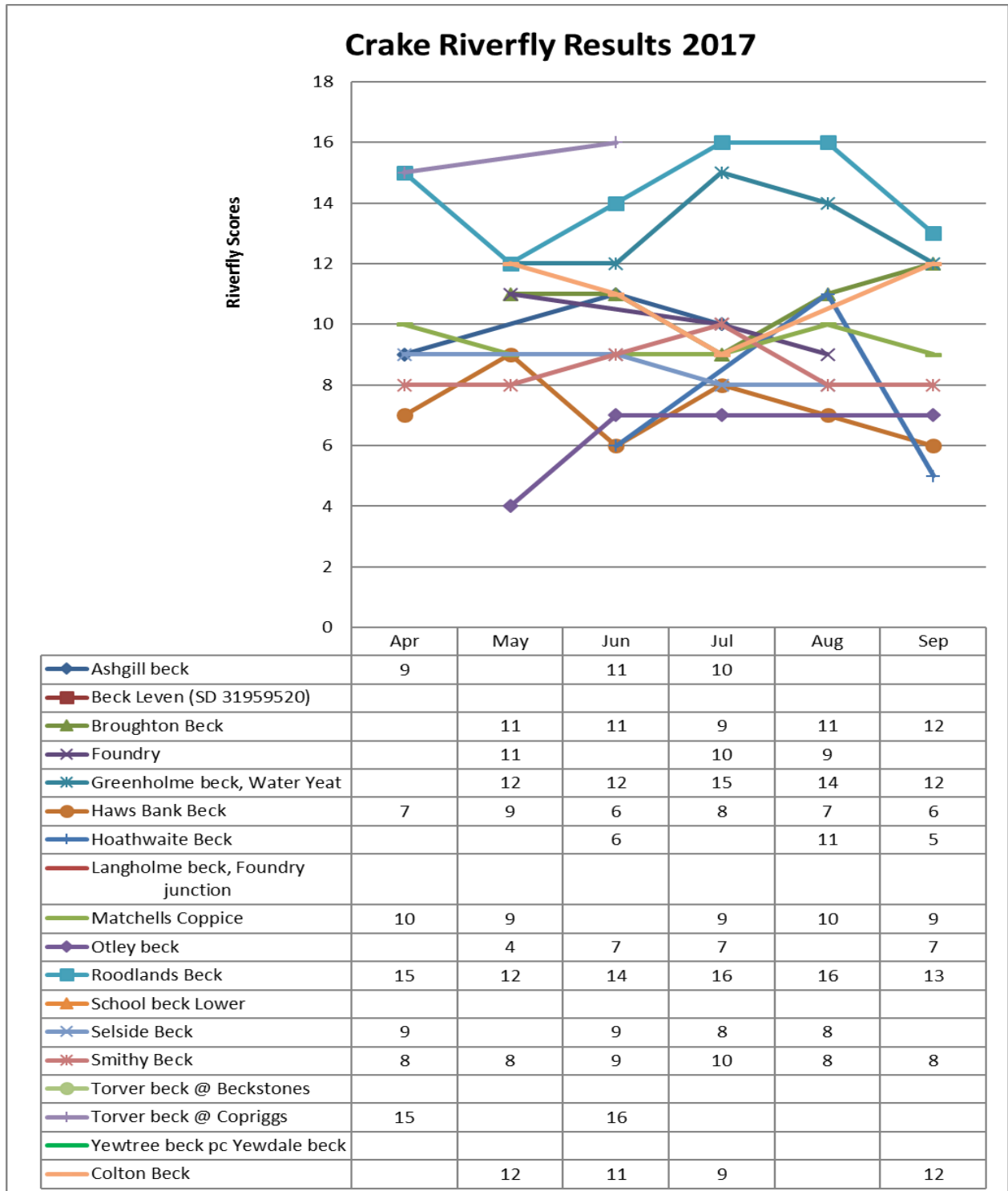
6. Acknowledgements

SCRT would like to thank all the volunteers for their amazing efforts in continuing this important piece of monitoring. It also wouldn't happen without the dedication of Mel Fletcher who kindly runs the training programmes and the Riverfly Partnership for their continued support. Additionally, we would also like to acknowledge Tesco Bags of Help for their very kind award of £2,000 to support riverfly training and events in the Barrow and Ulverston area during 2018.



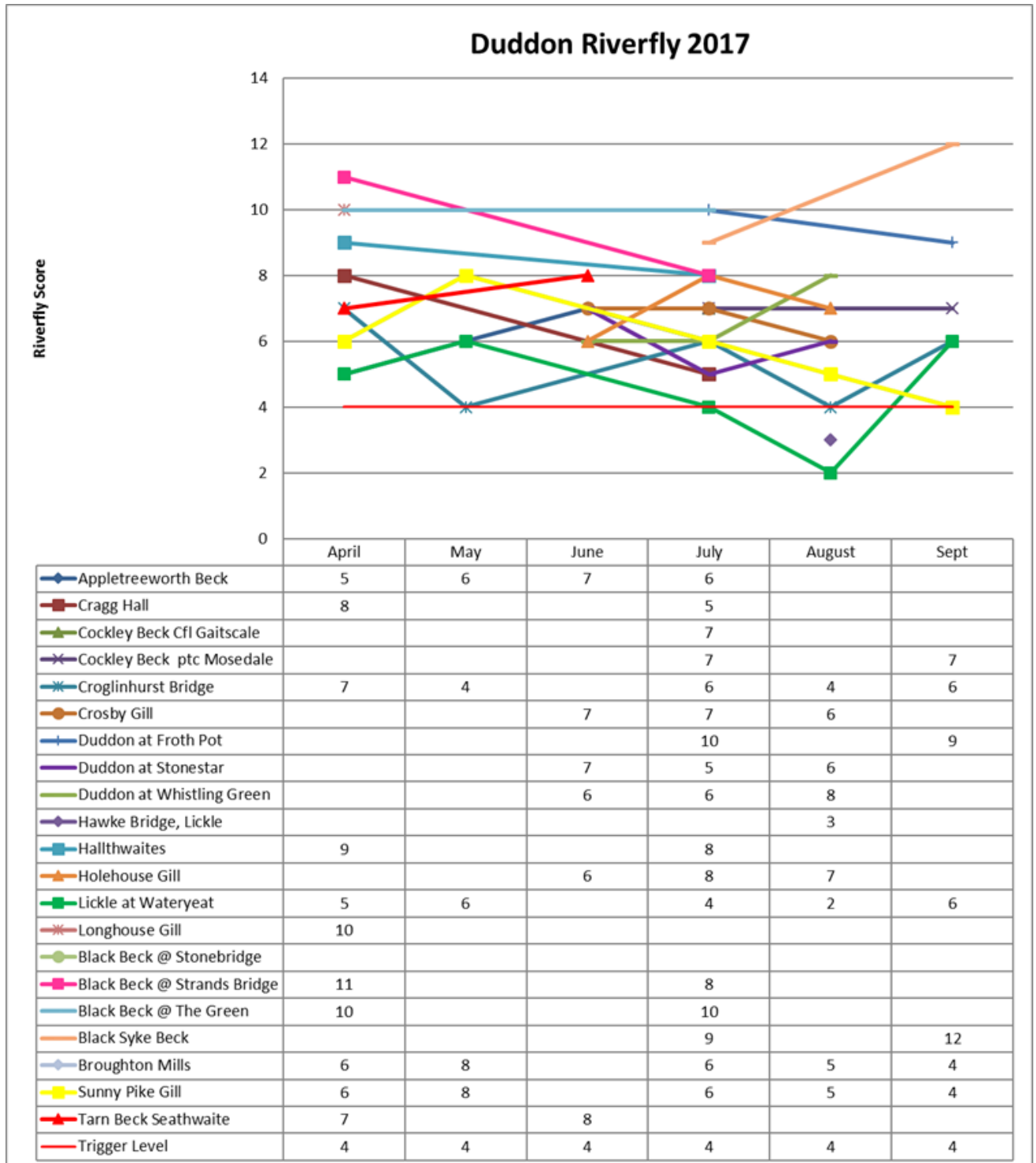
Appendix I

Table of sites and scores for the 2017 riverfly survey season in the Coniston & Crake catchment



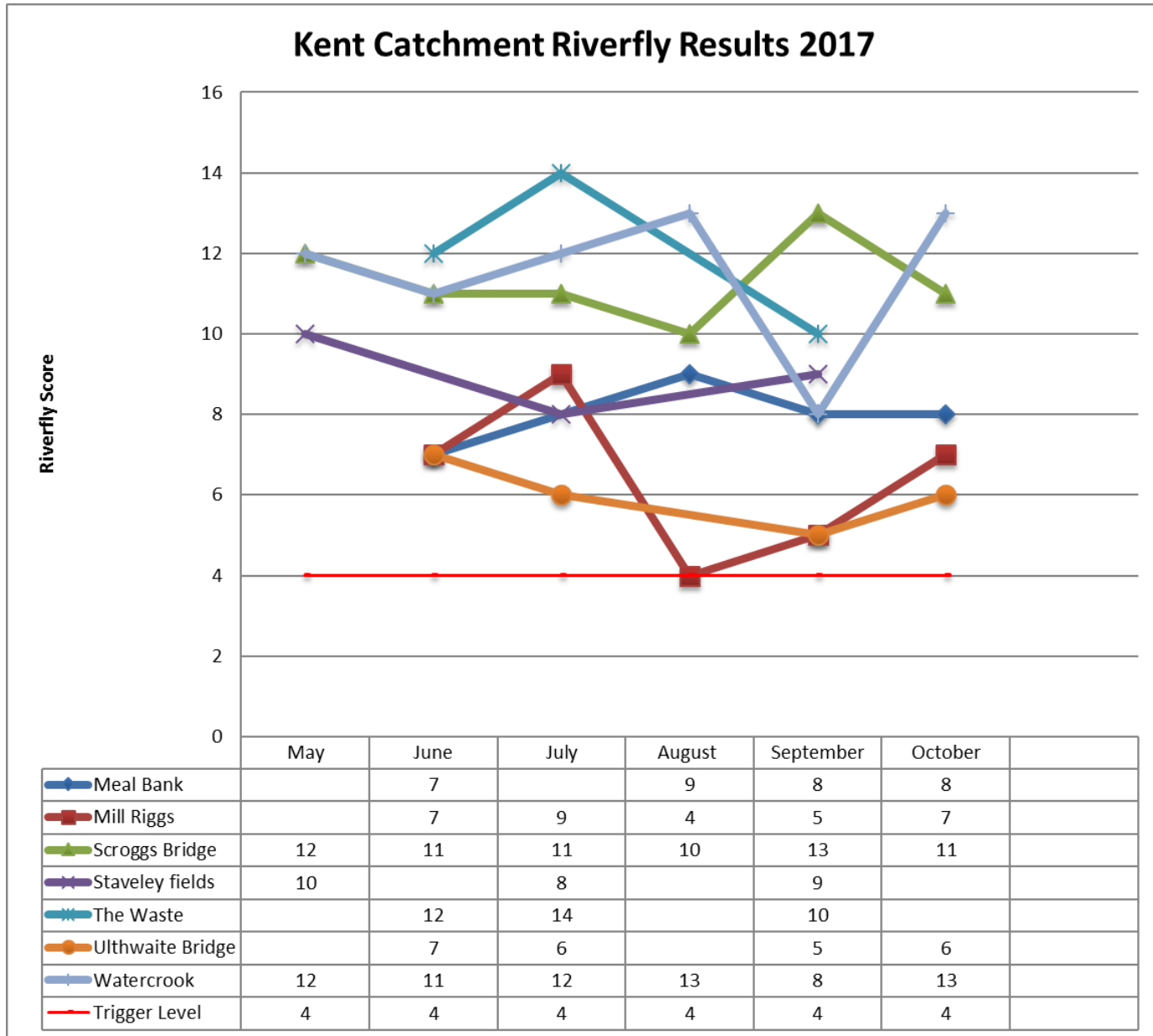
Appendix II

Table of sites and scores for the 2017 riverfly survey season in the Duddon catchment.



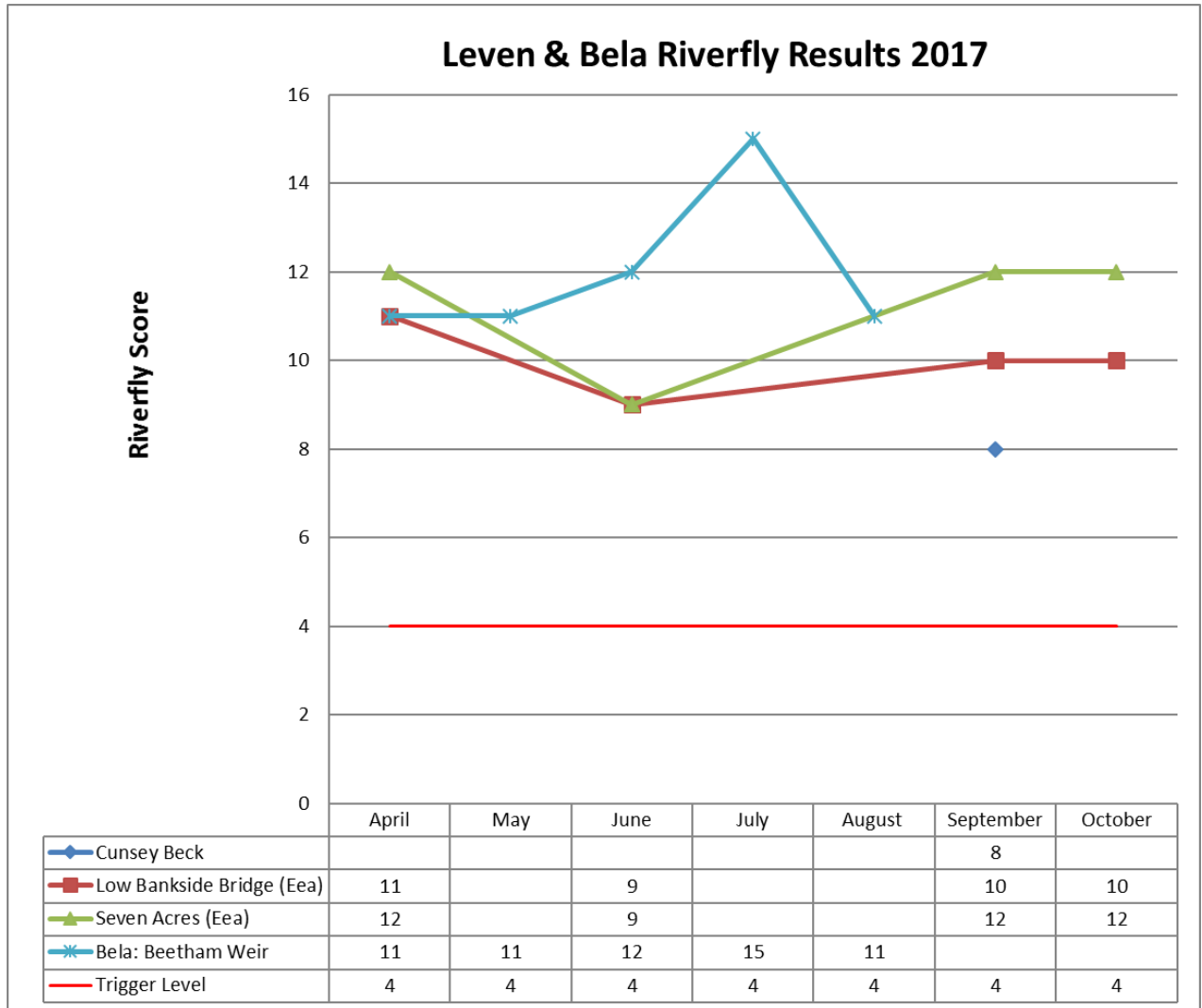
Appendix III

Table of sites and scores for the 2017 riverfly survey season in the Kent catchment



Appendix IV

Table of sites and scores for the 2017 riverfly survey season in the Leven and Bela catchments





South Cumbria Rivers Trust is registered in England and Wales as a company limited by guarantee (Company Registration No: 5763380) and a charity (Charity No: 1114682). We established in 2000 with the aim to protect, conserve and rehabilitate the aquatic environments of South Cumbria.

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