

South Cumbria Rivers Trust Riverfly Initiative 2020 Report



A project funded by the Catchment Based Approach



Contractor

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Unrestricted

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1. Introduction

South Cumbria Rivers Trust (SCRT) run an annual programme of riverfly (invertebrate) surveys as a method for monitoring water quality. Surveys are largely undertaken by volunteers, with SCRT providing training, support and co-ordination. Riverflies spend the majority of their lives in water and are vital components of the aquatic food chain, on which fish, birds and mammals depend. Furthermore, 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. The national riverfly programme, which SCRT operate under, is designed to be easy to follow; it looks at a small sub-set of riverflies to give a general indication of water quality and 'flag' up any serious pollution incidents.

The national riverfly monitoring initiative was originally designed to engage anglers with the water quality in their local rivers. Although, anglers are still a major and valued part of this initiative it has now been running for a number of years engaging a wide range of volunteers from a variety of different backgrounds. This method allows people to monitor the health of a local beck, reporting any serious declines in water quality and aiding SCRT in the continued understanding and engagement of riverine issues across South Cumbria. Any serious declines in water quality recorded as part of the monitoring are reported to the Environment Agency for further investigation.

Project Aims:

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

During 2020 national lockdowns due to the coronavirus pandemic restricted the riverfly programme. No new volunteers were trained in South Cumbria during 2020. Some existing volunteers continued to sample when it was feasible, however, for some this was restricted as it was not possible to share transport and some volunteers were shielding. This report summarises the data which it was feasible to collect in 2020.

2. Methodology

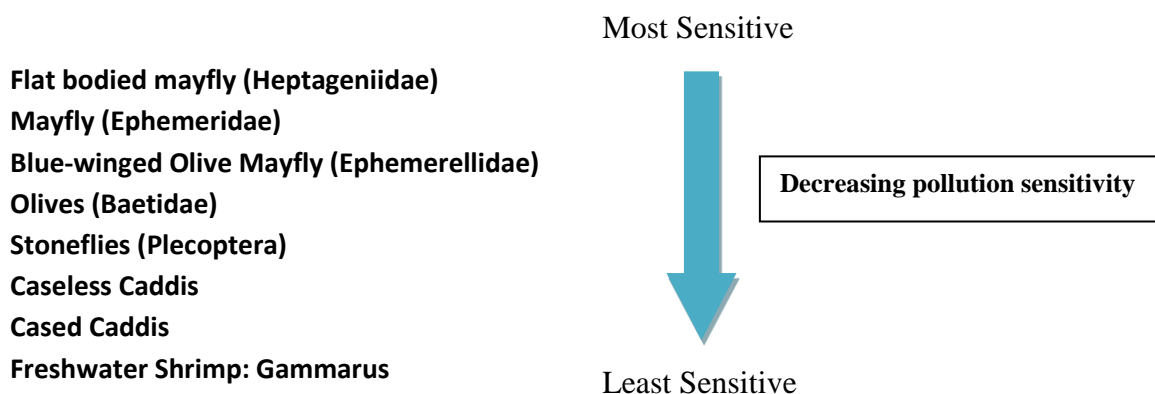
2.1. Site Selection

Due to the national lockdown no new sites were established during 2020. It is hoped that it will be possible to establish new volunteers and new sites in 2021.

2.2 Sampling Method

Sampling is usually undertaken monthly between April and September. However, due to the pandemic this year sampling didn't start until July when government advice permitted people to meet again outdoors, and SCRT staff were back from furlough. Sampling is restricted to summer months because South Cumbria is a particularly important area for migratory fish, and so sampling during only these months minimises disturbance to spawning fish. Water levels and weather conditions are also generally better during the summer months, meaning it is safer for volunteers to survey.

The sampling method involves a three-minute kick-sample, augmented by a one-minute hand search. The total sampling time is split proportionally across the areas of habitat at the sampling site, i.e. it may be split between pool, riffle and vegetation with relative coverage of each area. This methodology is the same as the Environment Agency use in their routine sampling for invertebrates. However, where the Environment Agency will aim to identify all invertebrate families present and to a higher degree, the riverfly initiative solely focusses on 8 broad target groups, as below.



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 across the UK.

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 by the Environment Agency on a site by site basis but are generally a value of 4 for South Cumbria. When a site records a total score of less than the trigger level this gives an indication that the site may be failing to meet water quality objectives and may have been subject to a pollution event. If the trigger level is breached this is initially reported to SCRT as the local riverfly hub, SCRT will then check if this is as the result of a pollution incident or another factor such as an error in sampling. If it is believed that the breach is due to a pollution event, it is reported through the designated protocol to the Environment Agency. The riverfly initiative is recognised as a standard citizen science monitoring scheme for assessing water quality and has been used by the EA in pollution incident follow ups.

A trigger level is set because there are temporal variations in riverfly populations; the riverfly groups listed above all have different life cycles with all but freshwater shrimp having a non-aquatic adult phase. Therefore, a decline in one species does not necessarily represent a pollution event however, a dramatic decline in all species, and therefore the biodiversity of a site, may be indicative of a pollution event. With continued monitoring volunteers begin to get to know their site and can often observe any changes in the health of the system just by a visual assessment.

3. Events & Training

Riverfly training and a refresher training session for existing volunteers was planned for April 2020, however, due to the coronavirus pandemic no training was undertaken during 2020. If the situation allows training will re-commence in April/ May 2021.

4. Results

4.1 South Cumbria Overview:

During 2020 32 riverfly records were submitted for South Cumbria, however, there were no results submitted for the Duddon or Leven catchments; the majority of records were in the Crake catchment. Six sites were surveyed within the Crake catchment with 15 records

submitted for the month between July and September (Table 1). It is difficult to compare the number of active volunteers to see if people are still engaged with the programme, because for a number of people it hasn't been feasible to sample during 2020. Renewed effort and support will be required to keep existing volunteers engaged for 2021 (if sampling is feasible). Table 2 shows the figures for the previous year when restrictions weren't in place, suggesting records from this year are roughly a third of what would be expected in a 'normal' year, with less than half of volunteers being able to undertake sampling.

Table 1. Summary of active volunteers and surveys undertaken in 2020

Catchment	No. of Sites	No. of Returns	No. of Active Volunteers
Bela	1	3	1
Crake	7	15	7
Duddon (inc. River Lickle)	0	0	0
Kent	3	5	4
Leven (inc. Rusland, Newlands & Gleaston)	0	0	0
Minor Catchments (inc. River Eea, Rusland, Newlands & Gleaston)	3	10	4
Total	13	32	14

Table 2. Summary of active volunteers and surveys undertaken in 2019

Catchment	No. of Sites	No. of Returns	No. of Active Volunteers
Bela	1	7	1
Crake	15	62	14
Duddon (inc. River Lickle)	10	25	5
Kent	7	28	10
Leven (inc. Rusland, Newlands & Gleaston)	0	0	0
Minor Catchments (inc. River Eea, Rusland, Newlands & Gleaston)	6	23	6
Total	39	145	36

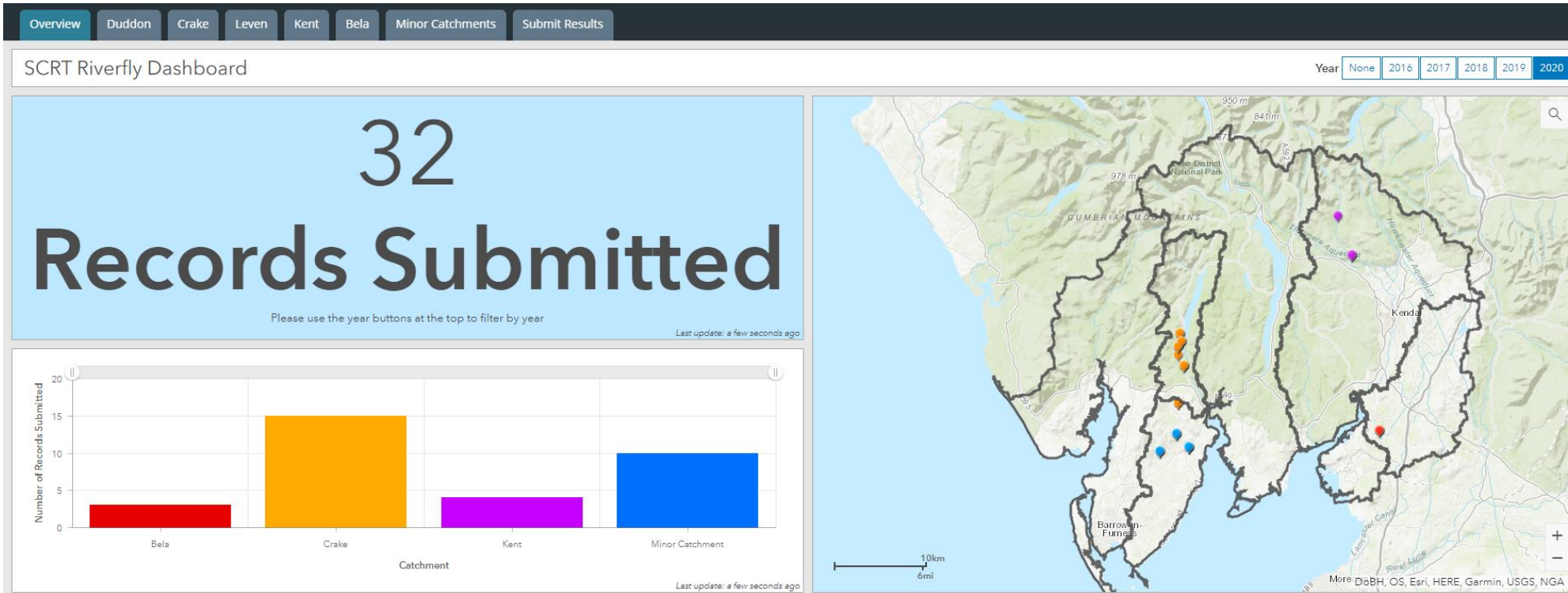


Figure 1. Screenshot showing the overview tab for 2020 on the riverfly dashboard for South Cumbria.

4.2 General observations

Two sites (on Broughton Beck and Crake Valley Park) failed to reach the trigger level of 4. For both sites it was believed that factors affecting the ease of sampling contributed to this, such as low water levels and excess plant growth. However, Crake Valley Park has also suffered from poor water quality related to a septic tank. This site also breached the trigger level in 2019, and the Environment Agency have put in place some regulatory measures.

In June most sites recorded very low to no water, by August these were 'high' or 'normal'. Note samples are skewed towards normal water levels as high-water levels make it unsafe to sample, conversely volunteers are asked to record when low water makes it hard to sample as this helps to build a picture about how drought conditions may be affecting these becks.

4.3 Coniston and Crake

This was the final year of the delivery phase for the Conserving Coniston and Crake project. It was therefore a shame that lockdowns restricted volunteer engagement with the project and sampling, however, it is hoped that riverfly sampling will continue into the future. Despite this, several volunteers were still active within the Crake catchment.

During June, Smithy beck recorded no water suggesting this beck is susceptible to drought and could benefit climate resilience measures. This beck was only surveyed once so it is difficult to tell how quickly the population of riverfly recovered. One site breached the trigger level, this site also breached the trigger level during 2019, however, low water levels are likely to have confounded the issue and sampling may not be fully representative. It should also be noted that the caravan park which had previously caused issues was unlikely to be open for periods of time during the sampling, no samples were taken once lockdown restrictions were eased and visitors could once again return to caravan sites. Data from 2021 will be important to understand if any recovery of the site can be observed.

4.4 Duddon

No surveys were undertaken in the Duddon Valley during 2020. Additionally, a couple of riverfly volunteers are leaving the area in 2021, there is therefore an opportunity to engage new volunteers to continue sampling these sites. During 2020 SCRT started a project working in this valley (funded by United Utilities), this will help to engage local landowners and communities who may support the riverfly programme, which in turn can provide useful information to the project. Therefore, this will be an area of focus for 2021.

4.5 Kent

Only a few sites were monitored in the Kent catchment during 2020, this catchment would really benefit from a push and extra support in 2021. 5 records were submitted in total. Although the record for Mill Riggs in July recorded no riverflies as the beck was dry. The other sites consistently reported riverfly scores above the trigger level. Some difficulties were also experienced with changes in landowners meaning some sites had to be slightly altered in terms of location; it is hoped the landowner may be supportive of a return to the 'usual' site in 2021.

4.6 Leven

No sites were surveyed in the Leven catchment in 2020 and this has long been a gap for SCRT. Again, the coronavirus pandemic restricted any progress being made with this, however, it is hoped that more progress can be made in 2021. Furthermore, during 2020 SCRT were successful in securing initial funding for a 'Water is Life' project focusing on water quality at a catchment scale. Through this project and an increased presence in the catchment there may be more opportunities for engaging local communities with volunteering.

4.7 Minor Catchments

During 2019, a number of new sites were established in 'minor catchments' and many of these have continued to be monitored through 2020. This includes sites in Ulverston and near Pennington. These sites are areas which will support project work by SCRT; SCRT have recently been funded to establish some projects in the Furness peninsula, scoping opportunities for future delivery. Issues, including the presence of sewage fungus, have been noted at Gill Bank beck in Ulverston, last year riverfly results for this beck fell below the trigger level on a couple of occasions, however, during 2021 all records were above the trigger level. This could be related to weather and other factors as issues were still observed with the water quality in the beck. The Environment Agency and Catchment Sensitive Farming are aware of and investigating the issues affecting this beck. Similarly, issues have been noted on Pennington beck in the past, however, no broad declines in water quality have been observed in 2020.

5. Challenges

5.1 Coronavirus

As noted above the riverfly programme was affected by the coronavirus pandemic and lockdown regulations. Some volunteers were shielding and unable to undertake sampling through out the season, others were unable to share transport to site and a few really valued

the chance to get out and contribute to a programme. Therefore, this year the programme was flexible and volunteers were advised only to sample if they felt they could safely and comfortably do so. It is likely that during 2021 there may still be some restrictions in place affecting recruiting new volunteers and supporting existing volunteers; this will be reviewed throughout the year.

5.2 Weather

Weather can have a big impact on riverfly surveys, particularly as it effects water levels, both high and low water levels can mean surveys aren't representative and high levels can also mean the river/ beck is unsafe to access. Early in the season water levels were generally quite low (and in some cases 'no water' was recorded), however, due to lockdown the programme didn't start until July this year and by this point water levels had generally returned to normal or were high. On some smaller becks, water levels were low to non-existent early in the season. Comparatively, during August and September water levels were high, in some cases preventing sampling. No records were recorded during very high flows; volunteers are advised not to sample during high flows due to safety reasons and because results are not likely to be representative. Figure 2, shows the number of occasions a survey was undertaken at certain water level conditions.

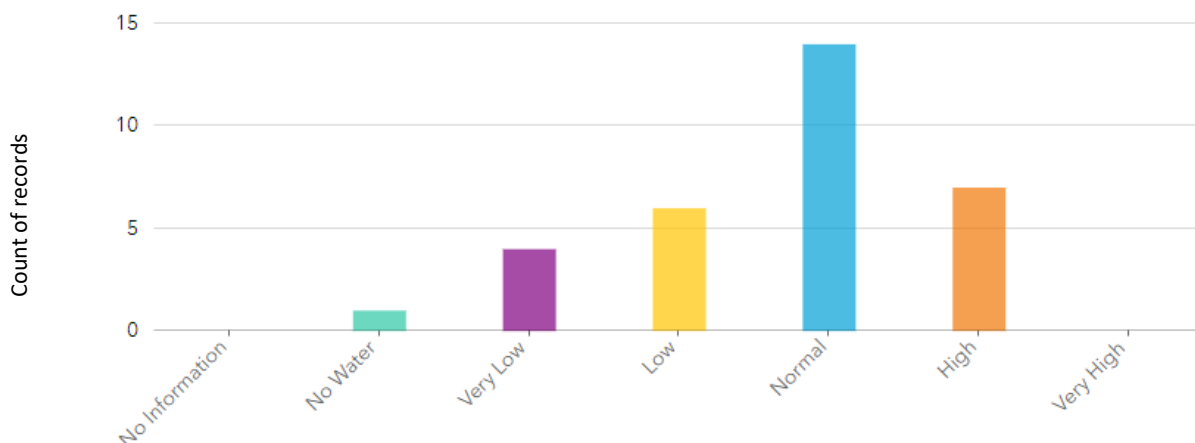


Figure 2. Water level information for 2020 submitted as part of the riverfly records to the SCRT riverfly dashboard

5.3 Riverfly Database

During 2019 difficulties continued to be experienced with the national riverfly database, therefore a riverfly dashboard was established and hosted by SCRT. This continues to be utilised and no issues have been noted during 2020.

5.4 Funding

Funding on-going monitoring is always a challenge. In previous years funding has been sought to support the riverfly programme, however, this hasn't always been successful. In general funders are looking for new techniques with on-the ground outputs. However, the riverfly programme is very valuable as a long-term dataset and engagement tool. Currently, funding is taken from project pots where possible and further supported by the catchment-based approach. As no training was undertaken in 2020, funding required was minimal; it is hoped that training will be feasible in 2021 and this will require some level of funding. Under the Catchment Based Approach a proposal is being outlined to establish a monitoring co-operative, if successful this would help support the riverfly surveys and other citizen science monitoring programmes run by SCRT.

6. Catchment Management

Riverfly data provides extensive coverage across the catchments of South Cumbria enabling water quality to be monitored over a relatively large area. Without the help of volunteers, it would not be possible for SCRT to cover such an extensive area. Reports from riverfly surveys help SCRT build a better picture of the catchments which can inform future project work and catchment management.

7. Next Steps for 2021

Coronavirus and lockdown regulations permitting it is hoped that during 2021 more support can be offered to existing volunteers. There were also several people who had expressed an interest in becoming a riverfly volunteer during 2020, however, lockdown prevented any training events from occurring. If feasible SCRT aim to offer more support to the programme and new opportunities for volunteers to engage with the programme. Additionally, through the Rivers Trust and in partnership with other catchment and coastal partnerships around Morecambe Bay we are looking to apply for funding to support a volunteer campaign to re-engage existing volunteers and encourage new volunteers to participate.

8. Acknowledgements

SCRT would like to thank all the volunteers who have participated in the riverfly programme during 2020, without whom we wouldn't be able to undertake this important piece of monitoring. We would also like to acknowledge all those who have been unable to participate this year but whom have continued to offer support in various forms. Thanks also go to Mel Fletcher as riverfly tutor who although we have been unable to run any training session during 2020 is always supportive of the programme and our volunteers. Similarly, thanks to Daniel Atkinson at the Environment Agency who is always supportive in the establishment of sites

and in following up any trigger breaches if they arise. Finally, thanks must go to all the landowners who kindly allow access to their land to undertake these surveys.





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). The Trust established with the aim to protect, conserve, and rehabilitate the aquatic environments of South Cumbria.

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