

Synagapetus dubitans

2012 Study Results



By Stuart M Crofts



SYNAGAPETUS DUBITANS - 2012 Study Report

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Background

The British Glossomatidae contains six species, equally split between the genera *Glossosoma* and *Agapetus*. The examination of adults I collected from North Yorkshire during 2010 revealed that an additional species, *Synagapetus dubitans*, from the closely related *Synagapetus* genus, also occurs in Britain.

During 2011 other sites were identified as having populations of *Synagapetus dubitans* in the North Yorkshire area of Great Britain and a record of the co-occurring Trichoptera species was begun. I published a full report of all my findings from this study at the end of 2011 (available by request from the author).

Adults of *Synagapetus dubitans* are separable from other species using a key to the European species by Hans Malicky (2004). But, the details given by Mosely (1935) and later by Vaillant (1967) are much more specific. Information can also be found in; *The Adult Trichoptera of Britain and Ireland* by Barnard & Ross (2012). The larvae are separable using the PhD Thesis of Thomas Pitsch (1993).

Introduction

The work I did searching for new sites where *Synagapetus dubitans* could be found in 2011 came up with some intriguing results and I began to get a feeling that I was starting to recognise certain features at a site that may well go on to contain this species. It made sense to expand this search and study into 2012 and try to quantify some of the physical features of the habitats where *S. dubitans* could be found.

My exploration of potential new sites always begins with looking at maps, both the normal land surface maps and geological survey maps. From these I can get an inkling if a spring or stream in a particular area is likely to be a “calcium depositing spring”. Thus far this characteristic appears to be a prerequisite for the species to be present. The other requirement is that the spring is permanent and flowing in every month of the year. However, and very obviously, not all the calcium depositing, permanent springs and streams in the UK has *S. dubitans* present, so there is still much to discover on its other requirements.

On the charts of *Appendix 1* can be found the results of my expeditions in 2012. Most of these visits have been solo trips but some have been in the company of Andrew Dixon, my friend and fellow Trichoptera enthusiast from Cumbria. Some samples have also been collected by David Southall, another good friend from East Yorkshire. Each record has the dates, locations and names of those involved. Also on the charts if you see the NGR is in [blue](#) text then there is a photograph of that site in *Appendix 2*.

A huge concern that I mentioned in the 2011 report was how delicate these depositing springs and stream actually are. This was highlighted in dramatic style in the summer of 2012 when major forestry work was carried out in Nutwith Cote wood, the site of the very first discovery of *Synagapetus dubitans* in 2010. When I realised this work was about to start I immediately contacted the landowner and arranged a site meeting with the

manager in charge of the forestry work. He had no idea the site was so special. After explaining the situation he agreed not to run any of the large forestry machines through the middle of the site or fell trees onto the spring itself that, when dragged out, would certainly cause a lot of damage to the delicate soft tufa type deposits and mosses that are found in the area immediately adjacent to the spring. However, he still had to get the machines on to the site but did so by crossing the spring at its very lowest point just before it reaches the main river and thus keep any damage to an absolute minimum. The work is now largely complete, it has changed the spring to some degree especially with regard to the over-shading which has been largely removed. The full impact on the ecology of the spring is still unknown and only time will tell the full story. More than anything this was a wakeup call that habitats such as these are just not recorded or protected in any way and it was just by luck, and the sympathetic ear of the land owner, that stopped this site from devastation. Additionally, if I had not spotted the potential problem and damage had occurred to this site it would not have been through malice or intent but because it is just not obvious, to the casual observer (or forester!), that this is such a special habitat. And, when you see the size of the modern forestry machines you can see they can do a lot of damage in a very short time.

Methods

Three sampling methods were employed to collect the specimens:

1. Larvae and pupae collecting

Targeting cased caddis from the Glossosomatidae family is a relatively easy task as they are easy to find in these small springs and streams. Those that can be picked off the stones and other structures easily are the active larvae, those that are more reluctant to come from their chosen location are often in the pupae stage.

2. Adult Collecting with a sweep net

For a sweep net I use a standard triangular folding type (frame size 450mm x 400mm x 450mm) and work through the vegetation close to the springs and streams. The samples caught are then collected from the net with a pooter. The main problems with sweep netting for the adults are associated with weather conditions. If it is wet and/or windy the adults are often in shelter and not picked up by the net. In addition, in the rain, trying to judge what are the small wet caddisflies in a net with dozens of other small wet insects is never an easy task.

3. Adult Collecting with a light trap

For light trapping I use either a light weight battery powered lantern (7w U-type energy saving lamp) or a portable rigid moth trap with an 8w actinic tube. If I use the lantern it is positioned in the middle of a two metre square white sheet so that any caddis coming close to the light can be easily seen and caught. Light trapping is always interesting but

the lights can, and often do, bring in caddis from quite far away. Subsequently, light trapping has its good points and its bad points, just like any other sampling method.

Whatever method of collection is used the locations of all the sampling areas are recorded using the UK National Grid Reference system (NGR) and are taken with a Garmin GPS receiver or taken directly from Ordnance Survey maps.

Discussion

On the charts in *Appendix 1* I have highlighted, in yellow, all the *S. dubitans* records to make them easier to find. Looking at the charts it can be seen that the larvae of *S. dubitans* were indeed present at a good number of the sites visited. In every case so far they have always found in the presence of the very common *Agapetus fuscipes* (although you will see on the records for the 8th of August 2012 I did not record *A. fuscipes* from the Hackfall stream, nevertheless I have recorded them from that location in past studies). Furthermore, having checked numerous larval samples since 2010 I can report that, up to now (I still have not checked larvae in every month of the year), I cannot find any definable, consistent, difference between the larvae cases of *S. dubitans* and those of *A. fuscipes* and only by checking the larvae inside the cases I have been able to confirm identifications. As well as the larval records it can also be seen that pupae and adults stages were also collected in 2012 for both *S. dubitans* and *A. fuscipes*. Another observation is that in general whether I have found larvae, pupae or adults at any particular site they are always in lower numbers than *A. fuscipes*.

As an added bonus of the study, as in 2011, it can be seen from the charts that other interesting records of adult caddisflies were collected during the survey work; *Plectrocnemia brevis*, for example. It also became evident again (as in 2011) that some of the sites visited although interesting and having populations of *A. fuscipes* turned out to show no evidence of *S. dubitans* being present. There were also some sites where I found no caddis species at all, this was either because of water quality problems or that they were just very temporary springs and only became evident at all due to the unusually wet summer of 2012.

Looking ahead it would be nice to locate other springs and streams in the UK that have populations of *S. dubitans*. The larval stage is the most obvious to lookout for, it is easy to collect and available for most of the year. Although it is not that difficult to identify in its latter larval instar stages there is a need for a simple description or key so you can discern it from the more common and widespread *A. fuscipes*. I am already doing some work on this and hope to publish my opinions on this soon. It is the same with the pupae stage, which are again very easy to find and collect. I am also excited to report that I believe I have found a way to identify the presence of *S. dubitans* from just what is left behind in pupal chambers long after the adults have emerged. I still have some work to complete on this but do hope to publish this information soon. And, there is more good news; for the adult stage, as well as the European references, we now have a newly published work; *The Adult Trichoptera (caddisflies) of Britain and Ireland* by Dr. Peter Barnard and Emma Ross (ISBN 978-0-901546-94-4), this is a very useful reference.

I hope to carry on my studies during 2013 not just in searching of more populations of *S. dubitans* but also doing additional studies on its lifecycle and the habitats where it is found.

Stuart M Crofts, February 2013

Acknowledgments

I would like to thank Dr. Ian Wallace, Craig Macadam, the staff at the Freshwater Biological Association and Riverfly Partnership for their valued support and ideas on how to progress further studies on the habits and distribution of *S. dubitans* in Britain. Also, my good friends Mr. Andrew Dixon and Mr. David Southall who have both helped with the some of the collecting and identifications of the caddis samples that all contribute to this report.

References

- Barnard, P & Ross, E.** 2012. The adult Trichoptera of Britain and Ireland, FSC Publications: 35
- Crofts, S. M.** (2012) *Synagapetus dubitans*, a caddisfly new to Britain. FBA News 56: 10-11
- Crofts, S. M.** (2012) *Synagapetus dubitans*, a caddisfly new to Britain. Unpublished, 14p
- Malicky, H.** 2004. Atlas of European Trichoptera (2nd ed.), Springer, Netherlands: 36, 42 & 48.
- McLachlan, R.** 1874 – 1880. A monographic revision and synopsis of the Trichoptera of the European fauna: 484-5.
- Mosely, M.E.** 1935. The genus *Synagapetus* McLachlan (Trichoptera). Annals and Magazine of Natural History, Ser. 10, **16**: 304-313.
- Pitsch, T.** 1993. Zur Larvaltaxonomie, Faunistik und Ökologie mitteleuropäischer Fließwasser-Köcherfliegen (Insecta: Trichoptera).
- Vaillant, F.** 1967. Quelques Trichoptères des Alpes et du Massif Central. Travaux du Laboratoire d'Hydrobiologie et de Pisciculture de l'Université de Grenoble 57-58: 37-50.

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Appendix 1

Forge Valley area in North Yorkshire January 28 2012
Collecting by Dave Southall and Identifications by Stuart Crofts

Genus	Species	Location	NGR	Altitude in feet above sea level	Samples taken	Larvae (L) Pupae (P) Adult (A)	♂	♀	Capture Method	Brief Notes (when taken)
<i>Agapetus</i>	<i>fuscipes</i>	Scarwell springs, Forge Valley, N. Yorks	SE982874	N/R	7	L	N/A	N/A	AH	larave of various sizes
<i>Agapetus</i>	<i>fuscipes</i>	Cowsmouth spring, Forge Valley, N. Yorks	SE983873	N/R	23	L	N/A	N/A	AH	larave of various sizes

Nutwith Cote in North Yorkshire March 28 2012

Collecting and Identifications by Stuart Crofts

Genus	Species	Location	NGR	Altitude in feet above sea level	Samples taken	Larvae (L) Pupae (P) Adult (A)	♂	♀	Capture Method	Brief Notes (when taken)
<i>Agapetus</i>	<i>fuscipes</i>	Nutwith Cote, woodland spring, N. Yorks	SE234783	N/R	5	L	N/A	N/A	AH	larave of various sizes
<i>Synagapetus</i>	<i>dubitans</i>	Nutwith Cote, woodland spring, N. Yorks	SE234783	N/R	2	L	N/A	N/A	AH	larave of various sizes
<i>Wormaldia</i>	<i>occipitalis</i>	Nutwith Cote, woodland spring, N. Yorks	SE234783	N/R	4	A	4	0	SN	

Rievaulx area (Ashberry Wood) in North Yorkshire April 16 2012

Collecting and Identifications by Stuart Crofts

Genus	Species	Location	NGR	Altitude in feet above sea level	Samples taken	Larvae (L) Pupae (P) Adult (A)	♂	♀	Capture Method	Brief Notes (when taken)
<i>Agapetus</i>	<i>fuscipes</i>	Mirefalls, Ashberry Wood Nature Reserve	SE5678684561	227	2	P	0	2	AH	Almost ready to emerge
<i>Agapetus</i>	<i>fuscipes</i>	Mirefalls, Ashberry Wood Nature Reserve	SE5678684561	227	4	L	N/A	N/A	AH	
<i>Rhyacophila</i>	<i>dorsalis</i>	Mirefalls, Ashberry Wood Nature Reserve	SE5678684561	227	1	L	N/A	N/A	AH	
<i>Agapetus</i>	<i>fuscipes</i>	Spring flowing into Mirefalls, Ashberry Wood N.R.	SE5675184592	269	9	L	N/A	N/A	AH	
<i>Synagapetus</i>	<i>dubitans</i>	Spring flowing into Mirefalls, Ashberry Wood N.R.	SE5675184592	269	6	L	N/A	N/A	AH	
<i>Agapetus</i>	<i>fuscipes</i>	Spring flowing into Mirefalls, Ashberry Wood N.R.	SE5679484845	266	2	P	N/A	N/A	AH	Just starting to pupate
<i>Agapetus</i>	<i>fuscipes</i>	Spring flowing into Mirefalls, Ashberry Wood N.R.	SE5679484845	266	9	L	N/A	N/A	AH	
<i>Agapetus</i>	<i>fuscipes</i>	Upper area of Mirefalls, Ashberry Wood N.R.	SE5613885485	168	1	P	1	0	AH	Almost ready to emerge
<i>Agapetus</i>	<i>fuscipes</i>	Upper area of Mirefalls, Ashberry Wood N.R.	SE5613885485	168	17	L	N/A	N/A	AH	
<i>Plectrocnemia</i>	<i>conspersa</i>	Upper area of Mirefalls, Ashberry Wood N.R.	SE5613885485	168	1	L	N/A	N/A	AH	
<i>Synagapetus</i>	<i>dubitans</i>	Upper area of Mirefalls, Ashberry Wood N.R.	SE5613885485	168	3	L	N/A	N/A	AH	
<i>Agapetus</i>	<i>fuscipes</i>	Spring flowing into Mirefalls, Ashberry Wood N.R.	SE5672184549	317	1	P	N/A	N/A	AH	Just starting to pupate
<i>Agapetus</i>	<i>fuscipes</i>	Spring flowing into Mirefalls, Ashberry Wood N.R.	SE5672184549	317	24	L	N/A	N/A	AH	
<i>Synagapetus</i>	<i>dubitans</i>	Spring flowing into Mirefalls, Ashberry Wood N.R.	SE5672184549	318	4	L	N/A	N/A	AH	

Mickley area in North Yorkshire June 01 2012

Collecting and Identifications by Stuart Crofts

Genus	Species	Location	NGR	Altitude in feet above sea level	Samples taken	Larvae (L) Pupae (P) Adult (A)	♂	♀	Capture Method	Brief Notes (when taken)
<i>Plectrocnemia</i>	<i>brevis</i>	Dropping Well spring, Mickley Wood, N. Yorks	SE2421877120	174	1	A	1	0	SN	
<i>Wormaldia</i>	<i>occipitalis</i>	Dropping Well spring, Mickley Wood, N. Yorks	SE2421877120	174	1	A	1	0	SN	
<i>Agapetus</i>	<i>fuscipes</i>	Small sping in Mickley Barras, N. Yorks	SE2461876744	271	6	P	N/A	N/A	AH	
<i>Agapetus</i>	<i>fuscipes</i>	Small sping in Mickley Barras, N. Yorks	SE2461876744	271	2	L	N/A	N/A	AH	
<i>Synagapetus</i>	<i>dubitans</i>	Small sping in Mickley Barras, N. Yorks	SE2461876744	271	7	L	N/A	N/A	AH	
<i>Wormaldia</i>	<i>occipitalis</i>	Small sping in Mickley Barras, N. Yorks	SE2461876744	271	7	A	6	1	SN	
<i>Agapetus</i>	<i>fuscipes</i>	Triple Springs area, Mickley Wood, N. Yorks	SE2463476737	235	1	A	0	1	SN	
<i>Lepidostoma</i>	<i>basale</i>	Triple Springs area, Mickley Wood, N. Yorks	SE2463476737	235	6	A	5	1	SN	
<i>Limnephilus</i>	<i>auricula</i>	Triple Springs area, Mickley Wood, N. Yorks	SE2463476737	235	1	A	0	1	SN	
<i>Wormaldia</i>	<i>occipitalis</i>	Triple Springs area, Mickley Wood, N. Yorks	SE2463476737	235	2	A	2	0	SN	
<i>Stenophylax</i>	<i>permistus</i>	Triple Springs(near path), Mickley Wood, N. Yorks	SE2468276664	N/R	1	A	1	0	SN	
<i>Wormaldia</i>	<i>occipitalis</i>	Triple Springs(near path), Mickley Wood, N. Yorks	SE2468276664	N/R	1	A	1	0	SN	

Nutwith Cote in North Yorkshire August 04 2012

Collecting and Identifications by Stuart Crofts

Genus	Species	Location	NGR	Altitude in feet above sea level	Samples taken	Larvae (L) Pupae (P) Adult (A)	♂	♀	Capture Method	Brief Notes (when taken)
<i>Agapetus</i>	<i>fuscipes</i>	Nutwith Cote, woodland spring, N. Yorks	SE2338978291	N/R	4	A	4	0	SN	These were the last samples taken at this spring site before major forestry clearance work started very close to the spring. The effect of this work is still unknown and only time will tell.
<i>Beraea</i>	<i>maurus</i>	Nutwith Cote, woodland spring, N. Yorks	SE2338978291	N/R	2	A	1	1	SN	
<i>Crunoecia</i>	<i>irrorata</i>	Nutwith Cote, woodland spring, N. Yorks	SE2338078272	N/R	1	A	0	1	SN	
<i>Lepidostoma</i>	<i>hirtum</i>	Nutwith Cote, woodland spring, N. Yorks	SE2338078272	N/R	1	A	0	1	SN	
<i>Psychomyia</i>	<i>pusilla</i>	Nutwith Cote, woodland spring, N. Yorks	SE2338978291	N/R	1	A	1	0	SN	
<i>Synagapetus</i>	<i>dubitans</i>	Nutwith Cote, woodland spring, N. Yorks	SE2338078272	N/R	3	A	1	2	SN	
<i>Wormaldia</i>	<i>occipitalis</i>	Nutwith Cote, woodland spring, N. Yorks	SE2338078272	N/R	4	A	3	1	SN	

North Yorkshire August 08 2012
Collecting and Identifications by Stuart Crofts and Andrew Dixon

Genus	Species	Location	NGR	Altitude in feet above sea level	Samples taken	Larvae (L) Pupae (P) Adult (A)	♂	♀	Capture Method	Brief Notes (when taken)
<i>Agapetus</i>	<i>fuscipes</i>	Alum Spring, Hackfall, N. Yorks	SE2337476958	397	12	A	12	0	SN	
<i>Beraea</i>	<i>maurus</i>	Alum Spring, Hackfall, N. Yorks	SE2337476958	397	4	A	3	1	SN	
<i>Drusus</i>	<i>annulatus</i>	Alum Spring, Hackfall, N. Yorks	SE2337476958	397	1	A	1	0	SN	
<i>Tinodes</i>	<i>dives</i>	Alum Spring, Hackfall, N. Yorks	SE2337476958	397	1	A	0	1	SN	
<i>Tinodes</i>	<i>unicolor</i>	Alum Spring, Hackfall, N. Yorks	SE2337476958	397	1	A	1	0	SN	
<i>Wormaldia</i>	<i>occipitalis</i>	Alum Spring, Hackfall, N. Yorks	SE2337476958	397	12	A	11	1	SN	
<i>Beraea</i>	<i>maurus</i>	Dropping Well stream, N. Yorks	SE2420177090	174	2	A	2	0	SN	
<i>Diplectrona</i>	<i>felix</i>	Dropping Well stream, N. Yorks	SE2420177090	174	1	A	1	0	SN	
<i>Micropterna</i>	<i>sequax</i>	Dropping Well stream, N. Yorks	SE2420177090	174	1	A	1	0	SN	
<i>Potamophylax</i>	<i>latipennis</i>	Dropping Well stream, N. Yorks	SE2420177090	174	1	A	1	0	SN	
<i>Beraea</i>	<i>maurus</i>	Hackfall stream, Hackfall, N. Yorks	SE2341177196	290	2	A	1	1	SN	
<i>Crunoecia</i>	<i>irrorata</i>	Hackfall stream, Hackfall, N. Yorks	SE2341177196	290	1	A	1	0	SN	
<i>Diplectrona</i>	<i>felix</i>	Hackfall stream, Hackfall, N. Yorks	SE2341177196	290	2	A	2	0	SN	
<i>Lepidostoma</i>	<i>hirtum</i>	Hackfall stream, Hackfall, N. Yorks	SE2341177196	290	1	A	1	0	SN	
<i>Micropterna</i>	<i>sequax</i>	Hackfall stream, Hackfall, N. Yorks	SE2341177196	290	1	A	0	1	SN	
<i>Rhyacophila</i>	<i>obliterata</i>	Hackfall stream, Hackfall, N. Yorks	SE2341177196	290	1	A	1	0	SN	
<i>Synagapetus</i>	<i>dubitans</i>	Hackfall stream, Hackfall, N. Yorks	SE2341177196	290	2	A	1	1	SN	
<i>Tinodes</i>	<i>unicolor</i>	Hackfall stream, Hackfall, N. Yorks	SE2341177196	290	6	A	2	4	SN	
<i>Wormaldia</i>	<i>occipitalis</i>	Hackfall stream, Hackfall, N. Yorks	SE2341177196	290	9	A	7	2	SN	
<i>Beraea</i>	<i>maurus</i>	Mickley Wood spring stream, N. Yorks	SE2457376701	263	2	A	2	0	SN	
<i>Crunoecia</i>	<i>irrorata</i>	Mickley Wood spring stream, N. Yorks	SE2457376701	263	1	A	1	0	SN	
<i>Diplectrona</i>	<i>felix</i>	Mickley Wood spring stream, N. Yorks	SE2462876743	153	2	A	2	0	SN	
<i>Tinodes</i>	<i>unicolor</i>	Mickley Wood spring stream, N. Yorks	SE2462876743	153	1	A	0	1	SN	
<i>Wormaldia</i>	<i>occipitalis</i>	Mickley Wood spring stream, N. Yorks	SE2457376701	263	2	A	2	0	SN	
<i>Agapetus</i>	<i>ochripes</i>	River Ure, Nutwith Cote, N. Yorks	SE2334979094	N/A	4	A	3	1	LT	Light trap set from 9pm to 11pm
<i>Athripsodes</i>	<i>albifrons</i>	River Ure, Nutwith Cote, N. Yorks	SE2334979094	N/A	5	A	0	5	LT	Light trap set from 9pm to 11pm
<i>Beraea</i>	<i>maurus</i>	River Ure, Nutwith Cote, N. Yorks	SE2334979094	N/A	1	A	1	0	LT	Light trap set from 9pm to 11pm
<i>Ceraclea</i>	<i>dissimilis</i>	River Ure, Nutwith Cote, N. Yorks	SE2334979094	N/A	1	A	1	0	LT	Light trap set from 9pm to 11pm
<i>Cheumatopsyche</i>	<i>lepida</i>	River Ure, Nutwith Cote, N. Yorks	SE2334979094	N/A	15	A	2	13	LT	Light trap set from 9pm to 11pm
<i>Glossosoma</i>	<i>boltoni</i>	River Ure, Nutwith Cote, N. Yorks	SE2334979094	N/A	1	A	0	1	LT	Light trap set from 9pm to 11pm
<i>Hydropsyche</i>	<i>pellucidula</i>	River Ure, Nutwith Cote, N. Yorks	SE2334979094	N/A	4	A	0	4	LT	Light trap set from 9pm to 11pm
<i>Hydroptila</i>	<i>forcipata</i>	River Ure, Nutwith Cote, N. Yorks	SE2334979094	N/A	3	A	0	3	LT	Light trap set from 9pm to 11pm
<i>Lepidostoma</i>	<i>hirtum</i>	River Ure, Nutwith Cote, N. Yorks	SE2332579089	N/R	1	A	1	0	SN	Flying across field on edge of dark
<i>Lepidostoma</i>	<i>hirtum</i>	River Ure, Nutwith Cote, N. Yorks	SE2334979094	N/A	1	A	0	1	LT	Light trap set from 9pm to 11pm
<i>Polycentropus</i>	<i>flavomaculatus</i>	River Ure, Nutwith Cote, N. Yorks	SE2334979094	N/A	3	A	3	0	LT	Light trap set from 9pm to 11pm

<i>Potamophylax</i>	<i>INDET</i>	River Ure, Nutwith Cote, N. Yorks	SE2334979094	N/A	1	A	0	1	LT	Light trap set from 9pm to 11pm
<i>Psychomyia</i>	<i>pusilla</i>	River Ure, Nutwith Cote, N. Yorks	SE2332579089	N/R	2	A	0	2	SN	Flying across field on edge of dark
<i>Psychomyia</i>	<i>pusilla</i>	River Ure, Nutwith Cote, N. Yorks	SE2334979094	N/A	25	A	3	22	LT	Light trap set from 9pm to 11pm
<i>Rhyacophila</i>	<i>dorsalis</i>	River Ure, Nutwith Cote, N. Yorks	SE2334979094	N/A	1	A	0	1	LT	Light trap set from 9pm to 11pm
<i>Agapetus</i>	<i>fuscipes</i>	Sandale springs, Dalby Forest, N. Yorks	SE85678490	N/R	11	L	N/A	N/A	AH	Collected by David Southall
<i>Beraea</i>	<i>maurus</i>	Spring near Dropping Well stream, N. Yorks	SE2422777103	254	1	A	1	0	SN	
<i>Wormaldia</i>	<i>occipitalis</i>	Spring near Dropping Well stream, N. Yorks	SE2422777103	254	2	A	2	0	SN	
<i>Agapetus</i>	<i>fuscipes</i>	Spring stream in Mickley Barras, N. Yorks	SE2427777085	291	3	A	3	0	SN	
<i>Beraea</i>	<i>maurus</i>	Spring stream in Mickley Barras, N. Yorks	SE2427777085	291	7	A	3	4	SN	
<i>Diplectrona</i>	<i>felix</i>	Spring stream in Mickley Barras, N. Yorks	SE2427777085	291	1	A	1	0	SN	
<i>Tinodes</i>	<i>unicolor</i>	Spring stream in Mickley Barras, N. Yorks	SE2427777085	291	3	A	0	3	SN	
<i>Wormaldia</i>	<i>occipitalis</i>	Spring stream in Mickley Barras, N. Yorks	SE2427777085	291	2	A	2	0	SN	
<i>Glyptotaelius</i>	<i>pellucidus</i>	Swinton Park, Masham, N. Yorks	SE208792	N/R	1	A	1	0	SN	
<i>Beraea</i>	<i>maurus</i>	Triple Springs, Mickley Wood, N. Yorks	SE2470176715	168	1	A	0	1	SN	
<i>Diplectrona</i>	<i>felix</i>	Triple Springs, Mickley Wood, N. Yorks	SE2470176715	168	1	A	1	0	SN	
<i>Lepidostoma</i>	<i>hirtum</i>	Triple Springs, Mickley Wood, N. Yorks	SE2470176715	168	1	A	1	0	SN	
<i>Psychomyia</i>	<i>pusilla</i>	Triple Springs, Mickley Wood, N. Yorks	SE2470176715	168	2	A	0	2	SN	
<i>Tinodes</i>	<i>unicolor</i>	Triple Springs, Mickley Wood, N. Yorks	SE2470176715	168	3	A	2	1	SN	
<i>Wormaldia</i>	<i>occipitalis</i>	Triple Springs, Mickley Wood, N. Yorks	SE2470176715	168	6	A	6	0	SN	

Rievaulx area in North Yorkshire August 09 2012
Collecting and Identifications by Stuart Crofts and Andrew Dixon

Genus	Species	Location	NGR	Altitude in feet above sea level	Samples taken	Larvae (L) Pupae (P) Adult (A)	♂	♀	Capture Method	Brief Notes (when taken)
<i>Agapetus</i>	<i>fuscipes</i>	Ashberry Springs, Ashberry Pastures, N. Yorks	SE5671084565	324	5	A	5	0	SN	
<i>Crunoecia</i>	<i>irrorata</i>	Ashberry Springs, Ashberry Pastures, N. Yorks	SE5671084565	324	1	A	0	1	SN	
<i>Tinodes</i>	<i>unicolor</i>	Ashberry Springs, Ashberry Pastures, N. Yorks	SE5671084565	324	3	A	1	2	SN	
<i>Wormaldia</i>	<i>mediana</i>	Ashberry Springs, Ashberry Pastures, N. Yorks	SE5671084565	324	1	A	1	0	SN	
<i>Wormaldia</i>	<i>occipitalis</i>	Ashberry Springs, Ashberry Pastures, N. Yorks	SE5671084565	324	4	A	2	2	SN	
<i>Agapetus</i>	<i>fuscipes</i>	Grass Keld Spring, N. Yorks	SE5520284758	347	5	L	N/A	N/A	AH	
<i>Agapetus</i>	<i>fuscipes</i>	Grass Keld Spring, N. Yorks	SE5520284758	347	7	P	2	5	AH	
<i>Lype</i>	<i>phaeopa</i>	Grass Keld, Ashberry Pastures, N. Yorks	SE5671884517	308	1	A	1	0	SN	
<i>Odontocerum</i>	<i>albicorne</i>	Grass Keld, Ashberry Pastures, N. Yorks	SE5671884517	308	A	A	N/R	N/R	AH	
<i>Tinodes</i>	<i>dives</i>	Grass Keld, Ashberry Pastures, N. Yorks	SE5671884517	308	1	A	1	0	SN	
<i>Agapetus</i>	<i>fuscipes</i>	Grass Keld, N. Yorks	SE5592984627	316	5	A	3	2	SN	
<i>Drusus</i>	<i>annulatus</i>	Grass Keld, N. Yorks	SE5592984627	316	3	A	3	0	SN	
<i>Tinodes</i>	<i>dives</i>	Grass Keld, N. Yorks	SE5592984627	316	4	A	1	3	SN	
<i>Tinodes</i>	<i>unicolor</i>	Grass Keld, N. Yorks	SE5592984627	316	1	A	0	1	SN	
<i>Wormaldia</i>	<i>occipitalis</i>	Grass Keld, N. Yorks	SE5592984627	316	3	A	2	1	SN	
<i>Agapetus</i>	<i>fuscipes</i>	Mirefalls, Ashberry Pastures, N. Yorks	SE5677584572	295	7	A	5	2	SN	
<i>Tinodes</i>	<i>dives</i>	Mirefalls, Ashberry Pastures, N. Yorks	SE5677584572	295	4	A	2	2	SN	
<i>Tinodes</i>	<i>unicolor</i>	Mirefalls, Ashberry Pastures, N. Yorks	SE5677584572	295	2	A	1	1	SN	
<i>Agapetus</i>	<i>fuscipes</i>	Small spring, Ashberry Pastures, N. Yorks	SE5676984595	280	6	A	5	1	SN	
<i>Lepidostoma</i>	<i>hirtum</i>	Small spring, Ashberry Pastures, N. Yorks	SE5676984595	280	1	A	0	1	SN	
<i>Synagapetus</i>	<i>dubitans</i>	Small spring, Ashberry Pastures, N. Yorks	SE5676984595	280	1	A	0	1	SN	
<i>Tinodes</i>	<i>dives</i>	Small spring, Ashberry Pastures, N. Yorks	SE5676984595	280	2	A	1	1	SN	
<i>Tinodes</i>	<i>unicolor</i>	Small spring, Ashberry Pastures, N. Yorks	SE5676984595	280	2	A	1	1	SN	
<i>Wormaldia</i>	<i>occipitalis</i>	Small spring, Ashberry Pastures, N. Yorks	SE5676984595	280	2	A	2	0	SN	
<i>Agapetus</i>	<i>fuscipes</i>	Spring flowing into Grass Keld, N. Yorks	SE5558384626	369	5	L	N/A	N/A	AH	
<i>Agapetus</i>	<i>fuscipes</i>	Spring flowing into Grass Keld, N. Yorks	SE5558384626	369	2	P	2	0	AH	
<i>Agapetus</i>	<i>fuscipes</i>	Spring flowing into Grass Keld, N. Yorks	SE5558384626	369	6	A	4	2	SN	
<i>Drusus</i>	<i>annulatus</i>	Spring flowing into Grass Keld, N. Yorks	SE5558384626	369	1	A	0	1	SN	
<i>Hydroptila</i>	<i>martini</i>	Spring flowing into Grass Keld, N. Yorks	SE5558384626	369	1	A	1	0	SN	
<i>Synagapetus</i>	<i>dubitans</i>	Spring flowing into Grass Keld, N. Yorks	SE5558384626	369	1	P	0	1	AH	
<i>Synagapetus</i>	<i>dubitans</i>	Spring flowing into Grass Keld, N. Yorks	SE5558384626	369	1	A	0	1	SN	
<i>Agapetus</i>	<i>fuscipes</i>	Woodland spring near Rievaulx, N. Yorks	SE5767585272	357	5	A	5	0	SN	
<i>Beraea</i>	<i>maurus</i>	Woodland spring near Rievaulx, N. Yorks	SE5767585272	357	1	A	1	0	SN	
<i>Tinodes</i>	<i>dives</i>	Woodland spring near Rievaulx, N. Yorks	SE5767585272	357	1	A	1	0	SN	

Rievaulx area in North Yorkshire August 31 2012
Collecting and Identifications by Stuart Crofts

Genus	Species	Location	NGR	Altitude in feet above sea level	Samples taken	Larvae (L) Pupae (P) Adult (A)	♂	♀	Capture Method	Brief Notes (when taken)
<i>Drusus</i>	<i>annulatus</i>	Cadel Stream, N. Yorks	SE5658387012	N/R	2	A	2	0	SN	A rich depositing stream
<i>Odontocerum</i>	<i>albicorne</i>	Cadel Stream, N. Yorks	SE5658387012	N/R	1	A	0	1	SN	A rich depositing stream
<i>Rhyacophila</i>	<i>obliterata</i>	Cadel Stream, N. Yorks	SE5658387012	N/R	1	A	1	0	SN	A rich depositing stream
<i>Agapetus</i>	<i>fuscipes</i>	Mirefalls, N. Yorks	SE5679084834	N/R	11	A	11	0	SN	Stream full of agapetus cases
<i>Agapetus</i>	<i>fuscipes</i>	Mirefalls, N. Yorks	SE5679084834	N/R	9	P	5	4	AH	Stream full of agapetus cases
<i>Odontocerum</i>	<i>albicorne</i>	Mirefalls, N. Yorks	SE5679084834	N/R	1	A	1	0	SN	Stream full of agapetus cases
<i>Wormaldia</i>	<i>occipitalis</i>	Mirefalls, N. Yorks	SE5679084834	N/R	1	A	1	0	SN	Stream full of agapetus cases
zero	zero	Oxen Dale stream, N. Yorks	SE5636686293	N/R	N/A	N/A	N/A	N/A	N/A	Small stream, cattle poached
<i>Plectrocnemia</i>	<i>brevis</i>	Small spring, Birk Bank, N. Yorks	SE5646486890	N/R	1	A	1	0	SN	Tiny woodland spring
zero	zero	Small spring, Far Hag Wood, N. Yorks	SE5643385942	N/R	N/A	N/A	N/A	N/A	N/A	Tiny spring, could dry up
zero	zero	Small spring, Far Hag Wood, N. Yorks	SE5642586033	N/R	N/A	N/A	N/A	N/A	N/A	Tiny spring, could dry up
<i>Agapetus</i>	<i>fuscipes</i>	Springs in Low Wood, N. Yorks	SE5692487484	N/R	1	A	1	0	SN	A series of small depositing springs
<i>Crunoecia</i>	<i>irrorata</i>	Springs in Low Wood, N. Yorks	SE5692487484	N/R	2	A	0	2	SN	A series of small depositing springs
<i>Diplectrona</i>	<i>felix</i>	Springs in Low Wood, N. Yorks	SE5692487484	N/R	4	A	3	1	SN	A series of small depositing springs
<i>Wormaldia</i>	<i>occipitalis</i>	Springs in Low Wood, N. Yorks	SE5692487484	N/R	9	A	9	0	SN	A series of small depositing springs
<i>Agapetus</i>	<i>fuscipes</i>	Woodland spring near Rievaulx, N. Yorks	SE5767585272	N/R	7	A	7	0	SN	
<i>Crunoecia</i>	<i>irrorata</i>	Woodland spring near Rievaulx, N. Yorks	SE5767585272	N/R	1	A	0	1	SN	
<i>Diplectrona</i>	<i>felix</i>	Woodland spring near Rievaulx, N. Yorks	SE5767585272	N/R	1	A	1	0	SN	
<i>Tinodes</i>	<i>unicolor</i>	Woodland spring near Rievaulx, N. Yorks	SE5767585272	N/R	1	A	0	1	SN	
<i>Wormaldia</i>	<i>occipitalis</i>	Woodland spring near Rievaulx, N. Yorks	SE5767585272	N/R	1	A	0	1	SN	

North Yorkshire September 18 2012
Collecting and Identifications by Stuart Crofts

Genus	Species	Location	NGR	Altitude in feet above sea level	Samples taken	Larvae (L) Pupae (P) Adult (A)	♂	♀	Capture Method	Brief Notes (when taken)
<i>Wormaldia</i>	<i>occipitalis</i>	Alum Spring, Hackfall, N. Yorks	SE2337476958	397	3	A	3	0	SN	
<i>Crunoecia</i>	<i>irrorata</i>	Nutwith Cote, woodland spring, N. Yorks	SE234783	N/R	1	A	1	0	SN	
<i>Wormaldia</i>	<i>occipitalis</i>	Nutwith Cote, woodland spring, N. Yorks	SE234783	N/R	2	A	1	1	SN	
<i>Wormaldia</i>	<i>occipitalis</i>	Triple Springs, Mickley Wood, N. Yorks	SE2470176715	168	8	A	6	2	SN	

Information & keys for the record sheets

Genus:	The genus of the specimen captured.
Species:	Species of the specimen identified. If "INDET" is in this column then the species is indeterminable because reliable, definitive keys, were not available at the time of investigation.
Location:	This is the general area in which the sample was collected.
NGR:	National Grid Reference (UK) direct from GPS receiver or Ordnance Survey maps where the sample was collected.
Altitude:	Height recorded by GPS in feet above sea level.
Samples Taken:	This is the number of samples taken for identification.
Larvae (L), Pupae (P) or Adult (A):	The life stage of the specimen collected.
Males:	The actual count of male specimens identified from the sample (it is only possible to sex the adult and mature pupae stages).
Females:	The actual count of female specimens identified from the sample (it is only possible to sex the adult and mature pupae stages).
Capture Method:	Method relates to how the specimen was caught: AH : ad hoc, no specific method. Larvae are often just picked off rocks in the water or by using a kick net. With adults, often just picked off bank side plants etc. SN : sweep netting randomly through undergrowth or trees LT : light trap
Notes:	These are just very brief comments.
N/R:	Wherever this abbreviation is used it simply means "not recorded"
N/A:	Wherever this abbreviation is used it simply means "not applicable"

Appendix 2 – Photographs of some of the sample sites visited in 2012



Mirefalls, Ashberry Wood

N Yorks

SE5678684561

Spring flowing into Mirefalls,

Ashberry Wood, N. Yorks

SE5675184592



Spring flowing into Mirefalls,

Ashberry Wood, N. Yorks

SE5679484845





Upper area of Mirefalls,
Ashberry Wood, N. Yorks

SE5613885485

Spring Flowing into Grass Keld

N. Yorks

SE5558384626



Mirefalls, N. Yorks

SE5679084834





Springs in Low Wood, N. Yorks

SE5692487484