



BAP Riverfly Interim Report

2009-10

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Acknowledgement to Natural England Countdown 2010, the Riverfly Partnership Species and Habitat Group, partner organisations and a wide number of individuals and volunteers. Surveys coordinated by The Riverfly Partnership and Buglife - The Invertebrate Conservation Trust.
The Riverfly Partnership operates within The Salmon & Trout Association.

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Work has been carried out on the eight Riverfly BAP species improve knowledge of each species and its requirements to inform conservation action. Surveys aim to establish new records or reconfirm previous known populations, enable new information to be captured and images collected to support the development of resources and inform further work.

1. Northern February red *Brachyptera putata*

1.1. River Dee - March 2010 onwards - David Pryce

Work due to be undertaken in February and March 2010, was delayed until March as the sample area was inaccessible due to 9ft of snow in the River Dee catchment.

A malaise trap was run and visited weekly. Sweep samples were collected from bankside vegetation for adults and kick samples from the river bed for larvae.

Specimens of both larvae and adults of *B. putata* were found and photos were taken.

It is proposed that specimens collected will inform work on the phenology of the species, as well as providing material to investigate comparisons with *B. starmachi* to and help clarify if *B. putata* is an endemic.

Appendix 1 for further information including survey proposal

1.2. River Dee - Feb / March 2009 - David Pryce/Craig Macadam

Samples were collected from nine sites along the River Dee and its tributaries. Aquatic invertebrates were collected using kick sampling the river bed and adults by sweep netting bankside vegetation. A single larval specimen of *Brachyptera putata* was collected, however of poor quality, from the River Dee upstream of the Linn of Dee and 14 other species of stonefly were recorded.

See Appendix 2.

2. Small grey sedge *Glossosoma intermedium*

This widespread Holarctic species is inexplicably extremely restricted in the UK. It is certainly known only from the following Lake District streams which are the Hoathwaite Beck at its mouth, the Pull Beck on its lower course, the Hayeswater Gill just above Hayeswater Reservoir and Troutbeck, either the Troutbeck or a stream in the neighbourhood of the village of that name; there is also a larval record, possibly of this species, from the River Wharfe. It became a BAP species due to its decline.

By 1985 it could not be found at the Hoathwaite Beck site; it could be found commonly at the Pull Beck site in 1985 but could not be found in 2003; 2003 was the last record for the Hayeswater Gill site.

Priority for Action - confirming its continued existence as a UK species.

2.1. Cumbria - March 2009 – Ian Wallace / Andrew Dixon

(Andrew Dixon made a number of visits during 2008 to the Hayeswater Gill site).

Ian Wallace visited the Hoathwaite Beck, and some adjacent streams on 12.3.2009 – without success; some pupae of *Glossosoma boltoni* Curtis were found in the Hoathwaite Beck at its mouth.

Ian Wallace visited the Pull Beck, and some adjacent streams on 12.3.2009 – without success; some larvae of *Glossosoma conformis* Neboiss were found towards the head of the stream, but no *Glossosoma* at all at the previous *G. intermedium* site.

Ian Wallace and colleagues from the Riverfly Partnership visited Hayeswater Gill on 8.5.2009 but were only able to collect cases of *Glossosoma conformis*.

(Andrew Dixon has also visited Hayeswater Gill in June and was also only able to find cases of *Glossosoma conformis*).

2.2. Cumbria - March 2010 - Andrew Dixon

The river Kent inlet and the outlet of the Kent Reservoir and inlet Lingmell Gill in Cumbria were sampled in March 2010. Sampling was carried out by Andrew Dixon a specialist caddisfly surveyor. Sampling was undertaken by stone turning and looking for caddis cases. *Glossosoma* cases found were *boltoni* or *conformis*. Other species found included the caddis: *Philopotamus montanus*, *Odontocerum albicorne*, *Rhyacophila dorsalis* and stoneflies *Perla bipunctata*, *Brachyptera risi* and *Dinocras cephalotes*.

See Appendix 3 for survey proposal and further information.

2.3. Cumbria - August 2009 - Andrew Dixon / Ian Wallace

Areas sampled included: Hayeswater gill, Brothers Water outlet, Riggindale Beck, Mardale Beck, Pull beck and several small unnamed gills. Sweep netting was used to look for adults and stone turning was used to look for cases. At Hayeswater Gill only

one adult *G. confirmis* was found, also a number of empty larval cases of *G. Confirmis*. Negative results from the adjacent small gills. The Brothers water outlet, Riggindale Beck, Mardale Beck were also sampled and no *G. intermedium* were found. Pull beck was also sampled with Ian Wallace two days later, a location where the Ian has recorded *G. intermedium* it in the past. A couple of *Glossosoma* cases were found although none were *intermedium*. It was concluded that *G. intermedium* is rare in Hayeswater gill and possibly extinct, the same for Pull beck.

See Appendix 4 for the survey proposal

3. Window winged sedge *Hagenella clathrata*

3.1. June 2009 - Surrey - Ian Wallace / Graham Vicks / Daniel Atter

This survey was undertaken by Ian Wallace the National caddisfly expert with assistance from Graham Vick and Daniel Atter. Surveys were carried out during June 2009 on the following sites Witley Common; Chobham Common, Brentmoor Heath and Folly Bog; Royal Common and Bagmoor Common; Whitmoor Common and Thursley Common.

The failure to find adults, where several had been seen in late May suggested that this survey, aimed to coincide with the flight period, was too late in the season. The selection of dates had been informed by species information from further north. Future survey work for adults in Surrey should be concentrated from mid May to the end of May, possibly extending into the first week of June. Sites for future survey: Whitmoor Common, Thursley, sites in the southern section of Chobham Common and the small area of Witley Common deserve consideration for adult survey. Surrey micro-lepidopterists are keen to be involved in recording in Surrey and beyond.

No pupal cases were found on Whitmoor Common where Graham Vick had seen several adults a few weeks before. The breeding site may be separate. It is proposed to survey for larvae at Whitmoor in 2010.

4. Scarce brown sedge *Ironoquia dubia*

4.1. Summer 2009 – Winter 2010 Hampshire & Berkshire Graham Vicks

Graham Vicks a caddisfly specialist monitored three Malaise traps in Pamber Forest (Hants), Millbarn Pond (Berks) and Windsor Forest (Berks) throughout the late summer into autumn and winter with the traps being checked weekly. During this survey *Ironoquia dubia* was unfortunately not recorded.

5. Yellow Mayfly *Potamanthus luteus*

2009 field work carried out by Dai Roberts, Cyril Bennett, Patrick Lloyd and colleagues to collect samples from Welsh sites for image work. Field work planned on the River Teme by Louis Kitchen with in kind field support by the Clyde Rivers Trust June 2010.

6. Southern Iron Blue *Baetis niger*

Various recording work has been carried out by individuals with records going to the Ephemeroptera Recording Scheme. Targetted field work by Cyril Bennett in 2008 /2009 led to the collection of new images for use in identification resources.

7. Rare medium stonefly *Isogenus nubecula*

Collaboration with Environment Agency to identify potential specimens when sampling on to family level on the River Dee, North Wales.

Search for *I. nubecula* by Ian Wallace on River Dee, Bangor 28 February 2009 – negative results. (Confirm survey effort – method with IW)

8. Scarce grey flag *Hydropsyche bulgaromanorum*

Collaborators are funded to survey rivers adjacent to the Arun for this species. Ian Wallace collaborating with Natural England and partners within an advisory role. As commissioned by Natural England Martin Drake an independent invertebrate surveyor has look for this species on further tributaries of the Arun with no success it is felt that the species is confined to the Arun utilising very specific conditions.

Appendix 1: Scarce February Red *Brachyptera putata* proposal 2010

David Pryce

Background

Brachyptera putata (Newman, 1838) is a priority species in the UK Biodiversity Action Plan on the grounds of its status as an endemic species. It has been recorded from two rivers in the borderlands of England and Wales – the Usk, where it was last recorded in 1996, and the Wye, where it was last recorded in 1992. There is an apparently thriving population in the Northern and Central Highlands of Scotland, although there are indications that the species maybe in decline in the Aberdeenshire area (Hammett, 2004; Anon, 2005). Although regarded as endemic it appears to be very closely related to a European species – *Brachyptera starmachi* Sowa, 1966 – which occurs in the Carpathian Mountains, Germany and Austria (Graf & Weinzierl, 2003). It is possible that *starmachi* is a synonym of *putata*, in which case *putata* would lose its endemic status. The apparent demise of this species on the Wye and Usk has highlighted the need for further information, particularly with respect to the adult flight season, in order to assist with future survey work on these two rivers.

Aims

The survey has 4 main aims:

- To obtain adult and larval specimens of *Brachyptera putata* for DNA analysis in order to precisely determine its status as an endemic species.
- To obtain a series of reference specimens for use in the preparation of future larval and adult keys.
- To obtain high quality photographs of both adults and larvae for promotional purposes by the Riverfly Partnership.
- To gather information on adult phenology in order to assist future monitoring.

Methodology

A Malaise trap will be set up beside the River Dee at Mar Lodge Estate near Braemar between grid references NO061896 and NO121906 on 30th January 2010. The precise location is yet to be determined upon consultation with Shaila Rao, the estate ecologist (National Trust for Scotland).

The trap will be visited weekly until 26th February 2010 when it will be removed.

Invertebrates will be trapped into 70% ethanol. Samples will be sorted and any *Brachyptera putata* adults transferred to 100% ethanol. At each visit a kick sample will be taken in order to collect live larvae which will be photographed. Sweep netting will also be undertaken in order to collect live adults which will also be photographed. Specimens from the kick sampling and sweep netting will be preserved in both 70% and 100% ethanol for reference material and DNA analysis respectively. All other Plecoptera will be retained and identified to species level.

Output

A report will be produced for the Riverfly Partnership detailing the results of the survey. It will also be necessary to produce a report for Mar Lodge Estate.

Timetable

30 th January 2010	Set up Malaise trap; kick sampling and sweep-netting
7 th February 2010	Change Malaise trap bottle; kick sampling and sweep netting
14 th February 2010	Change Malaise trap bottle; kick sampling and sweep netting
21 th February 2010	Change Malaise trap bottle; kick sampling and sweep netting
27 th February 2010	Remove Malaise trap; kick sampling and sweep netting
March –April 2010	Identification of specimens and comparison with European <i>Brachyptera</i> spp.
1 st May 2010	Draft report produced
31 st May 2010	Final report delivered

Preliminary costing of survey work

5 days @ £250 per day for survey work

1 day @ £250 per day for analysis and report production

Approximate mileage – 180 miles per day for 5 days = £360 at £0.40 per mile

Total cost = £1860

Funding

Riverfly Partnership	£900
Buglife	£500
In kind contribution	£460
<u>Total</u>	<u>£1860</u>

References

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Appendix 2: Surveys for *Brachyptera putata* - March 2009

Craig Macadam and David Pryce

Further information

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Introduction

The Riverfly Partnership received funding Natural England's Countdown 2010 fund to work on 8 UK Biodiversity Action Plan priority species. The purpose of these surveys was a) to obtain images of larvae and adults of *Brachyptera putata* for use by the Riverfly Partnership and b) to obtain fresh adults of *Brachyptera putata* for a study into the endemic status of this species.

Background

The Northern February red stonefly (*Brachyptera putata*) is a priority species within the UK Biodiversity Action Plan. *B. putata* is classified as Endemic and Nationally Scarce in Great Britain (Bratton, 1990). *Brachyptera putata* is found in the middle and lowland sections of large and medium-sized rivers with good water quality. In Scotland, it is mainly found in the Dee, Don, Spey and Deveron in north-east Scotland. Other records have been made from the Mudale, Halladale, Forss Water and Brora in the Highlands. There are several post-1980 records for the River Wye in Herefordshire and one from the River Usk at Llantrisant in Gwent. *B. putata* is not known to occur outside Britain although there is a possibility that *Brachyptera starmachii*, found in the arpathians, may indeed be *B. putata*.

Methods

Samples of aquatic invertebrates were collected by kick sampling. A standard kick net with 1mm mesh was held downstream of the sampler while the bed of the watercourse was disturbed upstream by the sampler's heel. Dislodged invertebrates together with organic matter and other debris are swept downstream by the current and are caught in the net. Where larger stones were present the net was held downstream of a stone and the stone was lifted with a foot, disturbing the loose organic matter trapped beneath the stone. Once collected the sample was transferred to a large plastic container. Selected specimens of stoneflies were removed and placed in 70% Isopropanol for subsequent identification. Some specimens of mayflies and caddisflies were also collected for identification. Adult insects were collected by sweeping a 30cm sweep net through bankside vegetation. Any stoneflies collected were placed in 70% Isopropanol for subsequent identification. Selected specimens (particularly in the Taeniopterygidae and

Capniidae) were photographed on site. Samples were collected from nine locations. These locations were a mix of sites where *Brachyptera putata* had been recorded in the recent past together with other sites where *B. putata* could reasonably be expected to occur.

Results

A total of 15 species of stonefly were recorded from six of the nine locations. A single larval specimen of *Brachyptera putata* was collected from the River Dee upstream of the Linn of Dee. No adult specimens were collected. Specimens of two endemic sub-species were collected: *Taeniopteryx nebulosa britannica* (February red stonefly) from the Clunie Water and Cairnwell Burn and *Capnia vidua anglica* (Widow stonefly) from the Cairnwell Burn. Whilst purpose of this survey did not cover extensive sampling of other riverfly groups, incidental records of other mayflies and caddisflies were made. One of the most interesting records was of *Ameletus inopinatus*, the Upland summer mayfly. There is anecdotal evidence that this species is retreating upstream in response to rising water temperatures. Several larval specimens were collected from the Cairnwell Burn at Glenshee Ski Centre. The altitude of these new records is approximately 655 metres (2150 feet). Samples at a lower altitude on the same watercourse (at footbridge upstream of confluence with Allt a'Gharbh-choire – 510 metres) did not contain any specimens of *Ameletus inopinatus*. Whilst this is a very limited survey for this species it suggests that this species has retreated much farther than at first thought. Further investigations are required to confirm this and to document the retreat of this species.

Sample Site No. 1

Date: 13th March 2009

Location: River Dee upstream of bridge at Linn of Dee

NGR: NO060896

Adults: None

Larvae: *Amphinemura standfussi* (2)

Leuctra hippopus (8)

Leuctra inermis (1)

Isoperla grammatica (6)

Sample Site No. 2

Date: 13th March 2009

Location: River Dee downstream of bridge at Linn of Dee

NGR: NO068897

Adults: None

Larvae: ***Brachypterya putata*** (1)

Brachyptera risi (8)

Protonemura meyeri (1)

Amphinemura sulcicollis (15)

Leuctra hippopus (15)

Leuctra inermis (7)

Siphonoperla torrentium (2)

Isoperla grammatica (16)

Sample Site No. 3

Date: 13th March 2009

Location: Quoich Water at Linn of Quoich (upstream of bridge)

NGR: NO069898
Adults: None
Larvae: Not sampled

Sample Site No. 4

Date: 13th March 2009
Location: Clunie Water at Glen Clunie
NGR: NO147864
Adults: None found
Larvae: Not sampled
Location: Unnamed tributary (right bank)
NGR: NO147864
Adults: *Taeniopteryx nebulosa* (1 male)
Leuctra hippopus (6m, 5f)
Larvae: Not sampled

Sample Site No. 5

Date: 14th March 2009
Location: Cairnwell Burn at footbridge
upstream of confluence with
Allt a'Gharbh-choire
NGR: NO148799
Adults: None found
Larvae: *Brachyptera risi* (23)
Protonemura praecox (5)
Leuctra inermis (6)
Isoperla grammatica (1)
Location: unnamed tributary (left bank)
NGR: NO148799
Adults: *Leuctra hippopus* (1f)
Larvae: Not sampled

Sample Site No. 6

Date: 14th March 2009
Location: Cairnwell Burn at Glenshee Ski Centre car park
NGR: NO139779
Adults: None found
Larvae: *Brachyptera risi* (1)
Taeniopteryx nebulosa (2)
Nemoura erratica (3)
Protonemura praecox (1)
Leuctra hippopus (3)
Capnia vidua anglica (9)
Diura bicaudata (1)

Sample Site No. 7

Date: 14th March 2009
Location: River Don upstream Glenkindie Bridge
NGR: NJ438136
Adults: None found

Larvae: Not sampled

Sample Site No. 8

Date: 14th March 2009

Location: Water of Bogie downstream Gartly Bridge

NGR: NJ521323

Adults: None found

Larvae: Not sampled

Sample Site No. 9

Date: 14th March 2009

Location: River Deveron at Huntly Town Park

NGR: NJ529408

Adults: None found

Larvae: *Brachyptera risi* (1)

Leuctra hippopus (4)

Leuctra inermis (5)

Isoperla grammica (1)

Perlodes microcephalus (1)

References

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Appendix 3: Preliminary results *Glossosoma intermedium* survey 2010

Andrew Dixon

G. intermedium Survey: 13/3/10 River Kent & Lingmell Gill

I sampled the R. Kent inlet and outlet of Kentmere Reservoir and Lingmell Gill that also enters the reservoir on the 13th March.

The reservoir was built in 1848 not for water source for human consumption, but for regulating water to a paper mill further down river. The area is volcanic and low-grade metamorphic rock (slatey). Not sure if it is sourced from the limestone band of the high Street ridge which sources Hayeswater and Trout Beck on the other side of the fell. I maybe able to confirm when I get my geological maps that I have ordered from O/S.

Sample points Grid references

River Kent inlet NY442085 outlet NY44707 & NY458063

Lingmell Gill NY445084

The River Kent where it enters the reservoir was not quite what I anticipated, being steeper and faster than what it appeared on the map. However, 60yds upstream it did level out and looked promising. I sampled about 50yds thoroughly before realising there was little there other than *P. montanus* at larvae & pupa stage of the caddis fly species and a odd case of probably *O. albicorne*. Other species included large Stonefly such as (*Perla bipunctata*) and stoneclingers of the *Ecdyonurus* genus, probably *torrentis*.

I then sampled Lingmell Gill, which looked even closer to the habitat I was looking for. Again I gave it a thorough sampling but only found two *Glossosoma* cases, which turned out to be either *boltoni* or *conformis*. These specimens were fairly small, not sure what instar they were at but I could only get to 98% that they were *boltoni*. I could do with Ian showing me if I am looking at the correct area for the posterior-lateral seta on the 8th segment and how much paler the seta is in comparison to the larger dorsal setae on *conformis* compared to those on *boltoni*. However, they certainly weren't *intermedium*. Other larvae found on Lingmell gill were *P. montanus*, *R. dorsalis* & *O. albicorne*. Along with two species of stonefly *B. risi* & *D.cephalotes*.

The outlet directly below the reservoir that came from the bottom of the dam was different again in being rich in weed for the first 100yds. I only gave this area a quick sample finding again *P. montanus* & *H. instabilis* larvae.

Further down river (about a mile) I sampled for 10min and found nothing but clean stones. Sheep heavily grazed this area with little fencing at the river edge.

Appendix 4: Survey results 2009 *Glossosoma intermedium*

Andrew Dixon

2.8.2009

WATERS SAMPLED

Hayeswater gill
Brothers water outlet
Riggindale Beck
Mardale Beck
Plus several small unnamed gills

Report of the days sampling for the Buglife surveys

Left home around 7:30am reached Hayeswater gill at around 9:50 following 35min hike. Weather was good although a little windy.

Sweep-netted both banks for 1 hour looking for adults of *glossosoma boltoni* to see if they were present at this venue but apart from one female specimen of *G. conformis* no other species of *Glossosoma* were found. I then turned stones for 1½ hrs looking for *Glossosoma* cases and collected 22 pupal cases. Most of the pupal cocoons of the 22 found were empty

of the parts usually leftover by transformation of the larvae to pupae, the few that had something left in turned out to be *G. conformis*.

I also sampled 3 of the small gills that also enter the tarn but only found *S. pallipes* and *A. fuscipes* cases.

Whilst having lunch I scanned the map looking for other places in the vicinity and decided that the streams on the other side of the fell flowing from roughly the same area would be worth a look, the decision was whether to go back to the car for a 30- mile drive or hike over the 500ft fell tops and a few hours walk. So after lunch I was soon back to the car!

On the way back I stopped off at Brothers water outlet but found it with too much water to sample the riverbed however, did get some adult species while there.

At the far end of Haweswater, which is only about 4km as the crow flies from where I sampled on Hayeswater gill. I walked around the lake to Riggindale beck which has its source barely 2km from Hayeswater gills source. This Beck is an exact copy of Hayeswater gill with the exception that it does flow a lot faster in the very bottom region where it enters the reservoir, but every other feature in the middle section looked very promising it fact it was like searching the same water, with exception of *S. pallipes* all the other species found in Hayeswater gill were here, except not one specimen of a *Glossosoma* case was found. I searched for well over an hour turning stones to confirm this.

I then went back to the top end of the reservoir to sample Mardale Beck but it does not look like the right type of habitat, being very fast and bouldery. A small stream that runs

into Mardale Beck, Gatescarth Beck was also sampled only one specimen of a *Glossosoma* case was found and that turned out to hold *G. boltoni* pupae.

My conclusion if any is that *G. intermedium* appears - at the very least, rare in Hayeswater gill and at worst has become extinct there, as this is the 4th time in the last 2 years I have sampled it. There also appears no evidence of it being in the other beck's mentioned above. However, I will endeavour to carry on the search.

Below are the adults found on the day which were caught by sweep-netting

Genus	Species	Location	NGR (where known)	Male	Female
<i>Odontocerum</i>	<i>albicorne</i>	Hayeswater gill (inlet)	NY433118	4	2
<i>Philopotamus</i>	<i>montanus</i>	Hayeswater gill (inlet)	NY433118	1	
<i>Mystacides</i>	<i>azurea</i>	Hayeswater gill (from Hayeswater)	NY433118	1	
<i>Glossosoma</i>	<i>conformis</i>	Hayeswater gill (inlet)	NY433118		1
<i>Silo</i>	<i>pallipes</i>	Hayeswater gill (inlet)	NY433118	2	
<i>Oecetis</i>	<i>testacea</i>	Brothers Water & outlet area(Golldrill)	NY402131		1
<i>Polycentropus</i>	<i>irroratus</i>	Brothers Water & outlet area(Golldrill)	NY402131	1	
<i>Mystacides</i>	<i>nigra</i>	Brothers Water & outlet area(Golldrill)	NY402131	2	
<i>Tinodes</i>	<i>waeneri</i>	Brothers Water & outlet area(Golldrill)	NY402131	1	1
<i>Athripsodes</i>	<i>aterrimus</i>	Brothers Water & outlet area(Golldrill)	NY402131	1	1
ZERO	ZERO	Riggindale Beck	NY458117	NR	NR

Appendix 5: Surrey survey report *Hagenella clathrata*

Ian Wallace

Ian Wallace

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Report on a survey of sites in Surrey for the BAP Riverfly species the Window-winged Caddis *Hagenella clathrata* (Kolenati) led by Ian Wallace

Background

Hagenella clathrata has been recorded in the past from the Surrey heath-land sites of Thursley, Witley and Whitmoor Commons on various dates between 1988 and 2002. The habitat used by the species is well-known to the surveyor from work between 1974 and 2008 at Whixall Moss in Shropshire, Chartley Moss in Staffordshire and Whitmoor Common in Surrey. The aim of the present survey was to investigate those places, and others in Surrey, which from examination of OS Maps and aerial images from Google Earth looked similar to the sites where the surveyor has collected it.

The sites investigated were Witley Common (9.6.09. & 12.6.09); Chobham Common, Brentmoor Heath and Folly Bog (11.6.09.); Royal Common and Bagmoor Common (12.6.09.); Whitmoor Common (10.6.09. & 14.6.09.); Thursley Common (12.6 & 13.6.09.).

Results

I am unaware of any attempt to describe and quantify ideal *H. clathrata* habitat in terms of vegetation height, age, and water regime. The approach adopted would follow (JNCC, (2004), Common Standards Monitoring Guidance for Lowland Wetland, Version August 2004, ISSN 1743-8160). In the absence of such information, habitat description is only possible in general terms. The photos on page 9 of this report show an example of utilised habitat. Ideal habitat may vary across the UK range of *H. clathrata*, but there does seem to be considerable superficial similarity between Surrey and north west Midland England.

The pools at the base of the tussocks are heavily shaded by a mat of fallen leaf litter from the *Molinia*, however it is usual to also find birch leaves present in the litter from the bottom of the pools and these are both eaten by the larvae and used for case construction; presence of sparse tree cover may therefore also be important. Open pools between tussocks that are not shaded by litter have other species, notably *Limnephilus luridus*. The pools are firm bottomed when stood in. They usually dry to sogginess by

summer, but never to the extent that the litter becomes friable. Vole runs are often found around the base of the tussocks and may increase the depth of hollows by extending them in summer into soggy areas. The behaviour of *H. clathrata* over summer has not been studied in any detail but it seems likely that the eggs hatch and the first instar larvae burrow into the soggy peat, awaiting flooding of the pools in autumn before commencing growth. This behaviour is certainly recorded in other caddis species.

The majority of each of those sites was unsuitable to support *Hagenella* usually because the habitat was too dry. A considerable amount of terrain was crossed while looking at each site. The route followed is not detailed in the report, which concentrates on the wetter areas encountered. At several sites, areas of habitat were found that, whilst now too dry and overgrown, it could be envisaged might have supported the species in the past.

At Thursley and at Chobham, I had received reports from site managers or entomologists of *H. clathrata* having been seen flying in areas in the past, that appeared now to be far too wet and lacking tussocks, and were likely to have been so when the observations were made. There is a distinct possibility that they were in fact seeing the related *Oligotricha striata* (L.). It has quite different wing markings, but stance, size, flight, and from a distance at rest, can make it look very like *H. clathrata*; it has certainly raised the hopes of the present surveyor on a number of occasions.

Witley Common

An adult of *Hagenella* was collected here on 28th May 1988 by Don Tagg. In discussions, Mr Tagg, indicated that the site was now very much drier. Mr Tagg's site was near Milford Lodge, and during the present survey, the only habitat remotely likely to support the species was found in the southern section of the site, the area north of the "A" road being unsuitable. Even in the southern part, the amount of damp tussock *Molinia* was small in extent and that wet enough to support *H. clathrata* was even smaller. Whilst this elusive species may have been overlooked as adult or old larval and pupal cases, it is not thought likely to persist at the site. However, future surveys could include the areas identified in red on the Google Earth view of part of the site, shown below. The site is around grid reference SU923402.

Chobham Common

Suggested by staff of Natural England and Surrey Wildlife Trust as having significant wet areas; they suggested the north part of the reserve.

The north part has tussocky areas in the two valley bogs, the Long Arm and the Little Arm. However, these were comparatively narrow and steep-sided. This resulted in little habitat with the right level of wetness, most was either too dry or too wet. A small area of Little Arm was flat enough, but is probably too small in extent to support this species now, or to have done so in the past. It is marked in red on the map and is around grid reference SU967659.

The part of the reserve south of the motorway had a number of *Molinia* tussock bogs associated with small streams arising from the common, but most were either too wet, or too dry. The site was investigated by walking from the road at Gracious Pond Farm towards Pipers Green Farm then west across the Common to Langshot Bog. One location seemed very suitable in terms of habitat and extent. *H. clathrata* was not

encountered but that site is certainly worthy of further investigation and other parts of the southern Chobham Common, e.g. around Langshot Bog, SU975635 and a small spot around SU991643 could be investigated again, around the same time.



Chobham Common, hopeful
H. clathrata habitat



Brentmoor Heath

Suggested by Scotty Dodd of Surrey Wildlife Trust as worth a visit "if in the area". This was one of the sites where possible past *H. clathrata* habitat was identified, but it is not thought worth a repeat visit as it is now far too dry. The area that might have supported it in the past is around grid ref SU933607.

Folly Bog (central grid SU925613)

Suggested by Scotty Dodd of Surrey Wildlife Trust as worth a visit "if in the area". This is a fine valley mire but appears too wet to support *H. clathrata*.

Royal Common and Bagmoor Common

Suggested by David Baldock, Surrey entomologist, as having damp areas. A small area of both sites had tussocky habitat that was now too overgrown or dry. It is not thought worth further investigation. The site on Royal Common was around the grid reference SU921424, and at Bagmoor SU923423.



Thursley Common (visited on 12.6.2009, by Ian Wallace, and by Ian Wallace, Graham Vick, Bob Kemp and Don Tagg on 13.6.2009)

Don Tagg reported having seen an adult in 1996, and possibly again in 2004. The area he saw then was very wet and lacked tussocks. This suggests that it was either breeding in a different habitat, was common generally at the site and that he had seen vagrants, or that *Oligotricha* was involved. Combinations of all these possibilities exist. Despite the comparative lack of appeal of Trichoptera in the past, it is curious that a site so well investigated for insects, has not produced any more records. The vast majority of the site is either far too wet or far too dry.

The site experienced a serious fire in 2006. Suitable unscathed tussock habitat exists in one location and this has been selected for Malaise trapping by Graham Vick in 2010. It is around grid reference SU908409.

The eastern edge of Thursley Common also has habitat that might support the species, but is probably too wet. The best area was on Ockley Common around grid reference SU912418, and this is probably worth a further investigation for adults.

Whitmoor Common (visited on 10.6.2009 by Ian Wallace & on 14.6.2009, by Ian Wallace, Graham Vick, Bob Kemp, Scotty Dodd and Daniel Atter.

This common had produced adults in 1995 from east of the railway line, and pupal cases in 2002 from two locations west of the railway. In May 2009 and early June, Graham Vick had seen several adults at one site and during this survey an empty case, whose appearance suggested it was from this season, was found at another area.





Whitmoor Common newly discovered site. Very small hidden dried-up pool where the case was found is in the centre of the picture

Whitmoor Common is thus the only confirmed extant Surrey location for *Hagenella clathrata*.



2002 photo of the Whitmoor Common site where old pupal cases of *H. clathrata* were found

Conclusions and future survey effort

1. Flight period

The failure to find adults at the spot where Graham Vick had seen several in Late May and the very start of June 2009 suggests that this survey, aimed to coincide with the flight period, was actually too late in the season. The selection of dates had been made from experience with the species further north. It is suggested that future Surrey survey work for adults be concentrated from mid May to the end of May, possibly extending into the first week of June.

2. Sites for future survey

2.1 Whitmoor Common, should be extensively surveyed in all suitable areas. Adults should be sought, but also larvae earlier in the season.

2.2 Thursley should be investigated for adults by Malaise trapping in the most suitable location and visits made to the north east corner.

2.3 Sites in the southern section of Chobham Common and the small area of Witley Common deserve consideration for adult survey.

3. Promoting recording of *Hagenella*

I addressed a group of Surrey micro-lepidopterists on 13.6.2009, (they were co-incidentally meeting at a site close to Thursley). I agreed to develop and provide material, on-line and printable, featuring *H. clathrata*, to encourage interested parties to keep their eyes out for adults whilst looking for micro-lepidoptera and other insects on heaths in Surrey, Berkshire and Hampshire in late spring.

4. Survey protocol

It was puzzling not to find any old pupal cases at the site on Whitmoor Common where Graham Vick had seen several adults a few weeks before. This could be due to the breeding site being actually a little distant and the particular scrubby pine trees where he saw them being a swarming and mating spot.

On Whixall and Chartley, I have never recommended larval surveying as a way of monitoring due to the difficulty of doing so, and also potential damage to the habitat as opposed to looking for active adults, but that may require modification for Surrey.

It is proposed to survey for larvae at Whitmoor in March 2010. This may result in the adaption of the protocol.

Water-table monitoring points could be established within the areas used by *H. clathrata* larvae as this could provide useful data for future conservation and habitat creation.

5. Conservation

Scotty Dodd has been able to modify the grazing regime on Whitmoor to safeguard the main *Hagenella* site. Certainty of the breeding site from the March survey will assist in designation of areas of the site.

It may be possible to extend the habitat by digging very small pools around 15 cm across between tussocks near to the areas actually being used. However this would have to be done very carefully to avoid them draining utilised habitat.

6. Acknowledgements

National Museums Liverpool provided in kind time for IW to write the report, The Riverfly Partnership and Natural England Countdown 2010 provided financial support for the survey during the 2009 field season, and there was kind effort given to field work on this particular survey by Daniel Atter, Scotty Dodd, Bob Kemp, and Graham Vick.

Appendix 6: Survey for *Ironoquia dubia* 2009

Graham Vick

Visits to Windsor, High Standing Hill SU614604

27 July	Prospecting sites and liaising with authorities on site
11 Aug	Set up trap (stream dry).
19 Aug	Collection of contents
2 Sep	Collection of contents
13 Sep	Collection of contents
19 Sep	Collection of contents
1 Oct	Collection of contents
4 Oct	Collection of contents
11 Oct	Collection of contents (stream much wetter, flowing at last)
16 Oct	Collection of contents (very dry again)
29 Oct	Collection of contents (dry)
6 Nov	Collection of contents (a little water in stream again - 10 cm deep)
19 Nov	Collection of contents (no caddis)
17 Jan	Removal of trap (stream now torrential and flooded well above banks. Still some snow melt. Installation had withstood heavy snowfalls and rapid current)

Caddis were obtained from 2 Sep until 6 Nov, but species did not include *Ironoquia dubia*. Final results will be supplied later, but the species collected were : *Glyptotaelius pellucidus*, *Limnephilus sparsus*, *Stenophylax sequax*.

Comment: habitat seems identical to when I last worked the site in 1994. However, the stream was exceptionally dry until late into the autumn in 2009, and this was different from that period. The site gives the best chance of rediscovery I think and should receive maximum attention.

Visits to Millbarn Pond, Lockram Brook SU673665

11 Sep	Set up trap
18 Sep	Collection of contents
4 Oct	Collection of contents
6 Oct	Collection of contents
11 Oct	Collection of contents
16 Oct	Collection of contents
29 Oct	Collection of contents
6 Nov	Collection of contents
19 Nov	Removal of trap

Caddis obtained from 18 Sep until 6 Nov: *Glyptotaelius pellucidus*, *Limnephilus flavicornis*, *Tinodes waeneri*. *Limnephilus lunatus*, No sign of *Ironoquia dubia*.

Comment: The habitat has changed slightly. The regime involving the release of lake water has changed compared with that in the 90s - as they are aware of risk of downstream floods and it may not be satisfying *Ironoquia*'s needs as well as it used to.

Visits to Pamber Forest, Honey Mill Stream SU614604

5 Sep	Set up trap
12 Sep	Collection of contents
19 Sep	Collection of contents
30 Sep	Collection of contents
10 Oct	Collection of contents
22 Oct	Collection of contents (still almost dry)
6 Nov	Collection of contents (stream now wet - 10 cm)
23 Nov	Removal of trap

Caddis obtained from 12 Sep until 6 Nov: *Glyptotendipes pellucidus*, *Limnephilus lunatus*, *Limnephilus sparsus*, *Limnephilus auricula*.

Comment: the habitat may have changed a little since the 60s when it was last found. Much woodland management has taken place but there is no evidence of pollution or other negative factors.

General comments

I was very disappointed to fail to find it as I put in a huge amount of work. The autumn was very dry and it may be that the rains did not come until too late for the species. The site at Windsor looked identical to how it was in the 90s. The other two sites may have changed somewhat. My method of using Malaise Traps was successful in the past, both at Windsor and Millbarn.

There are some striking common factors about the three sites. These are not typical of all woodland streams in the Berks/Hants N areas, and I think they are a feature of the geology of these sites which involves layers of clays and gravels. They are difficult for farming, and this will be why they have stayed as woodland (Pamber and Windsor anyway). All sites were once part of the Greater Windsor Forest area in the Middle Ages. The soils dry up in summer and are waterlogged in the winter.

All three sites fit the following characters:

Deciduous woodland, mostly oak, but other spp present. Abundance of leaf litter in streams and on forest floor.

Streams dry up for a considerable time in the summer and only refill in the autumn

Once the streams start to flow the flow is rapid, even torrential and scouring at times.

The stream profiles are unusual. The bed of the stream is hard and gravelly. This layer of gravel overlies clay. However, the bed remains very solid even when the stream is moist, and one can easily walk along the stream without sinking into the mud.

The profile of the stream is very rectangular: with almost vertical banks and a flat bed of compacted gravel. Visitors often comment that the streams look like they have been created with a JCB as the banks are so abrupt and the beds so flat. However, they are clearly natural. Lockram Brook is somewhat modified as it is part of an ornamental parkland situation rather than woodland.

Appendix 7: Overview of caddis work to July 2009 and proposed to 2010

Ian Wallace

1. *Glossosoma intermedium* (Klapálek, 1892) The Small Grey Sedge

This widespread Holarctic species is inexplicably extremely restricted in the UK. It is certainly known only from the following Lake District streams which are the Hoathwaite Beck at its mouth, the Pull Beck on its lower course, the Hayeswater Gill just above Hayeswater Reservoir and Troutbeck, either the Troutbeck or a stream in the neighbourhood of the village of that name; there is also a larval record, possibly of this species, from the River Wharfe. It became a BAP species due to its decline.

By 1985 it could not be found at the Hoathwaite Beck site; it could be found commonly at the Pull Beck site in 1985 but could not be found in 2003; 2003 was the last record for the Hayeswater Gill site.

Priority for Action - confirming its continued existence as a UK species.

Work undertaken in the first half of 2009

(Andrew Dixon made a number of visits during 2008 to the Hayeswater Gill site).

Ian Wallace visited the Hoathwaite Beck, and some adjacent streams on 12.3.2009 – without success; some pupae of *Glossosoma boltoni* Curtis were found in the Hoathwaite Beck at its mouth.

Ian Wallace visited the Pull Beck, and some adjacent streams on 12.3.2009 – without success; some larvae of *Glossosoma conformis* Neboiss were found towards the head of the stream, but no *Glossosoma* at all at the previous *G. intermedium* site.

Ian Wallace and colleagues from the Riverfly Partnership visited Hayeswater Gill on 8.5.2009 but were only able to collect cases of *Glossosoma conformis*.

(Andrew Dixon has also visited Hayeswater Gill in June and was also only able to find cases of *Glossosoma conformis*).

Future Work for 2009

There is a possibility that the species has changed its phenology in response to recent warm winters; abroad it is recorded as an adult in July, but has always been recorded in Spring in the UK. Repeated collecting of pupal cases is potentially damaging and time-consuming so the best chance of finding a few *intermedium* amongst other *Glossosoma* may be to look for adults. Andrew Dixon has agreed to visit the Hayeswater Gill site in July and again in September, and a few pupal cases will also be sought in September because *G. conformis* is by then an egg and, if *G. boltoni* is genuinely absent from the site, any filled pupal cases are likely to be *intermedium*. Ian Wallace will also, look through his records and provide a list for Andrew Dixon of other streams he visited unsuccessfully in 2003. This may point to streams that Andrew can survey.

Future work for 2010

If the 2009 surveys continue to be fruitless then it is suggested that a final survey in early spring is made at the old sites, and also the River Wharfe at Linton Bridge. Continued failure would suggest the species is described as probably extinct.

2. *Hagenella clathrata* (Kolenati) The Window Winged Sedge

This striking (for a caddis) is recorded principally from the North Midlands of England. There are comparatively modern records from the Aviemore district and ancient ones for London and south-west Scotland. Its occurrence in Surrey only became common knowledge in 2000 when Ian Wallace was shown a specimen from near Guildford taken in 1995; subsequent discussions with a local naturalist indicated he had seen it at three heathland sites between 1988 and 1996.

The species was awarded BAP status due to its apparent reduction in numbers at all its known sites.

Work undertaken in the first half of 2009

A major survey of the species and its habitat requirements at the Whixall Moss complex had been undertaken in 2008, funded by Countryside Council for Wales. However, it had not been possible to survey two outlying areas of the complex – Wem and Cadney Mosses; Wem is in England but Cadney is in Wales but as it is literally just over a ditch from Wem, and may share adults with Wem it was deemed sensible to visit too. David Pryce had taken adults at Wem in 2002. No larvae were found during a survey on 28.2.2009, but the site was photographed and incorporated into the main report for CCW; Cadney had no suitable habitat, but had areas that over time would become suitable it was thought.

Surrey seemed a priority for 2009, particularly as two of its past sites had not been surveyed for over 10 years.

(During May 2009, Graham Vick, made successful trips to Whitmoor Common in search of the adults, and unsuccessful trips to Thursley)

Between June 10th and 14th I visited the following Commons, in search of adults and also old pupal cases:- Witley, Milford, Whitmoor, Thursley, Ockley, Bagmoor, Chobham, Albury Bottom, Brentmoor Heath and adjacent Folly Bog. On the 13th at Thursley I was accompanied by Daniel Atter, Graham Vick, Bob Kemp and Don Tagg – the original Surrey recorder for this species; on the 14th at Whitmoor I was accompanied by Daniel Atter, Graham Vick, Don Tagg and Scott Dodd, the Surrey Wildlife Trust Invertebrate Officer.

Regrettably the species was only found on Whitmoor Common, where it seems to have gone from the area east of the railway – but it was found at an additional site to the west and possibly seen at another site to the west.

The meeting with Scott Dodd was particularly fortuitous as he had been charged with advising on grazing at Whitmoor – which would have certainly endangered *Hagenella*. Scott has been working hard on *Hagenella*'s behalf subsequently and met with colleagues from the Surrey Wildlife Trust, who manage the site, and also staff from Natural England. This should ensure it is catered for in subsequent management plans.

The few pre 2009 adult records for Surrey, and this year's observations suggest that it flies much earlier than in the north and my advice to focus survey in the second half of June are a month too late. This has significance for next year's surveying.

A chance meeting with another Surrey entomologist indicated a field meeting of the Surrey micro-lepidoptera group was taking place a few miles from where we were planning to survey. The leader of the group, Graham Collins, invited me to address the group about *Hagenella* recording and caddis recording in general; this may bear fruit in subsequent years.

A fuller report, detailing areas of the various sites visited that might have been, or be, suitable for *Hagenella* is being prepared.

Future work for 2010

Based on my experience in the north midlands, it was surprising that only one empty pupal case was found in Surrey, even adjacent to areas where many adults had been seen on previous visits this year by Graham Vick. This may suggest that they are pupating deeper within the tussocks or using the more open pools between them. It seems desirable to confirm the larval site and I propose to do so by survey on Whitmoor next February or March; it may suggest a re-survey of some of the unsuccessful sites this year, and also suggest another possible monitoring regime for Surrey.

As the flight period is over for this year, it seemed premature to widely promote *Hagenella* among local entomologists e.g. Graham Collins "micro" group, but this seems very desirable for next year for the whole of the month of May and to recorders also in Berkshire, and Hampshire.

There seems potential for the species to still be at Thursley Common, despite the devastating fire of 2006 and the subsequent significant wetting of the site. Graham Vick had a Malaise trap vandalised there in the past but it is thought a more hidden site, close to attractive habitat can be run. It is thought the Riverfly fund could pay for the traps.

The publicity material in form of cards that are being prepared will be invaluable – but a "Potamanthus" style Action Plan is also much needed – planned for 2009. The possibility of combining publicity with general talks on caddis and Riverflies by Ian or Graham should be considered too.

3. *Hydropsyche bulgaromanorum* Malicky The Scarce Grey Flag

Other people have obtained money, in addition to the Riverfly Grant to survey rivers adjacent to the Arun for this species. My work will be advisory.

4. *Ironoquia dubia* (Stephens)

Work planned for 2009

Graham Vick will take the lead on this. He proposes trialling live-catch Malaise Traps at the two known Windsor Forest sites, visiting them every other day. This will prevent excessive loss of adults while still allowing a good capture possibility; if they prove unsuccessful e.g. the traps become full of wasps that kill the caddis he will have to use

preservative. When these show the species is flying he will set traps on other hopeful streams he has identified over the next few months. It is thought useful if Ian visits to see the sites around September

Work planned for 2010

Hopefully the 2009 work will have identified sites where larval searches can be made in February March time – co-inciding with the search for *Hagenella* larvae in Surrey. This will improve our knowledge of the species and its requirements.

5. *Isogenus nubecula* Newman The Scarce Yellow Sally (A Stonefly)

Extensive surveys in 2003 & 2004 and using airlift samplers for deep water in 2006 and 2007 have failed to find nymphs at its only recent UK site of the Welsh/English River Dee.

This used to be most easily recorded as exuviae on bridges at Bangor-on-Dee in April and May; I have done this successfully in the past. There is an outside chance that it has changed its life-cycle and might be found as exuviae at other times. It was logistically easy to combine a search at Bangor-on-Dee with a visit to Wem Moss for *Hagenella* on 28.2.2009; as expected none were found. Although Bangor-on-Dee is in Wales the River becomes the English Welsh boundary comparatively nearby and it seems appropriate to survey for it at its most likely site.

Other work undertaken by Ian Wallace as support in kind for the BAP work on rare species since January 2009

Data abstraction. Records have been extracted for the Caddis Recording Scheme Data Base from the G.T. Porritt Collection at Huddersfield and the A. Brindle Card Indices at Manchester Museum; no new records were obtained for the BAP species. This has amounted to date at about 6 days, but the amount relevant to the BAP species is very small

Data-base editing. The caddis data base stands at 230,000 records and is being edited; most of this involves finding grid references for the numerous records from the literature and museums that lack them. The aim is a published Atlas and on the NBN Gateway. This obviously includes the BAP species, but most work on the has already been undertaken as part of the National Review of Scarce and Threatened Caddis. Work on this amounts to about half day a week at present, but again very little relevant to the BAP species

National Review of Scarce and Threatened Caddis. This is *in press* with JNCC Deborah Proctor leading. However I have kept this up to date. It may be also published on-line so the extra work would form a supplement. About half a day

Training Courses were run for the BTCV in Scotland and for the FBA. It is important that potential surveyors are confident at identifying caddis in the future. The BTCV work was especially useful as two of the students are likely to be surveying for *Hagenella* at Aviemore in the next two years. Another very important development on the training side is an on-line package prepared for the Environment Agency via the FBA. This does not feature the BAP species specifically but is aimed at increasing the amount of

species-level identification undertaken by the Agency. This is particularly useful as a number of scarce species e.g. the caddis *Hydropsyche bulgaromanorum* are likely to be recognised from new sites initially in EA samples.

The training courses have amounted to 7 days and the work on the EA package this year have taken about 5 days.

The meetings on site in Surrey have been mentioned. The May visit to the Hayeswater Gill also enabled on site discussions with FBA Staff as part of spreading understanding of this specie and its requirements. This amounted to the equivalent of 1 day.

E mail advice. I pass on advice about the BAP caddis when required. This year amounts to about half a day. The majority of my on-line advice and identification work does not cover BAP species.

Reports. The CCW Report on *Hagenella* was finished this year, from surveys undertaken last year. It took about 2 days.