



**Springs and Seepages of Wessex
Mendips Invertebrate Survey**

Andy Godfrey

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Andy Godfrey
Invertebrate Consultant
90 Bence Lane
Darton
Barnsley
South Yorkshire
S75 5DA
Tel: 01226 384022
Mobile: 07502 364511
Email: andy_godfrey_entomology@hotmail.com

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Summary

This is the report for the third area (Mendip Hills) to be surveyed in the five year, Wessex Water funded project run by Buglife – The Invertebrate Conservation Trust.

Twenty sites thought to have good spring and seepage habitat were selected for survey in the Mendips. Due to an excellent pre-existing report, other information and knowledge of the area by the surveyor, a relatively large number of sites could be selected. Some of the sites were found to have degraded with springs now dry or absent and these were not surveyed further. Seven sites were selected for survey in spring 2012 but weather conditions limited the survey to aquatic invertebrates. These were surveyed again along with a second tranche of sites but due to an abnormally wet spring this survey had to be delayed until July 2012. Further surveys took place in 2013.

All the aquatic invertebrate material has been identified and terrestrial material for the seven sites first surveyed in April 2012 has been completed. The results are presented in this report. A total of 76 aquatic invertebrate species were recorded in spring 2012, 75 in summer 2012 and 105 in 2013. Terrestrial invertebrates accidentally taken in the pond net have also been recorded. A total of 214 terrestrial species were recorded by sweep netting in 2013. In all, two Red Data Book, five Lower Risk (Nationally Scarce) and fourteen Nationally Scarce species have been recorded. The Red Data Book 1 crane fly *Ellipteroides alboscuteolata* is the most noteworthy species recorded. This species is associated with mossy calcareous seepages in a small number of woodlands. The related Red Data Book *Gonomyia abbreviata* was the second most noteworthy species recorded. This species is usually restricted to small shaded streams in woods on calcareous soils. Since these results only cover the aquatic invertebrates from all sites and terrestrial invertebrates from seven sites only, much more might be expected when the remaining terrestrial species are identified. The results so far however, indicate that the Mendips still possess valuable and at times exceptional spring and seepage habitat. However, sites appear to have been lost and degraded and this appears to be an ongoing process.

1. Introduction

This report details the results of the third year (Mendip Hills) of invertebrate surveys carried out as part of a five year, Wessex Water funded project run by Buglife – The Invertebrate Conservation Trust. The surveys were of the invertebrates associated with springs and seepages in the Wessex area. The surveyor was commissioned by Buglife to undertake the work. So far, the Blackdown Hills and the coastal seepages east of Lyme Regis have been surveyed. This report covers the third area to be surveyed which comprises the Mendip Hills in Somerset. Survey methodology was discussed between Buglife and the surveyor and three-minute kick sampling was selected along with preservation of the bulk samples in the field and later processing by washing, sieving and sorting. Sweep netting for terrestrial invertebrates was also undertaken at each site for a period of twenty minutes and insects were selectively removed with a pooter (aspirator).

2. Location

All the Mendip Hills sites surveyed in 2013-14 are located within Somerset. A location map showing the sample sites are included in the report. Grid references were obtained using a Garmin eTrex global positioning system and are provided in Appendix 3. Photographs of most of the sample sites are included at the end of the report.

3. Methodology

3.1. Aquatic survey method

The samples were collected with a standard pond net (supplied by EFE Field Equipment, Totnes)

and represent 3-minute kick samples taken in the channels. Ideally, the material was processed by washing and sieving in the field but where sufficient water was not available in the field to do this, the samples were preserved and this was conducted later. Each sample was initially washed using a coarse (1cm) sieve and 500-micron sieve first to remove any twigs, leaves, seeds, large stones, etc. The coarse material retained by the 1cm sieve was retained along with the 500-micron fraction. The samples were preserved using 10% formalin. The preserved samples were later examined in the laboratory by placing small amounts of material into gridded petri-dishes and adding water. These petri-dishes were then examined carefully under a stereomicroscope. Each light fraction typically used 40-50 petri-dishes this way with the smaller elutriated fractions using 10-20 petri-dishes. The coarse fraction (>1cm in size) was examined in a white tray for large invertebrates such as large cased caddis and large aquatic snails. Aquatic invertebrates were removed from the fractions and counted at the same time. For particularly abundant taxa, sub-sampling was used to estimate the total number of specimens (i.e. individuals were counted from 20-25% of the dishes and multiplied up).

Originally, use of a small surber sampler was considered for sampling but the lack of or low flows, very shallow water and lack of channels at most of the sites made the use of these impractical. Small surber samplers were used, for example, by Kutty (2006) but in watercourses with more channelised flow, more head of water and greater flow.

3.2. Terrestrial survey method

Sweep netting for terrestrial invertebrates was also undertaken at each site over bare ground, through low vegetation and through fringing scrub or low tree branches for a period of twenty minutes and insects were selectively removed with a pooter (aspirator). A 40cm diameter net supplied by Marris House Nets, Bournemouth and mounted on a metre long angling pole was used. Material was placed in alcohol in the evening for later examination.

3.3. Weather

Weather conditions on the survey dates are provided in Table 1.

Spring 2012 was, officially, the wettest on record for one hundred years. The rainfall totals for April and June were also the highest ever recorded. May was also very wet and July was wet for the first two-thirds. Given this background, much of the survey work could not be undertaken. Spring 2013 was also one of the coldest on record and was also wet. These abnormal springs meant that survey work had to be postponed until decent weather appeared and help explain why surveys were not confined to spring and autumn.

Survey Data	Weather Conditions
24 th April 2012	Cool and damp with 30% cloud at start of survey. Sunny intervals at 9am.
25 th April 2012	Heavy rain in morning (9-10am).
29 th June 2012	Very wet on ground. Vegetation wet. Sunny with blue sky.
16 th July 2013	Hot and sunny.
17 th July 2013	Very hot and sunny.
18 th July 2013	Warm and sunny.
16 th September 2013	Cold with 85% cloud cover and cool breeze at start of day.
17 th September 2013	100% cloud cover with cool breeze. Vegetation and ground wet in morning.
18 th September 2013	Vegetation and ground wet at start of survey, also humid and cool. Sunny from mid-day. Clouded over at last site (Tor Hole).

Table 1: Weather conditions on the survey dates.

3.4. Recording of Environmental Variables

Conductivity, pH, total dissolved solids and water temperature were measured using a Hannah HI98130 portable meter whilst turbidity was measured using a turbidity tube. Dissolved oxygen was measured in May 2011 using a Hannah HI9142 Dissolved Oxygen meter. The dissolved oxygen meter is temperamental and readings were not possible from all the sites. Other variables were estimated or measured with a meter rule.

3.5. Identification

All aquatic macroinvertebrates have, in general, been identified to species level. For immature specimens and females not separable to species, identification has been left at the appropriate level. As usual, nematodes, oligochaetes, ostracods and copepods have not been identified further. Water beetle larvae and Diptera larvae have been identified to the most appropriate level. Interestingly, no flatworms were noted during the survey.

Identification concentrated on wetland associated species and consequently invertebrates associated with dry conditions such as bees, wasps and ants have usually not been identified. Other invertebrates with habits not associated with seepages or springs such as those associated with dung, carrion, fungi or decomposing plant matter such as the Diptera families Heleomyzidae, Sphaeroceridae, Scathophagidae and Anthomyiidae have also not been prioritised. Some of these groups are taxonomically difficult such as the Chironomidae and the time taken to identify them could not be justified. All unidentified material will be retained indefinitely by the surveyor.

3.6. Assessment

UK BAP species have been checked against the list at www.ukbap.org.uk. Rarity statuses such as Red Data Book, Nationally Scarce (previously Notable) and Local have been developed and heavily used by Natural England, the Joint Nature Conservation Committee and associated organisations and are defined in Appendix 3. Since 1995, International Union for Conservation of Nature and Natural Resources (IUCN) categories has been adopted by the Joint Nature Conservation Committee as the new standard for Red Lists in Britain. JNCC aims to work towards assessing the status of all native species against standard criteria based on the internationally accepted guidelines developed by the IUCN (see IUCN, 2001, 2003). Only a few taxonomic groups have been given IUCN codes but these include the water beetles (Foster 2010) and Diptera belonging to the Empidoidea (Falk and Crossley 2005).

4. Selection of survey sites

The selection of the survey sites was based on information provided by the Somerset Environmental Records Centre (SERC) and on the surveyor's previous knowledge of the area. A list of Country Wildlife Sites some of which mention springs was obtained from the www.mendip.gov.uk website. The old memoirs of the Geological Survey Memoirs England were also available for Dorset and Somerset (Whitaker and Edwards 1926, Whitaker 1928) but of limited help partly because so much has changed since these were published. The paper by Baker and Simms (1998) which identifies active tufa-depositing habitats in Wessex was obtained after the Mendips survey work had began.

5. Previous data

Winder et al (1995) undertook a survey of aquatic macro-invertebrates of Mells River springs.

These included several of the sites covered in this survey namely Hurdlestone Wood, Bector Wood, White Hole Farm, Leigh Wood East and West and Chantry. These authors recorded 112 taxa from the nine Mells River springs in the spring and autumn of 1995. They found the springs on the western side of the study area were of higher quality than those to the east. Hurdlestone, Bector Wood and Packsaddle Bridge came into this category with Bector Wood having the greatest number of taxa and highest ASPT values and White Hole coming a close second. This survey recorded a fairly small number of rare and uncommon species including the caseless caddis *Rhyacophila septentrionis*, *Tinodes dives* and *T. unicolor*, the riffle beetle *Riolus subviolaceus*, the water beetle *Hydraena nigrita* (now downgraded from Notable) and the soldierfly *Oxycera pardalina*. The authors assessed the sites in terms of biological water quality.

Hafren Water (2005) undertook a macro-invertebrate survey of streams and seepages potentially affected by quarrying in the Mendip Hills. Dr Martin Drake undertook the invertebrate survey (in April 2005) and assessment. Samples were analysed using BMWP, the Community Conservation Index (CCI) and detrended correspondence analysis. Rare and uncommon species recorded included the white-clawed crayfish *Austropotamobius pallipes*, caseless caddis *Rhyacophila septentrionalis* and *Tinodes unicolor*, the water beetle *Hydraena nigrita* and the soldierfly *Oxycera pardalina*.

The current author has undertaken macro-invertebrate surveys of springs, seepages and streams in the Mendips every other year from 2000. The sites are similar to those of Winder et al (1995) and the surveys may represent subsequent routine monitoring of these sites. The surveys have been undertaken in April and June/July in the survey years and the samples have been assessed for rarity, BMWP and LIFE. Assessing these surveys would be time-consuming and would require permission from the client, so they have not been assessed.

Two particularly rare species in the area have been the subject of papers, namely Heaver (2006) on the Red Data Book 1 crane fly *Ellipteroides alboscutellata* and Drake (2012) on the dance-fly *Wiedemannia lamellata*, which he recorded in Whatley Brook in April 2012. This is the first record of this species in Britain for more than a century.

Although it doesn't contain records of invertebrates or data on biological water quality, the Somerset Environmental Records Centre (SERC) report on a base-line survey of tufa springs in the county conducted between 1997 and 2001 provided the basis for site selection. The survey attempted an audit of tufa springs in the county and the report provides a short description of each site, its condition, whether they are worthy of County Wildlife Site status and whether they should be further surveyed. Many sites appear to have been lost or degraded and the opportunity in the present survey to update the data on the key Mendips sites was taken. The report mentions that both aquatic and terrestrial invertebrates were sampled on two visits to each site but this information is not present in the report sent to the author. Unfortunately, SERC suffered in financial cut-backs during the period of this survey and there was communication with SERC petered out with changes in staff and staff losing their jobs.

6. Results and assessment

6.1. Species Assessment

A total of 76 aquatic invertebrate species were recorded in spring 2012 (Appendix 1), 75 in summer 2012 (Appendix 2) and 105 in 2013 (Appendix 3). Terrestrial invertebrates accidentally taken in the pond net have also been recorded. A total of 214 terrestrial species were recorded by sweep netting in 2013 (Appendix 4). Two Red Data Book, five Lower Risk (Nationally Scarce) and fourteen Nationally Scarce species were recorded. These are listed below in table 2.

Red Data Book 1		
<i>Ellipteroides alboscutellata</i>	Limoniidae	Diptera

Red Data Book 3		
<i>Gonomyia abbreviata</i>	Limoniidae	Diptera

Lower Risk (Nationally Scarce)		
<i>Dixa maculata</i>	Dixidae	Diptera
<i>Thaumalea truncata</i>	<u>Thaumaleidae</u>	Diptera
<i>Chelifera angusta</i>	Empididae	Diptera
<i>Hemerodromia adulatoria</i>	Empididae	Diptera
<i>Hemerodromia laudatoria</i>	Empididae	Diptera

Nationally Scarce		
<i>Plectrocnemia brevis</i>	<u>Polycentropodidae</u>	<u>Trichoptera</u>
<i>Tinodes unicolor</i>	<u>Psychomyiidae</u>	<u>Trichoptera</u>
<i>Hydroporus marginatus</i>	<u>Dytiscidae</u>	Coleoptera
<i>Riolus subviolaceus</i>	<u>Elmidae</u>	Coleoptera
<i>Elodes elongata</i>	<u>Scirtidae</u>	<u>Coleoptera</u>
<i>Pytho depressus</i>	<u>Pythidae</u>	<u>Coleoptera</u>
<i>Limonia trivittata</i>	<u>Limoniidae</u>	<u>Diptera</u>
<i>Molophilus corniger</i>	<u>Limoniidae</u>	<u>Diptera</u>
<i>Paradelphomyia nielsenii</i>	<u>Limoniidae</u>	<u>Diptera</u>
<i>Beris fuscipes</i>	<u>Stratiomyidae</u>	<u>Diptera</u>
<i>Oxycera pardalina</i>	<u>Stratiomyidae</u>	<u>Diptera</u>
<i>Ptiolina obscura</i>	<u>Rhagionidae</u>	<u>Diptera</u>
<i>Sphegina verecunda</i>	<u>Syrphidae</u>	<u>Diptera</u>
<i>Tetanocera punctifrons</i>	<u>Sciomyzidae</u>	<u>Diptera</u>

Table 2: Rare or local species recorded.

Details of the ecology, status and distribution of these species are provided in Appendix 4.

The occurrence of the Red Data Book and Nationally Scarce species throughout the sample sites are summarised in Table 3.

RDB, IUCN OR NS/NOTABLE SPECIES	WHERE AND WHEN RECORDED
<i>Ellipteroides alboscutellata</i>	Bector Wood (16/7/2013), Hurdlestone (16/7/2013)
<i>Gonomyia abbreviata</i>	Packsaddle (d/s)(18/7/2013)
<i>Dixa maculata</i>	Hurdlestone (16/7/2013)
<i>Thaumalea truncata</i>	Packsaddle (u/s)(18/7/2013)
<i>Chelifera angusta</i>	Hurdlestone (16/7/2013), Packsaddle (d/s)(18/7/2013)
<i>Hemerodromia adulatoria</i>	Packsaddle (d/s)(18/7/2013)
<i>Hemerodromia laudatoria</i>	Packsaddle (d/s)(18/7/2013)
<i>Plectrocnemia brevis</i>	Bector (16/7/2013)
<i>Tinodes unicolor</i>	Packsaddle (d/s)(24/4/2012) & (18/7/2013) Darhill (16/7/2012)
<i>Hydroporus marginatus</i>	LeighWoodEast (24/4/2012)
<i>Riolus subviolaceus</i>	LeighWoodEast (24/4/2012), Packsaddle (u/s)(24/4/2012), Bector (29/6/2012)
<i>Elodes elongata</i>	Chantry (18/7/2013), Darhill (17/9/2013), Packsaddle (d/s)(18/7/2013)
<i>Pytho depressus</i>	BatcombeSeatLane (17/7/2013)
<i>Limonia trivittata</i>	Bector (16/7/2013), LeighWoodEast (18/7/2013), Packsaddle (u/s)(18/7/2013), Packsaddle (d/s)(18/7/2013)
<i>Molophilus corniger</i>	Packsaddle (u/s)(18/7/2013)
<i>Paradelphomyia nielsenii</i>	Hurdlestone (16/7/2013), Packsaddle (u/s)(18/7/2013)
<i>Beris fuscipes</i>	Chantry (18/7/2013), LeighWoodE (18/7/2013), Packsaddle (u/s)(18/7/2013), Packsaddle (d/s)(18/7/2013)
<i>Oxycera pardalina</i>	Bector (24/4/2012) & (29/6/2012), Hurdlestone (24/4/2012) & (29/6/2012), LeighWoodEast (24/4/2012) & (29/6/2012)
<i>Ptiolina obscura</i>	Bector (16/7/2013)
<i>Sphegina verecunda</i>	Bector (16/7/2013), Hurdlestone (16/7/2013)
<i>Tetanocera punctifrons</i>	Bector (16/7/2013)

Table 3: Occurrence of UK BAP, IUCN, Red Data Book and Nationally Scarce invertebrates throughout the Mendips sample sites in 2012 and 2013.

The Red Data Book 1 crane fly *Ellipteroides alboscutellata* is the most noteworthy species recorded. Falk (1991) knew only of four sites, of which two were post 1960. Heaver (2006) discussed the ecology of this species and surveyed existing as well as potential sites for the species. He suggests that this species requires constant flushing of base-rich waters. Most of the records come from tufa-rich seepages in woodland. This species was abundant at Hurdlestone Wood in 2013 where it was the most abundant crane fly but only three individuals were recorded in the contiguous Bector Wood and none in the adjacent Packsaddle Bridge seepages or at the other sites surveyed. Consequently, although it was abundant in Hurdlestone Wood, it appears to be very localised and not present in other possibly suitable sites.

The related Red Data Book *Gonomyia abbreviata* was the second most noteworthy species recorded. Falk (1991) states that this species has been recorded from about 20 sites widely dispersed throughout England and Wales, of which about ten are post 1960. It is usually restricted to small shaded streams in woods on calcareous soils. A single male was recorded from Packsaddle Bridge (downstream, at the footbridge itself).

Several of the Lower Risk (Nationally Scarce) and Nationally Scarce/Notable species are associated with very clean, well oxygenated, running water in calcareous areas. Further information on the ecology, status and distribution of these species may be found in the national reviews, namely:

Trichoptera: Wallace (1991)

Coleoptera: Hyman and Parsons (1992), Foster (2000), (2010)

Diptera: Falk (1991), Falk & Chandler (2005), Falk & Crossley (2005)

6.2. *Site Assessments – General*

Reference below is made to spring and seepage invertebrates but most of the invertebrates recorded can be considered stream invertebrates, many of which are associated with running clean, unpolluted water, high in dissolved oxygen. Some of the streams (such as in Bector Wood and Leigh Wood) are seasonal or migrate downstream as the source dries up. Many of the species recorded might also be considered to be characteristic of headwaters. Few species are actually confined to springs or seepages and can exist in a range of associated habitats including headwater streams.

Physical, chemical and other details at the sample locations are provided in Appendices 5-6.

6.3. *Batcombe House (downstream of)*

ST6920239158. Not in the SERC (2001) report but recommended by the gardener at Batcombe House. I crossed into the field below the house and went down to the bridge across the stream. There is a small spring (fenced off) which issues into the stream. I sampled the spring and the stream immediately downstream of here. Permission to survey was provided by Batcombe House.

No rare or uncommon species were recorded from this site and it is therefore not considered to be of high importance for seepages, springs, streams or associated habitats.

6.4. *Batcombe House Tufa Spring*

See SERC (2001) report (p. 17, 2nd site from top of page). ST691392 (SERC grid ref). This is a small water filled grotto in the formal gardens behind Batcombe House. They still have white-clawed crayfish in the gardens ponds downstream (not seen by me). The site was too small and confined to sample and I would not recommend further surveying here but confirming the presence of white-clawed crayfish would be useful. There is little natural vegetation apart from liverworts just inside the grotto. No samples were taken from this site.

This small site could not be properly assessed without possible damage and other methods such as crayfish traps or bait traps (for cave shrimps and flatworms) might be better. Given that the last white-clawed crayfish population in neighbouring Devon has been rescued for captive breeding, sites for this species in Somerset and the wider Wessex region may take on extra importance, so checking the population at this site might be useful. The house owner and gardener are sympathetic to the crayfish.

6.5. *Batcombe Moor Lane*

See SERC (2001) report (p. 17, 5th site from top of page). ST692386 (SERC grid ref). Rather disappointing given the SERC entry. All I could find was a capped spring with cold water issuing from a pipe just upstream of the pump-house. Owned by Batcombe House.

This site is clearly of minor importance in terms of its fauna.

6.6. *Batcombe Seat (or Saite) Lane*

See SERC (2001) report (p. 17, 4th site from top of page). ST693388 (SERC grid ref). I struggled to find much off Seat Lane despite the glowing entry in the SERC report. I ended up sampling the marshy area in the field on the right side as you walk up Seat Lane. A small indistinct channel was present but this soon disappeared and re-emerges near the road where it joins the roadside ditch. The spring at the bottom of Seat Lane (ST6916038799) has obviously long dried-up.

One Nationally Scarce beetle (*Pytho depressus*) which is not associated with springs, seepages, streams or associated habitats in general was recorded. Consequently, it is not thought that this site is of high importance for its spring and seepage invertebrate fauna.

6.7. *Bector Wood*

See SERC (2001) report (p. 16, 4th site from bottom of page). ST678481 (SERC grid reference). Springs are present upstream in the wood. There are no obvious footpaths in this private wood which I have sampled for aquatic invertebrates since 2000 and I normally follow the stream upstream outside of the wood, the cross into the wood where it juts out into the field. Obvious tufa deposition in the springs and streams. The wood is part of Edford Woods and Meadows SSSI.

This wood supports an excellent fauna associated with springs and seepages with several rare and uncommon species including the RDB1 crane fly *Ellipteroides alboscuteolata*, the caseless caddis *Plectrocnemia brevis*, the riffle beetle *Riolus subviolaceus*, the crane fly *Limonia trivittata*, the soldierfly *Oxycera pardalina*, the snipe-fly *Ptiolina obscura*, the hoverfly *Sphegina verecunda* and the snail-killing fly *Tetanocera punctifrons*.

6.8. *Chantry Swallet*

The small spring-fed stream emerges 2m downstream of flagstone capping the spring (ST7165647109 approx.). This is ¼ mile upstream of the swallet (swallow hole). The springfed stream runs parallel with the main stream which it presumably joins further downstream. The owner is unknown but a footpath crosses by the capped spring (a stile is present on the main stream a few metres away).

Two Nationally Scarce/Notable species were recorded from this site, namely the marsh beetle *Elodes elongata* and the soldierfly *Beris fuscipes*. The latter is fairly widespread and probably no longer deserves its Notable status. Neither of these species are closely associated with springs or seepages. Taking into account the Common and Local species recorded, this site might be considered reasonable for its spring and seepage invertebrate fauna.

6.9. *Chilcompton Alder Beds*

See SERC (2001) report (p. 16, 2nd site from top of page). ST642522 (SERC grid ref). The landowner told me the spring was dry when I tried to visit in June 2013 so the survey was aborted and no samples were taken.

6.10. *Coney Wood, Batcombe*

See SERC (2001) report (p. 17, 1st site from top of page). ST692389 (SERC grid ref). Owned by the Woodland Trust. A footpath through the wood can be followed from the road below. I followed this upstream until I came to a large obvious trunk that had fallen across the stream and footpath (ST6923238972). There is a tufaceous seepage on the woodland slope above the root-plate (and also, a large badger sett here). There was insufficient water here to allow sampling with a pond-net and consequently only terrestrial invertebrate sampling could be undertaken.

This site could only be assessed for terrestrial invertebrates and these have not been identified as

yet. Flushes only covered small areas and it is not likely to be an exceptional site but it is potentially valuable for stream and woodland species.

6.11. Drashill Mossy Grottoes, Titwell, Crscombe

See SERC (2001) report (p. 15, 4th site from bottom of page). ST600438 (SERC grid ref). I approached from above but you could park on the main road below near the sewage treatment works and walk up the public footpath. The site is to one side of the footpath. I have no ownership details. A tufaceous screen is present with a stream above and below.

Dumping and earthmoving above at the edge of the field above appears to have resulted in habitat degradation. It supports at least two Notable species neither of which are particularly associated with seepages and springs. The caseless caddis *Tinodes unicolor* is more associated with headwater streams whilst the habitats of the marsh beetle *Elodes elongata* are certainly wetland associated but unclear due to taxonomic confusion in the genus. This site can only be considered to be of reasonable invertebrate interest.

6.12. Harridge Wood (Stream Source)

See SERC (2001) report (p. 16, 5th site from top of page). ST647481 (SERC grid ref). Somerset Wildlife Trust reserve. A spring emerges at the bottom of field above the wood and quickly enters a circular pond which is fenced off. A stream issues from the opposite end of the pond and flows down through the wood eventually flowing under the main footpath from the main entrance/car park.

No rare or uncommon invertebrates were recorded from the aquatic samples and the terrestrial samples have yet to be identified. One or two Nationally Scarce/Notable species might be expected from the latter. This site is likely to be of reasonable/medium interest.

6.13. Harridge Wood (East)

See SERC (2001) report (p. 16, 4th site from top of page). ST662483 (SERC grid ref). Somerset Wildlife Trust reserve. I followed the footpath alongside the stream upstream of the road (past the obvious stand of monk's-hood *Aconitum napellus*) until I got to a damp area dominated by *Carex pendula* and *Oenanthe* sp (ST6615548219 approx.). No standing or flowing water was present (excluding the stream nearby) so only terrestrial invertebrates could be sampled.

This site could only be assessed for terrestrial invertebrates and these have not been identified as yet. Flushes proved difficult to find and it is not likely to be an exceptional site for seepages and springs but it is potentially valuable for stream and woodland species.

6.14. Hurdlestone Wood

See SERC report (p. 16, 4th site from bottom of page). ST678481 (SERC grid ref). Streams and pools on a series of mossy tufaceous terraces in the woodland above the road. The wood is privately owned and is part of Edford Woods and Meadows SSSI.

An exceptional site with a large population of the RDB1 crane fly *Ellipteroides alboscuteolata* as well as supporting the meniscus midge *Dixa maculata*, the dance fly *Chelifera angusta*, the crane fly *Paradelphomyia nielsenii*, the soldierfly *Oxycera pardalina* and the hoverfly *Sphegina verecunda*. All of these are likely to be associated with springs and seepages to a greater or lesser degree.

6.15. Leigh Wood (East)

See SERC (2001) report (p. 16, 4th site from bottom of page). ST6837548119. A small dry channel crosses the grassland and extends up into the wood. The channel is damper at the downstream

end near where it joins the stream. Latter flows through riparian belt consisting of much thorny scrub and occasional mature trees. The site is privately owned.

Since the tributary channel is largely dry this is likely to be of low interest whilst the spring-fed stream within thorny scrub which runs down the hill supports some species of note. These include the small diving beetle *Hydroporus marginatus*, the riffle beetle *Riolus subviolaceus*, the crane fly *Limonia trivittata* and the soldierfly *Beris fuscipes*. The former is regarded as uncommon and a characteristic species of temporary, base-rich waters including the intermittent waters of chalk streams. The site is therefore probably of medium interest to seepage and spring species.

6.16. Leigh Wood (West)

See SERC (2001) report (p. 16, 4th site from bottom of page). ST6837548119. Small temporary stream sampled above the flume. This small stream feeds into the pond above White Hole Farm. The site is privately owned.

No rare or uncommon species were recorded from this small site. The dolichopodid *Diaphorus oculatus* was recorded here and nowhere else on the survey and whilst it is infrequently recorded by the surveyor, it is only given Local status by the Joint Nature Conservation Committee. This site must be considered of low value to seepage and spring invertebrates (compared to the other sites).

6.17. Neighbourne Farm Fields

See SERC (2001) report (p. 15, last site from bottom of page). ST639486 (SERC grid ref). Two springs are marked in the woods on the appropriate Ordnance Survey map. I found two dry channels but didn't follow these outside the woods. Consequently, these springs appear to have dried-up and were not surveyed further.

6.18. Packsaddle Bridge Fields, Whitehole (upstream)

See SERC (2001) report (p. 16, 3rd site from bottom of page). ST6804548074. Water emerges from a pipe in the wall behind the water bottling plant and below the minor road. Series of anatomising shallow channels feed into the stream below. A footpath connects to the road but this is private land.

This is a good site with several rare and uncommon invertebrates, most of which are associated to a greater or lesser degree with seepages, springs and associated habitats. Rare and uncommon species recorded included the trickle-midge *Thaumalea truncata*, the riffle beetle *Riolus subviolaceus*, the crane flies *Limonia trivittata*, *Molophilus corniger* and *Paradelphomyia nielsenii* and the soldierfly *Beris fuscipes*.

6.19. Packsaddle Bridge Fields, Whitehole (downstream)

See SERC (2001) report (p. 16, 3rd site from bottom of page). ST6812548219. The stream flows down a series of terraces with active tufa deposition immediately upstream of the wooden footbridge. At least one small spring to the side feeds into this. Another small tributary downstream of the bridge may be springfed. The site is privately owned but a public footpath crosses the footbridge.

This is an excellent to exceptional site with several rare and uncommon invertebrates, most of which are associated to a greater or lesser degree with seepages, springs and associated habitats. Rare and uncommon species recorded included the RDB crane fly *Gonomyia abbreviata*, the dance-flies *Chelifera angusta*, *Hemerodromia adulatoria* and *H. laudatoria*, the caseless caddis *Tinodes unicolor*, the marsh beetle *Elodes elongata*, the crane fly *Limonia trivittata* and the soldierfly *Beris fuscipes*.

6.20. *Tor Hole Nature Reserve*

This site was recommended by Wessex Water. A capped spring with a pipe is present near ST5731551855 with some water leakage. A water trough is also located here. Most of the rest of the nature reserve was dry on my visit. Owned by Somerset Wildlife Trust.

No rare or uncommon invertebrates were recorded from the aquatic samples and the terrestrial samples have yet to be identified. A few Nationally Scarce/Notable species might be expected from the latter. This site is likely to be of medium interest.

6.21. *Tufa pond South of Shepton Mallett*

See SERC (2001) report (p. 16, 1st site from top of page). ST641427 (SERC grid ref). I couldn't locate the pond although there was a small spring emerging on the lower slope of the field below the road. The pond appears to have been destroyed and the small spring in the field had been ploughed through. Consequently, I didn't spend any further time at this site.

6.22. *Underhill and Bullswood, near Midsomer Norton*

See SERC (2001) report (p. 16, 6th site from top of page). ST652542 (SERC grid ref). I entered the wood near the bungalow on the bridle path below the wood. I had no ownership details before I visited but was told that the wood is owned by the Rees-Moggs's who own extensive land in the area. The woodland was very dry and I suspect it was much wetter in the past. *Carex pendula* was dominant. Herb paris *Paris quadrifolia* and tutsan *Hypericum androsaemum* were noted. It was only possible to sample for terrestrial invertebrates in this wood.

This site could only be assessed for terrestrial invertebrates and these have not been identified as yet. Flushes proved difficult to find and it is not likely to be an exceptional site for seepages and springs but it is potentially valuable for woodland species.

7. Recommendations for Further Work

The terrestrial samples not identified should be worked up and the report updated.

Further analysis might be conducted including the use of biotic indices such as the BMWP, Community Conservation Index (CCI) and LIFE scores. Other methods such as diversity scores, species richness and multivariate statistics might also be used. Parameters on the sample sites were collected which would allow the latter to be used and relationships between taxa and environmental factors could be established.

Two important Diptera families (Ceratopogonidae and Psychodidae) with aquatic larvae and which are highly characteristic of seepages and springs were not identified due partly to lack of time, large amount of material collected and difficulties associated with identification. These families could be identified.

8. Conclusions

Twenty sites thought to have good spring and seepage habitat were selected for survey in the Mendips. Due to an excellent pre-existing report, other information and knowledge of the area by the surveyor, a relatively large number of sites could be selected. Some of the sites were found to have degraded with springs now dry or absent and these were not surveyed further. Seven sites were selected for survey in spring 2012 but weather conditions limited the survey to aquatic invertebrates. These were surveyed again along with a second tranche of sites but due to an

abnormally wet spring this survey had to be delayed until July 2012. Further surveys took place in 2013.

All the aquatic invertebrate material has been identified and terrestrial material for the seven sites first surveyed in April 2012 has been completed. The results are presented in this report. A total of 76 aquatic invertebrate species were recorded in spring 2012, 75 in summer 2012 and 105 in 2013. Terrestrial invertebrates accidentally taken in the pond net have also been recorded. A total of 214 terrestrial species were recorded by sweep netting in 2013. In all, two Red Data Book, five Lower Risk (Nationally Scarce) and fourteen Nationally Scarce species have been recorded. Since these results only cover the aquatic invertebrates from all sites and terrestrial invertebrates from seven sites only, much more might be expected when the remaining terrestrial species are identified. The results so far however, indicate that the Mendips still possess valuable and at times exceptional spring and seepage habitat.

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- Appendix 1: Aquatic invertebrates recorded from springs and seepages in the Mendips in Spring 2012.**
- Appendix 2: Aquatic invertebrates recorded from springs and seepages in the Mendips in June 2012.**
- Appendix 3: Aquatic invertebrates recorded from springs and seepages in the Mendips in 2013.**
- Appendix 4: Details of the terrestrial invertebrates recorded from the Mendips in 2013.**
- Appendix 5: Details of the Springs and Seepage Sites in the Mendips in 2012.**
- Appendix 6: Details of the Springs and Seepage Sites in the Mendips in 2013.**