

**HATCHMERE SSSI  
& PROPOSED  
BEAVER INTRODUCTION AREA,  
DELAMERE FOREST, CHESHIRE  
INVERTEBRATE SURVEY FOR  
THE TANYPTERA PROJECT**



Dave Bentley Ecology Services V1.3

[www.davebentleyecology.co.uk](http://www.davebentleyecology.co.uk)

## EXECUTIVE SUMMARY

- 1 An invertebrate survey was conducted by Dave Bentley Ecology Services for the Tanyptera Project, in support of the Cheshire Wildlife Trust, in August and October 2019 and in March 2020, at the Hatchmere Site of Special Scientific Interest and land to its north west, in the Delamere Forest in Cheshire West. The survey was designed to provide a baseline aquatic and wetland invertebrate survey against which the effects of a proposed Beaver introduction project can be measured over time. Some of the work took place within the proposed Beaver compound whilst the bulk of the work was to assess the invertebrates of the Hatchmere Site of Special Scientific Interest. Consent was obtained from Natural England for the survey.
- 2 Invertebrates are a major component of any ecological system. Invertebrates include Butterflies and Moths, Bees, Wasps, Ants, Flies, Slugs, Snails, Beetles, Bugs, Dragonflies, Spiders, Grasshoppers, Woodlice, Millipedes and Centipedes and many more groups of animals. Invertebrates help pollinate flowers and break down dead plants and animals into soil. Some, like Butterflies and Dragonflies provide a visual treat for people, and others serve as food for wild birds and mammals. Invertebrates are vital to a healthy ecosystem.
- 3 486 invertebrate taxa have been identified in this survey at Hatchmere. This is a good but not outstanding total for a late summer survey of basically three ponds, two streams and a ditch and adjacent marshland/mossland. In comparison, a survey at Sound Common heathland Site of Special Scientific Interest in Cheshire East by Dave Bentley in 2017-18, taking in a much wider period from May to September, revealed 678 taxa. A late summer survey of wetlands and grasslands in Northwich in 2020 revealed 610 taxa.
- 4 Of the 486 taxa, 412 taxa were recorded in the SSSI and 192 were recorded in the Beaver area. 75 taxa were recorded in the Beaver area but not in the SSSI area. 299 taxa were recorded in the SSSI but not in the Beaver area. 112 were common to both parts. With more work, it is likely that all the species found in the Beaver area will also be found in the SSSI.
- 5 No legally protected invertebrates were recorded. There are no European or UK Protected Invertebrate Species and no Priority Species (Section 41) of Principal Importance.
- 6 9 species have official UK scarcity statuses as listed by the UK Joint Nature Conservation Committee, a part of government. Some of these statuses require updating.

- 7 A total of 11 species had not (or at least not in recent decades) been recorded in Greater Cheshire before. These are Notable County First Records.
- 8 A total of 51 species are Very Local in Cheshire have been recorded in between just 2 and 8 other Greater Cheshire sites.
- 9 The bulk of the species of interest are found in the SSSI. Of note, though, is the presence of the Notable B Green Watercress Weevil in the Beaver Stream and this needs to be conserved.
- 10 The Local Wildlife Site Selection Criteria for the Cheshire region (Criterion S4) was used to consider the Dragonfly and Damselfly assemblage present. 10 species were recorded including the Black-tailed Skimmer, the Emerald Damselfly and the Black Darter. The threshold for consideration as a Local Wildlife Site is 8 Points. The assemblage scores at least 31 points, enough to warrant consideration as a Local Wildlife Site for Dragonflies alone.
- 11 Incidental records were made of Toads, Frogs, Common Lizard and Three-spined Sticklebacks. The alien invasive plant New Zealand Pigmyweed was also located in the NW part of the SSSI.
- 12 The Nationally Rare and Vulnerable Caddisfly *Anabolia brevipennis* has been found by National Caddisfly expert Ian Wallace in the Hatchmere Carr woodland in the year preceding this survey, but despite a careful search in this survey, it was not relocated in 2019/2020. It will still be present. It was not taken elsewhere in the survey, so this gives weight to the idea that it is restricted to the Carr Woodland in the NW of Hatchmere.
- 13 *A. brevipennis* should be listed as a named feature of the SSSI, and should be monitored, at least once each decade.
- 14 The current waterflow regime in the *A. brevipennis* area is very important to maintain suitable conditions for the population. The waterflow regime should be regularly monitored for any changes, especially in light of the Beaver introduction. Significant change should trigger a new survey for *A. brevipennis* and any footpath mitigation work as a result of waterflow change should be carefully considered (in terms of materials used as well as hydrological impact) to avoid any negative impact on the *A. brevipennis* population.

## 1 INTRODUCTION

- 1.1 An area of land (SJ 547 723) upstream of Hatchmere SSSI in the Delamere Forest of Cheshire belonging to Cheshire Wildlife Trust was proposed, in 2019, for a Beaver introduction project. A series of ecological studies were undertaken to consider the biological value of the introduction area and of Hatchmere. These would constitute a benchmark against which any impact of the Beaver introduction could be established over time. Consent was obtained from Natural England for the survey.
- 1.2 One of the components of the ecological studies was an invertebrate survey. This was arranged by the Tanyptera Project for the Cheshire Wildlife Trust. Dave Bentley Ecological Services was selected for the work given Dave Bentley's vast experience in wetland invertebrate survey work, and additional heathland survey expertise.
- 1.3 The invertebrate survey comprised three visits in August 2019, October 2019 and March 2020, timed to examine particularly the aquatic component. **The survey did not include early or mid-summer when, as long as there is sufficient rainfall, many more terrestrial species are encountered.**
- 1.4 Invertebrates are a major component of any ecological system. Invertebrates include Butterflies and Moths, Bees, Wasps, Ants, Flies, Slugs, Snails, Beetles, Bugs, Dragonflies, Spiders, Grasshoppers, Woodlice, Millipedes and Centipedes and many more groups of animals. Invertebrates help pollinate flowers and break down dead plants and animals into soil. Some, like Butterflies and Dragonflies provide a visual treat for people, and others serve as food for wild birds and mammals. Invertebrates are vital to a healthy ecosystem.
- 1.5 Invertebrates that are specific to certain habitats are seen as an indicator of the naturalness of a site. Where such a species is rare or uncommon its presence can indicate the value of a habitat. The presence of certain invertebrates can suggest management practices for a site; the growth in the number of habitat-specific species over time can indicate a site has been improved as a habitat type; conversely the loss of habitat-specific species over time suggests a decline in quality of that habitat type. The specific needs of certain uncommon invertebrates might suggest certain types of future management. Looking at the habitat needs of the range of invertebrates present shows the range of habitats that need to be maintained.
- 1.6 The report sets out what was found in the period in question. The report concentrates on aquatic/wetland/heathland invertebrates and not on

wayside and woodland invertebrates. It is quite possible that many species were not seen/ found on the days visited, or can be found in other habitats.

- 1.7 This document includes a text report and a spreadsheet.

## 2 METHODS

### Timing and extent

- 2.1 Long day visits were conducted on fine, sunny days in August (8/8/2019), October (2/10/2019) and March (28/3/2020).
- 2.2 A map is appended showing location of sampling points 1 to 22. The survey included the following habitats:

1	Norley Moss Pools	SJ 5520 7198
2	Norley Moss Moor	SJ 5522 7203
3	Norley mere edge	SJ 5524 7207
4	West side mix Hatchmere	SJ 5520 7214
5	NW bay Hatchmere	SJ 5521 7214
6	West wet wood Hatchmere	SJ 5519 7215
7	West seepage Hatchmere	SJ 5509 7223
8	Crassula pool Hatchmere	SJ 5497 7235
9	North inflow stream Hatchmere	SJ 5500 7234
10	North side swamp Hatchmere	SJ 5523 7228
11	Boardwalk (main) SE Hatchmere	SJ 5539 7207
12	Swim entry Hatchmere	SJ 5540 7216
13	East side Hatchmere	SJ 5536 7230
14	Sewage Outlet Hatchmere	SJ 5536 7224
15	NE Marsh Hatchmere	SJ 5531 7229
16	Beavers Brook	SJ 5472 7229
17	Beavers Pond	SJ 5478 7231
18	Beaver Glade	SJ 5471 7224
19	Beaver West Ditch A (N)	SJ 5461 7236
20	Beaver West Ditch B	SJ 5463 7231
21	Beaver West Ditch C	SJ 5464 7227
22	Beavers West Ditch D (S)	SJ 5467 7220

- 2.3 All field work and identification was done by Dave Bentley - who has been employed in wetland and general ecology since the early 1990s. Alan Stewart, Clive Washington and Garth Foster confirmed some specimens.
- 2.4 A site meeting was held with Ian Wallace in October to discuss the records of the rare Caddis *Anabolia brevipennis*. Breeding locations, identification tips and survey methods were kindly shared.

2.5 The methods employed were:

Direct observation of animals, mines and galls/ photography/ hand searching.

Use of pond net in water areas.

Searching of aquatic vegetation and water in a large white tray.

Butterfly net. Flying insects were targeted.

Canvas bag netting. A stout, short-handled bag was driven through ground vegetation, tall herbage, and amongst the lower branches of trees, with tree leaf clusters and bunches of reed-heads being shaken into the bag.

Vacuum sampling with a petrol sucker. The contents are shaken over a large white tray and picked through.

Samples were retained and preserved for microscopical examination.

**Identification:**

2.6 The latest up-to-date keys have been used. In addition help groups on Facebook have been consulted and online galleries and help pages viewed. Training courses with experts have been regularly attended. Almost every animal that is determined from a key can be viewed as a high definition photograph on specialist pages online. All samples have been retained, should they need to be re-examined.

2.7 Some species cannot be determined from female animals (e.g. some hoverflies), whilst many spider species cannot be determined without finding fully adult males or females. Species only become mature at certain times of year. *Some* of the Aleocharinae beetles have only basic keys which rely on having comparative samples and males, so cannot be identified at this time. A Moth survey would require night work to attract moths to a moth trap.

2.8 Many fly species have been identified. However, only a few selected distinctive Calypterate (blue-bottles or similarly shaped black flies) species have been so far identified. The tiny and little-known Fruit Flies and Chloropidae flies have not been identified. Smaller Nematocera are the province of life-long experts so few species can be identified.

2.9 Micro wasps and Ichneumon taken as bi-catch have been retained for a later attempt at identification by experts, though many species may not be known. They are the province of experts.

- 2.10 Thunderflies, tiny animals that live in flower heads, have not been attempted as the keys require very high magnification tools normally only found in Museums – and the species are not used in conservation evaluation.

### **3 RESULTS & DISCUSSION**

- 3.1 All taxa, their conservation statuses in England and Wales and in Cheshire, their habitat requirements, and the plot locations found are shown in the full spreadsheet.

#### **Species numbers**

- 3.2 486 invertebrate taxa have been identified in this survey at Hatchmere. This is a good total for a late summer survey of basically three ponds, two streams and a ditch and adjacent marshland. In comparison, a survey at Sound Common heathland Site of Special Scientific Interest in Cheshire East by Dave Bentley in 2017-18, taking in a much wider period from May to September, revealed 678 taxa. A late summer survey of wetlands and grasslands in Northwich in 2020 revealed 610 taxa.

- 3.3 Of the 486 taxa, 412 taxa were recorded in the SSSI and 192 were recorded in the Beaver area. 75 taxa were recorded in the Beaver area but not in the SSSI area. 299 taxa were recorded in the SSSI but not in the Beaver area. 112 were common to both parts. It is likely that all the species found in the Beaver area will also be found in the SSSI with more work.

- 3.4 The species counts in each group of invertebrates e.g. molluscs, dragonflies, beetles are shown by sample and site (e.g. SSSI or Beavers area) are shown on Table 1 at the end of this report.

#### **Species rarity – officially Scarce Species**

- 3.5 No legally protected invertebrates were recorded. There are no European or UK Protected Species and no Priority Species (Section 41) of Principal Importance. Note in case of transcribing errors in any of the following accounts the true record is the spreadsheet.

- 3.6 The survey located several officially scarce animals, and these have largely been confirmed with the relevant experts.

- 3.7 9 species with an official scarcity status, as supplied in January 2020 (taxon Designations download) by the UK Government's Joint Nature Conservation Committee, were recorded:

*Bathyphantes setiger* Cola-can-wielding Money Spider – Nationally Scarce, Very Local in Cheshire with fewer than 8 other records. Amber listed, meaning the spider will become Red Listed if the conservation status of the spider gets worse. A bog species. A male was found along the NW bay of Hatchmere, where *Sphagnum* lawns are present.

*Tmeticus affinis* Orange & Grey Money Spider- Nationally Scarce. Very Local in Cheshire with fewer than 8 other records. A wetland species. Females found at two marshy places on Hatchmere's east bank.

*Theridion cf hemerobium* Therid Spider – Nationally Scarce. Very Local in Cheshire with fewer than 8 other records. A wetland species living by open water. Juveniles of a good match were found along the main angling boardwalk, but this is not proof of the species being present.

*Noterus crassicornis* Smaller Boat-shaped Small Diving Beetle – Nationally Scarce. Local in Cheshire, not uncommon. A water beetle. One adult was taken along the main angling boardwalk, well away from the mossland.

*Hydroporus neglectus* Toothed Small Brown Diving Beetle – Nationally Scarce. Common to Local in Cheshire. A water beetle. One male was found in the NE marsh of Hatchmere where leafy water and *Sphagnum* is found.

*Stroggylocephalus livens* Mottled Bog Leafhopper – Nationally Notable B. This is the first Cheshire record. A wetland species. One male was found on the west bank of Hatchmere where bog habitat is present. Confirmed by Alan Stewart.

*Drupenatus nasturtii* Green Watercress Weevil – Nationally Notable B. Very Local in Cheshire with fewer than 8 other records. A wetland species. Taken in Beavers Brook amongst Water-cress.

*Dioxyna bidentis* Long-lipped Picture-winged Fly – Nationally Notable. Very Local in Cheshire with fewer than 8 other records. A wetland species. One adult taken on Norley Moss mere edge, presumably where Bidens grows in the saturated grass/surface mud.

*Agelastica alni* Alder Leaf Beetle – Red Data Book Data Deficient. Found on both Alder trees on site - in Floodplain and near East Pool. 20 years ago this was a rare beetle but the population exploded and now this beetle is found on almost any Alder tree in NW England. Also expanding in Yorkshire and Southern England.



### Species Notable in Cheshire (County First Records)

3.8 Species Notable in Cheshire. The survey located several animals for which no other modern Greater Cheshire record appears to exist on published databases. Greater Cheshire includes both the old county south of the River Mersey and the county that was created in 1974.

3.9 The 11 Notable County First (modern) Records (NC) species are:

*Hygrobates arenarius*\* Netted Water Mite – Previously confused with *Hygrobates fluviatilis* so this appears to be the first UK and first Cheshire record. *H fluviatilis* is recorded in one river in UK on NBN but was also listed in A Key to the Water Mites (Hydracarina) of the Flatford area by CL Hopkins 1961. It lives in fast streams and was found in the Beavers Brook. An under-recorded group.

*Unionicola crassipes*\* Square-plated Water Mite – First Cheshire record, no records on NBN but listed in A Key to the Water Mites (Hydracarina) of the Flatford area by CL Hopkins 1961. Found in the Beavers Pond. An under-recorded group, common in the Netherlands in many types of waterbody where freshwater sponges can be found.

\*(De Nederlandse watermijten (Acari: Hydrachnidia) by Harry Smit 2018 was used to determine these samples.

*Stroggylocephalus livens* Mottled Bog Leafhopper as noted above.

*Cixius distinguendus* Forest Lacehopper. Confirmed by Alan Stewart. Not recorded in Cheshire since 1929. Uses broad-leaved or conifer woodland edges. Found at Norley Moss in the vicinity of forest.

*Cixius nervosus* Damp Woodland Lacehopper. Male and female found in Beaver Glade, where broad-leaved trees, as well as conifers, are present.

*Megamelodes quadrimaculatus* Dark Brown Marsh Planthopper. Males and females found around the NW Bay of Hatchmere where mire, fen and wet grasses are present.

*Megamelus notula* Banded Sedge Planthopper. Not recorded in Cheshire since before 1960. Wetlands with sedges. Taken at the Norley Moss edge of Hatchmere.

*Caricosipha paniculatae* Greater Tussock Sedge Aphid. No records on NBN Atlas or rECOrd. Greater Tussock Sedge & other Carex.

*Platypalpus biapicalis*? Rare Dance Fly (unconfirmed). Uncommon species in UK. Taken in Beaver Glade. May not be accurate determination.

*Beckerina umbrimargo* Scuttle Fly. Under-recorded species.

*Chaetopleurophora erythronota* Scuttle Fly. Under-recorded species.

### Species with 1 to 8 other recorded sites in Cheshire – Very Local Species

- 3.10 An arbitrary figure of 8 other sites was chosen, thereby excluding all species with 10 or more recorded sites. These are in the VL column whilst NC (first county records) are also tabulated. Species which also have an affinity with the saline conditions are also included. Species with an official scarcity status but are not Notable or Very Local in Cheshire are not included here. There were 51 Very Local species recorded, **in addition** to the 11 Notable County records.
- 3.11 The species and their habitat requirements are all listed on the Spreadsheet. They comprise:

	VL	NC
<b>Totals</b>	<b>51</b>	<b>13</b>
Bees/wasps	1	
Spiders	7	
Water Mites		2
Microcrustacea	7	
Water Bugs	3	
Land bugs	14	6
Beetles	12	
Diptera	7	3

- 3.12 The full list of Very Local species in Cheshire, (NC are shown above) and with some duplication with officially Scarce species, showing broad habitat requirements and location found, is as follows:

<i>Colletes succinctus</i>	Heather Colletes Bee	Heaths SSSI
<i>Pirata (Piratula) uliginosus</i>	Coat Hooks Otter Spider	Heaths SSSI
<i>Tetragnatha cf obtusa</i>	Dark-headed Long-jawed Web-spinner	Wood edge SSSI
<i>Enoplognatha latimana</i>	Scarce Candy-striped Spider	Roughs SSSI
<i>Theridion cf hemerobium</i>	Therid Spider	Wetland SSSI
<i>Bathyphantes setiger</i>	Cola-can-weilding Money Spider	Wetland SSSI
<i>Ceratinella scabrosa</i>	Capped-abdomen Money Spider	Wood edge SSSI
<i>Tmeticus affinis</i>	Orange & Grey Money Spider	Wetland SSSI

<i>Acroperus harpae</i>	Spanner Water Flea	Wetland Beavers
<i>Ceriodaphnia quadrangula</i>	Small-headed Water Flea	Wetland SSSI
<i>Chydorus cf latus</i>	Square Water Flea	Wetland Both
<i>Chydorus ovalis</i>	Oval Water Flea	Wetland Both
<i>Chydorus sphaericus</i>	Oval Water Flea	Wetland Beavers
<i>Daphnia curvirostris</i>	Many-toothed Water Flea	Wetland SSSI
<i>Sida crystallina</i>	Barbapapa Water Flea	Wetland SSSI
<i>Hebrus ruficeps</i>	Ruddy Sphagnum Bug	Wetland SSSI
<i>Gerris argentatus</i>	Silver-edged Pond Skater	Wetland SSSI
<i>Sigara scotti</i>	Scott's Lesser Water Boatman	Wetland SSSI
<i>Rhacognathus punctatus</i>	Heather Shieldbug	Heaths SSSI
<i>Acalypta parvula</i>	Bulging-antennaed Moss Lacebug	Roughs SSSI
<i>Orius vicinus</i>	Smaller un-haired Flower Bug	Roughs Both
<i>Compsidolon salicellum</i>	Grey Yellow Bramble Bug	Wood edge SSSI
<i>Cyrtorhinus caricis</i>	Green & Brown Plant Bug	Wetland SSSI
<i>Orthotylus marginalis</i>	Dark Green Apple Capsid	Wetland SSSI
<i>Stygnocoris sabulosus</i>	Shiny Hairy Yellow-legged Ground Bug	Heaths SSSI
<i>Trapezonotus dispar</i>	Sandy Ground Bug	Heaths SSSI
<i>Conosanus obsoletus</i>	Part-winged Buff Leafhopper	Wetland SSSI
<i>Conomelus anceps</i>	Marsh Short-winged Planthopper	Wetland SSSI
<i>Javesella pellucida</i>	Stripe-faced Long-winged Planthopper	Roughs SSSI
<i>Ulopa reticulata</i>	Heather Planthopper	Heaths SSSI
<i>Aphalara cf polygona</i>	Orange-blotched Jump'g Plant Louse	Wood edge Beavers
<i>Enochrus affinis</i>	Pale-eyed Scavenger Beetle	Wetland SSSI
<i>Chaetocnema picipes</i>	Greenish black keeled Flea Beetle	Roughs SSSI
<i>Plagioderma versicolora</i>	Imported Willow Leaf Beetle	Wetland SSSI
<i>Stenus flavipes</i>	Yellow-legged Camphor Beetle	Wetland Both
<i>Stenus latifrons</i>	Camphor Beetle	Wetland Both
<i>Alianta incana</i>	Granulated abdomen Rove Beetle	Wetland Beavers
<i>Hygronoma dimidiata</i>	Yellow+brown-winged Rove Beetle	Wetland SSSI
<i>Lathrobium terminatum</i>	Yellow-flash Rove Beetle	Wetland SSSI
<i>Drupenatus nasturtii</i>	Green Watercress Weevil	Wetland Beavers
<i>Sitona obsoletus (lepidus)</i>	Cinnamon Sitona Weevil	Flower meadows SSSI
<i>Stenopelmus rufinasus</i>	Water Fern Weevil	Wetland Both
<i>Tachyerges stigma</i>	White-scutellumed Black Flea Weevil	Wood edge SSSI
<i>Achyrolimonia decemmaculata</i>	10-spot Cranefly	Wetland SSSI
<i>Chelipoda albiseta</i>	Long-legged Dance Fly	Wetland SSSI
<i>Leptozepe borealis</i>	Small dark Dance Fly	Wetland SSSI
<i>Dioxyna bidentis</i>	Long-lipped Picture-winged Fly	Wetland SSSI
<i>Tephritis leontodontis</i>	Hawkbit Gall Fly	Flower meadows SSSI
<i>Limnolia surturi</i>	Shore Fly	Wetland SSSI
<i>Cordilura ciliata</i>	Reedbed Black Dung Fly	Wetland Both

Habitat requirement details are given on the spreadsheet.

- 3.13 The Local Wildlife Site Selection Criteria for the Cheshire region (Criterion S9) considers Terrestrial/freshwater invertebrates:

“Sites should be selected that regularly support either:

Significant populations of any UK BAP species, or red data book listed species, or national rare/scarce species (present in 1-100 hectads in the UK).

OR

Significant assemblages\* of any terrestrial or freshwater invertebrates. (A locally significant bee assemblage is 8+ species of social bumble bee or 4+ species of cuckoo bee. A locally significant assemblage of macro-moths is 350 species which equates to 65% of the current list for VC5836)

\*Refer to Lancashire and Cheshire Entomological Society”

- 3.14 This survey shows that there is, at the very least, a presence of 9 nationally rare/scarce species (NB Nationally Scarce, Nationally Notable, Nationally Notable A and Nationally Notable Ball fall in the “present in 1-100 hectad” category). The assemblage of invertebrates is a “significant assemblage” as suggested in this report. Thus invertebrates are an important component of the designated site and contribute towards its continued designation.
- 3.15 The foregoing and the spreadsheet show the bulk of the species of interest are found in the SSSI, though the Beavers area is not without interest. Particularly the Watercress beds in the Beaver Stream need to be conserved to protect the Green Watercress Weevil *Drupenatus nasturtii*.

#### **Dragonfly and Damselfly Assemblage**

- 3.16 The Local Wildlife Site Selection Criteria for the Cheshire region (Criterion S4) was used to consider the Dragonfly and Damselfly assemblage present. 10 species were recorded including the Black-tailed Skimmer, the Emerald Damselfly and the Black Darter. The threshold for consideration as a Local Wildlife Site is 8 Points. The assemblage scores at least 31 points, enough to warrant consideration as a Local Wildlife Site for Dragonflies alone.
- 3.17 There may be more species which were not encountered. Dragonfly enthusiasts were contacted but no information was made available to supplement the survey.

### **Butterflies and Bees**

- 3.18 Given the aquatic focus, the survey was not timed to coincide with peak species numbers of summer maturing species such as butterflies and bees. No conclusion should be drawn from the sparsity of these groups in this survey.

### **Caddis *Anabolia brevipennis***

- 3.19 Despite a careful search at an appropriate time and with appropriate levels and extents of water pooling to support caddis, no Nationally Rare and Vulnerable *Anabolia brevipennis* were located. It was found by national caddisfly expert Ian Wallace in the Hatchmere North West Carr Woodland in the year preceding this survey, but despite a careful search in this survey, it was not relocated in 2019/2020. It will still be present. It was not taken elsewhere in the survey, so this gives weight to the idea that it is restricted to the Carr Woodland in the NW of Hatchmere.
- 3.20 Ian Wallace requests *A. brevipennis* should be listed as a named feature of the SSSI, and should be monitored, at least once each decade.
- 3.21 The current waterflow regime in the *A. brevipennis* area is very important to maintain suitable conditions for the population. The waterflow regime should be regularly monitored for any changes, especially in light of the Beaver introduction. Significant change should trigger a new survey for *A. brevipennis* and any footpath mitigation work as a result of waterflow change should be carefully considered (in terms of materials used as well as hydrological impact) to avoid any negative impact on the *A. brevipennis* population.

### **Sewerage installation**

- 3.22 A sewerage installation from the east side of the main road issues via a ditch under the road and through the willow area before emptying into the Mere. No signs of pollution were found in the ditch west of the road. The ditch contained numerous *Gammarus pulex* Freshwater Shrimp.

### **Habitats for invertebrates considered**

- 3.23 The area studied includes deep open water, vegetated open water, including with lily pads, marginal vegetation including reedbed, fen, inundation grassland and carr, flowing streams, sluggish streams and seepages, wooded damp grassland, marshy grassland, acid heath, sphagnum lawn and acidic heathland pools.

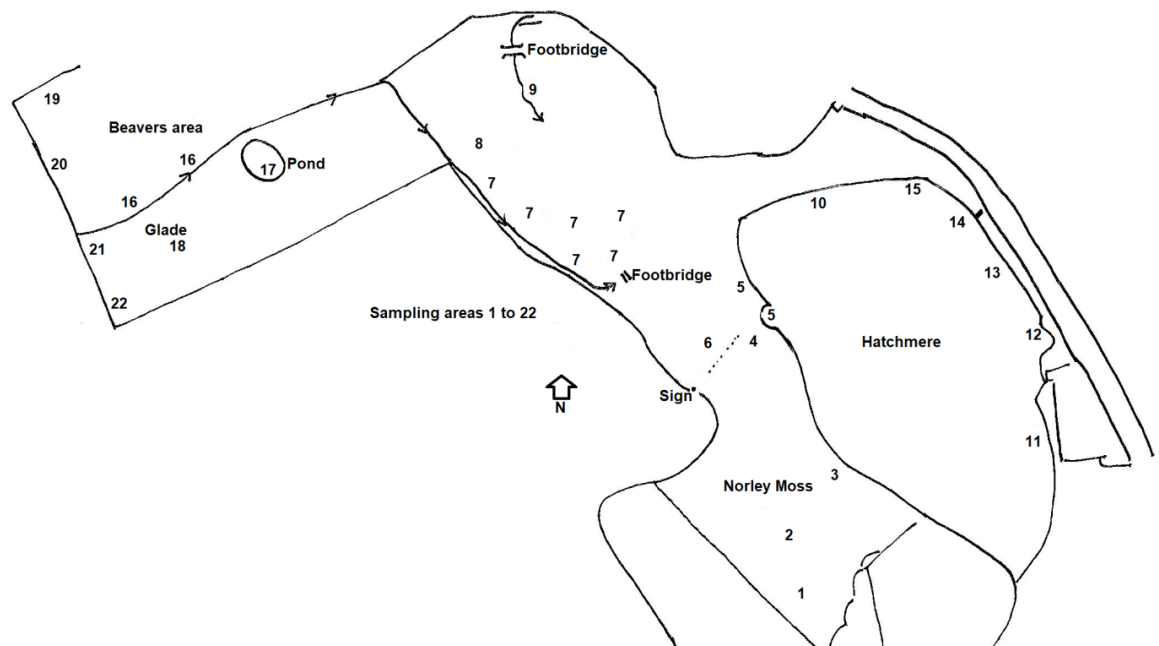
#### 4 INCIDENTAL WILDLIFE RECORDS

- 4.1 Frog spawn was found in Beavers Pond and the western ditch south of the stream in Beavers. Toad spawn was found in Beavers. Hatchmere was not searched at this time. Common Lizard found on Norley Moss.
- 4.2 Three-spined Stickleback fish were located as follows: The Western seepage into Hatchmere, the North East Marsh, Beavers Brook and Beavers Pond. Hatchmere's east bank is let to an angling club.
- 4.3 A pool containing the alien invasive New Zealand Pigmyweed *Crassula helmsii* was located in the NW of the SSSI (location is just visible from the SE corner of the Beaver enclosure fence). The contamination of the pond effectively ended the survey. This plant needs to be eliminated.

#### 5 CONCLUDING COMMENT

- 5.1 This is a report of an invertebrate survey of aquatic/wetland invertebrates at Hatchmere SSSI and the proposed Beavers area to the North West of the SSSI. Significant invertebrate interest exists on site contributing to the designation. Steps to ensure the survival of Watercress beds within the Beaver Stream may need to be taken. In order to evaluate the impact of the Beaver introduction, the methodology will need to be repeated at the appropriate intervals.

Dave Bentley 27/06/2021



Plan showing location of sample points 1 to 22



Table 1 (continued)

HATCHMERE SSSI, CHESHIRE		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
	Full SSSI	Beaver	Norley	Norley	Norley	West	North	West	Wet	Wet	Wet	North	Board	Swim	Mere	Sewage		
	Count	Count	Moss	Moss	Side	Side	West	Wet	Wet	Wet	Wet	North	Board	Swim	East	Outlet		
	this	this	Pools	Moor	Edge	Mix	Bay	Wood	Wood	Wood	Stream	Swamp	Walk	Mere	Side	Marsh		
	surveys	surveys	2ndOct	8thAug	8thAug	2ndOct	8thAug	2ndOct	8thAug	2ndOct	8thAug	2ndOct	8thAug	2ndOct	2ndOct	2ndOct	2ndOct	
TOTAL INVERTEBRATE TAXA RECORDED TO	486	412	192	21	113	116	71	69	66	12	9	37	24	80	39	5	2	46
SIMPLE ANIMALS:	3	2	2	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0
LUMBRICIDAE:	3	3	1	0	0	0	1	0	1	0	0	0	2	1	0	0	1	1
HIRUDINEA:	5	4	2	0	0	0	0	0	0	0	0	0	3	2	0	0	1	1
TRICLADIDA:	2	2	1	0	0	0	1	0	0	0	0	0	1	1	0	0	1	1
MOLLUSCA:	35	28	14	1	0	0	8	0	2	2	1	0	14	7	5	0	6	6
HYMENOPTERA:	12	10	4	0	4	3	1	2	0	0	2	2	0	0	0	0	0	0
MYRIAPODA:	5	4	2	0	0	1	0	0	0	0	1	0	1	0	0	1	1	1
ORTHOPTEROIDEI	3	3	0	0	2	0	0	1	0	0	1	0	0	0	0	0	0	0
ARACHNIDA:	80	71	28	6	20	33	17	11	22	0	0	10	6	12	9	0	0	6
MICROCRUSTACEA	16	11	11	3	1	0	1	8	0	0	0	0	4	1	0	0	3	3
MALACOSTRACA :	8	7	8	0	3	1	2	2	1	3	1	2	1	4	4	0	1	5
MEGALOPTERA:	3	2	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0
EPHEMEROPTERA	2	1	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
PLECOPTERA:	2	2	2	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0
TRICHOPTERA:	9	6	7	0	0	0	0	1	0	1	2	0	3	2	0	0	0	0
ODONATA:	10	9	3	0	1	3	1	3	1	0	0	0	3	0	0	0	0	0
HEMIPTERA:	18	17	8	2	0	2	1	7	0	1	0	0	12	6	0	0	3	3
HEMIPTERA:	51	47	13	0	22	23	10	4	8	0	0	9	6	2	1	0	1	1
LEPIDOPTERA:	6	5	2	0	2	2	0	1	0	0	0	1	0	0	0	0	0	0
COLEOPTERA:	42	34	16	8	5	4	2	10	3	1	2	0	1	10	2	0	0	5
COLEOPTERA:	60	49	21	0	12	17	13	3	9	0	0	3	2	2	0	0	3	3
DIPTERA:	94	82	32	0	38	21	14	5	16	2	1	4	5	4	1	0	0	9
THYSANOPTERA:	1	1	1	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0
COLLEMBOLA:	16	12	11	0	1	4	7	3	2	0	0	2	0	2	0	0	1	1