

A survey of ponds at Gallows Bridge Farm Nature Reserve, Buckinghamshire



A report for the Freshwater Habitats Trust

Martin Hammond Ecology

martinhammondecology@gmail.com

September 2016

1. Introduction

Gallows Bridge Farm forms part of the Upper Ray Meadows complex owned by the Berkshire, Buckinghamshire and Oxfordshire Wildlife Trust (BBOWT).

Six ponds were surveyed on 19th and 20th September 2016. A range of relict stream channels and foot drains were dry at the time of the survey, as were three small ponds in the southern meadows (Ponds 16 to 18, around SP 664 198). Tetchwick Brook, a small tributary of the River Ray, was sampled briefly at three locations to provide additional records.

Each pond was surveyed as per the PSYM methodology (Environment Agency, 2002), i.e. three minutes netting time divided equally between each of the meso-habitats present plus one minute examining the water surface and submerged debris. Where it was considered that additional sampling effort was warranted, additional netting was carried out but the taxa thus found were recorded separately. As far as possible, all material was identified to species level and raw data have been provided in spreadsheet format.

2. The ponds surveyed

Pond Field: Main Pond (SP 669 199)

The Pond Field contains around 30 ponds created by Freshwater Habitats Trust. The Main Pond is the permanent pond nearest the car park. It is a shallow, clay-bedded pond with patchy Broad-leaved Pondweed *Potamogeton natans* and stoneworts *Chara* spp., with low emergent vegetation around its banks. Nine-spined Sticklebacks are present.

A total of 45 species were recorded (40 in the PSYM sample), notably including the Nationally Scarce reed-beetle *Donacia thalassina*. This pond was rich in water bugs, which were represented by 18 species.

Old Fishing Lake

This permanent pond is overlooked by two birdwatching hides. The western half of the pond had been dredged very recently and access was difficult across the soft clay. Stands of Lesser Reedmace *Typha angustifolia* and White Water-lily *Nymphaea alba* occur along the eastern shore but access was limited by the steep bank profile and overhanging bushes. As a result, the invertebrate sample may not have been fully representative.

Three-spined Sticklebacks are present.

A total of 27 species were recorded including a specimen of the Nationally Scarce algivorous water beetle *Peltodytes caesus*.

Old Shooting Lake



This clay-bedded pond is located near the northern edge of the reserve. It has steep-sides to the north and supports extensive stands of Lesser Reedmace swamp with some overhanging willows on the bank, creating shaded pockets. The southern half of the pond had very recently been dredged, leaving a more gently-sloping profile. A water sample produced a pH reading of 7.27 with electrical conductivity (a measure of solute content) of $670 \mu\text{S}/\text{cm}^{-1}$.

The dredged area was dominated by pioneer Corixid bugs such as *Sigara lateralis*. The vegetated areas supported a species-rich invertebrate fauna dominated by water beetles. Forty-three species were identified from the PSYM sample. Although none of these were species of conservation concern, this presents a diverse community.

Pond 4

This kidney-shaped, silt-bedded pond has an extensive draw-down zone supporting Flote-grass *Glyceria fluitans*, Common Spike-rush *Eleocharis palustris*, Branched Bur-reed *Sparganium erectum*, Tubular Water-dropwort *Oenanthe fistulosa* and Common Water-plantain *Alisma plantago-aquatica*. Broad-leaved Pondweed grows in standing water in the deepest part of the basin.

Forty-five species were identified from Pond 4 (40 of these from the PSYM sample). Nationally Scarce species included the algivorous water beetle *Peltodytes caesus* and the large diving beetle *Hydaticus seminiger*. Also of note were two specimens resembling the newly-described scavenger water beetle *Hydrobius rottenbergii*, the least frequent of the three taxa formerly known as *H. fuscipes*.

Pond 5

This pond is partly fenced against livestock and partly open to grazing. Water levels were low at the time of the survey, leaving shallow water over a deep accumulation of soft, ochre-stained organic detritus. Stands of Greater Pond Sedge *Carex riparia* grow around the pond bank with Flote-grass and Marsh Foxtail *Alopecurus geniculatus* in the cattle-trampled area. A water sample produced a pH reading of 7.48 with electrical conductivity of 530 $\mu\text{S}/\text{cm}^{-1}$.



The invertebrate fauna of this pond appears to be species-poor with only 16 taxa recorded. Wandering Snail *Radix balthica* is very abundant.

Pond 19

This pond is located in the south-east corner of the reserve, within a species-rich hay meadow. It supports extensive submerged stands of stoneworts with localised Broad-leaved Pondweed and a few sparse shoots of Lesser Reedmace. It is clay bedded but a layer of stonewort marl is already accumulating. This extends into the draw-down zone which, at the time of the survey, formed a one metre-wide margin around the southern edge of the pond. A single Smooth Newt tadpole was netted but no fish.

Thirty-eight species were found including the Nationally Scarce algivorous water beetle *Peltodytes caesus*. Several of the species recorded here are characteristic of early successional ponds, such as the small diving beetles *Hygrotus confluens* and *Hydroglyphus geminus* and the scavenger water beetle *Laccobius sinuatus*.



3. Tetchwick Brook

Tetchwick Brook flows east-west along a straightened channel, then in a northerly direction along a more meandering course. It was sampled briefly at three locations to provide additional information on the aquatic invertebrate fauna of the reserve. Some 43 species were recorded, most of these being widespread still-water taxa. A small flowing-water element was represented by Freshwater Shrimp *Gammarus pulex*, the invasive alien Signal Crayfish *Pacifastacus leniusculus* and the algivorous water beetles *Haliplus fluviatilis* and *H. laminatus*. Adults and larvae of the local Mint Leaf-beetle *Chrysolina herbacea* were noted feeding on Water Mint and Gipsywort just upstream of the ford.

Mint Leaf Beetle ►



Tetchwick Brook upstream of ford



4. Results

A total of 99 aquatic macro-invertebrate taxa were recorded during this survey (Appendix 1). In addition to the three Nationally Scarce water beetles summarised below, the reserve supports a range of localised aquatic invertebrates including: the lesser water-boatman *Hesperocorixa moesta*; the algivorous water beetle *Halipplus laminatus* (in Tetchwick Brook); the scavenger water beetles *Enochrus coarctatus* and *Laccobius sinuatus*; and the small water beetle *Hydraena testacea*.

5. Notable species

Three water beetle categorised as Nationally Scarce (Foster, 2010; Hubble, 2014) were recorded during this survey:

Peltodytes caesus, an algivorous water beetle

Single specimens were identified from the PSYM samples from the Old Fishing Pond and Pond 19, with three from Pond 4. This beetle has a localised distribution in “lowland rich fen ponds and ditches” in southern England and Wales, south of a line from Gwent to Norfolk (Foster & Friday, 2011).

Hydaticus seminiger, a diving beetle

A single specimen of this large (14 mm) predatory diving beetle was caught in Pond 4. It has a local and patchy distribution in southern Britain, mainly in the south-east and East Anglia but with populations on the Somerset Levels and Cheshire Plain.

Donacia thalassina, a reed-beetle

A single specimen was collected from the Main Pond in the Pond Field. This is an uncommon *Donacia* with a widely scattered distribution, which appears to be declining in southern and south-eastern England (Hubble, 2014). Reed beetles develop as larvae at the roots of wetland plants, with the adults feeding on the aerial parts of the same plants. *Donacia thalassina* appears to use Common Spike-rush; as with other reed-beetles, it is much rarer than its foodplant.

The scavenger water beetle *Hydrobius fuscipes* is now recognised as comprising three distinct species in north-western Europe, distinguishable on both morphological and genetic grounds (Fossen *et al.*, 2016). *Hydrobius rottenbergii* appears to be much less frequent than *H. fuscipes* *sensu stricto* but its true status is, as yet, poorly understood. Two individuals resembling *H. rottenbergii* were collected from Pond 4.

6. References

Environment Agency (2002). *A guide to monitoring the ecological quality of ponds and canals using PSYM*. Version 2. Environment Agency Midlands Region: Solihull.

Fossen, E.I., Ekrem, T., Nilsson, A.N. & Bergsten, J. (2016). Species delimitation in northern European water scavenger beetles of the genus *Hydrobius* (Coleoptera, Hydrophilidae). *ZooKeys*, **564**: 71-120.

Foster, G.N. (2010). *A review of the scarce and threatened Coleoptera of Great Britain, Part 3: water beetles of Great Britain*. Joint Nature Conservation Committee: Peterborough.

Foster, G.N. & Friday, L.E. (2011). *Keys to adults of the water beetles of Britain and Ireland (Part 1)*. Handbooks for the Identification of British Insects, **4** (5). Royal Entomological Society: London.

Hubble, D.S. (2014). A review of the scarce and threatened beetles of Great Britain: the leaf beetles and their allies Chrysomelidae, Megalopodidae and Orsodacnidae. Species Status No. 19. Natural England:

Appendix 1

Aquatic macro-invertebrate taxa recorded during this survey

Taxon	English name	Family	Order
<i>Theromyzon tessulatum</i>	Duck Leech	Glossiphoniidae	Hirudinea
<i>Potamopyrgus antipodarum</i>	Jenkins's Spire-snail	Hydrobiidae	Gastropoda
<i>Galba truncatula</i>	Dwarf Pond Snail	Lymnaeidae	Gastropoda
<i>Lymnaea stagnalis</i>	Greater Pond Snail	Lymnaeidae	Gastropoda
<i>Radix balthica</i>	Wandering Snail	Lymnaeidae	Gastropoda
<i>Physa</i> sp.	a bladder snail	Physidae	Gastropoda
<i>Anisus leucostoma</i>	White-lipped Ramshorn Snail	Planorbidae	Gastropoda
<i>Anisus vortex</i>	White-lipped Ramshorn Snail	Planorbidae	Gastropoda
<i>Planorbis planorbis</i>	Margined Ramshorn Snail	Planorbidae	Gastropoda
<i>Unio</i> sp.	a mussel	Unionidae	Bivalvia
<i>Mucilium lacustre</i>	Capped Orb-mussel	Sphaeriidae	Bivalvia
<i>Asellus aquaticus</i>	Water Hoglouse	Asellidae	Isopoda
<i>Crangonyx pseudogracilis</i>	an amphipod shrimp	Crangonyctidae	Amphipoda
<i>Gammarus pulex</i>	Freshwater Shrimp	Gammaridae	Amphipoda
<i>Pacifastacus leniusculus</i>	Signal Crayfish	Astacidae	Decapoda
<i>Cloeon dipterum</i>	Pond Olive mayfly	Baetidae	Ephemeroptera
<i>Pyrrhosoma nymphula</i>	Large Red Damselfly	Coenagrionidae	Odonata
<i>Enallagma cyathigerum</i>	Common Blue Damselfly	Coenagrionidae	Odonata
<i>Ischnura elegans</i>	Blue-tailed Damselfly	Coenagrionidae	Odonata
<i>Libellula quadrimaculata</i>	Four-spotted Chaser	Libellulidae	Odonata
<i>Sympetrum striolatum</i>	Common Darter	Libellulidae	Odonata
<i>Anax imperator</i>	Emperor Dragonfly	Aeshnidae	Odonata
<i>Aeshna grandis</i>	Brown Hawker	Aeshnidae	Odonata
<i>Aeshna mixta</i>	Migrant Hawker	Aeshnidae	Odonata
<i>Sialis lutaria</i>	Common Alderfly	Sialidae	Megaloptera
<i>Nepa cinerea</i>	Water Scorpion	Nepidae	Hemiptera
<i>Ranatra linearis</i>	Water Stick-insect	Nepidae	Hemiptera
<i>Corixa punctata</i>	a lesser water-boatman	Corixidae	Hemiptera
<i>Hesperocorixa linnaei</i>	a lesser water-boatman	Corixidae	Hemiptera
<i>Hesperocorixa moesta</i>	a lesser water-boatman	Corixidae	Hemiptera
<i>Hesperocorixa sahlbergi</i>	a lesser water-boatman	Corixidae	Hemiptera
<i>Callicorixa praeusta</i>	a lesser water-boatman	Corixidae	Hemiptera
<i>Paracorixa concinna</i>	a lesser water-boatman	Corixidae	Hemiptera
<i>Sigara distincta</i>	a lesser water-boatman	Corixidae	Hemiptera
<i>Sigara dorsalis</i>	a lesser water-boatman	Corixidae	Hemiptera
<i>Sigara falleni</i>	a lesser water-boatman	Corixidae	Hemiptera
<i>Sigara lateralis</i>	a lesser water-boatman	Corixidae	Hemiptera
<i>Sigara nigrolineata</i>	a lesser water-boatman	Corixidae	Hemiptera
<i>Sigara semistriata</i>	a lesser water-boatman	Corixidae	Hemiptera
<i>Notonecta glauca</i>	Common Backswimmer	Notonectidae	Hemiptera

<i>Notonecta maculata</i>	Mottled Backswimmer	Notonectidae	Hemiptera
<i>Notonecta viridis</i>	a backswimmer	Notonectidae	Hemiptera
<i>Plea minutissima</i>	Pygmy Backswimmer	Pleidae	Hemiptera
<i>Ilyocoris cimicoides</i>	Saucer Bug	Naucorida	Hemiptera
<i>Gerris lacustris</i>	Common Pond-skater	Gerridae	Hemiptera
<i>Gerris odontogaster</i>	Toothed Pond-skater	Gerridae	Hemiptera
<i>Microvelia</i> sp.	a pygmy water-cricket	Veliidae	Hemiptera
<i>Haliphus fluviatilis</i>	an algivorous water beetle	Haliplidae	Coleoptera
<i>Haliphus laminatus</i>	an algivorous water beetle	Haliplidae	Coleoptera
<i>Haliphus lineatocollis</i>	an algivorous water beetle	Haliplidae	Coleoptera
<i>Haliphus ruficollis</i>	an algivorous water beetle	Haliplidae	Coleoptera
<i>Peltodytes caesus</i>	an algivorous water beetle	Haliplidae	Coleoptera
<i>Noterus clavicornis</i>	a burrowing water beetle	Noteridae	Coleoptera
<i>Agabus bipustulatus</i>	a diving beetle	Dytiscidae	Coleoptera
<i>Agabus sturmii</i>	a diving beetle	Dytiscidae	Coleoptera
<i>Ilybius fuliginosus</i>	a diving beetle	Dytiscidae	Coleoptera
<i>Ilybius montanus</i>	a diving beetle	Dytiscidae	Coleoptera
<i>Ilybius quadriguttatus</i>	a diving beetle	Dytiscidae	Coleoptera
<i>Rhantus suturalis</i>	a diving beetle	Dytiscidae	Coleoptera
<i>Colymbetes fuscus</i>	a diving beetle	Dytiscidae	Coleoptera
<i>Hydaticus seminger</i>	a diving beetle	Dytiscidae	Coleoptera
<i>Dytiscus marginalis</i>	Great Diving Beetle	Dytiscidae	Coleoptera
<i>Hydroporus angustatus</i>	a diving beetle	Dytiscidae	Coleoptera
<i>Hydroporus palustris</i>	a diving beetle	Dytiscidae	Coleoptera
<i>Hydroporus planus</i>	a diving beetle	Dytiscidae	Coleoptera
<i>Hydroporus pubescens</i>	a diving beetle	Dytiscidae	Coleoptera
<i>Hygrotus confluens</i>	a diving beetle	Dytiscidae	Coleoptera
<i>Hygrotus impressopunctatus</i>	a diving beetle	Dytiscidae	Coleoptera
<i>Hygrotus inaequalis</i>	a diving beetle	Dytiscidae	Coleoptera
<i>Hydroglyphus geminus</i>	a diving beetle	Dytiscidae	Coleoptera
<i>Hyphydrus ovatus</i>	a diving beetle	Dytiscidae	Coleoptera
<i>Laccophilus minutus</i>	a diving beetle	Dytiscidae	Coleoptera
<i>Helophorus grandis</i>	a scavenger water beetle	Helophoridae	Coleoptera
<i>Helophorus griseus</i>	a scavenger water beetle	Helophoridae	Coleoptera
<i>Helophorus minutus</i>	a scavenger water beetle	Helophoridae	Coleoptera
<i>Anacaena bipustulata</i>	a scavenger water beetle	Hydrophilidae	Coleoptera
<i>Anacaena globulus</i>	a scavenger water beetle	Hydrophilidae	Coleoptera
<i>Anacaena limbata</i>	a scavenger water beetle	Hydrophilidae	Coleoptera
<i>Anacaena lutescens</i>	a scavenger water beetle	Hydrophilidae	Coleoptera
<i>Berosus affinis</i>	a scavenger water beetle	Hydrophilidae	Coleoptera
<i>Cymbiodyta marginellus</i>	a scavenger water beetle	Hydrophilidae	Coleoptera
<i>Enochrus coarctatus</i>	a scavenger water beetle	Hydrophilidae	Coleoptera
<i>Helochares lividus</i>	a scavenger water beetle	Hydrophilidae	Coleoptera
<i>Hydrobius fuscipes</i>	a scavenger water beetle	Hydrophilidae	Coleoptera

<i>Hydrobius c.f. rottenbergii</i>	a scavenger water beetle	Hydrophilidae	Coleoptera
<i>Laccobius bipunctatus</i>	a scavenger water beetle	Hydrophilidae	Coleoptera
<i>Laccobius sinuatus</i>	a scavenger water beetle	Hydrophilidae	Coleoptera
<i>Hydraena testacea</i>	a small water beetle	Hydraenidae	Coleoptera
<i>Ochthebius minimus</i>	a small water beetle	Hydraenidae	Coleoptera
<i>Dryops luridus</i>	a long-toed water beetle	Dryopidae	Coleoptera
<i>Heterocerus fenestratus</i>	a mud beetle	Heteroceridae	Coleoptera
<i>Donacia thalassina</i>	Pondweed Reed-beetle	Chrysomelidae	Coleoptera
<i>Donacia versicolore</i>	Pondweed Reed-beetle	Chrysomelidae	Coleoptera
<i>Limnephilus sp.?</i>	a cased caddis-fly	Limnephilidae	Trichoptera
<i>Phryganea bipunctata</i>	a cased caddis-fly	Phryganeidae	Trichoptera
<i>?Athripsodes atterimus</i>	a cased caddis-fly	Leptoceridae	Trichoptera
Chironomidae	non-biting midge larvae	Chironomidae	Diptera
<i>Chironomus sp.</i>	non-biting midge larvae	Chironomidae	Diptera
Dixidae	meniscus midge larvae	Dixidae	Diptera