

Rush Wall Solar Park

Environmental Statement

Appendix 5.2

Invertebrate surveys

**Aquatic Invertebrate Survey
Rush Wall Farm,
Gwent Levels, Newport
for
Western Ecology
2019**

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Site Visits

27 June 2019 with Dave Boyce
27 August 2019

Summary

An aquatic invertebrate survey was conducted at Rush Wall Farm, Redwick, Newport, Gwent. The results of this show that the reens at this site are of low importance for rare and scarce invertebrates.

1 Introduction

The site was visited with Dave Boyce during warm conditions on 27 June 2019 and surveyed using the standard methodology for aquatic invertebrate sampling on the Gwent Levels (Buglife, 2013).

JMW re-visited the site on 27 August 2019 to conduct a survey for two scarce carder bees known to occur on the Gwent Levels.

2 Methodology

Details of the methodology used:

<https://www.buglife.org.uk/sites/default/files/2013Manual.pdf>

A standard Freshwater Biological Association design – soft, 1mm mesh, at least 30 cm deep, net, white polythene sheet, white tray and bucket was used to sample each reed at three locations. Invertebrates were then identified in the field or retained in ethanol for examination under the microscope later.

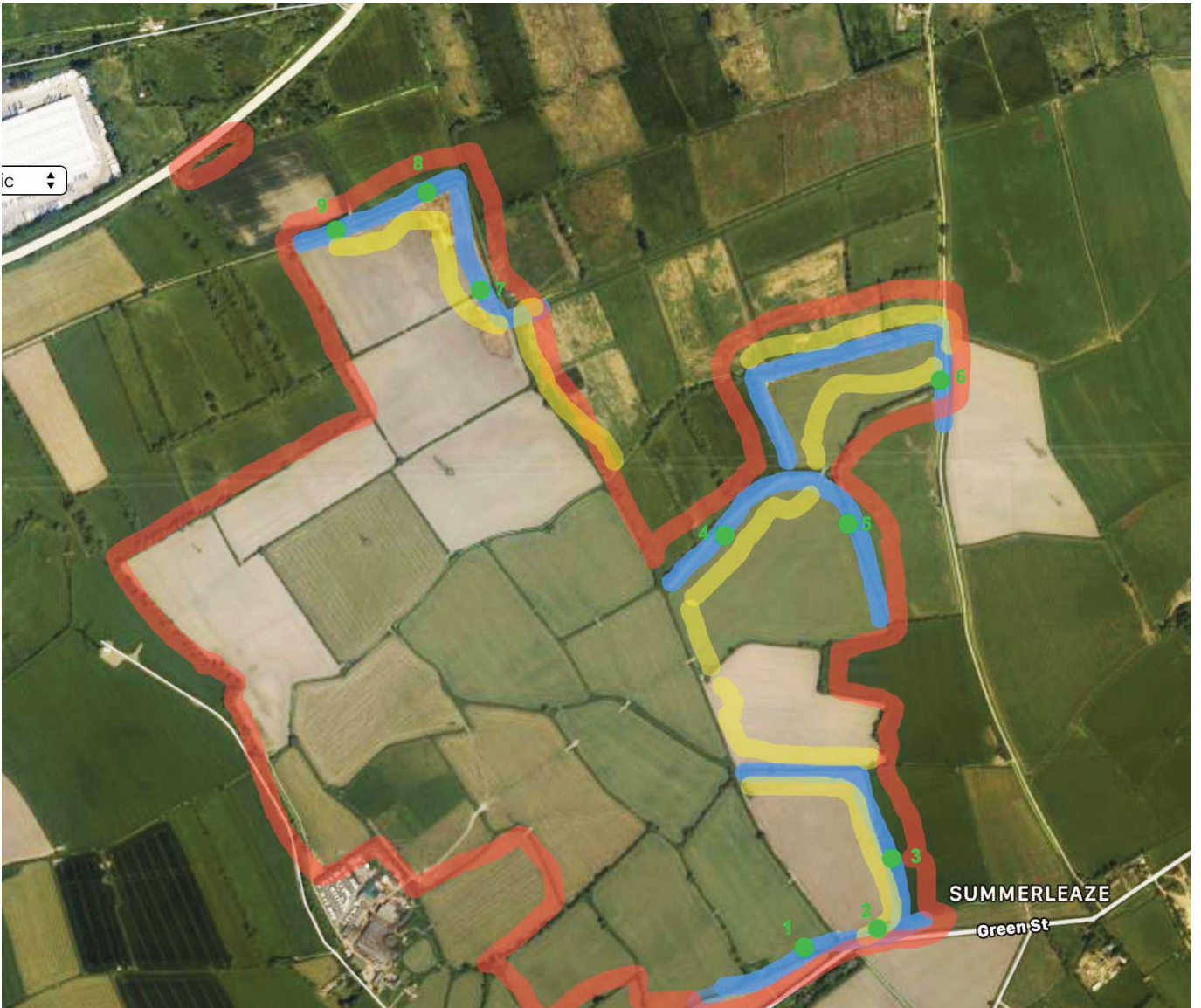
The target groups include adult water beetles, adult water bugs, the larvae of caddisflies, mayflies, stoneflies and dragonflies, molluscs, larger crustaceans, soldierflies, mosquitoes, dixids and water and raft spiders. Non-aquatic wetland species were not recorded.

Numbers of individuals in the samples were recorded using the following criteria.

- 1 - 9 **D**
- 10 - 99 **C**
- 100 + **B**
- 1000+ **A**



Sampling process.



Map showing survey area (RED) and locations of reens (BLUE) and sampling points (GREEN) and route taken (YELLOW).



Examples of survey sites - site 3 (left), site 4 (middle) and site 1 (right)

2 Results

Species recorded from the samples are given below.

Site 1

ST 41930 84903

Crustacea

Isopoda

Asellus aquaticus C

Insects

Coloeptera (Beetles)

Hydroporus pubescens D

Hydroporus palustris D

Hygrotus inequalis D

Helophorus brevipalpis D

Mollusca (Snails)

Radix balthica D

Planorbis planorbis D

Anisus vortex C

Sphaerium corneum D

Site 2

ST 42025 84957

Crustacea

Isopoda

Asellus aquaticus C

Insects

Coloeptera (Beetles)

Hydroporus pubescens D

Hydroporus palustris D

Hygrotus inequalis D

Helophorus brevipalpis D

Mollusca (Snails)

Radix balthica D

Planorbis planorbis C

Anisus vortex C

Sphaerium corneum D

Site 3

ST 41956 85165

Crustacea

Isopoda

Asellus aquaticus C

Crangonyx pseudogracilis D

Insects

Coloeptera (Beetles)

Hygrotus inequalis D

Mollusca (Snails)

Anisus vortex A

Site 4

ST 41857 85678

Crustacea

Isopoda

Asellus aquaticus C

Insects

Corixidae (Lesser water boatmen)

Corixa punctata D

Coloeptera (Beetles)

Hydroporus planus D

Hygrotus inequalis D

Helophorus brevipalpis D

Mollusca (Snails)

Radix balthica D

Planorbis planorbis D

Sphaerium corneum D

Site 5

ST 42115 85705

Crustacea

Isopoda

Asellus aquaticus C

Insects

Corixidae (Lesser water boatmen)

Corixa punctata D

Notonecta glauca D

Coloeptera (Beetles)

Hydroporus palustris D

Hydroporus planus D

Hygrotus inequalis D

Helophorus brevipalpis B

Helophorus minutus C

Helophorus obscurus C

Helophorus grandis C

Anacaena globulus D

Anacaena limbata D

Ilybius montanus D

Stenus boops D

Haliplus lineatocollis D

Mollusca (Snails)

Anisus vortex D

Site 6

ST 42274 85964

Crustacea

Isopoda

Asellus aquaticus C

Insects

Corixidae (Lesser water boatmen)

Corixa punctata D

Notonecta glauca D

Coloeptera (Beetles)

Haliplus ruficollis C

Helophorus grandis D

Helophorus brevipalpis D

Hydroporus angustatus D
Hydroporus palustris D
Noterus clavicornis D
Hygrotus inequalis D

Odonata (Damsel and Dragonflies)

Ischnura elegans D

Mollusca (Snails)

Anisus vortex D

Site 7

ST 41489 86125

Crustacea

Isopoda

Asellus aquaticus C

Insects

Corixidae (Lesser water boatmen)

Corixa punctata D

Notonecta glauca D

Coloeptera (Beetles)

Haliphus ruficollis D

Helophorus grandis D

Helophorus brevipalpis D

Hydroporus angustatus D

Hydroporus palustris D

Noterus clavicornis D

Hygrotus inequalis D

Cyphon phragmiteticola D

Odonata (Damsel and Dragonflies)

Ischnura elegans D

Mollusca (Snails)

Anisus vortex D

Site 8

ST 41366 86287

Crustacea

Isopoda

Asellus aquaticus C

Insects

Corixidae (Lesser water boatmen)

Corixa punctata D

Notonecta glauca D

Coloeptera (Beetles)

Anacaena limbata D

Haliphus ruficollis D

Helophorus grandis D

Helophorus brevipalpis D

Hydroporus angustatus D

Hydroporus palustris D

Noterus clavicornis D

Hygrotus inequalis D

Telmatophilus typhae D

Odonata (Damsel and Dragonflies)

Ischnura elegans D

Mollusca (Snails)

Anisus vortex D

Site 9

ST 41231 86238

Crustacea**Isopoda**

Asellus aquaticus C

Insects**Corixidae (Lesser water boatmen)**

Corixa punctata D

Notonecta glauca D

Coloeptera (Beetles)

Anacaena limbata D

Haliphus ruficollis D

Helophorus grandis D

Helophorus brevipalpis D

Hydroporus angustatus D

Hydroporus palustris D

Noterus clavicornis D

Hygrotus inequalis D

Odonata (Damsel and Dragonflies)

Ischnura elegans D

Mollusca (Snails)

Anisus vortex D

3 Bumblebee survey

On 27 August 2019 a visit was made to survey for the presence of two scarce bumblebees listed in the Section 41 of the *NERC Act 2006*.

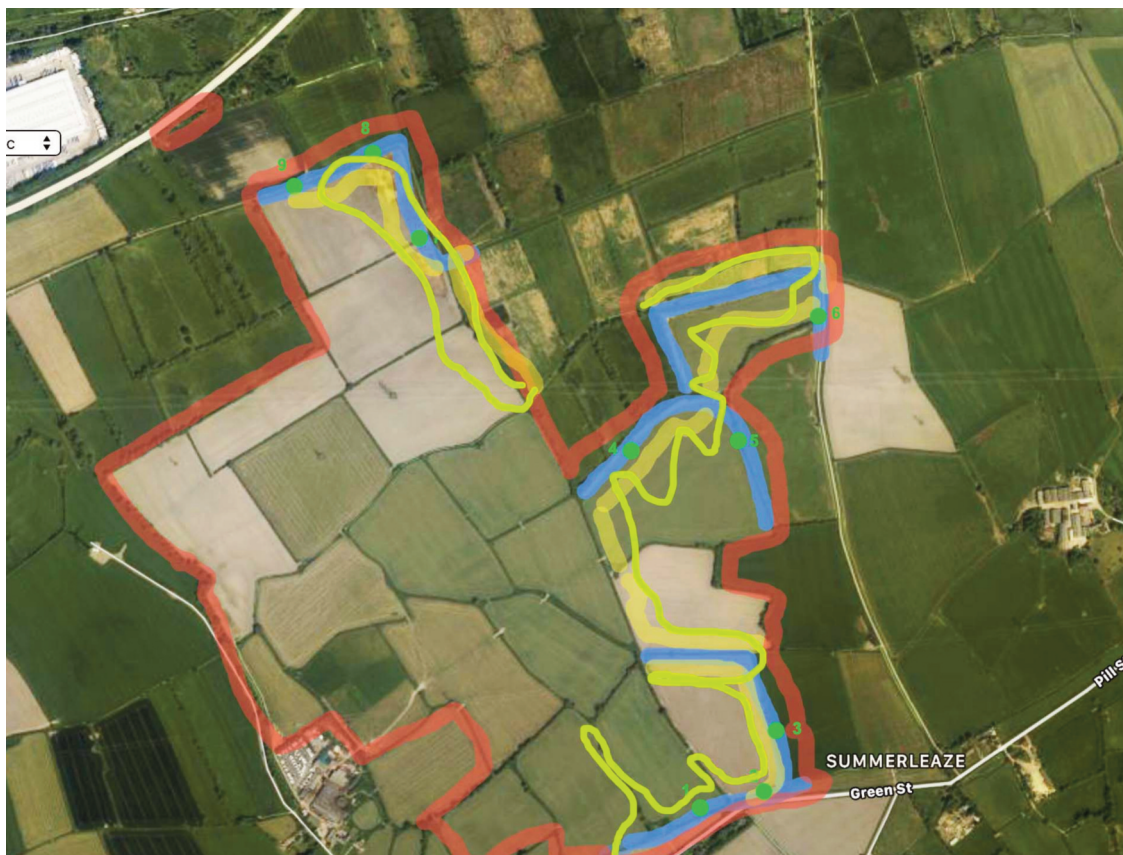
<http://publications.naturalengland.org.uk/publication/4958719460769792>

The Shrill Carder Bee *Bombus sylvarum* and the Brown-banded Carder Bee *Bombus humilis* are known to have nationally significant populations on the Gwent Levels.



Shrill Carder Bee *Bombus sylvarum* (left) and Brown-banded Carder Bee *Bombus humilis* (right) @John Walters

A transect which included areas with flowers such as thistles was walked in warm, sunny conditions and any bumblebees recorded. See map below. Several individuals of Red-tailed Bumblebee *Bombus lapidarius* and Common Carder bee *Bombus pascuorum* were recorded in the survey area but no other species. A single Shrill Carder Bee worker was seen just outside the survey area at ST 416 859 along with a single Brown-banded Carder Bee, another individual of the latter species was recorded on the main track to the east of the survey site at ST 424 851.



Map showing bee survey transect in yellow.

7 Conclusions

The reens at this site are not ideal for rare and scarce invertebrates. Many are deep-sided, shaded by scrub and at the time of the survey covered in a dense blanket of duckweed. The results detailed above show them to be of low importance for rare or scarce invertebrates.

If permission is granted for this project there may be opportunities to enhance habitat around the solar panels for the benefit on wildlife. Notes on this are given below.



Example of high quality invertebrate reen habitat on the Gwent Levels @John Walters

Open reen and pool margins

The establishment of a solar farm here will inevitably prevent grazing by livestock. Future management could seek to replicate this habitat feature by other means. Primarily this would be by the adoption of a programme of ditch management works that might include one or more of the following measures. During rotational ditch clearance, excavation should aim to create flat shelving margins, shallow embayments or gently sloping bank profiles (c.30-45°) during ditch clearance works. The creation of shallow pools where a similar ongoing management regime operates might also meet these objectives. Tree and shrub cover along such ditches should be kept to a minimum, as most of the important invertebrates associated with this habitat feature require open conditions. Excessive growth of bramble, tall herbs and grasses may also need to be cut back on a regular basis. Cutting ditch vegetation should be undertaken during the period from autumn to early spring. Cut material should be moved to an area of low ecological interest away from the ditch corridor, as run-off from rotting vegetation may otherwise reduce water quality. When cutting reeds and other tall emergent vegetation, it should be borne in mind that these constitute a valuable invertebrate habitat in their own right.

Species-rich grassland

Associated key species: brown-banded carder bumblebee; shrill carder bumblebee.

If solar panels are sited within fields, this will prevent grazing by livestock. In such cases, it may still be possible to create buffer strips around the field margins. These could be sown with appropriate flower-rich mixes (eg. clovers, vetches, bird's-foot trefoils, common knapweed etc.) and cut between September and March. Taller areas of grassland may be particularly beneficial in providing nest sites for shrill and brown-banded carder bumblebees. Shorter flower-rich swards (eg. with bird's-foot trefoils and clovers) could be created between/under the solar panels, with these being managed by sheep grazing and/or cutting. Red bartsia and yellow rattle may be useful components of the seed mix in the latter case, both as valuable nectar/pollen sources in their own right and because they are semi-parasitic on grasses should help to control the growth of coarser grasses. The re-seeding of solar farms in the Gwent Levels with wildflower mixes has the potential to be very beneficial to populations of shrill and brown-banded carder bumblebee and many other pollinating insects.

Acknowledgements

Thanks to the landowner for allowing access for this survey and to Colin Hicks and Dave Boyce for their assistance.

References

Palmer, M, Drake, M. and Stewart, N. 2013 *A manual for the survey and evaluation of the aquatic plant and invertebrate assemblages of grazing marsh ditch systems. Version 6.* Buglife,, Peterborough, 2013.

Smith, M. N. 2011. The Status and Distribution of the Shrill Carder Bee *Bombus sylvarum* on the Eastern Gwent Levels and within the Caerwent and Caldicot Areas of Gwent in 2010. CCW CONTRACT SCIENCE No. 972

Uk Priority Species information http://archive.jncc.gov.uk/_speciespages/153.pdf

Section 41 Species information <http://publications.naturalengland.org.uk/publication/4958719460769792>