Cyfoeth Naturiol Cymru
Natural Resources Wales

Monitoring Wetland Invertebrates on Rhos Goch National Nature Reserve, Radnorshire 2017

Phil A Ward

NRW Evidence Report No. 254

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Report series:	Evidence report series
Report number:	254
Publication date:	May 2018
Contract number:	
Contractor:	PA Ward
Contract Manager:	Rhys Jenkins
Title:	**Monitoring Wetland Invertebrates on Rhos Goch National Nature Reserve, Radnorshire 2017**
Author(s):	**Phil A Ward**
Technical Editor:	N/A
Peer Reviewer(s)	Michael Howe
Approved By:	Rhys Jenkins
Series editor(s):	N/A
Restrictions:	None

Distribution List (core)

NRW Library, Bangor	2
National Library of Wales	1
British Library	1
Welsh Government Library	1
Scottish Natural Heritage Library	1
Natural England Library (Electronic Only)	1

Distribution List (others)

Mike Howe, NRW (Electronic)	1
Dave Drewett, NRW (Electronic)	1

Recommended citation for this volume:

Ward, P.A 2018. Monitoring Wetland Invertebrates on Rhos Goch National Nature Reserve, Radnorshire 2017. NRW Evidence Report No. 254, 42pp. Natural Resources Wales, Bangor.

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Mae'r gwaith hwn yn cyflwyno canfyddiadau gwaith monitro infertebratau gwlyptir a gynhaliwyd yn 2017 yng Ngwarchodfa Natur Genedlaethol Rhos Goch, Sir Faesyfed.

Mae arolygon blaenorol wedi dynodi'r pedwar cynefin gwlyptir o fwd moel, haen y tir, dŵr agored a fflora gwlyptir fel nodweddion allweddol cyfosodiad o infertebratau gwlyptir. Yn flaenorol, yn 2007, sefydlwyd chwe gorsaf fonitro a chynhaliwyd chwiliadau amseredig gan ddefnyddio ystod o ddulliau casglu, gyda'r nod o ddatblygu dull monitro safonol ar gyfer y dyfodol. Dewiswyd rhywogaethau targed o blith infertebratau gwlyptir wedyn ar gyfer pob cynefin allweddol. Er mwyn i'r warchodfa fod mewn cyflwr ffafriol ar gyfer ei chyfosodiad o infertebratau gwlyptir, byddai'n rhaid i unrhyw waith fonitro gofnodi o leiaf 50% o'r tacsonau targed.

Mae'r gwaith hwn yn dilyn y gwaith monitro infertebratau a gynhaliwyd yn 2007 a 2012. Cafodd cyfanswm o 438 o gofnodion o 226 o rywogaethau infertebratau eu cofnodi yn ystod y gwaith monitro presennol yn 2017. Allan o'r 115 o rywogaethau targed a gofnodwyd o'r blaen, dim ond 26 o rywogaethau (23%) a gymerwyd yn 2017, sy'n dangos dirywiad cyson dros y cyfnod monitro o ddeng mlynedd (68 o rywogaethau [59%] yn 2007; 37 o rywogaethau [32%] yn 2012). Mae hyn yn dangos bod pob un o'r pedwar nodwedd cynefin allweddol ar gyfer gwlyptiroedd mewn cyflwr anffafriol a bod canrannau'r rhywogaethau gwlyptir targed yn parhau i ddirywio.

Argymhellir bod angen cynyddu lefelau pori er mwyn creu cynefin mwd moel a dŵr agored, ac y dylai'r gwaith o reoli prysg barhau er mwyn dal olyniaeth yn ei hôl.

2. Executive Summary

This work presents the findings of wetland invertebrate monitoring work undertaken in 2017 at Rhos Goch National Nature Reserve, Radnorshire.

Previous surveys have identified the four wetland habitats of bare mud, ground layer, open water and wetland flora as key wetland invertebrate assemblage features. Previously in 2007, six monitoring stations were set up and timed searches undertaken using a range of collecting methods, with the aim of developing standardised future monitoring. Target wetland invertebrate species were then chosen for each key habitat. For the reserve to be in favourable condition for its wetland invertebrate assemblage, any monitoring would have to record at least 50% of the target taxa.

This work follows on from invertebrate monitoring undertaken in 2007 and 2012. A total of 438 records of 226 invertebrate species were recorded during the current 2017 monitoring. Of the 115 target species previously recorded, only 26 species (23%) were taken in 2017, marking a steady decline over the 10 year monitoring period (68 species [59%] in 2007; 37 species [32%] in 2012). This shows that all of the four key wetland habitat features are in unfavourable condition and the percentages of the target wetland species are continuing to decline.

It is recommended that the levels of grazing need to be increased to provide bare mud and open water habitat, and that scrub management should continue to keep succession in check.

3. Introduction

Rhos Goch Site of Special Scientific Interest (SSSI) is owned and managed by Natural Resources Wales (NRW). The reserve is also a National Nature Reserve (NNR) and a Special Area of Conservation (SAC).

Past surveys have revealed a rich invertebrate fauna present on the reserve, the wetland invertebrate assemblage being considered a qualifying feature of the SSSI designation.

Sampling of the wetland invertebrate assemblage was first undertaken by Boyce in 2007 (Boyce, 2008) who carried out timed searches of four key habitat features within six set sampling stations, with the aim of developing a future standard monitoring methodology for the wetland invertebrates at Rhos Goch.

The objectives of the current contract are as follows:

- Undertake a monitoring programme in accordance with Boyce (2008), excluding assessments of the extent of the bare mud.

- From the results of the monitoring undertaken, determine whether the wetland invertebrate assemblage at Rhos Goch NNR remains in a favourable condition.

- Offer constructive comment on the state and management of the habitats examined from an invertebrate view-point, from within the experience of the contractor.

To monitor the condition of the key wetland habitat features, a lower limit was also set, whereby at least 50% of the listed invertebrate target taxa to be monitored are recorded in future sampling programmes for the reserve to be in favourable condition.

4. Methodology

The methodology follows exactly that set up by Boyce in 2007 (Boyce, 2008). This comprises timed searches of four key wetland habitats and selected taxa (a total of 9 taxa groups), for monitoring. See Table1.

Table 1: Wetland habitats and selected taxa.

Bare mud	Tipuloidea, Dolichopodidae, Carabidae, Staphylinidae
Open water	Tipuloidea, Water beetles including Scirtidae, Chrysomelidae and Curculionidae
Ground layer	Carabidae, Staphylinidae, Araneae
Wetland flora	Heteroptera, Chrysomelidae, Curculionidae

A one hour search of the ground layer involved shaking plant debris, tussocks and moss over white plastic trays and foot-treading of wet moss and ground vegetation into the water to allow species to float to the water surface; a one hour spot search in

each sampling station involved collecting insects with a net; a 15 minute sweep sample of wetland flora involved using standard kite-shaped sweep nets; aquatic species were sampled using a standard pond net in the water and by treading and sieving. These were undertaken at each of the six sampling stations.

The six sample stations set up by Boyce in 2007 (Boyce, 2008) were repeated in 2012 (Ward, 2012) and in 2017. Details of these sampling stations are found in Table 3 (taken from Boyce, 2008). Boyce's map showing station locations is found in Figure 1. Photographs of each sample station were taken (for comparison with ones from 2007 and 2012) which can be found in Appendix 2. Please note that the boardwalk stated in Table 2 is no longer *in situ*.

Table 2: Sample stations (from Boyce, 2008).

Sample station No.	Grid reference	Habitat type	Description
Station 1	SO 1921 4806	Poor fen, heavily grazed with bare ground (M23)	50m square SW from this point at W end of boardwalk (Station 2 adjacent to E)
Station 2	SO 1924 4811	Poor fen, grazed, but well-vegetated (M23), some flushed areas (M29)	50m square SW from this point on boardwalk, which marks N edge (Station 1 adjacent to W)
Station 3	SO 1936 4818	Mesotrophic transition mire (S9, S10, S27) and carr (W2)	50m square NE from this point on boardwalk, which marks S edge
Station 4	SO 1944 4824	Acidic transition mire (M4, M5)	25m radius from this point, which is on the boardwalk
Station 5	SO 1999 4857	Lowland raised bog (M19) and carr (W6)	25m radius from this point
Station 6	SO 1948 4837	Transition mire (S27) and carr (W2)	25m radius from this point

Sampling sessions were to be undertaken during two set time periods; two sessions between 15th May to 15th June and two days between 15th July and 15th August 2012.

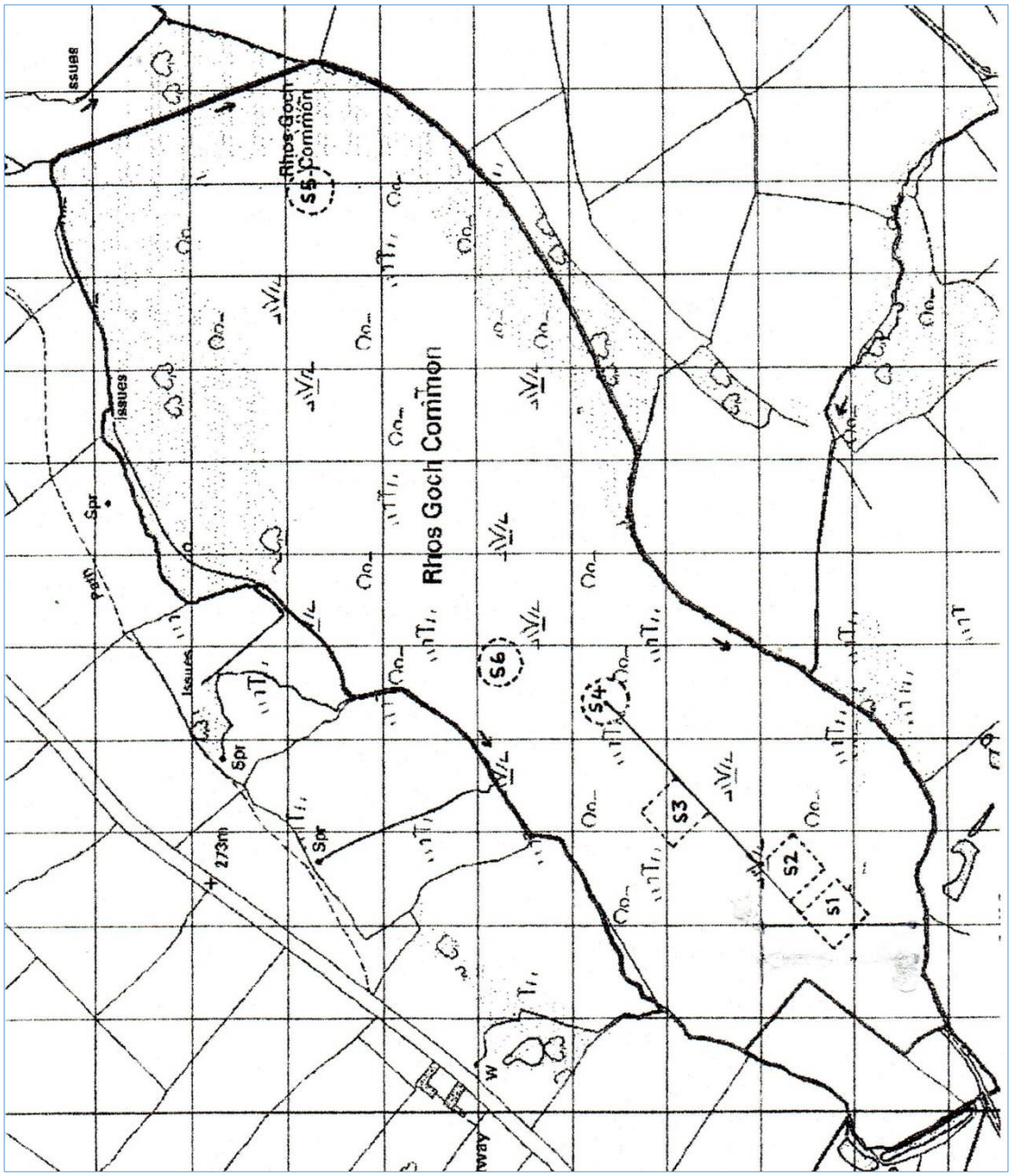
The visits were timed to take advantage of the best weather conditions for invertebrates, which were undertaken during dry, calm, and sunny weather conditions. See Table 3.

Table 3: Summary of date, times, weather conditions and methodology.

Dates	Time on site	Weather	Methodology
21/06/2017	08.00 – 15.15 British Summer time (BST)	Air temperature: 19°C - 26°C Cloud cover: 4/8 octas Wind speed: F2, light breeze Conditions: Warm, sunny periods	(Stations 1-4) 1 hour spot search 15 min sweep sample 15 min aquatic sample
22/06/2017	08.10 – 14.00 British Summer time (BST)	Air temperature: 17°C - 23°C Cloud cover:7/8 octas Wind speed: F2, light breeze Conditions: Warm, sunny periods	(Stations 5-6) 1 hour spot search 15 min sweep sample 15 min aquatic sample
20/07/2017	08.50 – 14.00 British Summer time (BST)	Air temperature: 17°C - 22°C Cloud cover: 5/8 octas Wind speed: F1, light air Conditions: Warm, sunny periods	(Stations 5-6) 1 hour ground search 15 min sweep sample 15 min aquatic sample
04/08/2017	08.20 – 15.30 British Summer time (BST)	Air temperature: 18°C - 20°C Cloud cover: 4/8 octas Wind speed: F1, light air Conditions: Warm and sunny	(Stations 1-4) 1 hour ground search 15 min sweep sample 15 min aquatic sample

Sampling was undertaken by two surveyors each session; MWJ Paskin BSc, ARCS, FRES, and PA Ward MCIEEM.

Figure 1. Location of sample stations (from Boyce, 2008). S1-S6 = Sample stations



5. Results

In total, 438 records of 226 species of invertebrate were recorded during the current 2017 survey (Appendix 1). Of the 115 wetland assemblage target species previously recorded from the site, 26 species (23%) were seen in 2017. This compares with 37 target species (32%) in 2012 and 68 target species (59%) recorded in 2007.

The wetland assemblage species recorded for each of the four key habitats are listed in Tables 4 to 7.

Bare Mud Species

Of the 14 target species of invertebrate associated with bare mud, 3 species (21%) were recorded from the sampling stations in 2017 (although *Blethisa multipunctata* was casually recorded outside the sampling stations), which is the same percentage as in 2007. The amount of available bare mud within the area in 2017 was assessed as minimal, no doubt due to lack of any grazing stock creating more open bare areas within the taller dense wetland vegetation. 2017 proved to be a drier year for sampling than previous years, with high water tables recorded during both the 2012 survey with 1 target species recorded (7%), and the 2007 survey with 3 target species (21%) of wetland invertebrates recorded.

Table 4: Bare Mud Species.

Species	2007	2012	2017	Status
COLEOPTERA				
Carabidae				
Blethisa multipunctata	●		(●)	Nat. Scarce
Agonum marginatum				
Acupalpus exiguus	●			Nat. Scarce
Bembidion bruxellense				
Chlaenius nigricornis				Nat. Scarce
Staphylinidae				
Platystethus nodifrons				Nat. Scarce
Paederus riparius	●	(●)	●	
DIPTERA				
Tipulidae				
Tipula maxima		●		
Tipula pruinosa				
Dolichopodidae				
Dolichopus atratus			●	
Dolichopus lepidus				
Hercostomus angustifrons			●	Nat. Scarce
Hercostomus chalybeus				
Hercostomus cupreus				
TOTAL	**3**	**1**	**3**	

(●) = indicates casual records not included in sampling totals.

Ground Layer Species

A total of only 11 of the 55 target species (20%) of invertebrates were recorded during the ground searches in 2017. This compares to 20 of the 55 target species (36%) in 2012, and 37 (67%) in 2007. This is a significant reduction in all target group species (*Carabidae, Staphylinidae, Araneae*) recorded, as noted in the 2012 report particularly for *Staphylinidae*.

Table 5: Ground Layer Species.

Species	2007	2012	2017	Status
COLEOPTERA				
Carabidae				
Carabus granulatus				
Bembidion doris	●	●		
Pterostichus minor		●	●	

Pterostichus vernalis				
Agonum afrum				
Agonum gracile	●	●		
Agonum piceum	●			
Agonum thoreyi	●	●	●	
Trichocellus placidus				
Acupalpus dubius	●			
Staphylinidae				
Hadrognathus longipalpus	●			
Stenus bifoveolatus	●	●		
Stenus canaliculatus				
Stenus cicindeloides	●	●	●	
Stenus formicetorum	●			
Stenus geniculatus	●			
Stenus oscillator	●	●		Nat. Scarce
Stenus pallitarsis	●		●	
Stenus picipennis	●			
Stenus solutus	●			
Euaesthetus ruficapillus	●			
Ochthephilum fracticorne	●		●	
Othius laeviusculus				
Philonthus atratus				Nat. Scarce
Philonthus corvinus	●			Nat. Scarce
Philonthus nigrita	●	●	●	
Philonthus umbratilis	●			
Habrocerus capillaricornis	●			
Tachporus pallidus	●	●		
Tachyporus transversalis	●	●	●	
Hygronoma dimidiate	●	●		
Alianta incana	●			
Pachnida nigella	●			
Deubelia picina	●	●		
Aleochara brevipennis				
Bryaxis curtisii	●			
Trissemus impressus	●			
ARANEAE				
Clubionidae				
Clubiona diversa				
Lycosidae				
Arctosa leopardus	●	●		
Pirata piscatorius	●	●	●	
Pirata uliginosus				
Hahniidae				
Antistea elegans	●	●	●	
Theridiidae				
Robertus arundineti				
Linyphiidae				
Metopobactrus prominulus				
Hypselistes jacksoni	●	●		

Trichopterna thorelli				
Silometopus elegans				
Lophomma punctatum	●	●		
Erigonella ignobilis	●			
Araeoncus crassiceps				
Drepanotylus uncatus	●	●	●	
Aphileta misera	●	●		
Agyneta olivacea				
Bathyphantes approximatus	●			
Bathyphantes setiger		●	●	
TOTAL	**37**	**20**	**11**	

Open Water Species

A total of 10 of the 32 target species (31%) of invertebrates were recorded for the open water habitats in 2017. This compares well with 11 of the 32 target species (34%) recorded previously in 2012, although still a reduction compared to the 20 species (63%) in 2007. Again, this is a significant drop in target species recorded between the 2017 & 2012 years compared to 2007. If we compare all species of water beetles and wetland *Scirtidae* including non-target species between sampling years, total of 37 species were initially recorded in 2007 with 29 species (78%) in 2012 and 23 species (62%) in 2017. Although a lower percentage again was recorded in 2017 than previously, it continues to be surprising that more target taxa were not recorded within this total.

Table 6: Open Water Species.

Species	2007	2012	2017	Status
COLEOPTERA				
Dytiscidae				
Hydroporus incognitus				
Hydroporus melanarius	●	●		
Hydroporus obscurus	●	●	●	
Hydroporus striola	●		●	
Hydroporus umbrosus	●	●	●	
Agabus affinis	●	●	●	
Agabus paludosus	●			
Rhantus exsoletus				
Hydrophilidae				
Helochares punctatus	●	●		Nat. Scarce
Enochrus affinis s.s.	●		●	Nat. Scarce
Enochrus coarctatus				
Enochrus ochropterus	●	●	●	Nat. Scarce
Enochrus fuscipennis	●			
Scirtidae				
Cyphon hilaris	●	●	●	
Cyphon punctipennis	●			Nat. Scarce
Scirtes hemisphaericus	●	●		
Chrysomelidae				
Donacia simplex	●			
Plateumaris discolor	●	●	●	

Galerucella sagittariae	●			
Curculionidae				
Tanysphyrus lemnae	●	●		
Amalorrhynchus melanarius				
Poophagus sisymbrii				
DIPTERA				
Tipulidae				
Prionocera pubescens	●		●	Rare
Tipula luteipennis				
Tipula malanoceros				
Tipula pierrei				
Limoniidae				
Limnophila punctata				
Dicranomyia ventralis				Nat. Scarce
Helius flavus	●		●	
Helius pallirostris				
Ptychopteridae				
Ptychoptera minuta	●	●		
Ptychoptera scutellaris				
TOTAL	**20**	**11**	**10**	

Wetland Flora Species

A total of only 2 of the 15 target species (13%) of invertebrates were recorded in association with the wetland flora in 2017, although *Prasocuris phellandrii* was also recorded casually but not included within the totals. This compares previously with 5 species (33%) in 2012 and 8 species (53%) in 2007. This is obviously a significant percentage drop between the 10 year periods of sampling.

Table 7: Wetland Flora Species.

Species	2007	2012	2017	Status
HEMIPTERA				
Pentatomidae				
Zicrona caerulea	●	●	●	
Lygaeidae				
Pachybrachius fracticollis	●	●	●	
Tingidae				
Dictyla convergens	●	●		
Miridae				
Polymerus palustris				
Saldidae				
Chartoscirta cocksi	●			
COLEOPTERA				
Chrysomelidae				
Prasocuris junci				
Prasocuris phellandrii	●	●	(●)	
Phyllotreta flexuosa				
Phyllotreta tetrastigma				
Cassida flaveola				

Curculionidae				
Hypera diversipunctata				Rare
Hypera pollux	●			
Thryogenes nereis	●	●		
Datonychus melanostictus	●			
Ceutorhynchus cochleariae				
TOTAL	**8**	**5**	**2**	

(●) = indicates casual records not included in sampling totals.

Additional species recorded

A total of 98 additional species were recorded for 2017 from within the target groups which include casual records. In comparison, 56 additional species were recorded in 2012 from within the target groups. Obviously a more significant number of additional species were recorded in 2017 than previously, so it is somewhat surprising that not more target taxa from within the target groups were also recorded. See Table 8 below, these species were not included within the targeted survey samples.

Table 8: Additional wetland species recorded from within target groups.

Target group	Additional wetland species in 2012	Additional wetland species in 2017
Staphylinidae	11	10
Tipuloidea	6	14
Araneae	6	24
Water beetles (including Scirtidae)	8	16
Carabidae	6	4
Curculionidae	1	0
Dolichopodidae	3	9
Chrysomelidae	6	8
Heteroptera	9	13
Totals:	**56**	**98**

Four additional species recorded were *Tetanocera freyi*, a Rare (RBD2) snail-killing fly (*Sciomyzidae*); cranefly *Phylidorea abdominalis* (*Limoniidae*), gall fly *Acanthiophilus helianthi* (*Tephritidae*) and muscid fly *Lipsocephala verni* (*Muscidae*), all Nationally Scarce.

6. Discussion

Table 9 compares the total number of wetland invertebrate taxon in each target group within sample stations overall and in 2007 (from Boyce, 2008) and 2012 (Ward, 2012) and 2017 respectively.

Table 9: Number of wetland assemblage target species at Rhos Goch.

Taxon	Wetland species overall	Wetland species 2007	Wetland species 2012	Wetland species 2017
Staphylinidae	29	24 (83%)	8 (28%)	6 (21%)
Tipuloidea	12	3 (25%)	2 (17%)	2 (17%)
Araneae	18	9 (50%)	8 (44%)	4 (22%)
Water beetles (including Scirtidae)	16	13 (81%)	8 (50%)	8 (50%)
Carabidae	15	7 (47%)	4 (27%)	2 (13%)
Curculionidae	8	4 (50%)	2 (25%)	0 (0%)
Dolichopodidae	5	0 (0%)	0 (0%)	2 (40%)
Chrysomelidae	8	4 (50%)	2 (25%)	1 (12.5%)
Hetereroptera	5	4 (80%)	3 (60%)	1 (40%)
Total:	**115**	**68 (59%)**	**37 (32%)**	**26 (23%)**

The above figures show that only just over a third of the total wetland target species were recorded in 2017 compared with 2007, and less than a quarter of the overall target species total.

The current 2017 survey shows that all four key wetland habitat features continue to fall some way short of the 50% threshold, therefore being in unsuitable condition for its wetland invertebrate assemblage, a statutory designated SSSI feature.

No grazing stock or signs of grazing were seen during the current 2017 sampling within the main area across the sampling stations and it was assessed that the amount of bare mud areas and open water created by grazing stock was limited. Horse grazing in 2017 was present within the electric fenced south-western entrance of the site (to the west of all the sampling stations) which created abundant areas of bare mud and open water conditions, which should be maintained. No bare mud and limited open water habitats were present at any of the sampling stations. A major increase in grazing to create bare mud areas and more extensive open water conditions for wetland invertebrates is recommended and essential, which ideally should be scattered across the survey site, using cattle grazing if possible. As stated in the 2012 report (Ward, 2012), to increase the essential bare mud and open water areas needed over the range of wetland habitats present for the target wetland invertebrate assemblage would need either an increase in grazing stock numbers, or a system of fenced compartments or temporary electric fencing during the summer months. This would restrict stock to certain areas and have the flexibility to move them to another compartment when enough bare ground had been created.

The ground layer across all the sampling stations was found to include a diverse and well-structured habitat, with substantial areas of *Sphagnum* moss and drier moss mounds, with a good build-up of dead grass, sedge and plant debris.

The amount of open water habitat across the sampling stations was found overall to be poor.

As stated in the 2012 report (Ward, 2012), the wetland flora was again found to be very diverse, well-structured and varied across the sampling stations, forming excellent invertebrate habitat. Much scattered willow bushes, from seedlings to more established trees, occur throughout the survey site, which form excellent feeding and sheltering habitat. However, the current management programme of tree treatment and reduction should be continued to protect against increased scrub colonisation. Further colonisation by seedling trees should be countered with an increase in grazing stock. Dead trees, however small, also form interesting, diverse and important habitat and well as overwintering sites, i.e. under bark, for many species including wetland ones.

7. Acknowledgements

Thank you to Rhys Jenkins and Dr Mike Howe, Natural Resources Wales.

8. References

Boyce, D.C. 2008. Monitoring Invertebrate Features on Sites of Special Scientific Interest: The Wetland Invertebrate Assemblage on Rhos Goch National Nature Reserve, Radnorshire. CCW Report No. **CCW/SEW/07/2**. Countryside Council for Wales.

Ward, P.A. 2012. Monitoring Wetland Invertebrates on Rhos Goch National Nature Nature Reserve, Radnorshire. CCW Report No. **CCW/SEW/12/4**. Countryside Council for Wales.

9. Appendices

9.1. *Appendix 1. Full list of invertebrates recorded at Rhos Goch SSSI in 2017.* (Red highlighted = Wetland Target Species)

Group	Family	Species	Status	Grid ref	Recorder	Determiner	Date	Station	Sampling method
Odonata	Coenagriidae	*Coenagrion puella*		SO19134795	PA Ward	PA Ward	21/06/2017	South-western ponds	Casual
Odonata	Coenagriidae	*Enallagma cyathigerum*		SO19244811	PA Ward	PA Ward	21/06/2017	Station 2	Spot
Odonata	Coenagriidae	*Enallagma cyathigerum*		SO19444824	PA Ward	PA Ward	21/06/2017	Station 4	Spot
Odonata	Coenagriidae	*Ischnura elegans*		SO19134795	PA Ward	PA Ward	21/06/2017	South-western ponds	Casual
Odonata	Aeshnidae	*Anax imperator*		SO19134795	PA Ward	PA Ward	21/06/2017	South-western ponds	Casual
Odonata	Libellulidae	*Libellula depressa*		SO19134795	PA Ward	PA Ward	21/06/2017	South-western ponds	Casual
Odonata	Libellulidae	*Sympetrum striolatum*		SO19134795	PA Ward	PA Ward	21/06/2017	South-western ponds	Casual
Orthoptera	Acrididae	*Chorthippus parallelus*		SO19994857	PA Ward	PA Ward	22/06/2017	Station 5	Spot
Hemiptera	Pentatomidae	*Picromerus bidens*		SO19364818	PA Ward	PA Ward	04/08/2017	Station 3	Sweep
Hemiptera	Pentatomidae	*Zicrona caerulea*		SO19244811	PA Ward	PA Ward	04/08/2017	Station 2	Casual
Hemiptera	Pentatomidae	*Zicrona caerulea*		SO19244811	PA Ward	PA Ward	04/08/2017	Station 2	Ground search
Hemiptera	Pentatomidae	*Zicrona caerulea*		SO19444824	PA Ward	PA Ward	21/06/2017	Station 4	Spot
Hemiptera	Lygaeidae	*Drymus brunneus*		SO19994857	PA Ward	PA Ward	20/07/2017	Station 5	Ground search
Hemiptera	Lygaeidae	*Drymus brunneus*		SO19444824	PA Ward	PA Ward	04/08/2017	Station 4	Ground search
Hemiptera	Berytinidae	*Drymus brunneus*		SO19444824	PA Ward	PA Ward	04/08/2017	Station 4	Ground search
Hemiptera	Lygaeidae	*Pachybrachius fracticollis*		SO19214806	PA Ward	PA Ward	04/08/2017	Station 1	Ground search
Hemiptera	Lygaeidae	*Pachybrachius fracticollis*		SO19244811	PA Ward	PA Ward	04/08/2017	Station 2	Ground search
Hemiptera	Lygaeidae	*Pachybrachius fracticollis*		SO19364818	PA Ward	PA Ward	04/08/2017	Station 3	Ground search

Hemiptera	Berytinidae	*Cymus glandicolor*		SO19484837	PA Ward	PA Ward	20/07/2017	Station 6	Ground search
Hemiptera	Berytinidae	*Cymus glandicolor*		SO19244811	PA Ward	PA Ward	04/08/2017	Station 2	Ground search
Hemiptera	Berytinidae	*Cymus glandicolor*		SO19364818	PA Ward	PA Ward	04/08/2017	Station 3	Ground search
Hemiptera	Anthocoridae	*Anthocoris confusus*		SO19484837	PA Ward	PA Ward	22/06/2017	Station 6	Sweep
Hemiptera	Anthocoridae	*Anthocoris nemorum*		SO19484837	PA Ward	PA Ward	22/06/2017	Station 6	Sweep
Hemiptera	Nabidae	*Dolichonabis limbatus*		SO19994857	PA Ward	PA Ward	20/07/2017	Station 5	Sweep
Hemiptera	Nabidae	*Dolichonabis limbatus*		SO19484837	PA Ward	PA Ward	22/06/2017	Station 6	Sweep
Hemiptera	Nabidae	*Dolichonabis limbatus*		SO19484837	PA Ward	PA Ward	20/07/2017	Station 6	Sweep
Hemiptera	Nabidae	*Dolichonabis limbatus*		SO19244811	PA Ward	PA Ward	04/08/2017	Station 2	Ground search
Hemiptera	Miridae	*Blepharidopterus angulatus*		SO19484837	PA Ward	PA Ward	20/07/2017	Station 6	Sweep
Hemiptera	Miridae	*Closterotomus norwegicus*		SO19214806	PA Ward	PA Ward	21/06/2017	Station 1	Spot
Hemiptera	Miridae	*Lygocoris pabulinus*		SO19484837	PA Ward	PA Ward	20/07/2017	Station 6	Sweep
Hemiptera	Miridae	*Stenodema calcaratum*		SO19214806	PA Ward	PA Ward	21/06/2017	Station 1	Spot
Hemiptera	Saldidae	*Saldula saltatoria*		SO19214806	PA Ward	PA Ward	21/06/2017	Station 1	Aquatic
Hemiptera	Hebridae	*Hebrus ruficeps*		SO19214806	PA Ward	PA Ward	04/08/2017	Station 1	Ground search
Hemiptera	Hebridae	*Hebrus ruficeps*		SO19364818	PA Ward	PA Ward	04/08/2017	Station 3	Ground search
Hemiptera	Hebridae	*Hebrus ruficeps*		SO19444824	PA Ward	PA Ward	04/08/2017	Station 4	Ground search
Hemiptera	Gerridae	*Gerris sp.*		SO19994857	PA Ward	PA Ward	22/06/2017	Station 5	Aquatic
Hemiptera	Aphrophoridae	*Aphrophora alni*		SO19214806	PA Ward	PA Ward	21/06/2017	Station 1	Spot
Hemiptera	Aphrophoridae	*Aphrophora alni*		SO19444824	PA Ward	PA Ward	21/06/2017	Station 4	Spot
Hemiptera	Cercopidae	*Philaenus spumarius*		SO19214806	PA Ward	PA Ward	21/06/2017	Station 1	Spot

Neuroptera	Chrysopidae	*Chrysopa perla*		SO19364818	MWJ Paskin	MWJ Paskin	21/06/2017	Station 3	Spot
Lepidoptera	Zygaenidae	*Zygaena lonicerae*		SO19214806	PA Ward	PA Ward	21/06/2017	Station 1	Spot
Lepidoptera	Arctiidae	*Callimorpha dominula*		SO19214806	PA Ward	PA Ward	21/06/2017	Station 1	Spot
Lepidoptera	Arctiidae	*Callimorpha dominula*		SO19244811	PA Ward	PA Ward	21/06/2017	Station 2	Spot
Lepidoptera	Arctiidae	*Callimorpha dominula*		SO19364818	PA Ward	PA Ward	21/06/2017	Station 3	Spot
Lepidoptera	Arctiidae	*Callimorpha dominula*		SO19484837	PA Ward	PA Ward	20/07/2017	Station 6	Casual
Lepidoptera	Nymphalidae	*Maniola jurtina*		SO19244811	PA Ward	PA Ward	21/06/2017	Station 2	Spot
Trichoptera	Limnephilidae	*Limnephilus centralis*		SO19214806	MWJ Paskin	MWJ Paskin	04/08/2017	Station 1	Sweep
Diptera	Tipulidae	*Prionocera pubescens*	Rare (RDB2)	SO19214806	MWJ Paskin	MWJ Paskin	21/06/2017	Station 1	Sweep
Diptera	Tipulidae	*Prionocera turcica*		SO19214806	MWJ Paskin	MWJ Paskin	21/06/2017	Station 1	Sweep
Diptera	Tipulidae	*Prionocera turcica*		SO19244811	MWJ Paskin	MWJ Paskin	21/06/2017	Station 2	Spot
Diptera	Tipulidae	*Tipula oleracea*		SO19214806	MWJ Paskin	MWJ Paskin	04/08/2017	Station 1	Sweep
Diptera	Limoniidae	*Erioptera flavata*		SO19484837	MWJ Paskin	MWJ Paskin	21/06/2017	Station 6	Sweep
Diptera	Limoniidae	*Erioptera flavata*		SO19244811	MWJ Paskin	MWJ Paskin	21/06/2017	Station 2	Sweep
Diptera	Limoniidae	*Erioptera flavata*		SO19484837	MWJ Paskin	MWJ Paskin	20/07/2017	Station 6	Sweep
Diptera	Limoniidae	*Erioptera flavata*		SO19214806	MWJ Paskin	MWJ Paskin	21/06/2017	Station 1	Spot
Diptera	Limoniidae	*Euphylidorea aperta*		SO19484837	MWJ Paskin	MWJ Paskin	22/06/2017	Station 6	Sweep
Diptera	Limoniidae	*Helius flavus*		SO19214806	MWJ Paskin	MWJ Paskin	21/06/2017	Station 1	Sweep
Diptera	Limoniidae	*Helius flavus*		SO19244811	MWJ Paskin	MWJ Paskin	21/06/2017	Station 2	Sweep
Diptera	Limoniidae	*Helius flavus*		SO19364818	MWJ Paskin	MWJ Paskin	21/06/2017	Station 3	Sweep
Diptera	Limoniidae	*Helius longirostris*		SO19214806	MWJ Paskin	MWJ Paskin	21/06/2017	Station 1	Sweep

Diptera	Limoniidae	*Helius longirostris*		SO19214806	MWJ Paskin	MWJ Paskin	21/06/2017	Station 1	Spot
Diptera	Limoniidae	*Helius longirostris*		SO19244811	MWJ Paskin	MWJ Paskin	21/06/2017	Station 2	Sweep
Diptera	Limoniidae	*Helius longirostris*		SO19364818	MWJ Paskin	MWJ Paskin	21/06/2017	Station 3	Sweep
Diptera	Limoniidae	*Helius longirostris*		SO19364818	MWJ Paskin	MWJ Paskin	21/06/2017	Station 3	Spot
Diptera	Limoniidae	*Molophilus flavus*		SO19994857	MWJ Paskin	MWJ Paskin	22/06/2017	Station 5	Sweep
Diptera	Limoniidae	*Molophilus obscurus*		SO19214806	MWJ Paskin	MWJ Paskin	04/08/2017	Station 1	Sweep
Diptera	Limoniidae	*Molophilus occultus*		SO19994857	MWJ Paskin	MWJ Paskin	22/06/2017	Station 5	Sweep
Diptera	Limoniidae	*Molophilus occultus*		SO19484837	MWJ Paskin	MWJ Paskin	20/07/2017	Station 6	Sweep
Diptera	Limoniidae	*Molophilus occultus*		SO19484837	MWJ Paskin	MWJ Paskin	22/06/2017	Station 6	Sweep
Diptera	Limoniidae	*Molophilus sp.*		SO19994857	MWJ Paskin	MWJ Paskin	20/07/2017	Station 5	Sweep
Diptera	Limoniidae	*Molophilus sp.*		SO19484837	MWJ Paskin	MWJ Paskin	22/06/2017	Station 6	Sweep
Diptera	Limoniidae	*Ormosia pseudosimilis*		SO19994857	MWJ Paskin	MWJ Paskin	20/07/2017	Station 5	Ground search
Diptera	Limoniidae	*Pseudolimnophila lucorum*		SO19484837	MWJ Paskin	MWJ Paskin	22/06/2017	Station 6	Sweep
Diptera	Limoniidae	*Phylidorea abdominalis*	Nationally Scarce	SO19214806	MWJ Paskin	MWJ Paskin	21/06/2017	Station 1	Sweep
Diptera	Limoniidae	*Phylidorea abdominalis*	Nationally Scarce	SO19244811	MWJ Paskin	MWJ Paskin	21/06/2017	Station 2	Sweep
Diptera	Limoniidae	*Phylidorea fulvonervosa*		SO19214806	MWJ Paskin	MWJ Paskin	21/06/2017	Station 1	Spot
Diptera	Limoniidae	*Phylidorea fulvonervosa*		SO19484837	MWJ Paskin	MWJ Paskin	20/07/2017	Station 6	Sweep
Diptera	Limoniidae	*Phylidorea squalens*		SO19364818	MWJ Paskin	MWJ Paskin	21/06/2017	Station 3	Sweep
Diptera	Limoniidae	*Phylidorea squalens*		SO19444824	MWJ Paskin	MWJ Paskin	21/06/2017	Station 4	Sweep

Diptera	Limoniidae	*Phylidorea squalens*		SO19444824	MWJ Paskin	MWJ Paskin	21/06/2017	Station 4	Spot
Diptera	Limoniidae	*Phylidorea squalens*		SO19994857	MWJ Paskin	MWJ Paskin	21/06/2017	Station 5	Sweep
Diptera	Limoniidae	*Phylidorea squalens*		SO19484837	MWJ Paskin	MWJ Paskin	21/06/2017	Station 6	Sweep
Diptera	Limoniidae	*Phylidorea squalens*		SO19484837	MWJ Paskin	MWJ Paskin	22/06/2017	Station 6	Spot
Diptera	Limoniidae	*Phylidorea squalens*		SO19444824	MWJ Paskin	MWJ Paskin	04/08/2017	Station 4	Sweep
Diptera	Limoniidae	*Pilaria discicollis*		SO19994857	MWJ Paskin	MWJ Paskin	20/07/2017	Station 5	Sweep
Diptera	Hybotidae	*Bicellaria vana*		SO19484837	MWJ Paskin	MWJ Paskin	22/06/2017	Station 6	Sweep
Diptera	Hybotidae	*Hybos culiciformis*		SO19484837	MWJ Paskin	MWJ Paskin	20/07/2017	Station 6	Sweep
Diptera	Hybotidae	*Hybos femoratus*		SO19214806	MWJ Paskin	MWJ Paskin	04/08/2017	Station 1	Sweep
Diptera	Hybotidae	*Platypalpus pallidiventris*		SO19994857	MWJ Paskin	MWJ Paskin	22/06/2017	Station 5	Spot
Diptera	Empididae	*Hilara manicata*		SO19484837	MWJ Paskin	MWJ Paskin	20/07/2017	Station 6	Sweep
Diptera	Dolichopodidae	*Campsicnemus scambus*		SO19214806	MWJ Paskin	MWJ Paskin	21/06/2017	Station 1	Spot
Diptera	Dolichopodidae	*Campsicnemus scambus*		SO19244811	MWJ Paskin	MWJ Paskin	21/06/2017	Station 2	Spot
Diptera	Dolichopodidae	*Chrysotus gramineus*		SO19444824	MWJ Paskin	MWJ Paskin	21/06/2017	Station 4	Sweep
Diptera	Dolichopodidae	*Chrysotus gramineus*		SO19994857	MWJ Paskin	MWJ Paskin	22/06/2017	Station 5	Sweep
Diptera	Dolichopodidae	*Chrysotus gramineus*		SO19994857	MWJ Paskin	MWJ Paskin	22/06/2017	Station 5	Spot
Diptera	Dolichopodidae	*Chrysotus gramineus*		SO19994857	MWJ Paskin	MWJ Paskin	20/07/2017	Station 5	Sweep
Diptera	Dolichopodidae	*Chrysotus gramineus*		SO19484837	MWJ Paskin	MWJ Paskin	20/07/2017	Station 6	Sweep
Diptera	Dolichopodidae	*Chrysotus gramineus*		SO19484837	MWJ Paskin	MWJ Paskin	22/06/2017	Station 6	Sweep

Diptera	Dolichopodidae	*Chrysotus gramineus*		SO19484837	MWJ Paskin	MWJ Paskin	22/06/2017	Station 6	Spot
Diptera	Dolichopodidae	*Dolichopus atratus*		SO19994857	MWJ Paskin	MWJ Paskin	22/06/2017	Station 5	Sweep
Diptera	Dolichopodidae	*Dolichopus atratus*		SO19994857	MWJ Paskin	MWJ Paskin	22/06/2017	Station 5	Spot
Diptera	Dolichopodidae	*Dolichopus brevipennis*		SO19214806	MWJ Paskin	MWJ Paskin	21/06/2017	Station 1	Spot
Diptera	Dolichopodidae	*Dolichopus brevipennis*		SO19244811	MWJ Paskin	MWJ Paskin	21/06/2017	Station 2	Spot
Diptera	Dolichopodidae	*Dolichopus plumipes*		SO19214806	MWJ Paskin	MWJ Paskin	21/06/2017	Station 1	Sweep
Diptera	Dolichopodidae	*Dolichopus plumipes*		SO19244811	MWJ Paskin	MWJ Paskin	21/06/2017	Station 2	Sweep
Diptera	Dolichopodidae	*Dolichopus trivialis*		SO19994857	MWJ Paskin	MWJ Paskin	20/07/2017	Station 5	Sweep
Diptera	Dolichopodidae	*Dolichopus ungulatus*		SO19214806	MWJ Paskin	MWJ Paskin	21/06/2017	Station 1	Spot
Diptera	Dolichopodidae	*Dolichopus ungulatus*		SO19244811	MWJ Paskin	MWJ Paskin	21/06/2017	Station 2	Spot
Diptera	Dolichopodidae	*Dolichopus ungulatus*		SO19364818	MWJ Paskin	MWJ Paskin	21/06/2017	Station 3	Spot
Diptera	Dolichopodidae	*Dolichopus ungulatus*		SO19444824	MWJ Paskin	MWJ Paskin	21/06/2017	Station 4	Sweep
Diptera	Dolichopodidae	*Dolichopus ungulatus*		SO19444824	MWJ Paskin	MWJ Paskin	21/06/2017	Station 4	Spot
Diptera	Dolichopodidae	*Dolichopus ungulatus*		SO19484837	MWJ Paskin	MWJ Paskin	22/06/2017	Station 6	Spot
Diptera	Dolichopodidae	*Dolichopus urbanus*		SO19214806	MWJ Paskin	MWJ Paskin	21/06/2017	Station 1	Spot
Diptera	Dolichopodidae	*Hercostomus aerosus*		SO19484837	MWJ Paskin	MWJ Paskin	22/06/2017	Station 6	Sweep
Diptera	Dolichopodidae	*Hercostomus angustifrons*	Nationally Scarce	SO19244811	MWJ Paskin	MWJ Paskin	21/06/2017	Station 2	Sweep
Diptera	Dolichopodidae	*Syntormon tarsatum*		SO19214806	MWJ Paskin	MWJ Paskin	04/08/2017	Station 1	Sweep

Diptera	Dolichopodidae	*Syntormon tarsatum*		SO19244811	MWJ Paskin	MWJ Paskin	21/06/2017	Station 1	Sweep
Diptera	Lonchopteridae	*Lonchoptera furcata*		SO19444824	MWJ Paskin	MWJ Paskin	04/08/2017	Station 4	Sweep
Diptera	Stratiomyidae	*Chloromyia formosa*		SO19994857	MWJ Paskin	MWJ Paskin	22/06/2017	Station 5	Sweep
Diptera	Rhagionidae	*Rhagio sp.*		SO19484837	PA Ward	PA Ward	22/06/2017	Station 6	Spot
Diptera	Syrphidae	*Episyrphus balteatus*		SO19444824	PA Ward	PA Ward	21/06/2017	Station 4	Spot
Diptera	Syrphidae	*Eristalinus sepulchralis*		SO19134795	MWJ Paskin	MWJ Paskin	22/06/2017	South-western area	Casual, flyi ng over
Diptera	Syrphidae	*Eristalis arbustorum*		SO19244811	PA Ward	PA Ward	21/06/2017	Station 2	Spot
Diptera	Syrphidae	*Eristalis arbustorum*		SO19484837	MWJ Paskin	MWJ Paskin	22/06/2017	Station 6	Spot
Diptera	Syrphidae	*Eristalis horticola*		SO19364818	PA Ward	PA Ward	21/06/2017	Station 3	Spot
Diptera	Syrphidae	*Eristalis nemorum*		SO19484837	MWJ Paskin	MWJ Paskin	22/06/2017	Station 6	Spot
Diptera	Syrphidae	*Eristalis tenax*		SO19484837	MWJ Paskin	MWJ Paskin	22/06/2017	Station 6	Spot
Diptera	Syrphidae	*Eristalis tenax*		SO19444824	PA Ward	PA Ward	21/06/2017	Station 4	Spot
Diptera	Syrphidae	*Helophilus hybridus*		SO19444824	MWJ Paskin	MWJ Paskin	21/06/2017	Station 4	Sweep
Diptera	Syrphidae	*Helophilus pendulus*		SO19364818	MWJ Paskin	MWJ Paskin	21/06/2017	Station 3	Spot
Diptera	Syrphidae	*Melanogaster hirtella*		SO19244811	MWJ Paskin	MWJ Paskin	21/06/2017	Station 2	Sweep
Diptera	Syrphidae	*Melanogaster hirtella*		SO19444824	MWJ Paskin	MWJ Paskin	21/06/2017	Station 4	Sweep
Diptera	Syrphidae	*Melanostoma mellinum*		SO19484837	MWJ Paskin	MWJ Paskin	20/07/2017	Station 6	Sweep
Diptera	Syrphidae	*Neoascia tenur*		SO19244811	MWJ Paskin	MWJ Paskin	04/08/2017	Station 2	Sweep
Diptera	Syrphidae	*Neoascia tenur*		SO19214806	MWJ Paskin	MWJ Paskin	21/06/2017	Station 1	Sweep
Diptera	Syrphidae	*Neoascia tenur*		SO19444824	MWJ Paskin	MWJ Paskin	21/06/2017	Station 4	Spot
Diptera	Syrphidae	*Neoascia tenur*		SO19994857	MWJ Paskin	MWJ Paskin	20/07/2017	Station 5	Sweep

Diptera	Syrphidae	*Platycheirus albimanus*		SO19214806	PA Ward	PA Ward	21/06/2017	Station 1	Spot
Diptera	Syrphidae	*Platycheirus albimanus*		SO19994857	MWJ Paskin	MWJ Paskin	20/07/2017	Station 5	Sweep
Diptera	Syrphidae	*Platycheirus clypeatus*		SO19484837	MWJ Paskin	MWJ Paskin	22/06/2017	Station 6	Spot
Diptera	Syrphidae	*Rhingia campestris*		SO19214806	PA Ward	PA Ward	04/08/2017	Station 1	Casual
Diptera	Syrphidae	*Sphaerophoria philanthus*		SO19364818	MWJ Paskin	MWJ Paskin	21/06/2017	Station 3	Sweep
Diptera	Syrphidae	*Syritta pipiens*		SO19214806	PA Ward	PA Ward	21/06/2017	Station 1	Spot
Diptera	Syrphidae	*Syrphus torvus*		SO19484837	MWJ Paskin	MWJ Paskin	22/06/2017	Station 6	Sweep
Diptera	Syrphidae	*Syrphus torvus*		SO19444824	MWJ Paskin	MWJ Paskin	04/08/2017	Station 4	Sweep
Diptera	Syrphidae	*Syrphus torvus*		SO19244811	PA Ward	PA Ward	21/06/2017	Station 2	Spot
Diptera	Syrphidae	*Syrphus vitripennis*		SO19364818	PA Ward	PA Ward	21/06/2017	Station 3	Spot
Diptera	Syrphidae	*Volucella bombylans*		SO19364818	PA Ward	PA Ward	21/06/2017	Station 3	Spot
Diptera	Tephritidae	*Acanthiophilus helianthi*	Nationally Scarce	SO19484837	MWJ Paskin	MWJ Paskin	22/06/2017	Station 6	Sweep
Diptera	Tephritidae	*Sphenella marginata*		SO19214806	MWJ Paskin	MWJ Paskin	04/08/2017	Station 1	Sweep
Diptera	Tephritidae	*Tephritis vespertina*		SO19484837	MWJ Paskin	MWJ Paskin	20/07/2017	Station 6	Sweep
Diptera	Ulidiidae	*Herina frondescentiae*		SO19364818	MWJ Paskin	MWJ Paskin	21/06/2017	Station 3	Sweep
Diptera	Sciomyzidae	*Ilione albiseta*		SO19214806	MWJ Paskin	MWJ Paskin	21/06/2017	Station 1	Sweep
Diptera	Sciomyzidae	*Ilione albiseta*		SO19244811	MWJ Paskin	MWJ Paskin	21/06/2017	Station 2	Sweep
Diptera	Sciomyzidae	*Ilione lineata*		SO19214806	MWJ Paskin	MWJ Paskin	21/06/2017	Station 1	Sweep
Diptera	Sciomyzidae	*Ilione lineata*		SO19214806	MWJ Paskin	MWJ Paskin	04/08/2017	Station 1	Sweep
Diptera	Sciomyzidae	*Limnia paludicola*		SO19364818	MWJ Paskin	MWJ Paskin	04/08/2017	Station 3	Sweep
Diptera	Sciomyzidae	*Limnia paludicola*		SO19444824	MWJ Paskin	MWJ Paskin	04/08/2017	Station 4	Sweep
Diptera	Sciomyzidae	*Pherbellia schoenherri*		SO19244811	MWJ Paskin	MWJ Paskin	04/08/2017	Station 2	Sweep

Diptera	Sciomyzidae	*Pherbina coryleti*		SO19244811	PA Ward	PA Ward	21/06/2017	Station 2	Spot
Diptera	Sciomyzidae	*Pherbina coryleti*		SO19244811	MWJ Paskin	MWJ Paskin	21/06/2017	Station 2	Spot
Diptera	Sciomyzidae	*Pherbina coryleti*		SO19214806	MWJ Paskin	MWJ Paskin	21/06/2017	Station 1	Spot
Diptera	Sciomyzidae	*Pteromicra angustipennis*		SO19364818	MWJ Paskin	MWJ Paskin	04/08/2017	Station 3	Sweep
Diptera	Sciomyzidae	*Sepedon spinipes*		SO19214806	MWJ Paskin	MWJ Paskin	21/06/2017	Station 1	Spot
Diptera	Sciomyzidae	*Sepedon spinipes*		SO19214806	MWJ Paskin	MWJ Paskin	04/08/2017	Station 1	Sweep
Diptera	Sciomyzidae	*Tetanocera arrogans*		SO19244811	MWJ Paskin	MWJ Paskin	04/08/2017	Station 2	Sweep
Diptera	Sciomyzidae	*Tetanocera elata*		SO19244811	PA Ward	PA Ward	21/06/2017	Station 2	Spot
Diptera	Sciomyzidae	*Tetanocera elata*		SO19444824	PA Ward	PA Ward	04/08/2017	Station 4	Sweep
Diptera	Sciomyzidae	*Tetanocera freyi*	Rare (RDB3)	SO19214806	PA Ward	PA Ward	21/06/2017	Station 1	Spot
Diptera	Sciomyzidae	*Tetanocera freyi*	Rare (RDB3)	SO19244811	MWJ Paskin	MWJ Paskin	04/08/2017	Station 2	Sweep
Diptera	Sciomyzidae	*Tetanocera fuscinervis*		SO19214806	MWJ Paskin	MWJ Paskin	21/06/2017	Station 1	Sweep
Diptera	Sciomyzidae	*Tetanocera fuscinervis*		SO19244811	MWJ Paskin	MWJ Paskin	21/06/2017	Station 2	Sweep
Diptera	Sciomyzidae	*Tetanocera fuscinervis*		SO19364818	MWJ Paskin	MWJ Paskin	04/08/2017	Station 3	Sweep
Diptera	Sciomyzidae	*Tetanocera fuscinervis*		SO19444824	MWJ Paskin	MWJ Paskin	04/08/2017	Station 4	Sweep
Diptera	Sciomyzidae	*Tetanocera robusta*		SO19244811	MWJ Paskin	MWJ Paskin	04/08/2017	Station 2	Sweep
Diptera	Agromyzidae	*Cerodontha capitata*		SO19214806	MWJ Paskin	MWJ Paskin	21/06/2017	Station 1	Sweep
Diptera	Agromyzidae	*Cerodontha capitata*		SO19484837	MWJ Paskin	MWJ Paskin	20/07/2017	Station 6	Sweep

Diptera	Agromyzidae	*Phytomyza calthophila*		SO19214806	MWJ Paskin	MWJ Paskin	21/06/2017	Station 1	Spot
Diptera	Opomyzidae	*Opomyza florum*		SO19214806	MWJ Paskin	MWJ Paskin	04/08/2017	Station 1	Sweep
Diptera	Opomyzidae	*Opomyza florum*		SO19244811	MWJ Paskin	MWJ Paskin	04/08/2017	Station 2	Sweep
Diptera	Opomyzidae	*Opomyza florum*		SO19364818	MWJ Paskin	MWJ Paskin	04/08/2017	Station 3	Sweep
Diptera	Opomyzidae	*Opomyza florum*		SO19444824	MWJ Paskin	MWJ Paskin	04/08/2017	Station 4	Sweep
Diptera	Opomyzidae	*Opomyza germinationis*		SO19214806	MWJ Paskin	MWJ Paskin	04/08/2017	Station 1	Sweep
Diptera	Opomyzidae	*Opomyza germinationis*		SO19364818	MWJ Paskin	MWJ Paskin	04/08/2017	Station 3	Sweep
Diptera	Opomyzidae	*Opomyza germinationis*		SO19444824	MWJ Paskin	MWJ Paskin	04/08/2017	Station 4	Sweep
Diptera	Opomyzidae	*Opomyza germinationis*		SO19484837	MWJ Paskin	MWJ Paskin	20/07/2017	Station 6	Sweep
Diptera	Scathophagidae	*Cordilura ciliata*		SO19244811	MWJ Paskin	MWJ Paskin	22/06/2017	Station 2	Sweep
Diptera	Scathophagidae	*Cordilura ciliata*		SO19484837	MWJ Paskin	MWJ Paskin	20/07/2017	Station 6	Sweep
Diptera	Scathophagidae	*Cordilura ciliata*		SO19484837	MWJ Paskin	MWJ Paskin	22/06/2017	Station 6	Sweep
Diptera	Scathophagidae	*Cordilura ciliata*		SO19484837	MWJ Paskin	MWJ Paskin	22/06/2017	Station 6	Spot
Diptera	Scathophagidae	*Cordilura ciliata*		SO19214806	MWJ Paskin	MWJ Paskin	04/08/2017	Station 1	Sweep
Diptera	Scathophagidae	*Cordilura ciliata*		SO19364818	MWJ Paskin	MWJ Paskin	04/08/2017	Station 3	Sweep
Diptera	Scathophagidae	*Scathophaga suilla*		SO19214806	MWJ Paskin	MWJ Paskin	21/06/2017	Station 1	Spot
Diptera	Scathophagidae	*Scathophaga suilla*		SO19244811	MWJ Paskin	MWJ Paskin	04/08/2017	Station 2	Sweep
Diptera	Tachinidae	*Tachina fera*		SO19484837	PA Ward	PA Ward	22/06/2017	Station 6	Spot
Diptera	Fannidae	*Fannia serena*		SO19244811	MWJ Paskin	MWJ Paskin	04/08/2017	Station 2	Sweep
Diptera	Muscidae	*Coenosia tigrina*		SO19364818	MWJ Paskin	MWJ Paskin	04/08/2017	Station 3	Sweep
Diptera	Muscidae	*Lispocephala erythrocera*		SO19214806	MWJ Paskin	MWJ Paskin	04/08/2017	Station 1	Sweep
Diptera	Muscidae	*Lispocephala erythrocera*		SO19444824	MWJ Paskin	MWJ Paskin	04/08/2017	Station 4	Sweep

Diptera	Muscidae	*Lispocephala verna*	Nationally Scarce	SO19364818	MWJ Paskin	MWJ Paskin	04/08/2017	Station 3	Sweep
Hymenoptera	Tenthredinidae	*Athalia lugens*		SO19444824	MWJ Paskin	MWJ Paskin	04/08/2017	Station 4	Sweep
Hymenoptera	Tenthredinidae	*Athalia rosae*		SO19244811	MWJ Paskin	MWJ Paskin	04/08/2017	Station 2	Sweep
Hymenoptera	Tenthredinidae	*Athalia scutellariae*		SO19244811	MWJ Paskin	MWJ Paskin	21/06/2017	Station 2	Spot
Hymenoptera	Formicidae	*Myrmica ruginodis*		SO19484837	PA Ward	PA Ward	20/07/2017	Station 6	Ground search
Hymenoptera	Formicidae	*Myrmica ruginodis*		SO19994857	PA Ward	PA Ward	20/07/2017	Station 5	Ground search
Hymenoptera	Crabronidae	*Pemphredon lethifer*		SO19444824	PA Ward	PA Ward	04/08/2017	Station 4	Casual
Hymenoptera	Vespidae	*Vespula vulgaris*		SO19214806	PA Ward	PA Ward	04/08/2017	Station 1	Casual
Hymenoptera	Andrenidae	*Andrena cineraria*		SO19244811	PA Ward	PA Ward	21/06/2017	Station 2	Spot
Hymenoptera	Andrenidae	*Andrena haemorrhoa*		SO19444824	PA Ward	PA Ward	21/06/2017	Station 4	Spot
Hymenoptera	Andrenidae	*Andrena semilaevis*		SO19244811	PA Ward	PA Ward	21/06/2017	Station 2	Spot
Hymenoptera	Apidae	*Apis mellifera*		SO19214806	PA Ward	PA Ward	21/06/2017	Station 1	Spot
Hymenoptera	Apidae	*Bombus hypnorum*		SO19364818	PA Ward	PA Ward	21/06/2017	Station 3	Spot
Hymenoptera	Apidae	*Bombus hypnorum*		SO19444824	PA Ward	PA Ward	21/06/2017	Station 4	Casual
Hymenotera	Apidae	*Bombus lucorum*		SO19214806	PA Ward	PA Ward	21/06/2017	Station 1	Spot
Hymenotera	Apidae	*Bombus lucorum*		SO19244811	PA Ward	PA Ward	21/06/2017	Station 2	Spot
Hymenotera	Apidae	*Bombus lucorum*		SO19364818	PA Ward	PA Ward	21/06/2017	Station 3	Spot
Hymenotera	Apidae	*Bombus monticola*		SO19364818	PA Ward	PA Ward	21/06/2017	Station 3	Casual
Hymenotera	Apidae	*Bombus monticola*		SO19484837	PA Ward	PA Ward	20/07/2017	Station 6	Casual
Hymenotera	Apidae	*Bombus pascuorum*		SO19484837	PA Ward	PA Ward	20/07/2017	Station 6	Casual

Hymenotera	Apidae	*Bombus terrestris*		SO19444824	PA Ward	PA Ward	21/06/2017	Station 4	Spot
Coleoptera	Carabidae	*Agonum thoreyi*		SO19364818	PA Ward	PA Ward	21/06/2017	Station 3	Aquatic
Coleoptera	Carabidae	*Agonum thoreyi*		SO19244811	PA Ward	PA Ward	04/08/2017	Station 2	Ground search
Coleoptera	Carabidae	*Bembidion guttula*		SO19364818	PA Ward	PA Ward	04/08/2017	Station 3	Ground search
Coleoptera	Carabidae	*Blethisa multipunctata*	Nationally Scarce	SO19134795	PA Ward	PA Ward	22/06/2017	South-western area	Casual, on bare mud
Coleoptera	Carabidae	*Bradycellus harpalinus*		SO19244811	PA Ward	PA Ward	04/08/2017	Station 2	Ground search
Coleoptera	Carabidae	*Pterostichus diligens*		SO19484837	PA Ward	PA Ward	22/06/2017	Station 6	Aquatic
Coleoptera	Carabidae	*Pterostichus diligens*		SO19444824	PA Ward	PA Ward	04/08/2017	Station 4	Ground search
Coleoptera	Carabidae	*Pterostichus diligens*		SO19244811	PA Ward	PA Ward	04/08/2017	Station 2	Ground search
Coleoptera	Carabidae	*Pterostichus diligens*		SO19484837	PA Ward	PA Ward	20/07/2017	Station 6	Ground search
Coleoptera	Carabidae	*Pterostichus minor*		SO19364818	PA Ward	PA Ward	04/08/2017	Station 3	Ground search
Coleoptera	Carabidae	*Trechus quadristriatus*		SO19994857	PA Ward	PA Ward	20/07/2017	Station 5	Ground search
Coleoptera	Dytiscidae	*Agabus affinis*		SO19994857	PA Ward	PA Ward	22/06/2017	Station 5	Aquatic
Coleoptera	Dytiscidae	*Agabus bipustulatus*		SO19214806	PA Ward	PA Ward	21/06/2017	Station 1	Aquatic
Coleoptera	Dytiscidae	*Agabus bipustulatus*		SO19214806	PA Ward	PA Ward	04/08/2017	Station 1	Aquatic
Coleoptera	Dytiscidae	*Agabus bipustulatus*		SO19444824	PA Ward	PA Ward	21/06/2017	Station 4	Aquatic
Coleoptera	Dytiscidae	*Agabus bipustulatus*		SO19244811	PA Ward	PA Ward	21/06/2017	Station 2	Aquatic
Coleoptera	Dytiscidae	*Agabus bipustulatus*		SO19244811	PA Ward	PA Ward	04/08/2017	Station 2	Ground search
Coleoptera	Dytiscidae	*Agabus unguicularis*		SO19214806	PA Ward	PA Ward	04/08/2017	Station 1	Aquatic

Coleoptera	Dytiscidae	*Agabus unguicularis*		SO19364818	PA Ward	PA Ward	04/08/2017	Station 3	Aquatic
Coleoptera	Dytiscidae	*Graptodytes granularis*		SO19244811	PA Ward	PA Ward	21/06/2017	Station 2	Aquatic
Coleoptera	Dytiscidae	*Graptodytes granularis*		SO19244811	PA Ward	PA Ward	04/08/2017	Station 2	Ground search
Coleoptera	Dytiscidae	*Hydroporus erythrocephalus*		SO19214806	PA Ward	PA Ward	21/06/2017	Station 1	Aquatic
Coleoptera	Dytiscidae	*Hydroporus erythrocephalus*		SO19214806	PA Ward	PA Ward	04/08/2017	Station 1	Aquatic
Coleoptera	Dytiscidae	*Hydroporus erythrocephalus*		SO19244811	PA Ward	PA Ward	04/08/2017	Station 2	Ground search
Coleoptera	Dytiscidae	*Hydroporus erythrocephalus*		SO19244811	PA Ward	PA Ward	21/06/2017	Station 2	Aquatic
Coleoptera	Dytiscidae	*Hydroporus granularis*		SO19214806	PA Ward	PA Ward	21/06/2017	Station 1	Aquatic
Coleoptera	Dytiscidae	*Hydroporus nigrita*		SO19444824	PA Ward	PA Ward	21/06/2017	Station 4	Aquatic
Coleoptera	Dytiscidae	*Hydroporus obscurus*		SO19214806	PA Ward	PA Ward	21/06/2017	Station 1	Aquatic
Coleoptera	Dytiscidae	*Hydroporus striola*		SO19214806	PA Ward	PA Ward	21/06/2017	Station 1	Aquatic
Coleoptera	Dytiscidae	*Hydroporus tristis/umbrosus*		SO19214806	PA Ward	PA Ward	04/08/2017	Station 1	Aquatic
Coleoptera	Dytiscidae	*Hydroporus tristis/umbrosus*		SO19244811	PA Ward	PA Ward	21/06/2017	Station 2	Aquatic
Coleoptera	Dytiscidae	*Hydroporus tristis/umbrosus*		SO19244811	PA Ward	PA Ward	04/08/2017	Station 2	Ground search
Coleoptera	Dytiscidae	*Hydroporus tristis/umbrosus*		SO19364818	PA Ward	PA Ward	04/08/2017	Station 3	Aquatic
Coleoptera	Dytiscidae	*Hydroporus umbrosus*		SO19444824	PA Ward	PA Ward	04/08/2017	Station 4	Aquatic
Coleoptera	Dytiscidae	*Hydroporus sp.*		SO19244811	PA Ward	PA Ward	21/06/2017	Station 2	Aquatic
Coleoptera	Dytiscidae	*Hydroporus sp.*		SO19994857	PA Ward	PA Ward	22/06/2017	Station 5	Aquatic
Coleoptera	Hydrophilidae	*Anacaena globulus*		SO19214806	PA Ward	PA Ward	21/06/2017	Station 1	Aquatic

Coleoptera	Hydrophilidae	*Anacaena globulus*		SO19214806	PA Ward	PA Ward	04/08/2017	Station 1	Aquatic
Coleoptera	Hydrophilidae	*Anacaena globulus*		SO19244811	PA Ward	PA Ward	21/06/2017	Station 2	Aquatic
Coleoptera	Hydrophilidae	*Anacaena globulus*		SO19244811	PA Ward	PA Ward	04/08/2017	Station 2	Ground search
Coleoptera	Hydrophilidae	*Anacaena globulus*		SO19364818	PA Ward	PA Ward	04/08/2017	Station 3	Aquatic
Coleoptera	Hydrophilidae	*Anacaena globulus*		SO19364818	PA Ward	PA Ward	04/08/2017	Station 3	Ground search
Coleoptera	Hydrophilidae	*Anacaena globulus*		SO19994857	PA Ward	PA Ward	22/06/2017	Station 5	Aquatic
Coleoptera	Hydrophilidae	*Anacaena globulus*		SO19994857	PA Ward	PA Ward	20/07/2017	Station 5	Aquatic
Coleoptera	Hydrophilidae	*Anacaena globulus*		SO19484837	PA Ward	PA Ward	20/07/2017	Station 6	Aquatic
Coleoptera	Hydrophilidae	*Anacaena limbata*		SO19364818	PA Ward	PA Ward	04/08/2017	Station 3	Aquatic
Coleoptera	Hydrophilidae	*Cercyon sp.*		SO19244811	PA Ward	PA Ward	21/06/2017	Station 2	Aquatic
Coleoptera	Hydrophilidae	*Cercyon sp.*		SO19214806	PA Ward	PA Ward	04/08/2017	Station 1	Ground search
Coleoptera	Hydrophilidae	*Cercyon sp.*		SO19364818	PA Ward	PA Ward	04/08/2017	Station 3	Ground search
Coleoptera	Hydrophilidae	*Chaertarthria sp.*		SO19444824	PA Ward	PA Ward	04/08/2017	Station 4	Ground search
Coleoptera	Hydrophilidae	*Coelostoma orbiculare*		SO19214806	PA Ward	PA Ward	21/06/2017	Station 1	Aquatic
Coleoptera	Hydrophilidae	*Coelostoma orbiculare*		SO19214806	PA Ward	PA Ward	04/08/2017	Station 1	Ground search
Coleoptera	Hydrophilidae	*Coelostoma orbiculare*		SO19214806	PA Ward	PA Ward	04/08/2017	Station 1	Aquatic
Coleoptera	Hydrophilidae	*Coelostoma orbiculare*		SO19444824	PA Ward	PA Ward	04/08/2017	Station 4	Aquatic
Coleoptera	Hydrophilidae	*Coelostoma orbiculare*		SO19244811	PA Ward	PA Ward	04/08/2017	Station 2	Ground search
Coleoptera	Hydrophilidae	*Coelostoma orbiculare*		SO19364818	PA Ward	PA Ward	21/06/2017	Station 3	Aquatic

Coleoptera	Hydrophilidae	*Coelostoma orbiculare*		SO19364818	PA Ward	PA Ward	04/08/2017	Station 3	Aquatic
Coleoptera	Hydrophilidae	*Enochrus affinis*		SO19994857	PA Ward	PA Ward	22/06/2017	Station 5	Aquatic
Coleoptera	Hydrophilidae	*Enochrus affinis*		SO19994857	PA Ward	PA Ward	20/07/2017	Station 5	Aquatic
Coleoptera	Hydrophilidae	*Enochrus affinis*		SO19214806	PA Ward	PA Ward	04/08/2017	Station 1	Aquatic
Coleoptera	Hydrophilidae	*Enochrus affinis*		SO19364818	PA Ward	PA Ward	04/08/2017	Station 3	Aquatic
Coleoptera	Hydrophilidae	*Enochrus ochropterus*	Nationally Scarce	SO19244811	PA Ward	PA Ward	21/06/2017	Station 2	Aquatic
Coleoptera	Hydrophilidae	*Helophorus brevipalpus*		SO19484837	PA Ward	PA Ward	20/07/2017	Station 6	Aquatic
Coleoptera	Hydrophilidae	*Helophorus grandis*		SO19214806	PA Ward	PA Ward	21/06/2017	Station 1	Aquatic
Coleoptera	Hydrophilidae	*Helophorus sp.*		SO19214806	PA Ward	PA Ward	04/08/2017	Station 1	Aquatic
Coleoptera	Hydrophilidae	*Hydrobius fuscipes*		SO19214806	PA Ward	PA Ward	04/08/2017	Station 1	Ground search
Coleoptera	Staphylinidae	*Atheta aterrima*		SO19364818	PA Ward	PA Ward	04/08/2017	Station 3	Ground search
Coleoptera	Staphylinidae	*Bryaxis bulbifer*		SO19444824	PA Ward	PA Ward	04/08/2017	Station 4	Ground search
Coleoptera	Staphylinidae	*Lathrobium brunnipes*		SO19214806	PA Ward	PA Ward	04/08/2017	Station 1	Sweep
Coleoptera	Staphylinidae	*Lathrobium brunnipes*		SO19364818	PA Ward	PA Ward	04/08/2017	Station 3	Ground search
Coleoptera	Staphylinidae	*Lathrobium terminatum*		SO19364818	PA Ward	PA Ward	04/08/2017	Station 3	Ground search
Coleoptera	Staphylinidae	*Myllaena sp.*		SO19444824	PA Ward	PA Ward	21/06/2017	Station 4	Aquatic
Coleoptera	Staphylinidae	*Ochthephilum fracticorne*		SO19214806	PA Ward	PA Ward	04/08/2017	Station 1	Ground search
Coleoptera	Staphylinidae	*Ochthephilum fracticorne*		SO19244811	PA Ward	PA Ward	04/08/2017	Station 2	Ground search
Coleoptera	Staphylinidae	*Ochthephilum fracticorne*		SO19444824	PA Ward	PA Ward	04/08/2017	Station 4	Ground search
Coleoptera	Staphylinidae	*Ochthephilum fracticorne*		SO19444824	PA Ward	PA Ward	04/08/2017	Station 4	Ground search
Coleoptera	Staphylinidae	*Paederus riparius*		SO19214806	PA Ward	PA Ward	21/06/2017	Station 1	Sweep
Coleoptera	Staphylinidae	*Paederus riparius*		SO19444824	PA Ward	PA Ward	04/08/2017	Station 4	Sweep

Coleoptera	Staphylinidae	*Paederus riparius*		SO19244811	PA Ward	PA Ward	04/08/2017	Station 2	Ground search
Coleoptera	Staphylinidae	*Philonthus nigrita*		SO19444824	PA Ward	PA Ward	04/08/2017	Station 4	Ground search
Coleoptera	Staphylinidae	*Philonthus sp.*		SO19994857	PA Ward	PA Ward	20/07/2017	Station 5	Ground search
Coleoptera	Staphylinidae	*Philonthus nigrita*		SO19364818	PA Ward	PA Ward	04/08/2017	Station 3	Ground search
Coleoptera	Staphylinidae	*Quedius boops*		SO19444824	PA Ward	PA Ward	04/08/2017	Station 4	Ground search
Coleoptera	Staphylinidae	*Quedius boops*		SO19484837	PA Ward	PA Ward	20/07/2017	Station 6	Ground search
Coleoptera	Staphylinidae	*Quedius maurorufus*		SO19364818	PA Ward	PA Ward	04/08/2017	Station 3	Ground search
Coleoptera	Staphylinidae	*Staphylinus erythropterus*		SO19994857	PA Ward	PA Ward	20/07/2017	Station 5	Ground search
Coleoptera	Staphylinidae	*Staphylinus erythropterus*		SO19484837	PA Ward	PA Ward	20/07/2017	Station 6	Ground search
Coleoptera	Staphylinidae	*Stenus cicindeloides*		SO19444824	PA Ward	PA Ward	04/08/2017	Station 4	Sweep
Coleoptera	Staphylinidae	*Stenus pallitarsis*		SO19214806	PA Ward	PA Ward	21/06/2017	Station 1	Aquatic
Coleoptera	Staphylinidae	*Tachyporus chrysomelinus*		SO19484837	PA Ward	PA Ward	22/06/2017	Station 6	Aquatic
Coleoptera	Staphylinidae	*Tachyporus dispar*		SO19484837	PA Ward	PA Ward	20/07/2017	Station 6	Ground search
Coleoptera	Staphylinidae	*Tachyporus transversalis*		SO19994857	PA Ward	PA Ward	20/07/2017	Station 5	Ground search
Coleoptera	Scirtidae	*Cyphon hilaris*		SO19214806	PA Ward	PA Ward	04/08/2017	Station 1	Sweep
Coleoptera	Scirtidae	*Cyphon hilaris*		SO19444824	PA Ward	PA Ward	04/08/2017	Station 4	Sweep
Coleoptera	Scirtidae	*Cyphon hilaris*		SO19994857	PA Ward	PA Ward	20/07/2017	Station 5	Ground search
Coleoptera	Scirtidae	*Cyphon padi*		SO19484837	PA Ward	PA Ward	20/07/2017	Station 6	Ground search
Coleoptera	Scirtidae	*Cyphon variabilis*		SO19364818	PA Ward	PA Ward	04/08/2017	Station 3	Ground search
Coleoptera	Elateridae	*Denticollis linearis*		SO19244811	PA Ward	PA Ward	21/06/2017	Station 2	Casual
Coleoptera	Cantharidae	*Cantharis figurata*		SO19364818	PA Ward	PA Ward	21/06/2017	Station 3	Spot

Coleoptera	Cantharidae	*Cantharis figurata*		SO19484837	PA Ward	PA Ward	22/06/2017	Station 6	Spot
Coleoptera	Cantharidae	*Cantharis nigra*		SO19214806	PA Ward	PA Ward	21/06/2017	Station 1	Spot
Coleoptera	Cantharidae	*Cantharis nigra*		SO19994857	PA Ward	PA Ward	22/06/2017	Station 5	Spot
Coleoptera	Cantharidae	*Cantharis nigra*		SO19484837	PA Ward	PA Ward	22/06/2017	Station 6	Spot
Coleoptera	Cantharidae	*Rhagonycha lignosa*		SO19484837	PA Ward	PA Ward	22/06/2017	Station 6	Spot
Coleoptera	Cantharidae	*Rhagonycha lignosa*		SO19484837	PA Ward	PA Ward	22/06/2017	Station 6	Sweep
Coleoptera	Cantharidae	*Rhagonycha testacea*		SO19484837	PA Ward	PA Ward	22/06/2017	Station 6	Sweep
Coleoptera	Oedemeridae	*Oedemera lurida*		SO19444824	PA Ward	PA Ward	21/06/2017	Station 4	Spot
Coleoptera	Oedemeridae	*Oedemera nobilis*		SO19244811	PA Ward	PA Ward	21/06/2017	Station 2	Spot
Coleoptera	Coccinellidae	*Adalia bipunctata*		SO19484837	PA Ward	PA Ward	22/06/2017	Station 6	Spot
Coleoptera	Coccinellidae	*Calvia quattuordecimguttata*		SO19484837	PA Ward	PA Ward	22/06/2017	Station 6	Spot
Coleoptera	Coccinellidae	*Chilocorus renipustulatus*		SO19444824	PA Ward	PA Ward	04/08/2017	Station 4	Sweep
Coleoptera	Coccinellidae	*Coccinella 7-punctata*		SO19484837	PA Ward	PA Ward	22/06/2017	Station 6	Spot
Coleoptera	Coccinellidae	*Coccinella 7-punctata*		SO19484837	PA Ward	PA Ward	22/06/2017	Station 6	Sweep
Coleoptera	Chrysomelidae	*Altica lythri*		SO19244811	PA Ward	PA Ward	21/06/2017	Station 2	Spot
Coleoptera	Chrysomelidae	*Altica lythri*		SO19444824	PA Ward	PA Ward	21/06/2017	Station 4	Sweep
Coleoptera	Chrysomelidae	*Chrysolina staphylea*		SO19244811	PA Ward	PA Ward	21/06/2017	Station 2	Aquatic
Coleoptera	Chrysomelidae	*Crepidodera aurea*		SO19994857	PA Ward	PA Ward	22/06/2017	Station 5	Spot
Coleoptera	Chrysomelidae	*Cryptocephalus labiatus*		SO19444824	PA Ward	PA Ward	21/06/2017	Station 4	Sweep
Coleoptera	Chrysomelidae	*Cryptocephalus labiatus*		SO19484837	PA Ward	PA Ward	22/06/2017	Station 6	Spot

Coleoptera	Chrysomelidae	*Galerucella lineola*		SO19214806	PA Ward	PA Ward	21/06/2017	Station 1	Sweep
Coleoptera	Chrysomelidae	*Galerucella lineola*		SO19214806	PA Ward	PA Ward	21/06/2017	Station 1	Spot
Coleoptera	Chrysomelidae	*Galerucella lineola*		SO19244811	PA Ward	PA Ward	21/06/2017	Station 2	Sweep
Coleoptera	Chrysomelidae	*Galerucella lineola*		SO19364818	PA Ward	PA Ward	21/06/2017	Station 3	Spot
Coleoptera	Chrysomelidae	*Galerucella lineola*		SO19444824	PA Ward	PA Ward	21/06/2017	Station 4	Spot
Coleoptera	Chrysomelidae	*Lochmaea caprea*		SO19994857	PA Ward	PA Ward	22/06/2017	Station 5	Spot
Coleoptera	Chrysomelidae	*Lochmaea caprea*		SO19484837	PA Ward	PA Ward	22/06/2017	Station 6	Spot
Coleoptera	Chrysomelidae	*Luperus longicornis*		SO19994857	PA Ward	PA Ward	22/06/2017	Station 5	Spot
Coleoptera	Chrysomelidae	*Luperus longicornis*		SO19994857	PA Ward	PA Ward	20/07/2017	Station 5	Sweep
Coleoptera	Chrysomelidae	*Phaedon armoraciae*		SO19214806	PA Ward	PA Ward	04/08/2017	Station 1	Sweep
Coleoptera	Chrysomelidae	*Plateumaris discolor*		SO19244811	PA Ward	PA Ward	21/06/2017	Station 2	Aquatic
Coleoptera	Chrysomelidae	*Plateumaris discolor*		SO19444824	PA Ward	PA Ward	21/06/2017	Station 4	Spot
Coleoptera	Chrysomelidae	*Prasocuris phellandrii*		SO19134795	PA Ward	PA Ward	04/08/2017	South-western area	Casual
Isopoda	Philosciidae	*Oniscus asellus*		SO19444824	PA Ward	PA Ward	04/08/2017	Station 4	Ground search
Isopoda	Philosciidae	*Oniscus asellus*		SO19994857	PA Ward	PA Ward	04/08/2017	Station 5	Ground search
Isopoda	Philosciidae	*Philoscia muscorum*		SO19364818	PA Ward	PA Ward	04/08/2017	Station 3	Ground search
Isopoda	Philosciidae	*Philoscia muscorum*		SO19444824	PA Ward	PA Ward	04/08/2017	Station 4	Ground search
Isopoda	Porcellionidae	*Porcellio scaber*		SO19994857	PA Ward	PA Ward	20/07/2017	Station 5	Ground search
Isopoda	Trichoniscidae	*Trichoniscus pusillus*		SO19994857	PA Ward	PA Ward	20/07/2017	Station 5	Ground search

Opiliones	Nemastomatidae	*Nemastoma bimaculatum*		SO19994857	PA Ward	PA Ward	04/08/2017	Station 5	Ground search
Araneae	Araneidae	*Araneus diadematus*		SO19444824	PA Ward	PA Ward	04/08/2017	Station 4	Ground search
Araneae	Araneidae	*Araneus diadematus*		SO19484837	PA Ward	PA Ward	20/07/2017	Station 6	Sweep
Araneae	Araneidae	*Araneus quadratus*		SO19444824	PA Ward	PA Ward	04/08/2017	Station 4	Ground search
Araneae	Araneidae	*Araneus quadratus*		SO19134795	PA Ward	PA Ward	04/08/2017	South-western area	Casual
Araneae	Araneidae	*Lariniodes cornutus*		SO19364818	PA Ward	PA Ward	21/06/2017	Station 3	Spot
Araneae	Araneidae	*Lariniodes cornutus*		SO19444824	PA Ward	PA Ward	21/06/2017	Station 4	Aquatic
Araneae	Araneidae	*Lariniodes cornutus*		SO19444824	PA Ward	PA Ward	21/06/2017	Station 4	Sweep
Araneae	Araneidae	*Lariniodes cornutus*		SO19994857	PA Ward	PA Ward	22/06/2017	Station 5	Aquatic
Araneae	Araneidae	*Lariniodes cornutus*		SO19994857	PA Ward	PA Ward	20/07/2017	Station 5	Ground search
Araneae	Araneidae	*Lariniodes cornutus*		SO19484837	PA Ward	PA Ward	22/06/2017	Station 6	Sweep
Araneae	Araneidae	*Lariniodes cornutus*		SO19364818	PA Ward	PA Ward	04/08/2017	Station 3	Ground search
Araneae	Araneidae	*Lariniodes cornutus*		SO19244811	PA Ward	PA Ward	21/06/2017	Station 2	Spot
Araneae	Araneidae	*Lariniodes cornutus*		SO19244811	PA Ward	PA Ward	04/08/2017	Station 2	Ground search
Araneae	Clubionidae	*Clubiona sp.*		SO19214806	PA Ward	PA Ward	04/08/2017	Station 1	Ground search
Araneae	Clubionidae	*Clubiona sp.*		SO19244811	PA Ward	PA Ward	04/08/2017	Station 2	Ground search
Araneae	Clubionidae	*Clubiona sp.*		SO19364818	PA Ward	PA Ward	04/08/2017	Station 3	Ground search
Araneae	Clubionidae	*Clubiona sp.*		SO19444824	PA Ward	PA Ward	04/08/2017	Station 4	Ground search
Araneae	Clubionidae	*Clubiona sp.*		SO19994857	PA Ward	PA Ward	20/07/2017	Station 5	Ground search
Araneae	Clubionidae	*Clubiona sp.*		SO19484837	PA Ward	PA Ward	20/07/2017	Station 6	Ground search
Araneae	Dictynidae	*Dictyna arundinacea*		SO19444824	PA Ward	PA Ward	21/06/2017	Station 4	Spot

Araneae	Dictynidae	*Dictyna arundinacea*		SO19994857	PA Ward	PA Ward	22/06/2017	Station 5	Spot
Araneae	Hahniidae	*Antistea elegans*		SO19214806	PA Ward	PA Ward	21/06/2017	Station 1	Aquatic
Araneae	Hahniidae	*Antistea elegans*		SO19214806	PA Ward	PA Ward	04/08/2017	Station 1	Ground search
Araneae	Hahniidae	*Antistea elegans*		SO19214806	PA Ward	PA Ward	04/08/2017	Station 1	Sweep
Araneae	Hahniidae	*Antistea elegans*		SO19444824	PA Ward	PA Ward	04/08/2017	Station 4	Ground search
Araneae	Hahniidae	*Antistea elegans*		SO19444824	PA Ward	PA Ward	04/08/2017	Station 4	Ground search
Araneae	Hahniidae	*Antistea elegans*		SO19244811	PA Ward	PA Ward	21/06/2017	Station 2	Aquatic
Araneae	Hahniidae	*Antistea elegans*		SO19244811	PA Ward	PA Ward	04/08/2017	Station 2	Ground search
Araneae	Hahniidae	*Antistea elegans*		SO19364818	PA Ward	PA Ward	04/08/2017	Station 3	Ground search
Araneae	Hahniidae	*Antistea elegans*		SO19994857	PA Ward	PA Ward	20/07/2017	Station 5	Ground search
Araneae	Hahniidae	*Antistea elegans*		SO19444824	PA Ward	PA Ward	04/08/2017	Station 4	Ground search
Araneae	Hahniidae	*Antistea elegans*		SO19484837	PA Ward	PA Ward	20/07/2017	Station 6	Ground search
Araneae	Linyphiidae	*Baryphantes setiger*		SO19214806	PA Ward	PA Ward	04/08/2017	Station 1	Ground search
Araneae	Linyphiidae	*Drepanotylus uncatus*		SO19484837	PA Ward	PA Ward	22/06/2017	Station 6	Sweep
Araneae	Linyphiidae	*Floronia bucculenta*		SO19444824	PA Ward	PA Ward	21/06/2017	Station 4	Aquatic
Araneae	Linyphiidae	*Gnathonarium dentatum*		SO19244811	PA Ward	PA Ward	04/08/2017	Station 2	Ground search
Araneae	Linyphiidae	*Gnathonarium dentatum*		SO19484837	PA Ward	PA Ward	04/08/2017	Station 6	Ground search
Araneae	Linyphiidae	*Hypselistes jacksoni*		SO19444824	PA Ward	PA Ward	04/08/2017	Station 4	Ground search

Araneae	Linyphiidae	*Linyphia triangularis*		SO19484837	PA Ward	PA Ward	22/06/2017	Station 6	Sweep
Araneae	Linyphiidae	*Walckenaeria sp.*		SO19994857	PA Ward	PA Ward	20/07/2017	Station 5	Ground search
Araneae	Lycosidae	*Alopecosa pulverulenta*		SO19484837	PA Ward	PA Ward	20/07/2017	Station 6	Ground search
Araneae	Lycosidae	*Alopecosa pulverulenta*		SO19444824	PA Ward	PA Ward	04/08/2017	Station 4	Ground search
Araneae	Lycosidae	*Pardosa pullata*		SO19484837	PA Ward	PA Ward	22/06/2017	Station 6	Spot
Araneae	Lycosidae	*Pirata hygrophilus*		SO19214806	PA Ward	PA Ward	21/06/2017	Station 1	Ground search
Araneae	Lycosidae	*Pirata hygrophilus*		SO19244811	PA Ward	PA Ward	21/06/2017	Station 2	Aquatic
Araneae	Lycosidae	*Pirata hygrophilus*		SO19364818	PA Ward	PA Ward	04/08/2017	Station 3	Ground search
Araneae	Lycosidae	*Pirata hygrophilus*		SO19444824	PA Ward	PA Ward	21/06/2017	Station 4	Aquatic
Araneae	Lycosidae	*Pirata hygrophilus*		SO19444824	PA Ward	PA Ward	04/08/2017	Station 4	Ground search
Araneae	Lycosidae	*Pirata hygrophilus*		SO19994857	PA Ward	PA Ward	20/07/2017	Station 5	Ground search
Araneae	Lycosidae	*Pirata hygrophilus*		SO19484837	PA Ward	PA Ward	20/07/2017	Station 6	Ground search
Araneae	Lycosidae	*Pirata piraticus*		SO19994857	PA Ward	PA Ward	22/06/2017	Station 5	Aquatic
Araneae	Lycosidae	*Pirata piraticus*		SO19484837	PA Ward	PA Ward	22/06/2017	Station 6	Spot
Araneae	Lycosidae	*Pirata piraticus*		SO19484837	PA Ward	PA Ward	22/06/2017	Station 6	Aquatic
Araneae	Lycosidae	*Pirata piraticus*		SO19444824	PA Ward	PA Ward	21/06/2017	Station 4	Aquatic
Araneae	Lycosidae	*Pirata piraticus*		SO19444824	PA Ward	PA Ward	04/08/2017	Station 4	Ground search
Araneae	Lycosidae	*Pirata piraticus*		SO19244811	PA Ward	PA Ward	04/08/2017	Station 2	Ground search
Araneae	Lycosidae	*Pirata piraticus*		SO19364818	PA Ward	PA Ward	04/08/2017	Station 3	Ground search
Araneae	Lycosidae	*Pirata piscatorius*		SO19214806	PA Ward	PA Ward	21/06/2017	Station 1	Aquatic
Araneae	Lycosidae	*Pirata sp.*		SO19484837	PA Ward	PA Ward	22/06/2017	Station 6	Aquatic
Araneae	Lycosidae	*Pirata sp.*		SO19994857	PA Ward	PA Ward	20/07/2017	Station 5	Aquatic
Araneae	Lycosidae	*Trochosa ruricola*		SO19484837	PA Ward	PA Ward	20/07/2017	Station 6	Ground search

Araneae	Salticidae	*Euophrys frontalis*		SO19484837	PA Ward	PA Ward	20/07/2017	Station 6	Ground search
Araneae	Salticidae	*Evarcha fontinalis*		SO19444824	PA Ward	PA Ward	04/08/2017	Station 4	Ground search
Araneae	Salticidae	*Neon reticulatus*		SO19444824	PA Ward	PA Ward	04/08/2017	Station 4	Ground search
Araneae	Salticidae	*Neon reticulatus*		SO19484837	PA Ward	PA Ward	20/07/2017	Station 6	Ground search
Araneae	Tetragnathidae	*Metellina segmentata*		SO19484837	PA Ward	PA Ward	20/07/2017	Station 6	Sweep
Araneae	Tetragnathidae	*Pachygnatha clercki*		SO19214806	PA Ward	PA Ward	21/06/2017	Station 1	Aquatic
Araneae	Tetragnathidae	*Tetragnatha extensa*		SO19244811	PA Ward	PA Ward	21/06/2017	Station 2	Spot
Araneae	Tetragnathidae	*Tetragnatha extensa*		SO19244811	PA Ward	PA Ward	04/08/2017	Station 2	Ground search
Araneae	Tetragnathidae	*Tetragnatha extensa*		SO19244811	PA Ward	PA Ward	04/08/2017	Station 2	Sweep
Araneae	Tetragnathidae	*Tetragnatha extensa*		SO19364818	PA Ward	PA Ward	21/06/2017	Station 3	Spot
Araneae	Thomisidae	*Ozyptila trux/atomaria*		SO19484837	PA Ward	PA Ward	20/07/2017	Station 6	Ground search
Araneae	Thomisidae	*Ozyptila sp.*		SO19444824	PA Ward	PA Ward	04/08/2017	Station 4	Ground search
Araneae	Thomisidae	*Tibellus oblongus*		SO19994857	PA Ward	PA Ward	20/07/2017	Station 5	Ground search
Araneae	Thomisidae	*Xysticus sp.*		SO19364818	PA Ward	PA Ward	04/08/2017	Station 3	Ground search
Mollusca	Oxychilidae	*Oxychilus alliarius*		SO19994857	PA Ward	PA Ward	04/08/2017	Station 5	Ground search
Mollusca	Planorbidae	*Anisus (Planorbis) leucostoma*		SO19214806	PA Ward	PA Ward	21/06/2017	Station 1	Aquatic
Mollusca	Lymnaeidae	*Galba (Lymnaea) truncatula*		SO19214806	PA Ward	PA Ward	21/06/2017	Station 1	Aquatic
Mollusca	Succineidae	*Succinea putris*		SO19214806	PA Ward	PA Ward	21/06/2017	Station 1	Aquatic

9.2. Appendix 2. Comparison photographs of sample stations in 2012 and 2017.

Figure 2. Station 1 looking S (12/06/2012).

Station 1 looking SSE (21/06/2017).

Figure 3. Station 2 looking S (12/06/2012).

Station 2 looking S (21/06/2017).

Figure 4. Station 3 looking SW (12/06/2012).

Figure 5. Station 4 looking SE (12/06/2012).

Station 4 looking SE (21/06/2017).

Figure 6. Station 5 looking E (12/06/2012).

Station 5 looking E (22/06/2017).

Figure 7. Station 6 looking N (12/06/2012).

Station 6 looking NE (22/06/2017).

9.3. Data Archive Appendix

The data archive contains:

[A] The final report in Microsoft Word and Adobe PDF formats.

[B] Species records, which are held on the NRW Recorder 6 database.

Metadata for this project is publicly accessible through Natural Resources Wales' Library Catalogue http://libcat.naturalresources.wales or http://catllyfr.cyfoethnaturiol.cymru by searching 'Dataset Titles'. The metadata is held as record no. 121589.

Published by:
Natural Resources Wales
Maes-y-ffynnon
Penrhosgarnedd
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