Cae'r Glaw Quarry
Gwalchmai
Anglesey

Report on a scoping survey of proposed extension
for terrestrial invertebrates

Commissioned by
United Environmental Services

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July 2021

SUMMARY

A walkover survey of an area of land adjoining Cae'r Glaw Quarry in July 2021 aimed to:

- identify presence or potential presence of valuable assemblages and/or species of special interest; and
- identify where further targeted survey work might be required.

The land is an area of granite geology with a complex mosaic of heathy rocky knolls and mostly acid herb-poor grassland with a large valley mire and a small pocket of basin mire in the east of the site. There are also areas of flushed marshy grassland towards the northern and western boundaries. It is divided into two units by a drystone wall which is lined in places by thorn scrub and patches of willow scrub occur locally elsewhere. Although clearly subject to sheep grazing in the recent past, no signs of grazing in the current year were apparent and the marshy grasslands were notably rank and bracken and bramble growth was found to be widespread on drier ground.

The site was found to support invertebrate species characteristic of lowland heathland on granite geology in the damper climate of western Britain. Three to four hours spent on site searching resulted in 70 species of invertebrate identified to genus or species level. Two of these – grayling butterfly *Hipparchia semele* and the rove beetle *Stenus europaeus* – have conservation status, the former listed under Section 7 of the Environment (Wales) Act (EWA) 2016 and assessed as Vulnerable at a UK level and the latter Nationally Scarce. The former was found to be plentiful on the heathy granite knolls while the latter was only found in the small basin mire. A good range of other nationally uncommon and very localised species were also found including the money spider *Araeoncus crassiceps* in the basin mire, marsh whorl snail *Vertigo antivertigo* in the valley mire, the minute bladder bug *Myrmedobia exilis* on the heathy knolls, and the grass bug *Teratocoris viridis* in the flushed marshy grasslands. Such a range of interesting species across the more semi-natural habitats of the area suggests a good quality site of moderate to high conservation interest.

Analysis of this fauna using Natural England's Pantheon database generated an assessment of below SSSI quality. Lowland heathland is however a localised habitat type which has become increasingly scarce in recent decades and is especially threatened at inland localities. Comparable sites have become very scarce on Anglesey, and so the site has been assessed as of significant conservation value although less than county (Anglesey) significance.

It is recommended that this exploratory survey is adequate for the purposes of site assessment for invertebrates. No further survey appears warranted.

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1 INTRODUCTION

1.1 Background

This document reports on a scoping survey of the invertebrate assemblages of an area of land adjoining Cae'r Glaw Quarry on Anglesey and which is proposed for extension to the quarry.

The land is an area of granite geology with a complex mosaic of heathy rocky knolls and mostly acid herb-poor grassland with a large valley mire and a small pocket of basin mire in the east of the site. There are also areas of flushed marshy grassland towards the northern and western boundaries. It is divided into two units by a drystone wall which is lined in places by thorn scrub and patches of willow scrub occur locally elsewhere. Although clearly subject to sheep grazing in the recent past, no signs of grazing in the current year were apparent and the marshy grasslands were notably rank and bracken and bramble growth was found to be widespread on drier ground.

The task for the 2021 invertebrate assessment was:

1. An invertebrate scoping survey to identify the presence of valuable communities and/or species of special interest
2. Provide a brief report detailing methodology, results (including the value of the invertebrate assemblages and any areas of particular interest), and recommendations for further survey (if required),

2 SURVEY METHODOLOGY

2.1 Survey strategy

Many invertebrates are highly seasonal in their availability for survey, having largely annual life cycles. Identification generally requires the availability of the adult stage, which can be as short as a matter of weeks within the field season, the precise time of year varying with the species. Ideally, therefore, assemblages should be sampled across a full season in order to detect as wide a variety of the resident species as possible and to generate a reliable assessment of site conservation value. A minimum of three visits is generally recommended, covering the late spring, high summer and autumnal activity peaks. However, single exploratory or scoping visits can be very instructive in determining whether or not this more detailed survey is warranted and identifying the habitats or features requiring more work. While such visits are best carried out during the main field season, visits at other times of year can still be very instructive.

2.2 General survey methodology

Surveying combined direct observation and hand-searching, supplemented by the use of a standard entomological sweep-net and a suction sampler. The techniques applied were as follows:

1. Direct observation:
    - Visual assessment of suitable features encountered during the walkover of the site;
    - Close inspection of potential invertebrate habitats and recording the presence of any species noted.
2. Hand-searching:
    - Examination of plant foliage for leaf-mines, galls, resting invertebrates, etc.
    - Searching amongst decaying wood and other debris, including looking beneath rocks, fallen wood, etc, lying on the ground.
3. Use of a standard entomological sweep-net to sample invertebrates present amongst the taller areas of field layer and from the accessible foliage of trees and shrubs.
4. Use of a domestic leaf sucker/blower machine with two-stroke engine to sample ground-living invertebrates amongst dense vegetation

These are amongst the standard techniques recommended in Drake et al (2007) for use in general site quality assessment and in particular Common Standards Monitoring on SSSIs.

2.3 Timing & weather conditions

The area was visited on the morning of 20th July 2021. Conditions were reasonable for invertebrate survey, although there had been some dew formed overnight which limited the use of the sweep-net. The temperature was around 25 degrees Centigrade, and this was following five or more similarly very warm and dry days and so the site was very dry overall. The 2021 field season had been very atypical with a cold and dry April followed by a wet and cold May, with temperatures not reaching typical summer figures until well into June. The invertebrate fauna may therefore be expected to be somewhat atypical in composition and abundance.

3 RESULTS & DISCUSSION

3.1 Overview and key habitats and species found

A total of 70 invertebrate species were noted during the site exploration. Although a relatively short list, this is judged to be fairly typical for the approach taken and for the habitats represented at this time of year.

Two of these – grayling butterfly *Hipparchia semele* and the rove beetle *Stenus europaeus* – have conservation status. Grayling is listed under Section 7 of the Environment (Wales) Act (EWA) 2016 and has recently been assessed as Vulnerable at a UK level (Fox et al, 2010). British populations have declined dramatically in the past ten years – between 30 and 49% - and especially at inland sites such as this. It was found to be plentiful on the heathy granite knolls. The rove beetle has Nationally Scarce status (Hyman, 1994) and was only found in the basin mire. A good range of other nationally uncommon and very localised species were also found including the

money spider *Araeoncus crassiceps* in the basin mire, marsh whorl snail *Vertigo antivertigo* in the valley mire, *Myrmedobia exilis* on the heathy knolls, and the plant bug *Teratocoris viridis* in the flushed marshy grasslands. Such a range of interesting species across the more semi-natural habitats of the area suggests a site of moderate conservation interest. The whorl snail has been identified as an indicator species of old wetland (Kerney & Stubbs, 1980).

The core grassland areas are semi-improved sheep pasture and of more limited value for invertebrates.

The species list has been analysed in terms of the Pantheon on-line database, a site assessment application which has been developed by Natural England as part of its work on common standards monitoring. The methodology is detailed in **NERR005** *Surveying terrestrial and freshwater invertebrates for conservation evaluation* (Drake et al 2007). The species list does not achieve the quality expected of a site of SSSI quality. Site quality is clearly below national – GB - importance, which is no surprise for such a small and isolated site.

3.2 Wetland areas

The wetlands across the site have provided the greatest variety of invertebrates and the most interesting species. The one Nationally Scarce species, the rove beetle *Stenus europaeus*, was associated with the small basin mire together with the very local money spider *Araeoncus crassiceps*. The old wetland indicator species, marsh whorl snail *Vertigo antivertigo* was found in the much more extensive valley mire, while the uncommon grass bug *Teratocoris viridis* was found in the flushed marshy grassland of the western corner of the site. Such an interesting variety of wetland habitats within such a small area of land is a feature of significant interest.

3.2.1 Basin mire (SH386772)

This peaty bog hollow has characteristic mire vegetation with cotton grass *Eriophorum*, bog asphodel *Narthecium ossifragum*, marsh cinquefoil *Potentilla palustris* and marsh St John's wort *Hypericum elodes*. The site appears to be a high quality basin mire. Sampling here produced an example of the Nationally Scarce rove beetle *Stenus europaeus* and the very local money spider *Araeoncus crassiceps*. The rove beetle appears to be a specialist of long-established lowland peatlands – both fen and mire conditions. Although widespread in Ireland it has a very restricted distribution in Britain and is best known from the East Anglian fens; there are also clusters of records from lowland fen and mire situations in parts of Yorkshire, the new Forest and North Wales. The money spider is best known in Britain across Wales due to its favouring damper heathy conditions.

3.2.2 Valley mire (SH385773)

The valley mire forms a very extensive strip combining areas of rush pasture and marshy grassland with patches of *Molinia- Narthecium -Erica tetralix* mire. Current condition is however poor due to lack of appropriate grazing. The rush pasture and marshy grassland areas are very tall and rank and contain little or none of the open bare ground habitat that is favoured by invertebrates. However, a specimen of marsh

whorl snail *Vertigo antivertigo* provides a good indication of long-term site quality and suggests that the present poor condition may be a recent feature. Kerney (1999) comments that it is more or less restricted to lowland semi-natural wetlands and requires hydrological stability. Although there is no strong evidence for major national decline this species is becoming increasingly scarce in parts of its British range through habitat loss. Killeen (1992) commented that even in Suffolk it is the most severely of the genus affected by habitat loss.

A good range of other invertebrate species typical of mire and rush pasture situations were also found, including the semi-aquatic beetle *Chaetarthria simillima* and the ground beetle *Bembidion mannerheimii* and the ground spider *Clubiona stagnatilis*. Collectively the invertebrate fauna suggests a site of moderate quality.

3.2.3 Flushed marshy grassland (SH381773)

The third area of wetland habitat found to be of significant interest for invertebrates within the site lies in the westernmost corner, above a disused access track leading from Clegir Mawr farm. Flushed grassland alongside a small drainage line here includes such typical mesotrophic wetland herbs as water mint *Mentha aquatica*, marsh marigold *Caltha palustris* and sneezewort *Achillea ptarmica*. This area may be expected to support a rich assemblage of mesotrophic marsh invertebrates. One uncommon species was found on this occasion, the grass bug *Teratocoris viridis*. This has a predominantly northern distribution in Britain and is thought to feed on sedges. Another localised bug species, the grass-feeding rhopalid *Myrmus miriformis* was also present – this is associated with lush damp meadows as well as grass heath situations.

3.3 Heathy knolls

Small exposed rocky outcrops and especially the more extensive ridges provide the other key habitat feature of the site. These provide mosaic habitats of bare rock, lichen-rich ground, areas of stonecrop *Sedum anglicum* and fine dry grassland on thin soils, open heath of heather *Calluna vulgaris*, bell-heather *Erica cinerea* and western gorse *Ulex gallii*, as well as coarser thorn scrub on deeper soils. The more open vegetation appearsto be being kept in good condition by rabbit grazing.

These areas provide valuable habitat for the GB Vulnerable butterfly, grayling *Hipparchia semele* which is listed under Section 7 of the Environment (Wales) Act (EWA) 2016. Grayling were present in good numbers across the site. Along with typical heathland weevils *Protopirapion atratulum* and *Sitona striatellus* feeding on the western gorse, an especially interesting feature was the minute bladder bug *Myrmedobia exilis.* This is a species of mossy ground in open areas on acid or sandy soils where they feed on aphids. Although widespread in Britain there are notably few records – the females are flightless and so confined to sites with long-established suitable conditions. One spider of interest was also found, the agelenid *Araneus quadratus*, which is an uncommon species of undisturbed heaths and grasslands. The structural variety provided by the heathy areas has sufficient height and strength to support its large orb web. There are few records from Anglesey.

3.4 Old drystone walls

The other feature of particular potential interest for invertebrates are the patches of old hawthorn and blackthorn which line the field boundary walls in a few places. Old thorn scrub is always a valuable feature for invertebrates although on this particular occasion very little could be found in association. This is thought to be a reflection of the 2021 weather patterns rather than site quality as such trees are typically rich in epiphyte assemblages of invertebrates, notably barkflies (Psocodea) which are notoriously sensitive to both very wet and very dry conditions when they hide away and seem virtually impossible to find. The one feature of note found was tree snail *Balea sarsii* – this feeds on the epiphytic lichens encrusting tree bark in open sunny situations and is a feature of the western seaboard areas of Europe.

4 CONCLUSIONS & RECOMMENDATIONS

4.1 Features of significance

Overall, the study site supports a very characteristic invertebrate fauna for an area of lowland dwarf shrub heath and mire on undulating granite bedrock. Site quality appears moderate to high although the condition of the wetland vegetation was found to be poor due to inadequate grazing management. Similar habitat is widespread over much of western Britain although is steadily decreasing through degradation or destruction for more intensive farming and development or neglect resulting in domination by gorse, willow, bracken and bramble.

The associated invertebrate fauna includes one Section 7 (EWA 2016) species: grayling butterfly *Hipparchia semele* and one Nationally Scarce peatland rove beetle *Stenus europaeus*. Analysis of the fauna indicates site quality below national quality, but patches of lowland heath and mire such as this are under threat nationally. Few such heathy knolls now survive on Anglesey. The area is therefore assessed as being below Anglesey importance but more than just local significance for its invertebrate assemblages.

4.2 Further survey requirements

Additional survey time would undoubtedly increase the list of species known to be present on site considerably but the impression gained of site quality suggests that the overall assessment would be unlikely to change as a result of any additional work. Accordingly, no further survey work is recommended.

5 ACKNOWLEDGEMENTS

The project is being led by Tom Kenwright of UEA. Thanks to: Gary Kitson (Hogan Associates) for managing site arrangements and to Alastair Grubb (UEA) for site transport and direction.

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APPENDIX 1 FULL LIST OF INVERTEBRATES NOTED IN JULY 2021

Group	Family	Species name	GB Status
Araneae	Agelenidae	*Araneus quadratus*	
(spiders)	Clubionidae	*Cubiona stagnatilis*	
	Linyphiidae	*Araeoncus crassiceps*	
		Bathyphantes approximatus	
		Microlinyphia pusilla	
		Neottiura bimaculata	
		Oedothorax fuscus	
		Peponocranium ludicrum	
	Lycosidae	*Pardosa pullata*	
		Pirata piraticus	
	Mimetidae	*Ero sp*	
	Tetragnathidae	*Pachygnatha clerki*	
		Tatragnatha extensa	
	Thomisidae	*Tibellus sp*	
		Xysticus ? cristatus	
	Zoridae	*Zora spinimana*	
Butterflies	Hesperidae	*Thymelicus sylvestris*	
	Pieridae	*Pieris napi*	
	Satyridae	*Aphantopus hyperantus*	
		Hipparchia semele	VU
		Maniola jurtina	
		Pyronia tithonus	
Coleoptera	Apionidae	*Protopirapion atratulum*	
(beetles)	Cantharidae	*Rhagonycha fulva*	
	Carabidae	*Bembidion mannerheimi*	
	Chrysomelidae	*Chaetocnema hortensis*	
		Neocrepidodera ferruginea	
	Coccinellidae	*Coccidula rufa*	
		Propylea 14-guttata	
		Ryzobius litura	
		Subcoccinella 24-punctata	
	Cryptophagidae	*Telmatocephalus*	
	Curculionidae	*Hypera nigrirostris*	
		Sitona striatellus	
	Hydrophilidae	*Anacaena globulus*	
		Chaetarthria simillima	
	Nitidulidae	*Brachypterus urticae*	
	Scirtidae	*Contacyphon ochraceus*	
	Staphylinidae	*Stenus boops*	
		Stenus cicindeloides	
		Stenus europaeus	NS

		Stenus fulvicornis
		Stenus lustrator
Dermaptera	Forficulidae	*Forficula auricularia*
Diptera	Limoniidae	*Erioptera lutea*
(flies)	Rhagionidae	*Chrysopilus cristatus*
	Sciomyzidae	*Pherbina coryleti*
		Tetanocera fuscinervis
		Tetanocera robusta
	Syrphidae	*Melanostoma mellinum*
		Platycheirus albimanus
	Tabanidae	*Chrysops relictus*
Hemiptera	Cercopidae	*Neophilaenus lineatus*
(bugs)		*Philaenus spumarius*
	Cicadellidae	*Cicadella viridis*
		Ulopa reticulata
	Lygaeidae	*Cymus claviculus*
	Microphysidae	*Myrmedobia exilis*
	Miridae	*Leptopterna sp*
		Lygocoris pabulinus
		Stenodema holsaticum
		Teratocoris viridis
		Trigonotylus ruficornis
	Nabidae	*Nabis limbatus*
	Pentatomidae	*Piezodorus lituratus*
	Rhopalidae	*Myrmus miriformis*
Hymenoptera	Formicidae	*Formica lemani*
Mollusca		*Balea sarsii*
(snails)		*Succinea putris*
		Vertigo antivertigo