

Allithwaite Quarry Management Plan 2022-2032

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1 Background information

1.1 Location & tenure

Location	Allithwaite Quarry is at the end of Quarry Lane, Allithwaite, near Grange-over-Sands.
District	South Lakeland
Local Planning Authority	South Lakeland District Council
National Grid Reference	SD 3907 7671 (centroid)
Size	0.9ha (excluding access track)
Tenure	Owned by Allithwaite & Cartmel Parish Council
Access	Open Access Land, no designated rights of way.
Legal Status	Compartment 1 of the site (0.3ha) falls within Wart Barrow SSSI

1.2 History

Allithwaite Quarry is believed to have been established in 1807 to provide the village with a source of stone for building. At its peak it employed 12 people from the village and had 3 lime kilns. Regular quarrying probably ceased in 1939, and during WW2 the quarry was used as a rifle range and dump for the local sawmill. Subsequent to this it was abandoned, used only as a community tip/ dumping ground.

1.3 Place in the landscape

1.3.1 Protected sites

Compartment 1 (to the east) of Allithwaite Quarry forms part of Unit 3 of Wart Barrow SSSI. Units 2 and 4 of the SSSI are immediately adjacent to the south and east boundaries of Allithwaite Quarry.

Wart Barrow SSSI was designated in 1987 for its diverse limestone flora- both of grassland and woodland, and the notable invertebrate fauna (particularly butterflies). Unit 3, which incorporates the top of Allithwaite Quarry, but not the quarry face, is currently in 'Unfavourable Recovering' condition (last assessed in May 2021).

Wart Barrow County Wildlife Site (CWS) is immediately adjacent to Allithwaite Quarry, and was designated in 1999. The site is larger than Allithwaite Quarry (3.7ha), and was designated for the short unimproved grazed turf present. In many areas this turf is very diverse and supports several notable plant species.

1.3.2 National character areas (NCA)

Allithwaite Quarry falls within NCA 20- Morecambe Bay Limestones. This area is characterised by conspicuous limestone hills often with prominent scars, cliffs, screes and exposed limestone pavement, with area of low lying undulating farmland. Disused quarries are a distinctive local feature, along with associated lime kilns.

1.4 Management history

In 2010 Martin Wain from Butterfly Conservation saw potential in the site to support important butterfly species. With support from the Parish Council he engaged a contractor to clear some of the scrub and trees from the quarry face, and together with Wendy Nelson (a keen local naturalist) started some volunteer work parties to manage the vegetation on the site primarily for the benefit of the butterfly fauna. Most of this work has entailed removal of scrub and trees, control of brambles and maintenance of footpaths. Non-native species such as cotoneaster have been targeted for removal. There have also been some attempts at removing some of the accumulated rubbish from the site, though this has been problematic.

There is no current or previous management plan for Allithwaite Quarry.

2 Site description

2.1 Habitats

2.1.1 Scrub/ woodland

The track leading to the Quarry from Allithwaite is tree lined, as is much of the Quarry boundary. The western half of the site (compartment 1) comprises several mature trees and scrub. Ash and sycamore are the predominant canopy trees. Many species present are considered neophytes (non-native, but well established in the UK flora and spread naturally) – such as sycamore and horse chestnut. Hawthorn is frequent along the boundaries and also scattered throughout the site. The ground flora along the access track is typical of secondary woodland with wild garlic, bluebell and dog's mercury. Under the woodland in the Quarry the ground flora is much more varied, with some woodland species, garden escapes and scrub (such as raspberry and bramble) under the canopy trees.

Figure 1. Map showing the 3 management compartments and main paths (Compartment one in blue, two in white and three in purple)



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Deciduous woodland is a notable habitat listed under section 41 of the NERC Act (Natural Environment and Rural Communities Act 2006, which requires a list of priority habitats and species to be drawn up to guide planning and development policy, previously known as the UK Biodiversity Action Plan).

2.1.2 Grassland

Much of the quarry floor and the area above the quarry cliffs are covered by grassland. Compartment 2 (central compartment) comprises the quarry floor and cliffs, compartment 3 it to the east and comprises the grassland above the cliffs (part of Wart Barrow SSSI)- see Figure 1 above. There is a mosaic of species, and in places with deeper soils bracken has also established. A recent vegetation survey of Wart Barrow SSSI (Graeme Skelcher 2018) also included the quarry floor grassland – and this identified both calcareous and neutral grassland communities on the quarry floor and above the cliffs. The communities described are diverse and support many plants of conservation interest. Scrub is frequent in many areas, especially bramble and hawthorn, as well as some saplings of ash and sycamore. Bracken has established at the boundary between the grassland and woodland in the south of the site.

Species rich grasslands – both of neutral and calcareous origin are notable habitats under section 41 of the NERC Act, previously BAP habitats.

2.1.3 Rock face

The quarry cliffs have some scattered vegetation on ledges and crevices, but also a lot of bare rock facing west. The cliffs are not very tall (not tall enough to support notable nesting birds for example), but are a prominent feature of the site with additional historical and geological interest.

2.2 Flora

The calcareous grassland on the site has been classed as CG9 grassland (Sesleria- Galium calcareous grassland). Blue moor grass *Sesleria caerulea* is a nationally scarce species in the UK, which has a stronghold in the Morecambe Bay Limestone grasslands. This grassland community is not especially diverse compared with other unimproved grasslands, but does include other species of interest – such as rock rose *Helianthemum nummularium*, salad burnet *Sanguisorba minor*, small scabious *Scabiosa columbaria*, juniper *Juniperus communis*, early purple orchid *Orchis mascula* and fly orchid *Ophrys insectifera*.

Most of the grassland on the quarry floor is classed as MG5 (Cynosurus- Centaurea neutral grassland). The sward is dominated by grasses with some black knapweed *Centaurea nigra*, birds foot trefoil *Lotus corniculatus*, mouse-ear hawkweed *Pilosella officinarum* and rough hawkbit *Leontodon hispidus*.

Non-native species are occasional and locally abundant in parts of the Quarry, especially the quarry floor. Cotoneaster is a problem on the limestone grassland and rock face, and buddleia is establishing amongst the scrub in the western half of the quarry. Winter heliotrope has also established under the scrub and trees and is dense in places.

An exhaustive list of the flora within the Quarry has been compiled by Wendy Nelson, and this includes bryophytes and lichens. A copy of this is included in the appendices to this Plan for future reference. Of all species recorded, three are of particular interest due to their scarcity-juniper, blue moor grass and fly orchid (see table in 2.5 below).

2.3 Fauna

2.3.1 Lepidoptera

The moths and butterflies of the site have been well studied, with a regular butterfly transect and some occasional moth trapping carried out by local naturalist Martin Chadwick. The site has an impressive list of 303 species, of which 28 are butterflies. Some of the species present are habitat specialists such as small pearl bordered fritillary, northern brown argus and dingy skipper. From the list of 303 species of lepidoptera, 26 are notable species and are listed under section 41 of the NERC Act (previous BAP species). One new addition to the list (June 2021) is small eggar moth- a nationally scarce species, which has scattered records mostly in the south-west of England. Six of the notable species are butterflies, and all of these are also listed on the red list as near threatened or vulnerable (see table in 2.5 below). The remaining twenty are moths, most of which are typical of woodland or rough grasslands – none are particular habitat specialists, but are listed due to relative declines in population. The current list for the quarry is included in the appendices to this Plan.

2.3.2 Other species

Most other species records are casual observations made by volunteers and visitors. A reptile survey has been carried out proving that common lizard have a small breeding population in the locality, but no other reptiles were seen.

Both common toad and common frog have been recorded, though as water is very ephemeral on site there is limited prospect of the Quarry supporting a breeding population at present.

Most birds recorded as nesting on site are widespread (such as robin, blackbird and long tailed tit), though there have been breeding records of some amber listed birds – kestrel and willow warbler.

Roe deer and rabbits are often seen in the Quarry and adjacent land, and there is also a record of a weasel near to the quarry cliffs.

Numerous other insects have been recorded, including bumblebees, mining bees, bugs and beetles. Given the sheltered nature of the site and relatively warm conditions offered by the quarry cliffs, there is likely to be a varied and interesting invertebrate assemblage.

2.4 Access and infrastructure

The Quarry is accessed through a pedestrian gate at the end of Quarry Road. This leads to a tree-lined track up to the quarry floor. There are no formal paths around the site or public footpaths, but the volunteers maintain a network of small paths around the quarry floor. The whole of the Quarry is designated Open Access Land under the CROW Act (Countryside Rights of Way Act 2000), as is the adjacent land parcel to the south which can be accessed through a field gate in the southern boundary of the Quarry.

The section of Allithwaite Quarry above the quarry cliffs is not easily accessible (no gates or stiles), and access is not encouraged to this area due to safety concerns.

The lime kiln at the western edge of the Quarry has been fenced off due to safety concerns.

At the access gate to the Quarry there is an information board, and a bench is being installed part way up the tree-lined track between the access gate and the quarry floor.

2.5 Summary and local context

The tables below lists those species and features recorded at Allithwaite Quarry that have been identified as rare, scarce or protected under various legislations or conservation assessments. Explanations of sources and status is given below, and references included in the appendices.

Species	UK status*	Local status**	Red data list status***	Last recorded on site#
Northern brown argus	NERC s41, WCA Sch5		VU	2021
Dingy skipper	NERC s41		VU	2021
Small pearl bordered fritillary	NERC s41		NT	2021
Wall brown	NERC s41		NT	2021
Small heath	NERC s41		NT	2020
Grayling	NERC s41		VU	2020
Small eggar moth	Nationally scarce		VU	2021
Common toad	NERC s41, WCA Sch5			
Common lizard	NERC s41, WCA Sch5			
Blue moor grass, <i>Sesleria caerulea</i>	Nationally scarce	-	LC	2021
Fly orchid <i>Ophrys insectifera</i>	NERC s41	Locally scarce	VU	2021
Juniper <i>Juniperus communis</i>	NERC s41	-	NT	2021

Feature	Location	Statutory	Non-statutory	Note
Deciduous woodland	On site	y		NERC s41
Species-rich grassland - calcareous	On site	y		NERC s41
Species-rich grassland - neutral	On site	y		NERC s41
Wart Barrow SSSI	On site, and adjacent (east and south)	y		WCA 1981
Wart Barrow CWS	Adjacent to site (north)		y	
Open Access Land	On site and adjacent (south)	Y		CROW Act 2000

* NERC (Natural Environment and Rural Communities) Act 2006 section 41 requires a list of priority habitats and species to be drawn up to guide policy, which succeeded the BAP (though the lists are broadly similar). Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) lists species that receive additional protection against injury, killing and collection.

**No of 2km squares in Cumbria taken from Halliday (1997). Locally rare is defined as occurring in less than 10 2km squares, whilst locally scarce plants occur in between 11 and 70 2km squares in the County. This definition is taken from the Guidelines for the Selection of Wildlife Sites (CWT).

***English red data list status taken from Conservation Designations for UK Taxa excel list (2018), accessed via JNCC website 15/6/21. LC- Least Concern, NT- Near threatened, VU-vulnerable.

Most recent surveys completed in 2020. 2021 surveys still in progress.

3 Threats and opportunities

3.1 Invasive non-native species

There are many recorded non-native species within Allithwaite Quarry, in part due to its history of a community tipping area. Most of these species, though not desirable, will not cause problems on the site. Some are quite invasive, however, and need to be controlled to avoid loss of native flora.

Winter heliotrope has established in a couple of places under the woodland canopy. This is a successful plant that spreads using rhizomes and can form dense carpets out-competing native flora. It can tolerate shade and thrives in damp areas.

Buddleia quickly colonises open areas, cliffs and disturbed ground and can displace native species, and some individuals are present at the edge of the woodland areas. The flowers are attractive to pollinating insects in the summer.

Cotoneaster is often spread by birds who eat the bright berries. It establishes in bare areas and rocky cliffs and has become a problem in many conservation areas such as limestone pavement habitats. There are several of these plants on the quarry face, and there has been previous control of this species with the Quarry.

Japanese knotweed has been recorded in the Quarry. Its removal is problematic and can require specialist contractors, so any plants seen should be quickly removed and legally disposed of.

3.2 Succession

Left to its own devices, the majority of Allithwaite Quarry would revert to woodland resulting in the loss of the diverse grassland flora and invertebrate assemblage that it supports. Prior to woodland becoming fully established, the grassland areas would slowly become less diverse as finer herbs are superseded by taller grasses and bramble. Features of historical interest – the quarry face and lime kiln- will become indistinct as they are hidden by the denser vegetation. Tree roots could penetrate the walls and cause the collapse of the limekiln. Rabbits and deer provide a light browsing pressure, but this is not enough to prevent this succession.

The grasslands will require ongoing management to combat this- either by scrub control and removal or through instigation of a suitable grazing regime. Grazing is the most effective and ecologically friendly method of managing succession (and will help to maintain diversity in the grasslands), but the Quarry has never been grazed and there are several constraints which will need to be overcome. These include;

- the size of the site – it is not an economically viable land parcel to graze, so will need to be incorporated with an adjacent pasture
- poor state of some of the boundary walls
- lack of water – can be overcome by opening access from an adjacent land parcel
- quarry cliffs pose dangers to livestock, and the upper grassland can't be grazed unless the cliffs are fenced
- historic dumping of rubbish and building materials can cause hazard to livestock.

Managing succession through active scrub control and removal is the other option, though this will only realistically tackle scrub colonisation and not the loss of diversity in the grasslands which results from lack of management. Scrub control and removal also has constraints to be overcome- including;

- access – the upper grassland is not easily accessed as there are no gaps/ stiles over the walls

- personnel – contractors are expensive, and volunteer work parties can require a lot of organisational time
- removal of arisings – cut material needs to be disposed of in a sensitive manner
- health and safety – quarry cliffs and historic dumping create hazards for people working on the site

3.3 Ash dieback disease

Ash dieback disease (Chalara) is now well-established in Cumbria, affecting many areas. Infected ash trees die off and shed branches, and have few leaves. Infected trees can survive for many years in this state, and some can recover. The infected trees look unsightly, but provide habitat for deadwood invertebrates, crevice nesting birds and bats. They can cause health and safety concerns if they are alongside rights of way, as infected trees can drop limbs and are more susceptible to wind damage.

As well as the safety aspects of ash dieback, ash is an important component of the woodland flora in the Quarry, alongside the non-native sycamore. Loss of ash from the canopy and its replacement by sycamore will have impacts on the ground flora as sycamore comes into leaf before ash- exerting more shade on the woodland floor.

3.4 Climate change

Evidence from UK Climate Impacts Programme (UKCP18) shows that over the coming century the climate of North West England is expected, on average, to become warmer and wetter in winter and hotter and drier in summer. There will be an increase in frequency of extreme events (floods/droughts). This will inevitably have impacts on the flora and fauna in the Quarry, with species on the northern edge of their ranges likely to disappear, and new warmth-loving species colonise. Woodland and grassland habitats are considered to be less susceptible to climate change than wetland and coastal habitats.

3.5 Anti-social behaviour

The use of Allithwaite Quarry by the general public has some drawbacks. Not all visitors respect the site, and some leave litter behind them. Irresponsible dog walkers can also disturb wildlife and cause health hazards by not clearing up after their dog.

3.6 Health and safety

Access to certain areas of the quarry cannot be encouraged due to natural risks (cliff edges), and all visitors should keep to clear paths. The historic dumping of rubbish and waste materials has also left a legacy of debris that can injure visitors (including dogs).

3.7 Education

The proximity of the site to the village, and relatively easy access means that the site could be used by local school and clubs for educational purposes such as forest schools. The diversity of the insect life (which can be quite easily seen) can engage and inspire – and help engender respect for the site. The history of the site can also be used in an educational context as the evidence of quarrying and lime burning are still present.

3.8 Wellbeing

The site is small and personal, and yet provides a feeling of escape from daily life as it is screened from the village and surrounding area. It can provide a quiet place for people to walk and engage with the wildlife on site, which has benefits for mental health and general wellbeing. The Allithwaite & Cartmel Parish Council Community Plan advocates improving access to the Quarry for local residents.

4. Vision for the site and management objectives

4.1 Long term vision

Allithwaite Quarry is a regularly visited and well-respected local nature reserve. The reserve is visited by the local primary school for their forest school classes, and also used by other local groups (such as brownies and scouts). Locals sit on the benches for quiet contemplation and to enjoy the peace and quiet. The lime kiln has been restored, and though it can't be accessed it can be easily seen from the path in the reserve. The small network of informal paths is well maintained, keeping the balance between access and the wilder feel of the site (no wide park-like trails).

The quarry floor grassland and woodland are lightly grazed in the autumn and winter, and in the summer support a diverse and abundant plant and insect life. The upper grassland (compartment 3) has maintained its diversity through regular light management by a group of dedicated local volunteers, and contributes to the good condition status of Wart Barrow SSSI. The quarry floor grassland (compartment 2) has been incorporated into the adjacent Wart Barrow CWS, and maintains a small buffer of scrub around the species rich grassland to protect the microclimate that is so important to the resident invertebrates. The site has become a valuable butterfly reserve with a sustainable breeding population of northern brown argus and has also played an important role in the re-establishment of duke of burgundy fritillary as a breeding species on Wart Barrow.

The woodland maintains a good diversity of trees and plants, and since the eradication of winter heliotrope the ground flora has recovered well. The reserve supports a diverse and varied avifauna and the common lizard population is thriving. The small ephemeral pond provides breeding habitat for frogs and newts, as well as several aquatic invertebrates such as damselflies.

4.2 Key management objectives

4.2.1 Maintain and enhance the floral and faunal biodiversity of the grasslands (compartments 2 & 3)

Strategies to achieve this objective include:

- Eradication of invasive non-native species
- Instigate suitable management to interrupt succession and prevent the loss of floral diversity in both compartments
- Continue monitoring of butterfly species

4.2.2 Maintain and enhance the floral and faunal biodiversity of the woodland (compartment 1)

Strategies to achieve this objective include:

- Eradication of invasive non-native species
- Monitor health of ash trees, and manage as appropriate
- Retain some deadwood (standing and fallen) to ensure a diversity of habitats and nesting sites
- Maintain a diverse canopy flora
- Maintain a mosaic of habitats/ soft woodland edge habitat between compartments 1 & 2

4.2.3 Protect the site from insensitive management and damage

Strategies to achieve this objective include:

- Investigate possibility of inclusion of compartment 2 into the adjacent CWS
- Maintain good working relationship with Butterfly Conservation staff and volunteers
- Nominate a councillor to become the point of contact for the Quarry for volunteers and partner agencies.

4.2.4 Protect and promote the cultural history of the Quarry

Strategies to achieve this objective include:

- Maintain, and where possible restore, the limekiln
- Maintain limited access to the quarry face and views of the limekiln, whilst not compromising visitor safety. After consultation with a geophysical engineer to assess the stability of the cliff edge, it has been recommended that a 1m high fence should be installed 2m from the cliff edge to prevent easy access to the rock face without affecting views.

4.2.5 Promote quiet enjoyment of the site through sympathetic and safe access, without detracting from the feeling of remoteness.

Strategies to achieve this objective include:

- Erect fencing around the perimeter of the site, inside the existing walls, to ensure stock are kept out until needed.
- Maintain the current network of small paths
- Add new signage to advise visitors keep to paths, not climb fences and to avoid cliff face (see also 4.2.4 above regarding fencing at cliff face)
- Where possible, remove all rubbish from the quarry floor
- The Parish Council will consult with volunteer groups prior to any projects or changes within the Quarry, will always listen to other views but retain the right to make the final decision.
- Investigate use of the Quarry by local schools for forest school education
- Consider provision of dog waste bin at the end of Quarry Road and simple sign at the access gate requiring dogs to be on short leads and owners to clear up after their dogs.

5. Management prescriptions

5.1 Maintain and enhance the floral and faunal biodiversity of the grasslands (compartments 2 & 3)

5.1.1 Eradication of invasive non-native species

Cotoneaster

Where accessible this plant should be pulled up from the ground, bagged up and deposited in a compost bin away from the site. It often grows in difficult to access places- such as the quarry face and top edge. In these situations a contractor may be required to access the plant safely and treat with a suitable herbicide. It is preferable to cut and stump treat the cotoneaster rather than spray the foliage as this ensures that only the target plant is directly impacted by the herbicide.

Buddleia

Despite being of value to nectaring insects, this species is quite invasive and should be eradicated from site. If any individuals are left there will be a continual supply of fresh seed and management to keep on top of its spread will need to be permanent. Encouragement of a diverse native flora will more than compensate for the absence of this plant.

As above, where accessible this plant should be pulled up from the ground, bagged up and deposited in a compost bin away from the site. It is usually easily controlled by cutting, and should not need herbicide treatment – though control may be needed for a few years to ensure all seedlings are removed.

5.1.2 Instigate suitable management to interrupt succession and prevent the loss of floral diversity in both compartments

There are two main approaches to achieving this; grazing and scrub control. Grazing is preferable if it can be negotiated within compartment 2. Compartment 3 is not currently suitable for grazing, and the current regime of scrub control should be continued.

Grazing in compartment 2

The best way to achieve this would be to permit stock currently grazing the adjacent area of access land to roam into the quarry floor in autumn by leaving the gate between the two sites open. This will avoid the need to provide an additional water source for the livestock in the Quarry. This will need full agreement of the adjacent grazier, and may have implications for their agri-environment payments, which should be investigated. One of the key constraints on this method of management is the residual rubbish left after the quarry was used as a tip. Prior to stock accessing the site, a thorough check will need to be made of the accessible grazing area, and any injurious items collected and suitably disposed of. There may be a need for fortnightly checks as long as the stock have access, as more debris could be unearthed by the livestock. Grazing should not be permitted between May and September to allow herbs to flower and avoid any impacts on the invertebrate fauna.

Scrub control in compartment 2 (if grazing is not possible)

Boundary scrub is to be retained where possible as it provides shelter from prevailing winds and enhances the microclimate within the Quarry.

Elsewhere within compartment 2 scrub needs to be managed to prevent it out-competing the grassland flora. Key areas are small areas of bramble, which should be cut back to prevent them getting established, any invasive non-native scrub (cotoneaster and buddleia), and sapling trees (especially sycamore as ash saplings currently have a very poor survival rate due to ash dieback disease). Occasional dense patches of bramble and hawthorn scrub can be tolerated as they provide additional shelter and nectaring sources for invertebrates. In the initial restoration phase the target is to bring the cover of scrub in this area down to 10-15% from the

current 25-30% (excluding the boundary lines of scrub). Any juniper in this compartment should be retained, and it is not included within the scrub cover targets as it is a desirable species in this habitat type.

Where possible scrub should be controlled by cutting. Herbicide treatment should be a last resort in persistent problem areas and only used as a stump treatment rather than foliar spray. Cut material should be deposited elsewhere on site (within the woodland compartment) as a habitat pile. If too much material is generated then brush can be removed from site and disposed of appropriately.

Once established, this management could be carried out by a volunteer work party each winter, or even on alternate years depending how well the vegetation responds.

There is likely to be a need to carry out some cutting of the grassland to simulate grazing in order to prevent it becoming rank and overgrown, with the loss of finer herbs of interest. A contractor should be engaged to cut the grassland with a strimmer to a height of roughly 5cm, and all arisings should be cleared from site or left in a woodland habitat pile to prevent aggressive species such as bramble establishing. This should be carried out on a long rotation – once every 4-5 years may be adequate given the low level rabbit and deer browsing on the site.

Scrub control in compartment 3

As for compartment 2 above, the boundary scrub should be retained as a shelter belt against prevailing winds. The scrub in this compartment comprises some gorse as well as hawthorn, sycamore and bramble. As in compartment 2, the target cover for scrub should be 10-15% and management should be carried out using similar techniques. Juniper is excluded from any scrub targets as it is a key species in the habitat and spreads very slowly.

There are additional constraints in this compartment due to the terrain and limitations on access. Currently volunteers climb over the stone wall or fence to access this area, which is not appropriate. A squeeze gap in the wall, or a stile over the fence or wall needs to be provided to permit access for volunteers. Removal of arisings is also more problematic given the terrain. Either a habitat pile location should be identified in a suitable location along the boundary wall, or all arisings need to be burnt on a raised platform to prevent damage to the soils underneath.

Any scrub at or near the top of the quarry cliffs should be left for safety reasons, unless it is an invasive non-native species or is creating additional problems by dispersing seed to the quarry floor below. In these instances the scrub clearance will need to be carried out by a contractor.

5.1.3 Continue monitoring of butterfly species

The ongoing butterfly transects walked by Martin Chadwick should be continued and facilitated wherever possible. Data from these transects is invaluable as it gives an indication of health of the butterfly populations on site, and by inference the vegetation and surrounding habitat.

5.2 Maintain and enhance the floral and faunal biodiversity of the woodland (compartment 1)

5.2.1 Eradication of invasive non-native species

Winter heliotrope

This plant is problematic to remove as it spreads using underground rhizomes. There are several possible methods of removal – soil cultivation, mulch/membrane or herbicide. The quickest and most effective way to remove it will be to use herbicide when it is in full leaf (mid summer) and follow up the treatment in spring and again in mid-summer as appropriate. If there

are any species of value in the vicinity they should be removed and either kept temporarily in pots or re-planted as bare root plants in a suitable location on site (ensuring that no rhizome from the heliotrope is planted along with them).

The alternative methods are more labour intensive and there is less chance of complete success. The plant does not like continual disturbance, so regular mowing, soil cultivation or rotivation will eventually kill it off. Likewise smothering the plant in a thick membrane or deep mulch will also prevent light reaching the leave and result in it dying back.

Once the areas affected by the plant have been treated with herbicide the following spring (and/ or been smothered by mulch/ membrane), these can be the locations for habitat piles for the arisings from the scrub clearance in the grasslands.

Buddleia

As in the grassland compartments - this species is quite invasive and should be eradicated from site. If any individuals are left there will be a continual supply of fresh seed and management to keep on top of its spread will need to be permanent.

As above, where accessible this plant should be pulled up from the ground, bagged up and deposited in a compost bin away from the site. It is usually easily controlled by cutting, and should not need herbicide treatment – though control may be needed for a few years to ensure all seedlings are removed.

5.2.2 Monitor health of ash trees, and manage as appropriate

Ash trees suffering from ash dieback are more likely to drop limbs and succumb during windy and stormy weather. It is recommended that a tree safety check is undertaken every 2 years by an arborist or similar contractor to assess the state of the ash trees near to paths and benches. Mature trees showing severe symptoms of ash dieback that could prove to be a risk to the public should be either felled or de-limbed (which leaves good standing wood habitat for invertebrates).

5.2.3 Retain some deadwood (standing and fallen) to ensure a diversity of habitats and nesting sites

Where it is safe and reasonable to do so (see 5.2.2 above) standing and fallen deadwood should be left in situ in the woodland. Many types of invertebrate require deadwood at some stage in their life cycle, and standing deadwood can provide excellent nesting habitat for birds and roosting sites for bats.

5.2.4 Maintain a diverse canopy flora

As ash trees are being lost from the canopy due to ash dieback, it would be prudent to plant alternative canopy trees on site to avoid sycamore dominating the woodland. Sycamore is non-native, though is widely accepted as part of our woodland flora in secondary woodlands such as this. Sycamore comes into leaf much earlier than ash, and as such the darker canopy will have negative impacts on the ground flora, resulting in the loss or declines in some woodland edge species. Other suitable native canopy trees that could be planted to replace ash include Lancastrian whitebeam *Sorbus lancastriensis*, common whitebeam *Sorbus aria*, wild cherry *Prunus avium*, wych elm *Ulmus glabra*, small leaved lime *Tilia cordata* and field maple *Acer campestre*.

5.2.5 Maintain a mosaic of habitats/ soft woodland edge habitat between compartments 1 & 2

The mosaic of habitats in the centre of the quarry floor enhances the microclimate of the quarry and provide excellent habitat for birds and invertebrates. A 'soft' boundary between the woodland compartment and the grassland compartment should be retained, with scrub such as elder, hawthorn and bramble, and also bracken between the mature trees and the species-rich grassland.

5.3 Protect the site from insensitive management and damage

5.3.1 Investigate possibility of inclusion of compartment 2 into the adjacent CWS

The more diverse grassland areas in compartment 2 meet the criteria for County Wildlife Site status for calcareous grassland CG9, with frequent blue moor grass and birds foot trefoil and occasional mouse-ear hawkweed and rough hawkbit.. Allithwaite Quarry also meets criteria in the species category as it supports 3 species of vulnerable butterfly (grayling, dingy skipper and northern brown argus). The foodplants of grayling (grasses such as sheep's fescue) and dingy skipper (bird's foot trefoil) are both present in compartment 2 of the Quarry (common rock rose- foodplant of the northern brown argus is only present in good numbers in compartment 3).

Inclusion into the County Wildlife Site would enhance its status, and may help to source any funding required for management. Cumbria Wildlife Trust administer the CWS scheme and the selection process.

5.3.2 Maintain a good working relationship with Butterfly Conservation staff and volunteers

Maintaining a good working relationship with Butterfly Conservation will be hugely beneficial for the site. Collaborative work parties will enable more management work to be undertaken, and Butterfly Conservation staff can provide good management advice and maybe be able to access sources of funding to protect the notable butterflies on the site.

5.3.3 Nominate a councillor to become the point of contact for Allithwaite Quarry

One councillor should have the remit of being the contact point for Allithwaite Quarry, and be aware of current work and projects. This will facilitate communications between volunteers, the parish council and partner agencies/ groups and ensure that things run smoothly. The Parish Clerk is the designated point of contact.

5.4 Protect and promote the cultural history of the quarry

5.4.1 Maintain, and where possible restore, the limekiln

Currently the limekiln is fenced off to prevent public access, to protect the limekiln and the general public. This area is becoming quite overgrown, obscuring views of the limekiln and potentially degrading the structure as tree roots push into stonework. Access over, or through, the fence needs to be provided to allow the volunteers to cut back the vegetation and scrub to prevent this happening.

The limekiln appears to be in reasonable condition, but it would be beneficial to get the structure assessed by a professional once the vegetation has been cleared. It does not appear to be especially suitable for use by bats in its current condition.

5.4.2 Maintain views of the quarry face and limekiln whilst ensuring visitor safety is not compromised

Access to these features of interest can be maintained by managing the current network of informal paths through regular strimming/ trimming. Signage to warn visitors not to climb fences or the cliff face is recommended.

A new fence has been recommended following feedback from a geophysical engineer on the stability of the rock face. This new fence should be 1m high and approximately 2m from the rock face to deter access to the foot of the cliffs. This fence should permit visitors to see the cliffs without compromising on their safety.

5.5 Promote quiet enjoyment of the site through sympathetic and safe access, without detracting from the feeling of remoteness

5.5.1 Install fencing around the perimeter of the site

Stockproof fencing should be erected around the perimeter of the site, inside any existing boundary walls to secure the site boundary from wandering stock and prevent visitor access into adjacent private land.

5.5.2 Maintain the current network of small paths

The existing path network should be maintained through regular strimming/ cutting back of vegetation to maintain access around the quarry floor and on to the adjacent access land. Though uneven in places, the small winding paths add to the sense of wildness of the site – and upgrading them to formal paths will detract from this. Signage to advise the general public about the uneven ground is already in place on the entrance notice.

5.5.3 Install sensitive and proportionate signage

The new fence at the cliff face will require some minimal signage to advise visitors of the risk of climbing the fence and approaching the foot of the cliff. All signage should be proportional to the risks and minimal to avoid sign fatigue by visitors (lots of signs tend to be ignored – better to have few and well placed ones to maximise effectiveness).

5.5.4 Where possible, remove all rubbish from the quarry floor

Where possible the historically dumped rubbish should be removed from site by a suitable contractor. It is acknowledged that some of this material is well buried, and may only be apparent after management works – but the aspiration should be removal of all waste materials. The asbestos has been classed as low grade material, and can be bagged and removed from site without the need of specialist contractors.

This would be best carried out over the winter months when vegetation has died back, and disturbance to resident wildlife will be minimal.

5.5.5 Consult with volunteer group prior to changing or adding to any aspect of the infrastructure

The regular volunteers are well placed to advise on locations for any new infrastructure (such as benches) to avoid any sensitive areas and ensure the best views. Ultimate decisions on projects remains with the Parish Council. See also 5.3.3.

5.5.6 Investigate use of the Quarry by local schools for forest school education

Allithwaite Quarry is potentially a great resource for local schools as it has aspects of local history as well as plenty of wildlife and open space to enjoy. There are some inherent problems at the site (previously dumped material, dog mess and lack of toilet facilities) but these can be overcome through some planning and robust risk assessments if staff are keen.

The area can be used to bring to life lessons on numerous topics including local history, sense of place (Morecambe Bay area), local wildlife, life cycles (specifically of butterflies) and habitats.

5.5.7 Consider provision of dog waste bin at end of Quarry Road

Consider providing a dog waste bin at the end of Quarry Road and simple sign at the access gate requiring dogs to be on short leads and encouraging owners to clear up after their dogs.

6. Work programme

Code	Action	Timing	Year									
			1	2	3	4	5	6	7	8	9	10
5.1. Maintain and enhance the floral and faunal biodiversity of the grasslands (compartments 2 & 3)												
5.1.1	Eradicate invasive non-native species. Cotoneaster- pulled by hand or contractor to use herbicide	Summer As necessary										
	Buddleia - pull and remove by hand.	As necessary										
5.1.2	Instigate suitable management of grassland											
	Start communication with grazier		X									
	Graze compartment 2 if possible	Spring or autumn Ongoing	X	X	X	X	X	X	X	X	X	X
	Scrub control – compartment 2	Winter- ongoing	X	X	X	X	X	X	X	X	X	X
	Create safe access to compartment 3 for management		X									
5.1.3	Continue butterfly monitoring	Spring- summer	X	X	X	X	X	X	X	X	X	X
5.2. Maintain and enhance the floral and faunal biodiversity of the woodland (compartment 1)												
5.2.1	Eradicate invasive non-native species. Winter heliotrope – herbicide treatment	Summer (first treatment), then spring and summer as needed.	X	X								
	Buddleia – pull and remove by hand	As necessary										
5.2.2	Monitor health of ash trees Tree health check	Every 2 years		X		X		X		X		X
	Tree pruning/ felling	Winter, as necessary										
5.2.3	Retain some deadwood	As necessary										
5.2.4	Maintain a diverse canopy flora through additional planting	Spring/ autumn as necessary										
5.2.5	Maintain a mosaic of habitats/ soft woodland edge habitat between compartments 1 & 2	As necessary										

Code	Action	Timing	Year									
			1	2	3	4	5	6	7	8	9	10
5.3 Protect the site from insensitive management and damage												
5.3.1	Investigate possibility of inclusion of compartment 2 into the adjacent CWS		X									
5.3.2	Maintain a good working relationship with Butterfly Conservation staff and volunteers	Ongoing										
5.3.3	Nominate a councillor to become the point of contact for Allithwaite Quarry		X									
5.4 Protect and promote the cultural history of the quarry												
5.4.1	Maintain, and where possible restore, the limekiln											
	Create access to limekiln for management		X									
	Clear scrub and bramble from limekiln	Autumn/ winter	X									
	Seek professional assessment of condition of limekiln			X								
5.4.2	Maintain views of the quarry face and limekiln whilst ensuring visitor safety is not compromised											
	Erect new fencing and suitable signage at the foot of the cliffs to deter access to rock face.	As soon as possible	X									
	Maintain footpaths	Ongoing	X	X	X	X	X	X	X	X	X	X
5.5 Promote quiet enjoyment of the site through sympathetic and safe access, without detracting from the feeling of remoteness												
5.5.1	Erect boundary fencing around entire site	As soon as possible	X									
5.5.2	Maintain the current network of small paths	Ongoing, spring and summer	X	X	X	X	X	X	X	X	X	X
5.5.3	Install sensitive and proportionate signage (see also 5.4.2 above)		X									
5.5.4	Remove rubbish and waste material from quarry floor	Late autumn- early spring when vegetation has died back	X									
5.5.5	Consult with volunteer group prior to changing or adding to any aspect of the infrastructure	As necessary										

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5.5.6	Investigate use of the Quarry by local schools for forest school education Contact local schools once some scrub clearance work completed on the site			X								
5.5.7	Consider provision of dog waste bin at end of Quarry Road		X									

7. References

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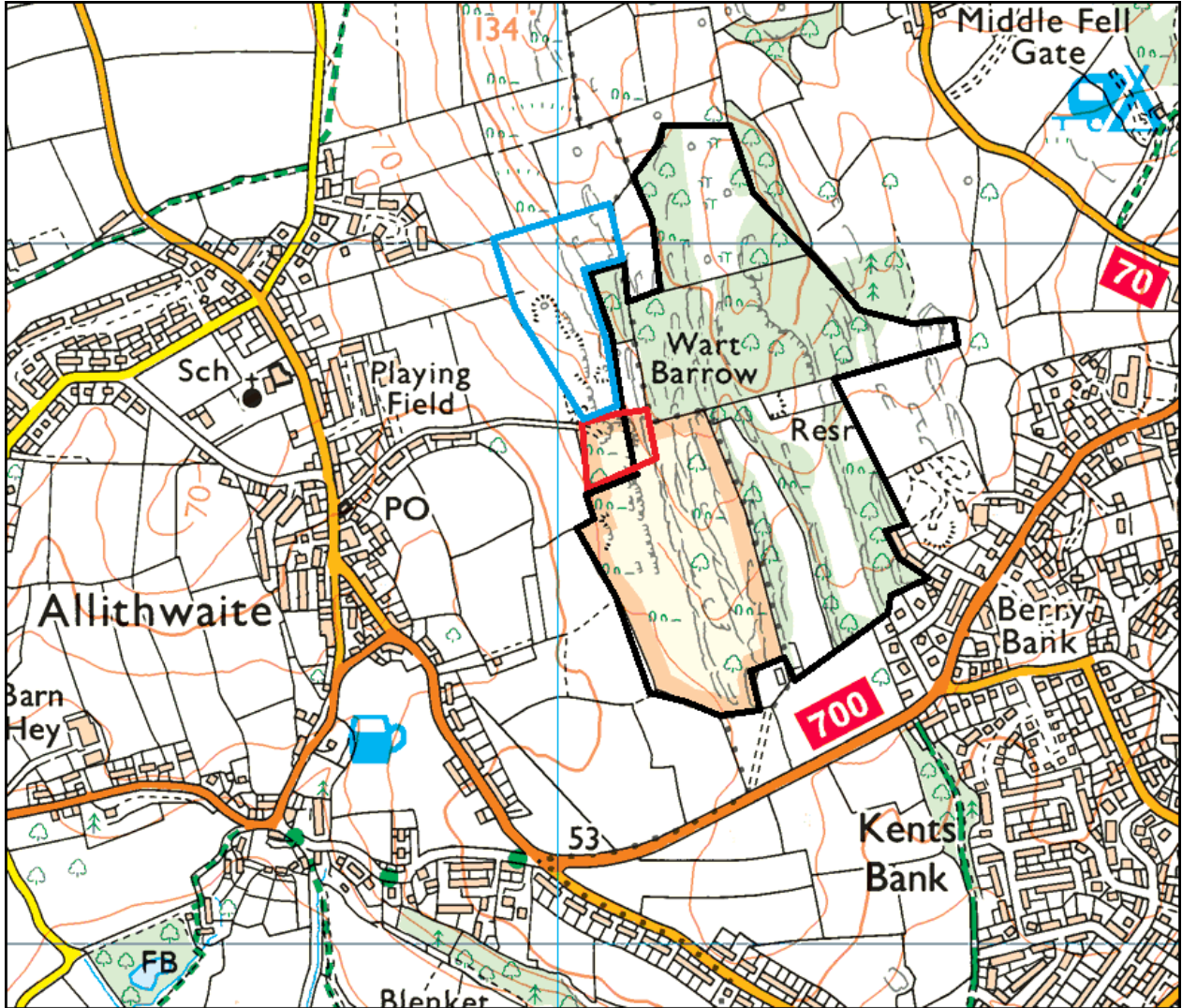
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8. Maps and species lists

8.1 Location map showing Allithwaite Quarry and adjacent protected land



Red line- Allithwaite Quarry

Black line – Wart Barrow SSSI

Blue line- Wart Barrow CWS

8.2 Species lists June 2021– Flora on quarry cliffs and SSSI grassland (Wendy Nelson)

Scientific name	Common name	Note
<i>Acer pseudoplatanus</i>	sycamore	
<i>Achillea millefolium</i>	yarrow	
<i>Agrimonia eupatoria</i>	common agrimony	
<i>Agrostis capillaris</i>	common bent grass	
<i>Anthoxanthum odoratum</i>	sweet vernal grass	
<i>Anthyllis vulneraria</i>	kidney vetch	
<i>Arabis hirsuta</i>	hairy rock cress	
<i>Arrhenatherum elatius</i>	false oat grass	
<i>Asplenium ruta-muraria</i>	wall rue	
<i>Asplenium scolopendrium</i>	hart's tongue fern	
<i>Asplenium trichomanes</i>	maidens hair spleenwort	
<i>Avenula pubescens</i>	downy oat grass	
<i>Bellis perennis</i>	daisy	
<i>Brachypodium sylvaticum</i>	false wood brome	
<i>Briza media</i>	quaking oat grass	
<i>Calluna vulgaris</i>	ling	
<i>Campanula rotuniflora</i>	harebell	
<i>Carex caryophyllea</i>	spring sedge	
<i>Carex flacca</i>	glaucous sedge	
<i>Carex pulicaris</i>	flea sedge	
<i>Carlina vulgaris</i>	carline thistle	
<i>Centaurea nigra</i>	common knapweed	
<i>Cotoneaster horizontalis</i>	cotoneaster	garden escape
<i>Cotoneaster simonsii</i>	cotoneaster	garden escape
<i>Crataegus mongyna</i>	hawthorn	
<i>Crepis capillaris</i>	smooth hawksbeard	
<i>Cruciata laevipes</i>	crosswort	
<i>Cynosurus cristatus</i>	crested dogs tail grass	
<i>Dactylis glomerata</i>	cocks foot grass	
<i>Deschampsia caespitosa</i>	tufted hair grass	
<i>Dryopteris affinis agg</i>	scaly male fern	
<i>Dryopteris dilatata</i>	broad buckler fern	
<i>Dryopteris filix-mas</i>	male fern	
<i>Epilobium montanum</i>	broad leaved willowherb	
<i>Erica cinerea</i>	Bell heather	
<i>Erophila verna</i>	common whitlow grass	
<i>Eupatorium cannabinum</i>	hemp agrimony	
<i>Festuca ovina agg</i>	sheeps fescue grass	
<i>Festuca rubra agg</i>	red fescue	
<i>Fragaria vesca</i>	wild strawberry	
<i>Fraxnus excelsior</i>	ash	
<i>Galium aparine</i>	common cleavers	
<i>Galium sternerii</i>	limestone bedstraw	
<i>Galium verum</i>	lady's bedstraw	

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Geranium robertianum	herb robert	
Geum urbanum	wood avens	
Hedera helix	ivy	
Helianthemum nummularium	rock rose	
Heracleum sphondylium	hogweed	
Hieracium agg	hawkweed	
Holcus lanatus	yorkshire fog grass	
Hypericum androsaemum	tutsan	
Hypericum perforatum	perforate st johns wort	
Hypericum pulchrum	slender st john's wort	
Ilex aquifolium	holly	
Inula conyzae	ploughman's spikenard	
Jacobaea vulgaris	ragwort	
Juniperus communis	juniper	
Koeleria cristata	hair grass	
Lapsana communis	common nipplewort	
Lathyrus pratensis	meadow vetchling	
Leontodon hispidus	rough hawkbit	
Leucanthemum vulgare	ox eye daisy	
Linum catharticum	fairy flax	
Lonicera periclymenum	honeysuckle	
Lotus corniculatus	birds foot trefoil	
Medicago lupulina	black medick	
Mercurialis perennis	dog's mercury	
Mycelis muralis	wall lettuce	
Myosotis arvensis	field forget me not	
Neottia ovata	common twayblade	
Ophrys insectifera	fly orchid	
Orchis mascula	early purple orchid	
Oxalis acetosella	wood anemone	
Pilosella aurantiaca	fox and cubs	garden escape
Pilosella officinarum	mouse-ear hawkweed	
Pimpinella saxifraga	burnet saxifrage	
Plantago lanceolata	ribwort plantain	
Poa trivialis	rough meadow grass	
Polystichum setiferum	shield fern	
Potentilla erecta	tormentil	
Potentilla sterilis	barren strawberry	
Poterium sanguisorba	salad burnet	
Primula x polyantha	polyanthus primrose	garden escape
Primula veris	cowslip	
Prunus spinosa	blackthorn	
Pteridium aquilinum	bracken	
Ranunculus bulbosus	bulbous buttercup	
Ribes uva-crispa	gooseberry	
Rosa canina agg	dog rose	
Rubus fruticosus agg	bramble	

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Rubus ideaus	raspberry
Rubus ulmifolius	elm-leaf blackberry
Sanicula europaea	sanicle
Saxifraga tridactylites	rue leaved saxifrage
Scabiosa columbaria	small scabious
Sesleria caerulea	blue moor grass
Solanum dulcamara	bittersweet
Solidago virgaurea	goldenrod
Sonchus asper	prickly sow thistle
Sorbus aucuparia	rowan
Sorbus aria agg cf lancastriensis	Lancastrian whitebeam
Tamus communis	black bryony
Taraxacum agg	dandelion
Taxus baccata	yew
Teucrium scorodonia	wood sage
Thymus drucei	wild thyme
Torilis japonica	upright hedge parsley
Trifolium pratense	red clover
Trisetum flavescens	yellow oat grass
Tussilago farfara	coltsfoot
Ulex europaeus	common gorse
Ulex gallii	western gorse
Ulmus glabra	wych elm
Veronica chamaedrys	germander speedwell
Viola reichenbachiana	early dog violet
Viola riviniana	common dog violet

8.3 Species lists June 2021– Flora on quarry floor (Wendy Nelson)

Scientific name	Common name	Note
Acer pseudoplatanus	sycamore	
Achillea millefolium	yarrow	
Aegopodium podagraria	ground elder	
Aesculus hippocastanum	horse chestnut	
Agrimonia eupatoria	common agrimony	
Agrostis capillaris	common bent grass	
Agrostis stolonifera	creeping bent grass	
Alliaria petiolata	garlic mustard	
Allium ursinum	wild garlic	
Anthoxanthum odoratum	sweet vernal grass	
Anthriscus sylvestris	cow parsley	
Aphanes arvensis	parsley piert	
Arabis hirsuta	hairy rock cress	
Arctium minus	lesser burdock	
Arenaria serpyllifolia	thyme leaved sandwort	
Arrhenatherum elatius	false oat grass	
Arum maculatum	wild arum	

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<i>Asplenium ruta-muraria</i>	wall rue	
<i>Asplenium scolopendrium</i>	hart's tongue fern	
<i>Asplenium trichomanes</i>	maidens hair spleenwort	
<i>Athyrium filix-femina</i>	lady fern	
<i>Avenula pubescens</i>	downy oat grass	
<i>Bellis perennis</i>	daisy	
<i>Brachypodium sylvaticum</i>	false wood brome	
<i>Briza media</i>	quaking oat grass	
<i>Bromopsis ramosa</i>	hairy brome	
<i>Buddleja davidii</i>	buddleia	
<i>Calystegia silvatica</i>	large bindweed	
<i>Campanula rotuniflora</i>	harebell	
<i>Cardamine hirsuta</i>	hairy bittercress	
<i>Cardamine pratensis</i>	cuckoo flower	
<i>Carduus crispus</i>	welted thistle	
<i>Carex flacca</i>	glaucous sedge	
<i>Carex sylvatica</i>	wood sedge	
<i>Catapodium rigidum</i>	fern grass	
<i>Centaurea nigra</i>	black knapweed	
<i>Cerastium fontanum</i>	common mouse ear	
<i>Chamaerion angustifolium</i>	rosebay willowherb	
<i>Circaea lutetiana</i>	broad leaved enchanters nightshade	
<i>Cirsium arvense</i>	creeping thistle	
<i>Cirsium vulgare</i>	spear thistle	
<i>Corylus avellana</i>	hazel	
<i>Cotoneaster horizontalis</i>	cotoneaster	garden escape
<i>Cotoneaster simonsii</i>	cotoneaster	garden escape
<i>Crataegus mongyna</i>	hawthorn	
<i>Crepis capillaris</i>	smooth hawksbeard	
<i>Crococsmia x crocosmiiflora</i>	crococsmia	garden escape
<i>Crocus tommasinianus</i>	crocus	
<i>Cruciata laevipes</i>	crosswort	
<i>Cynosurus cristatus</i>	crested dogs tail	
<i>Dactylis glomerata</i>	cocks foot grass	
<i>Deschampsia caespitosa</i>	tufted hair grass	
<i>Digitalis purpurea</i>	foxglove	
<i>Dipsacus fullonum</i>	teasel	
<i>Dryopteris affinis agg</i>	scaly male fern	
<i>Dryopteris dilatata</i>	broad buckler fern	
<i>Dryopteris filix-mas</i>	male fern	
<i>Epilobium hirsutum</i>	great willowherb	
<i>Epilobium montanum</i>	broad leaved willowherb	
<i>Epilobium parviflorum</i>	hoary willowherb	
<i>Euphorbia lathyris</i>	spurge	garden escape
<i>Euphrasia nemorosa</i>	eyebright	
<i>Fallopia japonica</i>	Japanese knotweed	garden escape

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<i>Festuca ovina</i> agg	sheeps fescue grass	
<i>Festuca rubra</i> agg	red fescue	
<i>Ficaria verna</i>	lesser celandine	
<i>Filipendula ulmaria</i>	meadowsweet	
<i>Fragaria vesca</i>	wild strawberry	
<i>Fraxnus excelsior</i>	ash	
<i>Fumaria</i> sp	fumitory	
<i>Galanthus nivalis</i>	snowdrop	
<i>Galium aparine</i>	common cleavers	
<i>Galium sternerii</i>	limestone bedstraw	
<i>Galium verum</i>	lady's bedstraw	
<i>Geranium dissectum</i>	cut leaved geranium	
<i>Geranium molle</i>	dove's foot cranesbill	
<i>Geranium pratense</i>	meadow cranesbill	
<i>Geranium robertianum</i>	herb robert	
<i>Geranium x oxonianum</i>	oxford geranium	garden escape
<i>Geum urbanum</i>	wood avens	
<i>Glechoma hederacea</i>	ground ivy	
<i>Hedera helix</i>	ivy	
<i>Heracleum sphondylium</i>	hogweed	
<i>Hieracium agg</i>	hawkweed	
<i>Holcus mollis</i>	creeping soft grass	
<i>Hyacinthoides hispanica</i>	Spanish bluebell	garden escape
<i>Hyacinthoides non-scripta</i>	bluebell	
<i>Hyacinthoides x massartiana</i>	hybrid bluebell	
<i>Hypericum androsaemum</i>	tutsan	
<i>Hypericum hirsutum</i>	hairy st johns wort	
<i>Hypericum perforatum</i>	perforate st john's wort	
<i>Ilex aquifolium</i>	holly	
<i>Iris spp</i>		planted
<i>Jacobaea vulgaris</i>	ragwort	
<i>Juncus conglomeratus</i>	compact rush	
<i>Juncus effusus</i>	soft rush	
<i>Koeleria cristata</i>	hair grass	
<i>Lamium purpureum</i>	red dead nettle	
<i>Lapsana communis</i>	common nipplewort	
<i>Lathyrus pratensis</i>	meadow vetchling	
<i>Leontodon hispidus</i>	rough hawkbit	
<i>Leontodon saxatilis</i>	lesser hawkbit	
<i>Leucanthemum vulgare</i>	ox eye daisy	
<i>Ligustrum ovalifolium</i>	privet	garden escape
<i>Linum catharticum</i>	fairy flax	
<i>Lithospermum officinale</i>	common gromwell	
<i>Lolium perenne</i>	perennial rye grass	
<i>Lonicera periclymenum</i>	honeysuckle	
<i>Lotus corniculatus</i>	birds foot trefoil	
<i>Luzula campestris</i>	field woodrush	

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<i>Lysimachia arvensis</i>	scarlet pimpernel	
<i>Lysimachia nemorum</i>	yellow pimpernel	
<i>Lysimachia nummularia</i>	creeping jenny	
<i>Malus domestica</i>	apple	
<i>Malus sylvestris</i>	crab apple	
<i>Meconopsis cambrica</i>	Welsh poppy	
<i>Medicago lupulina</i>	black medick	
<i>Mentha spicata</i>	spearmint	
<i>Mentha x villosa</i>	mint	garden escape
<i>Mercurialis perennis</i>	dog's mercury	
<i>Mycelis muralis</i>	wall lettuce	
<i>Myosotis arvensis</i>	field forget me not	
<i>Myosotis sylvatica</i>	wood forget me not	
<i>Narcissus agg</i>	daffodil	garden escape
<i>Neottia ovata</i>	common twayblade	
<i>Odontites vernus</i>	red bartsia	
<i>Ononis repens</i>	restharrow	
<i>Oxalis acetosella</i>	wood anemone	
<i>Pentaglottis sempervivens</i>	houseleek	garden escape
<i>Petasites pyrenaicus</i>	winter heliotrope	garden escape
<i>Phleum pratense</i>	timothy grass	
<i>Pilosella officinarum</i>	mouse-ear hawkweed	
<i>Plantago lanceolata</i>	ribwort plantain	
<i>Plantago major</i>	greater plantain	
<i>Poa annua</i>	annual meadow grass	
<i>Poa pratensis</i>	smooth meadow grass	
<i>Poa trivialis</i>	rough meadow grass	
<i>Polygonum multiflorum</i>	knotweed	garden escape
<i>Polypodium vulgare</i>	common polypody	
<i>Polystichum setiferum</i>	shield fern	
<i>Potentilla anglica</i>	trailing tormentil	
<i>Potentilla sterilis</i>	barren strawberry	
<i>Poterium sanguisorba</i>	salad burnet	
<i>Primula veris</i>	cowslip	
<i>Primula vulgaris</i>	primrose	
<i>Prunella vulgaris</i>	selfheal	
<i>Prunus spinosa</i>	blackthorn	
<i>Pteridium aquilinum</i>	bracken	
<i>Pulmonaria officinalis</i>	lungwort	
<i>Quercus cerris</i>	turkey oak	
<i>Quercus x rosaecea</i>	hybrid oak	
<i>Ranunculus acris</i>	meadow buttercup	
<i>Ranunculus bulbosus</i>	bulbous buttercup	
<i>Ranunculus repens</i>	creeping buttercup	
<i>Rhamnus cathartica</i>	purging buckthorn	
<i>Ribes nigrum</i>	blackcurrant	
<i>Ribes uva-crispa</i>	gooseberry	
<i>Rosa canina agg</i>	dog rose	

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<i>Rosa</i> cultivars	rose	garden escape
<i>Rubus fruticosus</i> agg	bramble	
<i>Rubus ideaus</i>	raspberry	
<i>Rumex obtusifolius</i>	broad leaved dock	
<i>Rumex sanguineus</i>	wood dock	
<i>Sambucus nigra</i>	elder	
<i>Saponaria officinalis</i>	soapwort	
<i>Saxifraga x urbium</i>	London pride	garden escape
<i>Scabiosa columbaria</i>	small scabious	
<i>Scrophularia nodosa</i>	figwort	
<i>Sesleria caerulea</i>	blue moor grass	
<i>Solanum dulcamara</i>	bittersweet	
<i>Solidago gigantea</i>	goldenrod	garden escape
<i>Sonchus asper</i>	prickly sow thistle	
<i>Stachys sylvatica</i>	hedge woundwort	
<i>Symphytum tuberosum</i>	tuberous comfrey	
<i>Tamus communis</i>	black bryony	
<i>Taraxacum</i> agg	dandelion	
<i>Taxus baccata</i>	yew	
<i>Thymus drucei</i>	wild thyme	
<i>Torilis japonica</i>	upright hedge parsley	
<i>Trifolium dubium</i>	lesser trefoil	
<i>Trifolium pratense</i>	red clover	
<i>Trifolium repens</i>	white clover	
<i>Trisetum flavescens</i>	yellow oat grass	
<i>Tussilago farfara</i>	coltsfoot	
<i>Ulmus glabra</i>	wych elm	
<i>Urtica dioica</i>	nettle	
<i>Verbascum thapsus</i>	common mullein	
<i>Veronica arvensis</i>	common speedwell	
<i>Veronica chamaedrys</i>	germander speedwell	
<i>Veronica hederifolia</i>	ivy leaved speedwell	
<i>Vicia cracca</i>	tufted vetch	
<i>Vicia sepium</i>	bush vetch	
<i>Viola odorata</i>	sweet violet	
<i>Viola reichenbachiana</i>	early dog violet	
<i>Viola riviniana</i>	common dog violet	

8.4 Species lists June 2021– Bryophytes within quarry (Wendy Nelson)

Species	Note
Amblystegium serpens	
Anomodon viticulosus	
Atrichum undulatum	
Barbula convoluta	
Barbula unguiculata	
Brachythecium rutabulum	
Brachythecium velutinum	
Bryum capillare	
Calliergonella sp	
Calyptogeia fissa	quarry top 4.3.2013
Campiliadephus chrysphyllus	SSSI grassland 2013
Cirriphyllum crassinervium	
Cirriphyllum piliferum	
Cololejuenea minutissima	ash near comfrey limekiln
Cratoneuron filicinum	
Cryphaea heteromalla	
Ctenidium sp	
Dicranum bonjeanii	
Didymodon ferrugineus	
Didymodon insulanus	
Didymodon tophaceus	
Ditrichum gracile	
Encalypta streptocarpa	
Entodon concinnus	
Eucladium verticillatum	01.03.2013
Fissidens adianthoides	wettest part of NE quarry floor
Fissidens dubius	
Fissidens gracilifolius	limeklin
Fissidens incurvus	30.12.2016
Fissidens taxifolius	
Frullania dilatata	
Grimmia pulvinata	
Homalia trichomanoides	
Homalothecium lutescens	
Homalothecium sericeum	
Hylocomium splendens	
Hypnum andoi	
Hypnum cupressiforme	
Hypnum lacunosum	
Isothecium alopecurooides	
Isothecium myosuroides	
Kindbergia praelonga	
Lophocolea bidentata	
Marchesinia mackaii	
Metzgeria furcata	

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<i>Neckera complanata</i>	
<i>Neckera crispa</i>	boulder N end SSSI grassland
<i>Orhtotrichum pulchellum</i>	
<i>Orthotrichum affine</i>	
<i>Orthotrichum anomalum</i>	
<i>Orthotrichum diaphanum</i>	elder nr Aesculus
<i>Orthotrichum stramineum</i>	elder nr Aesculus
<i>Oxyrrhynchium hians</i>	
<i>Plagiomnium undulatum</i>	
<i>Porella platyphylla</i>	
<i>Pseudocrossidium hornschuchianum</i>	ledge of outcrop nr E wall
<i>Pseudoscleropodium purum</i>	
<i>Radula complanata</i>	ash near comfrey
<i>Rhynchostegiella tenella</i>	
<i>Rhynchostegium confertum</i>	
<i>Rhynchostegium murale</i>	
<i>Rhytidiadelphus squarrosus</i>	
<i>Rhytidiadelphus triquetus</i>	
<i>Scapania aspera</i>	
<i>Schistidium apocarpum</i>	
<i>Syntrichia montana</i>	
<i>Syntrichia ruralis</i>	
<i>Thamnobryum alopecurum</i>	
<i>Thuidium tamariscinum</i>	
<i>Tortella inclinata</i>	
<i>Tortella nitida</i>	
<i>Tortella tortuosa</i>	
<i>Tortula muralis</i>	
<i>Tortula subulata</i>	ledge of outcrop nr E wall
<i>Trichostomum brachydontium</i>	quarry top 4.3.2013
<i>Ulotia crispa</i>	
<i>Ulotia phyllantha</i>	
<i>Zygodon viridissimus</i>	
<i>Zygodon viridissimus</i> var <i>stirtonii</i>	

8.5 Species lists June 2021– Lepidoptera with quarry (Martin Chadwick)

Taxon	Vernacular	Records	Individuals	First Recorded	Last Recorded
<i>Acronicta tridens/psi</i>	Dark Dagger / Grey Dagger	3	2	2013	2016
<i>Amphipoea oculea</i> agg.	Ear Moth agg.	2	3	2019	2020
<i>Amphipyra pyramidea</i> agg.	Copper Underwing agg.	12	22	2013	2020
<i>Epirrita dilutata</i> agg.	November Moth agg.	1	2	2020	2020
<i>Hoplodrina octogenaria/blanda</i>	Uncertain/Rustic agg.	5	17	2016	2020
<i>Mesapamea secalis</i> agg.	Common Rustic agg.	11	52	2013	2020
<i>Oligia strigilis</i> agg.	Marbled Minor agg.	10	24	2013	2020
<i>Triodia sylvina</i>	Orange Swift	5	7	2015	2020
<i>Korscheltellus lupulina</i>	Common Swift	18	114	2013	2020
<i>Korscheltellus fusconebulosa</i>	Map-winged Swift	19	45	2013	2020
<i>Korscheltellus fusconebulosa</i> f. <i>gallicus</i>	Map-winged Swift	2	3	2016	2019
<i>Hepialus humuli</i>	Ghost Moth	1	1	2019	2019
<i>Stigmella aurella</i>	a moth	1	present	2013	2013
<i>Opostega salaciella</i>	a moth	1	present	2013	2013
<i>Nemophora degeerella</i>	a moth	1	1	2017	2017
<i>Nemapogon cloacella</i>	Cork Moth	1	1	2013	2013
<i>Tinea semifulvella</i>	a moth	1	1	2014	2014
<i>Gracillaria syringella</i>	a moth	1	present	2013	2013
<i>Yponomeuta evonymella</i>	Bird-cherry Ermine	2	2	2013	2018
<i>Paraswammerdamia nebulella</i>	a moth	1	present	2013	2013
<i>Ypsolopha dentella</i>	Honeysuckle Moth	1	1	2018	2018
<i>Plutella xylostella</i>	Diamond-back Moth	4	22	2013	2017
<i>Prays fraxinella</i>	Ash Bud Moth	1	present	2013	2013
<i>Agonopterix arenella</i>	a moth	2	2	2014	2015
<i>Metzneria lappella</i>	a moth	1	1	2013	2013
<i>Metzneria metzneriella</i>	a moth	2	1	2013	2018
<i>Athrips mouffetella</i>	a moth	1	1	2018	2018
<i>Elachista argentella</i>	a moth	1	1	2013	2013
<i>Mompha raschkiella</i>	a moth	1	present	2013	2013
<i>Blastobasis adustella</i>	a moth	2	6	2018	2020
<i>Blastobasis lacticolella</i>	a moth	1	1	2017	2017

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<i>Alucita hexadactyla</i>	Many-plumed Moth	1	1	2014	2014
<i>Amblyptilia acanthadactyla</i>	Beautiful Plume	1	1	2012	2012
<i>Pterophorus pentadactyla</i>	White Plume	1	1	2020	2020
<i>Emmelina monodactyla</i>	Common Plume	1	present	2013	2013
<i>Anthophila fabriciana</i>	a moth	7	31	2012	2014
<i>Archips podana</i>	Large Fruit-tree Tortrix	1	1	2020	2020
<i>Pandemis corylana</i>	Chequered Fruit-tree Tortrix	4	6	2013	2018
<i>Pandemis cerasana</i>	Barred Fruit-tree Tortrix	2	2	2013	2014
<i>Pandemis heparana</i>	Dark Fruit-tree Tortrix	2	3	2013	2017
<i>Epiphyas postvittana</i>	Light Brown Apple Moth	2	2	2018	2020
<i>Neosphaleroptera nubilana</i>	a moth	1	1	2013	2013
<i>Aleimma loeflingiana</i>	a moth	1	1	2013	2013
<i>Acleris laterana</i>	a moth	1	1	2018	2018
<i>Acleris variegana</i>	Garden Rose Tortrix	1	2	2013	2013
<i>Pseudargyrotoza conwagana</i>	a moth	5	3	2013	2016
<i>Agapeta hamana</i>	a moth	5	6	2015	2020
<i>Agapeta zoegana</i>	a moth	11	18	2013	2019
<i>Aethes rubigana</i>	a moth	1	1	2015	2015
<i>Cochylis atricapitana</i>	a moth	1	1	2018	2018
<i>Hedya nubiferana</i>	Marbled Orchard Tortrix	5	5	2013	2020
<i>Hedya pruniana</i>	Plum Tortrix	2	3	2013	2013
<i>Celypha striana</i>	a moth	8	8	2013	2020
<i>Celypha lacunana</i>	a moth	1	present	2013	2013
<i>Rhopobota naevana</i>	Holly Tortrix	4	4	2013	2020
<i>Eucosma cana</i>	a moth	1	present	2013	2013
<i>Eucosma hohenwartiana</i>	a moth	1	1	2020	2020
<i>Epiblema scutulana</i>	a moth	1	1	2020	2020
<i>Epiblema cirsiana</i>	a moth	3	4	2013	2014
<i>Notocelia uddmanniana</i>	Bramble Shoot Moth	1	1	2018	2018
<i>Notocelia rosaecolana</i>	a moth	1	present	2013	2013
<i>Notocelia trimaculana</i>	a moth	2	2	2016	2020
<i>Cydia pomonella</i>	Codling Moth	1	1	2013	2013
<i>Cydia splendana</i>	a moth	1	1	2017	2017
<i>Pammene ignorata</i>	a moth	1	1	2013	2013
<i>Zygaena filipendulae</i>	Six-spot Burnet	23	39	2011	2020

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<i>Erynnis tages</i>	Dingy Skipper	55	234	2011	2020
<i>Thymelicus sylvestris</i>	Small Skipper	39	243	2012	2020
<i>Ochlodes sylvanus</i>	Large Skipper	36	106	2011	2020
<i>Anthocharis cardamines</i>	Orange-tip	49	145	2011	2021
<i>Pieris brassicae</i>	Large White	72	123	2011	2020
<i>Pieris rapae</i>	Small White	58	101	2011	2021
<i>Pieris napi</i>	Green-veined White	114	363	2011	2021
<i>Colias croceus</i>	Clouded Yellow	2	2	2014	2014
<i>Gonepteryx rhamni</i>	Brimstone	36	43	2011	2020
<i>Lasiommata megera</i>	Wall	19	27	2011	2019
<i>Pararge aegeria</i>	Speckled Wood	87	199	2011	2021
<i>Coenonympha pamphilus</i>	Small Heath	2	2	2012	2018
<i>Aphantopus hyperantus</i>	Ringlet	18	46	2013	2020
<i>Maniola jurtina</i>	Meadow Brown	91	1139	2011	2020
<i>Pyronia tithonus</i>	Gatekeeper	52	339	2011	2020
<i>Hipparchia semele</i>	Grayling	6	7	2014	2020
<i>Boloria selene</i>	Small Pearl-bordered Fritillary	23	51	2012	2020
<i>Speyeria aglaja</i>	Dark Green Fritillary	4	7	2013	2019
<i>Vanessa atalanta</i>	Red Admiral	59	121	2011	2020
<i>Vanessa cardui</i>	Painted Lady	21	89	2012	2019
<i>Aglais io</i>	Peacock	102	241	2011	2021
<i>Aglais urticae</i>	Small Tortoiseshell	48	69	2011	2021
<i>Polygonia c-album</i>	Comma	59	105	2011	2021
<i>Lycaena phlaeas</i>	Small Copper	13	21	2011	2018
<i>Callophrys rubi</i>	Green Hairstreak	1	1	2011	2011
<i>Celastrina argiolus</i>	Holly Blue	16	20	2011	2020
<i>Aricia artaxerxes</i>	Northern Brown Argus	11	25	2015	2020
<i>Polyommatus icarus</i>	Common Blue	116	444	2011	2020
<i>Aphomia sociella</i>	Bee Moth	6	12	2013	2020
<i>Acrobasis advenella</i>	a moth	4	5	2013	2020
<i>Myelois circumvoluta</i>	Thistle Ermine	1	1	2020	2020
<i>Phycitodes binaevella</i>	a moth	1	1	2018	2018
<i>Pyrausta purpuralis</i>	a moth	1	1	2011	2011
<i>Pyrausta ostrinalis</i>	a moth	1	1	2013	2013
<i>Anania coronata</i>	a moth	1	1	2013	2013
<i>Anania crocealis</i>	a moth	1	1	2018	2018
<i>Anania hortulata</i>	Small Magpie	3	2	2013	2015
<i>Udea ferrugalis</i>	Rusty-dot Pearl	1	1	2020	2020
<i>Udea lutealis</i>	a moth	4	7	2013	2019
<i>Udea olivalis</i>	a moth	5	9	2013	2019
<i>Patania ruralis</i>	Mother of Pearl	10	11	2012	2020

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<i>Evergestis forficalis</i>	Garden Pebble	1	1	2019	2019
<i>Scoparia ambigualis</i>	a moth	17	30	2013	2020
<i>Scoparia pyralella</i>	a moth	2	3	2013	2015
<i>Eudonia lacustrata</i>	a moth	2	3	2013	2017
<i>Eudonia angustea</i>	a moth	1	1	2019	2019
<i>Eudonia mercurella</i>	a moth	6	10	2013	2020
<i>Chrysoteuchia culmella</i>	Garden Grass-veneer	9	17	2014	2020
<i>Crambus pascuella</i>	a moth	4	2	2015	2019
<i>Crambus lathoniellus</i>	a moth	6	3	2013	2019
<i>Agriphila tristella</i>	a moth	4	11	2018	2019
<i>Agriphila straminella</i>	a moth	1	present	2013	2013
<i>Agriphila geniculea</i>	a moth	3	3	2013	2020
<i>Catoptria pinella</i>	a moth	3	3	2013	2020
<i>Watsonalla binaria</i>	Oak Hook-tip	1	1	2018	2018
<i>Cilix glaucata</i>	Chinese Character	4	6	2018	2020
<i>Thyatira batis</i>	Peach Blossom	3	3	2013	2014
<i>Habrosyne pyritoides</i>	Buff Arches	2	1	2013	2018
<i>Ochropacha duplaris</i>	Common Lutestring	1	1	2013	2013
<i>Eriogaster lanestris</i>	Small eggar		caterpillar	2021	
<i>Lasiocampa quercus f. callunae</i>	Northern Eggar	2	2	2017	2019
<i>Macrothylacia rubi</i>	Fox Moth	2	2	2016	2017
<i>Mimas tiliae</i>	Lime Hawk-moth	1	1	2017	2017
<i>Laothoe populi</i>	Poplar Hawk-moth	4	4	2013	2018
<i>Macroglossum stellatarum</i>	Humming-bird Hawk-moth	1	1	2012	2012
<i>Deilephila elpenor</i>	Elephant Hawk-moth	2	3	2013	2014
<i>Deilephila porcellus</i>	Small Elephant Hawk-moth	1	2	2017	2017
<i>Idaea seriata</i>	Small Dusty Wave	1	1	2018	2018
<i>Idaea dimidiata</i>	Single-dotted Wave	1	1	2020	2020
<i>Idaea biselata</i>	Small Fan-footed Wave	4	4	2017	2020
<i>Idaea aversata</i>	Riband Wave	10	16	2013	2020
<i>Scopula marginepunctata</i>	Mullein Wave	32	299	2013	2020
<i>Timandra comae</i>	Blood-Vein	2	2	2019	2019
<i>Cyclophora linearia</i>	Clay Triple-lines	1	1	2020	2020
<i>Scotopteryx mucronata</i>	Lead Belle	1	1	2013	2013
<i>Scotopteryx chenopodiata</i>	Shaded Broad-bar	3	5	2014	2020
<i>Xanthorhoe fluctuata</i>	Garden Carpet	2	1	2017	2017
<i>Xanthorhoe ferrugata</i>	Dark-barred Twin-spot Carpet	2	2	2013	2014
<i>Xanthorhoe designata</i>	Flame Carpet	8	12	2013	2019

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<i>Xanthorhoe montanata</i>	Silver-ground Carpet	24	77	2011	2020
<i>Campptogramma bilineata</i>	Yellow Shell	2	2	2013	2013
<i>Epirrhoe alternata</i>	Common Carpet	12	21	2013	2019
<i>Earophila badiata</i>	Shoulder Stripe	1	1	2013	2013
<i>Anticlea derivata</i>	Streamer	3	3	2013	2019
<i>Hydriomena furcata</i>	July Highflyer	3	3	2017	2020
<i>Hydriomena impluviata</i>	May Highflyer	1	2	2016	2016
<i>Thera britannica</i>	Spruce Carpet	1	1	2020	2020
<i>Cidaria fulvata</i>	Barred Yellow	5	6	2013	2018
<i>Electrophaes corylata</i>	Broken-barred Carpet	5	6	2013	2016
<i>Cosmorhoe ocellata</i>	Purple Bar	9	12	2013	2020
<i>Eulithis prunata</i>	Phoenix	3	5	2013	2014
<i>Gandaritis pyraliata</i>	Barred Straw	8	16	2013	2020
<i>Ecliptopera silaceata</i>	Small Phoenix	6	9	2013	2020
<i>Chloroclysta siterata</i>	Red-Green Carpet	3	4	2018	2020
<i>Dysstroma truncata</i>	Common Marbled Carpet	28	62	2013	2020
<i>Colostygia pectinataria</i>	Green Carpet	10	14	2013	2020
<i>Lampropteryx suffumata</i>	Water Carpet	1	1	2017	2017
<i>Epirrita dilutata</i>	November Moth	1	2	2020	2020
<i>Philereme transversata</i>	Dark Umber	1	1	2014	2014
<i>Mesotype didymata</i>	Twin-spot Carpet	1	2	2013	2013
<i>Perizoma alchemillata</i>	Small Rivulet	1	present	2013	2013
<i>Gymnoscelis rufifasciata</i>	Double-striped Pug	4	4	2013	2020
<i>Chloroclystis v-ata</i>	V-Pug	2	2	2013	2019
<i>Pasiphila rectangulata</i>	Green Pug	2	2	2015	2018
<i>Eupithecia pulchellata</i>	Foxglove Pug	6	7	2013	2018
<i>Eupithecia abbreviata</i>	Brindled Pug	4	10	2017	2021
<i>Eupithecia pusillata</i>	Juniper Pug	3	3	2013	2020
<i>Eupithecia centaureata</i>	Lime-speck Pug	1	1	2013	2013
<i>Eupithecia absinthiata</i>	Wormwood Pug	3	4	2013	2018
<i>Eupithecia vulgata</i>	Common Pug	2	2	2020	2020
<i>Eupithecia exiguata</i>	Mottled Pug	1	1	2014	2014
<i>Eupithecia subfuscata</i>	Grey Pug	3	6	2013	2018
<i>Aplocera plagiata</i>	Treble-bar	1	1	2012	2012
<i>Acasis viretata</i>	Yellow-barred	4	5	2017	2018

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	Brindle				
<i>Abraxas grossulariata</i>	Magpie Moth	2	2	2014	2017
<i>Lomaspilis marginata</i>	Clouded Border	2	2	2019	2020
<i>Macaria alternata</i>	Sharp-angled Peacock	1	1	2013	2013
<i>Petrophora chlorosata</i>	Brown Silver-line	9	11	2013	2019
<i>Opisthograptis luteolata</i>	Brimstone Moth	27	78	2013	2020
<i>Ennomos fuscantaria</i>	Dusky Thorn	11	13	2013	2020
<i>Selenia dentaria</i>	Early Thorn	3	3	2017	2020
<i>Odontopera bidentata</i>	Scalloped Hazel	4	4	2015	2019
<i>Crocallis elinguaris</i>	Scalloped Oak	3	3	2015	2020
<i>Ourapteryx sambucaria</i>	Swallow-tailed Moth	3	2	2013	2020
<i>Colotois pennaria</i>	Feathered Thorn	1	1	2013	2013
<i>Biston betularia</i>	Peppered Moth	2	3	2013	2015
<i>Menophra abruptaria</i>	Waved Umber	1	2	2014	2014
<i>Peribatodes rhomboidaria</i>	Willow Beauty	5	10	2013	2018
<i>Alcis repandata</i>	Mottled Beauty	21	99	2013	2020
<i>Ectropis bistortata</i>	Engrailed	1	1	2017	2017
<i>Lomographa bimaculata</i>	White-pinion Spotted	7	7	2013	2019
<i>Lomographa temerata</i>	Clouded Silver	5	18	2014	2019
<i>Campaea margaritaria</i>	Light Emerald	6	6	2013	2020
<i>Pseudoterpna pruinata</i>	Grass Emerald	4	4	2013	2020
<i>Geometra papilionaria</i>	Large Emerald	1	1	2020	2020
<i>Hemithea aestivaria</i>	Common Emerald	3	2	2013	2016
<i>Pheosia tremula</i>	Swallow Prominent	1	1	2014	2014
<i>Pheosia gnoma</i>	Lesser Swallow Prominent	1	1	2013	2013
<i>Pterostoma palpina</i>	Pale Prominent	1	1	2013	2013
<i>Phalera bucephala</i>	Buff-tip	2	2	2014	2015
<i>Rivula sericealis</i>	Straw Dot	5	4	2013	2018
<i>Hypona proboscidalis</i>	Snout	6	5	2013	2019
<i>Euproctis similis</i>	Yellow-tail	2	2	2013	2017
<i>Calliteara pudibunda</i>	Pale Tussock	11	22	2014	2020
<i>Spilosoma lutea</i>	Buff Ermine	10	13	2013	2020
<i>Spilosoma lubricipeda</i>	White Ermine	6	7	2013	2019
<i>Diaphora mendica</i>	Muslin Moth	1	1	2018	2018

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<i>Phragmatobia fuliginosa</i>	Ruby Tiger	7	14	2013	2019
<i>Tyria jacobaeae</i>	Cinnabar	24	30	2011	2018
<i>Nudaria mundana</i>	Muslin Footman	17	40	2013	2020
<i>Atolmis rubricollis</i>	Red-necked Footman	1	1	2013	2013
<i>Eilema depressa</i>	Buff Footman	1	1	2015	2015
<i>Eilema griseola</i>	Dingy Footman	5	14	2017	2020
<i>Eilema lurideola</i>	Common Footman	15	83	2013	2020
<i>Herminia tarsipennalis</i>	Fan-foot	4	8	2013	2020
<i>Herminia grisealis</i>	Small Fan-foot	4	6	2013	2016
<i>Schrankia costaestrigalis</i>	Pinion-streaked Snout	1	1	2013	2013
<i>Euclidia mi</i>	Mother Shipton	4	6	2012	2016
<i>Abrostola tripartita</i>	Spectacle	1	1	2019	2019
<i>Diachrysa chrysis</i>	Burnished Brass	3	2	2013	2020
<i>Autographa gamma</i>	Silver Y	60	178	2012	2021
<i>Autographa pulchrina</i>	Beautiful Golden Y	5	11	2013	2020
<i>Autographa jota</i>	Plain Golden Y	1	present	2013	2013
<i>Plusia festucae</i>	Gold Spot	2	2	2013	2017
<i>Colocasia coryli</i>	Nut-tree Tussock	1	2	2018	2018
<i>Craniophora ligustri</i>	Coronet	5	5	2013	2019
<i>Amphipyra berbera</i>	Svensson's Copper Underwing	2	2	2020	2020
<i>Allophyes oxyacanthae</i>	Green-brindled Crescent	6	7	2017	2020
<i>Xylocampa areola</i>	Early Grey	3	3	2017	2021
<i>Bryophila domestica</i>	Marbled Beauty	1	1	2020	2020
<i>Hoplodrina octogenaria</i>	Uncertain	4	5	2015	2020
<i>Hoplodrina blanda</i>	Rustic	5	6	2015	2020
<i>Charanyca trigammica</i>	Treble Lines	15	52	2013	2020
<i>Rusina ferruginea</i>	Brown Rustic	1	1	2020	2020
<i>Phlogophora meticulosa</i>	Angle Shades	2	2	2017	2018
<i>Euplexia lucipara</i>	Small Angle Shades	2	5	2013	2016
<i>Gortyna flavago</i>	Frosted Orange	1	1	2018	2018
<i>Hydraecia micacea</i>	Rosy Rustic	3	3	2018	2020
<i>Amphipoea oculatea</i>	Ear Moth	1	1	2017	2017
<i>Luperina testacea</i>	Flounced Rustic	6	10	2014	2020
<i>Photedes minima</i>	Small Dotted Buff	1	1	2018	2018
<i>Apamea remissa</i>	Dusky Brocade	1	1	2016	2016
<i>Apamea crenata</i>	Clouded-bordered Brindle	5	5	2013	2017
<i>Apamea sordens</i>	Rustic Shoulder-knot	1	1	2013	2013
<i>Apamea monoglypha</i>	Dark Arches	7	9	2013	2020

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<i>Mesapamea secalis</i>	Common Rustic	1	1	2018	2018
<i>Mesapamea didyma</i>	Lesser Common Rustic	2	3	2018	2019
<i>Oligia strigilis</i>	Marbled Minor	1	1	2019	2019
<i>Oligia latruncula</i>	Tawny Marbled Minor	1	1	2019	2019
<i>Oligia fasciuncula</i>	Middle-barred Minor	1	present	2013	2013
<i>Agrochola helvola</i>	Flounced Chestnut	2	2	2020	2020
<i>Cosmia trapezina</i>	Dun-bar	2	2	2018	2020
<i>Atethmia centrigo</i>	Centre-barred Sallow	4	11	2013	2020
<i>Antitype chi</i>	Grey Chi	1	1	2013	2013
<i>Aporophyla nigra</i>	Black Rustic	5	9	2018	2020
<i>Polymixis lichenea</i>	Feathered Ranunculus	4	5	2013	2020
<i>Orthosia incerta</i>	Clouded Drab	1	1	2017	2017
<i>Orthosia cerasi</i>	Common Quaker	4	5	2014	2019
<i>Orthosia gracilis</i>	Powdered Quaker	1	1	2014	2014
<i>Orthosia gothica</i>	Hebrew Character	6	8	2013	2021
<i>Tholera cespitis</i>	Hedge Rustic	2	2	2013	2013
<i>Tholera decimalis</i>	Feathered Gothic	9	64	2013	2020
<i>Cerapteryx graminis</i>	Antler Moth	5	10	2013	2020
<i>Polia nebulosa</i>	Grey Arches	5	5	2013	2020
<i>Lacanobia thalassina</i>	Pale-shouldered Brocade	9	9	2013	2019
<i>Lacanobia contigua</i>	Beautiful Brocade	1	1	2017	2017
<i>Melanchra persicariae</i>	Dot Moth	1	present	2013	2013
<i>Hada nana</i>	Shears	3	7	2016	2018
<i>Hada plebeja</i>	Shears	12	29	2013	2020
<i>Hadena bicurris</i>	Lychnis	2	2	2015	2020
<i>Mythimna pallens</i>	Common Wainscot	2	1	2013	2013
<i>Mythimna impura</i>	Smoky Wainscot	6	6	2013	2020
<i>Mythimna ferrago</i>	Clay	13	27	2013	2020
<i>Leucania comma</i>	Shoulder-striped Wainscot	6	7	2013	2019
<i>Agrotis exclamationis</i>	Heart and Dart	26	97	2013	2020
<i>Agrotis clavis</i>	Heart and Club	19	51	2013	2020
<i>Agrotis puta</i>	Shuttle-shaped Dart	2	7	2014	2017
<i>Agrotis ipsilon</i>	Dark Sword-grass	1	1	2020	2020
<i>Axylia putris</i>	Flame	7	12	2013	2020
<i>Ochropleura plecta</i>	Flame Shoulder	18	42	2013	2020
<i>Diarsia brunnea</i>	Purple Clay	6	7	2013	2019
<i>Diarsia mendica</i>	Ingrailed Clay	19	61	2013	2020
<i>Diarsia rubi</i>	Small Square-spot	12	16	2015	2020
<i>Cerastis rubricosa</i>	Red Chestnut	2	2	2014	2017
<i>Noctua pronuba</i>	Large Yellow Underwing	45	662	2013	2020

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Noctua comes	Lesser Yellow Underwing	11	16	2013	2020
Noctua janthe	Lesser Broad-bordered Yellow Underwing	5	20	2013	2019
Xestia baja	Dotted Clay	5	5	2013	2020
Xestia xanthographa	Square-spot Rustic	6	11	2013	2019
Xestia c-nigrum	Setaceous Hebrew Character	9	15	2013	2020
Xestia ditrapezium	Triple-spotted Clay	1	1	2017	2017
Xestia triangulum	Double Square-spot	13	17	2013	2020
Eugnorisma glareosa	Autumnal Rustic	13	59	2013	2020
Naenia typica	Gothic	1	1	2015	2015
Nola cucullatella	Short-cloaked Moth	1	present	2013	2013
Nola confusalis	Least Black Arches	2	2	2013	2014
Pseudoips prasinana	Green Silver-lines	1	1	2016	2016

8.6 Species lists June 2021– All notable species within quarry from Cumbria Biodiversity Data Centre search

Taxon Latin Name	Recommended Common Name	Taxon group	Year	Count	Comment
Lipoptena cervi	Deer Ked	insect - true fly (Diptera)	2013	1 Count of Adult	
Centrotus cornutus	Tree Hopper	insect - true bug (Hemiptera)	2015	1 Count	shrubs at foot of quarry face
Centrotus cornutus	Tree Hopper	insect - true bug (Hemiptera)	2015	1 Count	photo available
Strongylocoris leucocephalus	Strongylocoris leucocephalus	insect - true bug (Hemiptera)	1993		
Dolycoris baccarum	Hairy Shieldbug	insect - true bug (Hemiptera)	2015	1 Count	medium instar
Dolycoris baccarum	Hairy Shieldbug	insect - true bug (Hemiptera)	2012	1 Count	small instar
Dolycoris baccarum	Hairy Shieldbug	insect - true bug (Hemiptera)	2015	1 Count	On Garden Geraniums
Dolycoris baccarum	Hairy Shieldbug	insect - true bug (Hemiptera)	2014		
Palomena prasina	Green Shieldbug	insect - true bug (Hemiptera)	2014	2 Count of Adult	On Cotinus coggygria
Palomena prasina	Green Shieldbug	insect - true bug (Hemiptera)	2014		
Palomena prasina	Green Shieldbug	insect - true bug (Hemiptera)	2014		
Palomena prasina	Green Shieldbug	insect - true bug (Hemiptera)	2015	1 Count	
Erynnis tages	Dingy Skipper	insect - butterfly	2017	1 Count	
Erynnis tages	Dingy Skipper	insect - butterfly	2018	1 Count	
Erynnis tages	Dingy Skipper	insect - butterfly	2018	7 Count	Sunny and warm.
Erynnis tages	Dingy Skipper	insect - butterfly	2012	some	
Erynnis tages	Dingy Skipper	insect - butterfly	2015	8 Count of Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2015	2 Count of Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2015	1 Count of Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2016	1 Count of Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2016	10 Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2016	2 Count of Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2016	1 Count of Adult	40 minutes in and around the quarry. T16 Sunny
Erynnis tages	Dingy Skipper	insect - butterfly	2016	2 Count of Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2017	1 Count	
Erynnis tages	Dingy Skipper	insect - butterfly	2017	2 Count	

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Erynnis tages	Dingy Skipper	insect - butterfly	2015	2 Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2015	4 Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2015	4 Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2015	2 Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2015	2 Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2019	8 Count of Adult	Sunny, T 16C, breezy 30 minutes observation
Erynnis tages	Dingy Skipper	insect - butterfly	2019	2 Count of Adult	15 min count 40 minutes obs. 90% sun, breezy, Temperature about 12C.
Erynnis tages	Dingy Skipper	insect - butterfly	2019	3 Count of Adult	35 minutes. Sunny and warm
Erynnis tages	Dingy Skipper	insect - butterfly	2019	1 Count of Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2013	1 Count of Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2013	1 Count of Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2014	3 Count of Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2014	1 Count of Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2015	5 Count of Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2015	3 Count of Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2016	5 Count of Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2016	15 Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2016	8 Count of Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2016	3 Count of Adult	60 mins
Erynnis tages	Dingy Skipper	insect - butterfly	2015	1 Count of Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2017	2 Count	
Erynnis tages	Dingy Skipper	insect - butterfly	2017	4 Count	
Erynnis tages	Dingy Skipper	insect - butterfly	2017	2 Count	
Erynnis tages	Dingy Skipper	insect - butterfly	2016	5 Count of Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2016	1 Count of Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2016	4 Count of Adult	25 minutes observation
Erynnis tages	Dingy Skipper	insect - butterfly	2019	1 Count of Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2019	1 Count of Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2019	1 Count of Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2019	1 Count of Adult	

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Erynnis tages	Dingy Skipper	insect - butterfly	2019	1 Count of Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2019	7 Count of Adult	45 minutes observations. 100% sun. 19deg C no breeze in quarry 30 minute
Erynnis tages	Dingy Skipper	insect - butterfly	2019	6 Count of Adult	2nd generation
Erynnis tages	Dingy Skipper	insect - butterfly	2018	1 Count of Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2018	2 Count	
Erynnis tages	Dingy Skipper	insect - butterfly	2011	1 Count of Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2011	1 Count of Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2011	2+ Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2018	4 Count	in full sun. Very warm 55 minutes observation in the quarry & N and S boundary field
Erynnis tages	Dingy Skipper	insect - butterfly	2016	2 Count of Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2013		
Erynnis tages	Dingy Skipper	insect - butterfly	2013		
Erynnis tages	Dingy Skipper	insect - butterfly	2013		
Erynnis tages	Dingy Skipper	insect - butterfly	2013		
Erynnis tages	Dingy Skipper	insect - butterfly	2012	some Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2012	4 Count of Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2013	3 Count of Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2013	2 Count of Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2017	1 Count	
Erynnis tages	Dingy Skipper	insect - butterfly	2011	2 Count of Adult	males sparring
Erynnis tages	Dingy Skipper	insect - butterfly	2011	2 Count of Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2011	10 Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2011	3 Count of Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2014	1 Count of Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2014	1 Count of Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2014	15 Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2014	2 Count of Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2014	3 Count of Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2014	4 Count of Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2014	7 Count of Adult	

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Erynnis tages	Dingy Skipper	insect - butterfly	2014	8 Count of Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2013	2 Count of Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2011	1 Count of Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2014	Mating; Many Present	Single mating pair plus singles on SSSI Grassland
Erynnis tages	Dingy Skipper	insect - butterfly	2014	1 Count of Adult	Very tatty, chasing fresh Meadow Brown
Erynnis tages	Dingy Skipper	insect - butterfly	1992	1 Count of Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2019	1 Count of Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2014	1 Count of Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2013		2 or 3 seen
Erynnis tages	Dingy Skipper	insect - butterfly	2013	2 Count of Adult	on rocky outcrop
Erynnis tages	Dingy Skipper	insect - butterfly	2014	Present	
Erynnis tages	Dingy Skipper	insect - butterfly	1993	1 Count of Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	1993	1 Count of Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2011	6 Count of Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2014	1-2 Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2014	1 Count of Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2014	1 Count of Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2019	2 Count	
Erynnis tages	Dingy Skipper	insect - butterfly	2014	2 Count of Adult	In 1 hour late morning
Erynnis tages	Dingy Skipper	insect - butterfly	2011	1 Count of Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2011	2-9 Adult	
Erynnis tages	Dingy Skipper	insect - butterfly	2011	10-29 Adult	
Erynnis tages tages	Dingy Skipper	insect - butterfly	2015	1 Count	
Erynnis tages tages	Dingy Skipper	insect - butterfly	2016	3 Count	
Boloria selene	Small Pearl-bordered Fritillary	insect - butterfly	2014	1 Count of Adult	
Boloria selene	Small Pearl-bordered Fritillary	insect - butterfly	2013	1 Count of Adult	
Boloria selene	Small Pearl-bordered Fritillary	insect - butterfly	2014	1 or 2 Adult	Seen in SD390766-767%0A
Boloria selene	Small Pearl-bordered Fritillary	insect - butterfly	2013	1 Count of Adult	
Boloria selene	Small Pearl-bordered Fritillary	insect - butterfly	2016	5 Count of Adult	55 minutes observation in the quarry and north and south

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Boloria selene	Small Pearl-bordered Fritillary	insect - butterfly	2017	1 Count	boundary fields
Boloria selene	Small Pearl-bordered Fritillary	insect - butterfly	2018	2 Count	in full sun. Very warm
Boloria selene	Small Pearl-bordered Fritillary	insect - butterfly	2018	4 Count	warm, sunny some wind
Boloria selene	Small Pearl-bordered Fritillary	insect - butterfly	2015	2 Count	
Boloria selene	Small Pearl-bordered Fritillary	insect - butterfly	2015	2 Count of Adult	
					100% sun, faint breeze, 18 deg
Boloria selene	Small Pearl-bordered Fritillary	insect - butterfly	2016	3 Count of Adult	C
Boloria selene	Small Pearl-bordered Fritillary	insect - butterfly	2016	1 Count of Adult	
Boloria selene	Small Pearl-bordered Fritillary	insect - butterfly	2017	7 Count	
Boloria selene	Small Pearl-bordered Fritillary	insect - butterfly	2019	1 Count of Adult	
Boloria selene	Small Pearl-bordered Fritillary	insect - butterfly	2011	4 Count of Adult	
Boloria selene	Small Pearl-bordered Fritillary	insect - butterfly	2015	3 Count of Adult	
Boloria selene	Small Pearl-bordered Fritillary	insect - butterfly	2015	1 Count of Adult	
Boloria selene	Small Pearl-bordered Fritillary	insect - butterfly	2016	4 Count of Adult	
Boloria selene	Small Pearl-bordered Fritillary	insect - butterfly	2016	7 Count of Adult	22oC and sunny intervals
Boloria selene	Small Pearl-bordered Fritillary	insect - butterfly	2014	1 Count of Adult	
Boloria selene	Small Pearl-bordered Fritillary	insect - butterfly	2014	1 Count of Adult	
Boloria selene	Small Pearl-bordered Fritillary	insect - butterfly	2014	2 Count of Adult	
Boloria selene	Small Pearl-bordered Fritillary	insect - butterfly	2014	2 Count of Adult	
Boloria selene	Small Pearl-bordered Fritillary	insect - butterfly	2012	1 Count of Adult	
Boloria selene	Small Pearl-bordered Fritillary	insect - butterfly	2015	3 Count of Count of Adult	
Boloria selene	Small Pearl-bordered Fritillary	insect - butterfly	2015	1 Count of Count of Adult	
Boloria selene	Small Pearl-bordered Fritillary	insect - butterfly	2019	1 Count of Adult	15 min count
Boloria selene	Small Pearl-bordered Fritillary	insect - butterfly	2016	3 Count of Adult	Possibly more than 3,
Boloria selene	Small Pearl-bordered Fritillary	insect - butterfly	2017	2 Count	
Boloria selene	Small Pearl-bordered Fritillary	insect - butterfly	2017	2 Count	
Boloria selene	Small Pearl-bordered Fritillary	insect - butterfly	2017	3 Count	
Boloria selene	Small Pearl-bordered Fritillary	insect - butterfly	2017	1 Count	
Boloria selene	Small Pearl-bordered Fritillary	insect - butterfly	2014		
Boloria selene	Small Pearl-bordered Fritillary	insect - butterfly	2016	Present	
Polytonia c-album	Comma	insect - butterfly	2015	2 Count of Adult	

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Polygonia c-album	Comma	insect - butterfly	2015	1 Count of Adult	
Polygonia c-album	Comma	insect - butterfly	2015	2 Count of Adult	
Polygonia c-album	Comma	insect - butterfly	2015	1 Count of Adult	45 minutes mid-morning.
Polygonia c-album	Comma	insect - butterfly	2016	1 Count of Adult	female
Polygonia c-album	Comma	insect - butterfly	2017	1 Count	
Polygonia c-album	Comma	insect - butterfly	2017	1 Count	
Polygonia c-album	Comma	insect - butterfly	2016	3 Count of Adult	On ivy
Polygonia c-album	Comma	insect - butterfly	2019	1 Count of Adult	
Polygonia c-album	Comma	insect - butterfly	2019	3 Count of Adult	50 minutes observation
Polygonia c-album	Comma	insect - butterfly	2013	1 Count of Adult	
Polygonia c-album	Comma	insect - butterfly	2019	1 Count of Adult	25 mins obs in mid afternoon.
Polygonia c-album	Comma	insect - butterfly	2013	1 Count of Adult	
Polygonia c-album	Comma	insect - butterfly	2013	1 Count of Adult	
Polygonia c-album	Comma	insect - butterfly	2015	2 Count	damp path
Polygonia c-album	Comma	insect - butterfly	2018	1 Count of Adult	
Polygonia c-album	Comma	insect - butterfly	2015	1 Count	
Polygonia c-album	Comma	insect - butterfly	2011	2 Count of Adult	
Polygonia c-album	Comma	insect - butterfly	2018	2 Count	Sunny
Polygonia c-album	Comma	insect - butterfly	2018	1 Count	sun and temp. about 25C.
Polygonia c-album	Comma	insect - butterfly	2018	4 Count of Adult	
Polygonia c-album	Comma	insect - butterfly	2017	1 Count	
Polygonia c-album	Comma	insect - butterfly	2017	1 Count	
Polygonia c-album	Comma	insect - butterfly	2016	1 Count of Adult	
Polygonia c-album	Comma	insect - butterfly	2016	1 Count of Adult	
Polygonia c-album	Comma	insect - butterfly	2015	1 Count of Count of Adult	
Polygonia c-album	Comma	insect - butterfly	2015	1 Count of Count of Adult	
Polygonia c-album	Comma	insect - butterfly	2015	2 Count of Count of Adult	
Polygonia c-album	Comma	insect - butterfly	2015	1 Count of Count of Adult	
Polygonia c-album	Comma	insect - butterfly	2015	1 Count of Adult	
Polygonia c-album	Comma	insect - butterfly	2011	2 Count of Adult	ovipositing
Polygonia c-album	Comma	insect - butterfly	2011	2 Count of Adult	
Polygonia c-album	Comma	insect - butterfly	2018	1 Count	T29C. Sunny

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Polygonia c-album	Comma	insect - butterfly	2018	5 Count	Within quarry and perimeter fields.
Polygonia c-album	Comma	insect - butterfly	2018	2 Count	moderately sunny conditions.
Polygonia c-album	Comma	insect - butterfly	2019	1 Count of Adult	lower part of quarry. 25 minutes observation in Sunny. T 25C 35 minutes observation in mid afternoon.
Polygonia c-album	Comma	insect - butterfly	2019	2 Count of Adult	
Polygonia c-album	Comma	insect - butterfly	2019	1 Count of Adult	
Polygonia c-album	Comma	insect - butterfly	2019	1 Count of Adult	
Polygonia c-album	Comma	insect - butterfly	2019	2 Count of Adult	
Polygonia c-album	Comma	insect - butterfly	2017	1 Count	
Polygonia c-album	Comma	insect - butterfly	2017	1 Count	
Polygonia c-album	Comma	insect - butterfly	2017	1 Count	
Polygonia c-album	Comma	insect - butterfly	2016	4 Count of Adult	
Polygonia c-album	Comma	insect - butterfly	2016	2 Count of Adult	70 minutes of observation in and around the quarry
Polygonia c-album	Comma	insect - butterfly	2015	2 Count of Adult	On ivy blossom.
Polygonia c-album	Comma	insect - butterfly	2015	1 Count of Adult	
Polygonia c-album	Comma	insect - butterfly	2018	3 Count	
Polygonia c-album	Comma	insect - butterfly	2019	3 Count of Adult	45 minutes observation in lower quarry. On brambles
Polygonia c-album	Comma	insect - butterfly	2019	2 Count of Adult	1 hour around mid-day
Polygonia c-album	Comma	insect - butterfly	2017	2 Count	
Polygonia c-album	Comma	insect - butterfly	2014	1 Count of Adult	hot sunny and bright day
Polygonia c-album	Comma	insect - butterfly	2016	1 Count of Adult	
Polygonia c-album	Comma	insect - butterfly	2016	1 Count of Adult	
Polygonia c-album	Comma	insect - butterfly	2015	3 Count of Adult	
Polygonia c-album	Comma	insect - butterfly	2011	1 Count of Adult	
Polygonia c-album	Comma	insect - butterfly	2013	1 Count of Adult	
Polygonia c-album	Comma	insect - butterfly	2014	1 Count of Adult	
Polygonia c-album	Comma	insect - butterfly	2014	1 Count of Adult	
Polygonia c-album	Comma	insect - butterfly	2014	1 Count of Adult	

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Polygonia c-album	Comma	insect - butterfly	2014	4 Count of Adult	
Polygonia c-album	Comma	insect - butterfly	2014	6 Count of Adult	
Polygonia c-album	Comma	insect - butterfly	2011	1 Count of Adult	
Polygonia c-album	Comma	insect - butterfly	2013	1 Count of Adult	seen in SD391766 or SD391767
Polygonia c-album	Comma	insect - butterfly	2018	1 Count of Adult	
Polygonia c-album	Comma	insect - butterfly	2018	1 Count of Adult	
Polygonia c-album	Comma	insect - butterfly	2019	1 Count of Adult	
Polygonia c-album	Comma	insect - butterfly	2019	1 Count of Adult	
Coenonympha pamphilus	Small Heath	insect - butterfly	2018	1 Count	in full sun. Very warm
Coenonympha pamphilus	Small Heath	insect - butterfly	2015	1 Count of Adult	
Lasiommata megera	Wall	insect - butterfly	2012	1 Count of Adult	
Lasiommata megera	Wall	insect - butterfly	2011	1 Count of Adult	
Lasiommata megera	Wall	insect - butterfly	2013	1 Count of Adult	
Lasiommata megera	Wall	insect - butterfly	2014		
Lasiommata megera	Wall	insect - butterfly	2015	2 Count of Adult	
Lasiommata megera	Wall	insect - butterfly	2017	1 Count	
Lasiommata megera	Wall	insect - butterfly	2017	1 Count	
Lasiommata megera	Wall	insect - butterfly	2019	1 Count of Adult	30 minute obs
Lasiommata megera	Wall	insect - butterfly	2019	1 Count of Adult	
Lasiommata megera	Wall	insect - butterfly	2018	1 Count of Adult	
Lasiommata megera	Wall	insect - butterfly	2019	2 Count of Adult	50 minutes observation
Lasiommata megera	Wall	insect - butterfly	2018	2 Count	
Lasiommata megera	Wall	insect - butterfly	2016	1 Count of Adult	
Lasiommata megera	Wall	insect - butterfly	2015	2 Count of Adult	
Lasiommata megera	Wall	insect - butterfly	2014	1 Count of Adult	
Lasiommata megera	Wall	insect - butterfly	2015	1 Count of Adult	
Lasiommata megera	Wall	insect - butterfly	2016	1 Count of Adult	
Lasiommata megera	Wall	insect - butterfly	2015	1 Count of Adult	45 minutes in and around the quarry. Sun 70%, T 17 Windy Warm and sunny. Joint Cumbria BC field trip with the Grange Natural History Society.
Lasiommata megera	Wall	insect - butterfly	2014	2 Count of Adult	

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Lasiommata megera	Wall	insect - butterfly	2015	1 Count of Adult	45 minutes mid-morning.
Lasiommata megera	Wall	insect - butterfly	2015	1 Count of Adult	
Lasiommata megera	Wall	insect - butterfly	2014	1 Count of Adult	
Lasiommata megera	Wall	insect - butterfly	2014	2 Count of Adult	
Lasiommata megera	Wall	insect - butterfly	2014	6 Count of Adult	
Lasiommata megera	Wall	insect - butterfly	2017	1 Count	
Lasiommata megera	Wall	insect - butterfly	2018	1 Count	Sunny
Lasiommata megera	Wall	insect - butterfly	2018	1 Count	
Lasiommata megera	Wall	insect - butterfly	2016	1 Count of Adult	
Hipparchia semele	Grayling	insect - butterfly	2018	2 Count	On Buddleia
Hipparchia semele	Grayling	insect - butterfly	2014	1 Count of Adult	
Hipparchia semele	Grayling	insect - butterfly	2019	1 Count of Adult	35 minutes. Sunny and warm
Hipparchia semele	Grayling	insect - butterfly	2015	1 Count of Adult	
Hipparchia semele	Grayling	insect - butterfly	2015	1 Count of Adult	
Hipparchia semele	Grayling	insect - butterfly	2019	2 Count of Adult	
Hipparchia semele	Grayling	insect - butterfly	2018	1 Count	T29C. Sunny, on Buddleia
Hipparchia semele semele	Grayling	insect - butterfly	2015	1 Count	
Hipparchia semele semele	Grayling	insect - butterfly	2018	3 Count of Adult	
Aricia artaxerxes	Northern Brown Argus	insect - butterfly	2015	1 Count of Adult	
Aricia artaxerxes	Northern Brown Argus	insect - butterfly	2015	4 Count of Adult	
Aricia artaxerxes	Northern Brown Argus	insect - butterfly	2015	1 Count of Adult	
Aricia artaxerxes	Northern Brown Argus	insect - butterfly	2015	2 Count of Adult	
Aricia artaxerxes	Northern Brown Argus	insect - butterfly	2016	1 Count of Adult	100% sun, faint breeze, 18 C 55 minutes observation in the quarry, N & S boundary fields
Aricia artaxerxes	Northern Brown Argus	insect - butterfly	2016	6 Count of Adult	
Aricia artaxerxes	Northern Brown Argus	insect - butterfly	2016	1 Count of Adult	
Aricia artaxerxes	Northern Brown Argus	insect - butterfly	2016	6 Count of Adult	22oC and sunny intervals
Aricia artaxerxes	Northern Brown Argus	insect - butterfly	2016	1 Count of Adult	
Aricia artaxerxes	Northern Brown Argus	insect - butterfly	2015	1 Count of Adult	
Aricia artaxerxes	Northern Brown Argus	insect - butterfly	2015	1 Count of Count of Adult	
Aricia artaxerxes	Northern Brown Argus	insect - butterfly	2016	1 Count of Adult	
Aricia artaxerxes	Northern Brown Argus	insect - butterfly	2016	1 Count of Adult	

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<i>Aricia artaxerxes</i>	Northern Brown Argus	insect - butterfly	2017	1 Count
<i>Watsonalla binaria</i>	Oak Hook-tip	insect - moth	2018	1 Count of Adult
<i>Ennomos fuscantaria</i>	Dusky Thorn	insect - moth	2018	1 Count of Adult
<i>Ennomos fuscantaria</i>	Dusky Thorn	insect - moth	2018	1 Count of Adult
<i>Ennomos fuscantaria</i>	Dusky Thorn	insect - moth	2018	1 Count of Adult
<i>Ennomos fuscantaria</i>	Dusky Thorn	insect - moth	2018	1 Count of Adult
<i>Ennomos fuscantaria</i>	Dusky Thorn	insect - moth	2018	1 Count of Adult
<i>Ennomos fuscantaria</i>	Dusky Thorn	insect - moth	2018	1 Count of Adult
<i>Ennomos fuscantaria</i>	Dusky Thorn	insect - moth	2018	1 Count of Adult
<i>Ecliptopera silaceata</i>	Small Phoenix	insect - moth	2018	1 Count of Adult
<i>Ecliptopera silaceata</i>	Small Phoenix	insect - moth	2014	1 Count of Adult
<i>Ecliptopera silaceata</i>	Small Phoenix	insect - moth	2018	1 Count of Adult
<i>Ecliptopera silaceata</i>	Small Phoenix	insect - moth	2013	3 Count of Adult
<i>Scotopteryx chenopodiata</i>	Shaded Broad-bar	insect - moth	2014	1 Count of Adult
<i>Xanthorhoe ferrugata</i>	Dark-barred Twin-spot Carpet	insect - moth	2013	1 Count of Adult
<i>Xanthorhoe ferrugata</i>	Dark-barred Twin-spot Carpet	insect - moth	2014	1 Count of Adult
<i>Scopula marginepunctata</i>	Mullein Wave	insect - moth	2014	1 Count of Adult
<i>Scopula marginepunctata</i>	Mullein Wave	insect - moth	2014	1 Count of Adult
<i>Scopula marginepunctata</i>	Mullein Wave	insect - moth	2018	1 Count of Adult
<i>Scopula marginepunctata</i>	Mullein Wave	insect - moth	2018	10 Adult
<i>Scopula marginepunctata</i>	Mullein Wave	insect - moth	2015	4 Count of Adult
<i>Scopula marginepunctata</i>	Mullein Wave	insect - moth	2015	8 Count of Adult
<i>Scopula marginepunctata</i>	Mullein Wave	insect - moth	2018	33 Adult
<i>Scopula marginepunctata</i>	Mullein Wave	insect - moth	2013	4 Count of Adult
<i>Scopula marginepunctata</i>	Mullein Wave	insect - moth	2018	43 Adult
<i>Scopula marginepunctata</i>	Mullein Wave	insect - moth	2018	24 Adult
<i>Scopula marginepunctata</i>	Mullein Wave	insect - moth	2018	4 Count of Adult
<i>Scopula marginepunctata</i>	Mullein Wave	insect - moth	2013	1 Count of Adult
<i>Scopula marginepunctata</i>	Mullein Wave	insect - moth	2018	4 Count of Adult
<i>Scopula marginepunctata</i>	Mullein Wave	insect - moth	2018	7 Count of Adult
<i>Scopula marginepunctata</i>	Mullein Wave	insect - moth	2018	50 Adult
<i>Scopula marginepunctata</i>	Mullein Wave	insect - moth	2018	34 Adult

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Scopula marginepunctata	Mullein Wave	insect - moth	2016	1 Count of Adult	
Scopula marginepunctata	Mullein Wave	insect - moth	2013	1 Count of Adult	Group session
Scopula marginepunctata	Mullein Wave	insect - moth	2016	4 Count of Adult	
Spilosoma lubricipeda	White Ermine	insect - moth	2014	1 Count of Adult	
Spilosoma lubricipeda	White Ermine	insect - moth	2014	1 Count of Adult	
Spilosoma lutea	Buff Ermine	insect - moth	2018	1 Count of Adult	
Spilosoma lutea	Buff Ermine	insect - moth	2016	1 Count of Adult	
Spilosoma lutea	Buff Ermine	insect - moth	2016	1 Count of Adult	
Spilosoma lutea	Buff Ermine	insect - moth	2015	2 Count of Adult	
Spilosoma lutea	Buff Ermine	insect - moth	2013	Present	Group session
Spilosoma lutea	Buff Ermine	insect - moth	2014	2 Count of Adult	
Spilosoma lutea	Buff Ermine	insect - moth	2014	2 Count of Adult	
Tyria jacobaeae	Cinnabar	insect - moth	2013	1 Count of Adult	
Tyria jacobaeae	Cinnabar	insect - moth	2013	1 Count of Adult	
Tyria jacobaeae	Cinnabar	insect - moth	2012	1 Larvae	caterpillar
Tyria jacobaeae	Cinnabar	insect - moth	2014	2 Count of Adult	
Tyria jacobaeae	Cinnabar	insect - moth	2014	1 Count of Adult	
Tyria jacobaeae	Cinnabar	insect - moth	2014	1 Count of Adult	
Tyria jacobaeae	Cinnabar	insect - moth	2014	1 Count of Adult	
Tyria jacobaeae	Cinnabar	insect - moth	2014	3 Count of Adult	
Tyria jacobaeae	Cinnabar	insect - moth	2014	3 Count of Adult	
Tyria jacobaeae	Cinnabar	insect - moth	2015	1 Count of Adult	
Tyria jacobaeae	Cinnabar	insect - moth	2015	1 Count of Adult	
Tyria jacobaeae	Cinnabar	insect - moth	2015	1 Count of Adult	
Tyria jacobaeae	Cinnabar	insect - moth	2014	3 Count of Adult	
Tyria jacobaeae	Cinnabar	insect - moth	2015	Present	
Tyria jacobaeae	Cinnabar	insect - moth	2015	2 Count of Adult	
Tyria jacobaeae	Cinnabar	insect - moth	2015	1 Count of Adult	
Tyria jacobaeae	Cinnabar	insect - moth	2015	1 Count of Adult	
Tyria jacobaeae	Cinnabar	insect - moth	2015	1 Count of Adult	
Tyria jacobaeae	Cinnabar	insect - moth	2016	1 Count of Adult	

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Tyria jacobaeae	Cinnabar	insect - moth	2012	1 Count of Adult	
Tyria jacobaeae	Cinnabar	insect - moth	2018	2 Count	
Tyria jacobaeae	Cinnabar	insect - moth	2012	1 Count of Adult	
Tyria jacobaeae	Cinnabar	insect - moth	2013	1 Count of Adult	
Tyria jacobaeae	Cinnabar	insect - moth	2012	2 Count of Adult	
Tyria jacobaeae	Cinnabar	insect - moth	2012	2 Count of Adult	
Tyria jacobaeae	Cinnabar	insect - moth	2012	1 Count of Adult	
Tyria jacobaeae	Cinnabar	insect - moth	2013	8 Count of Adult	
Tyria jacobaeae	Cinnabar	insect - moth	2013	4 Count of Adult	
Tyria jacobaeae	Cinnabar	insect - moth	2013	1 Count of Adult	
Tyria jacobaeae	Cinnabar	insect - moth	2013	1 Count of Adult	
Tyria jacobaeae	Cinnabar	insect - moth	2015	1 Count of Adult	
Tyria jacobaeae	Cinnabar	insect - moth	2011	Present	ovipositing
Tyria jacobaeae	Cinnabar	insect - moth	2015	Present	
Tyria jacobaeae	Cinnabar	insect - moth	2015	1 Count of Adult	
Tyria jacobaeae	Cinnabar	insect - moth	2013	2 Count of Adult	
Tyria jacobaeae	Cinnabar	insect - moth	2018	2 Count	sun and temp. about 25C.
Tyria jacobaeae	Cinnabar	insect - moth	2018	1 Count	Very warm
Tyria jacobaeae	Cinnabar	insect - moth	2013	1 Count of Adult	
Tyria jacobaeae	Cinnabar	insect - moth	2013	1 Count of Adult	
Tyria jacobaeae	Cinnabar	insect - moth	2014	several Adult	on quarry floor
Tyria jacobaeae	Cinnabar	insect - moth	2014	1 Count of Adult	SSSI grassland
Tyria jacobaeae	Cinnabar	insect - moth	2011	1 Count of Adult	
Tyria jacobaeae	Cinnabar	insect - moth	2015	1 Count of Adult	
Tyria jacobaeae	Cinnabar	insect - moth	2013	1-2 Adult	SD390766-SD390767
Tyria jacobaeae	Cinnabar	insect - moth	2013	present	SD390766-SD390768
Atolmis rubricollis	Red-necked Footman	insect - moth	2013	1 Count of Adult	
Schrankia costaestrigalis	Pinion-streaked Snout	insect - moth	2013	1 Count of Adult	Group session
Melanchra persicariae	Dot Moth	insect - moth	2013	Present	Group session
Leucania comma	Shoulder-striped Wainscot	insect - moth	2016	2 Count of Adult	
Leucania comma	Shoulder-striped Wainscot	insect - moth	2015	1 Count of Adult	
Leucania comma	Shoulder-striped Wainscot	insect - moth	2015	1 Count of Adult	

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Leucania comma	Shoulder-striped Wainscot	insect - moth	2013	1 Count of Adult	
Orthosia gracilis	Powdered Quaker	insect - moth	2014	1 Count of Adult	
Tholera cespitis	Hedge Rustic	insect - moth	2013	1 Count of Adult	Group session
Tholera cespitis	Hedge Rustic	insect - moth	2013	1 Count of Adult	
Tholera decimalis	Feathered Gothic	insect - moth	2018	2 Count	
Tholera decimalis	Feathered Gothic	insect - moth	2018	1 Count	
Tholera decimalis	Feathered Gothic	insect - moth	2014	1 Count of Adult	
Tholera decimalis	Feathered Gothic	insect - moth	2013	50 Adult	Group session
Tholera decimalis	Feathered Gothic	insect - moth	2013	5 Count of Adult	
Tholera decimalis	Feathered Gothic	insect - moth	2018	2 Count	
Tholera decimalis	Feathered Gothic	insect - moth	2018	1 Count	
Diarsia rubi	Small Square-spot	insect - moth	2018	1 Count	
Diarsia rubi	Small Square-spot	insect - moth	2015	1 Count of Adult	
Diarsia rubi	Small Square-spot	insect - moth	2015	1 Count of Adult	
Diarsia rubi	Small Square-spot	insect - moth	2015	2 Count of Adult	
Diarsia rubi	Small Square-spot	insect - moth	2018	1 Count	
Diarsia rubi	Small Square-spot	insect - moth	2018	1 Count	
Diarsia rubi	Small Square-spot	insect - moth	2015	1 Count of Adult	
Eugnorisma glareosa	Autumnal Rustic	insect - moth	2018	14 Count	
Eugnorisma glareosa	Autumnal Rustic	insect - moth	2018	15 Count	
Eugnorisma glareosa	Autumnal Rustic	insect - moth	2018	1 Count	
Eugnorisma glareosa	Autumnal Rustic	insect - moth	2013	1 Count of Adult	
Apamea remissa	Dusky Brocade	insect - moth	2016	1 Count of Adult	
Hydraecia micacea	Rosy Rustic	insect - moth	2018	1 Count	
Hydraecia micacea	Rosy Rustic	insect - moth	2018	1 Count	
Hoplodrina blanda	Rustic	insect - moth	2016	1 Count of Adult	
Hoplodrina blanda	Rustic	insect - moth	2018	2 Count of Male	Gen. det. male
Hoplodrina blanda	Rustic	insect - moth	2015	1 Count of Adult	
Atethmia centrigo	Centre-barred Sallow	insect - moth	2013	5 Count of Adult	Group session
Atethmia centrigo	Centre-barred Sallow	insect - moth	2018	1 Count	
Atethmia centrigo	Centre-barred Sallow	insect - moth	2018	4 Count	
Anax imperator	Emperor Dragonfly	insect - dragonfly (Odonata)	2014	1 Count of Adult Female	

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Libellula depressa	Broad-bodied Chaser	insect - dragonfly (Odonata)	2015	Present Count	
Libellula depressa	Broad-bodied Chaser	insect - dragonfly (Odonata)	2015	1 Count of Adult	
Sympetrum striolatum	Common Darter	insect - dragonfly (Odonata)	2015	Present Count	
Sympetrum striolatum	Common Darter	insect - dragonfly (Odonata)	2015	Present Count	
Sympetrum striolatum	Common Darter	insect - dragonfly (Odonata)	2015	1 Count	
Sympetrum striolatum	Common Darter	insect - dragonfly (Odonata)	2015	1 Count	
Sympetrum striolatum	Common Darter	insect - dragonfly (Odonata)	2018	1 Count of Adult	
Bufo bufo	Common Toad	amphibian	2014	2 Count of Adult	
Bufo bufo	Common Toad	amphibian	2014	1 Count	
Bufo bufo	Common Toad	amphibian	2014	1 Count of Adult	Large adult
Bufo bufo	Common Toad	amphibian	2014	1 Count of Adult	Under metal sheet
Bufo bufo	Common Toad	amphibian	2014	1 Adult Dead	Crushed under metal sheet
Bufo bufo	Common Toad	amphibian	2014	1 Count of Adult	
Rana temporaria	Common Frog	amphibian	2014		Different indiv from previous
Rana temporaria	Common Frog	amphibian	2011	1 Count of Adult	
Rana temporaria	Common Frog	amphibian	2014		
Accipiter nisus	Sparrowhawk	bird	2013	1 Adult Female	chasing blackbird
Accipiter nisus	Sparrowhawk	bird	2013		flying SE
Accipiter nisus	Sparrowhawk	bird	2012	1 Count of Adult	fml
Buteo buteo	Buzzard	bird	2013	2 Count of Adult	
Buteo buteo	Buzzard	bird	2013	2 Count of Adult	Displaying pair
Buteo buteo	Buzzard	bird	2013	2 Count	Trying to steal prey from peregrine along with 2 ravens
Buteo buteo	Buzzard	bird	2013	2 Count	On ground with kill, 2 ravens & 2 buzzards trying to steal prey.
Falco peregrinus	Peregrine falcon	bird	2013	1 Count	
Falco tinnunculus	Kestrel	bird	2013		
Falco tinnunculus	Kestrel	bird	2014	1 Female	Settled in ash-tree SSSI.
Falco tinnunculus	Kestrel	bird	2013	1 Male	
Falco tinnunculus	Kestrel	bird	2011	1 Count of Adult	
Falco tinnunculus	Kestrel	bird	2014		Hovering over SSSI grassland
Bombycilla garrulus	Waxwing	bird	2013		
Garrulus glandarius	Jay	bird	2012	2 Count of Adult	

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Coccothraustes coccothraustes	Hawfinch	bird	2013		seen around 10:30am
Coccothraustes coccothraustes	Hawfinch	bird	2012	1 Count of Adult	
Pyrrhula pyrrhula	Eurasian Bullfinch	bird	2012	1 adult	Count of calling/vocalising
Pyrrhula pyrrhula	Eurasian Bullfinch	bird	2011	some	Quantity
Anthus pratensis	Meadow Pipit	bird	2013		Drinking from seepage on quarry face
Motacilla alba yarrellii	Pied Wagtail	bird	2013		
Phylloscopus trochilus	Willow Warbler	bird	2013	present	Male Singing, poss more than one
Phylloscopus trochilus	Willow Warbler	bird	2012	1 adult	Male
Phylloscopus trochilus	Willow Warbler	bird	2011	2+	Adult singing
Regulus regulus	Goldcrest	bird	2011	1 Count of Adult	
Regulus regulus	Goldcrest	bird	2011	some	Quantity
Regulus regulus	Goldcrest	bird	2013		around 3:30pm
Regulus regulus	Goldcrest	bird	2012	2 Count of Adult	in hawthorn
Regulus regulus	Goldcrest	bird	2014	1 Count	feeding in hawthorn
Troglodytes troglodytes	Eurasian Wren	bird	2013	1 Count of Adult;	at least 3 Count of Juvenile
Turdus iliacus	Redwing	bird	2013		feeding hawthorn & ivy berries
Turdus philomelos	Song Thrush	bird	2013		feeding on hawthorn berries
Turdus philomelos	Song Thrush	bird	2013		feeding on hawthorn ad ivy berries
Turdus philomelos	Song Thrush	bird	2013	some	Count of berries
Turdus viscivorus	Mistle Thrush	bird	2012	Adult	
Picus viridis	European Green Woodpecker	bird	2014	1 Count	flew up from meadow - ant nest
Picus viridis	European Green Woodpecker	bird	2012	1 Count of Adult	calling
Strix aluco	Tawny Owl	bird	2012	1 Count of Adult	
Capreolus capreolus	Roe Deer	terrestrial mammal	2011	1 Count of Adult	
Capreolus capreolus	Roe Deer	terrestrial mammal	2012	2 Count	2 fawns resting together in long grass. Different ages
Capreolus capreolus	Roe Deer	terrestrial mammal	2015	1 Count	
Capreolus capreolus	Roe Deer	terrestrial mammal	2015	2 Juvenile	

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Capreolus capreolus	Roe Deer	terrestrial mammal	2015	1 Count of Juvenile; 1 Count of Adult Female	
Capreolus capreolus	Roe Deer	terrestrial mammal	2012	1 adult Male	9:15 -9:30hrs
Capreolus capreolus	Roe Deer	terrestrial mammal	2012	1 Count of Adult	dead. Dumped decapitated
Capreolus capreolus	Roe Deer	terrestrial mammal	2014	1 Adult Male	Barking, went south
Capreolus capreolus	Roe Deer	terrestrial mammal	2014	1 Count	lying up near limekiln
Capreolus capreolus	Roe Deer	terrestrial mammal	2012	1 Count of Adult	
Capreolus capreolus	Roe Deer	terrestrial mammal	2015	1 f Adult Male	seen at 12.45pm & 2.45pm
Capreolus capreolus	Roe Deer	terrestrial mammal	2015	1 Count of Male	
Capreolus capreolus	Roe Deer	terrestrial mammal	2015	1 Count of dead	half carcass moving from SD391766 to SD391767
Capreolus capreolus	Roe Deer	terrestrial mammal	2015	1 Juvenile	
Mustela nivalis	Weasel	terrestrial mammal	2015	1 Count of Adult	
Pipistrellus	Pipistrelle	terrestrial mammal	2013	4+ Count	
Pipistrellus	Pipistrelle	terrestrial mammal	2014		
Sorex araneus	Eurasian Common Shrew	terrestrial mammal	2013	1 Count of dead	
Sciurus carolinensis	Eastern Grey Squirrel	terrestrial mammal	2015	1 Count	
Sciurus carolinensis	Eastern Grey Squirrel	terrestrial mammal	2018	1 Count	
Sciurus carolinensis	Eastern Grey Squirrel	terrestrial mammal	2015	1 Count	
Sciurus carolinensis	Eastern Grey Squirrel	terrestrial mammal	2004	1 Count	Mixed Woodland
Zootoca vivipara	Common Lizard	reptile	2016	1 Count of Adult	
Zootoca vivipara	Common Lizard	reptile	2016	Adult	
Zootoca vivipara	Common Lizard	reptile	2018	1 Count	
Zootoca vivipara	Common Lizard	reptile	2012	1 Count of Adult	last sighting of year
Zootoca vivipara	Common Lizard	reptile	2012	1 Count of Adult	
Zootoca vivipara	Common Lizard	reptile	2013	1 Count of Adult	under metal sheet
Zootoca vivipara	Common Lizard	reptile	2017	2 Count of Adult	
Zootoca vivipara	Common Lizard	reptile	2013	1 Count	
Zootoca vivipara	Common Lizard	reptile	2014	1 Count	
Zootoca vivipara	Common Lizard	reptile	2013	1 Adult; 1 Juv	basking on metal sheet
Zootoca vivipara	Common Lizard	reptile	2013	1 Juvenile	basking on sycamore log,
Zootoca vivipara	Common Lizard	reptile	2015	1 Count of Adult	
Zootoca vivipara	Common Lizard	reptile	2012	2 Count	2young lizards under tin sheet

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Zootoca vivipara	Common Lizard	reptile	2014		under metal sheet
Zootoca vivipara	Common Lizard	reptile	2014		
Zootoca vivipara	Common Lizard	reptile	2014		under metal sheet
Zootoca vivipara	Common Lizard	reptile	2014		2 basking on metal sheet
Zootoca vivipara	Common Lizard	reptile	2014	2 Young	
Zootoca vivipara	Common Lizard	reptile	2014		basking
Zootoca vivipara	Common Lizard	reptile	2015	1 Count	under metal sheet
Zootoca vivipara	Common Lizard	reptile	2014	1 Count of Adult	
Arion (Arion) ater	Large Black Slug	mollusc	2013		
Ophrys insectifera	Fly Orchid	flowering plant	2011	7 Count of Adult	2 fl open
Ophrys insectifera	Fly Orchid	flowering plant	2011	8 Count of Adult	9th plant