The Charterhouse area

Limited parking is available at Charterhouse and Black Rock Gate. No shops or refreshments are available.

Located on the contact between the sandstone uplands and the surrounding limestone plateau, the Charterhouse area has a wealth of interesting geology and evidence of a formerly extensive lead mining industry. This varied geology gives rise to a variety of special habitats, and much of the area has been designated as a Site of Special Scientific Interest because of the intricate juxtaposition of acidic, lime-loving and lead-tolerant vegetation, and for the cave systems beneath.

The name Charterhouse is a corruption of Chartreuse, the French town that was home to the Carthusian monks who set up an estate here in about 1180.

The hamlet of Charterhouse [8] [ST 49875 55759] sits on the narrow outcrop of Avon Group mudstone which separates the limestone plateau to the south from the acidic sandstone heath of Blackdown. To the south-east the remains of old lead workings can be seen. The mineral veins occur as open worked grooves or rakes cutting across the landscape. Blackmoor Valley and Ubley Warren [9] [ST 50715 55395] are covered with ‘gruffy’ ground, a local name for uneven mined ground, including worked-

out rakes, black glassy slag heaps, round stone-lined ‘buddle’ pits used for washing the ore, smelting plants, old flues and a complex network of dams and leats. The miners were seeking lead ore, mostly galena (PbS), a heavy, grey, shiny, metallic mineral. The ore was a small component of the many calcite veins running south-east from Charterhouse towards Yoxter.

The lead was probably first worked during the late Iron Age but it was in Roman times that the first serious mining took place. The Romans were mining in the Charterhouse area by AD49, within six years of arriving in Britain. Dated lead ingots and other Roman artefacts have been found in the area, some of which are now in the Wells and Mendip Museum. The heyday of mining was in the 17th and 18th centuries when local farmers, who took up mining in the winter months, dug many small shallow mines. Little surface evidence remains from this time.

In 1844 Cornish miners began work in the Charterhouse area, trying to exploit the deeper ore. However, unlike the large mineral veins of Derbyshire, most of the Mendip lead veins thin out rapidly with depth and the venture was unsuccessful. The rich residual deposits of lead ore near the surface had been largely worked out. Instead, they resmelted the lead-rich waste or slag from earlier mining operations, creating the landscape seen today.

Blackmoor’s long history of lead mining has created a rich mosaic of valuable wildlife habitats. The rakes support important communities of mosses, liverworts, lichens and ferns, some of them nationally rare. The bare and sparsely vegetated slag heaps contain very low levels of plant nutrients and high levels of toxic heavy metals, especially lead, zinc and cadmium. A specialised community of metal-tolerant plants has colonised the slag heaps, which are covered in a low- growing mat of lichens, mosses, and tolerant vascular plants. These include alpine penny-cress, a rare plant which, in Britain, is almost confined to sites rich in lead or zinc, sea campion, herb Robert and the tiny white-flowered common whitlow-grass. The slag heaps also support a diverse lichen community, which includes small lichens of the Cladonia genus and several species that are normally found on siliceous rocks in upland areas.

The car park [ST 505 556] is a good place to start exploring the area [10] [ST 50535 55672]. At the base of the rocky crag next to the car park are the remains of the Pattinson Plant. This extracted silver from lead ore by allowing molten lead to crystallise while pouring off the still molten silver-rich lead into separate containers.

A walk up the valley leads to the remains of an old smelting plant and flues which were in use until 1878 [11] [ST 50707 55994]. Here, a stream- driven fan forced hot air over the lead-rich slag and slime from earlier mining operations. The vapourised lead condensed in the flues and was removed by hand, a particularly unpleasant and dangerous job.

Nearby are several ponds that fed the leats supplying water to the buddles where the ore was washed and sorted. These ponds, and their associated wetlands are developed on the Avon Group mudstones, and support distinctive flora and fauna including a number of aquatic plants, such as mare's-tail, amphibious bistort, water-starwort and marsh marigold. The pools are also important for dragonflies and damselflies and a wide range of other invertebrate fauna.

The water from the ponds sinks underground at the contact with the Black Rock Limestone near the car park. This cannot be followed, but two gated caves occur nearby. Upper Flood Swallet [12] [ST 50572 55775] is a major cave system with a stream. Waterwheel Swallet [13] [ST 50468 55670], on the west side of the valley was used to dispose of lead tailings. The remains of a water wheel, fed by a leat from the pools upstream, were discovered during excavation of the cave entrance. The water from both of these caves emerges at Cheddar Risings.

On the hillside above [14] [ST 50238 55587] good exposures of gently dipping Black Rock Limestone can be seen where it has been quarried for lime. Remains of small Spirifer brachiopods, crinoids and corals can be found.

Farther down valley, the Cheddar to Charterhouse road crosses the valley. Beneath the embankment is a rather large, incongruous pipe [15] [ST 50374 55475]. This was installed after severe floods in 1968 washed the road away. Good buddles can be seen just up valley from the road. The manhole cover in one of the depressions nearby is the entrance to an 18th century lead mine. To the south-east are the spectacular worked out rakes of Ubley Warren [9] [ST 50715 55395]. Take care here as there are old mineshafts! The area is of special interest as acid-loving plants growing on loessic soils lie adjacent to lime-loving plants growing on the limestone rich spoil heaps and crags. A rich, varied, flora has developed, including the common spotted orchid, bee orchid, Hutchinsia and brittle bladder- fern. There are also many rare plants here, including the nationally scarce soft-leaved sedge which often grows in association with early purple orchid. Where lead-rich soil is present, the nationally scarce spring sandwort can be found. Ubley Warren is also an important site for reptiles, with slow worms, adders and common lizards all present.

Continuing down towards Cheddar via Velvet Bottom, the remains of a smelting plant can be seen [ST 496 553] [16] [ST 49566 55186]. Water was fed here along a leat from Long Wood. Good exposures of the black glassy slag occur in many places. Examination of the spoil tips reveals abundant calcite as well as crinoid fragments and other fossils from the Black Rock Limestone. Many of the tips are now covered in short, rabbit-cropped limestone turf and a wide diversity of typical herbs, grasses and wildflowers are present including carline thistle, common spotted orchid and devil's-bit scabious.

These attract many insects especially butterflies and grasshoppers. In addition, the dry grassland supports large populations of adders and common lizard which may often be seen basking early or late in the day.

The curious steps farther down this valley are the former tailing dams and settlement ponds [17] [ST 49008 54878]. Much of the valley has been backfilled with spoil from the mining operations. During the heyday of mining, this valley must have looked very different from today.

At the junction with the Long Wood Valley, outcrops of the red Triassic Dolomitic Conglomerate can be seen [18] [ST 48751 54894]. This rock infills an ancient Triassic valley which can be traced from here to

Harptree. The contact between this Triassic rock and the underlying Carboniferous Limestone is clearly seen in a small roadside quarry on the Yoxter–Cheddar road [19] [ST 502 535].

Towards Cheddar, an old quarry [20] [ST 48633 54710] on the north side of the valley is cut into the Burrington Oolite, here dipping to the south. If you look carefully you can see that the rock is made up of lots of small rounded grains of calcium carbonate known as ooliths. These formed in a shallow tropical sea about 340 million years ago. This particular rock is chemically very pure and was often quarried for lime. A superb restored lime kiln, which was operational in the 1930s, can be seen here. Black Rock Gate and the upper part of Cheddar Gorge is a short walk down the valley.

The steep, south-facing slopes here have very thin soils which support a diminutive herb-rich limestone grassland that includes sheep's-fescue, wild thyme and quaking-grass. Spring cinquefoil can be seen flowering in the spring. Typical semi-natural ash–hazel woodland clothes the steep and rocky valley slopes close to the top of Cheddar Gorge. Many

ferns, mosses and liverworts thrive in the shady and humid conditions.

Heading back northwards up the tributary valley, Long Wood [21] [ST 48598 55474] has been woodland since possibly as early as the 13th century. It now supports many plants and animals that are usually restricted to ancient woodland sites, including toothwort and the common dormouse. Much of the wood was traditionally managed as coppice. Ramsons form dense white garlic-scented carpets near the stream, while higher ground favours bluebells, wood anemone and less commonly, herb Paris. Water occasionally flows down the dry valley during severe floods.

Up a small side valley is the gated entrance to Rhino Rift [22] [ST 48389 55629] a predominantly vertical cave system. Beyond the gate, five deep shafts descend to a depth of 145 m. The name derives from rhino and hyena teeth found near the entrance.

At the top end of the wood is Long Wood Swallet [23] [ST 48588 55695]. The stream here disappears underground at the contact between the Avon Group and the Black Rock Limestone. The cave, accessible only to experienced cavers, follows the typical Mendip swallet cave pattern with a series of small inlet passages descending steeply down dip to unite in a streamway ending in a sump. Cavers have explored more than 1600 m of passage extending to a depth of 175 m. The water has been dye traced to Cheddar.

Figures

(Figure 25) Aerial view of The Charterhouse.

(Figure 26) Worked-out lead rakes, Ubley Warren.

(Figure 27) Charterhouse mine workings (after University of Bristol Spelaeological Society Proceedings, 1986).

(Figure 28) Gruffy ground, Velvet Bottom.

(Figure 29) Upper Flood Swallet © Peter Glanvill.

(Figure 30) Alpine penny-cress. © Sharon Pilkington.

(Figure 31) Slag left from the 19th century resmelting operations, Blackmoor.

(Figure 32) Examples of complete crinoids, Black Rock Limestone.

(Figure 33) Black Rock Quarry. Close up of ooliths in the Burrington Oolite.

(Figure 34) Long Wood Swallet.

(Figure 35) Grimmia donniana growing on glassy lead-rich slag. © Sharon Pilkington.

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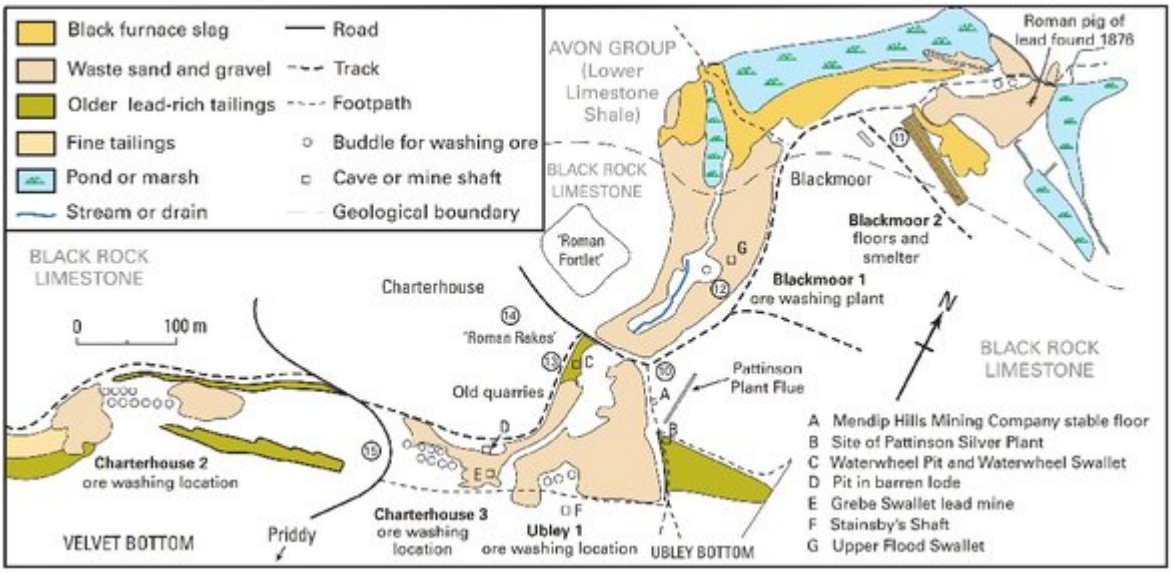

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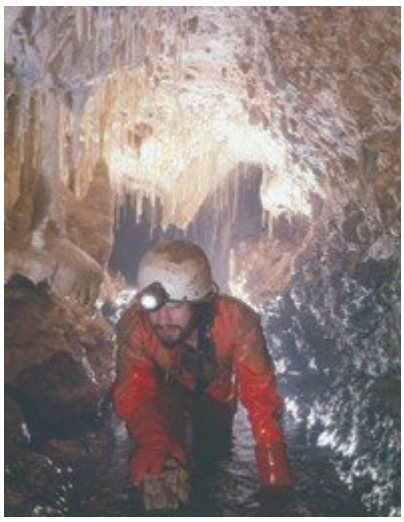

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