

CAVE CONSERVATION PLAN FOR THE CAVES UNDERLYING "GRUFFY FIELD", CHARTERHOUSE-ON-MENDIP, SOMERSET

INTRODUCTION

This plan relates principally to the caves known as G.B. Cave, and Charterhouse Cave and also to other cave and karst features to be found in their immediate vicinity. G.B. Cave is noted for the extreme beauty of its calcite formations, and is also one of the most intensively studied caves in the U.K. (Halliwell, 1980). It has been designated as a type site Drawdown Vadose Cave by Ford (1964, 1968). Following the discovery of the equally well decorated Charterhouse Cave, Smart *et al* (1984) carried out a study of the new site to comment on and to challenge Ford's earlier work. The caves of this area thus have both outstanding natural beauty and a unique place in the development and understanding of theories of cave formation. Work on the clastic and stalagmite deposits in G.B. Cave has also been of great importance in developing an absolute chronology for the Pleistocene. The full extent of the scientific work carried out at this site is not reiterated here, readers should refer to the select bibliography given at the end of this plan. The area has been designated as a Site of Special Scientific Interest (SSSI) by the Nature Conservancy Council (now Natural England), see Appendix B.

OBJECTIVES

The particular features of this site, outlined above, are of continuing interest for both scientific and aesthetic reasons. It is important therefore for future enjoyment and study that this site and these features are protected. The objective of this plan is to provide the maximum degree of conservation for the site, whilst still allowing reasonable access for interested and responsible parties under the terms of the lease entered into between Somerset Wildlife Trust and the Charterhouse Caving Company Ltd.

SITE DETAILS

The entrances to the caves are all to be found in an area known as The "Gruffy Field" which is situated to the south of the Shipham – Charterhouse road and entered through a field gate at NGR ST 47655640.

The NGR of the entrances are as follows :

ST 47595623	G.B. Cave
ST 47755620	Charterhouse Cave

Other sites include:

ST 47755621	Read's Grotto
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ST 47635622	Tyning's Farm Swallet
ST 47655610	Tyning's Great Swallet
ST 47665620	Doline III Collapse
ST 47675619	Rabbit Mine

A survey which includes both underground and surface details of these sites was published in Smart *et al*, 1984. The underground surveys are to B.C.R.A. Grade 5C (Ellis, 1988). Copies are available from the University of Bristol Speleological Society (UBSS). A copy is appended to this plan (Appendix A).

The land on which these entrances are situated belongs to The Somerset Wildlife Trust (SWT). The underground has been leased to a company formed by local caving clubs, The Charterhouse Caving Company Ltd. (CCC Ltd.). The underground management, including the control of access, is administered by CCC Ltd.

FEATURES REQUIRING CONSERVATION

The particular features requiring conservation in these caves can be divided into three categories: Calcite Formations, Clastic Sediments and Passage Morphology.

CALCITE FORMATIONS:

Both G.B. and Charterhouse Caves are particularly noted for their profuse calcite decoration. Especially fine examples are to be found in Bat Passage and in the Great Chamber, in G.B. and in Midsummer Chamber and the Grotto of the Singing Stal in Charterhouse. Other smaller displays of equal quality are to be found at numerous locations throughout both caves. Of less aesthetic but equal scientific value are the calcite flows that overlay or are interbedded with clastic sediments at points throughout the caves.

CLASTIC SEDIMENTS:

Sediments of mud, sand and gravel are to be found throughout the caves. These have scientific value for correlating the various phases of erosion and deposition in the history of the formation of the caves. Being less aesthetically pleasing than calcite deposits, they are in danger of random damage through ignorance of their potential importance.

PASSAGE MORPHOLOGY

Most of the elements of cave passage morphology, passage shapes, dimensions and altitudes, are not generally thought to be at risk, except in the circumstances of digging operations. Some more delicate features do exist, however, such as fossils exposed in the cave walls by differential erosion, and equal care must be shown to these. Included within this category are the surface features of geomorphological interest, especially the dolines, and also the remains of mining activity.

The areas in the caves of particular fragility, and therefore vulnerability, are highlighted on the attached plan of the caves (Appendix A)

THE PRESENT STATE OF THE CAVES

G.B Cave was discovered in 1939, and has been used by cavers continuously since that time. As a consequence, some of the features, notably in the more accessible passages, have suffered damage, mainly from wear and tear. This is particularly apparent in the First Grotto, where early photographs are witness to a profuse display of helictites, now sadly destroyed. A collection of early photographs is available for study in the library of the UBSS.

Charterhouse Cave was discovered in 1982. By this time more people were aware of the problems of conservation, and so it was feasible to establish a much greater degree of access control. The cave is also a more difficult one to traverse. For these reasons it has suffered much less wear and tear than G.B. though some signs of it are apparent to those who know the cave well.

Read's Grotto was the first cave to be discovered in this area, in 1922. Its main chamber, Baker's Temple was then very well decorated, as can be seen in contemporary photographs (Perry, 1923, plate IV opp. p58). No control over access has ever been implemented here and very little calcite is now left.

CURRENT CONSERVATION PRACTICES

ACCESS CONTROL

Access is controlled by the Charterhouse Caving Company Ltd. Both of the major caves are gated. The use of the caves for the purpose of any trade or business or for commercial purposes is prohibited.

G.B. Cave: Keys are held by the member clubs of CCC Ltd. Parties are limited to six persons. No novices are allowed in the cave. Members of non-member clubs are able to gain access by application to a member club or to the Hon. Secretary of CCC Ltd. and are required to sign an indemnity form which also provides details of the regulations governing the use of the cave.

Charterhouse Cave: One key is held by each member club that has been given by CCC Ltd. the power to appoint leaders for this cave. Each of these clubs may appoint two leaders. All parties must be led by one of these leaders and are limited in size to four persons, including leader. No novices are allowed in the cave.

PREFERRED ROUTES AND TAPING

In both caves, routes are marked through some of the more sensitive areas, using tapes. The most fragile areas are highlighted on the survey in Appendix A.

USE OF CARBIDE

The use of carbide lamps is forbidden.

DIGGING GUIDELINES

All digs in the area are subject to the approval of CCC Ltd. and also of SWT in the case of surface digs. All digging teams must give an annual report to CCC Ltd. No digs are approved unless, i) likely to lead to significant discoveries, ii) their working will not significantly damage known cave features and iii) they will not connect G.B. and Charterhouse Caves.

The use of explosives may be approved by CCC Ltd. subject to the damage guideline above.

FIXED AIDS

In general, it is not policy to install or maintain fixed aids. At present, the fixed ladder to the Upper Grotto in the entrance series and the series of bolts required to reach the Ladder Dig extension, both in G.B. Cave are maintained.

ACCESS CONTROL – MINOR SITES

Read's Grotto: This cave has little left in it to conserve. Gating or grilling its entrance, an active stream sink, would create water flow problems and it is therefore kept open.

Tynning's Great Swallet: Two cave passages open from the bottom of this depression. The easterly is kept open. The west passage is currently being dug by UBSS, and its security against unauthorised access is their responsibility.

Tynning's Farm Swallet: This stream sink has no cave access.

Doline III Collapse: No access to the caves is currently possible from this collapse depression and there is no intention of allowing access in the future. The fencing around it is the responsibility of SWT.

Rabbit Mine: Whilst there is little of conservation interest in this site, its vertical entrance may be a hazard to the unwary. It has therefore been fitted with a grill of a design that will maintain access for both cavers and bats.

EXTERNAL FEATURES

At present the land above the entrances to the caves, and immediately upstream of the stream sinks is utilised as rough grazing for horses and sheep. It is not believed that these practices have any deleterious effects on the caves or the cave environment.

BATS

Thanks to the activities of cavers in opening up the caves, opportunities for bats to roost in this area now exist. None of the caves are particularly popular with bats, but some lesser horseshoes have been noted in G.B. Cave. They have been seen in the entrance passages in summer, and are known to use the roof of the Gorge and the high level passages off it, the Art Gallery and East Passage, and presumably Whitsun Folly, in winter

Studies by Heaver (see Heaver 1990 for full bibliography) in South Wales cave sites indicate that bat population sizes appear to be independent of human traffic in caves of this type or larger. It would appear, therefore that no specific measures to conserve the bat populations are necessary. However, in order to ensure that no future problems are caused to this population, access to these high level passage can be restricted during the winter if deemed necessary.

MONITORING

The caves are monitored by periodic visual inspections, undertaken by persons familiar with both features of scientific interest and formations of ascetic value. Any changes are noted and recorded. Formal monitoring is undertaken every ten years in a format agreed with Natural England.

FUTURE CONSERVATION MEASURES

Subject to the results of the periodic monitoring and assessments, it may be that certain aspects of current practice need to be altered, specifically:

Access Control: If damage levels are found to be higher than currently believed, then further restrictions on the availability of keys and the size of parties will be required. It is certainly the case that these caves are not a suitable site for commercially run caving trips, of any type. Neither the increase in traffic nor the decrease in understanding that would result from parties of this type could in any way contribute to the conservation of the site. Access to such delicate sites should be for recreational cavers only. This principle may be applied by limiting access only to members of properly established caving clubs or direct members of the national body for caving.

Preferred Routes: Additional taping may be required. In addition it may be appropriate to further restrict access to certain areas of the caves. The inlets to Chiaroscuro Passage in Charterhouse Cave are already taped off. Similar measures may be applied for example to Midsummer Passage, and to the high level oxbow at the end of Bat Passage in G.B.

Scientific Work: As has already been stated, G.B. is probably the most intensively studied cave in the country. This large base of material makes it valuable as a subject for further research. Whilst this is to be encouraged, it is proposed that the sampling of sediments should be restricted to those projects likely to produce new information, and that sampling simply to confirm current knowledge or for training purposes should be prohibited.

External Features: Any proposed changes in the use of the overlying land should be carefully reviewed, and the list of Potentially Damaging Operations (PDO's) applied by the SSSI schedule should be adhered to. (See Appendix B)

Site Clean-Ups: These have been held sporadically in the past and will be conducted whenever needed.

Education: No policy of this nature can succeed unless it is known of and understood by those people who use the site. This policy and the circumstances surrounding its formation will be published in such manner as will reach the greatest number of these people.

REVIEW

This plan will remain in force for a period of ten years from the date hereof and this period may be extended for further periods of ten years or as otherwise agreed by the signatories.

APPENDICES

A) (i) Annotated copy of the published survey of G.B. and the Upper Series of Charterhouse Cave together with (ii) a copy of the full plan survey of the caves, following significant extensions to Charterhouse Cave, 2008-11.

B) Copy of the SSSI notification Citation Sheet, Map and PDO list.

REFERENCES CITED AND SELECT BIBLIOGRAPHY

ATKINSON, T.C., HARMON, R.S. and SMART, P.L. 1977. Radiometric dating of Speleothems and Cavern Development in the Mendip Hills, England. *Proceedings of the 7th International Congress of Speleology, Sheffield*. pp5-10

ATKINSON, T.C., HARMON, R.S., SMART, P.L. and WALTHAM, A.C. 1977. Paleoclimatic and Geomorphic implications of $^{230}\text{Th}/^{234}\text{U}$ dates on Speleothems from Britain. *Nature*, **272**. pp24-28

ATKINSON, T.C. and SMART, P.L. 1986. Speleothem Dating and the Geomorphic History of G.B. Cave, Mendip Hills. *Transactions of the British Cave Research Association*. **13**. p66

CRICKMAY, J.H. and BENDALL, R.A.. 1951. A Survey of G.B. Cave, Charterhouse-upon-Mendip. *Proceedings of the University of Bristol Speleological Society*. **6**. pp174-85

- DONOVAN, D.T. 1944. The stalactites of G.B. Cave. *Proceedings of the University of Bristol Speleological Society*. **5**. pp119-23.
- DONOVAN, D.T. and WALLIS, F.S. 1944. G.B. Cave, Blackdown, Mendip Hills. Geological Report. *Proceedings of the University of Bristol Speleological Society*. **5**. pp114-8.
- ELLIS, B. 1988. *An Introduction to Cave Surveying*, British Cave Research Association Cave Studies Series **2**.
- FORD, D.C. 1964. On the Geomorphic History of G.B. Cave, Charterhouse-on-Mendip, Somerset. *Proceedings of the University of Bristol Speleological Society*. **10**. pp149-188.
- FORD, D.C. 1965. The Origin of Limestone Caverns: A Model from the Central Mendip Hills, England. *Bulletin of the National Speleological Society*. **27**. pp109-32.
- FORD, D.C. 1966. Calcium Carbonate Solution in some Central Mendip Caves. *Proceedings of the University of Bristol Speleological Society*. **11**. pp46-53.
- FORD, D.C. 1968. Features of Cavern Development in Central Mendip. *Transactions of the Cave Research Group of Great Britain*. **10**. pp11-25.
- FRIEDERICH, H. and SMART, P.L., 1982. The Classification of Autogenic Percolation Waters in Karst Aquifers: A Study in G.B. Cave, Mendip Hills, England. *Proceedings of the University of Bristol Speleological Society*. **16**. pp143-59
- FRIEDERICH, H., SMART, P.L. and HOBBS, R.P. 1982. The Microflora of Limestone Percolation Water and the Implications for Limestone Springs. *Transactions of the British Cave Research Association*. **9**. pp15-26.
- GILBERT, E.V. 1963. Recent Developments in G.B. Cave, Charterhouse-on-Mendip. *Proceedings of the University of Bristol Speleological Society*. **10**. pp58-64
- GODDARD, F.J. 1944. G.B. Cave, Charterhouse on Mendip. *Proceedings of the University of Bristol Speleological Society*. **5**. pp105-13
- HALLIWELL, R.A. 1980. Karst Waters of the Ingleborough Area, North Yorkshire. *Proceedings of the University of Bristol Speleological Society*. **15**. p202.
- HEAVER, S. 1990. Bat Investigations of Mynydd Llangattwg 1988-1989. *The Red Dragon, Annual Journal of the Cambrian Caving Council*. **17**. pp8-19.
- NORTON, M.G. 1966. Interim Report on the Ladder Dig Series, G.B. Cave Charterhouse-on-Mendip, Somerset. *Proceedings of the University of Bristol Speleological Society*. **11**. pp63-70
- PERRY, C.B. 1923. Read's Grotto and Tynings Farm Swallet. *Proceedings of the University of Bristol Speleological Society*. **2**. p75.

RAWDING, G. 1977. Lithology, shape and particle size analyses of sediments in G. B. Cave, Charterhouse-on-Mendip, Somerset. *Stage II Project Report, University of Bristol*.

SAVAGE, D. 1969. The Visible Effects of the Flood of July 10th 1986 in and around G.B. Cave, Charterhouse-on-Mendip, Somerset. and A Revised Survey of G.B. Cave, Charterhouse-on-Mendip, Somerset. *Proceedings of the University of Bristol Speleological Society*. **12**. pp123-7.

SMART, P.L., MOODY, P., MOODY, A.A.D., and CHAPMAN, P.R.J. 1984 Charterhouse Cave. Exploration, Geomorphology and Fauna. *Proceedings of the University of Bristol Speleological Society*. **17**. pp5-28.

SMITH, D.I. and MEAD, D.G. 1962, The Solution of Limestone. *Proceedings of the University of Bristol Speleological Society*. **9**. pp188-211

STENNER, R.D. 1973, A Study of the Hydrology of G.B. Cave, Charterhouse-on-Mendip, Somerset. *Proceedings of the University of Bristol Speleological Society*. **13**. pp171-226.

Originally prepared by G. J. Mullan

Dated ^{1st} day of June 2015

Signed



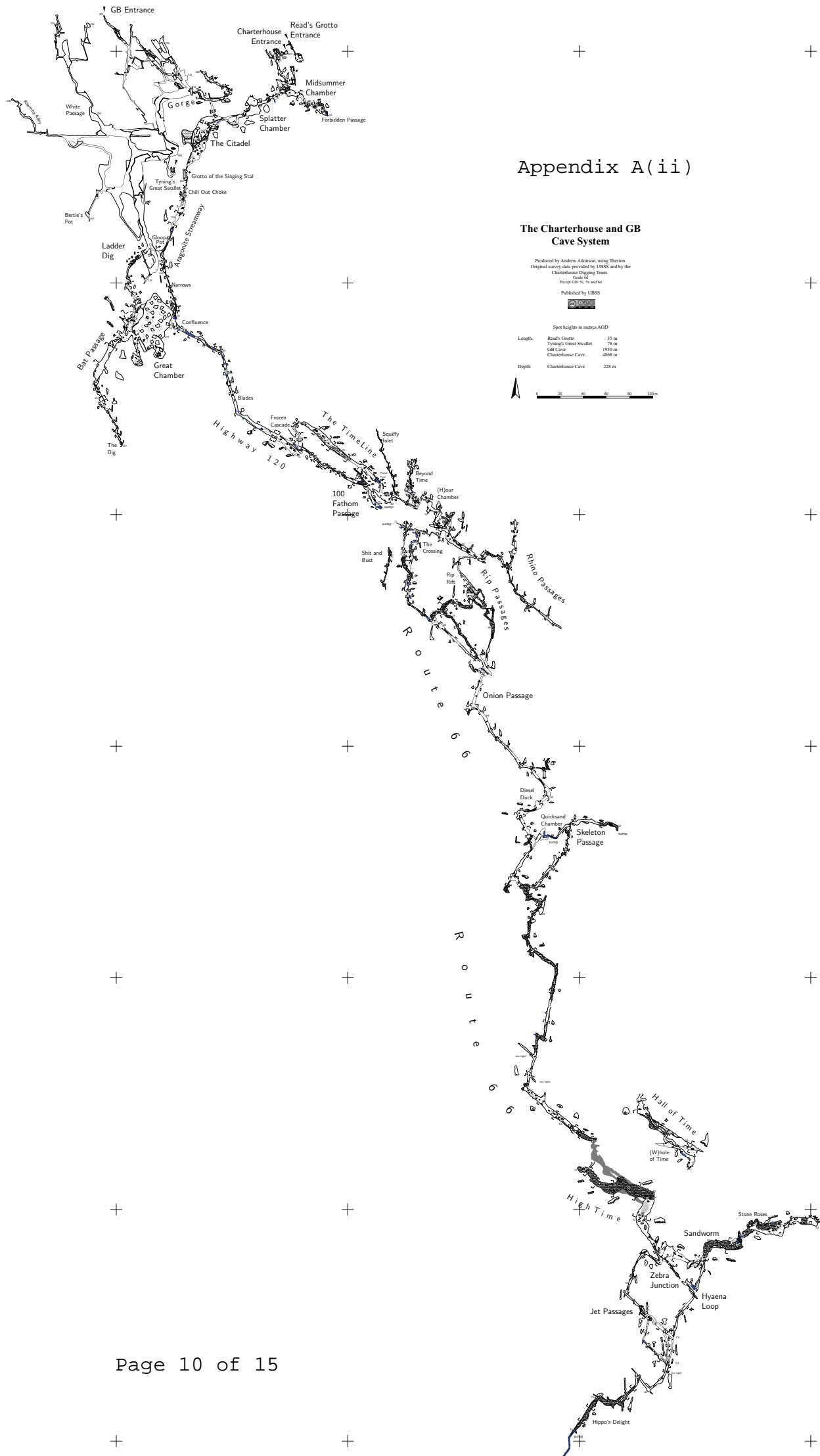
On behalf of Natural England



On behalf of Charterhouse Caving Company Ltd.



On behalf of Somerset Wildlife Trust



Appendix A(ii)

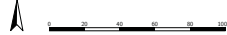
The Charterhouse and GB Cave System

Produced by Andrew Atkinson, using Theron.
 Original survey data provided by LBSS and by the
 Charterhouse Diving Team.
 Great GB
 Except GB: 3c, 5c and 6d

Published by LBSS

Spot heights in metres AOD

Length:	Read's Grotto	35 m
	Tying's Great Swallet	78 m
	GB Cave	1950 m
	Charterhouse Cave	4868 m
Depth:	Charterhouse Cave	228 m



COUNTY: SOMERSET

SITE NAME: THE CHEDDAR COMPLEX

DISTRICT: MENDIP, SEDGEMOOR

Status: Site of Special Scientific Interest (SSSI) notified under Section 28 of the Wildlife and Countryside Act, 1981, (as amended).

Local Planning Authority: MENDIP DISTRICT COUNCIL, Sedgemoor District Council, Somerset County Council

National Grid Reference: ST 465538–505560,
470563, 477563

Area: 441.3 (ha.) 1090.5 (ac.)

Ordnance Survey Sheet 1:50,000: 182

1:10,000: ST 45 NE, SE,
ST 55 SW, NW

Date Notified (Under 1949 Act): 1952

Date of Last Revision: 1972

Date Notified (Under 1981 Act): 1989

Date of Last Revision: –

Other Information:

Site renamed and boundary amended by extension and deletion.

Site now includes 4 SSSIs formerly known as Cheddar Gorge SSSI, August Hole/Longwood Swallet SSSI, GB Cavern Charterhouse SSSI and Charterhouse-on-Mendip SSSI. Part of site listed in 'A Nature Conservation Review', Ed D A Ratcliffe (Cambridge University Press 1977). Part owned by the National Trust. Part managed by the Somerset Trust for Nature Conservation. Site lies within the Mendip Hills Area of Outstanding Natural Beauty. Site listed in the Geological Conservation Review.

Description and Reasons for Notification:

Biological

The Cheddar Complex supports a wide range of semi-natural habitats which includes unimproved grassland, calcareous dry dwarf-shrub heath, semi-natural broadleaved woodland and dense and scattered scrub. The unimproved acidic and calcareous grassland communities and the complex mosaic of calcareous grassland and acidic dry dwarf-shrub heath have a restricted distribution in Britain. The floristic interest of the site is high. Four nationally rare plants are present -- two of which are endemic to the Cheddar area -- as well as fifteen nationally scarce species. The lower plants and the fauna are also of interest.

The Cheddar Complex occupies one of the many dry valleys which dissect the plateau of the Mendip Hills. The steep cliffs and scree slopes of Cheddar Gorge are the dominant physical feature of the site. The area is underlain by Black Rock Limestone, Burrington Oolite and Clifton Down Limestone of the Carboniferous Limestone Series, and by Dolomitic Conglomerate of the Keuper. In many places weathering of these strata has resulted in the formation of immature calcareous soils. In contrast more acid soils derived in large part from windblown silt (loess) originating from outside the Mendips, are also present. Lead ore was worked at Charterhouse until the beginning of this century and soils in this area contain high levels of the metal.

Many of the unimproved calcareous grassland communities are characterised by an abundance of Meadow Oat-grass *Avenula pratensis*. Sheep's Fescue *Festuca ovina* and Crested Hair-grass *Koeleria macrantha* with Glaucous Sedge *Carex flacca* and Spring-sedge *Carex caryophyllea*. Associate species on south-facing slopes with shallow soils include Dwarf Thistle *Cirsium acaule*, Common Rock-rose *Helianthemum nummularium*, Kidney Vetch *Anthyllis vulneraria*, Wild Thyme

Thymus praecox and Hoary Plantain *Plantago media*. Soils of slopes with other aspects tend to be wetter, and here associated species include Flea Sedge *Carex pulicaris*, Betony *Stachys officinalis*, Selfheal *Prunella vulgaris* and Lady's Bedstraw *Galium verum*. Unimproved acidic grassland communities dominated by Red Fescue *Festuca rubra*, Brown Bent *Agrostis capillaris* and Sweet Vernal-grass *Anthoxanthum odoratum* are also widespread. Associated species include Spring Sedge, Yorkshire Fog *Holcus lanatus*, Pignut *Conopodium majus*, Heath Bedstraw *Galium saxatile* and Tormentil *Potentilla erecta*. This community grades into calcareous dry dwarf-shrub heath on heavily leached soils.

A complex mosaic of unimproved calcareous grassland and calcareous dry dwarf-shrub heath also occurs. Species typical of calcareous grassland include Meadow Oat-grass, Sheep's Fescue, Fairy Flax *Linum catharticum* and Dwarf Thistle. Heath species such as Heather *Calluna vulgaris* and Gorse *Ulex europaeus* are well represented and Bracken *Pteridium aquilinum* is often locally dominant.

An unusually large number of rare plant species occur. Many grow on the rocky outcrops and steep scree slopes of Cheddar Gorge. The nationally rare Little Robin *Geranium purpureum*, Cheddar Pink *Dianthus gratianopolitanus* and Cheddar Bedstraw *Galium fleurotii* occur here, the latter two species being endemic to the area. Nationally scarce species include Slender Tare *Vicia tenuissima*, Dwarf Mouse-ear *Cerastium pumilum* and Rock Stonecrop *Sedum forsterianum*. Mossy Saxifrage *Saxifraga hypnoides* and Lesser Meadow-rue *Thalictrum minus* do not occur elsewhere in Somerset.

Two nationally scarce species are present in the Charterhouse area. Spring Sandwort *Minuartia verna* is found on the old lead works, and Soft-leaved Sedge *Carex montana* is common on Ubley Warren.

Broadleaved semi-natural woodland characterised by Ash *Fraxinus excelsior* is widespread in many places along the lower slopes. Other species include Wych Elm *Ulmus glabra* and Pedunculate Oak *Quercus robur*. The understorey is usually dominated by Hazel *Corylus avellana* with Field Maple *Acer campestre* and Spindle *Euonymus europaeus*. Dog's Mercury *Mercurialis perennis* and Ivy *Hedera helix* are the most frequent ground flora species. Sanicle *Sanicula europaea*, Nettle-leaved Bellflower *Campanula trachelium*, Early-purple Orchid *Orchis mascula*, Broad-leaved Helleborine *Epipactis helleborine* and the nationally scarce Narrow-lipped Helleborine *Epipactis leptochila* also occur.

A wide range of scrub communities are present. Typical species include Hawthorn *Crataegus monogyna* Yew *Taxus baccata*, Buckthorn *Rhamnus catharticus*, Common Whitebeam *Sorbus aria*, Dogwood *Cornus sanguinea* and Wayfaring Tree *Viburnum lantana*. The nationally scarce *Sorbus porrigentiformis* and the nationally rare *Sorbus anglica* also occur.

The lower plant interest of the site is considerable. Cheddar Gorge is one of the very few areas in southern Britain for the lichens *Solorina saccata*, *Squamaria cartilaginea* and *Caloplaca cirrochroa*. Bryophytes at Charterhouse with a restricted distribution in Somerset include *Grimmia doniana* and *Gymnostonium aeruginosum*.

The site supports a rich fauna. Twenty-nine resident breeding species of butterfly have been recorded. The local Small Pearl-bordered Fritillary *Boloria selene* and Chalkhill Blue *Lysandra coridon* are of particular interest. Ash-black Slug *Limax cinereoniger*, a Harvestman *Homalenotus quadridentatus* and the notable Large Chrysalis Snail *Abida secale* also have a local distribution in Somerset. Bats are well represented with Greater Horseshoe Bat *Rhinolophus ferrumequinum*, Natterer's Bat *Myotis nattereri*, Whiskered Bat *M. mystacinus*, Daubenton's Bat *M. daubentoni* and Brown Long-eared Bat *Plecotus auritus*. A strong population of

Dormouse *Muscardinus avelanarius* is also present. Breeding birds include Grasshopper Warbler *Locustella naevia*.

Geological

This site is important for karst, caves and vertebrate palaeontology and comprises four single interest localities. Cheddar Gorge is Britain's largest gorge and probably the country's best known limestone feature. It is a spectacular fluvial feature with a geomorphic history extending back 2 million years and encompassing the major environmental changes of the Pleistocene period. This history can be traced in the morphology of both the Gorge and associated caves.

Cheddar Caves contain both active and fossil systems. The active cave system is one of the most heavily studied karst systems in Britain with reference to the conduit and diffuse flow characteristics of its hydrology. The fossil cave passages provide important evidence for Pleistocene landscape evolution both within Cheddar Gorge and over the adjacent lowlands.

Charterhouse Caves include four major swallet caves that provide an indisputable record of Pleistocene landform development in the Mendips and surrounding area. In G.B. Cave, in particular, the sequence of clastic and stalagmite deposits contains an unequalled record of alternating warm and cold surface environments during the last 350,000 years. As such it is one of the most important sites in Britain for developing an absolute chronology for the Pleistocene.

Sun Hole Cave provides a varied fauna radiocarbon-dated to the end of the Late Devensian Cold Stage. The fauna includes both arctic and Norway lemming, several voles, steppe pika *Ochotona pusilla*, brown bear, wolf, horse, reindeer, and of particular interest saiga antelope -- the only well-dated record of this species in Britain.

The Charterhouse area is of great importance as the finest remaining example of the unique Lead orefields of the Mendips. The surface features derived from lead working from pre-Roman times up to the nineteenth century are extremely well preserved. Study of these surface features has enabled geologists to determine the form of the mineral veins and the large size of the ore-bodies. The orefield can be examined underground in a number of caves and old mines. Mineralization is seen to occur in sedimentary features known as neptunian dykes. Most of the ore-bodies are dominated by the mineral Galena (lead sulphide), but Cerussite (lead carbonate), Pyrite (iron sulphide), Limonite (iron oxide) and Calcite (calcium carbonate) occur; Smithsonite (zinc carbonate) occurs locally. This type of residual mineralization is restricted to the Mendip area in Britain and this site is the best locality at which to study it.

SITE NAME: THE CHEDDAR COMPLEX, SSSI, SOMERSET

OPERATIONS LIKELY TO DAMAGE THE FEATURES OF SPECIAL INTEREST

<u>Standard Ref. No.</u>	<u>Type of Operation</u>
1	Cultivation, including ploughing, rotovating, harrowing and reseeded.
2	Grazing and changes in the grazing regime (including type of stock or intensity or seasonal pattern of grazing and cessation of grazing).
3	Stock feeding.
4	Mowing or other methods of cutting vegetation.
5	Application of manure, fertilisers and lime.
6	Application of pesticides, including herbicides (weedkillers).
7	Dumping, spreading or discharge of any materials.
8	Burning.
9	The release into the site of any wild, feral or domestic animal*, plant or seed.
10	The killing or removal of any wild animal*, including pest control.
11	The destruction, displacement, removal or cutting of any plant or plant remains, including tree, shrub, herb, hedge, dead or decaying wood, moss, lichen, fungus, leaf-mould and turf.
12	Tree and/or woodland management (including afforestation, planting, clear and selective felling, thinning, coppicing, modification of the stand or underwood, changes in species composition, cessation of management).
13a	Drainage (including moor-gripping and the use of mole, tile, tunnel or artificial drains).
13b	Modification of the structure of water courses (e.g., rivers, streams, springs, ditches and drains), including their banks and beds, as by re-alignment, regrading and dredging.
13c	Management of aquatic and bank vegetation for drainage purposes.
14	The changing of water levels and tables and water utilisation (including irrigation, storage and abstraction from existing water bodies and through boreholes).
15	Infilling of ditches, drains, ponds, pools, marshes or pits.
16a	Freshwater fishery production and management including sporting fishing and angling.
20	Extraction of minerals, including topsoil, sub-soil, lime, limestone pavement and spoil.
21	Construction, removal or destruction of roads, tracks, walls, fences, hardstands, banks, ditches or other earthworks, or the laying, maintenance or removal of pipelines and cables, above or below ground.
22	Storage of materials on or against features of interest.
23	Erection of permanent or temporary structures, or the undertaking of engineering works, including drilling.
24	Modification of natural or man-made features (including cave entrances), clearance of boulders, large stones, loose rock or scree and battering, buttressing or grading rock-faces and cuttings, infilling of pits and quarries.
26	Use of vehicles likely to damage or disturb features of interest.
27	Recreational or other activities (excluding caving) likely to damage features of interest.
28	Game and waterfowl management and hunting practices.

*"animal" includes any mammal, reptile, amphibian, bird, fish or invertebrate.

Site Notified to the Secretary of State on 23 March 1989



NOTE: A larger scale map, showing the definitive boundary, is available on request

Nature Conservancy Council
 Site boundary notified to the
 Secretary of State
 on 23 March 1989

NATURE CONSERVANCY COUNCIL
 Site boundary thus
 Scale 1:25 000



0 Metres 500 1000
 0 Yards 500 1000

Based on the Ordnance Survey 1:25 000 map with the permission of the Controller of Her Majesty's Stationery Office. Crown Copyright reserved 1988/3