



REVISED PLAN NOVEMBER 2021

LOWLAND CALCAREOUS GRASSLAND

1. INTRODUCTION

Lowland calcareous grasslands are developed on shallow lime-rich soils generally overlying limestone rocks, including chalk. These grasslands are now largely found on distinct topographic features such as escarpments or dry valley slopes and sometimes on ancient earthworks in landscapes strongly influenced by the underlying limestone geology. More rarely, large remnant examples occur on flatter topography such as in Breckland and on Salisbury Plain. They are typically managed as components of pastoral or mixed farming systems, supporting sheep, cattle or sometimes horses; a few examples are cut for hay. Calcareous grassland in Warwickshire is mainly found in the south and east of the county in association with disused and active quarries or cuttings associated with disused and active railway lines and canals.



Kidney vetch © Mike Slater

Unimproved and semi-improved limestone grasslands include a range of plant communities in which lime-tolerant (calcicolous) plants are characteristic. Typical species include common centuary (*Centaureum erythraea*), yellow-wort (*Blackstonia perfoliata*), kidney vetch (*Anthyllis vulnerari*) and dwarf thistle (*Cirsium acaule*). The particular community which is characteristic of the Cotswolds is the *Upright Brome - Tor Grass community* (CG5). There are also small pockets of CG5 and *Sheep's-Fescue - Meadow Oat Grass community* (CG2) grassland on the older Triassic-Jurassic limestones which occur on the lower land immediately north of the Cotswolds. These community types, and establishing calcareous grasslands, are found in many of the quarries and cuttings associated with these areas. More ancient examples are now very rare but include Oxhouse Farm, Lighthorne Heath, Grove Hill, Frankton fields and Wilmcote Rough.

Nationally, unimproved and semi-improved limestone grasslands support a very rich flora and many nationally rare and scarce species such as early gentian (*Gentianella anglica*) and pasque flower (*Pulsatilla vulgaris*) although no such nationally scarce species occur in Warwickshire's calcareous grassland.

Calcareous grassland is also extremely important for invertebrates, with perhaps in excess of 500 hundred strongly calcicolous Warwickshire species, including many Nationally Threatened, Nationally Scarce or Regionally Scarce flies, bees, wasps, moths, beetles and bugs. The Cotswolds hold nationally important populations of species such as heath snail, which occurs on a number of sites in the south of the county. The marbled white butterfly (*Melanargia galathea*) is a useful indicator species for assessing the quality of grassland, also small heath (*Coenonympha pamphilus*), small copper (*Lycaena phlaeas*), common blue (*Polyommatus icarus*) and brown argus (*Aricia agestis*); the presence of all 5 species breeding on a site puts it in the top 5% of grasslands in Warwickshire (Mike Slater, pers.comm.2021). Several declining butterflies are dependent on calcareous grasslands, e.g. small blue (*Cupido minimus*) and grizzled skipper (*Pyrgus malvae*). Entomological surveys have shown that the two most important sites for calcicolous insects are the

Warwickshire, Coventry and Solihull Local Biodiversity Action Plan

Bishops Hill – Bishops Bowl complex and Southam Quarry, not currently SSSIs but appearing to support considerable national significance (the latter is the richest bumblebee site in the Midlands today).

In calcareous grassland there are a few niche species of moth, e.g. the beautiful yellow underwing (*Anarta myrtilli*) and chalk carpet (*Scotopteryx bipunctaria*). The day-flying grassland moths such as chimney sweeper (*Odezia atrata*), narrow-bordered 5-spot burnet (*Zygaena lonicerae*), 6-spot burnet (*Zygaena filipendulae*), Mother Shipton (*Euclidia mi*), burnet companion (*Euclidia glyphica*) and latticed heath (*Chiasmia clathrata*) as indicators of all good quality unimproved grassland (Kieth Warmington, 2017).

Scrub and secondary woodland is frequently associated with unimproved limestone grassland. Although scrub encroachment can be a significant problem, where managed appropriately, scrub can provide important habitats for a variety of species – and some insect species show a strong preference for calcareous scrub as opposed to scrub in general. Scrub-edge conditions are required by species such as the lesser whitethroat (*Sylvia curruca*), fly orchid (*Ophrys apifera*) and many species of moths. Scrub also provides shelter for many warmth-loving invertebrates associated with limestone grassland. Any rough grassland associated with this habitat would be valuable for barn owls (*Tyto alba*).

Future calcareous grassland will be created through the restoration of existing landfill sites, e.g. at Ufton, and major road improvements in the south of the county.

2.	OBJECTIVES	TARGETS
	Associated Action Plans are: 'Open Mosaic Habitats on Previously Developed Land', 'Quarries & Gravel Pits', 'Traditional Orchards', 'Churchyards & Cemeteries', 'Parks & Public Open Spaces', 'Roadside Verges', 'Bats', 'Barn Owl', 'Farmland Birds', 'Lapwing', 'Great Crested Newt', 'Chalk Carpet', 'Small Blue', 'Dingy Skipper', 'Dotted Bee-fly', 'A Cuckoo Bee' and 'Rare Bumblebees'	
	PLEASE CONSULT THE '<i>GENERIC HABITATS</i>' ACTION PLAN IN CONJUNCTION WITH THIS DOCUMENT FOR OBJECTIVES COMMON TO ALL HABITAT PLANS	
A.	To restore the 59ha of existing lowland calcareous grassland above 0.25ha that are currently in unfavourable condition, to favourable or recovering, giving priority to those holding Priority Species* & Red Data Book species. <i>*The UK BAP was succeeded by the UK Post-2010 Biodiversity Framework (2012-2019) in July 2012. The UK list of priority species, however, remains an important reference source.</i> Target has been reset from 27ha in view of progress 2011-2017.	2030
B.	To expand the extent of the habitat by 16ha.	2030

3. NATIONAL BAP OBJECTIVES AND TARGETS

Lowland Calcareous Grassland is on the current UK Biodiversity Action Plan (BAP) list of Priority Habitats published in 2007([Joint Nature Conservation Committee](#)). The targets and objectives for the [Lowland Calcareous Grassland](#) BAP, updated in 2010-11, may be seen online.

4. CURRENT STATUS

Calcareous grassland in the sub-region is largely confined to the south and east of Warwickshire within the Cotswolds and Feldon areas (and with limited areas in the south of the Arden). The majority has a relatively recent origin, falling within old or partially worked quarries, where disturbance has ceased some time ago. Further more important examples occur in cuttings. A little exists within agricultural settings (often on steeper ground that has been left out of improvement schemes) and along some road verges and railway or canal cuttings. Scrub invasion is a common problem at many sites, with rabbits often playing a crucial role in maintaining open grassland.

Nationally, the cover of calcareous grassland has suffered a sharp decline over the last 50 years. Such grasslands are highly susceptible to changes in, or cessation of, management. It is estimated that before 1935, unimproved limestone grassland covered over 40% of the Cotswolds, this has sharply declined to around 1.5% today. This loss has been driven predominantly by changes in agricultural policy, leading to conversion of grasslands to arable crops, artificial improvement and reseeded (improved leys).

Baseline data from the 1998-2001 Habitat Biodiversity Audit recorded the total area of calcareous grassland in Warwickshire, Coventry and Solihull to be 62.9ha, with 27.6ha unimproved and 35.3ha improved. However, figures from the HBA in 2012 were 118.75ha, with 35ha unimproved and 83.75ha semi-improved. In 2017 this figure had risen to 151ha, this trebling of the area being due to increases in the area of the habitat due to 0.14ha of expansion, 42ha of restoration / change of management, an increase in the level of recording and a reassessment of sites previously classified as improved.

Since 2011 46.773ha of calcareous grassland has been restored by [Butterfly Conservation Warwickshire](#) (BCW); the total area now under maintenance by BCW is 48.913ha. On the [Warwickshire Wildlife Trust](#) (WWT) reserves of [Harbury Spoilbank](#) , [Stockton Cutting](#) and [Ufton Fields](#) approximately 22ha of calcareous grassland is in good condition, with some reversion to scrub of previously restored areas. New lowland calcareous grassland creation schemes may be possible based on present or proposed new nature reserves, or as part of quarry restoration schemes.

Five Warwickshire [Sites of Special Scientific Interest](#) (SSSIs) have unimproved calcareous grassland but this is mostly only a small proportion of each site, the remainder being scrub and woodland. In 2014 the total resource within the SSSIs was c.24ha, less than 22% of the total SSSI area. The largest areas are Oxhouse Farm, Harbury Railway Cutting & Quarry and Ufton Fields.

The total resource within [Sites of Special Scientific Interest](#) (SSSI) is 112.26ha on 5 sites (2019 data, see chart below). Natural England estimates of calcareous grassland on SSSIs in Warwickshire, Coventry & Solihull (pers.comm. Anton Irving, 2011) are:

SSSI	Unimproved calcareous grassland (ha)	Total site area (ha)	Associated habitat
Copmill Hill	0.42	11.51	Scrub (2.18 ha of grassland on site has developed from ploughed land and is not yet classed as calcareous grassland)

Warwickshire, Coventry and Solihull Local Biodiversity Action Plan

Harbury Railway Cutting	6.85	26.75	Scrub and woodland
Oxhouse Farm	8.34	17.4	Scrub
Stockton Railway Cutting & Quarry	0.96	24.1	Scrub and bare ground
Ufton Fields	7.7	32.5	Scrub and woodland
TOTAL	24.27	112.26	

4.1 Legal and Policy Status

A wide range of species and habitats are protected under international and domestic laws, including the [Wild Birds Directive](#) (1979), the [Wildlife and Countryside Act](#) (1981), the [Conservation Regulations](#) (1994) and [EC Habitats Directive](#) (1992). Protection of sites is afforded nationally through SSSI, [Special Areas of Conservation](#) (SAC) and [Local Nature Reserve](#) (LNR) statutory status. Other sites are offered recognition of their value through Local Wildlife Site status (LWS), Local Character Areas and identified Landscape Scale Areas. The [National Planning Policy Framework](#) (2012) chapter/section 11 states conditions with regard to any development negatively affecting biodiversity, including protected sites, ancient woodland and other irreplaceable habitats (paragraph 118). The Wildlife & Countryside Act and schedule 2 of the [Conservation of Habitats & Species Regulations](#) (2010) make it an offence to intentionally kill, injure, take, possess, sell, buy or transport a range of species.

About 80% of the known area of unimproved calcareous grassland in Warwickshire, Coventry & Solihull is on SSSI land, the largest area being at Oxhouse Farm. Work within the LBAP area continues to classify other lowland calcareous grasslands as Local Wildlife Sites (LWSs) which will afford them policy protection within the planning system.

By 2017 10 sites had been designated as LWS:

- Darlingscott Triangle (roadside verge with some calcareous grassland some neutral)
- Stretton on Fosse Road Verge
- Pillerton Priors Road verge
- Chesterton Road Verge
- Ettington by-pass
- Tredington Fosse Way Verges
- Lias Line
- Taskers Meadow
- Bishops Hill / Bishops Bowl Complex
- Grove Hill

There may be more calcareous grassland LWS in addition to the 10 listed here but the data is not yet available (Ruth Moffatt, pers.comm. 2021)

4.2 Current Factors Affecting the Habitat

In the past lowland calcareous grassland was lost across England primarily to agriculture, and to a lesser extent development. The main factors affecting the habitat in our area at present are:

Warwickshire, Coventry and Solihull Local Biodiversity Action Plan

- **Encroachment of scrub** and the ‘simplification’ of vegetation structure due to a lack of conservation management such as light grazing, controlled burning and cutting – large expanses of uniform species-rich calcareous grassland has intrinsic value- many insects need large expanses for viable populations.
- **Fragmentation and isolation** as the sites in Warwickshire are scattered across the south and east of the county, often some distance from one-another and often only of a small size. Many calcicolous insects require clusters of larger sites for viable populations and are now restricted to the Southam and Harbury areas, where this still occurs.
- **Changes in farming** and the reduced availability of suitable livestock leading to a lack of grazing and coarser vegetation (though rabbits can alleviate this).
- **Lack of active management or inappropriate management** particularly of the road, rail and canal cuttings, has allowed scrub to take over and in places, develop into woodland. Tree planting schemes have also damaged existing sites, as have some quarrying activities.
- **Quarry infill** of some old limestone workings is occurring at some sites e.g. Cross Hands and being considered at some others. This may threaten the evolving grassland of the spoil heaps. However, there are opportunities for sympathetic restoration to increase the area of calcareous grassland in some cases (especially at Southam where the quarries are largely un-vegetated at present).
- **New quarrying**, e.g. expansion of Southam Quarry and the creation of the new quarry at Lodge Farm, Rugby, which provides opportunities for large gains of habitat.
- **Threats from development** – e.g. at the Bishop’s Bowl – Bishop’s Hill complex.
- **Agricultural improvement** such as intensive fertilizer and herbicide application.

5. LOCAL ACTION

- An accurate digitised database of calcareous grassland in the sub-region has been established by the Habitat Biodiversity Audit (HBA) and is annually updated. The identification of plant indicator species to establish criteria for assessing the quality of calcareous grassland habitat has been completed.
- Lowland calcareous grasslands have been identified as a priority habitat for sustainable management in the Midland Clay Pastures Natural Area.
- The [Natural England Grazing Animals Project](#) (GAP) is a partnership of farmers, land-managers and organisations that are committed to promoting the benefits of grazing with the natural environment and our cultural heritage in mind. It is part of the Rare Breed Survival Trust, based at Kenilworth.
- **NE scrub control programmes:** there are [Environmental Stewardship Scheme](#) agreements administered by NE for the management and restoration of calcareous grassland at 10 sites, including Grove Hill and Draycote Meadow (both WWT reserves), Burton Dassett, which has calcareous species on the upper slopes, Oxhouse Farm SSSI and Copmill Hill SSSI.

Warwickshire, Coventry and Solihull Local Biodiversity Action Plan

- **WWT:**
 - the Trust's reserves are under positive nature conservation management are Stockton, Harbury Spoilbank and Ufton Fields, with half their total area of 42ha in favourable condition.
 - the Trust is working in partnership with an independent consultant with funding from Natural England's Facilitation Fund. The aim of this project is to increase wild bird and pollinator habitat across the Arden landscape character area in Warwickshire. This will be achieved by supporting farmers to make simple changes to their land management practices. A number of habitats will be targeted including wild flower grassland.
 - from 2017 the Trust will pursue opportunities for support from Highways England to manage calcareous grassland on roadside and motorway verges sympathetically for wildlife and to enhance habitat connectivity across the sub-region. In the south of the county this will support the chalk carpet moth.
- **BCW:**
 - has carried out restoration of 11.273ha on 8 of its reserves: at Fenny Compton Tunnels (5ha), Ettington Cuttings (1.06ha), Newton Cutting (2.106ha), Nelsons Wharf (0.447ha), Long Itchington Cutting (1.306ha), Harbury Spoilbank North (1.2ha), Southam Bypass South(0.124ha) and Southam Bypass North (0.03ha)
 - has carried out restoration of 33.5ha at 5 other sites: Bilton Cutting (0.5ha), Bishops Bowl (26.5ha), Draycote village (0.5ha), Little Haven(1ha of privately owned railway line) and Bishops Hill (5ha).
- **Warwickshire County Council:** has identified some road verges to the Highways Division for special treatment. In the south mechanisms were put in place in 2013 to manage certain roadside verges sensitively by local volunteer groups, e.g. Ettington, Southam.
- **Detailed invertebrate survey** work on many calcareous sites has taken place, particularly for groups such as flies, beetles, wasps & bees and butterflies. This has highlighted some potential SSSIs and will assist with LWS designation.

6. PROPOSED LOCAL ACTIONS

ACTION	Lead	Partners	By	
PLEASE CONSULT THE '<i>GENERIC HABITATS</i>' ACTION PLAN IN CONJUNCTION WITH THIS DOCUMENT FOR ACTIONS COMMON TO ALL HABITAT PLANS				
Policy, Legislation & Protection				
PL1. Ensure that any site meeting the relevant criteria is considered for designation as an SSSI.	NE	LWSP WCC CCC	WWT SMBC	ongoing
PL2. Continue to select all qualifying lowland calcareous grassland sites as LWSs and enter onto database.	LWSP	NE SDC	HBA RBC	ongoing

Warwickshire, Coventry and Solihull Local Biodiversity Action Plan

ACTION	Lead	Partners	By
PLEASE CONSULT THE 'GENERIC HABITATS' ACTION PLAN IN CONJUNCTION WITH THIS DOCUMENT FOR ACTIONS COMMON TO ALL HABITAT PLANS			
PL3. Ensure that the protection of all calcareous grassland is included in Local Development Plans, Neighbourhood Plans and any other relevant strategies.	WCC	NE LAs WWT	ongoing
PL4. Ensure that new minor or major developments aim for net biodiversity gain through adherence to the mitigation hierarchy in view of previous high losses of calcareous grassland.	WCC	NE WWT LPAs NWBC NBBC	ongoing
Site / Species Safeguard & Management			
SM1. Maintain the 72ha of calcareous grassland already in favourable condition by ensuring the appropriate management of all sites.	CSG	NE WBRC LOs CFE RBC WWT BCW SDC HEng	ongoing
SM2. Continue restoration of 26ha of existing calcareous grassland in unfavourable condition by 2025 and a further 33ha by 2030, by appropriate management.	CSG	NE WBRC LOs CFE WWT BCW SDC HEng RBC	2025-2030
SM3. Continue restoration of degraded calcareous grassland at the five SSSIs and any sites in agri-environment schemes.	NE	WWT LAs LOs	ongoing
SM4. Expand the area of calcareous grassland by 7ha by 2025 and a further 9ha by 2030.	CSG	WWT WCC SDC RBC LOs QOs	2025-2030
SM5. Work at a landscape scale, focusing effort on identified important clusters of calcareous grassland to maximise benefit, 'rewilding' the wider countryside and restoring the range of the habitat to build resilience to climate change. Target areas are: <ul style="list-style-type: none"> • Feldon Pastures • Feldon Parkland • Cotswolds • Major roadside verges and embankments 	BCW AONB WWT	NE WCC RBC WWT LOs SDC WCC HEng	2030
Advisory			
A1. Inform landowners of their lowland calcareous grassland resource and provide management advice, sources of machinery etc.	NE	WWT AONB	ongoing

A2. Signpost Best Practice Guidelines to appropriate landowners via agri-environment schemes.	NE	WWT	CFE	ongoing
Research & Monitoring				
RM1. Map digitally the remnant areas of unimproved and semi-improved calcareous grassland.	HBA	LWSP WCC RBC	WWT SDC LOs	ongoing
RM2. Identify sites for potential calcareous grassland restoration and expansion by connectivity mapping.	HBA	NE BCW WCC	WWT LEs	ongoing
RM3. Identify plant indicator species to establish criteria for assessing the quality of calcareous grassland habitat.	HBA	NE WCC LWSP	BCW	Achieved
RM4. Use indicator species criteria for monitoring calcareous grassland condition and expansion every 5 years, particularly on LWSs.	HBA	NE LWSP	WWT BCW	ongoing
Communication, Education & Publicity				
CP1. Inform and advise on the management of lowland calcareous grassland to land owners in order to illustrate best practice, at relevant events.	NE	WWT LOs	CFE	ongoing

Abbreviations: AONB – Cotswold AONB, BCW – Butterfly Conservation Warwickshire, CCC – Coventry City Council, CFE – Campaign for the Farmed Environment, CSG – Core Steering Group, HEng – Highways England, HBA – Habitat Biodiversity Audit partnership, HEng – Highways England, LEs - Local Entomologists, LOs – Landowners, LPAs – Local Planning Authorities, LWSP – Local Wildlife Sites Project NE – Natural England, QOs – Quarry owners, RBC – Rugby Borough Council, SDC – Stratford District Council, SMBC – Solihull Metropolitan Borough Council, WBRC – Warwickshire Biological Record Centre, WCC – Warwickshire County Council, WWT – Warwickshire Wildlife Trust.

7. PROGRESS WITH ACTIONS

From 2015–2020 there will be a rolling programme of reporting on progress, of 10 action plans per year with an annual summary of results. Progress with this plan up to 2017 can be seen at <https://www.warwickshirewildlifetrust.org.uk/LBAP>.

8. BIBLIOGRAPHY

Kirby, P. (1992). [Habitat management for Invertebrates](#): a Practical Handbook. RSPB.

Falk, S. J. (2006). The modern bee and wasp assemblages (Hymenoptera: *Aculeata*) of Warwickshire's calcareous quarries and spoilheaps, and the conservation issues facing them. *British Journal of Entomology and Natural History*, 19: 7-33.

Warwickshire, Coventry and Solihull Local Biodiversity Action Plan

Falk, S.J. (2009) Warwickshire's Wildflowers - provides habitat-specific species lists, and explanations of habitats from a botanical viewpoint.

Treweek Environmental Consultants (2009) Regional Spatial Strategy (R.S.S.) Phase 3 Regional Habitats Targets Review, Technical Report pp.71-94, prepared for the W. Midlands Regional Assembly.

Lawton, J.H. (2010) [Making Space for Nature](#): a review of England's wildlife sites and ecological network. Report to Defra, advocating a landscape-scale approach guided by four key principles, summarised as '*more, bigger, better and joined*'.

DEFRA (2011) [Biodiversity 2020](#): A strategy for England's wildlife and ecosystem services.

Natural England (2006) [Priority Habitat Inventory \(England\)](#) - habitat surveillance pilots and inventory updates are part of the ongoing monitoring projects carried out by Natural England.

HBA (2013) The State of the Habitats of Warwickshire, Coventry and Solihull.

RSPB (2016) [State of Nature](#) – a stocktake of all our native wildlife by over 50 wildlife organisations.

Natural England (2016) The [Conservation Strategy for the 21st Century](#) sets out how NE will help deliver DEFRA's ambitions for the environment to reverse biodiversity loss, sustain distinctive landscapes and enhance engagement with nature.

Worldwide Fund for Nature (2018) [The Living Planet Report](#): aiming higher. Published in collaboration with the Zoological Society of London.

9. FURTHER INFORMATION

UK Biodiversity Action Plan '[Lowland Meadows](#)'.

Habitat Biodiversity Audit (HBA) for Warwickshire, Coventry & Solihull – mapping data set and associated information. Phase 1 ([JNCC](#)) 1996-2002 and Phase 2 (Local Wildlife Sites) ongoing.

Statutory conservation agencies, [Warwickshire Museum](#), , Warwickshire Wildlife Trust and the [Royal Society for the Protection of Birds](#) provide advice on appropriate management, restoration and expansion of lowland calcareous grasslands.

Biodiversity Planning Toolkit - a new online resource to help incorporate biodiversity and geodiversity into the planning system and new development.

[Buglife](#) - the Invertebrate Conservation Trust. (2014) 'Promoting habitat mosaics for invertebrates in chalk downland' provides information on the habitat-management requirements of key invertebrates.

Natural England (2005). [The Importance of Livestock Grazing for Wildlife Conservation](#)

The [Grasslands Trust](#) was established in 2002 to address the crisis facing our wildflower-rich grasslands.

Warwickshire, Coventry and Solihull Local Biodiversity Action Plan

[Plantlife](#) - a charity which carries out plant species and habitat conservation, owns and manages nature reserves, campaigns, and raises awareness through education.

[Nature After Minerals](#) provides advice on creating and managing different grassland habitats.

[British Wildlife](#) (2017) Habitat Management News: Restoration of moth abundance in re-created species rich grassland. Vol.29, no.2: pp.95-6.

10. CONTACT

David Lowe, Team Leader, Ecology,
Historic Environment & Landscape, Community Services,
Warwickshire County Council. Tel. 01926 418060.
Email: davidlowe@warwickshire.gov.uk