

Illustrated guide to lowland chalk and limestone grassland

Chalk and limestone grassland comprises some of the most species-rich habitat in lowland England. It varies widely from the south-facing, shallow soils of the chalk Downs in the south, to the north-facing slopes of the limestone Dales. Whatever the location if it is in the right condition chalk and limestone grassland can support a huge number of plants and animals.

This guide illustrates what lowland chalk and limestone grassland should and shouldn't look like at different times of the year. These conditions should apply unless you are managing the site for a particular species with different requirements.

Where possible use livestock to manage sward heights in preference to cutting. Correct management will allow and encourage more plants to flower over the summer months. Sheep selectively graze flower heads so in the spring it is best to graze with other stock.

April and May



Typical spring flowers in lowland chalk and limestone grassland

Chalk and limestone grassland in April and May should support early perennial flowers such as cowslip and early purple orchid, and small annuals such as early forget-me-not and rue-leaved saxifrage.

Correct sward conditions at this time of year will allow and encourage many more plants to flower over the summer months.

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Nectar and pollen are scarce in the spring so flowers are particularly valuable to bumblebees, solitary bees, and butterflies such as grizzled skipper and the rare Duke of Burgundy, including the flowers of shrubs such as blackthorn, willow, and hawthorn.

Shrubs also provide nesting sites for birds and semi-shade for small flowers such as common and early dog-violets, bugle and primrose.

Unless managing for a particular species with different requirements, aim for:

A fairly short sward (5-10 cm tall) over most of the site.

Taller clumps of vegetation (15-30 cm tall) on up to a third of the area.

Small areas (2-5%) of bare ground.

Scattered scrub surrounded by taller herbage.

Ideal in April and May



Ideal sward condition for spring



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Cross section of ideal sward structure in spring

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In spring avoid



Sward too short

Over-grazing will create too much bare ground. This will encourage thistles, ragwort and other undesirable species to invade. Flowers and flower heads will be eaten.



Too rank for main area of field

Under-grazing will allow rank dead herbage and plant litter to block light from smaller species and prevent them from flowering. Scrub will invade and shade out grasses and flowers.

June and July



Knapweed and orchids are typical of chalk grassland

Chalk and limestone grassland in June and July should be ablaze with flowers and butterflies, and buzzing with bees, grasshoppers and other insects. Commoner flowers include bird's-foot trefoil and salad burnet.

The richest swards may also contain kidney vetch, common rock-rose, greater knapweed, small scabious, carline thistle, mouse-ear

hawkweed, thyme, fairy flax, stemless thistle, bee and pyramidal orchids.

There should be a wide range of grasses, including quaking grass. Insects may include six-spotted burnet moth and a number of butterflies including common blue, brown argus and, in the south, chalkhill and Adonis blues.

Ideal in June and July



Grassland in ideal condition in early summer



Cross section of an ideal sward

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In June and July avoid



Too short

If the grass is over-grazed all the flowers will be eaten and the sward will be too uniform. Over-grazing will create too much bare ground with few tussocks for insects, spiders and other animals and could damage anthills. On over-grazed grassland there will be no scrub or only scattered "lollipop" bushes.



Too rank

If the grass is under grazed smaller wildflowers and anthills being shaded out. Under grazing will lead to a high proportion of grasses, including dominant species such as tor grass. Under-grazing will allow scrub and trees to colonise and a build up of dead plant litter.

Autumn and winter



Features of interest in autumn and winter include fungi and berries as well as late flowering plants

Chalk and limestone grassland in the autumn and winter may be less spectacular than in summer but it has many other interests for example late nectar sources such as the blue flowers of devil's-bit scabious.

These are valuable to butterflies such as red admiral and small copper. Also watch out for waxcap fungi, such as the striking scarlet waxcap. The scrub should bear berries that attract birds such as bullfinch, fieldfare and redwing.

Ideal in autumn and winter



Ideal condition for the grassland over winter



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Cross section of ideal sward structure over winter

A good sward structure at this time of year is crucial to ensuring conditions are ideal for plants and animals the following season.

Unless managing for a particular species with different requirements, aim for the same sort of sward conditions as the summer.

Avoid in autumn and winter



Too short

Over grazing can create too much bare ground, this can weaken the sward and encourage thistles and other undesirable species to invade.

There are few tussocks or niches for overwintering invertebrates and little cover for birds or mammals in an over grazed sward.

Further information

Natural England Technical Information Notes are available to download from the Natural England website at

In particular see:

TIN045 *The use of lime on semi-natural grassland in agri-environment schemes*

TIN050 *Selecting indicators of success for grassland enhancement*

TIN060 *The use of yellow rattle to facilitate grassland diversification in agri-environment schemes*



Too rank for main area of field

Under-grazing allows dominant species such as tor grass to shade out smaller species. It also allows a thick layer of dead plant litter will build up and scrub patches to expand.

Bramble runners will extend and young trees will establish.

This guidance has been developed to support Environmental Stewardship agreements.

It does not replace your Agreement and you must continue to follow the prescriptions and specifications.

The outcomes shown may not be appropriate or suitable for all sites. Please consult scheme handbooks or your Natural England adviser for further information.

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