

Illustrated guide to upland limestone grassland

Upland limestone grassland supports some of the rarest plants in England. On some sites there are species that are commonly found in the Alps. Species vary widely depending on where in the country the grassland is. However, there are a lot of flowers that are typical of this habitat, including salad burnet, common bird's-foot trefoil, limestone bedstraw, selfheal, rough hawkbit, eyebrights, and the bobbing heads of quaking grass. In the uplands limestone sites with rock outcrops and block scree are important for molluscs, in particular snails as the limestone provides the scarce calcium they need for their shells.

This guide illustrates what upland limestone grassland should and shouldn't look like at different times of the year. The proportion of flowers in this type of grassland varies from very few to dominating the sward.

Whatever the proportion of flowers the general conditions illustrated below apply unless you are specifically managing the site for a particular species which has different requirements.

April and May



Indicator species for April and May can include common dog-violet, primrose and early purple orchid

By May limestone grassland should be showing signs of greening and the steely blue heads of blue moor-grass may be emerging. The first flowers are likely to be common dog-violet, primrose and early purple orchid.

On damper slopes and around flushes, spikes of bird's-eye primrose and marsh valerian may start emerging.

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Nectar and pollen are scarce at this time of year so any flowers are valuable to insects. This includes the flowers of shrubs such as blackthorn, sallow and hawthorn. These shrubs also provide valuable nesting sites for birds.

No grazing, or light grazing with cattle in the spring will encourage plants to flower in the summer.

Sheep will selectively graze the flower shoots and will reduce flower numbers in the spring and summer.

Small patches of soil and rock are vital for insects. Solitary bees dig their nests in bare soil. The first common blue and small heath butterflies emerge during May.

Ideal in April and May



Ideal sward condition in the spring

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

Most of the sward at least 5 cm tall with only a patchy thin (1 cm) layer of dead plant litter.

Taller clumps (15 – 30 cm) on up to 30% of the area, especially against woodlands or rock outcrops.

Scattered bare soil on less than 5% of the area.



Cross section of ideal conditions

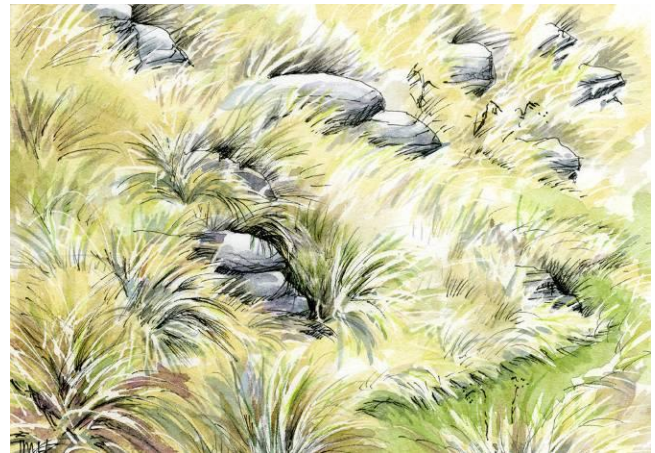
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April and May avoid



The sward grazed too short

Flowers and flower heads will be eaten off if the grass is over-grazed and too much bare ground will encourage thistles, ragwort and other undesirable species.



A rank sward over the majority of the field

Under-grazing will allow rank dead herbage and plant litter to block light preventing smaller species flowering or germinating.

July



Indicator species include bird's eye primrose, common rock rose and blue moorgrass

Plants can flower and set seed where swards are lightly grazed or where stock are removed for a few weeks. Sheep like to eat flower heads so if you are grazing at this time it is better to graze with cattle.

By midsummer, upland limestone grassland will be in flower. Where grazing pressure is low species such as orchids, common rockrose, bloody crane's-bill and dropwort should thrive.

Illustrated guide to upland limestone grassland

Ideal in July



Ideal sward structure in July

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

A sward at least 5 cm tall over most of the site.

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

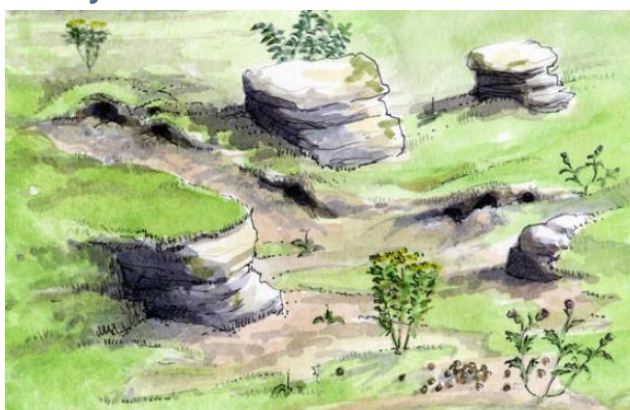
Scattered scrub (more than 5%) especially against woods and rocky out-crops.

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



Ideal sward cross section

In July avoid



Sward over-grazed

Grazing the sward too short with too much bare ground will encourage ragwort, thistles, nettles and other undesirable species. Any flowers will be eaten and the sward will be too uniform and shrubs and tree sapling will be grazed out.



Under-grazing the sward

This sward is too rank for the majority of the field. This should be limited to less than a third of the site. Rank herbage and plant litter will block light and prevent smaller species flowering or establishing from seed.

Illustrated guide to upland limestone grassland

September and October



Indicator species in September and October

By late summer, most plants should have set seed, although a few late flowering species such as devil's-bit scabious and autumnal gentian may still be in bloom. Annuals such as eyebrights die after seeding and grass leaf blades yellow and die back as winter approaches.

Invertebrates become less active as winter approaches. The tiny caterpillars of the Northern brown argus butterfly will eat oval patches on the underside of rockrose leaves before moving to the base of the plants to over-winter.

Graze with cattle or sheep to remove surplus grass and limit the build-up of litter. Cattle are better than sheep because they are less selective grazers.



Cross section of ideal sward in autumn

Ideal in September and October



Ideal condition of the sward in the autumn

Illustrated guide to upland limestone grassland

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

Most of the sward grazed to about 5cm tall with a patchy thin layer (1 cm) of dead plant litter.

Some taller (15-30 cm) patches, but not extensive stands.

Less than 5% of scattered bare ground.

In autumn avoid



Over-grazed

Over-grazing at this time of year will cause excessive poaching in wet conditions and a very short sward with bare ground. This will allow weed seeds to germinate.



Under-grazed

Rank dead herbage and thick plant litter rank over the majority of the field.

Further information

Natural England Technical Information Notes are available to download from the Natural England website at www.naturalengland.org.uk.

For enquiries please contact the Natural England Helpline on 0300 060 0863 or email enquiries@naturalengland.org.uk

This guidance has been developed to support Environmental Stewardship agreements. It does not replace an 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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