

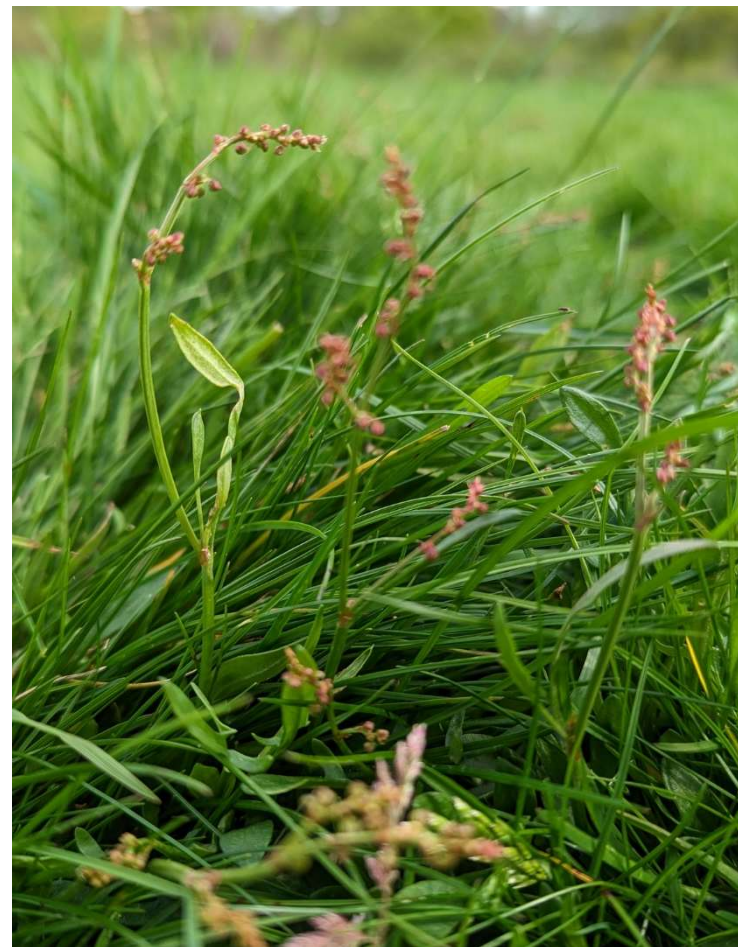
Acid grassland

Acid grasslands develop on nutrient-poor, silica-rich rocks like granite, sandstone, or shales. In the UK, they are widespread across the uplands of Scotland, Wales, and the Pennines, as well as on lowland heaths like the New Forest.

Abiotic factors

The environment is dictated by high acidity and low mineral content:

- **pH Levels:** The soil is acidic, typically with a pH between 4.0 and 5.5.
- **Nutrient availability:** The acidity prevents many bacteria from breaking down organic matter, leading to slow decomposition and low levels of nitrogen and other plant nutrients.
- **Mineral Toxicity:** In very acidic soils, metals like aluminium can become soluble and toxic to most plants, limiting which species can survive.
- **Water Retention:** Soils are often free-draining and sandy. In areas with high rainfall, these soils can become waterlogged, lowering oxygen levels in the soil. This further prevents the decomposition of plant matter and leads to the formation of peat.



Acid grassland

Associated plant species

Many of the plants associated with these habitats are sensitive to calcium levels in the soil. In addition, many soil nutrients are affected by soil acidity. Metals such as aluminium can become soluble in acid conditions and the concentrations of these elements can become toxic to plants.



Sheep's sorrel
(*Rumex acetosa*)



Common Stork's-Bill
(*Erodium cicutarium*)



Sweet Vernal Grass
(*Anthoxanthum odoratum*)



Bell Heather
(*Erica cinerea*)

Acid grassland

Associated animal species

The animals in these areas are often adapted to open, rugged landscapes with sparse cover.



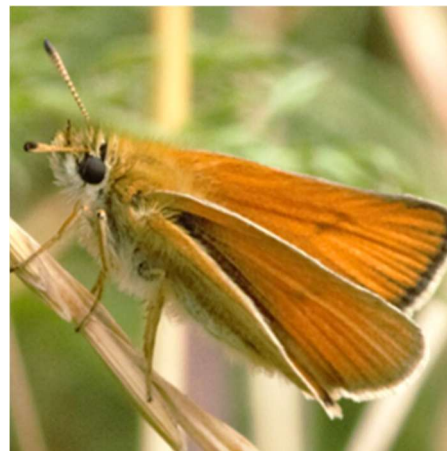
Yellow Meadow Ant
(*Lasius flavus*)

Long-lived colonies which build large anthills. In areas that are not well-drained or prone to flooding, colonies can quickly drown



Meadow pipit
(*Anthus pratensis*)

Build their nests on the ground. Mixed vegetation types and heights provided by anthills can help with nesting sites and food availability.



Essex skipper
(*Thymelicus lineola*)

Caterpillars feed on a variety of grasses that grow in dry grassland habitats.



Green hairstreak
(*Callophrys rubi*)

Caterpillars feed on a variety of shrubs associated with acid soils.

Calcareous grassland

These grasslands develop on shallow soils over calcium-rich rocks like chalk or limestone. They are famous for being some of the most species-rich habitats in Western Europe, sometimes supporting over 40 species of plants per square metre.

Abiotic factors

These grasslands are defined by the chemistry of the underlying rock:

- **pH Levels:** The soil is alkaline (basic) because of the calcium carbonate in the chalk or limestone.
- **Nutrient availability:** The soils are extremely nutrient-poor, particularly in phosphorus and nitrogen. This prevents fast-growing grasses from taking over, allowing smaller wildflowers to thrive.
- **Drainage:** Chalk and limestone are porous, meaning water drains away very quickly. This creates a dry environment where plants must be drought-tolerant.
- **Soil:** The soil layer is typically very thin and sits directly on top of the parent rock with very little organic matter.

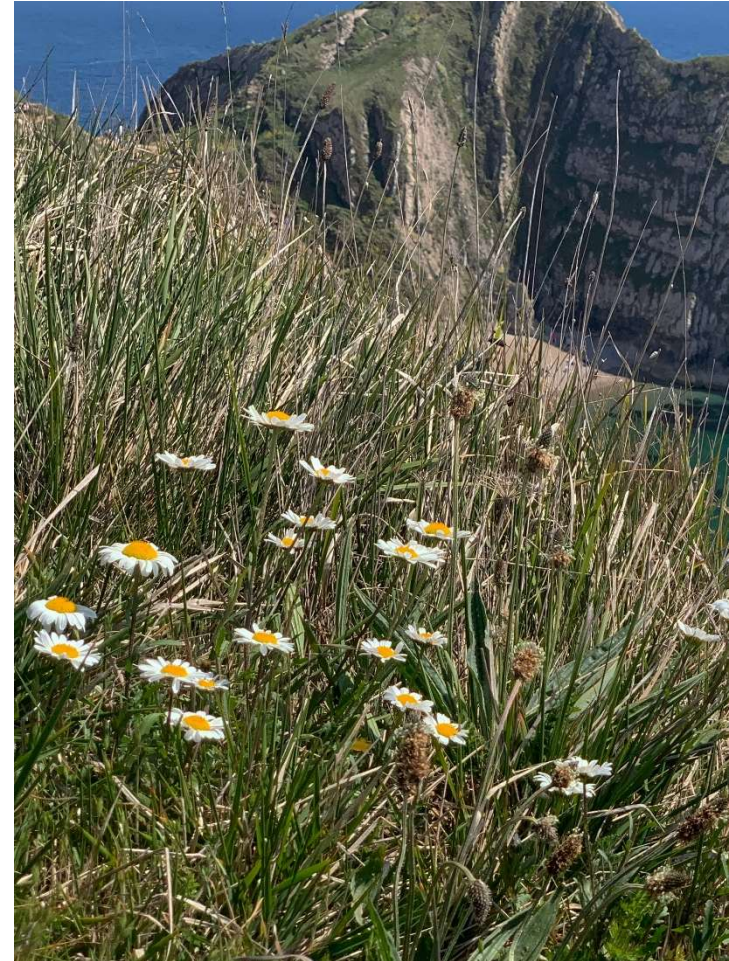


Photo by Nick Kocharhook

Calcareous grassland

Associated plant species

These plants are "calcicoles" (calcium-lovers). They are often low growing to survive grazing and are adapted to dry soils.



Creeping cinquefoil
(*Potentilla reptans*)



Salad burnet
(*Sanguisorba minor*)



Horseshoe vetch
(*Hippocrepis comosa*)



Quaking-grass
(*Briza media*)

Calcareous grassland

Associated animal species



Striped snail
(*Cernuella virgata*)

Many snails benefit from the greater availability of calcium in these habitats because it is crucial for shell growth



Sheep
(*Ovis aries*)

Sheep are often grazed in these habitats. Grazing helps prevent the growth of shrubs and trees.



Adonis blue butterfly
(*Polyommatus bellargus*)

Horseshoe vetch is the only food plant for their caterpillars. This plant only grows in alkaline soils.



Wart-biter bushcricket
(*Decticus verrucivorus*)

Feeds on a range of plants and lays eggs in bare ground or short grass on south-facing slopes.

Alpine meadows

Alpine meadows are grasslands found on high mountain slopes above the tree line but below the permanent snow line. In the UK, similar habitats can be found in the Scottish Highlands or the Lake District.

Abiotic Factors

These habitats are defined by:

- **Temperature:** Low average temperatures, which leads to a short, frost-free growing season.
- **Light levels:** Intense sunlight (including high UV levels) is received during the day because the atmosphere is thinner at high altitude, and there are fewer tall plants to provide shade.
- **Soil:** Thin, acidic, and nutrient-poor.
- **Wind:** High wind speeds lead to rapid desiccation (drying out) and physical damage to plants.



Alpine meadows

Associated Plant Species

These plants are often "cushion-forming", growing low to the ground in dense groups. This protects them from wind damage and traps heat. Many also have waxy or hairy leaves to reduce water loss through their leaves.



Alpine Meadow-grass
(*Poa alpina*)

Sometimes produces small plantlets instead of seeds so the plant can spread faster in the short growing season.



Purple Saxifrage
(*Saxifraga oppositifolia*)



Mountain Avens
(*Dryas octopetala*)



Edelweiss
(*Leontopodium nivale*)

Alpine meadows

Associated Animal Species

Animals here have adaptations like thick fur, hibernation cycles, or specialised blood to cope with the thin atmosphere at high altitudes.



Golden Eagle
(*Aquila chrysaetos*)

A top predator that uses mountain thermals to soar and hunt.



Chamois
(*Rupicapra rupicapra*)

Related to sheep and goats, with specialised hooves for grip on rocky terrain.



Mountain Ringlet
(*Erebia epiphron*)

Dark wings help absorb sunlight and warm their bodies.



Apollo Butterfly
(*Parnassius apollo*)

Caterpillars feed on sedum, a group of plants that grow well in thin, rocky soils.

Beaver meadows

Beaver meadows form when a beaver pond is abandoned. Eventually, the dam breaches and the water level drops, leaving behind a flat, nutrient-rich meadow of silt and organic matter that was once the pond floor. In the UK, these habitats are returning as the Eurasian beaver is reintroduced.

Abiotic factors

The environmental conditions of a beaver meadow are shaped by its history as a flooded pond.

- **Temperature:** Without a forest canopy, the meadow surface experiences hotter days and colder nights than the surrounding forests.
- **Light levels:** Because beavers fell the surrounding trees for food and building, meadow plants receive more light than plants growing in the shaded forests around them.
- **Soil:** The ground is made of a thick layer of silt and sediment that is very high in carbon and nutrients.
- **Water Level:** While no longer fully submerged, the water table remains high, keeping the soil saturated or waterlogged, which stops most trees from growing.



Beaver meadows

Associated plant species

These species thrive in the nutrient-rich, damp conditions of the meadow. Over time, these plants will continue building the soil depth, and the water table will continue to drop. This allows trees to survive and grow, and the area will become forest again. This process of change is called 'succession'.



Purple Loosestrife
(*Lythrum salicaria*)



Meadowsweet
(*Filipendula ulmaria*)



Marsh-marigold
(*Caltha palustris*)



Reed Canary Grass
(*Phalaris arundinacea*)

Beaver meadows

Associated animal species

The transition from pond to meadow creates a "shifting mosaic" of habitats that supports high biodiversity.



Water Vole
(*Arvicola amphibius*)

Digs burrows in soft, silty soils near water.



Common Frog
(*Rana temporaria*)

Shelters in the damp, tall vegetation.



Snipe
(*Gallinago gallinago*)

A wading bird that uses its long bill to probe the soft soil for invertebrates.



Barn Owl
(*Tyto alba*)

Often hunts small mammals over open meadows.