Northern Ireland Priority Habitat Guide: Calcareous grassland

What is Calcareous grassland?

Calcareous grassland is defined in general terms as species-rich grassland occurring on shallow, lime-rich soils most often derived from chalk and limestone rocks. Within Northern Ireland, most Calcareous grassland occurs on soils derived from Carboniferous limestone bedrock. Calcareous grassland exists on the shallow soils that have developed around limestone outcrops. Most Calcareous grassland in Northern Ireland occurs above 250–300m altitude with only small pockets found at lower elevations.

Table 1. Linking habitat types with Annex 1, ASSI features and NI Priority Species

Northern Ireland Priority Habitat type: Calcareous grassland		
Habitat Directive Annex 1 habitats (SAC Features)	**ASSI features**	**NI priority species**
H6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) H6230 Species rich *Nardus* grassland on siliceous substrates in montane areas (and sub-montane areas in continental Europe)	Calcareous grassland	Irish Hare, Small Blue Butterfly, Dingy Skipper Butterfly, Marsh Fritillary, Irish Eyebright, Dense-flowered Orchid, Hoverfly *Cheilosia ahenea* and the mosses *Tortella densa* and *Myurella julacea* var. *julacea*

Definition

The Calcareous grasslands in Northern Ireland are defined as being grasslands which are:-

- Species-rich (generally more than 20 species per 2 x 2m square).
- Include a suite of characteristic plant species, which vary according to the underlying geology and location.
- Have less than 25% cover of scrub or dwarf shrubs.

The National Vegetation Classification (NVC) codes are useful in determining which habitat types fall within the Calcareous grassland priority habitat. NVC codes are provided in the Appendix 2.

Where are they found?

In Northern Ireland the majority of Calcareous grassland occurs in the limestone uplands of County Fermanagh. Here, Calcareous grassland exists on the shallow soils that have developed around limestone outcrops. At lower altitudes, Calcareous grassland generally grades into other unimproved grassland types where it becomes more fragmented and altered by agricultural improvement. Calcareous grassland occurs on shallow soils over Tertiary basalts and chalk in Counties Antrim and Derry. It can be also associated with maritime grassland on free-draining shingle and shell-rich blown sand.

Calcareous grasslands often occur as part of a transition or habitat mosaic with other grassland habitats and heath, bog and flushes.

DAERA hold priority habitat and species data on the NIEA Natural Environment Map Viewer. See https://appsd.daera-ni.gov.uk/nedmapviewer/ (and link to video tutorial). Note that the Map Viewer indicates areas which hold NIEA records of habitat / species data, but does not infer the complete coverage of these environmental assets in Northern Ireland.

Why are they important to wildlife?

Calcareous grasslands are among the most flower-rich of all our semi-natural grasslands. Characteristic species of limestone grassland in Fermanagh include Wild Thyme, Crested Hair-grass, Lady's Bedstraw, Mouse-ear Hawkweed, Fairy Flax, Glaucous Sedge, Lady's Mantle and Blue Moor-grass. Frequent in the sward are Yarrow, Common Bent, Daisy, Dog's-tail, Common Bird's-foot-trefoil, Harebell, Cat's-ear, Ribwort Plantain, Devil's-bit Scabious, White Clover and Red Fescue. Rare plants can include Irish Eyebright, Dense-flowered Orchid and Autumn Gentian.

Calcareous grasslands on the Tertiary basalts and chalks of Counties Antrim and Derry include species such as Wild Thyme, Crested Hair-grass, Lady's Bedstraw, Mouse-ear Hawkweed, Fairy Flax, Glaucous Sedge, Lady's-mantle, Harebell and Kidney Vetch.

The variety and abundance of flowering plants within semi-natural habitats provide good sources of pollen and nectar for many of our pollinating insects such as bumblebees, hoverflies, butterflies and moths. For further information on habitat management for pollinators, refer to the All-Ireland Pollinator Plan resources: www.pollinators.ie. While some of these are widespread and common, Calcareous grasslands are important for a range of Northern Ireland priority species as shown in Table 1.

Many of the invertebrate species that occur on Calcareous grasslands are specialist species that do not occur on any other type of habitat. These include the Woodlouse *Armadillidium pictum* and Geyer's Whorl Snail *Vertigo geyeri*.

Where Calcareous grassland appears in a mosaic habitat in Fermanagh, where there is an abundance of Devil's-bit Scabious, the Marsh Fritillary, a European protected butterfly may also be present. Devil's-bit Scabious is the only food plant for caterpillars of the Marsh Fritillary.

Pressures & Threats

As upland areas can be difficult to access, the main threat to Calcareous grassland in these areas is scrub encroachment while in the lowlands it suffers more impact from human influences leading to piecemeal loss and degradation of the habitat. Factors which have led to its decline include:

- Agricultural improvement: cultivation, fertiliser and pesticide application, ploughing and re-seeding have all been major causes of habitat loss and continue to be the most significant threat to this habitat.
- Grazing: appropriate levels of grazing are necessary to maintain the habitat by preserving a relatively low nutrient status and by keeping competitive species in check. Overgrazing, particularly by sheep, can reduce species diversity as stress-tolerant species dominate. Supplementary feeding can lead to nutrient enrichment, as well as localised poaching.
- Abandonment: in the absence of management by cutting or grazing, Calcareous grassland undergoes vegetation change leading to rankness and the development of scrub and woodland.
- Quarrying: quarrying of limestone and other calcareous bedrocks is a local but significant factor resulting in the loss of Calcareous grasslands. Conversely, the infilling of abandoned limestone quarries where Calcareous grasslands have become established is also a threat in some areas.
- Habitat fragmentation: reduction of grassland area and separation of semi-natural grassland parcels results in fragmentation.
- Recreation: recreational pressure bringing about floristic change associated with soil compaction and damage to the grassland sward may occur at certain sites, most probably within Areas of Outstanding Natural Beauty (AONBs) such as the limestone hills of County Fermanagh and coastal cliff tops of County Antrim.
- Erosion: natural processes and recreational pressure can lead to accelerated loss of thin calcareous soils, particularly where these are sparsely vegetated. This may occur in tandem with overgrazing and poaching of Calcareous grassland.
- Airborne pollution: acidification and nitrogen enrichment from atmospheric deposition could potentially lead to vegetation change.
  Climate change: could potentially result in changes in the species composition and diversity of grassland communities and associated invertebrate populations.

Favourable management of Calcareous grassland

These important grasslands should be protected and maintained where they occur, and should be restored where their condition has declined. Some of our most important grassland sites are protected through National and International legislation. In the wider countryside, grasslands are protected from development and increased agricultural productivity through planning policies and legislation such as the Environmental Impact Assessment Regulations.

Land reclamation techniques such as use of fertilisers, drainage and reseeding, can result in habitat loss or damage and should be prevented.

Calcareous grasslands are best managed by light, extensive grazing (cattle grazing is preferred). Undergrazing and/or overgrazing should be avoided and the risk of poaching should be minimised. Where the historical management of the habitat has been for hay production, this should continue.

Encroaching scrub and bracken should be controlled by cutting as these can spread at the expense of the priority habitat. Machinery should only be used where ground conditions permit.

Trees should not be planted on this grassland type and nor should it be used for supplementary feeding or storage areas.

On known or potential Marsh Fritillary sites please also refer to Marsh Fritillary habitat guide.

How do we determine the "health" or condition of Calcareous grassland?

The conservation status can be determined by the condition of the habitat. Favourable condition is defined by setting targets or target ranges for a series of different attributes. These are components or characteristics of the vegetation that are relatively easy to measure, but which are reliable indicators of the "health" of the habitat.

NIEA has developed Rapid Condition Assessments for several broad habitat types (grassland, moorland, woodland, coastal and wetlands). These will be made available online in the future. In the interim copies can be requested by contacting NIEA by E-mail: NIEA.EFSHigher@daera-ni.gov.uk.

Appendix 1: Calcareous grassland Indicator species

Positive Indicators:

Achillea millefolium	Yarrow
Agrostis capillaris	Common Bent
Alchemilla sp.	Lady's-mantle
Antennaria dioica	Mountain Everlasting
***Anthyllis vulneraria*	Kidney Vetch
Avenula pubescens	Downy Oat-grass
Briza media	Quaking-grass
**Campanula rotundifolia*	Harebell
Carex caryophyllea	Spring-sedge
Carex flacca	Glaucous Sedge
Carex pulicaris	Flea Sedge
Centaurea nigra	Knapweed
Cynosurus cristatus	Crested Dog's-tail
Danthonia decumbens	Heath-grass
Euphrasia sp.	Eyebright
Festuca rubra	Red Fescue
Fragaria vesca	Wild Strawberry
Galium verum	Lady's Bedstraw
Geranium sp.	Cranesbill species
Hypochaeris radicata	Cat's-ear
**Koeleria macrantha*	Crested Hair-grass
**Linum catharticum*	Fairy Flax
Lotus corniculatus	Common Bird's-foot-trefoil
**Pilosella officinarum*	Mouse-ear-hawkweed
**Polygala vulgaris*	Common Milkwort
Potentilla sterilis	Barren Strawberry
Ranunculus bulbosus	Bulbous Buttercup
**Sesleria albicans*	Blue Moor-grass
Succisa pratensis	Devil's-bit Scabious
**Thymus polytrichus*	Wild Thyme
Veronica officinalis	Heath Speedwell

Negative Indicators:

Arrhenatherum elatius	False Oat-grass
Bellis perennis	Daisy
Cirsium arvense	Creeping Thistle
Cirsium vulgare	Spear Thistle
Deschampsia caespitosa	Tufted Hair-grass
Galium aparine	Cleavers
Holcus lanatus	Yorkshire-fog
Lolium perenne	Perennial Rye-grass
Phleum pratense	Timothy
Plantago major	Greater Plantain
Pteridium aquilinum	Bracken
Ranunculus repens	Creeping Buttercup
Rumex crispus	Curled Dock
Rumex obtusifolius	Broad-leaved Dock
Senecio jacobaea	Common Ragwort
Trifolium repens	White Clover
Urtica dioica	Stinging Nettle

* **Core indicators** – if two core indicator species present, this will help to confirm the Calcareous grassland habitat type.
Core indicators at inland sites only.

Please refer to the Grassland Indicator Key in the Grassland Rapid Condition Assessment.

Appendix 2: National Vegetation Classification codes

Calcareous grasslands in Northern Ireland encompass a range of plant communities that broadly reflect a number of those communities described in the National Vegetation Classification (NVC) of Great Britain (Rodwell, 1991a) where descriptions and codes are given to associations of plants that are characteristic of particular environmental and management conditions.

Four NVC communities are typically represented in Northern Ireland's Calcareous grasslands:

CG9 - *Sesleria albicans-Galium sterneri*

CG10 - *Festuca ovina-Agrostis capillaris-Thymus polytrichus*

CG13 - *Dryas octopetala-Carex flacca* heath

CG6 - *Avenula pubescens* grassland