the species recovery trust

SPECIES HANDBOOK

Field Gentian

(*Gentianella campestris*)

Ecology, conservation, survey and management

Conservation Status

ENDANGERED

- **Outside its stronghold still suffering from localised extinctions**
- **Dependent on well-grazed low nutrient grasslands, which are still in decline**

If ever the term ‘small is beautiful’ was coined for a flowering plant, this would probably be it. Field Gentian is the jewel in the crown of unimproved grazed pastures, whether it be in the hilly limestone of the Lake District, the windswept expanses of the welsh coastal dune systems or the lowland acid grasslands lawns of the New Forest.

Field Gentian is a member of a group of flowering plants with an often complex ecology and taxonomy. It has proven incredibly difficult to grow and maintain plants *ex situ*, and in the wild there is uncertainty about when plants first germinate, and what factors trigger this process.

In the heatwave of 2018 virtually every population in the south of England failed, which gave a chilling preview of that may befall this and other species of dry skeletal grasslands in a post climate-change world.

When conditions (and in particular grazing levels) are optimal, then huge populations can emerge, in turn producing millions of seeds, so with the right management across its range of sites we hope to keep this species thriving across most of its range.

Description

An erect vascular plant that grows to 30cm (but usually much shorter), either with simple or branched stems. It produces small but intensely coloured purple flowers. It can be separated from Autumn Gentian by the alternating narrow and broad calyx lobes.

Lifecycle

It mostly grows as a biennial, germinating in spring and spending its first summer as a tap root and bud, although this has been poorly observed in the wild. The following summer it then flowers in late July through to September, often producing copious amounts of seed.

Some plants have been observed producing new rosettes at the base of the flower stalk in the second year, possibly surviving for a third year (pictured below).

Although often visited by bees the species is highly self-fertile and can produce seed without pollination.

The leaves contain high levels of bitter glycoside, which protects them from most forms of herbivory, even when growing in tightly grazed lawns.

Habitat

Field Gentian tends to favour low-nutrient grasslands, typically favouring acid grassland and sparse heathland (U4,H1) in the south of England and limestone grassland (CG1, CG2) in the north. In Wales it only occurs on coastal sites, often in amongst dune slacks.

It can be found on pastures, grasslands, open heaths, sand dunes and machair grassland. The key factor being low nutrients and the maintenance of grazing, which acts to maintain a short sward.

When grazing levels decline and a taller thicker vegetation develops, the Gentian plants rapidly disappear, although they can persist on the edge of dense stand of Heather and Bracken.

Associate species


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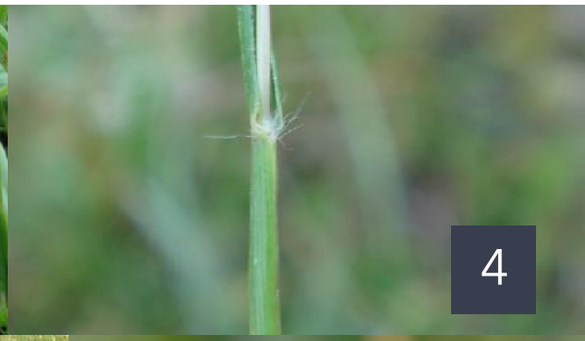
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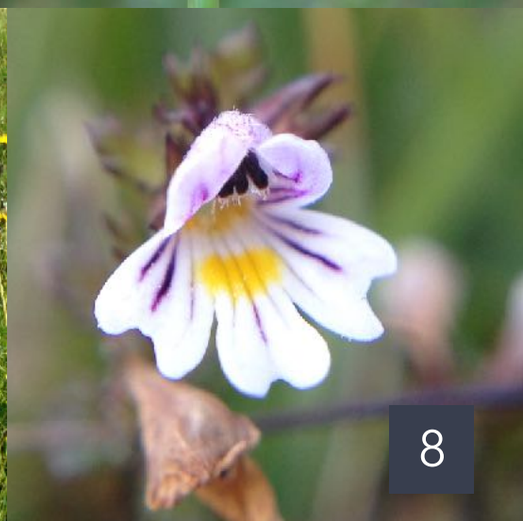
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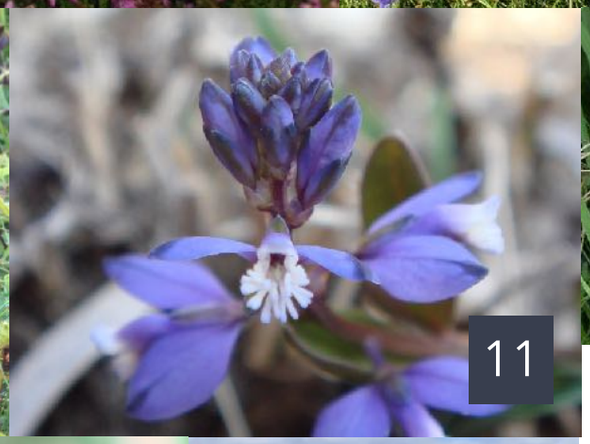
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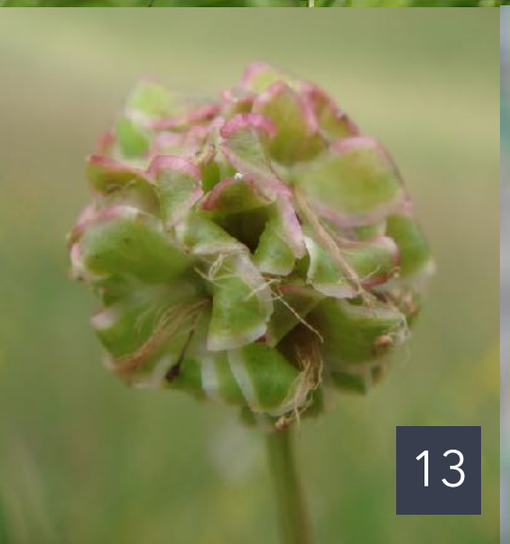
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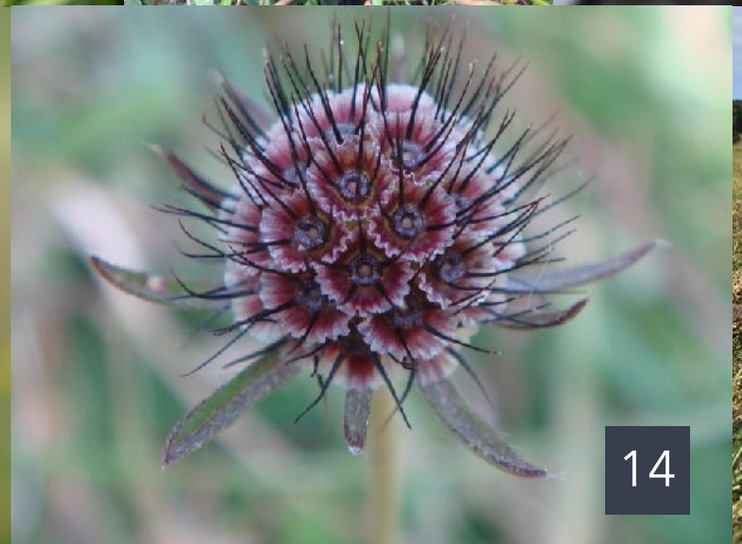
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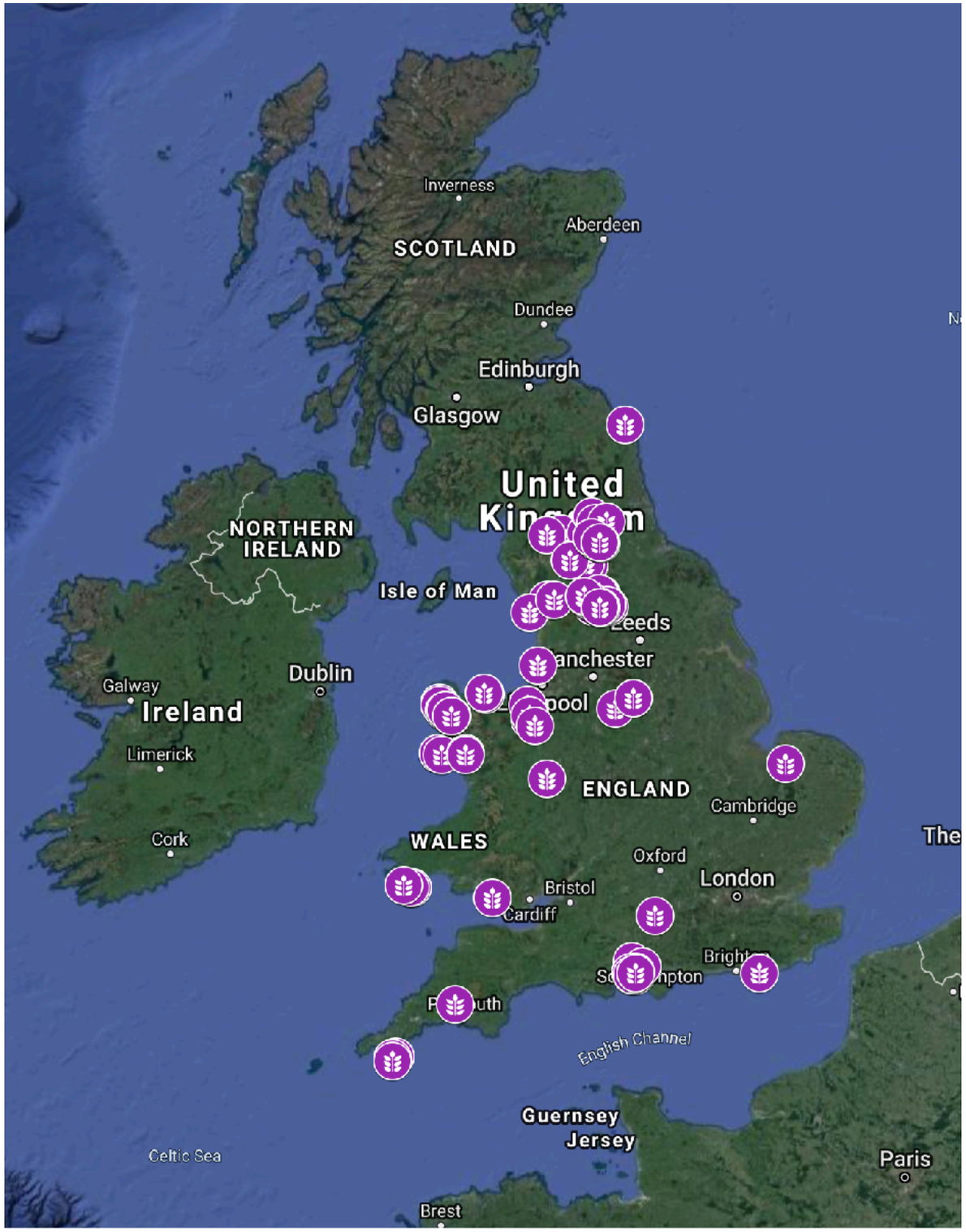
1. *Agrostis capillaris*
2. *Anthoxanthum odoratum*
3. *Carex flacca*
4. *Danthonia decumbens*
5. *Festuca ovina*
6. *Calluna vulgaris*
7. *Campanula rotundifolia*
8. *Euphrasia officinalis*
9. *Galium saxatile*
10. *Gentianella amarella*
11. *Polygala serpyllifolia*
12. *Prunella vulgaris*
13. *Sanguisorba minor*
14. *Succisa pratensis*
15. *Spiranthes spiralis*

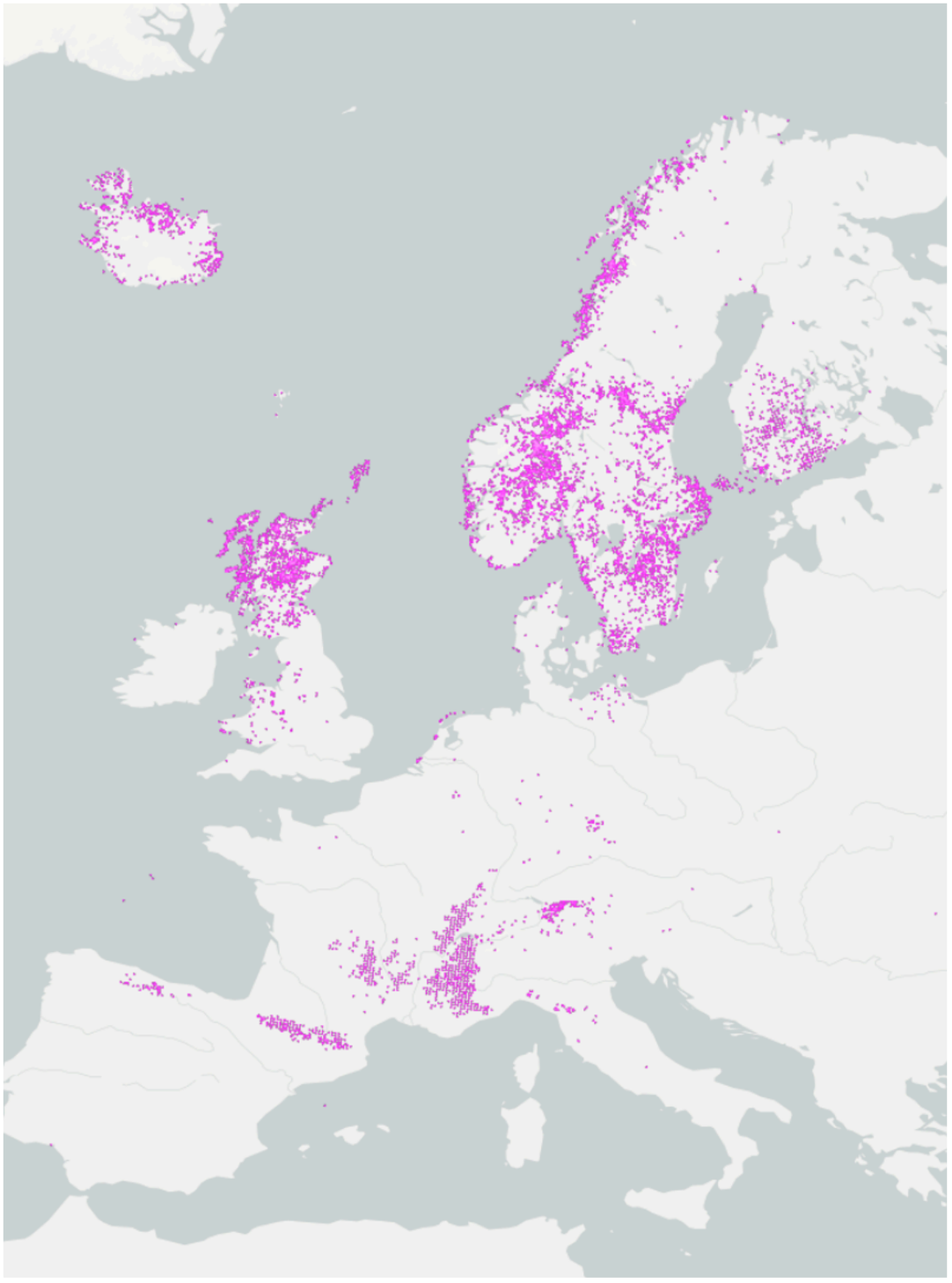


Distribution

ENGLAND AND WALES

In England the species has two strongholds, in the New Forest and Yorkshire Dales (where it is more scattered). Outside this it has a very sparse distribution, and in recent years has not been seen in Norfolk or Derbyshire.

In the west of Wales, all the populations are coastal, either occurring in sand dunes, or on limestone grassland on the Great Orme.



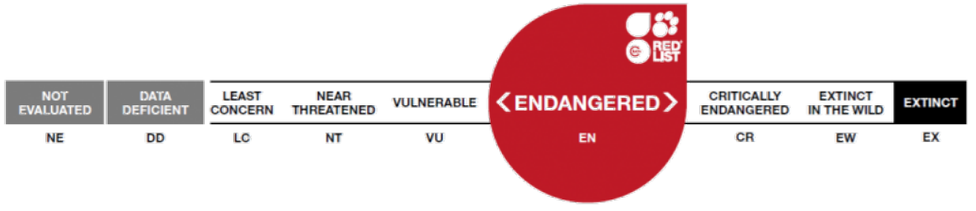
WORLD

Endemic to Europe where it has a Continental Boreo-temperate distribution. It is widely distributed across northern Europe (including Iceland) with strongholds in Scotland and Scandinavia. To the south it tends to occur as an alpine species, with populations found in the Alps, Pyrenees, Picos de Europa and Apennines.

Status

GB Red List **Vulnerable**,

England Red List **Endangered**, meaning it is facing a high risk of extinction in the wild.



Reasons for decline

A combination of loss of habitat and fragmentation of remaining sites leading to local extinctions.

Field Gentian requires a short-sward grassland, partly as the plants are relatively small, which is particularly marked in young seedlings. At sites where grazing is no longer practised populations rapidly disappear, and there is as yet no evidence of populations being restored from seed banks.

Protection under the law

Listed as a species of Principal Importance in England and Wales under the NERC Act 2006 and is a UK Biodiversity Action Plan priority species.

Heathland site lost to afforestation in the New Forest

Dune site lost to coarse vegetation in Wales

SURVEY

Identification

Field Gentian can grow up to 30cm but in low-nutrient well grazed grassland can frequently form flowering spike <10cm tall. Taller plants can form multiple side branches with flowers on.

The flowers are a deep bluish purple colour, with a corolla divided into four lobes with fringed throats.

Habitat

Plants will only grow in sort swards so these areas should be focussed on. Where patches of bracken and heather occur plants can frequently occur at the edge of these clumps, which can act to protect them from drought and livestock. Isolated populations can also occur in small patches of short sward grassland scattered within dense stands of scrub/heather where small patches of grassland occur.

When to survey

The surveys are best carried out from late July-September when flowers are present and can be spotted relatively easily.

Habitats

What to record

- Numbers of plants (if over 100 count to the nearest 10, if over 100 to the nearest hundred)
- Area of patch (there may be multiple patches, but don't overcomplicate things, use sketch map if easier!)
- Numbers of plants flowering
- General condition of habitat (particularly presence of open sward/ competing vegetation etc.)
- If possible record associate species with DAFOR (Dominant, abundant, Frequent, Occasional, Rare) levels and vegetation height
- Presence of available habitat for plants to colonise into
- Threats - too thick sward, encroaching scrub, over trampling etc.

Rosette in December

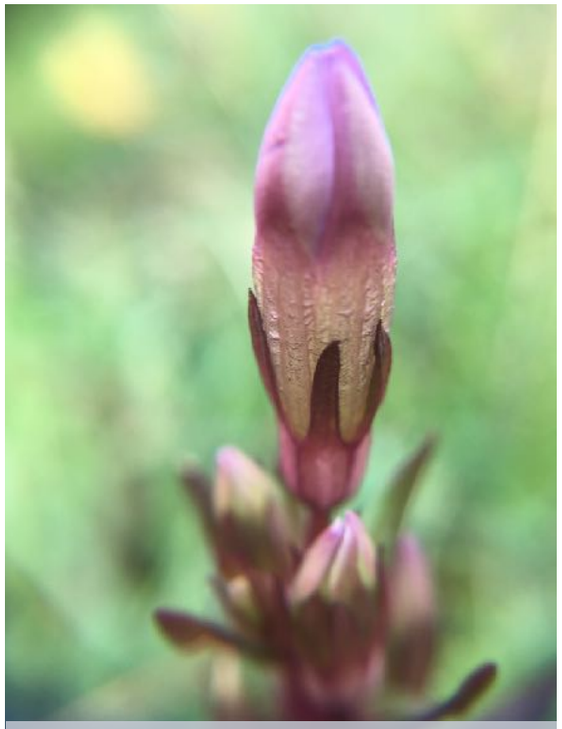
Vegetative ID

Small rosettes with young leaves which are folded in half when young.

Autumn Lady's-tresses rosettes can also be present on site - these tend to have less visible venation and are more upright in their habit.

Confusable species

Many populations occur alongside Autumn Gentian (*Gentianella amarella*), but once your eye is in the Field Gentian can be quite easily separated by nature of being smaller, and having a deeper purple tinge to the flowers. If plants are in flower or in seed closer examination reveals the unequal corolla lobes of Field Gentian, versus the coronet appearance of Autumn Gentian. It may be hard to separate from Autumn Gentian when only present as a rosette.



Autumn Gentian corolla

Field Gentian corolla

Autumn Lady's-tresses rosette

Field Gentian flower stem developing in July

One of the largest populations on tightly grazed acid grassland in the New Forest

Rotational bracken cutting in the New Forest

MANAGEMENT

Habitat management for Field Gentian involves the creation and maintenance of a short sward grassland. Populations can exist within a mosaic of heather and bracken, but still tend to favour open patches where these small plants can successfully germinate, receive enough sunlight to develop flowering stems and successfully pollinate.

This is best achieved with relatively heavy cattle/pony grazing, which acts to maintain a short sward but also breaks up the ground to assist with seed germination. Some of the current sites are grazed by sheep and still support plants, although the populations in these locations are typically lower. Due to high levels of glycoside in the plants they generally appear to escape being browsed, even on tightly grazed sites.

For sites which require heather or bracken management, this is best carried out from November onwards, to provide the plants with adequate time to set seed, especially in sites where the arisings are being harvested and removed from site.

OUR WORK

- Establishing a monitoring network across all sites
- Providing habitat management advice to landowners
- Carrying out research into lifecycle and plant ecology

SUCCESS

- Annual monitoring data now collected for 70% of sites in England and Wales
- Habitat management appears to have stabilised some declining populations

As well as being a spectacular plant in its own right, Field Gentian is an indicator and measurement of health for low-nutrient tightly grazed habitats, which in themselves support a wealth of other species.

With rising levels of nitrate pollution and continued problems with achieving ideal levels of grazing this species still faces considerable challenges ahead, and is likely to remain conservation dependent for several decades.

The Species Recovery Trust is a charity set up to tackle the loss of some of the rarest species in the UK.

There are over nine hundred native species in the UK that are classed as under threat, with several hundreds more currently widespread but known to be in significant decline. The countryside is now bereft of many species that were a familiar sight a mere generation ago.

A small number of these species are on the absolute brink of existence, poised to become extinct in our lifetimes; our goal is to stop them vanishing.

Our aim is to remove 50 species from the edge of extinction in the UK by the year 2050. In addition we are reconnecting people with wildlife and the natural world through training programmes and awareness raising.









the species recovery trust

www.speciesrecoverytrust.org.uk

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