

BSBI Ireland Annex I Grassland Resources

Species-rich *Nardus* grasslands (EU Habitats Directive Code 6230)

*6230 Species-rich *Nardus* grassland, on siliceous substrates in mountain areas
(and submountain areas in continental Europe)*



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This is one of a series of reference documents that have been created as part of the Irish Grasslands Project that started in 2020. Their aim is to provide a better understanding of the four main grassland types found in Ireland that are listed on Annex I of the EU Habitats Directive. We list the main indicator species, and provide additional information on selected species, aiming to help with identification.



An Roinn Tithíochta,
Rialtais Áitiúil agus Oidhreacht
Department of Housing,
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Species-rich *Nardus* grassland in Ireland is usually confined to acidic substrates in upland areas and generally occurs in mosaic with heath habitat. This species-rich community, of which there are two sub-communities in Ireland, requires a source of mineral flushing in order to exist. Such flushing can be from a calcareous or non-calcareous source. This vegetation should not be confused with species-poor grassland vegetation dominated by *Nardus stricta*, which is widespread in heavily grazed, upland areas of Ireland.

The most frequent grasses present are *Agrostis capillaris* (Meadow Bent), *Anthoxanthum odoratum* (Sweet-vernal Grass) and *Nardus stricta* (Mat-grass), with *Festuca ovina* (Sheep's-fescue) and *Danthonia decumbens* (Heath Grass) also occurring. Characteristic species of the calcareous sub-community include *Antennaria dioica* (Mountain Everlasting), *Campanula rotundifolia* (Harebell), *Lotus corniculatus* (Common Bird's-foot-trefoil), *Prunella vulgaris* (Self-heal) and *Thymus polytrichus* (Wild Thyme). Species such as *Carex pilulifera* (Pill Sedge), *Lathyrus linifolius* (Bitter Vetch), *Pseudorchis albida* (Small-white Orchid), *Viola canina* (Heath Dog-violet), and *Viola riviniana* (Common Dog-violet) are all typical of the non-calcareous community. Both sub-communities usually have a well-developed bryophyte layer that can often include *Hylocomium splendens* (Glittering Wood-moss), *Rhytidiadelphus loreus* (Little Shaggy-moss), and *R. squarrosus* (Springy Turf-moss).

Extensive grazing (mostly by sheep) is required in order to maintain this habitat. The main threats to this habitat are generally inappropriate grazing practices, land improvement, abandonment or low management intensity and afforestation.

Characteristic species of Species-rich *Nardus* grasslands

The species listed below are characteristic of Species-rich *Nardus* grasslands in Ireland. They have been developed based on scientific analysis of hundreds of relevés (=vegetation surveys). If Species-rich *Nardus* grasslands are in good condition, they will typically have at least seven positive indicator species, with at least two of these being high-quality indicators in the case of the non-calcareous sub-community and at least one high quality indicator in the case of the calcareous sub-community. For further info: [Irish Semi-natural Grasslands Survey](#) (O'Neill *et al.* 2013)

High Quality Indicator Species		Positive Indicator Species	
<u>Scientific Name</u>	<u>Common Name</u>	<u>Scientific Name</u>	<u>Common Name</u>
Calcareous sub-community			
<i>Alchemilla glabra</i>	Smooth Lady's-mantle	<i>Agrostis capillaris</i>	Meadow Bent-grass
<i>Antennaria dioica</i>	Mountain Everlasting	<i>Anthoxanthum odoratum</i>	Sweet-vernal Gras
<i>Campanula rotundifolia</i>	Harebell	<i>Carex binervis</i>	Green-ribbed Sedge
<i>Conopodium majus</i>	Pignut	<i>Festuca ovina</i>	Sheep's Fescue
<i>Ctenidium molluscum</i>	Comb-moss	<i>Galium saxatile</i>	Heath Bedstraw
<i>Linum catharticum</i>	Fairy Flax	<i>Hylocomium splendens</i>	Glittering Wood-moss
<i>Lotus corniculatus</i>	Common Bird's-foot-trefoil	<i>Luzula campestris</i>	Field Wood-rush
<i>Lysimachia nemorum</i>	Yellow Pimpernel	<i>Luzula multiflora</i>	Heath Wood-rush
<i>Primula vulgaris</i>	Primrose	<i>Nardus stricta</i>	Mat-grass
<i>Prunella vulgaris</i>	Self-heal	<i>Polygala serpyllifolia</i>	Heath Milkwort
<i>Thymus polytrichus</i>	Wild Thyme	<i>Potentilla erecta</i>	Tormentil
Non-calcareous sub-community		<i>Rhytidiadelphus loreus</i>	Little Shaggy-moss
<i>Breutelia chrysocoma</i>	Golden-head Moss	<i>Rhytidiadelphus squarrosus</i>	Springy Turf-moss
<i>Carex caryophylla</i>	Spring Sedge	<i>Veronica officinalis</i>	Heath Speedwell
<i>Carex pilulifera</i>	Pill Sedge		
<i>Danthonia decumbens</i>	Heath Grass		
<i>Lathyrus linifolius</i>	Bitter Vetch		
<i>Pseudorchis albida</i>	Small White Orchid		
<i>Viola canina</i>	Heath Dog-violet		
<i>Viola riviniana</i>	Common Dog-violet		

Species-rich *Nardus* Uplands: Selected Indicator Species

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High Quality Indicator Species

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Positive Indicator Species

Agrostis capillaris (Common Bent)

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Agrostis capillaris is a hairless perennial that flowers from June to August. Its inflorescence is a diffuse, feathery panicle that is comprised of one-flowered spikelets. Its ligule is blunt and short and the leaves are spear-like, rough and lack sheaths. *A. capillaris* is a very common species that is found abundantly across all of Ireland, occurring in a wide variety of habitats from lawns to meadows to woodlands and can appear as a pink/purple haze when growing in large swathes.



Antennaria dioica (Mountain Everlasting)

HQ

Antennaria dioica is a distinctive, rather unusual looking member of the daisy family. It is a dioecious species whose male and female flowers are found on separate plants. Female plants have pink flowers, whereas the male plants have white flowers. Leaves are predominantly basal and are oval and downy on their underside and are mat forming. *A. dioica* is a species of calcareous soils and is restricted to primarily the north and west of the country.



***Campanula rotundifolia* (Harebell)**



Campanula rotundifolia is a delightful species to come across and cannot be easily mistaken for any other species. Its flower heads are composed of nodding bell-shaped flowers, which are a pale blue/mauve colour. The basal leaves of *C. rotundifolia* wither early and are very small and narrow. The stem leaves are long and linear and are un-stalked. In Ireland, *C. rotundifolia* is restricted to the north, west and south-west of the country and occurs on dunes, rocky crevices and calcareous-flushed heath.



***Carex pilulifera* (Pill Sedge)**



Carex pilulifera is a densely tufted species of sedge which can be found growing on dry heaths, grasslands and woodland rides which occur on acid soil. The leaves are bright green and persist through the winter after dying back. The inflorescence is clustered, and composed of a single male spikelet, and two to four female spikelets which are ovoid in shape. The utricles of *C. pilulifera* are downy and the stems tend to arch outwards when in fruit. *C. pilulifera* could be confused with *C. caryophyllea*, however this species has a sheath on the lowest bract, whereas this is not present in *C. pilulifera*. Habitat can also a good indicator as *C. caryophyllea* has a strong preference for calcareous soils, whereas *C. pilulifera* is a species of acidic ground.



***Danthonia decumbens* (Heath-Grass)**

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Danthonia decumbens is a perennial, tufted species of grass. As its name suggests, it has a preference for acidic habitats, like heaths and upland pastures, however it can also occur where an acidic layer overlays calcareous rock. Its inflorescence is a compact and narrow panicle, which is composed of between three and six ovoid spikelets. Its leaves are hairy, and the ligule is replaced by a ring of hairs. *D. decumbens* is one of the later grasses to flower - from June to August and is widespread across all of Ireland.

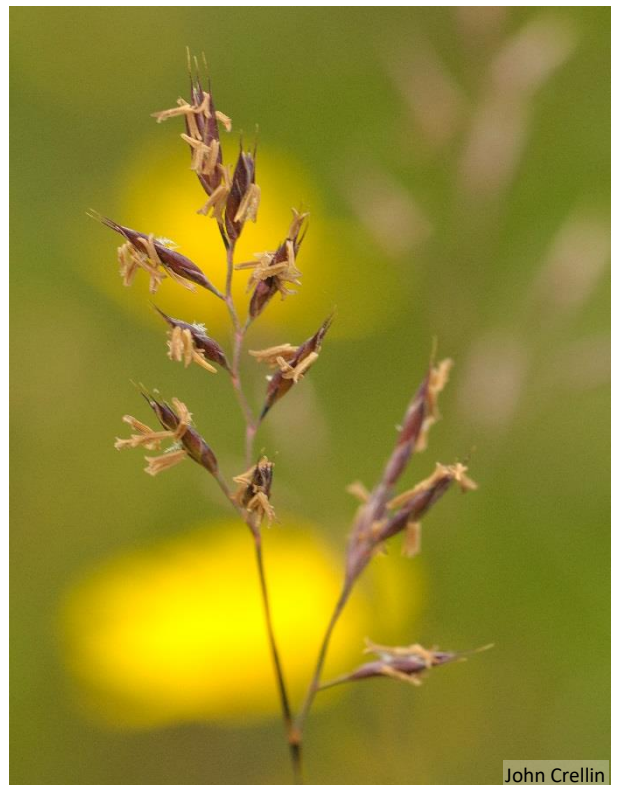


Jessica Hamilton

***Festuca ovina* (Sheep's-fescue)**

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Festuca ovina is a perennial species of grass whose inflorescence is an erect panicle that contains spreading branches that hold spikelets, which are held stiffly. Its growth habit is strongly tufted and has sheaths that are open/overlapping, and split more than halfway to the base. All leaves are bristle-like and hairless, including those held on the stem. It occurs in a range of habitats, from heaths to more mountainous terrain. Overall, *F. ovina* is a very common species and can be found across all of Ireland in suitable habitat.



John Crellin

Luzula multiflora agg. / *L. campestris* (Heath/Field Woodrush)



Two common and similar looking members of *Juncaceae* who possess long grass-like leaves, which are covered in silky white hairs. *L. multiflora* is an aggregate, of which there are three known sub-species in Ireland. All are generally taller than *L. campestris*, and they tend to occur in more acidic situations. *L. multiflora* agg. can be reliably separated from *L. campestris* using two main characters:

When in flower: *L. campestris* has conspicuous yellowish anthers that are longer than the filaments, whereas in *L. multiflora* agg. the anthers are less than, or as long as the filaments.

When in fruit: *L. campestris* has round seeds, whereas the seeds of *L. multiflora* agg. are oblong in shape.



Nardus stricta (Mat-grass)



Nardus stricta is a distinct species of grass that forms conspicuous tufted mats, often with the dead leaves of the previous year's growth still attached. The species has grey-green leaves, which are bristle-like and come away from the sheaths at right angles. *N. stricta* flowers from June to August and has a one-sided inflorescence with whip-like spikelets that are a deep purple-black colour. A very common species on peat soils, and upland heath habitats, *N. stricta* can be found across Ireland, but predominantly in the north, west and south-west of the country where an abundance of its preferred habitat occurs.



***Pseudorchis albida* (Small-white Orchid)**

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Pseudorchis albida is a diminutive species of orchid that rarely grows more than 20cm high. The inflorescence is a dense, cylindrical spike of white/green flowers, which have a faint vanilla scent. Its basal leaves are oblong-lanceolate, whereas further up the stem the leaves become much shorter and more narrowed. In Ireland *P. albida* is an extremely rare species that grows in upland grassland and heath habitats and is restricted to a handful of sites across the country, mostly in the north-west. It is currently classified as 'Vulnerable' on the Irish Red List of Vascular Plants and is a protected species.



Hannah Northridge

***Viola canina* (Heath Dog-violet)**

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Viola canina is an uncommonly encountered member of the violet family. Compared to other dog-violets, the flowers of this species are inconspicuous and much more of a blue-violet, compared to the deeper purple-violet colours of the more common *V. riviniana* (Common Dog-violet) and *V. reichenbachiana* (Early Dog-violet). Alongside its flowers, other useful identification features are a yellow/green spur, creeping growth habit and lack of basal rosette. *V. canina* is a species of acid ground, found on coastal dunes, acidic grassland and heaths. Overall in Ireland, *V. canina* is rare, scattered across the country with most records from the west and north-west of the country.



Jessica Hamilton

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Thank you to everyone who allowed us to use their photographs in this booklet.

In order of occurrence

6230 Habitat, Kate McNutt (@NPWS); 6230 Habitat, Kate McNutt (@NPWS); *Agrostis capillaris*, Jessica Hamilton; *Antennaria dioica*, ©Zoe Devlin; *Campanula rotundifolia*, Jessica Hamilton; *Carex pilulifera*, Jessica Hamilton; *Danthonia decumbens*, Jessica Hamilton; *Festuca ovina*, John Crellin; *Luzula multiflora/campestris*, Jessica Hamilton; *Nardus stricta*, Jessica Hamilton; *Pseudorchis albida*, Hannah Northridge; *Viola canina*, Jessica Hamilton.

References

Fossitt, J. A. (2000) *A Guide to the Habitats in Ireland*. The Heritage Council, Kilkenny.

Galvánek, D. & Janák, M. (2008) *Management of Natura 2000 habitats. 6230 *Species-rich Nardus grasslands*. European Commission. Available at:

https://ec.europa.eu/environment/nature/natura2000/management/habitats/pdf/6230_Nardus_grasslands.pdf

Martin, J.R., O'Neill, F.H. & Daly, O. (2018) The monitoring and assessment of three EU Habitats Directive Annex I grasslands habitats. *Irish Wildlife Manuals*, No. 102. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht, Ireland. Available at:

<https://www.npws.ie/sites/default/files/publications/pdf/IWM%20102%20Annex%201%20Grasslands.pdf>

NPWS (2019). *The Status of EU Protected Habitats and Species in Ireland. Volume 1: Summary Overview*. Unpublished NPWS report. Edited by: Deirdre Lynn and Fionnuala O'Neill. Available at:

https://www.npws.ie/sites/default/files/publications/pdf/NPWS_2019_Vol1_Summary_Article17.pdf

O'Neill, F.H., Martin, J.R., Devaney, F.M. & Perrin, P.M. (2013) The Irish semi-natural grasslands survey 2007-2012. *Irish Wildlife Manuals*, No. 78. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Ireland. Available at:

<https://www.npws.ie/sites/default/files/publications/pdf/IWM-78-Irish-semi-natural-grassland-survey.pdf>

Perrin, P. (2018) *Irish Vegetation Classification: Community synopsis Nardus stricta-Potentilla erecta grassland*. Available at: <https://www.biodiversityireland.ie/wordpress/wp-content/uploads/GL4Bi.pdf>

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