

# **Killyon Cow Park Biodiversity Action Plan 2022**

Killyon Community Association



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## 1. Introduction

Killyon is a rural village in Co. Meath with 202 houses and a population of around 800 people. It is located on the R161 road, approximately 16 km Southwest of Trim and 10 km northeast of Kinnegad. The Community Association has been in operation for 16 years with much work carried out by volunteers and FAS scheme members over the years. There are 9 committee members and 15 voluntary members. Currently there are three FAS workers to carry out maintenance work.

In early 2022, Killyon Community Association secured funding from the Community Foundation Ireland (CFI) to appoint an ecologist to assist in the preparation of a biodiversity action plan. Dr Fran Giaquinto, a panel ecologist with CFI, was appointed. Fran Giaquinto is a chartered environmentalist and full member of the Chartered Institute for Ecological and Environmental Management. The application to CFI outlined a biodiversity plan for the Cow park, a six acre field which the group recently secured on a long term lease with Meath County Council. Plans for the use of the Cow park are at a very early stage with suggestions of a walking track, community orchard, recreational facilities and a community centre. The aim of this document is to produce a meaningful biodiversity plan for the field, taking into account the capabilities and time commitment of the volunteers. The land surrounding Killyon graveyard was also surveyed in the course of preparing this plan and some recommendations for that area have also been made.



*Image: 1: Fas workers Dermot and Gerry setting up the meadow in the graveyard*

### **The main outcomes of the project will be to:**

- Produce a biodiversity plan that supports and protects the Cow park, in conjunction with Killyon Community Association.
- Increase biodiversity awareness for the Cow park in Killyon.
- Encourage Killyon residents to become citizen scientists and engage in national monitoring programmes which are delivered by the National Biodiversity Data Centre (NBDC).

### **The project's success will be monitored by the following:**

- Data collected from the ecological study will be submitted to National Biodiversity Data Centre.
- Killyon community members have a better understanding of what protection of biodiversity means in practice and are more aware of the species-richness of the grasslands at the graveyard and cow park.
- Killyon community members take a more active interest in actions they can take to protect biodiversity at the cow park and elsewhere.

## 2. Map of the main survey area



*Image: 2: Rough outline of the site*

## 3. Description of selected site

The selected area is a six acre field in Killyon, Co Meath and it is part of what was known locally as the Cow park. Cow plots or parks were usually allocated by the Land Commission when a large estate of land was being divided, a portion of the lands would become a cow plot. There are other cow plots in Athboy and Ballivor. Meath Co Council administered a system of communal land renting on 'Cow parks' whereby the Council rented this land to local landless labourers for the grazing of a few cows and calves. This field is part of that Cow park, with the local GAA club having also been given some land on a similar long terms lease from the council.

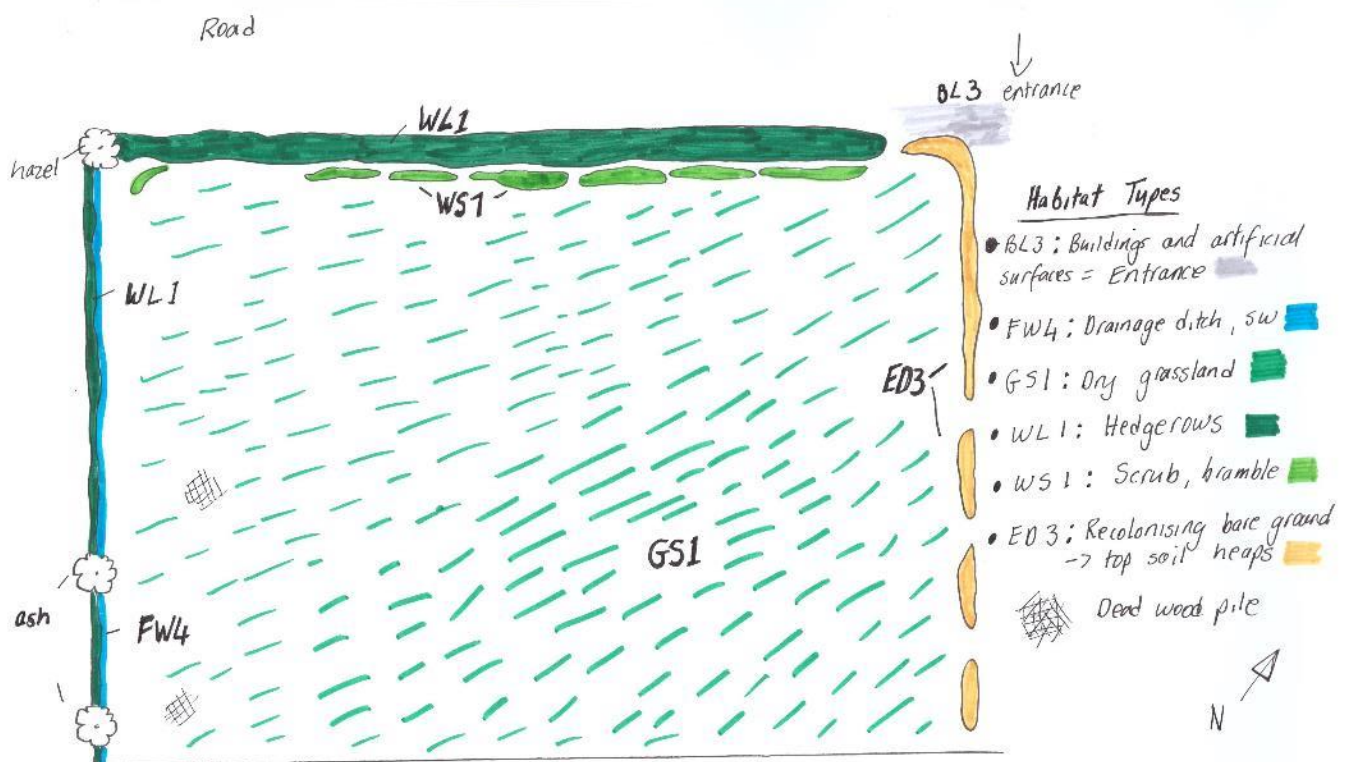
A rough track has been dug out along the north-eastern boundary to provide access to the GAA land at the back of the field. The soil from creating the track has been mounded into high banks along the north-east edge of the cow park. The field is composed of meadow grassland with a mature native hedgerow along the north-western boundary and a lower, sparser hedge along the south-western boundary. This south-western boundary also has a drainage ditch. An electric fence separates the cow park from the GAA land along the south-eastern side. A site survey was carried out on 16<sup>th</sup> May with a further visit and community workshop on 19<sup>th</sup> July 2022.

#### 4. Habitat types in the surveyed area

In October 2000, Julie Fossitt of the National Parks and Wildlife Service published A Guide to the Habitats of Ireland<sup>1</sup> which provides a standard scheme for identifying, describing, and classifying habitats in Ireland. It covers natural, semi-natural, and artificial habitats of land and freshwater environments, and it remains the most important habitat classification system in Ireland to date. The habitat survey of the Cow park identified the following main habitat types

Code	Habitat	Location
BL3	Buildings and artificial surfaces	Entrance to Cow park
FW4	Drainage ditch	Southwest boundary
GS1	Dry calcareous and neutral grassland	Main field
WL1	Hedgerows	Southwest and northwest boundary
WS1	Scrub	Row of bramble parallel to northwest hedgerow
ED3	Recolonising bare ground	Mounds of topsoil along northeast boundary

Table 1 Main habitat types of surveyed area in Killyon, based on the Fossitt classification



The Cow park, Killyon, Co. Meath	
Habitat map	
1:10	Oct 2022

## 5. Key Features:

### 5.1 Grassland

Grassland is the main habitat type in the field and the grassland here is quite species rich with much potential for improvement through biodiversity-sensitive management. Meadow buttercup, knapweed and sweet vernal grass are abundantly present and these are all positive indicators for a species rich grassland. A section in the south-eastern corner near the track (see map) is particularly species rich and demonstrates what the grassland could become with a managed cutting regime. The plant species and diversity of plant life suggest it is absorbing a lot of carbon. A quadrat was taken here in the July and the results are shown below.

#### Results of the quadrats, 19<sup>th</sup> July 2022

Quadrat	Grasses % cover	Forbs % cover	Grass: forb ratio	Litter % cover	Bare soil % cover	Ave vegetation height	Dominant grass type
1	60	40	60/40	60%	40%	45cm	Sweet vernal grass
Species found: Dandelion, meadow buttercup, knapweed, ribwort plantain, meadow vetchling							



Image: 3: Bird's foot trefoil, knapweed, hawksbeard, yarrow, meadow vetchling, sedge

However, some less desirable species are also found in the grassland. A patch of rushes and a large section of silverweed and creeping buttercup are found in the first half of the field (see map). The silverweed and creeping buttercup are signs of overgrazing and soil compaction. Silverweed is a favourite food of cattle, horses, goats, pigs and geese, only sheep decline it.

A step-transect study was used to record the presence of creeping thistle (results in appendix) and this found a large section, present in the third quarter of the field, again evidence of overgrazing and poaching – particularly in the winter months. Creeping thistle has great value from a wildlife perspective as they provide a succession of micro-environments and food for a range of birds such as siskin and insects feeding on green leaves, flower heads, dead heads and stems. However, it is not welcome in a hay meadow and will need management, otherwise it will continue to spread.

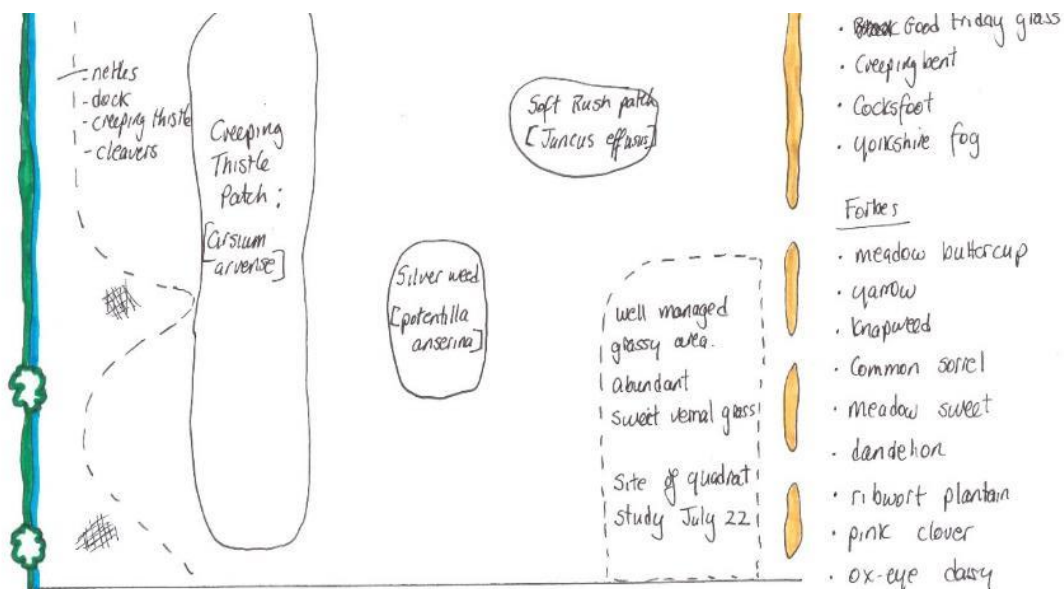
Parallel to the drainage ditch at the back of the site there are large patches of nettles and dock, both signs of nutrient rich soil, and more creeping thistle. They suggest that silage bales could have been stored here and this enriched the soil, leading to vigorous growth.

All these species (rushes, silverweed, creeping buttercup, nettles, dock, creeping thistle) grow vigorously and outcompete other grassland species which results in less species and thus less biodiversity and they will need to be managed to prevent them from spreading, with the aim of creating a species rich meadow.



Image: 4: Creeping thistle, silverweed, dock and nettle

In addition, brambles from the bramble patch along the north-western boundary are beginning to encroach the grassland and this will require management too.



• see appendix for full species list

The Cow park, Killyon, Co. Meath	
Grassland map	
1:10	Oct 2022

## 5.2 Hedgerows:

### **North-western boundary**

Along the north-western boundary a dense, mature hedgerow separates the field from some houses. As part of the survey the hedge was looked at in detail. It is more like a tree line than a hedgerow as it has not been managed in many years. The main species are hawthorn with some elder and ash and one mature hazel tree. The ash are showing signs of ash dieback disease. Wildrose, bramble and ivy weave through the trees and the ground flora includes hart's tongue fern, herb Robert, burdock, ivy, bramble and nettle. Our hedgerows are invaluable for biodiversity because we have so little deciduous woodland in Ireland. Hedgerows provide ecological corridors giving birds, small mammals, pollinating insects and bats food, a home and safe passage.



*Image: 5: Mature hedge providing an food, habitat and an ecological corridor*

### **South-western boundary**

The hedgerow along the south-western boundary is more dilapidated with many gaps. It has been managed by yearly cutting and so is more like a hedgerow than a tree line. The main species found are elder, wych elm, hawthorn and ash. Standard ash trees are found along this boundary and unfortunately all are suffering from ash dieback and will eventually succumb to this disease. As this hedgerow is found parallel to a drainage ditch the species found here are different from those found elsewhere in the field, favouring flora that can tolerate wetter ground, such as ferns and angelica.



*Image: 6: Hedgerow along the south-west boundary is more patchy and less valuable for wildlife*



### 5.3 Bramble patch

Parallel to the north-western hedgerow a large thicket of bramble has encroached on and colonised a tract of land. Brambles are among our most important plants for wildlife - from the flowers which are loved by pollinators to the berries in autumn for birds and mammals. In addition to the food they provide they form scrubby thickets as in this case, and this dense cover is needed as habitat for overwintering insect larvae, smaller songbirds and other wild creatures. This bramble thicket is mostly south facing so has high value and creates a second ecological corridor parallel to the hedgerow. Brambles are a vigorous deciduous shrub and will spread, by layering into open ground so they can become invasive and this thicket will need some management to prevent it spreading further into the grassy area.



*Image: 7: Bramble thicket which has encroached into part of the meadow from the hedgerow*

5.4 Drainage ditch: runs along the south-western boundary. This channel drains the field and provides a narrow, slow-moving body of water at the edge of the cow park. Water invertebrates are likely to be present with their associated predators. The ditch could provide a habitat for frogs or newts to breed, and birds and small mammals to drink and bathe. On the day of the site visit damselflies were observed on site. The sides of the drainage ditch provide a habitat for moisture loving flora such as ferns and angelica.

5.5 Habitat piles: two piles of dead wood are found close to the drainage channel. These were created when the ditch was dredged in past years. While accidental, these have become habitat piles providing a refuge and hunting ground for small mammals and amphibians. Fungi, wood-boring insects, woodlice, beetle grubs and wood wasps all find homes and food in dead wood. These are prey for other animals: spiders, frogs, hedgehogs and birds. Piles of dead wood provide shelter for over-wintering and hibernating wildlife so have great ecological value.

5.6 Mounds of topsoil: Created from building the track into the GAA land at the back of the cow park these tall mounds of topsoil are now mostly colonised by creeping thistle. The mounds are very high and almost impossible to manage as any work here would need to be carried out by hand and it would be time consuming and difficult work.



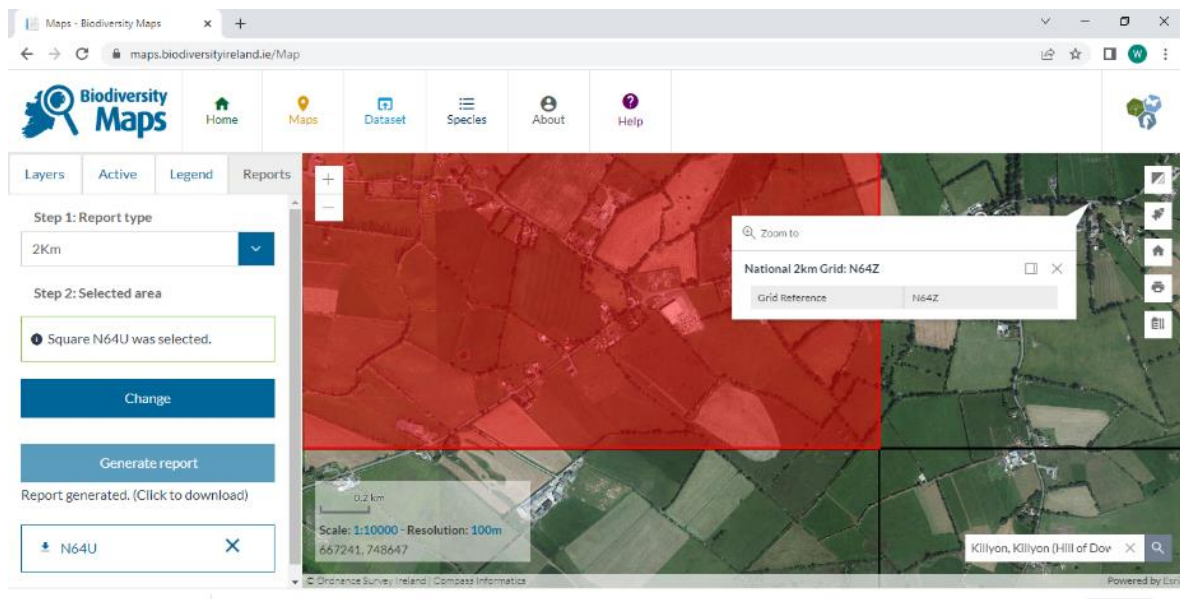
*Image: 8: Creeping thistle and dock setting seed on the mounds of topsoil left behind from the creation of the track*



*Image: 9: The two wildlife corridors at the Cow park, bramble patch and hedgerow*

## 6. National biodiversity database

We used the national biodiversity database, BIODIVERSITY MAP GRID REF N64U, 2km square to explore recorded records for Killyon. Although there are very few records some species of conservation concern have been recorded and these are listed in the table below.



Species	Status
Common Kestrel ( <i>Falco tinnunculus</i> )	Protected Species
Eurasian Teal ( <i>Anas crecca</i> )	Birds of Conservation Concern - Amber List
Rock Pigeon ( <i>Columba livia</i> )	Protected Species
European Otter ( <i>Lutra lutra</i> )	

## 7. Site visits and Community Interaction

### 7.1 Site visit May 2022

We conducted a habitat survey on 16<sup>th</sup> May 2022, and Fran Giaquinto met with Killyon community association members Linda Gilsean and Geraldine Foley and walked through the site. More was learned about the history of the field and the community members outlined possible plans for the six acre site including tree planting, a community orchard and a community centre. A species survey of the Cow park was conducted.

On this day a species survey of the graveyard close to the cow park was also undertaken. This area is relevant as it has three circles of grassland which the community have been managing as hay meadows over the last few years. It demonstrates what species could appear in the cow park with proper grassland management. It also has potential as a seed bank for growing plug plants to introduce into the cow park. We demonstrated how to carry out a quadrat study and two students from St. Finian's national school joined in. Recommendations for the graveyard are found below.



Image: 10: Quadrat study at the graveyard in May 2022 with two students from St. Finian's national school

### Results of the quadrat study at the graveyard May 2022

Quadrat	Grasses % cover	Forbs % cover	Grass: forb ratio	Litter % cover	Bare soil % cover	Ave vegetation height	Dominant grass type
1	75%	25%	75/25	50%	5%	33cm	Common bent grass
<b>Species:</b> bird's foot trefoil, black Friday grass, knapweed, meadow buttercup, germander speedwell, sheep's sorrel							

## 7.2 Community workshop July 2022

A workshop was held with the local community to raise awareness about the importance of biodiversity at the cow park and how the community can help to protect it.

We demonstrated how to carry out a quadrat study of a grassy area and a quadrat was taken in a section of the grassland that was more species rich. Fran helped the group identify the species growing in the grassland.

### Goals of the community workshop:

- Encourage, support and empower the group to manage the cow park for biodiversity.
- Educate the community in how to carry out a quadrat of a grassy area.
- Motivate the community group to carry out quadrat studies of other grasslands in the community.
- Identify the common species found in the grassland and educate the community members in identifying these.
- Explain the importance of citizen science and how a quadrat study can be used to determine if the management practices are working.



Image: 11: Community members taking part in the workshop July 2022

## 8. Strengths/ Opportunities

- An active and committed community group.
- Community members have considerable understanding of biodiversity and are already working with the local primary school to share this knowledge.
- The cow park is an established community area.
- The cow plot is particularly rich in insect life.
- No invasive species are currently present in the field except for a few *Buddleja davidii* plants which have self-seeded into the track. Every effort should be made to ensure the Cow park remains free of invasive species.



Image: 12 Emperor moth in the un-mown grassland

## 9. Weakness/Threats

- All activities are dependent on volunteers who in most cases have full time jobs. Any future plans need to consider the work and long-term maintenance involved.

## 10.Key Recommendations for biodiversity management.

### 10.1 Meadow

The grassland could be managed as a traditional hay meadow with the aim of establishing a rich mix of grasses and wildflowers. Hay meadow facts:

- One of our rarest and most species-rich habitats
- The product of traditional, low-intensity farming. Cut for hay in late summer. Cattle/sheep graze over winter
- Meadows support many species of flowering plants, pollinators and other insects
- The seeds the plants produce and the invertebrates living in meadows provide food for birds and mammals
- Even meadows with few plant species provide food for seed-eating birds and nesting habitat for ground-nesting birds e.g., lapwings, curlews and skylarks
- Dandelion and sorrel are particularly good for seed-eating birds
- Plants and wildlife associated with traditional hay meadows need long-established management practices to continue
- A late cutting date is the critical factor - Mid July onwards (ground-nesting birds)
- Meadows are more resilient to drought than grassland with low species-richness. This may become increasingly important with predicted decreases in rainfall.
- Increasingly, farmers are being encouraged to increase species richness in their pastures as a climate-resilience measure. The cow-park is a hugely valuable seedbank of native species and it could become very important in the future as a resource for farmers to draw on.



Fertile soil favours vigorous grasses and forbes (such as dock and nettle) and it is difficult for wildflowers to compete with these plants. Over time the cutting and removing of vegetation reduces the fertility of the soil and traditional meadow flowers will begin to naturally colonise the ground.

The soil in the cow plot holds the seed bank for these wild plants and they will begin to emerge once conditions suit and there is space. The meadows which have been managed at the graveyard demonstrate what species diversity we can expect in the Cow park in future years.

Managing the grassland with the aim of restabilising a traditional hay meadow would require minimum input from the volunteers. Here are two options for how Killyon community group could begin to manage the meadow:

**Option 1:** Light grazing in winter, hay cut in summer – July/August

**Option 2:** Cut twice a year with machine, (cut and lift) mid-April, end summer.

- Ideally the well managed area where the quadrat study was conducted (parallel to the track) would be cut first, with the rougher back section cut second – to avoid spreading creeping thistle, silverweed and creeping butter cup.
- For the first year it would be beneficial to have three cuts (end April; end July; end October) but it may not be practical or affordable to have three cuts in a year.
- The grassland could be monitored using a quadrat study each year to determine if the cutting and lifting regime is working and more diversity is evident.
- Including some yellow rattle seed here and growing on some plug plants with seed saved from the adjacent graveyard meadows would also be beneficial.
- **Dealing with the creeping thistle:**  
A creeping thistle problem should not develop in a dense, well-managed sward of perennial grasses and forbes but when it does occur it can be very invasive. As it is present in the field it will need some management. Creeping thistle only rarely propagates itself by seed – instead, its root propagation is very efficient – fragments of rhizome can remain dormant in the soil for years and then appear when there is a gap in the sward. A small cutting can spread into a 20m patch in just two years. **Mechanical topping to weaken plants and prevent flowering and seed spread can be very effective if it is timed correctly. This should take place just before the flower bud turns purple, as this is when the maximum reserves from the thistle roots are being used to produce seed.** This old saying often proves true: ‘Cut a thistle in June, it’s a month too soon; Cut a thistle in July it will surely die.’ Remove cuttings to prevent seed ripening. Care should be taken in the future to avoid overgrazing (especially in the winter) and poaching which opens up gaps in the sward into which thistles can spread.  
(see [www.suffolkwildlifetrust.org/thistle-management-and-control](http://www.suffolkwildlifetrust.org/thistle-management-and-control))
- The bottom section of the field parallel to the drainage ditch has very vigorous growth with a lot of nettle and dock, it would require more regular cutting to bring this section back to a wildflower meadow. Therefore, this would be a good location to plant a small coppice of native trees. Local seed can be collected and perhaps the national school can get involved with propagating and planting out some native trees here. The mounds of dead wood could be left here as the **habitat piles** they have become. A small coppice here would also provide shelter and a sense of enclosure to the field. It is better that any trees that are planted are planted in groups or a coppice rather than individual specimen trees. The trees will grow better together but also planting individual trees through a meadow will impact the soil’s biological, chemical and physical properties.



## 10.2 Hedgerow

The dense hedgerow along the **north-western boundary** is more like a treeline than a hedgerow and it has not been actively managed for some time. There is little to be gained in recommencing hedgerow management at this point and it should be maintained as the valuable ecological corridor that it has become. It provides shelter and privacy to the site and creates and to the adjacent properties. The main species is hawthorn and these have a life span of 250-400 years. We recommend surveying the hedgerow in ten-fifteen years to determine if coppicing is required to regenerate the hedgerow.

The dilapidated hedgerow along the south-western boundary has many gaps. It would benefit by adding bareroot hedging plants to fill the gaps and create an unbroken wildlife corridor. Seeds or cuttings could be collected from trees already present in the boundaries of the field and new plants grown for this hedgerow. Elder, wych elm, hawthorn, wild damson and hazel are all naturally found in the surrounding hedgerows. The mature ash trees here will die back in time so it would be wise to include some standard trees now that will replace them. From an ecological point of view alder supports many of the species that rely on ash and alder would also suit the wet conditions of the drain. Leave any ash until they become dangerous as standing dead wood is very beneficial for bats, owls, and invertebrates.

Constant long- term trimming at the same height places a hedge under stress and can damage it but sympathetic trimming can thicken a hedge by creating new points from which growth can fill out. Ideally trim the hedge on a three-year rotation, allowing the cutting height to increase a little each time. If possible delay trimming until February so that wildlife can benefit from the berries and seeds through the winter months.

## 10.3 Brambles

The bramble thicket is mostly south facing and so has high value and creates a second ecological corridor parallel to the hedgerow. It supports a whole web of insect and bird life and is the beginning of succession into wood. Hawthorn and willow will seed into this thicket and the bramble offer a physical barrier around tree seedlings and act as a nurse species to these trees.

However, brambles can become invasive as they are a vigorous semi-evergreen shrub producing prickly shoots from a perennial rootstock. The shoots, known as canes, die after flowering and fruiting in the autumn of their second year. The dead canes provide a supporting framework over which new canes grow to increase the height of the thicket. Brambles will spread by layering into open ground so can become invasive and this thicket will need some management to prevent it spreading further into the grassy area. We recommend cutting a path along the bramble thicket and keep this short – perhaps as a walking track. The path can be kept 1m from the bramble thicket as this will provide a step-down habitat. The 1m strip can be cut once a year in November and this will prevent the brambles encroaching further into the grassland.

## 10.4 Mounds of topsoil

The mounds of topsoil are too difficult to manage as they are and have been colonised by dock and creeping thistle. They do offer shelter and privacy to the site. We suggest lowering these mounds to a manageable height where they could be easily mown. They could become a lovely feature for children to play on or a place to sit in the summer months if they were kept mown short. A small 2 meter x 2 meter section could be kept bare to encourage mining bees to nest. This is the perfect habitat for them and will work much better than a bee hotel. Of the 97 wild bee species in Ireland 66 are solitary mining bees which use earth banks and old stone walls to nest in. Female bees will carve

tunnels in the earth and build small walls to make a line of 'brood cells,' each with an egg and pollen. On sunny, warm spring days, bees will be visible, returning to these nests with bright yellow pollen and you can learn to identify the different types of solitary bees. Once a year any vegetation that has grown can be cleared by weeding it back to bare soil. Do this in late autumn, to avoid disturbing any nesting bees. Never use pesticides of any kind (including herbicides) on an area meant for solitary bee nesting as this will kill them. They will benefit from the native species found in the grassland.

Winter is the best time to lower the mounds, Care will have to be taken with the top layers of soil as it will be full of creeping thistle and dock root – wherever this top soil is spread these species will be spread so the top soil, though if it is to an area that will be very regularly mown this should control the problem.



*Image: 13. Mining bee and habitat, mounds of topsoil*

## 10.5 Summary

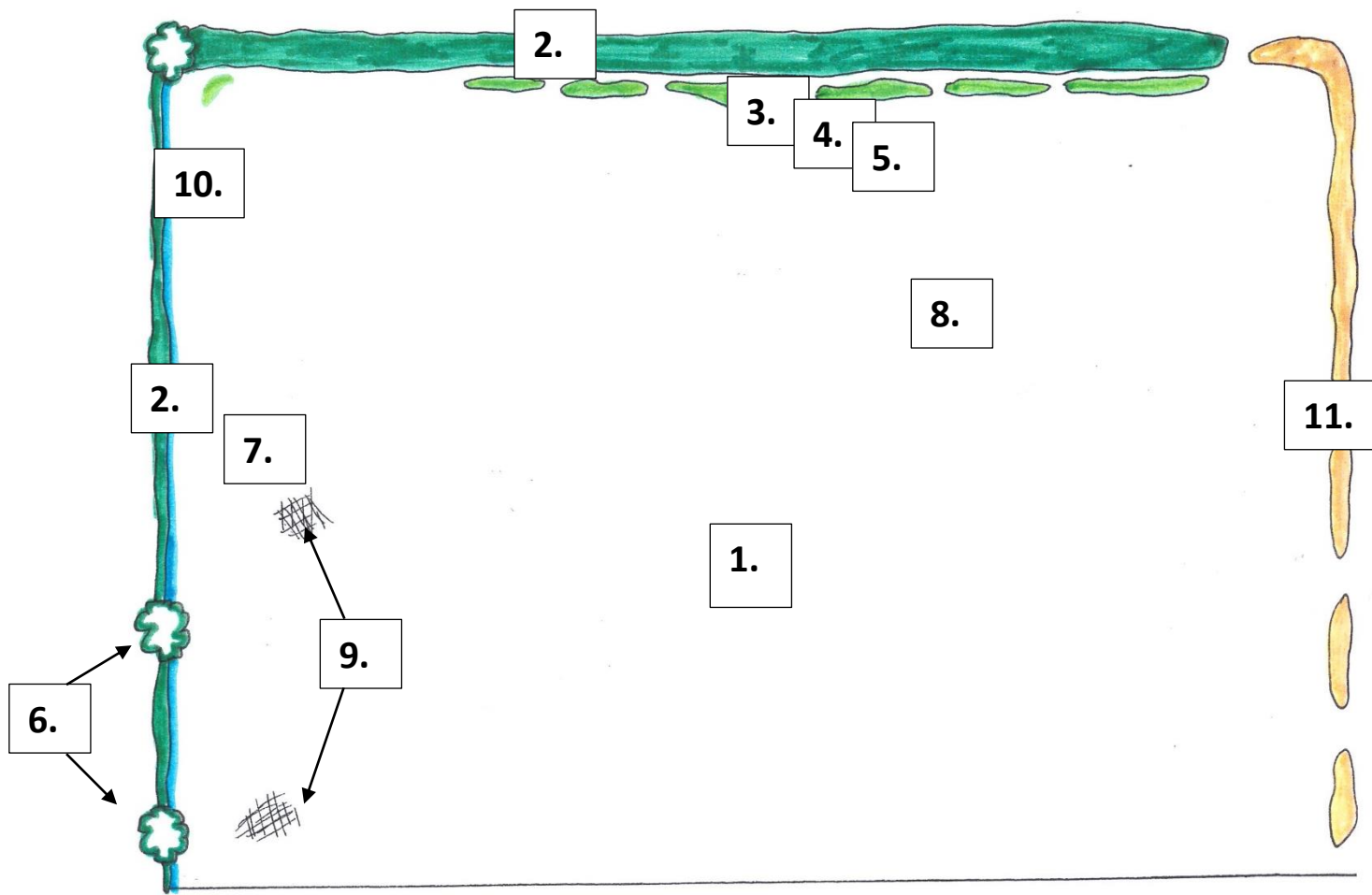
Our study for the biodiversity plan has shown the Killyon community that the cow park is a very interesting area, ecologically, because it contains a range of different habitats within the one field, including several grassland types, hedgerow, treeline, bramble patch, drainage ditch, soil mounds, dead brush pile. Each of these habitats provides a home to a different community of species. This is one of the reasons why the cow park is rich in biodiversity. There is an abundance of insect life here and with a 60% decline in insect populations nationally the presence of so many insects make this site very promising.

The cow park is also important for another reason, known as ecological transition. If a transect is marked across the field, it shows that the vegetation changes from quite short grassland, to more vigorous grassland, to nutrient-rich grassy areas to long grass to bramble patch to hedgerow to treeline, but each vegetation type melds into the other. This means that a wide range of species can make use of the transition, depending on their need for food, water, or shelter.

Finally, the cow park provides two important ecological corridors: 1) the treeline which will be used by bats and birds; 2) the dense hedgerow which will be used by songbirds and larger birds of prey, such as kestrels, hedgehogs and other small mammals. Together, these features make it an excellent place for schools-focused outdoor study. The Cow park could become the place where local children really learn what biodiversity means and study this as part of an ongoing citizen scientist project.



*Image: 14: Insect life at the cow park: spider webs, baby spiders, possibly drinker moth eggs, meadow buttercup seed head*



### Biodiversity actions at a glance

1.	Grassy area management
2.	Hedgerow: * Northwest * Southwest
3.	Bramble patch
4.	Grass strip parallel to brambles
5.	Mown path
6.	Ash dieback
7.	Native tree planting
8.	Community orchard
9.	Habitat piles
10.	Drainage ditch
11.	Mounds of topsoil

## 11. Biodiversity Actions at a glance

- 1: Grassy area:** Manage the grassy area as a wildflower/hay meadow. Initially two cuts a year – mid-April, end summer (cut and lift). Thereafter one cut a year end August may suffice. Cut the creeping thistle section just as the flowers turn purple, best action to weaken the plant.
- 2: Hedgerow:** **Northwest:** Maintain ecological corridor as is, resurvey hedgerow 2032  
**Southwest:** Determine ownership of hedge and infill gaps with hawthorn, hazel, wych elm, crab apple, spindle, guelder rose.
- 3: Bramble/scrub patch:** Maintain ecological corridor and habitat for wildlife. Native trees could be added into bramble thicket.
- 4: Longer grass strip parallel to bramble patch:** Leave a 1-2 metre strip of longer grass to provide a transition habitat. Cut November each year with clippings removed.
- 5. Cut path parallel to grass strip:** to prevent bramble spreading into grassland.
- 6: Ash dieback:** Monitor, leave as standing dead wood, only remove if health and safety risk.
- 7: Native bareroot tree planting:** into rough nettle/dock patch at back of cow park.
- 8: Community orchard:** group to decide on best location. Manage organically.
- 9: Habitat piles:** maintain and surround with native tree planting.
- 10: Drainage ditch:** leave a riparian margin 1 meter wide, cut and lift once a year.
- 11: Mounds of topsoil:** lower the mounds and re-design so they can act as informal south facing seating for visitors, mow regularly to prevent creeping thistle and dock from spreading. Create mining bee habitat in some sections.
- 12: Manage invasive species.** Dig out buddleia seedlings from the track and monitor hedgerows 2023, 2024 to ensure buddleia has not spread
- 13: Citizen science project:** Annual quadrat studies in grassland and timed insect counts in grassland/hedgerow/bramble patch May/June. Involve the local school if possible.

## 12.Task List

	Action	When
<b>Grassy area management</b>	Cut the meadow and remove all clippings	Early April + Late summer 2023 Early April + Late summer 2024 Late summer 2025
	Manage creeping thistle section by regular cutting and lifting <b>OR</b> allow it to flower and cut and lift once flower heads are purple – will weaken the plant	Summer 2023; 2024; 2025
	Leave a 1-2 m strip of long grass parallel to bramble patch, to provide a transition habitat. Cut November each year with clippings removed	2023, 2024, 2025
	Mow a path regularly, one m out from the bramble patch to prevent it encroaching further into the grassland.	Mar-Oct 2023, 2024, 2025
	Take quadrats in the grassland, record species found and check how many grasses there are to forbs (all plants except grasses, sedges, and rushes). Record the results. Involve the local school children if possible	May/June 2023; 2024; 2025
	Repeat the step transit study to see if the creeping thistle is spreading	Sept 2023; Sept 2024; Sept 2025
<b>Hedgerows</b>	Fill gaps in hedge on south-west boundary with hawthorn, elder, crab apple, wych elm, hazel, spindle and guelder rose	Bareroot season 2023/2024
	Monitor ash trees, only remove if they pose a health and safety risk.	Ongoing
	Include native alder to develop into mature trees to replace the ash onsite	Bareroot season 2023/2024/2025

<b>Community Orchard planting</b>	Decide on a suitable location for community orchard	Autumn/winter 2022
	Involve the community in planting of orchard	Nov 2022 - Feb 2023
	Mulch, stake and label all trees carefully to minimize future maintenance	On planting
	Make a map of the community orchard for future reference	On planting
<b>Native tree planting</b>	Collect local seed: Oak, alder, hazel, hawthorn and holly and grow on in a small tree nursery for planting out on site in 2025/2026 – with local school if possible	Autumn 2023/2024
	Plant native trees into the area of nettles and dock parallel to drainage ditch	Bareroot season 2024/2025
<b>Mounds of topsoil</b>	Lower the height of the mounds of topsoil so that they can be managed by regular mowing	Nov 2022-Apr 2023
	Topsoil could be reconfigured into lower hillocks that will provide shelter, privacy and informal seating for the cow park	2023
	Include some sections of south facing bare soil as mining bee habitat 2m x 2m sections	Spring 2023, 2024, 2025
<b>Invasive species management</b>	Remove buddleia from the track, monitor the site to ensure this plant does not self-seed	Spring 2023, 2024, 2025

### 13. Citizen science

There is the potential to have an exciting, community-based, citizen scientist project at the Cow park. Signage could be provided on the importance of hay meadows, hedgerows and brambles, with information on the species of plants, insects and mammals that are supported by them. Your local heritage officer and local community development company may be able to help with funding for this.

The school children in Killyon could be involved and learn how to monitor and record the species found. Repeating quadrats and step transit studies each year will help to show what is the best cutting regime for the grasslands and will build up a record of the site and how it changes over time.

Learning how to measure and monitor biodiversity is an excellent way to teach young people and adults about biodiversity. There are many opportunities in Ireland which encourage people to become citizen scientists and make a real contribution to the body of information that is held nationally by the National Biodiversity Data Centre. Lots of useful information, including details of the various monitoring schemes can be found at: <https://pollinators.ie/record-pollinators>. Here are some examples of monitoring schemes the Killyon community could get involved with:

#### Flower Insect Timed Count

<https://pollinators.ie/record-pollinators/fit-count/#:~:text=How%20to%20take%20part%3A%20FIT,%2C%20farm%2C%20park%2C%20school>.

#### Bumblebee monitoring scheme

<https://biodiversityireland.ie/surveys/bumblebee-monitoring-scheme/>



*Image: 15: Ecological corridors and grasslands at the cow park*

#### Climate change

Green spaces like the cow park can make a real contribution as carbon sinks. The grassland, bramble patch and hedgerow can all be managed to become carbon stores rather than carbon emitters. Through this the community of Killyon is taking practical action to fight climate change.



## 14. Organisations to provide further assistance

### 14.1 Bird Watch Ireland

The largest independent conservation organisation in Ireland - the primary objective of BirdWatch Ireland is the protection of wild birds and their habitats in Ireland. Carry out extensive scientific research and survey work into Ireland's birds. Operate applied conservation projects and manage a network of reserves nationwide. Prepare and advocate policies to protect and conserve Irish birds and their habitats. Promote the importance of wild birds and biodiversity through field education, dedicated media and to the national media.

### 14.2 Bat Conservation Ireland

A charity dedicated to the conservation of Ireland's bats. They promote conservation of bats by disseminating educational materials, giving talks and leading bat walks, carrying out nationwide surveys and monitoring of bats, acting as an umbrella group for the local bat groups and providing a central repository for bat records - <https://www.batconservationireland.org/>

### 14.3 All-Ireland Pollinator Plan

A national strategy for pollinator conservation, including a range of actions and many sub-guides for different sectors including farmers, businesses and communities - <https://pollinators.ie/>

## 15. Appendix

### 15.1 Species list: May/ June/ July 2022

Latin name	Common name	Description
Rubus fruticosus	<b>Bramble</b>	
Rumex obtusifolius	<b>Broad-leaved Dock</b>	It can spread, prevent from forming seed.
Vicia sepium	<b>Bush Vetch</b>	Positive indicator
Buddleja davidii	<b>Butterfly bush</b>	
Stellaria media	<b>Chickweed</b>	
Galium aparine	<b>Cleavers</b>	Sign of high nutrients in the soil.
Dactylis glomerata	<b>Cocksfoot</b>	One to watch. It forms a thick layer of litter on the surface of the soil if it is not regularly cut which prevents wildflowers from establishing.
Lotus corniculatus	<b>Common Bird's-foot-trefoil</b>	Positive indicator
Papaver rhoeas	<b>Common Poppy</b>	
Anthriscus sylvestris	<b>Cow parsley</b>	
Agrostis stolonifera	<b>Creeping bent</b>	One to watch. Can forms a thick layer of litter on the surface of the soil if not regularly cut which prevents wild flowers establishing.
Ranunculus repens	<b>Creeping Buttercup</b>	It can spread if there is too much bare soil
Cirsium arvense	<b>Creeping Thistle</b>	Can spread easily, especially on bare ground
Cardamine pratensis	<b>Cuckooflower</b>	Positive indicator
Geranium dissectum	<b>Cut-leaved Crane's-bill</b>	Positive indicator
Taraxacum officinalis agg.	<b>Dandelion</b>	Positive indicator
Veronica chamaedrys	<b>Germander speedwell</b>	Positive indicator
Luzula campestris	<b>Good Friday grass</b>	Positive indicator
Plantago major	<b>Greater Plantain</b>	Positive indicator
Senecio vulgaris	<b>Groundsel</b>	Positive indicator
Crepis capillaris	<b>Hawksbeard</b>	Positive indicator
Geranium robertianum	<b>Herb-Robert</b>	Positive indicator
Epilobium parviflorum	<b>Hoary willowherb</b>	Positive indicator
Heracleum sphondylium	<b>Hogweed</b>	Positive indicator
Centaurea scabiosa	<b>Knapweed</b>	Positive indicator
Galium verum	<b>Lady's bedstraw</b>	Positive indicator
Stellaria palustris	<b>Marsh stitchwort</b>	Positive indicator
Ranunculus acris	<b>Meadow Buttercup</b>	Positive indicator

Lathyrus pratensis	<b>Meadow vetchling</b>	Positive indicator
Filipendula ulmaria	<b>Meadow sweet</b>	Positive indicator
Cerastium fontanum	<b>Mouse ear</b>	Positive indicator
Urtica dioica	<b>Nettle</b>	Nettles are a sign of high nutrients in the soil. In sunny places, nettles can be the food source of the red admiral, small tortoiseshell, painted lady and comma butterflies.
Leucanthemum vulgare	<b>Oxeye Daisy</b>	Positive indicator
Trifolium pratense	<b>Red Clover</b>	Positive indicator
Plantago lanceolata	<b>Ribwort Plantain</b>	Positive indicator
Anagallis arvensis	<b>Scarlet pimpernel</b>	Positive indicator
Rumex acetosella	<b>Sheep's sorrel</b>	Positive indicator
Potentilla anserina	<b>Silverweed</b>	Can spread easily and this is why it is important not to have too much bare soil in the grassland
Anthoxanthum odoratum	<b>Sweet vernal grass</b>	Positive indicator
Potentilla erecta	<b>Tormentil</b>	Positive indicator
Phleum pratense	<b>Timothy grass</b>	
Deschampsia cespitosa	<b>Tufted Hair-grass</b>	
Torilis japonica	<b>Upright Hedge-parsley</b>	Positive indicator
Achillea millefolium	<b>Yarrow</b>	Positive indicator
Lysimachia nemorum	<b>Yellow Pimpernel</b>	Positive indicator
Holcus lanatus	<b>Yorkshire Fog</b>	One to watch. It forms a thick layer of litter on the surface of the soil if not regularly cut which prevents wild flowers establishing.
Trifolium repens	<b>White clover</b>	Positive indicator

## 15.2 Step transect

A step transect was carried out by Geraldine Foley and Linda Gilsenan in September 2022, to monitor the occurrence of creeping thistle. Beginning from a point close to the mound of topsoil and walking to the end of the field to the drainage ditch, each step roughly measured 1 metre.

### Summary of results:

- 15 out of 182 steps had creeping thistle
- The concentration of creeping thistle is from step 118- step 148
- Out of 31 steps creeping thistle was found on 15 steps

## 15.3 Recommendations for Killyon graveyard

- Killyon community council are to be commended for their biodiversity management at the graveyard. **The three small areas of hay meadow here are very diverse with many positive indicator species** including sweet vernal and briza media grasses – see the full list below. We recommend **continuing the same management practice for these areas** (cut at the end of the summer) as the quadrat study here showed good quality grassland.
- The graveyard meadows are extremely valuable as from studying the plant diversity here we see what the Cow park could be like with some gentle management. It is also **valuable as a seed source for growing on plug plants to include in the Cow park.**
- **The lack of insect life in the graveyard when compared to the Cow park was very noticeable.** This could be due to the fact that the closest hedgerow is a tightly clipped laurel, which offers little or nothing for biodiversity. In addition, the rest of the grass in the graveyard is very tightly mown so the three uncut areas are islands – cut off and not connected to any ecological corridor. It highlights the value of the habitats and ecological corridors which the cow park has.
- Looking at the forbes in the cut section of the graveyard we found many low growing species such as bird’s foot trefoil, self-heal, daisy, clover, dandelion, primrose, cowslip. If the cutting regime here was changed slightly it would allow these species to flower, while keeping a short grass appearance. This would offer an ecological corridor for pollinators and other insect life. We recommend **raising the cutting height to at least 10 cm above the ground and perhaps cutting a little less frequently.** This simple action would have a big impact.
- The hedgerow around the graveyard is predominantly laurel but despite this there was a great diversity of wildflowers growing at the base of the hedge such as meadow vetchling, germander speedwell, sow bain, bush vetch, scarlet pimpernel and fumitory. A light trim at the base of the hedge once a year (prior to August 15<sup>th</sup>) should encourage these species



Image: 16: The meadow at the graveyard

#### 15.4 Species list, Graveyard May 2022

Latin name	Irish name	Common name
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Lotus corniculatus	Crobh éin	<b>Bird's-foot-trefoil</b>
Vicia sepium	Peasair fhiáin	<b>Bush vetch</b>
Stellaria media	Flíodh	<b>Chickweed</b>
Anthriscus sylvestris	Peirsil bhó	<b>Cow parsley</b>
Primula veris	Baine bó bleachtáin	<b>Cow slip</b>
Ranunculus repens	Fearbán (reatha)	<b>Creeping Buttercup</b>
Bellis perennis	Nóinín	<b>Daisy</b>
Taraxacum vulgaria	Caisearbhán	<b>Dandelion</b>
Fumaria officinalis	Camán searraigh díge	<b>Fumitory</b>
Veronica chamaedrys	Lus cré talún	<b>Germander speedwell</b>
Luzula campestris	Giúnach léana	<b>Good Friday grass</b>
Senecio vulgaris	Grúnlas	<b>Groundsel</b>
Crepis capillaris	Lus <u>Cúran</u> min	<b>Hawksbeard</b>
Centaurea scabiosa	Mínscoth mhór	<b>Knapweed</b>
Galium verum	Bolach cnis	<b>Lady's bedstraw</b>
Ranunculus acris	Feárbán féir	<b>Meadow buttercup</b>
Lathyrus pratensis	Peasairín buí	<b>Meadow vetching</b>
Cerastium fontanum	Cluas luchóige mhara	<b>Mouse ear</b>
Leucanthemum vulgare	Noínín mór	<b>Oxeye Daisy</b>
Primula vulgaris	Sabhaircín	<b>Primrose</b>
Briza media	Féar gortach	<b>Quaking-grass</b>
Trifolium pratense	Semair dhearg	<b>Red clover</b>
Plantago lanceolata	Slánlus	<b>Ribwort Plantain</b>
Anagallis arvensis	Falcaire fiáin	<b>Scarlet pimpernel</b>
Prunella vulgaris	Duán ceannchosach	<b>Self-heal</b>
Rumex acetosella	Samhadh caorach	<b>Sheep's sorrel</b>
Sonchus arvensis	Bleachtán léana	<b>Sow bain</b>
Anthoxanthum odoratum	Féar cumhra	<b>Sweet vernal grass</b>
Achillea millefolium	Athair thalún	<b>Yarrow</b>
Holcus lanatus	Féar an chinn bháin	<b>Yorkshire fog</b>