

2020

Scoring Burren Winterages

General Instructions & Guidelines

These instructions and guidelines are subject to regular review and revision.

More significant, recent revisions are indicated by the use of blue text in the document

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'The European Agricultural Fund for Rural Development: Europe investing in rural areas'.

Health Assessment for Burren Winterage-type Pastures¹

(Species-rich grazed habitats including Calcareous Grasslands, Limestone Heaths & their Mosaics with Limestone Pavement & Turloughs).

The 'health' assessment is based on the supposition that management plays a significant role in determining the ability of Burren winterage-type pastures to achieve their potential in terms of their conservation status, diversity and abundance of plants present. It sets out to assess the management of each field in terms of both the actual management, the management that is needed to get it into the best condition for it to function as a species-rich limestone grassland/heath/pavement, and the ecological integrity of the grazed habitats present. Each individual field is assessed by answering a series of questions, the results of which are used to calculate a final health rating for the field on a scale of 1 (poor) to 10 (excellent).

Burren Lowland Grasslands (BLG) and Burren wet grasslands should be scored using the Burren Lowland Grassland and Burren wet grassland health assessments respectively. See the relevant guidelines for guidance as to the qualifying criteria for these two grassland habitats.

GENERAL INSTRUCTIONS

What is being scored?

The scoring takes a 'snapshot' of a field's condition with the aim of capturing the impact of grazing and any supporting works carried out in the preceding year. Remember, the impact of farm works carried out after the end of the previous winter grazing period but before the current scoring visit, will not come in to effect until scored in the following year.

What Type of Pasture is it?

When carrying out the assessment you need to decide what type of pasture you are looking at and get a general feel for the ecological integrity (contact BP office if unsure). Is it:

- a typical Burren winterage or a modified Burren winterage i.e. one where the vegetation has changed due to more intensive year-round, prolonged summer grazing, or past agricultural improvement? In cases of past reseeding and fertilisation, consider whether it is more appropriate to score the field or sub-unit using the Burren Lowland Grassland assessment.
- a grazed turlough/wetland? (Contact BP office – initial assessment will be carried out by a member of the BP staff.
- a meadow-type Burren lowland grassland or Burren wet grassland? Use guidelines, scoring methodology and calculators developed for these habitats.

Optimum Time for Carrying Out Winterage Assessments

Mid-May to late August.

- Section A assessments: winter grazing levels, litter, feed sites and water troughs, natural water & bare soil, are easier to do early in the season (late April to mid-June). However, with careful observation, they can be done later in the season,
- Section B assessments: Bracken and weeds are more difficult to assess accurately early in the season (before Mid-June).

Walking a field

To assess the management and identify any existing or potential problems in a field, the assessment route should:

- Cover representative areas of the grazeable habitats present so a good overview of the state of the field can be obtained. E.g. ensure that you cover a selection of the vegetation types present such as grassland and heath, different strengths of winterage and different terrains. Where possible, plan an approximate route by examining aerial photographs beforehand. N.B. DO NOT just follow access tracks or regular stock paths as this will give a biased view of the field's condition.
- Target any obvious/known hot-spots e.g. feed sites; natural watering points (particularly springs) and recently installed drinking troughs. Ask the farmer to indicate their locations if he/she is not walking with you. Their locations should be recorded and mapped for future reference.

¹ The methodology described here is based on that developed for assessing rangeland health in Alberta and British Columbia, Canada. Details on the former can be found at <http://esrd.alberta.ca/lands-forests/grazing-range-management/range-health.aspx>.

Observation Method

The health assessment is dependent on the observational skills of the surveyor. It is essential to look around as you walk so you get a feel for the wider area e.g. to estimate the overall grazing level or the percentage cover of encroaching scrub. It is also necessary to stop regularly to pick up the detail needed for certain assessments e.g., parting the grass at regular intervals during your walk to estimate litter density or checking the vegetation for weed species or the presence of scrub seedlings.

Time Allocation

Make sure you allow sufficient time for carrying out the assessments. It will probably take longer than you think the first time you assess a field but will become faster as you become more familiar with the assessment criteria and the individual farms.

Completing the Score Sheet

- Use a separate score sheet for each field.
- Fill out the required farm & survey details.
- Note the main pasture type(s) (e.g. grassland, heath) and strength (e.g. weak, middling or strong) in the comments box.
- Record the current grazing practice and feeding management in the boxes provided.
- Refer to the scoring guidelines in this document and circle the appropriate value for each of the 10 assessment criteria (A1-5, B1-4 and C1).
- You are advised to make notes in the comments box for each of the 10 criteria as needed (N.B. you may think you don't need to make notes as you will remember, but your memory is likely to be less accurate when you're scoring a lot of fields (all start to blend into one) or after time has elapsed).
- Note in the box provided, whether any habitats or archaeology have been damaged during the past year or if it appears recent but was not seen previously. Examples that should be recorded here include:
 - Robbing out of stone from archaeological features including remnant slab walls.
 - Dumping/spreading of spoil, soil or farmyard manure (FYM) on pasture or limestone pavement.
 - Removal of limestone pavement, rock or glacial boulders.
 - Scrub removal without permission (incl. removal of mature trees/specimens when stated in plan that they are to be left).
 - Indiscriminate, excessive or poorly targeted herbicide application.
- A comments box is provided at the bottom of the sheet to record:
 - Actions required to improve scores.
 - Issues relating to work carried out under I-2 e.g. non-completion, poor quality work, failure to comply with conditions in plan or permission from NPWS or NMS, or failure to gather brash post scrub cutting.
 - Littering / dumping by farmer/contractors e.g. discarded herbicide cans, plastic bottles, feed bags.
- Consider taking photographs that are representative of the field or specific issues e.g. impact on feed sites or springs, examples of poor work, and note those taken on the score sheet as a reminder.

Completing and submitting the Winterage Calculator

- N.B. You can only select or enter data in the relevant places as the workbook sheets are locked to prevent unintentional changes. Please contact the BP team if you have any problems with this.
- Fill out the required farm & survey details.
- Enter the scores for the individual assessment criteria into the Winterage Calculator using the drop-down menus. Make sure you enter the scores in the correct column. Also enter any comments from the scores sheet into the boxes provided; these can be amended and added to annually as needed.
- The field scores are calculated automatically and appear in red beneath the relevant column.
- Add additional worksheets as required (right click on sheet tab, select 'Move or copy...' tick 'Create copy' box).
- Make sure you save the file using the farmer's name, I-1, year of assessment and initials of advisor e.g. Gallagher, Michael I-1 2010 SP. Do not just send in without amending otherwise we receive many files with the same name.
- Enter the field scores into the farm plan.
- Email the completed Winterage Calculator along with I-1 sheet to info@burrenlife.com.

SCORING GUIDELINES

The question you are answering for each of the following assessment criteria is simply:

‘Is there a problem, how bad is it’?

When answering the question, you should follow these guidelines as closely as possible but judgement and discretion can, and should be, used where necessary. Figures such as ‘half’ and percentages are indicative rather than definitive and are there to help you decide on the extent of the problem.

Section A. Relating to Grazing and Stock Management

A1. Grazing level

Aim: to evaluate whether the current grazing level equates to that needed to keep the grazing-dependant habitats in good ecological condition or, to restore them to such. The current grazing level refers mainly to the most recent winter grazing period but it also covers any requirements for summer grazing.

Grazing levels may vary either side of that which is deemed to be optimum, i.e. too heavily or too lightly grazed, and are assessed by looking at a variety of indicators such as the appearance of the sward, litter levels, amount of dung and bare soil.

Grazing levels are rarely uniform across a field, even on those considered well grazed. Palatable, easily accessed vegetation will be grazed preferentially, with less palatable plants and areas being left until the former have been eaten. Vegetation on ‘cross’ areas (i.e. very rough, rocky, uneven ground that is difficult for cattle to travel on) is likely to be grazed only lightly at best. Trying to get cattle to graze ‘cross’ areas can result in overgrazing of the easily grazed parts of a field and increases the risk of injury to the stock. Furthermore, having some minor areas left ‘un’ or only lightly grazed in an otherwise well-grazed field is desirable, as it adds to vegetation structure and is good for biodiversity. Consequently, it is acceptable for the grazing intensity to be low on ‘cross’ areas and these should be excluded from the grazing assessment.

Scoring Notes:

- Grazing levels should be **assessed across the main grazeable area** with the ‘cross’ areas excluded. Where this is the case note the presence of ‘cross’ areas on the score sheet.
- Make sure that you walk a representative area of the field, don’t just follow access tracks or well used stock paths as these will usually be in the better grazed areas and may give an overly favourable impression of the grazing level. Use aerial photo to help plan your route.
- Scoring of winter grazed fields is best carried out at the end of, or shortly after, the winter grazing period (usually late April or May). However, it can be carried out successfully in late spring and during the summer as long as careful observations are made at regular intervals along the assessment route.
- Although it can be inferred from the quality of the sward, fields which require light summer grazing should sometimes be scored during the summer to get an indication that summer grazing levels are correct.
- Fewer flowering plants will be evident than indicated in the following description, if scoring carried out in April or early May but their presence and cover can be inferred from the proportion and variety of non-grass leaves.
- N.B. Winter weather or unavoidable variations in stock numbers can adversely affect grazing levels e.g. long periods of snow, extended wet periods, over or under stocking due to TB restrictions. If this is the case, seek advice from the Burren Programme team.

Description	Score
<p>Negligible - Little or no grazing evident: • Sward rank, barely grazed, usually taller than a well grazed winterage. • Litter layer and dead-standing vegetation obvious. • Pasture likely to be paler than that on well grazed areas. • ‘Spongey’ to walk on where there’s a build-up of litter and moss. • Signs of grazing livestock absent or rarely seen i.e. little or no dung, regular stock paths or recent hoof prints. • Grassier appearance with fewer flowering plants compared to a well grazed pasture.</p>	-35
<p>Grazing level below optimum - too lightly grazed: Some signs similar to above but not as extensive or obvious.</p> <p>A. <u>Significantly below optimum:</u> i.e. grazing largely confined to a few easily accessible, palatable areas but even these poorly grazed with plenty of forage left. Less palatable areas not or barely grazed at all. A. -25</p> <p>B. <u>Less than half</u> of grazeable area in field <u>fairly well grazed:</u> e.g. some easily grazed, palatable areas well grazed but others with plenty of forage left and grazing levels elsewhere negligible or relatively low. B. -5</p> <p>C. <u>More than half</u> of grazeable area in field <u>well grazed:</u> e.g. palatable areas well grazed but rest only fairly well grazed at best. C. 0</p> <p>D. <u>Generally good</u> over majority of grazeable area but still <u>slightly below</u> optimum in some areas: D. 9</p> <p><i>C and D often result from lack of light, summer grazing or failure to start winter grazing before the stronger grasses lodge and become ungrazeable.</i></p>	
<p>Grazing optimum: • Sward looks in good condition with an abundance of flowering plants. • Litter levels low although they may be higher where grazing levels have increased only recently. • Dead standing vegetation absent or very rare on main grazeable area. • Signs of grazing livestock such as dung, stock paths and hoof prints relatively easy to see but not overly conspicuous over whole area i.e. easy to find but not immediately visible all the time. 15</p> <p><i>N.B. Where summer or year-round grazing is being used for a limited time to ‘restore’ pastures that have become rank, the grazing level should be recorded as optimum for that period.</i></p>	
<p>Grazing level above optimum - too heavily grazed: Applies to winter, but more <u>particularly summer</u>, grazing.</p> <p>A. <u>Slightly above optimum</u> but otherwise good: • Applies mainly to fields grazed tighter than recommended during a ‘light summer graze’. • Some of the more palatable areas grazed out rather than ‘topped’ but flowering plants still obvious over much of the field. A. 8</p> <p>B. Signs of heavier grazing evident but patchy in distribution: • Applies mainly to fields with a tradition of regular and/or light, summer grazing periods where there is a lack of ‘green land’ on farm. • Sward may be short in more palatable areas but flowering heads of plants typical of Burren winterages should be common on less grazed areas. B. -6</p> <p><i>Care should be taken not to overlook A and B above and incorrectly record as optimum.</i></p>	
<p>Significantly over-grazed: Mainly applies to fields regularly grazed throughout the year or for more prolonged periods <u>particularly in late spring & summer</u>. May occur very occasionally where winter grazing if heavily overstocked and using a lot of supplementary feed, or if fertiliser applied occasionally.</p> <p>• Sward short throughout grazeable area with little variation in vegetation height. • Relatively few herbs or grasses seen in flower during May/June/July as grazed off. • Site looks ‘grassy’ rather than ‘flowery’. • Most flowering herbs are low growing, rosette plants (e.g. daisies). • Litter largely absent or negligible. • Dung very conspicuous (may be concentrated in certain areas). • Bare soil and/or disturbed stones may be visible in parts or throughout. -36*</p> <p><i>* Use ‘-25’ if you feel this is more appropriate but <u>make sure you state that the problem is overgrazing in the calculator.</u></i></p>	

A2. Plant Litter & Rank Vegetation

Aim: to determine the amount of plant litter or rank vegetation that is present across a field. This complements the assessment of grazing levels.

Where grazing is absent or too light, dead plant material known as ‘litter’ accumulates. It may be present as a layer at the base of the sward (thatch) or as dead-standing vegetation (mainly grasses and sedges). The amount of litter will depend on the grazing level so it may be extensive or patchy. As litter levels increase, the diversity and abundance of herbs (i.e. flowers) decreases as it prevents other plants and seedlings from getting sufficient light. However, as the presence of some litter is beneficial for certain insects and other invertebrates, and consequently, small mammals and birds, it is about finding a balance. In the Burren, the balance is often provided by ‘cross’ areas where litter is more frequent due to the naturally lower grazing levels. Fields should not be scored down for litter in ‘cross’ areas.

Scoring Notes:

- Litter levels should be **assessed across the main grazeable area**. ‘Cross’ areas should be excluded from the assessment.
- For the purpose of scoring, a litter layer is deemed to be a layer of dead plant material that is thick enough to cloak the ground and stop, or reduce, sunlight getting to the plants beneath it. Dead strands of vegetation that allow the light through to the soil or other plants are normal and should not be penalised.
- Litter cover on the main grazeable areas of well grazed winterages should be less than 10%. However, even with optimum grazing levels, it may take a few years for the litter levels to drop to below 10% on areas that were previously undergrazed.
- If a field has little or no litter, it may have been overgrazed.
- N.B. Dead-standing plant litter can occur as the result of prolonged hot, dry weather in summer especially where soils are very thin. Take care to distinguish between litter resulting from undergrazing and that due to climatic conditions; the latter should not influence the scoring.

Description	Score
Litter cover ≤10%: Very sparse & scattered on main grazeable area. This is the most common level on winterages with grazing levels that are optimum or slightly below. <i>If you think litter levels are increasing due to ongoing, slight undergrazing, you should consider scoring litter at the 11-25% rate (i.e. 14) even if it is still below 10% as it indicates a sward in decline. If you do this, please include a note in the calculator stating the cover is ≤10% but increasing.</i>	20
Litter cover 11 – 25%: Mostly in less palatable areas.	14
Litter cover >25-50%: Thatch forming some continuous patches but mostly in less palatable areas.	8
Litter cover >50-75%: Dead-standing vegetation (especially Blue-moor grass and Red Fescue) frequent and/or thatch forming some large, continuous patches.	2
Litter dominant >75% cover: Forming a more or less continuous layer across most of the assessment area both as a thatch and dead-standing, the latter particularly visible.	0

A3. Impact of Feed Sites and Water Troughs

Aim: to evaluate whether feed sites, feed troughs (where used) and removable water troughs are located and managed in such a way as to have the minimum impact on habitats, soil and ground water.

Supplementary feeding with concentrates can benefit both the livestock and the habitats when done correctly as it encourages, and enables, stock to eat coarser vegetation thus encouraging better foraging and grazing. However, over-feeding can have a negative impact at and around feed sites and, if feeding levels are too high, can introduce nutrients leading to localised enrichment and habitat damage. Farmers should be

encouraged to move away from using troughs and to feed on the ground where possible as this can reduce the impact significantly when animals are not fed in the same location day after day.

Providing water troughs can have many benefits (especially when feeding concentrates) but can, and will, have a negative impact if badly located or poorly installed.

Scoring Notes:

Feed Sites

- Both current and recent (previous 2 winters) feed sites where damage is still obvious should be assessed under this heading. Older feed sites that are no longer used should be assessed under weeds and, if applicable, bare soil. On feed sites where concentrates have replaced silage but weeds originating from the silage feeding still extend over an area greater than approximately 15m x 15m:
 - only assess the area impacted by current feeding here, • score the older, silage impact under B4 – Weeds.
- The assessment area encompasses the full area around the feed site(s) where the impact is visible.
- Bare earth will be visible in spring but is likely to re-vegetate over the summer so assess the site accordingly. This will mean assessing either the amount of bare earth or, the relative frequency of weeds/agriculturally favoured species that colonise the area or, a combination of both.
- The location of any inappropriately sited feed troughs/sites should be noted and brought to the attention of the farmer for remedy e.g. located in particularly wet areas, on good conservation grassland/heath, on delicate peaty soils that are more prone to damage, or if impacting on any archaeological features.
- Where silage feeding has taken place in cases of accepted ‘force majeure’, the impact should be scored. The presence of silage feeding is likely to result in a score of 7 or less for this criterion (i.e. under A3, not the overall field score) but it will depend on the amount and duration of feeding.

Water Troughs

- In this case, water troughs refers to those troughs that are ‘mobile’ and can be moved or removed, relatively easily e.g. all plastic troughs, pre-cast concrete troughs. It does not usually extend to walled springs or large permanent water storage tanks that also act as drinkers whose impacts should be covered elsewhere if applicable e.g. bare soil, impact on natural water sources.
- The location of any poorly installed (e.g. not level so constantly leaking) or inappropriately sited drinking troughs should be noted and brought to the attention of the farmer for remedy, (see feed troughs above for examples).

Description	Score
<p>Low – Impact, if any, from either supplementary feeding or water troughs minor and localised:</p> <ul style="list-style-type: none"> • Feed site: • No feed troughs used. • If used, areas of bare earth / weeds generally <u>restricted to a 2m band</u> around 2-3 troughs. • Visible impact around multiple troughs restricted to an area of approximately 7m x 7m or less. • Troughs in suitable locations where impact reduced (e.g. wall bands, near gates or access tracks) and sufficient distance from archaeological features. • Water troughs: • No overflow from water troughs. • Suitable location away from archaeological features. • Bare earth / weeds restricted to 2-3m band around troughs. 	15
<p>Between Low & Medium: Impact as per medium but at either feed site or water troughs, not both.</p>	11

<p>Medium – Greater impact at feed site and some around water troughs:</p> <ul style="list-style-type: none"> • Feed site: • Area of bare earth / weeds generally restricted to within a 3-4m band around troughs. • Visible impact around multiple troughs restricted to an area of approximately 10m x 10m. • Permitted silage feeding (<i>force majeure</i>) restricted to a single location for limited time – no build-up of dung. • Located in such way that stock are encouraged to <u>regularly</u> cross nearby mound/slab wall with damage resulting from feed site. • Water troughs: • Some overflow due to poor installation leading to greater cutting up of ground. • Located on vulnerable soil which is likely to become damaged over time. • Located in such a way that stock are encouraged to <u>regularly</u> cross nearby mound/slab wall with damage resulting from water provision. 	7
<p>Between Medium & High: Impact as per high at either feed site or water troughs, not both. Maybe as per high for one and medium for the other.</p>	2
<p>High – Higher impact associated with either feed site or water troughs than above but more often occurring at both:</p> <ul style="list-style-type: none"> • Feed site: • Area of bare earth / weeds and visible impact due to current feeding extends beyond an area of approximately 15m x 15m (but see notes above re past silage feeding). • Permitted silage feeding (<i>force majeure</i>) at more than one location with some build-up of dung around ring feeder, round bale or similar. • Poor location of troughs resulting in localised but significant damage to, or loss of, thin or peaty soils. • Located on, or too close to, an archaeological feature or, in a location that stock are encouraged to <u>regularly</u> cross a nearby archaeological feature (other than a mound/slab wall) with damage resulting. • Water troughs: • Water trough(s) continually overflowing leading to significant damage to, or loss of, thin or peaty soils. • Located on vulnerable soil is leading to localised soil loss. • Located on, or too close to, an archaeological feature or, in a location that stock are encouraged to <u>regularly</u> cross a nearby archaeological feature (other than a mound/slab wall) with damage resulting. 	-7

A4. Natural Water Sources

Aim: to evaluate the impact of the farm stock on natural sources including springs, drinking ponds and other water bodies such as turloughs.

It is possible for stock to drink from natural water sources without doing damage. However, significant pressure can result when water availability is low e.g. at springs following low rainfall. This can be avoided by providing alternative drinking sources, capturing water to ensure better supply and by preventing stock from accessing vulnerable natural water sources.

Scoring Notes:

- Only natural water sources are scored under this heading. Any issues relating to removable water troughs should be covered under A3.
- The area to be assessed includes the water source and, if present, the area of surrounding wetland vegetation.
- The main impacts to be assessed are contamination with dung, disruption of the integrity of the associated wetland vegetation and the presence of other damaging activities including herbicide use.
- Where there are multiple natural water sources, the assessment should be weighted toward the one(s) with the most damage.
- If no natural water sources are present please note this in the comments box.
- Any impact will become less obvious as the time between the grazing period and the assessment increases so check water sources thoroughly.

Description	Score
Low: • Natural water sources rarely or lightly used due to availability of water in drinking troughs / tanks. • No dung in water or on surrounding rock over which springs flow. • Hoof prints sparse or absent. • Where present, wetland vegetation (including mosses) should not show signs of loss due to trampling. • Undisturbed water in ponds/pools should be clear, and in the case of shallow ones, well vegetated. • Impact on turloughs low and dispersed.	15
Between Low & Medium: • Water troughs / tanks may be present but their location means that stock still use some natural water sources. • Multiple natural water sources present, most with low impact but one or two with medium.	11
Medium: • A small amount of dung around springs. • Hoof prints resulting in a somewhat pock-marked, uneven appearance but not 'churned up'. • Wetland vegetation may be patchy and discontinuous but bare mud/peat originating from disturbance should cover no more than about 50% of the area. • Water in ponds/pools may be slightly discoloured due to suspended solids.	7
Between Medium & High: If multiple water sources present, half or more with medium impact.	2
High: • Significant amounts of dung in and around the water source. • Will probably appear churned up with bare mud covering a significant proportion of the assessment area. • Wetland vegetation, if present, much reduced through trampling.	-7

A5. Bare Soil & Erosion

Aim: to evaluate the impact of grazing and management practices on the condition of the soil structure.

Scoring Notes:

- Bare soil is to be expected along regular stock routes and around regular congregation points (e.g. by gates, shelter areas) and is acceptable as long as it is within the normal range and is not resulting in accelerated soil loss.
- Bare ground that is caused by stock around feed sites or water troughs is covered under A3, and that at natural water sources under A4. They should not be included in this section unless the bare soil extends beyond the areas covered under those two headings.
- Bare soil and rutting caused by vehicles (e.g. tractors) when feeding stock should be included here.
- Bare soil created by wildlife (e.g. rabbits and ants) or by other means not associated with agriculture, should be excluded from the assessment but noted in the comments box.

Description	Score
Low: • Bare soil more or less restricted to regular stock paths, 'pinch' points and congregation areas. • No soil loss.	5
Between Low & Medium:	1
Medium: • Bare soil mainly along regularly used routes or areas with minor soil loss occurring at a few points. • Minor rutting and soil disturbance caused during occasional vehicle access may be present. • Bare soil may extend a short distance beyond the main feed site or water points.	-3
Between Medium & High:	-10
High: • Areas of bare and eroding soil resulting in exposure of the underlying rock seen at regular intervals along main stock paths particularly those leading to main feed sites or water points. • Excessive areas of bare soil within main grazing area due to overstocking. • Bare soil extending out significantly from the main feed sites. • Significant rutting caused by vehicles/machinery particularly going between access gate and feed points.	-17

B. Relating to Plants That Can Compromise Species-rich Grazed Habitats and/or Invasive Species

B1. Immature Scrub

Aim: to assess the impact of, and threat posed by, the spread of native woody species on the species-rich, open, grazed habitats of Burren winterages, as well as those of non-native woody species (e.g. *Cotoneaster*).

There has been a rapid expansion of scrub, particularly hazel, in the Burren over the last 100 years or so. Whilst scrub is a valuable habitat in itself, its continued expansion threatens the Burren's internationally important, species-rich grasslands and heaths. A balance needs to be found both in terms of conservation and agricultural viability.

Cotoneaster is a non-native shrub that has escaped from gardens. There are many different species, some which grow as upright bushes and some that have a horizontal, spreading growth form which can form dense carpets. It is the latter, low growing form that has become a problem in a few locations in the Burren e.g. parts of Abbey Hill, where it is outcompeting the natural Burren vegetation. Farmers should be encouraged to remove *cotoneaster* whenever it is found growing on winterages.

Scoring Notes:

- Levels of immature scrub should be assessed across the grazeable areas. **Any scrub that is not suitable for removal i.e.: mature scrub or areas of scrub with a woodland flora beneath; single, scattered mature trees and bushes; scrub that is on cross ground (unless it is actively spreading); or any other scrub that the Burren Programme would not recommend for removal, should be excluded when assessing scrub cover.**
- The main native species to be considered are hazel, blackthorn, whitethorn, gorse (or furze) and briars. Willow and other species may be a problem in some areas if they appear to be expanding quickly. Any queries regarding the inclusion of other species will be dealt with on a site by site basis; contact the BP team if this arises. Note the main species present in the comments box.
- When assessing scrub other than hazel such as patches of blackthorn and scattered whitethorn, ask yourself whether it is young and actively spreading or older and fairly static. If it's the latter, it should not impact the field score and should not be considered for removal except to improve access.
- Where scrub seedlings, suckers or saplings are common and easily seen without searching, or cover is borderline between two categories, use the scores in brackets.
- Although usually categorised as a dwarf shrubs the following should be treated as 'Scrub' for the purpose of this assessment if they are having a negative impact on typical Burren winterage vegetation:
 - Heather (*Calluna vulgaris*) – where a significant area is covered by tall heather (knee height or above), that is forming areas of closed canopy, and is mostly of a similar age.
 - Burnet Rose (*Rosa pimpinellifolia*) – when small this is eaten by stock but where undergrazing has led to it becoming over tall (>50cm), it may need cutting to encourage cattle to graze ranker areas.

Where the above occur please make a note in the comments box.

Description	Score
Immature, removable scrub cover negligible: 2% or less Immature scrub occurring as a few sporadic individuals or one or two discrete patches.	15 (13)
Immature, removable scrub cover between: 3 - 5%	9 (7)
Immature, removable scrub cover between: 6 – 10%	3 (1)
Immature, removable scrub cover between: 11 - 25%	-7 (-9)
Immature, removable scrub cover: > 26	-18

B2. Bracken (local name = 'ferns') & Tussock-forming Rushes.

Aim: to assess the impact of, and threat posed by, bracken and/or rushes on the species-rich grasslands and heaths of Burren winterages.

Where bracken becomes dense it shades the plants below, leading to the development of grass dominated vegetation with fewer of the typical winterage species. However, some species that are better adapted to shady environments, such as Primrose, Violets and woodland plants like Bluebells, may thrive. The key to this assessment is in determining whether bracken really is a problem, or is becoming one, as opposed to areas where it 'looks' to be a problem.

The larger tussock forming rushes are rarely an issue on typical Burren winterages but they are a feature of some of the winterages next to areas of shale (often planted with coniferous forestry). Here the soils tend to be heavier and wetter, conditions that rushes like. They may also occur around some turloughs. As scattered tussocks, rushes can add to the habitat structure providing niches for invertebrates and ground nesting birds, but when they form dense stands, they have a similar impact on the vegetation as does bracken.

Scoring Notes:

In general, bracken and rushes do not overlap so it is rare for both to be an issue in the same part of a field. However, differences in soil and drainage may mean that each can be a potential problem in different parts of the same field. Bracken is encountered more often than rushes on typical winterages.

Bracken (ferns)

- The assessment only covers bracken (*Pteridium aquilinum*); it does not include any other species of fern such as those most commonly associated with scrub or woodland, or species that grow in rocky areas.
- The timing of the field assessment may affect your perception of bracken on a site. The extent and density of bracken may be underestimated when visiting sites in May or June as the fronds (bracken leaves) will not have fully unfurled, but you can get a good idea of its distribution. If visiting at this time, note whether the growth is somewhat linear, indicating that it is growing within soil filled grikes (fissures in the, often soil covered limestone pavement / rock); if so its growth, spread and cover will be checked. Where growing in pockets of deep soil (e.g. in hollows or small valleys) the growth and canopy cover will be greater later in the summer.
- Bracken growing on winterages is usually grike-bound, stunted (around knee height) and rarely forms a closed canopy that reduces light reaching the plants beneath. When like this, it is not a problem.
- If you don't walk over a representative area of the winterage, you may overestimate the negative impact of bracken. When viewed from a distance, bracken often appears denser and more problematic than it really is. You need to get 'up-close' to make an informed decision.
- Bracken growing amongst scrub will undergo a 'growth spurt' in the years immediately after scrub cutting. This should be excluded from the assessment for the two years post cutting particularly where control measures (e.g. targeted strimming or crushing) are being implemented.

Rushes

- The assessment only covers the larger, tussock-forming rushes including soft rushes (*Juncus effusus* and *J. conglomeratus*) and hard rush (*J. inflexus*).
- When assessing the impact of rushes take in to account their location, extent, density and amount of dead rush litter. Remember: 'are they a problem, how big a problem?'

Description	Score
<p>Low:</p> <ul style="list-style-type: none"> • <u>Bracken</u> if present, usually restricted to soil filled grikes (indicated by growing in straight lines) and fronds (bracken leaves) relatively short i.e. average up to 0.5m or knee height from June onwards. • Never forming a closed canopy which suppresses the grassland or heath flora beneath i.e. no dense patches greater 2x2m in body of field and very few of this size present <u>either in body, or on margins (exclude areas where scrub cut in past couple of years unless bracken was an issue prior to scrub removal)</u>. • Vegetation beneath bracken generally the same as that growing in the open. • <u>Rushes</u> if present, occurring as scattered clumps which are not suppressing more typical grassland or heath vegetation or discouraging grazing between the tussocks. • Grass and rush litter confined to immediate vicinity of rush tussock. • No evidence that rushes are spreading on to more typical grassland and heath beyond the damp hollows and wetter soils that favour rushes. 	5
Between Low & Medium:	1
<p>Medium:</p> <ul style="list-style-type: none"> • <u>Bracken</u> with an open canopy (i.e. not dense) for the most part. • Cover of dense bracken with closed canopy not exceeding 10% of the assessment area (excludes areas cleared of scrub in the past couple of years) and litter layer of dead bracken leaves sparse so neither are suppressing the typical ground flora to any great extent. • Average height of the fronds up to about 0.75m with any taller restricted to small patches. • May be some dense stands of bracken but these are restricted to a few pockets of deeper soil so do not impact the wider winterage. • <u>Rushes</u> restricted to pockets of deeper, wetter soil but forming denser stands in these areas. • Litter layer may be building between tussocks as density of rushes discourages grazing around them. • Indications that rushes are beginning to spread into the surrounding typical winterage but sparse and not widespread. 	-3
Between Medium & High:	-10
<p>High:</p> <ul style="list-style-type: none"> • <u>Bracken</u> forming dense stands (closed canopy) covering more than 20% of the grazeable area: • Dead fronds forming a significant litter layer beneath dense stands. • Flora beneath bracken stands modified, with grassy appearance and flora may be more typical of woodland than winterage. • Fronds usually tall with average height of 1m or more (waist height). • Rush tussocks forming dense stands over a significant area of the winterage which, along with a significant build-up of dead rush leaves between the tussocks, is suppressing growth of most plants other than strong grasses. • Rushes spreading actively from the wetter areas on to more typical winterage. 	-17

B3. Purple Moor-grass

Aim: to assess the impact of, and threat posed by, Purple-moor grass (Molinia caerulea) on the species-rich grasslands and heaths of Burren winterages and the adequacy of the grazing regime in managing it.

Purple-moor grass (PMG) is a natural component of certain Burren habitats including wetland vegetation around flushes and springs, grasslands on heavier, clay soils, and certain types of heath found mainly in the north western and western parts of the Burren. However, there is evidence that it is spreading into dry calcareous grasslands and *Dryas* (Mountain avens) heath due to a lack of summer grazing, particularly following the introduction of REPS with its restrictions on summer grazing of winterages.

Scoring Notes:

- The presence of PMG is both normal and acceptable in those habitats listed above so long as it is being managed in such a way that prevents extensive areas becoming covered by a thick litter layer.

- You need to familiarise yourself with PMG so that you can identify it in the field. It is easily identified when in flower but as it does not flower until late summer (July/August) you need to be able to recognise it when in the vegetative state.
- Record whether any summer grazing has taken place, or is occurring at the time of scoring and score according to its impact on the PMG and litter layer.
- Where PMG covers an extensive area of a field, PMG litter should also be recorded with other plant litter under A2. However, where PMG is confined to discrete patches or veins, any PMG litter need not be included under A2 as well (i.e. use your discretion as to the overall impact of PMG on the field).

Description	Score
Low: • Purple moor-grass present as a natural part of the vegetation (e.g. springs, flushes, grasslands on heavier clay soils or in association with heather on limestone heaths). • Light summer grazing preventing it from forming dense stands with a thick litter. • Never forming extensive, dense patches whose associated litter is suppressing other grasses and flowers.	5
Between Low & Medium: • <u>Thick litter layer</u> beneath PMG <u>discontinuous</u> and not exceeding 5% of the grazeable area.	1
Medium: • PMG may be common over more than half of the assessment area but less than 25% of the PMG has a significant layer of litter beneath (litter layer present but patchy / discontinuous). • Or, PMG occurs as discrete pockets / patches, the thick litter layer beneath which is suppressing the growth of other grasses and flowers on approx. 5 - 10% of the total grazeable area.	-3
Between Medium & High:	-10
High: • PMG common over more than half of the assessment area with old leaves forming a thick litter layer across more than half of the PMG area. • If litter is pulled away in small test patches (approx. 30-50cm ²) the cover of other grasses and flowers is very low (<25%).	-17

B4. Weeds & Agriculturally-favoured Species

Aim: to estimate the frequency and distribution of plants that are not a normal part of the plant communities of well managed Burren winterages (outside of recognised locations such as wall bands and shelter walls), and which usually indicate past or current management issues e.g. heavy feeding or regular summer grazing.

Scoring Notes:

- The broad definition of a weed is ‘a plant growing somewhere it’s not wanted, be that in a garden, amongst an arable crop or even, in a species-rich grassland’. For the purpose of this assessment, ‘weeds’ include plants associated with soil disturbance as well as some plants that are commonly found in more intensively managed land where the grazing levels or soil nutrients are higher, but which are rare or absent from well managed Burren winterages (i.e. agriculturally-favoured species).
- Naturally occurring weed species: Weeds should only result in a negative impact on the score when they are the result of present or past management. Occasionally, weeds occur on winterages due to circumstances outside the farmers control e.g. creeping thistle may occur naturally in patches on areas that flood for a period in winter, docks may be more common on the margins of flood zones and cock’s-foot naturally in the deeper soil of ‘mini’ dolines. In these cases, the presence of the weed species should be noted in the winterage calculator but its presence should not affect the score.
- Established weed species: In some fields, agriculturally-favoured grasses and certain long-lived weeds such as perennial rye-grass, cocks-foot, hogweed and silverweed (present as the result of management e.g. past or present silage feeding) have become established and integrated through the sward. As such, the farmer cannot control them using specific actions e.g. by cutting, pulling, spot-treating but is reliant on their natural decline once the causative management practice has ceased. Established weeds, as described here, should be recorded

under ‘C1 – Ecological Integrity’ with B4 covering weeds that the farmer can manage should he/she choose to do so.

- Weeds are acceptable when confined to restricted locations such as wall bands. These are narrow strips, up to about 5m wide, that develop parallel to walls particularly where stock stand for shelter. However, they should cover a limited area and not extend into the main body of the field.
- Weeds on older feed sites that are no longer used, and on feed sites where concentrates have replaced silage but which still have weeds originating from silage feeding extending beyond the current feed site (e.g. over an area greater than approximately 15m x 15m), should be assessed under this heading. See scoring notes under ‘A3 – Impact of feed sites ...’
- Certain weeds will flourish for a short period of time after scrub removal or where brash piles have been burned. These should be excluded from the assessment.
- Some of the common weeds and agriculturally-favoured plants that may be encountered on winterages include: Docks such as Broad-leaved and Curled (*Rumex obtusifolius*, *R. crispus*.), Creeping & Common thistle (*Cirsium arvense*, *C. vulgare*), Ragwort (*Senecio jacobaea*), Hogweed (*Heracleum sphondylium*), Nettles (*Urtica dioica*), Chickweed (*Stellaria media*), Prickly and Smooth sow-thistle (*Sonchus asper*, *S. oleraceus*), Redshank (*Persicaria maculata*), Burdock (*Arctium* sp.), Red bartsia (*Odontites verna*), Perennial rye-grass (*Lolium perenne*) and Timothy (*Phleum pratense*). Three other species that do occur naturally on winterages but which become much more common with disturbance and/or increased nutrients are Silverweed (*Potentilla anserina*), Cock’s-foot grass (*Dactylis glomerata*) and Common sorrel (*Rumex acetosa*).

Description	Score
Low: • Weed species absent or rare. • If present, restricted to: i) sporadic individuals in wall bands which extend no more than about 5m out from the wall, ii) weeds around feeders/water troughs (equivalent to ‘low’ or ‘low-medium’ in section A3 ‘Impact of feed sites and water troughs’). • Cover of weeds negligible.	10
Between Low & Medium: • Weeds occasional. • Generally restricted to wall bands, shelter spots or around feeders/water troughs where they may be quite common. • Weeds occasional at old, disused silage feed sites. • Negligible within body of field.	6
Medium: • Weeds relatively common in wall bands and by shelter walls and occasionally extending 5 – 10m out from these. • Weeds may be relatively common on old silage feed sites but decreasing. • Instances of weeds originating from silage feeding extend over an area greater than approximately 15m x 15m on areas where concentrates now fed (see notes under A3 – feed sites and water troughs). • Scattered individuals distributed throughout the field or located in one or two patches, total cover of weeds less than 2% of the grazeable area.	2
Between Medium & High: • Cover of weeds outside of wall bands, shelter spots and current feed sites between 2-10%. • Significant cover of weeds associated with old feed sites.	-3
High: • Weeds obvious throughout the assessment area as numerous individuals, or multiple dense patches. • Cover of weeds exceeds 10% of grazeable area.	-12

C. Relating to Site and Ecological Integrity

C1. Ecological Integrity

Aim: to determine whether the winterage retains its ecological integrity i.e. the vegetation (plant communities) present is typical of that which would be expected on a well-managed Burren winterage-type pasture.

Many different plant communities occur on Burren winterages, the variations being influenced by natural environmental conditions e.g. soil type, soil depth, drainage and exposure to wind, as well as by management practices e.g. grazing. As the environmental factors often vary significantly within a small area, the plant communities exist as very complex mosaics and the differences between them are natural. Whilst the vegetation of most winterages can be described as ‘typical’, that on some has been modified to some degree

by factors such as more intensive summer grazing, mechanical reclamation or, very occasionally, fertiliser application and/or reseeding. This modification is usually seen as an increase in agriculturally favoured species and weeds, and a decrease in the relative proportion of herbs (flowers) typically found on winterages with a commensurate increase in the proportion of grasses; the amount of visible change being dependant on the level of modification.

Scoring Notes:

- Where historic summer grazing (particularly on non-SAC, additional Annex 1 fields) has adversely affected the ecological integrity but has had a positive impact in terms of reducing scrub encroachment on archaeological or cultural features, then this may be viewed as an ‘over-riding’ conservation interest and the scores adjusted as outlined below.
- **NB.** In cases of damage to habitats or archaeology by unauthorised or careless activities (e.g. excessive, poorly targeted herbicide application; excessive or unauthorised scrub removal; damage to limestone pavement including removal and reclamation by covering with soil/farmyard manure) the field score will be reduced by an amount deemed appropriate by the Burren Programme team. This will be achieved by adjusting the component score for ecological integrity (adjustments will be reviewed on a yearly basis where impact ‘restores’ with time).

Description	Score
<p>Typical: The vegetation is typical of a range of grassland and heath communities found on Burren winterages. • Usually with high species diversity i.e. many different species of plant which are abundant across the field. • Looks very ‘flowery’ from about mid-April to late-September. • Vegetation should not have been modified by summer grazing. • Pastures should not have undergone any discernible agricultural improvement in terms of reclamation or, where this happened many years ago, it should have been recolonised by a typical, species-rich flora.</p>	5
<p>Slightly Modified: Fields should be scored as follows:</p> <p>A. Weak or middling winterages which have a history of <u>relatively light, but prolonged</u>, summer grazing with <u>cattle</u> resulting in the <u>vegetation: • being only very slightly modified</u> (slightly grassier, often more daisies (<i>Bellis perennis</i>) • still species-rich, and • including the majority of flowering plants that you would expect to see on that type of Burren winterage.</p> <p>B. As above but where there is a history of regular, light summer grazing with <u>sheep or equines</u>. • vegetation modification greater than above (often looks ‘greener’ due to increase in more vigorous grasses)</p> <p>C. Winterages whose vegetation has been slightly modified by past feeding or stocking management: • Modified, expanding out from old field sites (e.g. more weeds or agriculturally favoured grasses).</p> <p>D. Winterages with little or no grazing and no other problems.</p> <p><i>If justified in terms of having a positive impact on archaeological &/or cultural features a score of ‘-6’ can be increased to ‘0’. Please include a note in the calculator if such an adjustment is made.</i></p>	<p>A = 0</p> <p>B = -6</p> <p>C = -6</p> <p>D = 0</p>
<p>Moderately Modified: The vegetation still retains strong elements of the typical flora found on a Burren Winterage but: • Burren-type flora much reduced and often more or less restricted to thin soils over rock. • More agriculturally-favoured species that are tolerant of more intensive summer grazing e.g. more productive grasses and low growing rosette plants like common daisy (<i>Bellis perennis</i>).</p> <p>This category will usually result from more intensive summer grazing but should not be used if the pasture has been reseeded in the last 5 years and/or is regularly fertilised with artificial fertiliser or slurry.</p> <p><i>If justified in terms of having a positive impact on archaeological &/or cultural features a score of ‘-17’ can be increased to ‘-6’. Please include a note in the calculator if such an adjustment is made.</i></p>	-17

<p>Significantly Modified: The vegetation has been significantly modified by: reclamation; agricultural improvement including reseeded and/or regular applications of artificial fertiliser or slurry; and/or intensive grazing. It is relatively species-poor in terms of those plants typically found on healthy Burren winterages or in Burren meadows, the flora being dominated by agriculturally-favoured species and weeds. Where this applies to the whole or part of a field, either the whole field or the modified area is best treated as improved agricultural grassland and excluded from the health assessment. However, if the field or area has been nominated for habitat restoration then it should be scored. Contact the Burren Programme office if in any doubt.</p>	<p>-28</p>
<p><i>For use in cases of damage to habitats or archaeology by unauthorised or careless activities only.</i></p>	<p><i>-10 to -50</i></p>