



How to use the Hen Harrier Programme Bog and Heath Scorecard.

What bogs/heaths are eligible for scoring using the Bog/ Heath Scorecard?

Any bog or heath that is designated as Hen Harrier Special Protection Area (SPA) is eligible to be scored for the Hen Harrier Programme. Fields that score 3 or less will not be eligible for payment.

When should scoring be carried out?

Fields must be scored between May 15th and July 31st in any given year.

*Note that scores must be submitted to the Hen Harrier Project team on or before July 31st to be eligible for payment

Walking the field

The field is the unit outlined by the Hen Harrier Project (HHP) as a field. It has a unique identifier (the SPA initials, a farm number and a field number). These fields have been identified from aerial photographs and so any differences on the ground (merging/dividing fields, incorrect habitat assigned etc.) must be noted and submitted to the HHP Project Officer.

To assess the current situation and management and to identify any existing or potential problems in a field, the assessment route should be representative of the site.

1. Ensure that you cover a selection of the vegetation types present such as bog, heath, and acid grassland (different coloured areas on an aerial photograph) and different terrains (steep slopes, hummocks, hollows etc). Where possible, you should 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 you a biased view of the field's condition.
2. Target any obvious potential problem spots e.g. access points, roads/ tracks, areas adjoining coniferous forest plantations, watercourses etc.

Method

Bog and heath assessments are 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 proportion and type of 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

These fields are often large contiguous sites so 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.

If discrete areas within a management unit look likely to differ by one or more score, mark these areas on the map. The overall score should be calculated for the **entire unit**, but these areas with pronounced over or under grazing or with excessively dominant *Molinia* may be appropriate locations for certain supporting actions.



Comments/recommendations

Note any comments or management actions in the box provided on the sheet which may be useful to the farmer as management advice to improve score. These may provide the basis of management advice that you can provide to the participant. Though they are not compulsory, without changes in management, scores and payment are unlikely to increase. Management actions may include increasing or decreasing stock levels at certain times of the year or the timing and duration of the grazing season, scrub removal, weed control, changing location of supplementary feeding areas or measures to protect potential nesting sites or reduce wildfire risk.

Calculating the HHP Bog/Heath score

Add up all marks awarded for Section A (A.1 to A.3) and Section B (B.1 to B.6) to get the score for the management unit.

A. Ecological Integrity

The bog and heath scorecard is designed to measure the delivery of a wide range of environmental public goods. It is not focused on suitable nesting and forage grounds for small birds, mammals and Hen Harrier alone but also on the potential for the site to deliver biodiversity, clean water, high quality soil, air, biodiversity. Bog and heath fields include very large parcels, increasing the scores in these areas could have a lasting impact on the delivery of these environmental public goods as well as local Hen Harrier populations.

A. 1 Bog/Heath structure integrity

A.1.1 Habitat structure

Sphagnum mosses are key indicators of sites with good hydrological integrity. They are also essential for bog growth. Sites without them are generally poor. There are many species of Sphagnum. For the bog/ heath assessment card all Sphagnum species are considered in the same manner. All prefer very wet sites, are vulnerable to fire and excessive trampling. They may be less abundant on thin peats on the slopes of hills.

Heathers are an important component of the vegetation communities on these sites. They should not dominate large areas, be of uniform size and structure or be tall and leggy throughout (this is a sign of under grazing). Examples of heather in all growth stages will be present in sites that are in good condition. Uniform size and structure suggests that the site is, or has recently been, affected by overgrazing or burning. On blanket bogs, heathers may be present but will be less abundant. Heather particularly Ling heather (*Calluna vulgaris*) will do better on drier sites, and on the thinner peats found on the slopes of hills.

Optimal condition for a bog/ heath site is a mosaic of bog, heath and acid grassland with all stages of heathers growth cycle present. Areas of tall heather, particularly areas that are remote from commercial forestry are particularly valuable as potential nest/ roost sites. Sites with little or no heather (other than very wet blanket bog) or completely dominated by tall woody heather may need management interventions. If left undisturbed heather may eventually become dominant. These sites are very vulnerable to fire.



Cladonia lichens are indicators of acidic, nutrient-poor soils typical of bog and heaths. They are slow-growing and are vulnerable to trampling and burning. It is a good sign if they are frequent throughout a site or are present in large clumps on Sphagnum hummocks.

Bog cottons are common components of bog and heath habitats. They should occur throughout the site but should not be dominant. They are early colonisers of newly burnt sites so where they are dominant you should make note of any fire damage.

A healthy site is not dominated by a single plant species but has a mosaic of plant communities with a range of plants in a range of stages of development.

Guidance for scoring A.1.1

This is an assessment of the entire site and you must have walked it all before calculating the final score. On large sites you are likely to encounter several habitats in a range of conditions and with a variety of pressures. Some of the key plants that you will come across on a high-quality site are listed here. Many other important plants occur on these sites, but the ones below are highlighted as they are easy to identify and can tell a lot about the ecological integrity of the site.

Note 1: Dry heath will occur particularly on slopes, Sphagnum may be rare. Such sites may be naturally well-drained and should score well unless new or maintained drains are evident. If dry heaths are in good condition the cover of heather should be high.

Management advice

Undamaged blanket bog should be relatively soft or spongy underfoot. A firm surface on bog may indicate that the site has been negatively impacted by burning/ drainage or overgrazing. These impacts may be historic and the vegetation cover may appear to have recovered. Drain blocking, low levels of summer grazing with cattle with no burning/ winter grazing or vehicle use may help.

Livestock management regimes can have a significant effect on the heather component of the vegetation. Heather is not preferentially grazed by livestock. If other forage types are available, heather is generally avoided. As a result, it is most vulnerable to grazing during the winter when other forage is scarce. Managing the timing of grazing gives the farmer a useful tool for managing the heather resource in the field. Advice on heather management should include the following.

Management to improve heather height.

- 1) No winter grazing.
- 2) Light summer grazing with cattle can suppress competing Molinia and encourage heathers.
- 3) No supplementary feeding near stands of heather.
- 4) No burning.

Management to address excessively dominant heather.

- 1) Controlled burning. Do not burn very tall heather > 45 cm as the resulting fire will be very hard to control. Flailing or advance preparation of fuel breaks and stop lines may be more appropriate.
- 2) Winter grazing.
- 3) Improvements to access to large blocks by flail mowing paths through the heather.
- 4) Supplementary feeding locations in or adjacent to heather.



Heather recovering from a burn has a higher Nitrogen content than the mature heather that was there previously. This will attract livestock in to these areas for up to 3 years following a burn. This can keep the vegetation in the burnt area short for an extended period particularly if grazed by sheep or ponies but will have the effect of reducing grazing pressure in other parts of the site.

A1.2 Scrub structure

Some areas of Willow-dominated scrub or Bog myrtle occur naturally on bog and heaths. These occur where the topography or hydrology change slightly and are typical components of a high-quality bog and heath systems. Other types of scrub, particularly Gorse can be invasive and can change the hydrology of the surrounding peat.

Guidance for scoring A.1.2

Walk the entire site before making a call on scrub cover and type. Be sure to have a closer look at any scrub patches to verify the dominant species present. In general, areas of scrub that measure >0.2 ha should be scored using the scrub scorecard. However, where this scrub occurs on bog/heath and is impacting the hydrology it's impact should be considered on the bog/heath scorecard and recommendations should be made to address this issue.

Where this does occur, you can recommend sensitive removal (hand-cutting) of this scrub provided it is not a potential roost or nest site (consult with the Project Officer). Where the scrub is very well-established and there is evidence of successional development to bog woodland, management intervention is not required as bog woodland is an important habitat in its own right.

A.2 Soil integrity

The soil integrity of large tracts of peatland is particularly important as these have potential to be very effective carbon stores and even carbon sinks in some cases. This is compromised where there is bare soil, drainage, erosion or where peat forming species such as heather and Sphagnum are affected.

Guidance for scoring A.2

As you walk the site make regular notes where you see bare soil patches and possible causes. Bare soil outside of trackways or damage caused by the use of vehicles should be noted. Excessive poaching should also be noted. Any of these will have a negative impact on the score. Larger areas of bare peat may require specialist advice. Bare peat is an important indicator of habitat condition. If it exceeds 5% of the total area then the site is damaged, >10% and it is severely damaged.

Management advice

Bare peat is a key determinant of erosion risk. On many sites bare peat is concentrated on access routes, stock paths and near supplementary feeding sites. These can normally be addressed by changes in management or stocking rates. Re-establishing vegetation on larger areas of bare peat can be challenging. Before offering advice, you should consider the type and extent of the erosion problem.

- Large scale gully erosion. This is a serious problem, once initiated it may be impossible to stop. It is normally encountered on deep peat at higher altitudes.



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- Sheet erosion where the vegetation is all but gone and the peat is being eroded by surface water.
- Rill erosion is the removal of soil by concentrated water running through little streamlets, or head cuts. Detachment of particles in a rill occurs if the sediment in the flow is below the amount the flow can transport and if the flow exceeds the soils resistance to detachment.

Where sheet or rill erosion are occurring, seeds and seedlings can be detached before they have a chance to establish. Management advice to participants on how to address bare peat problems should include;

- 1) Reduce grazing pressure, particularly in the winter.
- 2) Take the livestock type into account, very heavy animals particularly cattle and horses can cause additional damage. Be aware of the differing grazing strategies employed by livestock species. Ponies and sheep bite vegetation, they can be picky eaters and can graze a sward very tightly. Cattle are less picky and require a taller sward. Ponies have a less efficient digestive system than sheep or cattle and consume more forage relative to their weight.
- 3) Move high risk activities such as supplementary feeding away from damaged areas.
- 4) Prevent burning of vegetation, any vegetation, even just plant litter can shelter soil particles and seedlings from detachment by heavy rain. As such, anything is preferable to bare soil.
- 5) Consider fencing off in severe cases. Be aware that fences can alter grazing patterns and may lead to a new problem elsewhere on the site.
- 6) Address bottlenecks where fences and or natural obstacles channel animals through small gaps leading to increased localised pressure. Remove redundant fences, create additional alternative access routes.
- 7) In very severe cases of sheet erosion, consider creating benches to reduce the velocity of surface water movement these can be created with Coir roles or even sandbags. These mini dams can reduce the velocity of overland flow, encourage the deposition of mobilised particles and facilitate vegetation establishment. This is a specialist proposition and you should contact the Project Officer to discuss it.

A.3 Hydrological integrity

The hydrological integrity of these peatlands indicates how effective they are as carbon stores and sinks and also how healthy the moss layers will be. If hydrological functioning is improved the moss layer (including *Sphagnum* spp) is likely to respond positively and the habitat score will improve. Damage around natural water sources can result in point-source pollution that can have downstream impacts. Preventing this where possible will have positive water quality benefits

A.3.1 Drainage

A hydrologically intact site will have no artificial drains cut into it. Many of these sites will have been drained to improve them agriculturally or to reduce the risk to animals in marshy sections. You don't need to consider boundary drains under this heading, just internal drains.

Guidance for scoring A.3.1

Examine the aerial photographs of the site before you go out in the field. Make note of areas where drains appear to be present and ensure that you walk along or have good sight of most of them. Active maintenance of drains and the cutting of new drains are undesirable activities. As a consequence, sites with this type of management receive a negative score under this heading. Sites unaffected by



drainage or where active measures have been taken to repair the damage caused by drainage receive a positive score.

It is important to differentiate between drains and gullies. Drains are man-made channels that run in straight lines and occur in regular patterns which can readily be seen on aerial photographs. Gullies are natural looking, sinuous channels, they may look like streams on the aerial photographs but are caused by man-made factors such as drainage, fire, over-grazing or erosion. Both drains and gullies impact negatively on ecosystem functioning. However, advisory support must consider the differences in origin before offering advice. For example, if the conditions that led to gully erosion still exist than blocking won't improve the situation. In the case of drains the advisor must consider the origin and original purpose of the drain before making recommendations on appropriate management interventions.

Management advice

- 1) Roadside drains are needed to protect the road from the scouring action of water flowing on its surface. Roads have a camber to direct water to these drains. The management of these drains should focus on reducing the negative impact of water loss from the site. If the road is long established, then the receiving channels are likely to have adapted to the flow patterns created by roadside drains. In these cases, no action is normally required. Discharging water from these drains into vegetated areas at regular intervals can be of value on gentle slopes and should be considered.
- 2) Narrow drains cut through deep peat, i.e. > 80 cm deep, often associated with turbary. These drains may not respond well to blocking as the blockage may be by-passed or undercut without this being apparent on the surface. The best strategy is to cease maintenance, do not cut new drains and allow them to collapse naturally. Recovery from this type of drainage will be slow.
- 3) Drains cut through deep peat that reach down to the underlying mineral layer. These require may specialist advice and support. Please contact the Project Officer for advice.
- 4) Drains cut through shallow peats. These are often cut across a slope. The objective being to divert water flowing on the surface away from selected downslope areas (often improved grasslands). This has the effect of drying the area down-slope of the drain. This could have the desirable effect of favouring heather, but the impact is often negative as water is removed from the site. If accompanied by heavy grazing pressure and/or fertiliser application this could lead to valuable heath habitats being degraded and replaced by species-poor acid grasslands. These drains, particularly if only recently cut should be blocked. Peat blocks cut near the surface are the best material for damming these channels but plastic sheeting or stone can also be used. Dams must be located at regular intervals, the steeper the slope, the closer dams must be. The objective is to create a series of shallow pools where the water velocity is low. This will encourage the establishment of Sphagnum moss and other vegetation and the deposition of sediment, leading eventually to the infilling of the drain. The escape of water to downslope areas can be facilitated by cutting notches at regular intervals in the sides of the drain. The impact of this action on adjoining downslope lands should be considered by the advisor and the participant.
- 5) Drains cut to remove water from their catchment for facilitating agricultural or turbary activity. In many cases the original reason for the drain may no longer be relevant. In these cases, and in situations where the drains have been cut in the recent past, blocking is the



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preferred management option. This will improve the ecological functionality of the site. It may also improve the hydrological functioning of the site and the natural watercourses within it.

- 6) Drains in areas of excessive *Molinia* dominance. The lowering of the water table may promote the growth of *Molinia*. In these cases, blocking drains may have the desirable effect of reducing the vigour of *Molinia* and breaking up the continuity of fire vulnerable areas. This may be a consideration on the lower slopes of hills where *Molinia* is extending into the deeper valley peat because of the lowering of the water table by drainage.
- 7) Large gullies which are eroded down to the mineral layer require specialist treatment and specialist support is advised.

In all cases, priority for blocking drains should be given to those most recently established, these pose the greatest erosion risk. Older drains, and the water courses they flow into, may have reached an equilibrium where they do not pose a significant added erosion risk. However, they still remove water from the site and have a detrimental impact on carbon storage and on ecosystem functionality. Where possible blocking these drains should also be considered.

A.3.2 Impact on natural water sources

Many bog/heath fields will have rivers and streams flowing through them. Grazing animals can impact negatively on water resources, causing physical damage and direct pollution of the water resource with dung.

Guidance for scoring A.3.2

Examine the aerial photographs of the site before you go out in the field. Make note of rivers and streams or other natural water sources present and ensure that you walk along or have good sight of most of them. Discuss established livestock access and feeding points with the farmer and ensure you visit these. Fields where watercourses show evidence of trampling and dunging, eroding banks etc. will receive a negative score under this heading. Supporting actions for grazing infrastructure or for the provision of drinking water may provide a mechanism for addressing these issues.

Management advice

Managing the impact on water resources should focus on;

- 1) Seasonally appropriate stocking levels.
- 2) Keeping high risk activities such as supplementary feeding sites away from watercourses.
- 3) Breaking the connectivity between severely damaged areas and the receiving watercourse. This may require temporary fencing.
- 4) Installing culverts to prevent animals or vehicles being forced to wade across streams to access part of the site.
- 5) Fencing off vulnerable banks. The passage of heavy livestock or vehicles can damage bankside vegetation. This can increase the erosion risk leading to banks being undercut and collapsing. Stretches of river bank at risk can be fenced off to exclude livestock.

Livestock grazing on these large tracts of land need access to water. Fencing off watercourses in these areas can have negative consequences and these should be considered carefully before advising a participant. Animals still need water and the concentration of activity around the



remaining sources can create point-sources of pollution. Any changes should be carefully monitored.

B. Threats and Future Prospects

Section B assesses threats to the ecological integrity of the field. It also considers things that will result in a further degradation of the ecological integrity if they persist.

B.1 Cover of negative indicators/agriculturally favoured weeds throughout the site

The presence of negative indicators gives an indication of the past management of a site. Invasive alien plant species impact on the hydrology and biodiversity of a site. Agriculturally favoured weeds indicate the application of fertiliser or other management not appropriate for bog and heath habitats.

Guidance for scoring B.1.

As you walk the site make note of the presence of any of the plant species listed. Where the overall cover is <5% it should be recommended that they are removed to ensure that the cover does not increase and eventually negatively impact the habitat score.

Management advice

Agriculturally favoured weeds are present because of soil-enrichment caused by fertiliser or animal waste and/or the destruction of the previous vegetation by excessive poaching. The physical removal of agriculturally favoured weeds such as nettles or docks is rarely practical, the use of herbicides carries its own risks and, in any case, does not address the under-lying causes.

Management advice on agricultural weeds should focus on:

- 1) Ceasing applications of fertiliser or animal manure.
- 2) Planning for seasonal grazing patterns, ensuring that the type and number of stock are appropriate for the site at that time of year.
- 3) Prevent additional disturbance by ceasing the supplementary feeding of stock near the damaged area.
- 4) Establish a green cover on the damaged site. Fast growing grass species, even Perennial Rye Grass will help stabilise a site and present fewer opportunities for weed seedlings to establish. If nutrient applications cease these grasses will become less prominent in the years ahead. On acid soils, Rye or Triticale can be considered as nurse grasses. Fertiliser is rarely needed to establish green cover, if it is required restrict it to small amounts of Phosphate and Potash.
- 5) In severe cases, consider temporary fencing to exclude livestock until the sward is re-established. If temporary fencing is being considered take account of the effect of fencing on animal behaviour and grazing patterns. Fencing can result in the problem being moved and another site being damaged instead.
- 6) Herbicide should only be required for invasive species. Specialist advice from Approved Pesticide advisors should be sought.

Higher cover of agriculturally favoured weeds species will impact on the site score and actions to reduce their cover should be taken. It is likely that this will take some time to address satisfactorily. Scores may be depressed for several years because of severe poaching damage and soil enrichment.



Invasive Alien Species.

Invasive alien species such as Giant Hogweed, Himalayan Balsam and Japanese Knotweed can have a serious impact on ecosystems. Removal strategies depend on the species involved and the extent of the problem. In serious cases and in all cases involving Japanese Knotweed or close to watercourses specialist advice should be sought.

Giant Hogweed can be controlled by spraying with a herbicide, remember that the sap can cause serious damage to unprotected skin. It is a biennial and the first-year plant is small and can easily be dealt with by herbicide applications. The 2nd year or flowering stage can be difficult where growth is dense or in difficult to reach sites such as river banks. Physical control such as cutting can be considered after appropriate planning and the use of protective clothing and eye protection.

Himalayan Balsam is a garden escape, it has explosive seed pods which scatter their contents if touched. Often found by watercourses complicating planning for removal.

Japanese Knotweed is capable of propagation from very small pieces of root and stem. Cutting increases the risk of spread. Often found along roadsides or watercourses. Can even be found on bog roads where contaminated soil was used as fill. Management is often made more difficult when it is established beside watercourses. Control requires specialist advice.

B.2 Presence of Rhododendron or self-sown conifers

The presence of Rhododendron or self-sown conifers is negative from a site management perspective. These species can be invasive on some sites with negative consequences for biodiversity and hydrology. As their presence even in small numbers is a risk to the current and future habitat value of the site it results in a negative score. This provides an incentive for the farmer to remove them.

Guidance for scoring B.2.

Any Rhododendron or self-sown conifers noted while walking the site will result in a negative in score under this section.

Management advice

Management advice for the control of self-sown conifers should consider that;

- 1) Conifers can lower the water table of the bog, they shade plant communities adapted to open conditions and provide a vantage point for Hooded Crows and Magpies. The preferred control method is the physical cutting of trees and seedlings. Participants in the Hen Harrier Programme can benefit from a general derogation from the requirements for a tree felling licence in SPAs designated for breeding Hen Harriers.
 - a. Loppers, secateurs and pruning saws are suitable for seedlings and saplings.
 - b. Larger trees will need a saw, a chainsaw or if the numbers are very small a bow saw can be used. Larger trees should be cut into sections and removed from the bog.
- 2) Rhododendron casts a dense shade suppressing other vegetation, it does not support significant numbers of invertebrates and so reduces the productivity of a site for Hen Harrier prey species. The plant is toxic to animals and although rarely consumed, its presence reduces the agricultural value of a site. Control strategies must consider the plants ecology and physiology.



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- a. Control should concentrate on removing the seed source by tackling mature flowering plants first.
- b. Large well-established plants can recover from cutting. Spraying with herbicides is often ineffective, as the waxy surface of the leaf is not very absorbent. Cambium injection with a suitable herbicide is the preferred control method, seek specialist advice before proceeding with this approach. Physical pulling or digging out is also effective but can also damage the sensitive habitat it's growing on.
- c. Seedlings and younger plants can be pulled or cut.

B.3 Damage from Burning

Burning of vegetation in hill areas poses a risk to the eligibility of land for direct payments, for biodiversity and to the agricultural resource. It is a high-risk strategy for land management. Lands that are at risk of wildfire include areas dominated by *Molinia*, very tall heather and gorse. On peatlands these are all indicative of areas of under-grazing. Management should focus on reducing the amount of fuel available and the connectivity of areas with a high fuel loading. The negative score attached to burnt areas is to incentivise management to reduce the level of risk.

Guidance for scoring B.3.

Note any areas that have been burnt in the current year or any areas that have evidently been burnt in the last 2 years (areas dominated by bog-cotton or exhibited peat erosion due to fire damage). The area affected by fire damage should be calculated. Any uncontrolled burning on a field i.e. burning carried out without the notice to the relevant authorities and the Hen Harrier Project Team, even if only a small proportion of the site is affected will receive a negative score. This applies whether the fire occurred during the legal burning period or not. Sites that were burned in the previous 1-2 years, where the damage is still evident should also receive a negative score irrespective of who lit the fire. The HHP team will work to combat uncontrolled burning over the course of the Programme. If a large part of the site is affected, the impact on scoring will be magnified by the poor scores for bare peat and vegetation composition possibly leading to no payment for that field.

Management advice

Not only does uncontrolled burning on these sites result in immeasurable damage to the wildlife (nests are incinerated, and animals burn to death) it also damages the output of other ecosystem services. Soil structure can be damaged if the heat from the fire ignites the surface layer of peat, the post-fire soil erosion can be increased. This has negative consequences both for the site and for receiving watercourses. Carbon sequestration is halted as the main peat forming species, i.e. *Sphagnum* moss and heathers are killed off. In the short term, fires release large quantities of greenhouse gases into the atmosphere and in the medium term, the oxidation of peat from surface layers is accelerated as the protective covering of vegetation is removed. These issues are all exacerbated if the future fire risk is increased as fire adapted species such as *Molinia* proliferate.

From an agricultural perspective, fires can lead to a loss of income as burnt areas are not eligible for direct payments. While fresh green growth of *Molinia* may be observed in the weeks following a spring



fire, the agricultural benefits of this are minimal. *Molinia* has a short grazing season, the replacement of a mixed plant community on a heath with a *Molinia*-dominated sward shortens the grazing season and increases the risk of future fires.

In some scenarios carefully managed controlled burning may be a useful management tool. The scoring system recognises this but incentivises alternative management strategies to reduce the impact of wildfires.

There is no question of fault. If the site is burned, its habitat value is reduced and so is its score. If there is a high fire risk the participant should be advised to;

- 1) Use the supporting actions available for drain blocking, targeted grazing along with grazed and willow firebreaks.
- 2) Increase summer (June and July) grazing with cattle or horses. This can weaken *Molinia* growth, minimise the build-up of fuel and reduce the wildfire risk.

Consider, flail mowing of dominant *Molinia* in September to remove excess fuel and improve accessibility for cattle in the following grazing season.

B.4 Turbary

Turbary is a common occurrence on many bog/heath sites throughout the SPA network. It introduces disturbance at a crucial time in the Hen Harrier life cycle (i.e. in April/May when they are beginning to nest). It also has serious impacts on the soil and hydrological quality of a site.

Guidance for scoring B.4

Note any active turf banks on the aerial photographs before you go out on site. Vertical-face cutting hand-cutting has a much lower impact than sausage machine cutting so make note of the locations of active extractions and the mechanism of extraction. Sausage machine cutting, and high extraction levels will severely impact the site score. When calculating the area affected by turbary, the cut area and the spread area and any areas used for turf storage should all be taken into account. Recently-used spread grounds will likely have poor cover of the indicators listed in A.1 and higher cover of bare soil (A.2) and these should be taken into account in the relevant sections.

Management advice

If turbary must continue for example on areas where third parties have turbary rights then advice on reducing the impact should include;

- 1) Reducing the area affected by turbary operations including peat drying and storage.
- 2) Cease cutting using a sausage machine, the action of this machine causes serious damage without improved efficiencies.
- 3) Do not burn off vegetation to facilitate turf extraction, these fires lit in early summer are a leading cause of wildfires.
- 4) If using a hopper, ensure that no deep pools are created. Avoid digging deep holes plant life can't establish in them.
- 5) Cut from existing turbary areas rather than new sites.



- 6) Minimise disturbance to Hen Harriers by avoiding, delaying or moving turf cutting operations if requested by a Hen Harrier Programme Project Officer.
- 7) Rehabilitating old turf cutting sites by drain blocking, exclusion of stock, removal of dumped material and possibly the infilling of deep holes with peat.

B.5 Damage due to supplementary feeding

Supplementary feeding is providing round bales of silage, haylage or hay to livestock, and/or the provision of concentrates and mineral licks. Supplementary feeding can lead to soil eutrophication, a proliferation of weed species and the nutrient enrichment of watercourses.

It can also result in changes to animal behaviour and grazing patterns. This can exacerbate uneven pasture utilisation, leading to over-grazing and under-grazing occurring on different parts of the same site. Supplementary feeding with silage can result in cattle waiting at the feeder. This is associated with increased localised damage and under-utilisation of areas more remote from the feeding site. The effect of feeding with concentrates is not as pronounced as animals still must source roughage away from the feeding location.

The practice of feeding on trackways or areas of bare rock to reduce poaching is a high-risk strategy. The risk of water pollution at these sites is high as they often have better connectivity with receiving watercourses.

Guidance for scoring B.5

Look for current feeding sites within the field and assess the impact and extent of damage around these feed site(s). Where bare ground in a field is likely to be attributable to supplementary feeding, assess under this indicator.

Older feeding sites may be identifiable by patches of agriculturally favoured weeds. Weedy growth around existing feeders should be assessed under this indicator. Feeding sites should not be located within 10m of a watercourse as this can lead to run-off and impact on water quality. Where supplementary feeding is being provided for a short-term period to assist in grassland conservation (e.g. overwintering cattle to halt spread of bracken), this should be considered in the scoring – lean towards lower thresholds.

Inappropriate location of feeders in the grassland should be noted in comments and brought to the attention of the farmer, e.g. where round feeders are located adjacent to water features, feeders located in very wet areas of the field or on soils which might be vulnerable to soil erosion.

B.5 - Thresholds	Description
High	<ul style="list-style-type: none"> - Supplementary feeding in a field at multiple locations, resulting in obvious areas of bare soil (severe poaching) (>10% of field or more than 30m from the feeding site), which is still largely unvegetated during the summer months. Or a single feed site with >10% damage to the field. - Extensive areas of weeds/negative indicators, spreading >3m outwards from feeding site(s); - Additionally, there may be extensive areas of churned up ground along trackways leading to the feeding site(s);



	- Feeding sites within 10m of a watercourse (stream, river, wet drain, lake).
Moderate	- A single feed site with extensive areas of bare ground noticeable and extending up to 30m from the feeding site; - Soil disturbance around feeders or water sources extends for >3m, ground appears 'churned up'; - Patches of weeds/negative indicators extending up to 3m from feeders, patches may be dense in parts; - Some bare ground may be evident along trackways leading to the feeding site(s); - Feeding site(s) greater than 10m from watercourse – but due to siting, aspect and setting, could result in enrichment of the watercourse (needs to be judged on an individual field basis).
Low/none	- Feeder(s) not located within 10m of watercourse, in very wet or on very thin soils; - Limited areas of poaching noticeable around feeding site(s) in wetter soils, and then mostly vegetated with little (<10%) bare soil visible; - Scattered or small patches of weeds/negative indicators extending no more than 2m from feeding site(s); - Limited bare ground along trackways leading to feeding site(s); - Where there are multiple feeding sites, these are rotated through the grassland and the overall impact of the feeding sites meets the first four criteria in the low threshold.

Management advice

Damage from supplementary feeding can be addressed by:

- Reducing the need for supplementary feeding by adjusting the type and number of stock to be kept on the field and the timing and duration of the grazing season.
- Feeding concentrates in preference to silage.
- Rotating feeding locations on a regular basis. This is facilitated by the feeding of concentrates in preference to silage.

B.6 Bracken cover

Bracken (*Pteridium aquilinum*) is a vigorous and aggressive fern, spreading rapidly by means of strong underground stems or "rhizomes". It tolerates a wide range of soil types, doing particularly well on deep acidic soils, but it is intolerant of waterlogged soils. Bracken is a major weed in many upland and upland margin areas, causing management problems in agriculture, conservation, game management and recreation. The extent and density of bracken may be underestimated when visiting sites in May or June as the fronds will not have fully unfurled although it will be possible to get a good idea of its distribution.



Guidance for scoring B.6

Examine the aerial photos before going out on site. Note any bright green patches (this will depend on the time of year the aerial photograph was taken). Take note of any areas of bracken during the transect walk and outline the areas affected. Calculate the total area of bracken to assess the level of the impact.

B.6 - Thresholds	Description
High: >50%	Very dense stands of bracken over half or more of the field, forming closed canopy. Very little vegetation underneath the canopy in mid-summer.
Med-Low: 11-50%	Bracken fronds obvious within the field, primarily scattered and in the main, not forming closed canopy. Vegetation often including woodland plants underneath the Bracken.
Low: <10%	Bracken absent or cover negligible or in very small patches.

Bracken control may be necessary when it is already invading heather or unimproved grassland of conservation interest, where there is a dense patch of bracken which may colonise adjacent areas of heather or unimproved grassland, on slopes of less than eight degrees with a significant cover of grass species and ground vegetation under bracken - control of bracken allows grasses to grow more vigorously, providing additional grazing for stock, reducing pressure on heather and unimproved grassland elsewhere. Efforts should be concentrated on treating stands which still have some ground vegetation that will aid recovery of the site.

It is not always appropriate to undertake control of bracken as environmental damage may result at some sites. Where control is considered necessary, contact your Project Officer as specialist advice may be required. Some areas may benefit little from control, e.g. where bracken forms a substitute woodland community, supporting interesting plants and insects, steep sites with deep bracken litter and little opportunity for the recovery of vegetation following treatment. Bracken control on these sites can lead to severe erosion.

B.7 Are there any damaging activities?

Damaging activities are those which have potential, either currently or in the future, to reduce the ability of the grassland to support a diversity of plant species.

Guidance for scoring B.7

Damaging activities, if any, should be assessed over the entire field. Where there is more than one damaging activity, of the same or varying degrees of impact, the most damaging activity may be scored or alternatively score the sum of damaging activity, whichever is considered to be the greater in



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impact. Damage from dumping or anything else not already covered in the previous sections may be considered here.

Wind turbines on site and wire fences splitting a parcel with no other field boundary present both pose threats to Hen Harrier populations and should be considered as damaging activities where present.

Where damaging activity is noted in or adjacent to the field, consider whether this may impact either in the short or medium term on the field being scored, e.g. drainage, please note in the comments.

NB: any damage due to supplementary feeding is assessed separately by indicator B.5.

Management advice

Where possible, the damaging activity should be stopped.

Wire fences may be suitable for the flag marker supporting action.