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Trust



Nature Friendly Farming in the Uplands

A brief description of UK upland habitats and their management

An illustrated introduction to the typical habitats on upland farms, including links to further information Designed to be of interest to potential and new entrants to upland farming, and those in related countryside roles.

Ensuring that our upland farmland is healthy and rich in wildlife, as well as productive has never been more important. The uplands have a crucial role to play in tackling the challenges that we all face from climate change. Alongside production, our upland farms can provide carbon storage, flood management, healthy water catchments, habitats rich with diverse wildlife and beautiful spaces for everyone to enjoy for future generations.



Hay meadows

Why is it important?

As well as providing a valuable, herb-rich fodder crop for stock during the winter months, a traditionally managed hay meadow will support a wealth of native grasses and wildflower species. These in turn provide food for an abundance of pollinating insects such as bumblebees and butterflies. Wide, uncut tussocky margins provide year-round shelter, foraging and hibernation for birds, reptiles, invertebrates and mammals.

The aim of management is to remove the seasons growth. This can be done by mowing or late season grazing.

How should it be managed?

Meadows need to be shut up from grazing in Spring to allow flowering to take place. In the late summer a hay cut and aftermath grazing, or deferred grazing (grazing rather than cutting the meadow), will remove the year's growth and maintain the fine grasses and herbs that make up the sward.

When the hay is cut, leave a wide uncut margin-this will provide pollinators with a late food source as well as allowing those very late-flowering species, such as Devil's bit scabious, sneezewort etc to continue to set seed. It also offers valuable shelter and hibernation areas for mammals and invertebrates.

Hay should be turned at least 3 times to allow seed to drop from the crop.

Ideally hay making would be staggered over the late summer but weather conditions often prevent this.

Aftermath grazing should be left until late autumn-November is ideal, but basically once all flowering has finished. Again, this gives everything a chance to flower fully and drop seed.

Light applications of FYM will be the only fertiliser applied to these areas. Traditional liming may also be used to maintain the pH around neutral.

How can I improve it further?

Soil testing will help determine the potential for restoring species rich hay meadows and the best way to go about this.

Adding seed, green hay or plug planting will all introduce missing species into a meadow, Ground preparation and ongoing management are critical to the success of restoration.

Feeding stock on the meadow with species rich hay is a slower but possible alternative way of increasing diversity.

Links to more details:

Farm Wildlife

<https://farmwildlife.info/how-to-do-it/existing-wildlife-habitats/wildflower-rich-meadows/>

Cumbria Wildlife Trust

<https://www.cumbriawildlifetrust.org.uk/about/what-we-do/living-landscapes/wildlife-conservation-projects/hay-meadow-restoration>

RSPB

<https://www.rspb.org.uk/our-work/conservation/conservation-and-sustainability/farming/advice/managing-habitats/hay-meadows/>

Magnificent Meadows

<http://www.magnificentmeadows.org.uk/advice-guidance>

http://magnificentmeadows.org.uk/assets/pdfs/Hay_meadow_and_pasture_management.pdf

Buglife

<https://www.buglife.org.uk/advice-and-publications/advice-on-managing-bap-habitats/upland-hay-meadows>



Hay meadow sward - yellow rattle, red clover, ribwort plantain,
pignut, sweet vernal grass Betony
Curlew in spring meadow
Rowing up hay crop
Common spotted orchids

Species rich pasture

Why is it important?

Old permanent pasture provides rich and varied grazing opportunities for grazing stock as well as supporting a wide range of native wildflower species. Leniently or rotationally grazed pastures allow the plants to flower and set seed. They are host to a wealth of birds, mammals and invertebrates. The undisturbed soils allow a rich native soil flora and fauna to develop, where grassland fungi such as waxcaps can thrive. There is very unlikely to have been any artificial fertiliser application on land like this and it will not have been ploughed or reseeded for many decades, if ever.

The soil type, and especially pH, determines the particular plants that grow in an area and hence determines the type of grassland - acid/neutral/calcareous. There can often be an intricate mosaic of habitat types across any given area dictated by soils and flushing. These can be picked out by the plants growing in each area once you know what to look for.

The distinctive lumps of meadow ant nests can be a great indicator of undisturbed dry grasslands as they are easily lost with any mechanical operations (harrowing, rolling, mowing etc). Steep or otherwise inaccessible pieces of ground are hence where these unimproved grasslands have most often survived.

How should it be managed?

These grasslands depend on grazing for their very existence and low nutrient status - without grazing animals they rapidly become rank and turn to scrub. Whilst some scattered scrub is a valuable addition, too much will shade out the sensitive grassland species.

The grazing needs to be light enough in Spring and summer to enable the plants to flower and set seed but then high enough to remove the years growth by the end of the year. Cattle grazing produces a varied sward structure and are less selective than sheep. Sheep can have specific benefits such as scrub or ragwort control.

Supplementary feeding should not be carried out on species rich pasture as it leads to poaching and the addition of nutrients.

There must be no fertiliser used, with the dung of the grazing animals being sufficient to maintain the natural fertility. Naturally occurring legumes such as clover will also add nitrogen back to the soil.

How can I improve it further?

Avoiding mechanical operations on land and light spring/summer grazing will allow a varied sward structure to develop along with features such as meadow anthills. Change will be slow to see but species such as green woodpecker arriving (feeding on the ants) may highlight the changes taking place.

Links to more details:

Farm Wildlife

<https://farmwildlife.info/how-to-do-it/existing-wildlife-habitats/wildflower-rich-pastures/>

http://magnificentmeadows.org.uk/assets/pdfs/Hay_meadow_and_pasture_management.pdf

Buglife

<https://www.buglife.org.uk/advice-and-publications/advice-on-managing-bap-habitats/lowland-calcareous-grassland>

<https://www.buglife.org.uk/advice-and-publications/advice-on-managing-bap-habitats/lowland-dry-acid-grassland>

https://www.buglife.org.uk/sites/default/files/Grassland_web_0.pdf

CIEEM

<https://cieem.net/wp-content/uploads/2019/07/Grazing-for-wild-plants-and-biodiversity-FL-Advisory-Note.pdf>



Meadow Grasshopper
Waxcaps
Yellow meadow ant hills
Acid grassland with orchids
Cattle grazing chalk grassland
Acid grassland with yarrow and harebell



Low Input Permanent Grassland

What is it and why is it important?

Low input permanent grassland is pasture or meadow land which receives little or no artificial fertiliser, farmyard manure or slurry and is grazed only lightly. They can be neutral, acid or calcareous, with low soil nutrient levels and typically, plant diversity is greater when the pH is above 5.5. If managed in a sympathetic way, the field has the potential to be rich in flowering plants, have a varied sward structure, provide nectar resources and shelter for invertebrates, as well as attracting a greater number of bird species. These grasslands have been shown to store more carbon, reduce nitrogen pollution of air and water, provide health benefits to livestock and potentially producing high quality, better tasting and healthier food. Fields managed in this way are an invaluable refuge for wildlife as well as being an important part of a working farm.

How should it be managed?

Grasslands are easily damaged through neglect or mismanagement and can take a long time to restore. The more degraded the grassland the more the soils and species they support will have changed. However, small changes to the existing management may be all that is needed. The two key factors involved in achieving the environmental and wildlife benefits of low input permanent grassland are:

1) reducing the intensity of grazing, typically by sheep or cattle

Maintaining a sward height between 7-13cm provides structural diversity for invertebrates and birds as well as encouraging deeper roots systems of grasses and flowering plants. This lighter grazing regime can further increase structural diversity by allowing scrub to develop around the edge of a field or where appropriate.

For meadows, light spring grazing and an earlier shut up date increases the likelihood of flowering plants.

2) reducing the level of artificial inputs

Limiting inputs to no more than 12 tonnes/ha of farmyard manure helps to increase the diversity of flowering grasses and wildflowers that thrive on low levels of nutrients in the soil. Using little or no artificial fertiliser reduces costs to the farm business.

In addition, the fields should not be ploughed, cultivated or drained.

How can I improve it further?

Utilising rotational or intermittent grazing management practices rather than set stocking brings real benefits. Periods of rest allow the grassland species to develop opportunities for stronger root systems, create more vigorous and healthier regrowth and provides opportunities for flowering and seeding of plants.

Grasslands can also be improved by adding a wildflower seed source through green hay, brush harvester seed or natural regeneration using livestock movement to and from a species rich area.

Links to more details

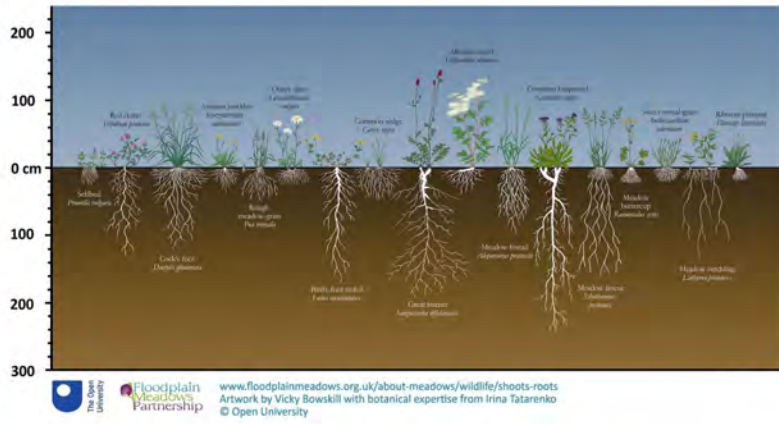
<https://www.nationaltrust.org.uk/woolbeding-countryside/features/conservation-grazing>

http://www.magnificentmeadows.org.uk/assets/pdfs/Natures_Tapestry.pdf

<http://www.magnificentmeadows.org.uk/advice-guidance/how-can-i-manage-my-meadow/managing-for-grassland-habitats>

<https://farmwildlife.info/how-to-do-it/existing-wildlife-habitats/rough-grassland/>

From Shoots to Roots: revealing the above and below ground structure of meadow plants



Wet grassland /rush pasture

Why is it important?

Well managed wet grassland and rush pasture can be really species-rich and full of wildlife, including rare species, such as the marsh fritillary and small pearl-bordered butterflies.

Wading birds such as lapwing, curlew and snipe need damp ground to probe for food. Well managed rush pasture can provide ideal conditions for these birds to feed and raise a family. Their populations have declined massively in recent years making such breeding sites all the more important. They require a mixture of short grassland and bare ground for feeding with some taller tussocks or rush to provide cover.

How should it be managed?

A period of no, or very light, grazing in spring will enable nesting to take place undisturbed. Light cattle grazing will maintain a species-rich habitat and avoid soft rush becoming dominant, creating a good range of vegetation heights, without targeting flowers preferentially.

Shallow scrapes and ditches provide muddy margins for chick feeding as water levels recede in late spring.

Dense soft rush can be a difficult problem to contend with on wet ground. Scattered rush is a valuable part of the habitat but dense rush is of very little value for biodiversity or agriculture. Mowing of dense rush in late summer, in combination with cattle or pony grazing, can maintain the desired field conditions. Mechanical activity such as this must be carried out after any nesting birds have finished and is likely to lead to compaction of wet soils which can exacerbate the conditions favoured by soft rush.

The land needs to be pretty much undisturbed by people and dogs so avoid any areas with busy footpaths or regular access. Screened hides might provide education and observation points from a safe distance.

How can I improve it further?

Where drains and ditches have been installed it might be possible to use sluices to keep the water levels high during Spring and early summer, then let it drop to enable grazing or mowing to take place in late summer in drier conditions. Sluices can also enable cut rush to be flooded which can be an effective control method.

Predation of eggs and chicks can also be a significant factor limiting breeding success where only small numbers are hanging on. Predator fencing and/or control may be required if this is the limiting factor. Sheep will also consume any eggs they come across as they are a great source of minerals.

Links to more details:

Farm Wildlife

<https://farmwildlife.info/how-to-do-it/existing-wildlife-habitats/wet-grassland-and-grazing-marsh/>

<https://farmwildlife.info/how-to-do-it/existing-wildlife-habitats/rush-pastures/>

RSPB

<https://www.rspb.org.uk/our-work/conservation/conservation-and-sustainability/farming/advice/managing-habitats/extensively-grazed-grassland/>

<https://www.rspb.org.uk/our-work/conservation/conservation-and-sustainability/farming/advice/techniques-to-help-wildlife/re-wetting-grassland/>

RSPB Rush management

<https://www.rspb.org.uk/our-work/conservation/conservation-and-sustainability/farming/advice/techniques-to-help-wildlife/rush-management/>



Lapwing
Highland cattle grazing rush
pasture
Ragged robin in wet grassland
Marsh valerian and carnation
sedge in wet grassland



Wetlands – fen, flushes and mires

Why is it important?

Shallow, seasonal pools, lake edges, wet flushes, fen and marshy grassland provide valuable and varied forage for grazing livestock, particularly during dry conditions. Specialist species such as sedges, sphagnum mosses, cotton grasses, and orchids flourish in these areas. They can also sustain thriving populations of dragonflies and damselflies, amphibians and butterflies.

Wetland areas help to slow water that flows through them and help to clean it by filtering out sediment and nutrients that might be being carried in run off.

Historically many of these areas have been drained or fenced out from grazing land.

How should it be managed?

Light summer or autumn grazing is usually the ideal management as it keeps these areas open but allows plants to flower and set seed. Avoid heavy poaching by livestock although cattle or ponies are often the best grazing animals for the job as they happily wade into wet areas and browse tall vegetation.

There must be no additions of fertilisers or manure directly to the wetland features or in the area around them where it will run off into them. Clean water supplying the wetland will maintain the low nutrient status of the habitat and hence it's wildlife interest.

How can I improve it further?

Sensitive blocking or infilling of any drainage channels can restore the original water levels and movements to these features.

Where grazing has been absent or very light it may be beneficial to remove encroaching scrub where this is shading more interesting areas and is not a valuable feature in its own right.

Seek experienced advice on these matters.

Links to more details:

Farm Wildlife

<https://farmwildlife.info/how-to-do-it/existing-wildlife-habitats/farm-ponds-and-waterbodies/>

Buglife

<https://www.buglife.org.uk/advice-and-publications/advice-on-managing-bap-habitats/fens>

https://www.buglife.org.uk/sites/default/files/Ponds_web_0.pdf

<https://www.buglife.org.uk/advice-and-publications/advice-on-managing-bap-habitats/purple-moor-grass-and-rush-pastures-culm>



Upland pool cross section
Golden ringed dragonfly
Marsh bedstraw in fen area
Upland mire system



Heath, moorland and blanket bog

Why is it important?

These habitats occur on very acidic and nutrient poor, often peaty soils, which restricts the plant species able to survive there. These extensive areas comprise a mosaic of habitat types. The often harsh climatic conditions mean that changes to vegetation are often slow to happen so management needs to be a long term plan.

Heathland areas are those dominated by dwarf shrubs such as heather and bilberry, and sometimes very lichen rich. Heathland can be wet or dry. Scattered trees such as birch and rowan should also be a key feature, along with patches of juniper or gorse scrub on dry heath. These species should be encouraged to increase.

Blanket bog is found on areas of wet peat more than 40cm deep. It is dominated by Sphagnum mosses which can form hummocks and bog pools. Species like cranberry and cross leaved heath grow amongst cotton grasses and the insectivorous plants sundew and butterwort.

Areas flushed with more nutrient rich water occur locally and can be much more diverse than the surrounding habitats. Here sedges such as yellow, carnation and glaucous sedges can dominate amongst species like lousewort, birds eye primrose, bog pimpernel and lesser spearwort.

There are many specialist animals that rely on these habitats including ring ouzel, merlin, adder, twite and wheatear.

How should it be managed?

Heath is vulnerable to overgrazing so careful stock management is required throughout the year. Winter grazing is often best avoided completely as this is when dwarf shrubs are most vulnerable and readily grazed.

Blanket bog and wet heath should never be managed by burning.

Supplementary feeding should not be carried out as it leads to poaching and the addition of nutrients.

Stocking with hardy breeds at an appropriate density will avoid the need for supplementary feeding.

How can I improve it further?

Planting scattered trees, where appropriate, will create a diverse mosaic of habitats for wildlife, as well as helping to store water and carbon.

If the area has been drained in the past blocking the ditches, or grips as they are known, should be undertaken to hold water in the peat for longer.

Exposed peat hags can also be reprofiled and reseeded to prevent continued erosion.

Seek professional advice about this sort of work.

Links to more details:

Farm Wildlife

<https://farmwildlife.info/how-to-do-it/existing-wildlife-habitats/mountain-hill-and-moorland/>

<https://farmwildlife.info/how-to-do-it/existing-wildlife-habitats/upland-fringe-ffridd/>

Buglife

<https://www.buglife.org.uk/advice-and-publications/advice-on-managing-bap-habitats/blanket-bog>

<https://www.buglife.org.uk/advice-and-publications/advice-on-managing-bap-habitats/upland-heathland>

Plantlife - Juniper

https://www.plantlife.org.uk/application/files/9715/4747/1672/Managing_uplands_for_juniper.pdf

RSPB Grip blocking

<https://www.rspb.org.uk/our-work/conservation/conservation-and-sustainability/farming/advice/techniques-to-help-wildlife/moorland-gripping/>



Juniper
Gorse and heather
Moorland with scattered
trees on steep slope
Bell heather and acid
grassland on rocky
exposure
Wheatear and heather

Woodland

Why is it important?

Woodland provides valuable shelter in the landscape for people, plants and animals. Scrubby woodland edges, rides and glades provide the perfect habitat for many species of birds, reptiles and invertebrates that need the mix of open and sheltered habitats.

Woodlands support a vast array of species including specialist fungi, mosses, lichens, invertebrates and birds and mammals. You might find species like redstart, pied flycatcher, tawny owl, great spotted woodpecker, red squirrels, bats, bluebells, wood sage, wood anemone and wild garlic.

Most woodlands have been heavily managed in the past as a valuable resource for coppice products, charcoal, timber and/or forage production. This past use tends to determine the structure of the woodland, the species present and the growth form of the individual trees. There may be associated historical structures such as charcoal pits or furnaces associated with the woodlands. Post industrial abandonment has often led to a decline in wildlife interest.

How should it be managed?

To ensure the growth of woodland flowers, shrubs and replacement young trees grazing needs to be carefully managed in most woodlands. Occasionally the mosses and liverwort interest in a woodland would benefit from the presence of low numbers of grazing animals. Seek advice on appropriate management if this might be the case.

Controlling deer grazing might also be required if their density is preventing growth of young trees. This may be through culling or fencing if limited to small areas.

Standing and fallen dead wood should remain for the benefit of fungi, invertebrates and other species like wood peckers and treecreepers.

Retain any wet areas, streams and waterlogged woodland. Do not clear ditches or drains that remove water from the woodland.

There is a continuous need to be alert for signs of tree diseases and to maintain biosecurity. In many cases no action is required but an awareness of the threat and potential risks is required.

How can I improve it further?

Sometimes introduced or invasive species may need to be removed from woodland. These are most likely to be Himalayan balsam, rhododendron or non native trees especially if they are reproducing successfully.

Whilst many areas of woodland can be successfully managed for decades with no intervention other areas would benefit from active management. Depending on the past history of the woodland this might include reinstating coppicing, thinning or more extensive felling of coupes. Often past management followed by a long period of neglect has produced very even aged stands of trees. Creating some variation in this structure can be very beneficial.

In some places planting additional trees or introducing lost species could be really useful especially if it links pockets of woodland or hedgerows together, or expands existing areas.

Links to more details:

Cumbria Woodlands

<http://www.cumbriawoodlands.co.uk/woodland-management/why-manage-woodlands.aspx>

Farm Wildlife

<https://farmwildlife.info/how-to-do-it/existing-wildlife-habitats/woodland/>

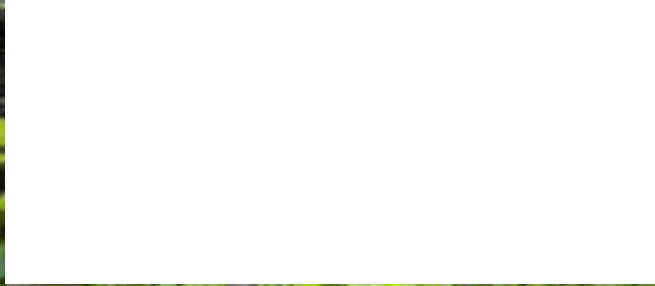
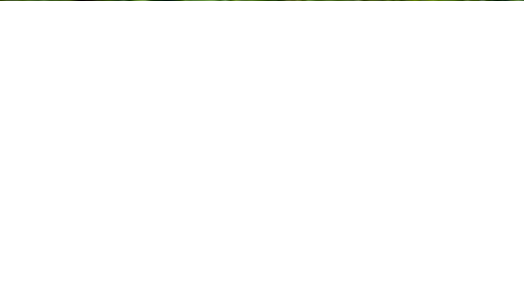
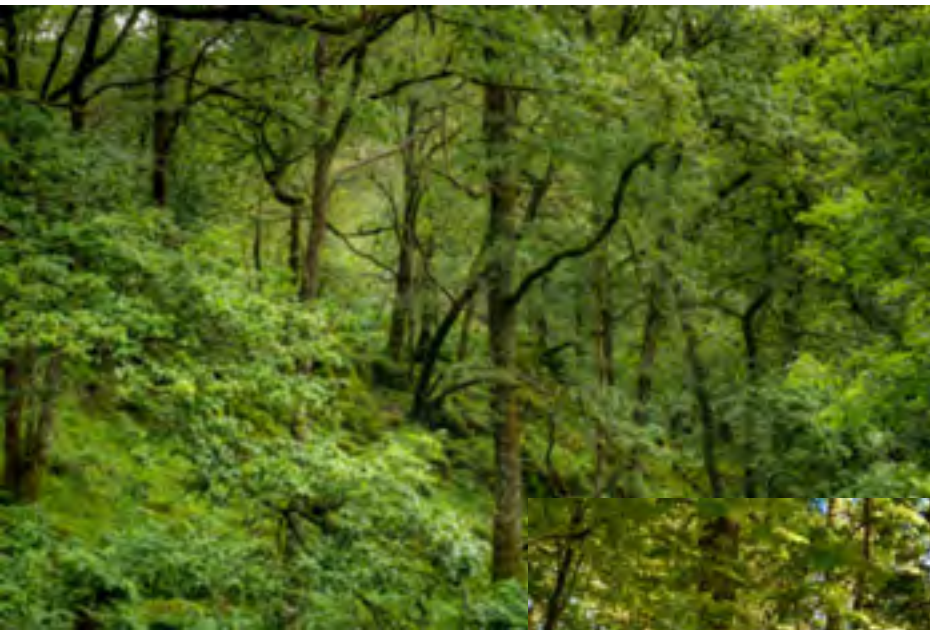
Buglife

<https://www.buglife.org.uk/advice-and-publications/advice-on-managing-bap-habitats/upland-oakwood>

<https://www.buglife.org.uk/advice-and-publications/advice-on-managing-bap-habitats/upland-mixed-ashwoods>

<https://www.buglife.org.uk/advice-and-publications/advice-on-managing-bap-habitats/wet-woodland>

https://www.buglife.org.uk/sites/default/files/Woodland_web.pdf



Wood pasture, parkland and in-field trees

Why is it important?

Giving shelter and shade to grazing stock, an individual tree, if left to grow into its natural form can support a vast array of wildlife. The living parts of the tree are rich with nesting and foraging opportunities for birds and bats. The young leaves are festooned with tiny caterpillars which will support birds like warblers and blackcap. Standing and fallen deadwood is a rare and incredibly valuable resource for wildlife, supporting species such as green woodpecker, lichens and fungi and a wide range of deadwood invertebrates.

The grassland or heathland found in wood pasture and parkland is normally undisturbed, having escaped ploughing and agricultural improvement. Fertilisers contribute to the loss of both plant and fungal diversity in grasslands. Woodland and meadow wildflowers are often adapted to nutrient poor soil. It is these grassland and heathland features that require active management.

The lack of ploughing means the soil structure is left largely intact, so the complex ecosystem of the subterranean world undisturbed. The result is reduced soil erosion and less damage to fungal hyphae networks. Whilst some plants thrive in disturbed soil there are others that require this undisturbed soil structure.

Historically many trees were pollarded to provide animal fodder and timber. Pollarded trees have a distinctive shape and can often be some of the oldest trees and particularly important for wildlife.

How should it be managed?

Grazing is required to prevent the development of scrub and woodland. Cattle only grazing at a very low stocking rate is often a good compromise to allow natural regeneration of trees without the need to fence and protect each one.

Avoid use of fertilisers, slurry and pesticides as these will damage both the trees and the grasslands that support them.

Newly planted trees will need to be protected from grazing animals which would otherwise eat and damage the young trees. These young trees are essential to ensure continuity of the habitat in the future.

Supplementary feeding should not be carried out on species rich pasture as it leads to poaching and the addition of nutrients.

Dead wood should be left where it is (unless dangerous) -both fallen or standing of all sizes.

Avoid activities such as vehicle use and stock congregating over the roots of trees as this will result in compaction and damage to the tree.

Repollarding trees might be usefully undertaken to extend the life of old pollards. Seek professional advice in this respect.

Refer also to descriptions for hay meadows and species rich or wet pastures as appropriate.

How can I improve it further?

Ensure adequate replacement trees are present to continue the continuity of over mature trees in the landscape and in close enough proximity for fungi and invertebrates to colonise.

Encourage scrub such as hawthorn and blackthorn to provide a valuable early nectar source.

Links to more details:

Farm Wildlife

<https://farmwildlife.info/how-to-do-it/existing-wildlife-habitats/wood-pasture-parkland/>

Buglife

<https://www.buglife.org.uk/advice-and-publications/advice-on-managing-bap-habitats/lowland-wood-pastures-and-parklands>

https://www.buglife.org.uk/sites/default/files/HM%20Wood%20pasture%20mosaic%20proof%20FINAL_2.pdf

Ancient Tree Forum

<http://www.ancienttreeforum.co.uk/resources/ancient-tree-guides/>



Hedgerows and hedgerow trees

Why is it important?

Hedges give valuable shelter to crops and grazing animals, but tall and bushy hedgerows full of native species, which fruit and flower freely, will also provide year-round foraging, breeding sites and shelter for a huge range of wildlife, such as linnet, weasel, redwing and warblers. The wide boundaries of the hedgerow will be rich with woodland edge plants, such as red campion, greater stitchwort and violet. A fully connected hedgerow network, allows wildlife to move freely and safely throughout the farm and into the surrounding landscape.

Hedges often support remnant or relic pockets of woodland vegetation where the woodland has been otherwise lost. These edge habitats are great places for warmth loving species such as slow worms and butterflies as well as those requiring more cover such as bank voles, wood mice and amphibians.

Another benefit of well sited hedgerows is that they slow the flow of surface water and trap sediment that would otherwise flow off slopes during high rainfall events. This reduces flooding and siltation of watercourses downstream, as well as retaining more soil on the fields and encouraging infiltration.

How should it be managed?

Hedges should be allowed to grow wide and tall with cutting undertaken at a maximum of every other year. Cutting should take place in late winter after the berries have been eaten but before nesting birds start. Not all hedges on the farm should be cut in the same year.

Livestock should be fenced out of the hedge to keep it thick at the bottom with a good range of plants able to thrive in its' wide base.

Leave an additional buffer between hedgerows and mechanical field operations such as mowing, rolling or harrowing.

Laying might be an appropriate technique to maintain the density of a hedge and encourage it to thicken from the base. Again this should be carried out in rotation rather than all hedges being laid in the same year.

Hedgerows trees should be maintained, and young ones carefully marked to avoid damage during hedge cutting. Care should be taken to avoid damaging their root system through vehicle movements, livestock feeding areas and especially ploughing. The root network typically extends at least as far as the tree crown.

How can I improve it further?

Ideally hedges will be fenced from livestock to a minimum of 3m width. This gives more space for marginal vegetation to thrive as well as providing a wider corridor for movement of species, more area of habitat and increased shelter.

Very thin or narrow hedges can have additional shrubs planted into them, especially when the remaining hedgerow is being laid.

Adding hedgerows trees to existing and widened hedgerows can be especially valuable.

Repollarding trees might be usefully undertaken to extend the life of old pollards. Seek professional advice in this respect.

Planting new hedgerows can bring significant enhancements to the visual landscape and to biodiversity. They can be great corridors for wildlife to move along especially if they link other hedgerows or other blocks of habitat up. New hedges should contain a diverse and appropriate mix of native species and be planted densely in a wide fenced corridor.

Historical maps may highlight where hedges have been lost and where it may therefore be most appropriate to replant.

Links to more details:

Farm Wildlife <https://farmwildlife.info/how-to-do-it/field-boundaries/hedges/>

Buglife

<https://www.buglife.org.uk/advice-and-publications/advice-on-managing-bap-habitats/ancient-and-species-rich-hedgerows>

https://www.buglife.org.uk/sites/default/files/Hedgerows_web.pdf

Hedgelink <http://www.hedgelink.org.uk/index.php?page=4>

<https://hedgerows.co.uk/Good%20practice.htm>

The Wildlife Trusts <https://www.wildlifetrusts.org/actions/how-make-hedge-wildlife>

https://www.peakdistrict.gov.uk/_data/assets/pdf_file/0008/78857/hedgeplanting.pdf

Natural England <https://webarchive.nationalarchives.gov.uk/20150303022940/http://publications.naturalengland.org.uk/publication/33005>

TCV Handbook <https://www.conservationhandbooks.com/>

PTES <https://ptes.org/hedgerow/>



Drystone walls and banks

Why is it important?

As stock proof boundaries these features enable the controlled management of grazing across the farm. This enables both land, livestock and wildlife to be managed as required. There are many traditional local terms for these often historical features.

Like hedges, walls and banks provide valuable shelter and cover to plants, livestock, people, invertebrates, birds and small mammals. Banks can be particularly important providing warm, dry, open ground for burrowing insects such as basking reptiles, mining and solitary bees.

In an open landscape walls and banks provide valuable cover for nesting birds and small mammals.

Old walls can be a great place to find lichens and mosses growing undisturbed.

Another benefit of well sited walls and banks is that they slow the flow of surface water and trap sediment that would otherwise flow off slopes during high rainfall events. This reduces flooding and siltation of watercourses downstream, as well as retaining more soil on the fields and encouraging infiltration.

How should it be managed?

Regular repair and maintenance should be undertaken as required using traditional methods and local materials, retaining local features.

Boundaries should be maintained in a stock proof condition. Mosses and lichens should not be removed from walls.

How can I improve it further?

It may be appropriate to restore or replace lost or redundant boundaries. With careful planning any new boundaries can be used to maximise their benefits such as slowing water flow or to connect gaps in a habitat network.

Links to more details:

TCV

<https://www.conservationhandbooks.com/dry-stone-walls-why/>

Drystone Walling Association

[http://www.dswales.org.uk/files/Walls & Wildlife.pdf](http://www.dswales.org.uk/files/Walls_%20Wildlife.pdf)

Farm Wildlife

<https://farmwildlife.info/how-to-do-it/field-boundaries/dry-stone-walls/>



Lichen encrusted drystone wall
Walls in the landscape
Mosses and lichens on drystone walls and tree



Bracken management

Why is it important?

Bracken is a fern that is native to Britain but can cover vast expanses of land which reduces access to grazing and can spread over more important habitats.

On its' own bracken has very limited value for biodiversity but the conditions it creates can be very important particularly for invertebrates. Bracken litter warms up significantly more than the surrounding vegetation which provides basking for species like High brown fritillary and adder. The shade created by the bracken fronds can provide similar conditions to woodland and hence support species like bluebell, wood anemone and violets.

The deep and spreading rhizomes of bracken allow it to spread but they can also help to stabilise upland soils, especially on steep slopes, avoiding siltation and land slips. Bracken can also help to reduce the run off of surface water by slowing water down and increasing soil infiltration.

How should it be managed?

The approach to bracken will be different in different places. Where control is desirable there are various methods to be considered. Again the favoured option will vary according to the situation.

In some places bracken beds might be a good area to target for tree planting although targeted clearance around new trees may be required in the first few years to prevent them being swamped.

Grazing animals, cultivation, cutting, rolling and herbicides can all be used to reduce the dominance of bracken. All techniques require follow up for a number of years to be most effective. Elimination of bracken is rarely achievable but a reduction in density, height and general vigour will allow other species to thrive in the sward beneath it. Livestock trampling can be effectively focussed through placing mineral buckets or hay in bracken beds.

Care needs to be taken to ensure control of dense bracken areas does not result in bare ground and run off of exposed soils into water courses, especially on steep slopes if herbicide is used.

Links to more details:

Farm Wildlife

<https://farmwildlife.info/how-to-do-it/existing-wildlife-habitats/bracken/>

Natural England

<http://publications.naturalengland.org.uk/publication/127007>

<http://publications.naturalengland.org.uk/publication/33017>

<http://publications.naturalengland.org.uk/publication/35013>

Scottish Natural Heritage

<http://adlib.everysite.co.uk/adlib/defra/content.aspx?id=000IL3890W.18SYNFQGWIP8N>

Game Conservancy Trust

https://docs.wixstatic.com/ugd/fdc287_5e364689a99147c5961686522f639e89.pdf

https://docs.wixstatic.com/ugd/fdc287_15a9f1b4957a4d6299442b4f77d04fd7.pdf



Bracken roller
Cattle grazing in
scattered bracken
High Brown
Fritillary



Water quality

Why is it important?

Maintaining the quality of water draining from the land is a key outcome. This includes minimising the nutrients and soil being lost from the holding. Managing all land with minimum and very targeted inputs of manure, fertiliser and pesticides will help to achieve this. Managing sward height though control of grazing will also ensure soil is held on to and not washed off into water courses at times of heavy rainfall.

Where water flows into reservoirs or rivers used for the extraction of drinking water, ensuring high water quality is good for public health and avoids the expense of difficult water treatment processes. For example peat stained water is very difficult to clean but undesirable to the general public. Good land management however can avoid the loss of peat into the water in the first place.

How should it be managed?

Managing manure and forage storage, as well as chemical usage around the yard and farm buildings is critical to protecting water quality. Good design and maintenance of infrastructure will go a long way to preventing pollution and minimising effluent for disposal. Having sufficient capacity for the number of animals housed is essential. Separating clean and dirty water will help to maximise available storage and reduce pollution problems.

Looking after soil structure and health will ensure the ground itself is able to absorb more water more quickly and is held together by a thick mass of deep roots to resist erosion and compaction. Ensure that stocking levels and grazing practices (eg supplementary feeding) are such that any damage to the surface structure and exposure of soils is avoided. The aim is to encourage a good sward height and strong root network to develop and prevent surface run-off. This in turn prevents soil and nutrients being lost into streams and rivers.

How can I improve it further?

Fencing livestock out of watercourses and maintaining suitable buffers of longer vegetation will help to keep soil/sediment and nutrients in the fields, and slow the flow of surface water into streams and rivers by increasing infiltration. Buffer strips and riverside fencing will be important tools to maintain water quality and encourage diverse habitats to develop along watercourses. These will both protect the water quality and provide important corridors for wildlife through the landscape.

Links to more details:

Farm Wildlife

<https://farmwildlife.info/how-to-do-it/wet-features/streams-and-rivers/>

Natural England

<http://publications.naturalengland.org.uk/publication/9031>

Eden Rivers Trust

https://edenriverstrust.org.uk/wp/wp-content/uploads/2019/01/Eden_Catchment_Water-friendly-farming_leaflet.pdf



Dipper on fast flowing stream
Upland river

Flood prevention / water storage

Why is it important?

Rain falling on the uplands can very quickly run down and result in flooding of land, roads and property downstream. If the water can be slowed these flood peaks can be both delayed and reduced saving properties and infrastructure from damage.

As the climate changes and extreme weather events become more frequent the need to cope with intense heavy rainfall becomes ever more important.

Increasing vegetation cover helps by physically holding the water on leaves allowing increased losses to evaporation, increased transpiration and results in much higher soil infiltration as well. This results in less water running off the surface when it rains, and less damage being caused by erosion of the soil.

How should it be managed?

Hedges, trees, ungrazed buffer strips, shallow swales and low bunds all slow the water on it's way to the streams and rivers. Slowing water down gives more time for it to infiltrate into the soil, be taken up by plants or be evaporated all of which prevents it running off and reaching the streams. These features would also help by trapping sediment that might otherwise be washed down to silt up rivers contributing to flooding, as well as preventing the loss of valuable soil from the land.

Woody debris dams can also slow water and trap sediment when it has reached the watercourses.

Creating riverside corridors allows a dense sward and scrub/trees to develop which will both slow water movement and trap sediment before it entering the watercourse.

The easiest way to maximise infiltration easily and effectively reduce surface run off across the farm is to ensure a good sward cover through careful management of grazing. This will also protect the vegetation from drought stress in case of extreme hot weather.

How can I improve it further?

Restoring peat and wetland areas by blocking/decommissioning old drains and ditches can be very effective at holding water back. Peat has a massive capacity to absorb water like a giant sponge.

Additional tree planting on a small or large scale can be really helpful and can provide a great opportunity to involve local schools or community groups.

Links to more details:

SEPA

<https://www.sepa.org.uk/media/163560/sepa-natural-flood-management-handbook1.pdf>

Eden Rivers Trust

https://edenriverstrust.org.uk/wp/wp-content/uploads/2018/12/11882_NFM_handbook_WEB.pdf

https://edenriverstrust.org.uk/wp/wp-content/uploads/2018/12/woods-for-river_web.pdf



Standing water on grassland
Well vegetated spring and stream
Woody debris in river



Soil health and structure

Why is it important?

The good health of soil is paramount to the success and sustainability of any farm business. Healthy soil conditions are critical for the productivity of the vegetation that grows in it, as well as holding and filtering water, storing carbon, and a host of other functions. Many factors can damage the structure and composition of soils and some can take a very long time to recover. Regular observation, sampling and general awareness of soil health really can determine the viability of a farming business. Soil is of no use to the farm if it has been washed away on to roads or into streams and rivers. Once in the watercourses excess nutrients can cause algae to grow depriving wildlife of vital oxygen. Soil particles smother river gravels with the loss of fish, invertebrate and crayfish habitats.

How should it be managed?

Careful management produces soil that has lots of earthworms, high organic matter content, good vegetation cover and excellent root growth. Avoiding compaction (at all depths) will improve drainage, ensure aerobic conditions and good fungal activity. Other key things are to avoid losses to erosion and to maintain appropriate pH and nutrient levels with no unnecessary expenditure, pollution risk or damage to habitats. Maintaining grazing levels which produce a strong, healthy and intact layer of vegetation is crucial in order to avoid surface erosion.

Minimising the weight and number of vehicle movements on land reduces the risks of compaction, particularly on wet ground. Take particular care around gateways and feeding sites where trampling by livestock can also cause compaction problems. Even livestock trampling can create a near surface compacted layer which will significantly impede drainage and grass growth. Avoiding compaction can help maximise rainfall penetration of the soil, thus reducing surface run off and erosion. Improvements to soil structure can also improve plant growth.

How can I improve it further?

Assess soil structure through digging test pits and carry out testing to check nutrient levels on a regular basis. This will enable you to take appropriate action to identify and correct any problems early on. Testing nutrient levels enables very targeted use of manure, fertiliser and lime for any specific crop (including grass) saving both money and resources, and preventing excess being washed straight off or building up unused in the soil. It allows the most to be made of on farm manures and slurries.

Links to more details:

Natural England Technical Information Notes

35 - Soil sampling for habitat recreation and restoration

<http://publications.naturalengland.org.uk/publication/31015?category=23033>

36 - Soil and agri-environment schemes: interpretation of soil analysis

<http://adlib.everysite.co.uk/resources/000/245/878/TIN036.pdf>

37 - Soil texture

<http://www.adlib.ac.uk/resources/000/264/782/TIN037.pdf>

Summary of evidence

<http://publications.naturalengland.org.uk/publication/6432069183864832?category=23033>

Magnificent Meadows

http://www.magnificentmeadows.org.uk/assets/pdfs/Soil_Nutrient_Testing.pdf

Farm Wildlife

<https://farmwildlife.info/how-to-do-it/farmed-area/soil-health/>

Agriculture

<https://www.agricology.co.uk/farming-themes/soil-management>



Earthworm in dark organic rich soil profile
Compacted water logged soil profile
LHS Compacted with poor root growth / RHS Good soil structure and hence root development
Badly poached soil from winter feeding



Livestock management

Why is it important?

Routine livestock management can have all sorts of unintended consequences. Timing and density of grazing, supplementary feeding and parasite control are often taken for granted but can have massive impacts on the habitats and diversity of plants and invertebrates found on any piece of land.

How should it be managed? How can I improve it further?

Rotational grazing or mob stocking (as opposed to set stocking) allows flowering and seed set which in turn provides nectar and food for invertebrates, birds and small mammals. This sort of system allows the recovery of vegetation in grazed areas prior to being grazed again - this maximises the length of grazing season and the productivity of grassland whilst also encouraging species diversity and soil health. Low levels of set stocking may be appropriate on extensive areas as a way to deliver a lenient grazing regime. Maintaining stock-proof boundaries and gates is essential in order to allow controlled stock movement and rotational grazing.

Supplementary feeding can lead to poaching and the addition of nutrients. If feeding is required it indicates that the land is being stocked at more than its' carrying capacity. This might be acceptable to maintain animal growth rates on improved land but is rarely desirable on more natural habitats. If necessary feeding of loose hay at scattered locations is preferable to the use of feeders as these focus poaching damage. Care should be taken to differentiate between mineral and feed blocks. There is a time and place to use each and they can be great management tools to focus stock activity for specific reasons.

Grazing improved land, or feeding, in one field or area and allowing stock access to sensitive habitats will also result in the stock moving nutrients into the sensitive habitat through their dunging. This might be different areas of the same field or where fields are run together with open gates, or where animals are fed on hard standing or under cover. Additional nutrients enables more dominant species to grow in nutrient poor habitats leading to a loss of diversity.

Carefully consider parasite control strategies for livestock to reduce the impacts of persistent drugs on invertebrates (such as dung beetles and earthworms) and water quality. This includes pour-on treatments as well as drugs given by injection or orally. Avoid the use of avermectins wherever possible, and treat individual animals only as and when necessary, as opposed to the whole herd/flock routinely. Seek veterinary advice on a suitable strategy for your particular farm, and/or individual animals.

Mixed grazing and pasture management can help manage parasite populations.

Links to more details:

<https://www.cotswoldseeds.com/downloads/mob%20grazing%20website.pdf>

<https://www.biodynamic.org.uk/wp-content/uploads/2017/08/Mob-grazing-article-by-Peter-Brown-Summer-17-SF-.pdf>

Farm Wildlife

<https://farmwildlife.info/how-to-do-it/farmed-area/>

<https://farmwildlife.info/how-to-do-it/farmed-area/livestock-choices/>

<https://farmwildlife.info/how-to-do-it/farmed-area/livestock-enhancing-improved-grassland/>

<https://farmwildlife.info/how-to-do-it/farmed-area/livestock-husbandry-chemical-control-of-parasites-endectocides/>



Loose feeding hay to cattle
in snow



Dung beetle
Flowering sward through
rotational grazing



Resources

There is a wealth of available information available to assist in informing management decisions. Links to some of these are provided throughout this document but there are many more.

Here are a few of the more comprehensive resources online:

Farm Wildlife

<https://farmwildlife.info/>

CIEEM

<https://cieem.net/i-am/resources-hub/>

TCV Handbooks - small subscription charge for full access

<https://www.conservationhandbooks.com/handbooks/>

Cross compliance

<https://www.gov.uk/guidance/cross-compliance-2019>

More detailed, site specific, and restoration advice is available from National Trust staff, your local Wildlife Trust, Natural England and more specific conservation charities.

Photo credits: NT Image Library, John Malley, Corrine Benbow, Abigail Saunders

low input permanent grassland

means grassland used for pasture or hay or silage production, which has received little or no fertilizer and which has developed or has the potential to develop a diverse botanical interest;

Agricultural grassland covers a wide range of types from agriculturally-focussed Ryegrass-dominated pastures to traditional species-rich meadows and wet grasslands with mire. Whilst they all have differing management requirements and potential for delivering habitat and biodiversity benefits, the wildlife benefits of any grassland can be enhanced by following some simple principles which can deliver significant benefits whilst still maintaining their agricultural use and value.

In general terms, two key factors largely set the wildlife value of any grassland – the intensity of management and artificial inputs, and the management approach. To enhance the wildlife value of any grassland, changes to management to create greater diversity in heights and structure of the grassland can greatly enhance it's value for wildlife, as well as having benefits for farming – greater drought resistance and improved ability to utilise natural fertility due to wide range of species present and deeper rooting behaviour, better protection of vulnerable soils giving longer grazing period and earlier spring growth, health benefits of grazing more diverse forage and browse allowing stock to 'self-medicate'.

We recommend that you:

- graze during the growing season to maintain a sward:
 - that has an average height of 7 centimetres (cm) to 13cm
 - where at least 20% is shorter than 10cm
 - where at least 20% is over 10cm tall

Utilising rotational or intermittent grazing management practices rather than set stocking brings real benefits, allowing the grassland species to develop opportunities for stronger root systems and allowing recovery periods between grazing periods creating more vigorous and healthier regrowth and opportunities for flowering and seeding allowing plants to regenerate themselves and to fill the gaps which may otherwise be exploited by invasive weed species. Grazing in this way also has health benefits for the stock, breaking parasite life cycles and reinfection / development of resistance, reducing soil ingestion associated with tight grazing and increasing mineral content of grazing. Grazing with cattle, or a mixture of cattle and sheep, is very beneficial in achieving the varied sward height and again has production benefits in terms of grass and stock health.

Ideally, during the spring and early summer, the grassland will have a good cover of flowering grass species and wildflower species, and may also contain scattered areas of scrub and/or rushes. Grazing or cutting will ensure a variety of plant heights. Bare ground will be very limited.

By autumn, the sward will vary in height with tussocks of grass. Some grasses and wildflowers will be allowed to go to seed.

Any archaeological or historic features will be protected under a grass cover, with no increase in scrub cover, no bare ground present, and no damage incurred due to machinery use.

- **Recommended management**

To assist you in achieving environmental benefits, we recommend that you develop and follow best practice:

- maintain a sward with a range of heights during the growing season to ensure that at least 20% is less than 7cm and 20% is more than 7cm. No height variation needs to be maintained when the field is closed up for a cut of hay or silage.
- maintain soil pH above 5.4 by liming, if necessary to promote a range of grasses and wild flowers, but not if the target is to maintain acid grassland.
- graze or cut areas of dense rush growth so that stands of soft or hard rush cover 20% or less of the parcel area and are less than 20cm high by 30 September
- maintain and encourage where appropriate scrub cover as well-established scrub in separate small patches, lines and occasional individual bushes across the site
- prevent additional scrub encroachment on historic or archaeological features
- check for breeding birds before operating machinery or carrying out other activities which may disturb breeding birds or damage their nests. The breeding season tends to run from mid-March until mid-July, but it can start earlier and finish later, depending on the species and the weather.
- Avoid development of areas of bare ground and obvious damage to soil

To achieve the aims and deliver the environmental benefits:

- avoid any mechanical operations (including hay/silage cutting) between 15 March and 30 June, or allow activities that disturb breeding birds, including ground nesting birds and their chicks
- do not cut rushes between 15 March and 31 July
- do not plough, cultivate or re-seed
- only use herbicides if needed, as spot-treat or weed-wipe to control nettles, bracken, injurious weeds or invasive non-native species
- avoid cutting more than one-half of scrub in any one year, except on historic and archaeological features
- limit supplementary feed to non-molassed mineral blocks
- avoid modifying or extending existing drainage systems
- limit inputs to no more than 12 tonnes/ha of farmyard manure or no more than the following amounts of fertiliser as an alternative to farmyard manure. Applications of fertiliser and manure must not be increased if the current rate is less than:
 - 9 kg/ha nitrogen

- 23 kg/ha phosphate
 - 83 kg/ha potash
-
- Do not harrow or roll on historic or archaeological features
-
- Do not apply paper waste or other industrial by-products