

# Bracken: Strategies for Control and Management

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## What is bracken?

Bracken is native species of fern that grows between 3 and 6 feet in height, typically in extensive communities on well-drained land in woodland or open-ground habitats. It is a vigorous pioneer species, and its colonising tendencies mean, if left unmanaged, it can dominate moorland, grassland, and other habitats of agricultural or conservation value.

When found as part of a mosaic of habitats, bracken has high biodiversity value. It can shelter plant species such as wood anemone, bluebells, and violets, it supports over 40 species of invertebrate (11 of which exclusively rely on bracken<sup>1</sup>) and it provides cover for ground-nesting birds and small mammals<sup>2</sup>. When in an extensive and homogenous stand however, it can be of very low biodiversity or agricultural value, outcompeting other vegetative species.



The degree and type of management required depends on your aims for the area in question<sup>3</sup>. For example, complete eradication may not be a reasonable goal due to the costs involved, and tolerating some amount of bracken can add to the biodiversity of a site.

*Image courtesy of Adam Crowe*

## Historical use

Historically bracken had many uses and regular harvesting likely contributed to its control. When dried it can be used as livestock bedding<sup>4</sup> or thatching, and there are some innovative uses in contemporary times such as for fuel<sup>5</sup> or peat-free compost<sup>6</sup>.

Harvested in early spring, the furred fronds, or “fiddleheads” are eaten in countries around the world. When hot-composted or burned, bracken can be safely used on vegetable beds, but due to its carcinogenic properties (see below) it is not generally advised to use it as a mulch.



*A mosaic of habitat is best for biodiversity  
(photo courtesy of Fiona and Dave Daley)*

## Health concerns

<sup>1</sup> <https://core.ac.uk/download/pdf/14343297.pdf>

<sup>2</sup> [https://butterfly-conservation.org/sites/default/files/2021-08/BrackenforButterfliesLeaflet\\_ENG.pdf](https://butterfly-conservation.org/sites/default/files/2021-08/BrackenforButterfliesLeaflet_ENG.pdf)

<sup>3</sup> <https://www.gwentwildlife.org/sites/default/files/2020-01/No.12%20Habitat%20Management%20Toolkit%20-%20Bracken%20Control%20FINAL.pdf>

<sup>4</sup> <https://www.fas.scot/downloads/bedding-materials-directory/#:~:text=The%20evidence%20suggests%20that%20bracken,a%20lot%20in%20the%20past.&text=Bracken%20breaks%20down%20more%20readily,land%20and%20used%20as%20fertiliser.>

<sup>5</sup> <https://www.malvern hills.org.uk/latest-news/20170830-brackenburn/>

<sup>6</sup> <https://www.dalefootcomposts.co.uk/our-products.aspx>

Bracken is classed as carcinogenic, and is associated with toxicity and cancers in many species of livestock and in humans due to several compounds<sup>7</sup>. It is considered to be most hazardous when producing spores in late summer (although this typically only happens on a ten year cycle), or when consumed, either directly or indirectly through animal products. If concerned, manage bracken when young and green to mitigate exposure to spores. Bracken poisoning has been recorded in pigs, sheep, horses, and cattle if given prolonged access to bracken whether as grazing or in bedding.



Cautious guidance advises against using it as livestock bedding at risk of them ingesting it. Although bracken does not seem palatable to most species of livestock, prolonged exposure can lead to toxicity, so it is advised that you allow access to sufficient forage that stock are discouraged from grazing it, or otherwise restrict their access to it over long periods. It can also be a reserve for ticks which has health implications for livestock and humans<sup>8</sup>. Pigs destined for human consumption should be removed from bracken 15 days prior to slaughter and any incidences of bracken poisoning should be reported to the Food Standards Agency<sup>9</sup>.

Images above: <https://wildflowerfinder.org.uk/Flowers/B/Bracken/Bracken.htm>

## Methods of control

A variety of control methods can be used to control or reduce the prevalence of bracken in an area; the best method or combination of methods depends on context and resources. It is generally easier to keep on top of bracken than it is to reclaim pasture from a dense, established stand, so developing a bracken management strategy early on is helpful. Studies into the efficacy of these methods show variable results<sup>10</sup> as does the anecdotal evidence. Regardless of method, ongoing management and maintenance is required. Care should be taken to ensure ground-nesting birds are not present at the time of work.



*Image (right): Dense bracken litter - photo courtesy of Nat and Roger Marsden*

### Cutting

Cutting, whether with a mower, scythe or strimmer, can be an effective method of control but it is generally recommended that it be conducted at least twice a year during the first few years of management; once around June when bracken is around 2 feet tall, and again approximately six weeks later. Historic England's research into the effectiveness of different kinds of management found that a single cut in late July led to significant reduction in bracken cover over the course of several years<sup>11</sup>. Over time this will weaken the plant, though this is a long-term solution which

<sup>7</sup> <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1756650/pdf/v052p00812.pdf>

<sup>8</sup> <https://www.brackencontrol.co.uk/background/why-manage>

<sup>9</sup> <http://apha.defra.gov.uk/documents/surveillance/diseases/bracken-poisoning-pigs.pdf>

<sup>10</sup> <https://www.conservationevidence.com/actions/1726#:~:text=One%20randomized%2C%20replicated%2C%20controlled%2C,plant%20species%20or%20plant%20diversity.>

<sup>11</sup> <https://historicengland.org.uk/research/results/reports/7961/Monitoringofbrackencontrolmethodsandtheirimpactonthehistoricenvironment>

requires several years of repetition in order to be effective, as well as ongoing maintenance. It is recommended that you remove the bracken litter after cutting to allow light to reach remaining vegetation.

### Crushing

Crushing, rolling, or bruising bracken damages the plant by causing the stems to “bleed”, and the rhizome to use up its reserves and weaken over time. Like cutting, it is necessary to repeat this treatment for several years to have an impact. Crushing can be undertaken mechanically with rollers or dedicated bracken crushers, either pulled by machinery such as a tractor or ATV, or with horse-drawn rollers.

It is recommended to repeat crushing at least twice in the growing season; Historic England’s research into the impact of different kinds of management on bracken found that crushing twice was the minimum required to have a significant impact on populations, however a single pass did have a positive effect on vegetation diversity, possibly due to allowing more light to reach the ground.

For small stands bruising can be undertaken on foot by snapping mature stems with a rod or stick.

### Livestock impact

Livestock such as cattle and ponies can be used to trample bracken through a similar action to crushing. They are more able to manage steep or rocky terrain that machinery cannot access. Over winter, they can break up dense leaf litter from the previous season’s growth<sup>12</sup> or can weaken bracken by exposing the rhizomes to frost through poaching (although this may not be desirable in line with other land management goals).

A Historic England study on the impacts of different types of management on bracken found that areas where cattle had been foddered over winter displayed reduced bracken cover and figure the following year<sup>13</sup>. Sheep and goats are not generally considered as effective for this use as they tend to move through the bracken more than crushing it. Pigs can be useful as their rooting can damage or destroy rhizomes, or otherwise expose them to the elements, and they may eat them along with young bracken shoots.



*Image above: Horse-drawn bracken roller*

All livestock should be monitored as they may graze bracken, particularly when it is young and green, but they do not seem to preferentially graze it when other forage is available. Prolonged exposure can lead to toxicity; it is recommended that livestock have ample alternative forage available to discourage them from grazing the bracken, and that you observe their behaviour in case individuals or the group show a preference for bracken and need removing from a site. Be careful if calving in bracken as cows may hide their calves in dense stands which may make it difficult to monitor and tag them. Bracken is also an ideal habitat for ticks, and it is advised that

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<sup>12</sup><https://farmwildlife.info/how-to-do-it/existing-wildlife-habitats/bracken/#:~:text=Cutting%20can%20help%20to%20reduce,possibly%20into%20the%20longer%2Dterm.>

<sup>13</sup><https://historicengland.org.uk/research/results/reports/7961/Monitoringofbrackencontrolmethodsandtheirimpactonthehistoricenvironment>



you evaluate your flock or herds' vulnerability to various tickborne diseases before utilising them in this way, and monitor their health ongoing.



*Areas that have been opened up by livestock impact - photos courtesy of Nat and Roger Marsden*

## Herbicide

Asulam is a bracken-specific herbicide which is applied in late summer when bracken fronds have fully unfurled for maximum absorption and impact<sup>14</sup>; however, it is only available under annual emergency licences in England via the Bracken Control Group and is banned in Scotland, Wales, and Northern Ireland, as well as the EU<sup>15</sup>. Glyphosate is an alternative but less recommended as it indiscriminately destroys non-target vegetation species.

## Case studies

### 1. Nic & Paul Renison - Cumbria

Nic and Paul Renison farm in Cumbria, and have been using their cattle to manage dense stands of bracken on steep hillsides. They graze the cattle on these sites during the growing season and use salt licks to target impact. Once an area of vegetation has been trampled they move the salt lick to another spot until they have the desired coverage. They note that if you put the salt at the top of the bank the cattle may move it downhill themselves!

Nic and Paul have also trialled bale grazing on the same area to a) reduce consumption of bracken b) add new seed to the area; they also hand sow seed into trampled areas

*Image courtesy of Paul Renison, showing areas that have had cattle impact (right) versus left ungrazed (left)*



### 2. Fiona and Dave Daley - Cartmel Fell

Fiona and Dave have provided a useful timeline measuring their management and its impacts since 2017 across their 75 acres of bracken. The site is 150m above sea level, steep, and very rocky making it inaccessible to rollers and machinery.

*Image (right) courtesy of Fiona and Dave: August 2017 before management, bracken 1.5m tall)*



<sup>14</sup><https://www.gwentwildlife.org/sites/default/files/2020-01/No.12%20Habitat%20Management%20Toolkit%20-%20Bracken%20Control%20FINAL.pdf>

<sup>15</sup> <https://www.brackencontrol.co.uk/asulam>

Their aim was not to eradicate bracken as they had observed several species of rare butterflies on the site, and they are also working with Lancaster University to try and understand what kind of carbon the bracken are sequestering.

Initial management consisted of grazing their herd of Belted Galloways between October and December. Initially supplementary forage was necessary as there was very little grass amongst the bracken, but due to poor access they were limited to broadcast feeding hay bales they carried onto the site



Cattle were introduced in December 2017. They found that the cattle soon opened up pathways amongst the bracken and improved the visibility enough that they could get the pasture topper in to assist with management.



By 2019 after 2 years, areas had been opened up but there was still very little grass cover. But by 2020 the grass species were starting to establish as shown in the image to the left.



As of 2022 primroses and violets began to appear (right)



The site as it is in October 2023 can be seen to the left.

### 3. Adam Crowe - Cumbria

Adam's goal isn't to eradicate bracken on his site altogether, but to break up the litter layer and prevent it from dominating the site, which is a healthy mosaic of wood pasture, heather, and mire. He has received funding from DEFRA's Farming in Protected Landscapes fund to have a survey and methodology created so that they can do a botanical survey once a year to see how the changes that they're making are impacting the vegetation on the site. This will be undertaken with fixed point photos and quadrats

Adam uses a quad-drawn bracken bruiser which is part-funded through FIPL as it can access places more easily than the tractor.

He was advised to roll the bracken twice in a season but found that by August most of the bracken hadn't stood back up again.



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