

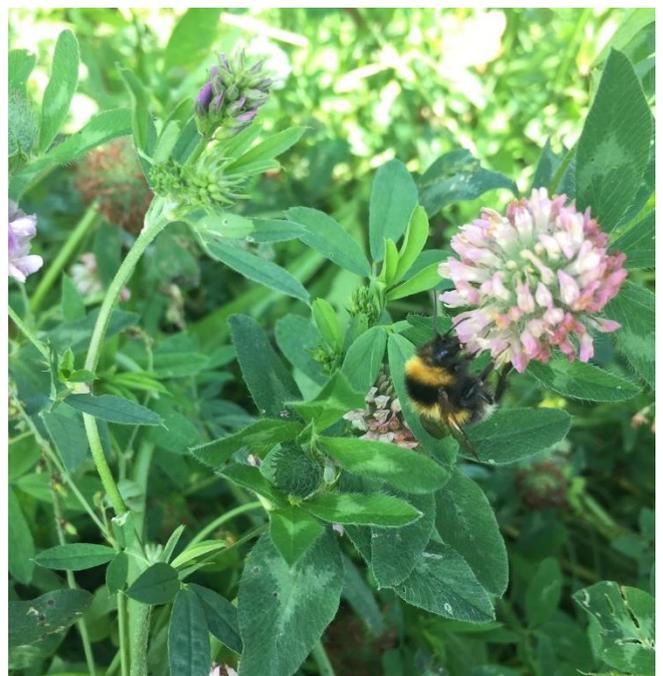
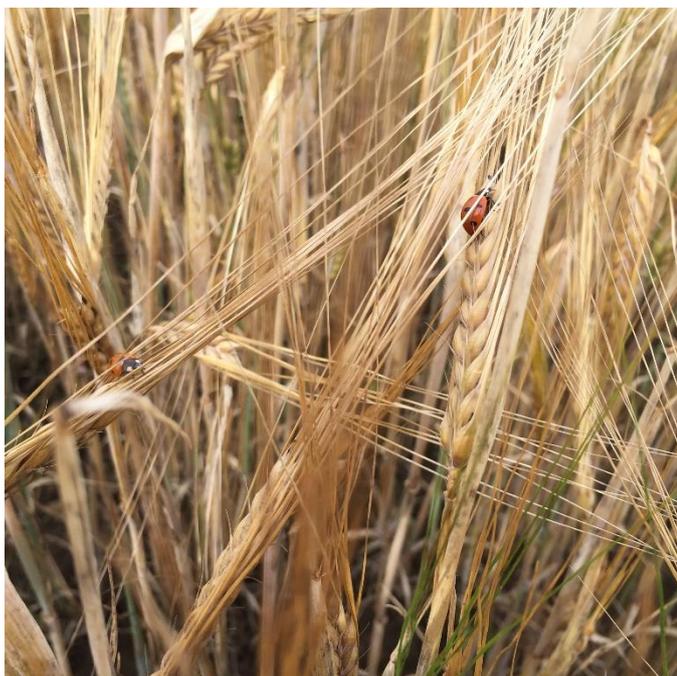
Five actions for nature

National Advice Hub
T: 0300 323 0161
E: advice@fas.scot
W: www.fas.scot

Farming and Wildlife

Farming and nature have co-existed for thousands of years and species such as yellowhammers, skylarks and brown hare strongly rely on farmland habitats. In agricultural landscapes, hedgerows, buffer strips, and farm woodlands are amongst the many habitats present that create wildlife corridors and stepping stones through our countryside. These Nature Networks allow species to move between different habitats, linking remnants of ancient woodlands, species-rich grasslands and sites designated for nature.

The tapestry of habitats farmland supports provides a variety of resources for wildlife, including food, shelter, nesting and overwintering sites. Many of these farmland species in turn provide benefits to agricultural production. A diversity of insects pollinate crops such as field beans and oilseed rape, natural predators act as a first line of defence against aphids, and a variety of soil organisms recycle nutrients returning them to the soil. As prices of organic inputs increase, and pesticides are withdrawn from the market, nature-positive farming practices are becoming increasingly recognised as a way to harness the benefits that nature provides to the farm and local community (known as ecosystem services).



Here are five key actions that farmers can take to boost wildlife on their farm.



Plan and integrate actions across the whole farm

- Map and assess the condition of habitats
- Monitor soil health and create a nutrient management plan
- Create an Integrated Pest Management plan
- Consider nature in your cropping and grazing plans



Improve cultivated soil health

- Reduce and target synthetic inputs (e.g. precision agriculture)
- Reduce soil disturbance – minimum tillage, direct drilling
- Maximise soil organic matter - bulky manures, integrate livestock
- Increase the number of crops in the rotation and explore intercropping



Enhance field margins and permanent habitats

- Protect and expand all permanent, nature-rich habitats
- Connect habitats up across a farm by restoring hedgerows for example
- Work with adjacent farms to connect habitats across the landscape
- Protect these habitats from synthetic inputs



Create new nature rich habitats

- Create native woodlands, low input grassland, wetlands and ponds
- Restore linear habitats such as hedgerows, stone dykes and field margins
- Implement buffer strips to protect watercourses
- Establish nectar and pollen mixes, wild bird cover or tall grass grazing



Manage for species

- Provide breeding, feeding and shelter
- Increase habitat diversity to support a variety of species
- Target management for key species
- Be vigilant and control for non-native invasive species

1. Plan and integrate actions across the whole farm

Many species move between farmland habitats to meet their resource requirements and typically a wide variety of well-managed habitats supports a greater diversity of species. For example, in spring bumblebees will nest and forage along hedgerows, before moving to oilseed rape and field beans in early summer, and finally queen bees will gorge on flower-rich field margins as they prepare to overwinter. An important first step for nature is therefore to know what habitats are on your farm and determine their condition. This can help you decide where hedgerow restoration could restore links between habitats, or where the greatest benefits of placing flower-rich field margins could be derived.

Wildlife isn't restricted to the edges and hedges of farmland. Many species live entirely in agricultural fields, while others rely heavily on them during their life cycle. Earthworms aerate the soil, and a diversity of soil organisms recycle nutrients in dung and decaying plant matter. Ground beetles and spiders move from undisturbed tussocky field margins where they overwinter, into grassland and arable fields in spring where they will feast on a variety of pests such as aphids, leatherjackets and slugs. Restoring soil health and targeting agrochemical inputs will help improve infield habitats for these important beneficial insects. Precision farming techniques (e.g. controlled farm traffic, variable-rate applications), integrated pest management plans and nutrient budgeting can all help farmers optimise the use of synthetic inputs with positive impacts to both nature and profit margin.

2. Improve cultivated soil health

With the degradation of soil health an increasing concern, many farmers are taking positive action to restore soil ecosystems. Healthy soils are the foundation of our food production systems. Restoring diverse communities of soil organisms helps to optimise nutrient cycling, while improvements in soil structure and increasing organic matter not only increases the potential of soil to store carbon, but also to hold and retain water. More frequent periods of drought and flooding are predicted due to climate change, so increasing the capacity of soils to uptake and retain water is crucial to building resilient farming systems.



Farmyard manures, digestates and cereal straws are commonly used to improve soil structure, organic matter and increase water retention. A variety of other actions will also help to restore soil health, particularly in arable systems where degradation is typically most prevalent. These are underpinned by Gabe Brown's five principles of soil health (Figure 1). The viability of these actions will depend on access to machinery, farm infrastructure, soil type, crop rotation and geographical location, with suitability varying between farms. Sacrificing a small area of a field to trial some of these practices can help explore their viability without the risk of implementing changes more widely.



Minimise soil disturbance

Reduced tillage and targeted agrochemical applications protects soil communities, builds organic matter and reduces GHG emissions



Keep the soil surface covered

Cover crops and winter stubble protect soil communities from weather extremes. They reduce the risk of soil erosion and protect watercourses



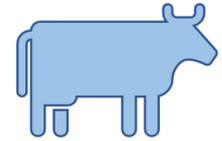
Continual living roots

Cover crops, grass leys and agroforestry allow for year-round carbon capture. They reduce nutrient leaching and provide continual food for soil communities



Promote crop diversity

Intercropping or undersowing crops provide a greater diversity of food for soil communities, can increase water uptake and retention building resilience



Integrate grazing livestock

Grazing winter cereals or incorporating grass leys increases soil organic matter and reduces the need for inorganic fertilisers

Gabe Brown's five principles of soil health

3. Enhance field margins and permanent habitats

Linear features such as field margins, drystone dykes, water margins and hedgerows support a variety of different species. They provide resources for pollinating insects, shelter for birds and butterflies, overwintering sites for spiders and ladybirds, and berries for birds. Many species use these habitats to navigate, and for others they provide important corridors linking habitats such as farm woodlands, wetlands and species-rich grasslands. [Research has found](#) that well-managed field margins enhance crop yields due to the ecosystem services provided by the species they support (e.g. pollination and natural pest control). Furthermore, hedgerows protect soils from erosion and provide shade and shelter for livestock, reducing heat stress in cattle and exposure in newborn lambs.



Habitats vary in their inherent value to support species with habitats such as machair, ancient woodland and species-rich hedgerows being particularly valuable in supporting rare and declining species. The value of a habitat is also determined by its condition with habitats suffering from both over-management (e.g. over-trimming hedgerows) and neglect (e.g. scrub encroachment in species-rich grasslands). In the absence of management, most habitats will start to deteriorate, reducing their value to wildlife and their ability to function. Examples of deteriorating habitats can include field margins becoming invaded by rank grasses and scrub, hedgerows

starting to degenerate, and farmland ponds becoming encroached with vegetation such as willow. Managing existing farmland habitats to improve their condition can optimise the benefits they provide without adversely impacting on food production.

Mowing flower-rich field margins annually will reduce the risk of scrub encroachment and increase the longevity of nectar and pollen mixes. Similarly, cutting hedgerows every 2-3 years, and laying or coppicing them can prevent them degenerating and ensure that they remain structurally sound. Furthermore, as most hedgerow plants flower on second year growth, staggering cutting across the farm will ensure flowers and berries are produced every year.

Semi-natural habitats are particularly vulnerable to inorganic fertilisers and pesticides. It is therefore important to protect them from spray drift for example by establishing a wider buffer, avoiding spraying in windy conditions and the use of low-drift nozzles. If there is a need to control weeds in field margin habitats, it is recommended that this is done through mowing or spot spraying.

4. Create new nature-rich habitats

In many farms there is room to make space for nature without adversely impacting production. Taking awkward corners out of agricultural production, creating wetlands or ponds where the ground is prone to water logging, planting small native woodlands and replanting hedgerows can all help bolster the habitats and resources your farm provides for biodiversity. Actions such as water margins can help to protect watercourses from diffuse pollution and landowners meet Good Agricultural and Environmental Conditions (GAECs).



It can be tricky to know what habitats to create, and where to create them. In some areas old aerial footage is available from the [National Library of Scotland](#), allowing us to take a look back in time to see how our land has changed. This could help identify habitats that were previously present on your farm, giving an idea of where restoration could work best. For example, old maps and aerials can pinpoint ghost ponds – old ponds that have been long lost. In the central belt, [habitat networks have been mapped](#) for woodlands, wetlands, neutral grasslands and bogs and heaths. These maps have spatially pinpointed areas where the creation of new habitats will optimise habitat connectivity.

There are a number of funding streams that can help support the creation of new habitat (e.g. [Agri-Environment Climate Scheme](#), [Forestry Grant Scheme](#), and the [Nature Restoration Fund](#)), and increasingly businesses are linking up with landowners to invest in habitat restoration work (e.g. [Landscape Enterprise Networks](#)). Recognising that nature extends beyond farm boundaries, and many

species require quite large areas to support their requirements, funding schemes are increasingly looking at adopting more landscape-scale approaches. This does need multiple land managers working together, but if you can pull together the team, results for nature can be amazing. They can uplift biodiversity in entire catchments, return polluted rivers back to thriving ecosystems rich in aquatic life, restoring networks of hedgerows to connect ancient woodlands.

5. Manage for species

Farmland supports a diversity of species many of which require a variety of resources that they obtain from different habitats. Most species will require breeding sites, nesting sites and shelter. For species with low mobility these resources will need to be near each other. Mobile species, on the other hand, will flit across a landscape to find what they need. For many species, it is relatively easy to do a stock check to see if your farm, or indeed the surrounding landscape, has the necessary resources. For example, bumblebees need undisturbed tussocky grass to nest, and a continual supply of flowers to support them when they are active (March until September). For other species, their ecology is less well known and what resources they need, and when they need them can be tricky to work out. When the focus is targeted to a single species (e.g. grey partridge or curlew), then advice should be sought to ensure that management actions meet the requirement of that species. When the aim is to promote nature in general, then the focus should be on supporting a variety of good quality habitats.

Many species rely on both semi-natural habitat and productive agricultural land during their lifecycle. Skylarks will nest in spring-sown arable fields, hoverflies will forage on the open flowers of oilseed rape and ground beetles will feed on a variety of arable pests. Growing a diversity of different crops and/or maintaining swards of different heights through strip or multi-paddock grazing will therefore further benefit biodiversity.



Japanese knotweed



Giant Hogweed



Himalayan Balsam

Finally, it is also important to keep vigilant for species which pose a threat to our natural environment. Non-native invasive species such as giant hogweed, Himalayan balsam and Japanese knotweed often spread along watercourses, public footpaths and roads. These invasive plants smother native vegetation and once established can be difficult to eradicate. Early detection and control are therefore vital.



Related Resources

[Habitats for Beneficial Insects | Farm Advisory Service \(fas.scot\)](#)

[Farmland Birds | Helping farmers in Scotland | Farm Advisory Service \(fas.scot\)](#)

[Integrated Pest Management | Helping farmers in Scotland | Farm Advisory Service \(fas.scot\)](#)

[Practical sustainable farming - Agricology](#)

[Nature Friendly Farming Network - Sustainable Farming \(nffn.org.uk\)](#)



Author

Dr Lorna Cole, SAC Consulting



National Advice Hub
T: 0300 323 0161
E: advice@fas.scot
W: www.fas.scot