BRIDE Project
Farming with Nature

BRIDE Project EIP

Farm Habitat Management Guidelines

A Guide to

Farming with Nature

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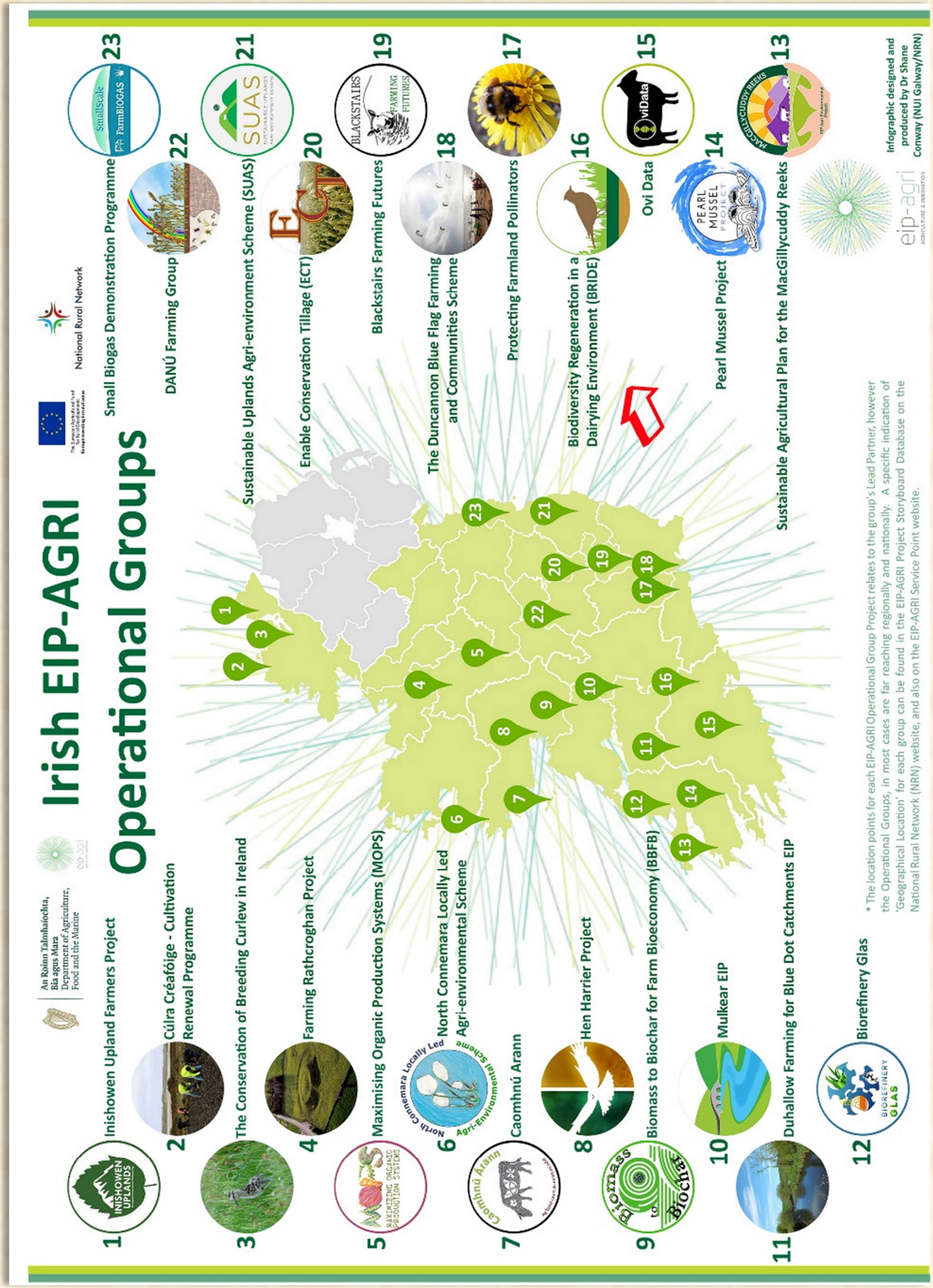
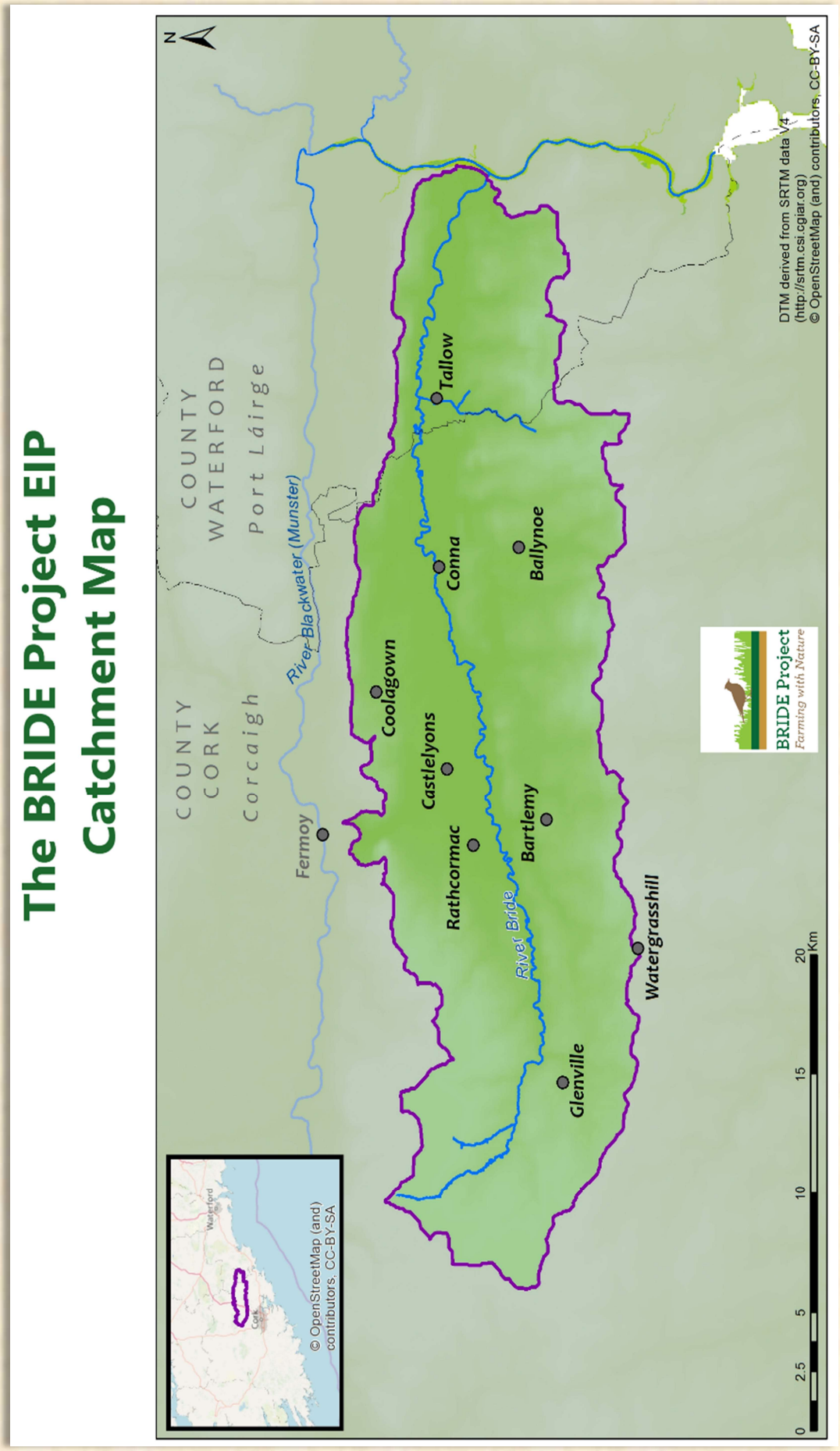


Irish EIP-AGRI Operational Groups



The Bride river valley catchment area and its local communities

INDEX

INTRODUCTION

The BRIDE (**B**iodiversity **R**egeneration **I**n a **D**airying **E**nvironment) Project was set up to improve biodiversity in the Bride river valley area of East Cork and West Waterford.

These guidelines are designed to be both practical and manageable for farmers who want to improve biodiversity, water quality and carbon sequestration on their farms. Although specifically for out Project participants in the Bride river valley, they can be adopted to any farming area in the country. In order to improve the environmental standards on any farm, the guidelines are simple – leave room for nature.

The BRIDE Project aims to design and implement a results-based approach to conserve, enhance and restore habitats in lowland intensive farmland.
These ***BRIDE Farm Habitat Management Guidelines*** provide practical advice on the creation and management of the dominant farmland habitats found within the BRIDE catchment.

It is often easier to retain existing habitats than to create new ones, and older habitats contain more wildlife than recently created habitats of the same type.
Networks of wildlife habitats are more ecologically valuable than isolated wildlife areas. Where possible, create linking corridors by planting/retaining hedges or keeping strips of long grass along the road verges. It is very important to note that land used for creating a new habitat should come from the productive part of the farm. Do not locate new wildlife habitats on existing wildlife habitats because this causes an overall loss of biodiversity. For example, planting a woodland on wetland or a scrubby area of the farm is only destroying one habitat to create another.

Eligible land that qualifies for the BPS (Basic Payment Scheme) and non-eligible land that doesn't, is, perhaps, the single biggest obstacle to biodiversity improvement on Irish (and indeed European) farmland. Farmers can be penalised for taking land out of food production and putting it to another use such as woodland, pond or other habitat creation. This may well be the case for some of the BRIDE Project farmer participants and therefore there is an urgent need to reform agricultural policy at both national and European level so that farmers are not penalised but rewarded for managing their land for the different services it can provide.

The BRIDE Project seeks to place a value on "waste" or non-productive land. Land that is not agriculturally productive can be used to counter the impacts of climate change, biodiversity loss and can also be used to improve air and water quality. Now more than ever there is a need to manage land for all of these ecosystem services.

Using these Guidelines

The guidelines are based on individual habitats and each habitat is dealt with under the following headings:

- Overview - general description of the habitat
- Timeframe - best time to create the habitat (if applicable)
- Location - ideal location on the farm for the habitat (not all habitats are suited to all farms / areas of the farm)
- Benefits - the environmental benefits of this habitat are explained
- Habitat Creation - guidelines on the creation / restoration of each habitat
- Habitat Management - guidelines on the management of new or existing habitats to improve biodiversity, water quality and carbon sequestration

The addition of **B, C, WQ,** beside each of the habitats is an indicator of the benefits of that particular habitat on the following environmental aspects –

BIODIVERSITY (B) – this habitat will increase the abundance and variety of plant and animal life.

CARBON SEQUESTRATION (C) – this habitat will aid the removal of carbon-dioxide from the atmosphere.

WATER QUALITY IMPROVEMENT (WQ) – this habitat will improve water quality by reducing the amount of run-off entering the waterways.

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Other relevant Contacts

For matters relating to wildlife and habitat conservation, contact the National Parks and Wildlife Service (NPWS) for the details of your local Wildlife Ranger. 1890-383-000
For matters relating to waterways and fisheries conservation in the Bride valley, contact Inland Fisheries Ireland. 026-41222

1.

ANNUAL BIODIVERSITY PLOT (B)

OVERVIEW

This is an area sown, using the BRIDE Project Annual Biodiversity Mix (see page 8), which contains plant species suitable for pollinating insects while also providing food and cover for birds in winter. It is an artificial habitat to replace winter stubble and summer wildflowers and can be created on any farm enterprise.

Winter food availability for seed-eating birds has reduced substantially over the years.

This has been caused by the increased rate of turnaround in cereal crops from one season to the next, the use of glyphosate on winter stubble, coupled with the declining area of tillage ground nationally,

Wildflowers in grazing pasture have also declined because of the conversion of grassland from meadows that contained many species of grasses and wildflowers to modern pasture that contains only one or two plant species.

TIMEFRAME

Sow during the months of April / May

LOCATION

The area can be from 0.1 ha (min.) to 0.5 ha (max.). This habitat should be located next to a hedgerow or other similar habitat to provide protection for small birds from predators. It is important that the area is no greater than 0.5 ha, as many smaller plots spread over a wide area are more beneficial than fewer larger plots.

Benefits

This habitat will provide a pollen and nectar source for pollinators and many other insect species. The seeds from these plants will provide food for small birds such as Yellowhammers, Linnets, Goldfinches, Greenfinches, Sparrows, Reed Buntings, and a variety of other bird species. Small mammals can also use these plots to forage for food. Consequently, birds of prey such as Kestrels and Barn Owls will use the habitat to prey on small birds and mammals.

Habitat Creation

The Annual Biodiversity Plot will need to be sown every year as it involves the use of annual flowering plant species. Habitat creation includes ploughing, harrowing and setting of the mix during the months of April and May. Ploughing a couple of weeks ahead of sowing will provide a stale seed bed resulting in a reduced need for pesticide.

Seed bed preparation for Annual Biodiversity Plot

Habitat Management

This habitat should be kept free from livestock and pesticides. Ideally, the plot should be located adjacent to a hedgerow or other habitat that allows birds to perch and provide a lookout for predators. Management will be minimal as once the seed is set no other work is required. ***The plot should remain untouched until April of the following year when field preparation can commence again***. Grazing the plot before ploughing in the spring will help in trampling down the dead vegetation. The use of any pesticides will significantly reduce the quality of this habitat and should be avoided.

BRIDE Annual Biodiversity Plot Seed Mix	
Species	**Seeding Rate Kgs/ha**
Linseed	12.0
Gold of Pleasure	7.5
White Millet	4.0
Red Clover	2.5
Mustard	2.5
Forage Rape	2.0
Borage	0.5
Phacelia	0.5
Field Poppy	0.25
Common Vetch	0.25

A summer food source for pollinators

A winter food source for finches, buntings and other small birds

A flock of finches feeding in winter

2.

BEE SCRAPE (B)

OVERVIEW

Many people are familiar with the Honey Bee but it often comes as a surprise to learn that there are 77 different species of solitary bee in Ireland and these are very important pollinating insects. Many solitary bee species nest in exposed or bare soil patches on hedgerow banks or similar habitats and bee scrapes are simply just that – scrapes that reveal bare soil on a sunny earthen bank. During pollinator surveys on farms in the Bride Valley in 2018, it was found that lack of availability of this type of nesting habitat could be a limiting factor for these pollinators.

Solitary bees are excellent pollinators, non-aggressive and do not swarm

TIMEFRAME

Nov-April

LOCATION

When choosing a location, try to select an area that does not contain wildflowers but that does have wildflowers in the general vicinity (within 200m radius). Ideally, a south-facing bank of soil with a nearby pollen source i.e. wildflowers and flowering shrubs such as hawthorn, bramble or blackthorn. Scrapes can also be located on a steep slope in a field that may be unsuitable for livestock or machinery.

Benefits

Bee scrapes provide the nesting habitat required for solitary bees and other insects in which to nest. Look out for the tiny "drill holes" that can be seen once occupied *(see arrows in picture)*.

Habitat Creation:

Bee scrapes can be created by removing excess vegetation from a south-facing hedgerow bank and creating the bare soil required for these nests. Using a shovel, mini-digger or loader bucket, scrape back any vegetation to create a sheer face. This will hinder any plant growth on the face of the habitat thus reducing the need for maintenance. An area of 1m x 1m will suffice, but the more the better.

Habitat Management:

Keep the scrape clear of any vegetation both on and beneath the scrape by manually scraping back the area to bare soil. Be careful to avoid disturbing any nesting bees. Avoid the use of pesticides of any kind. Alternatively, instead of annually scraping back vegetation, and accidentally disturbing nesting bees, create a new scrape each year next to the scrape from last year so that you have a rotation.

A solitary bee entering its "burrow" in a bee scrape

3.
BOGS (B, C, WQ)

OVERVIEW

Bogs are valuable wetlands. A bog is an area of wet peat, rich in organic matter but low in mineral nutrients. There are two types of bog that are found in Ireland - raised bog and blanket bog. Raised bogs are formed by the accumulation of peat in shallow lake basins or depressions and mostly occur in the midlands and they are usually deep (3-12 m), while blanket bogs occur on flat or gently sloping ground and are usually 1-2 m in depth.

Much of our lowland farm wetlands have been drained and converted to intensive farmland over the past 100 years and large areas of bog land have been drained and planted with conifers. Bog land is a unique habitat that has its own distinct biodiversity with multiple functions on many different environmental levels. **Retain – not drain!**

TIMEFRAME

Not applicable

LOCATION

Blanket bog is the only type of bog found in the Bride valley and examples can still be found in the upper reaches of the valley in the Nagle Mountains but many of these bogs have been planted with conifers.

Benefits

In addition to their biodiversity value, bogs accumulate and store millions of tonnes of carbon and have a vital function in storing the greenhouse gases that cause climate change. They also store vast amounts of rainfall and perform a very important role in flood prevention. When bogs are drained and harvested, they can no longer perform these functions effectively. These habitats contain a diverse range of characteristic flora and fauna such as Ragged-Robin, Meadowsweet and several orchid species and birds such as Snipe, Curlew and Willow Warbler.

The Curlew formerly bred in the Bride valley
[photo: Mark Carmody]

Habitat Creation

Bogs have been forming over thousands of years and cannot be artificially created but some can be restored by blocking the drainage channels and rewetting.

Habitat Management

The main causes of bog loss include drainage, reclamation, peat extraction, afforestation, over-grazing and burning. All of these forms of management should be avoided, along with keeping these unique biodiversity-rich areas free from dumping. A controlled grazing system with a suitable stocking rate will benefit biodiversity on this habitat.

4.
DERELICT BUILDINGS (B)

OVERVIEW

Derelict and historic buildings are an important part of our cultural and natural heritage. Buildings that have dark secluded areas near the roof, or undisturbed cavities and chimney voids can generally support bats and occasionally Barn Owls, sometimes without the knowledge of the owner.

Retain – not remove!

TIMEFRAME

Not applicable

LOCATION

Not applicable

BENEFITS

Derelict buildings can provide important habitats for several bat species, Barn Owls, Stock Doves, Swallows and other bird species. Due to the importance of some of these old buildings, from a heritage point of view, there are grants available from the Heritage Council for their restoration in some cases.

Habitat Creation

The least amount of disturbance to these already existing habitats the better. The addition of nesting or roosting boxes in these buildings may increase the likelihood of habitation by bats or owls. Many of the BRIDE Project nest and roosting boxes are particularly suited to indoor locations.

Habitat Management

Maintenance of the roof of derelict buildings to prevent deterioration is important but be aware that replacing the roof may result in the destruction of existing nesting sites for bats, owls etc.

Leave mosses, lichens and ferns on walls and refrain from using pesticides. If re-pointing, do not use cement and avoid removing render. Keep Ivy in check (do not remove). If possible, try and keep farm animals out of the building as this may result in further deterioration of an already delicate structure. In particular, scratching by animals on old stone walls can damage the structure. Allow easy access in and out of the building for birds such as Barn Owls and Swallows.

Lime kilns can be important habitats for bats

5.

EXPOSED ROCK (B)

OVERVIEW

This habitat tends to be unaffected by agricultural improvement, so these areas often contain a wide range of wildflowers and other wildlife. Areas of exposed rock (especially limestone) can be exceptionally rich in wildflowers and can also support many species of insects, birds and small mammals. This habitat can provide good nutritional grazing for livestock but intensive grazing can result in shorter swards and prevent many plants from flowering.

TIMEFRAME

Fence off the area during the spring and summer months.

LOCATION

Not applicable

BENEFITS

Exposed rock can be an important habitat for wildflowers and insects.

HABITAT CREATION

Fence off from livestock during the spring and summer months but allow light grazing in the autumn and winter period.

HABITAT MANAGEMENT

This habitat is dependent on controlled grazing, with a suitable stocking rate, to prevent it from transitioning into scrub/woodland. The delicate ecology of this habitat is best maintained by keeping it free from slurry, fertilizer and pesticides.

Exposed rock with scrub encroachment in the background

6.
FARMYARD (B)

OVERVIEW

The farmyard is an important habitat for many species of wildlife and this fact is often overlooked when protection of habitats is being considered. Unfortunately, modern day farm buildings are not as suitable for a variety of bird and bat species as the traditional stone structures of the past. Mass concrete has replaced stone and cavity walls. Farm sheds are also larger with fewer nooks and crannies for nesting or roosting and old buildings are frequently demolished to make way for modern and larger structures. For these reasons artificial nest sites need to be provided to assist the many species that depend on farmyards for their survival.

BAT BOXES (B)

OVERVIEW

Bat boxes are a very successful alternative to the more natural tree holes, attic spaces or crevices in old buildings and roofs that formerly occurred in abundance around farmyards. All participating BRIDE farms will be supplied with two bat boxes (a breeding box and a roosting box) for use inside a farm building. Bats provide the perfect form of natural pest control. However, bats remain vulnerable to threats such as increased artificial night lighting, habitat damage, hedgerow loss and pesticide use. They have suffered widespread declines across Europe and all bats are now protected under Irish and European law.

Bat Roosting Box

Timeframe

Bat boxes can be installed at any time of the year.

Location

Fit the bat boxes as high as possible (at least 4m off the ground) onto a purlin or rafter under the ridgeline of the roof but free from rain. Less active sheds are most suitable, but any shed will suffice. High roofs are more suitable than lower ones but in all cases care should be taken during installation.

Benefits

Bats are very beneficial as they eat midges, mosquitoes and other pest species in large numbers. Even our smallest bats, the Pipistrelles, (which can fit on the end of your thumb) can easily consume 3,000 insects in one night. Schmallenberg virus, which affects sheep and cattle, is spread by midges, so bats are a natural pest controller and help in reducing the risk of spread of the disease. Other bat species feed on moths, beetles and spiders.

Daubentons Bat
[photo: Mark Carmody]

Habitat Creation

The boxes can be screwed into the purlin or secured with galvaband. Ensure the location is safe from cats and bird predators and that bats will have 24 hour access into and out of the building.

Habitat Management

Due to the location of the opening on the underside of the bat boxes, no cleaning is required.

Leislers Bat
[photo: Mark Carmody]

BIRD BOXES (B)

Barn Owl nest box in an old shed

OVERVIEW

Many of the specialist farmland bird species such as Corncrake, Barn Owl and Skylark are in decline and over half of the Red List of Birds of Conservation Concern in Ireland are dependent upon lowland farming.

Installing nest boxes for a variety of farmyard bird species can make intensive modern farm structures suitable for many species. These boxes replicate the traditional nesting sites that were to be found in old stone buildings, cavity walls and tree cavities. BRIDE Project nest boxes are designed to cater for the traditional farmyard species such as Barn Owl, Starling and House Sparrow. Species specific nest boxes will be provided to each farm and targeted specifically at species that are likely to occur on the farm.

TIMEFRAME

Bird nest boxes can be installed at any time of the year but ideally before the spring nesting season.

LOCATION

Different species have different nesting requirements, so the project ecologist will choose a suitable location and box for each specific farm, targeted at the species that are likely to occur.

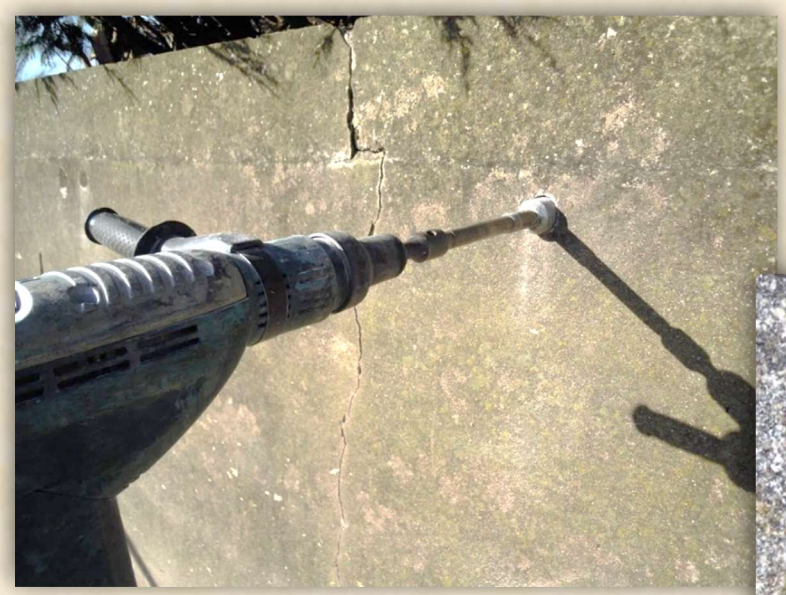
Benefits

Bird nest boxes provide much needed nesting habitat for a variety of threatened species and for some species (e.g. Barn Owl) these boxes can also be used as winter roost sites and will increase the chances of nesting in spring.

The Barn Owls' reputation as the 'farmer's friend' is well deserved. Before rodenticides, owls were one of the best means of keeping rodent numbers in check. Ironically, the rodenticides which have replaced Barn Owls as the modern means of rodent control are often highly toxic to Barn Owls as they frequently ingest poisoned rodents. Encouraging Barn Owls to nest on your land can have an impact on local rodent populations.

Habitat Creation

The boxes can be rawl-bolted to a wall or tied to a shed structure with galvaband or cable ties. The boxes should include an opening on one side to enable removal of debris during the autumn. Drilling holes in a cavity wall with 1 and 2 inch masonry bits will entice several species (e.g. Pied Wagtails, Great/Blue Tits and Starlings) to nest in the farmyard and this method provides a cheap and effective alternative to an artificial nest box. Some birds are very territorial and will not tolerate other birds in the same area, therefore nestboxes for these



Drilling a hole in a cavity block wall can make a very effective nest box

Blue tit chicks in a cavity wall

species should be kept apart and placed in different locations away from each other. Other species are colonial (nest in colonies) and in this situation nest boxes can be placed near one another e.g. House Sparrows and Starlings.
When erecting a nest box, always try to ensure it cannot be reached by cats, dogs, rodents or other predators such as Magpies, Stoats or Hooded Crows.

Starlings can be seen feeding leather jackets and other soil pests to their young in May

Habitat Management

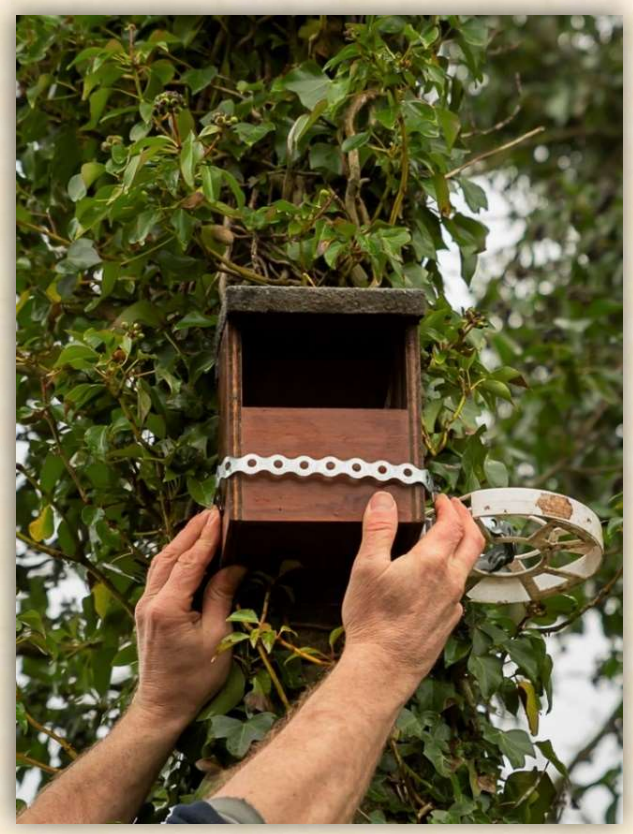
If birds take up residence in a nest box, resist the temptation to interfere as this could potentially result in the parents abandoning the nest. Instead, watch the comings and goings of the birds from a safe distance, they will behave more naturally and you will enjoy and learn more this way. The box can be opened from the end of October and cleaned out. Empty out old nest material and any unhatched eggs and clean the inside of the box with boiling water (which should kill most parasites that may infect next year's brood).

Remember to clean out nest boxes in the autumn

Starling nest box clamped with cable ties

House sparrow triple nest box.
Note tell-tale sign of nesting material protruding from hole.

Swift nest box



Spotted flycatcher nest box being installed

Kestrel nest box installation needs people power!
[*photo: Ger Broderick*]

Do not get disillusioned if the nest box remains unused for a long period. Some species like Blue Tits, House Sparrows, Starlings and bat species will readily occupy artificial nest boxes but it could take several years for other species to take up residence. Most importantly, position the boxes in the right location. Barn Owls, because their numbers are low, may take years to inhabit the nestbox. Provide the box in any case and leave it. Work on improving the surrounding habitats in the meantime, and in time – who knows!

RODENTICIDE ALTERNATIVE (B)

The BRIDE Project encourages the use of rodenticide alternatives such as this snap-trap

OVERVIEW

Anti-coagulant rodenticides such as warfarin have been used since the 1940's. When rodent resistance to these poisons was discovered in the late 1950's, more toxic first-generation rodenticides were introduced. Resistance to first-generation rodenticides in certain rat populations was identified in the 1960's and these were superseded by even more toxic second-generation anti-coagulant rodenticides which have been proven to be fatal to mammals, birds, dogs, cats, and other non-target wildlife through secondary poisoning (ingesting poisoned rodents). The BRIDE Project recommends using rodenticide alternatives such as a variety of traps or the use of a dog or cat. Farmyards are at the junction of wild and domestic so enforcing an unnatural factory-clean environment is not a practical option. Various trap options are financially supported by the BRIDE Project.

Rodenticide resistance has led to the use of more toxic products

TIMEFRAME

October to March

LOCATION

Traps should be placed beside a reek of straw bales or in any dark hidden corner. Remember to place them adjacent to a wall since rats like to run along walls to avoid detection. If using a snap trap, consider the location carefully to avoid catching non-target species including pets.

Rats are often shy of new objects and the placement of unset traps in a new location for a week or two will increase the opportunities for catching.

Rodenticide alternative - rat trap

BENEFITS

Rodents are important prey to a range of predators including Barn Owls, Long-eared Owls, Hen Harriers, Buzzards, Kestrels, Stoats and Foxes. Ingestion of poisoned rodents can be fatal for these species as well as family pets.

Let nature provide the solutions!
Common Buzzard with prey
[photo – Norma Gleeson]

Management

Check the traps on a daily basis and reset the traps if needed. Use gloves when disposing of dead rodents. Prevention is better than cure, so using feed bins and other good storage facilities for animal feedstuffs will greatly reduce the threat from rodents.

Keeping feedstuffs in a vermin-proof bin should reduce vermin infestation

Natural rodenticide - leave it to Mother Nature – Barn Owl chicks digesting!

7.

FIELD MARGIN (B, C)

OVERVIEW

The field margin is often overlooked as a habitat as it is regarded as part of the hedgerow. However, having a wide field margin beside a hedge will provide multiple benefits of food and shelter for declining farmland biodiversity. The tendency to maximise land use has led to many field margins becoming non-existent with the crop now growing right up to the hedgerow border. With livestock and crops utilising such valuable space, little room is left for wildflowers, pollinators and other insects along with a range of bird and mammal species. The added problem of pesticide, slurry and fertiliser application means the quality of this habitat (where it still exists) can often be poor. Creating a 2m field margin will provide a habitat for wildflowers, insects, birds and small mammals.

TIMEFRAME

Grassland - Any time of the year, but ideally between October and March.
Tillage - Field margins can be created during the setting season.

LOCATION

Field margins are the areas between the crop and the field boundary and in most cases they occur adjacent to hedgerows.

Benefits

As most of the cropping area on modern farmland does not contain high levels of biodiversity, the importance of the field margin is often overlooked. Pollinator and insect numbers continue to decline, but the creation of field margins that contain wildflowers and vegetation cover will help to reverse these declines. Bird species such as Yellowhammer and Willow Warbler nest on or close to the ground in thick vegetation so having a wide field margin will be of huge benefit to these species. Barn Owls and Kestrels depend on small mammals such as field mice, voles, rats and shrews for food and this habitat is where they occur most frequently.

Greater white-toothed shrew - one of the small mammals that will benefit from wider field margins

Habitat Creation

Creating a field margin is quite simple – it means moving the crop (usually grass, cereals or brassicas) out from the adjacent habitat (typically a hedgerow). The BRIDE Project margin width recommendation is a minimum of 2m from the base of the hedgerow. The biggest challenge in creating this habitat is the change of mind-set needed by farmers to change the land use in this small area from food production to biodiversity improvement.

Create a field margin over time by situating new fence posts 2m from the base of the hedge

Grassland - In a grazing situation, the hedgerow should be fenced off from the grass crop, so repositioning the wire fence 2m from the base of the hedgerow is all that is required. However, to improve the quality of the habitat, creating a pollinator plot (see Pollinator Plot) in addition to moving out the electric fence will make an even more significant improvement to its biodiversity value. If the hedgerow is not protected from livestock there will be no field margin habitat. If the field is used for silage or hay only, with no grazing livestock, the electric fence is not required.

TILLAGE - In a tillage situation, commence sowing the crop 2m out from the base of the hedgerow. Similar to grassland, the quality of the habitat can be improved by sowing a pollinator plot (see Pollinator Plot) and this will further improve its biodiversity value. However, allowing the new margin to self-seed on its own, may provide a good quality margin without the additional cost of a pollinator seed mix.

HABITAT MANAGEMENT

Flailing the Field Margin annually will reduce the need for pesticides

It will be important to flail this area **every year** (Sept. 15th to Feb. 28th) to cut back the vegetation and prevent the hedgerow from encroaching onto the field margin *(see image)*. Cutting the ground vegetation will allow light down to ground level and thus encourage wild flowers to germinate the following year. Allowing restricted livestock access to the margin (Sept. 15th to Feb. 28th) will also be beneficial, however, this may not always be practical.

Fertiliser spreader disc shut off on the hedgerow side prevents nutrients reaching the field margin

It is very important when spreading fertiliser, to shut off the disc on the hedgerow side to prevent fertiliser from reaching the field margin as wild flowers will not thrive in nutrient-rich soil and wasting fertiliser in this area is costly to the farmer. Apart from improving biodiversity, an equally important reason to increase the field margin width is to reduce the need for chemical control of vegetation by allowing a hedge-cutter to mow vegetation close to the electric fence.
Mechanical, not chemical control.

An electric fence positioned too close to a hedgerow - allow a 2m gap between the fence and base of the hedgerow, allowing easier access for machinery for side trimming of hedgerows and flailing of field margins.

A cut-out switch will allow power to specific areas of the farm only, thus preventing shorting of current to the electric fence

Avoid using pesticide under wire and along watercourses

8.

HEDGEROWS (B, C, WQ)

OVERVIEW

The majority of Ireland's hedgerows date from the eighteenth and nineteenth century, but some hedgerows have been dated to prehistoric times. Hedgerows have been used to define field, farm, parish and even county boundaries and they are a very ancient and important part of our heritage. They were also used as livestock enclosures and thus needed to be stockproof. This is why many of our hedgerows contain thorn species such as Hawthorn (Whitethorn), Blackthorn, Holly, Dog Rose, Bramble and Gorse (Furze). The electric fence has now replaced these and is being used to reinforce stockproof hedging on many farms. The BRIDE Project hedgerow mix introduces several other native and less widely used species such as Guelder Rose, Spindle, Hazel, Buckthorn, Alder Buckthorn and Bird Cherry to enhance the biodiversity value of this new approach to hedgerow creation. This measure is designed to reinstate some of our lost hedgerows along with creating a new habitat for insects, birds and bats. **Retain - not remove!**

Guelder Rose, one of the hedgerow species included in the BRIDE Hedgerow Mix

TIMEFRAME

Any time between October and March.

Location

Hedgerows can be planted in the centre of a large field or alongside a livestock or machinery passageway. The quality of existing hedgerows can be improved by filling gaps with some of the hedgerow species.

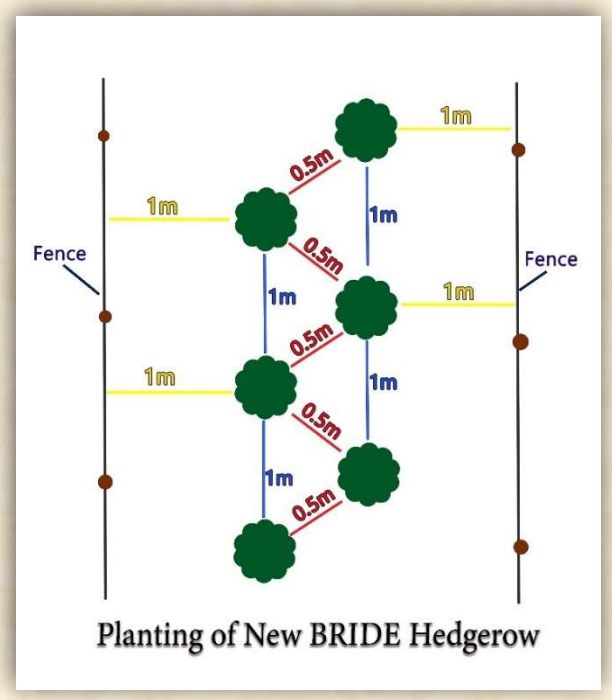
Benefits

Hedgerows create shelter from rain and sun for livestock as well as a very important habitat for a wide range of plant and animal species. Hedgerows provide corridors for wildlife that enable them to connect with other habitats. A mature hedgerow will visually enhance the farm you work on and also the countryside you live in. It can also prevent run-off from farmland thus preventing flooding, soil erosion and pollution. Hedgerows also significantly lower your carbon footprint.

Habitat Creation - Grassland Farmer

New hedgerows should ideally be located alongside a farm passageway or can be used to replace an existing wire fence boundary. If planting beside a farm passageway, ensure it is set back far enough from the passageway (2m) such that it does not interfere with livestock, electric fences or machinery. Plant on the northern side of an east-west running passageway to allow the sun dry out the passageway and thus help to prevent potholes. Plant on either side or both sides of a north-south running passageway.

Have the ground as bare as possible before planting a new hedgerow. The plants should be spaced at 3 per metre in a staggered line using the BRIDE Project hedgerow mix (up to 15 species – use at least 8 species). The mix contains many different species as the focus is on improving biodiversity rather than making the hedgerow stockproof. The traditional hedgerow contained mainly Whitethorn (Hawthorn) and Blackthorn but with the advent of electric fencing the need for thorn shrub species is no longer as important as it was in the past. Planting a native tree every 50m will add to the structure and biodiversity value of the hedgerow. Adding too many trees will cause shade as the trees mature in later years and possibly out compete the hedgerow species. When choosing plants, it is important to use plants with a good root structure that are tall and strong enough to require minimum maintenance. Small 'whips' will mean more work keeping the area free from competing grasses and bramble. Ensure the hedgerow is protected from livestock using an electric fence 1m out from the new hedgerow**.**



Planting of New BRIDE Hedgerow

This fence will need to be moved out further as the hedge grows and expands.

BRIDE Hedgerow Plant Mix	
Species	**Latin Name**
Crab Apple	*Malus sylvestris*
Blackthorn	*Prunus spinosa*
Alder Buckthorn	*Frangula alnus*
Purging Buckthorn	*Rhamnus catharticus*
Bird Cherry	*Prunus padus*
Wild Cherry	*Prunus avium*
Dogwood	*Cornus sanguinea*
Hawthorn	*Crataegus monogyna*
Hazel	*Corylus avellana*
Holly	*Ilex aquifolium*
Wild Privet	*Ligustrum vulgare*
Guelder Rose	*Viburnum opulus*
Spindle	*Euonymous europaeus*
Goat Willow	*Salix caprea*
Grey Willow	*Salix cinerea*

Habitat Creation - Tillage Farmer

This option may not suit tillage farmers as the requirement for larger fields and machinery was the reason many hedgerows were removed in recent decades. However, planting a new hedgerow in some of the bigger fields will greatly add to the biodiversity and carbon reduction of tillage farms as well as creating corridors of connectivity for wildlife. Large fields are prone to soil erosion, weather exposure and run-off. Creating new hedgerows will minimise soil erosion and siltation of streams and rivers and greatly enhance the landscape value of your farm. Livestock access will not be an issue for tillage farmers but avoiding spray drift and fertiliser onto the habitat is important.

Habitat Management – Existing Hedgerows

All BRIDE Project hedgerows should be allowed to grow and mature so that their full biodiversity and carbon sequestration value can be achieved. They should be side-trimmed only, to prevent encroachment and this will need to be carried out every year or at least every 2 years. The practice of "leaving a whitethorn here and there" defeats the purpose of the exercise and makes the job more difficult for the hedge cutting contractor. Do not use pesticide, fertiliser and slurry anywhere near the habitat.

Side Trimmed Hedgerow

Habitat Management – New Hedgerows

If rabbits or hares are a problem, guards will need to be used and will be an additional cost where this is an issue. Over the first and possibly second year, vegetation will need to be kept down to ensure the new plants are not out-competed. Trampling around the plants in the first year of establishment will prevent undergrowth build-up. The first year can also be problematic for the plant if drought conditions occur. The new hedgerow may need watering if this is the case. Wind rock can be an issue before the plant gets properly rooted so ensure the plant is upright and straight at all times. Pruning after planting is not required as the mix contains many plant species, several of which will not tolerate pruning.

Rabbit / Hare guards may be needed in certain areas

Habitat Management - Roadside Hedgerows

Roadside hedges can be maintained in a similar way to hedgerows in a field. However, in an area of poor visibility, the hedge will need to be flailed to a height where visibility of oncoming traffic or pedestrians is not compromised e.g. at a junction, bad bend, under power or telephone lines, at a field entrance, dwelling house or farm entrance - where good sightlines are important. Roadside hedgerows need to be side trimmed every year (this can take place throughout the year, in the interest of safety) to prevent encroachment onto the road, thereby reducing the risk of damage and injury to vehicles and road users respectively.

Poor quality hedgerow with low height structure, gaps and low density

Consult your neighbour before cutting boundary hedgerows as hedgerow management varies between different farmers!

Mature hedge with full canopy and side trimmed
= more biodiversity
= high quality Results Based Payment (RBP) score

9.
INVASIVE SPECIES CONTROL (B, WQ)

OVERVIEW

Invasive species are defined as “non-native species that have been introduced by human intervention, outside their natural range and that have the ability to threaten our native habitats and wildlife, cause damage to our environment, economy or human health”. Invasive species include plants, insects, fish, birds and mammals. The BRIDE Project is targeting a particularly troublesome group of invasive plant species that occur widely in the Bride valley - Giant Hogweed, Japanese Knotweed, Laurel, Winter Heliotrope, Old Man’s Beard and Himalayan Balsam. Some of these plants can be beneficial to pollinating insects but the downside is that they out-compete native species and cause serious local declines of many of our native wildflowers. Giant Hogweed and Himalayan Balsam, tend to occur close to rivers and streams and once dieback occurs in the autumn, the exposed rooting structure of these plants frequently results in bank erosion and soil runoff during the winter months.

TIMEFRAME

Control and eradication of invasive species requires different management for each species. Treatment also varies with time of the year. Always consult an ecologist or expert.

Location

Giant Hogweed and Himalayan Balsam are generally watercourse plants but may also be found away from these areas. It is important that you are sure of the correct identity of these plants and be careful not to confuse them with native species such as hogweed before treatment commences.

Benefits

Some invasive species can have a positive environmental value such as providing pollen and nectar for pollinating species. However, the negative consequences, such as out-competing native wildflowers, soil and riverside erosion and human health and safety issues far outweigh their positive values.

Habitat Creation

N/A

Habitat Management

Invasive species management is challenging and involves a plan at landscape scale and over a long time period to ensure proper eradication. Some farms may have several invasive species while others will have none and farmers adjacent to a watercourse tend to be more prone to the problem. A plan will be drawn up to examine the feasibility of eradicating all or some of the invasive species on a farm by farm basis. The problem will be different on each farm so an overall approach will be taken in consultation with each project participant affected. Management of any invasive plant species will require supervision of the site for a minimum of 5 years and repeating the control measure every year until the plant has been completely eradicated. **Always consult an ecologist or other expert prior to undertaking management**.

Giant Hogweed - This plant can be identified by its size (when fully grown), its leaves and large umbrella-like flower. Be careful not to confuse with the native hogweed, a similar, but considerably smaller plant with a different leaf structure. Giant hogweed can grow up to 5m tall and is generally a riverside plant. While beneficial to pollinators it has a human and animal health risk in that the sap from the plant is a severe skin irritant. Cutting the plant in early spring (taking care to avoid the sap coming into contact with the skin) can help to eradicate the plant otherwise the use of targeted chemical treatment may be needed.

Giant hogweed is one of the invasive plant species found between Castlelyons and Tallow along the river Bride

Himalayan Balsam - This species is generally found close to watercourses. It has an ability to spread rapidly by means of the spring-loaded mechanism it uses to disperse its seeds. Removing the plant by hand (its short rooting system makes it easy to uproot) before the flower appears is the preferred treatment.

Himalayan Balsam

Himalayan Balsam can also be chemically controlled by spraying with a product approved for use near water.

Cherry Laurel - This is an invasive shrub of native woodland and hedgerows and can cause shading that prevents the regeneration of native tree species. Mechanical removal followed by chemical treatment is the most suitable means of eradication.

Laurel - an invasive plant species of Bride valley woodland
[Photo: GB NNSS]

Japanese Knotweed – This plant can spread very easily, and its control is not as straightforward as some other species. Mechanical control is not recommended, and chemical control can be carried out but only at specific times of the year. This species is notoriously difficult to eradicate and repeat treatment is usually necessary for several years. Consult an ecologist.

Japanese Knotweed

Winter Heliotrope - This plant was introduced, possibly by beekeepers, as an early food source for Honey Bees. It flowers in the early part of the year before many other plants appear. Unfortunately, it is similar to Japanese Knotweed in that it can spread by its root system but any part of the plant has the potential to regenerate. It out-competes native plants and can become the dominant species over large areas. Chemical control early in the season can be successful but care should be taken when moving soil to avoid spreading the plant to other areas. Ongoing chemical treatment over several years is usually required to completely eradicate this species.

Winter Heliotrope

Old Man's Beard - This species was introduced into Ireland as a garden ornamental plant. It is related to other 'Clematis' species that are used as climbers for walls and trellises in gardens. Once established, it soon spread to the surrounding countryside and is now an invasive on many farms and other areas of the Bride valley. It spreads both horizontally and vertically and can cover large distances annually. As a climber it can completely cover hedgerow species and even trees, blocking out light and causing a huge weight burden on young trees that can lead to the collapse of the tree. Control can be both physical, by pulling or cutting the woody stems, or chemical. The plant can spread by both seed and vegetatively through stems rooting in the ground. Care needs to be taken as the sap from the plant can be a skin irritant and the plant is also poisonous to livestock.

Old Man's Beard or Traveller's Joy can be very damaging to native hedgerows

Old Man's Beard will eventually kill off even a dense hedgerow

Invasive species management *is challenging and will almost certainly need to be carried out over a number of years before control is achieved. Always consult an expert or ecologist before attempting to tackle the problem, as incorrect management control could do more harm than good.*

10.

MULTI-SPECIES GRASSLAND (B, C, WQ)

OVERVIEW

Presently, most grass swards are dominated by perennial ryegrass with perhaps some clover. With just two plant species in a mix, the modern grass sward is lower in species of insects and other invertebrates than grass swards in the past. These modern swards also require higher levels of nutrients to achieve higher levels of farm productivity. This leads to the less aggressive species of plants being out-competed with a subsequent loss in biodiversity. The BRIDE Project Multi-Species Grassland mix (see below) contains several grass species including Timothy, Cocksfoot, Fescues, and several wildflower species such as Plantain, Red and White clover and Yarrow to benefit pollinators and a wide range of other insects.

The enormous changes to grassland management practices that have taken place over the past fifty or sixty years have resulted in a huge loss of biodiversity on Irish farmland. The change from hay to silage-making and the almost complete reliance on one single grass species (perennial ryegrass), have led to massive declines in plant diversity, insect species and numbers, and the bird and mammal species that depend on this diversity. Ground nesting birds such as Corncrake, Lapwing, Curlew, Snipe, Skylark, Grey Partridge and Meadow Pipit are now absent from most lowland farms and several species are now facing extinction as breeding birds in Ireland. These species are no longer able to exist in modern farmland where higher stocking levels, earlier harvesting with much larger machinery, continuous intensive grazing, artificial fertilisers and pesticides, have made large areas of farmland uninhabitable to a vast range of species.

Retain old semi-natural grassland – do not reseed!

Timeframe

Reseeding with this mixture can be carried out from March to May and from August to September. A spring reseed will be less prone to weed establishment and therefore reduces the need for pesticide application.

Location

The multi-species grassland mix can be sown in any field but for attracting species such as Skylark, several other factors need to be considered before works begin. These include the aspect, soil type (wet or dry), elevation and surrounding landscape. The ecologist will advise on the best location for this habitat.

Multi-species grassland on the right (post grazing) has a more varied height and density structure leading to a higher biodiversity value sward

Benefits

This multi-species mix will provide the specific sward structure that is required by some of our threatened farmland birds. The mix contains clover which can fix nitrogen thus reducing the need for artificial fertiliser. Plantain and Yarrow add to the diversity of the sward and can contribute to the health of grazing livestock. These are deep rooted plants which can also add to the different nutrient value of the sward for livestock. The inclusion of six species of grass instead of the normal single species will give more adaptability to the extremes of weather. Some of these species are more drought tolerant and there is strong evidence to suggest that a multi-species sward will be less susceptible to weed infestation as the ground cover will be denser leading to less likelihood of weed establishment. The need for pesticide sprays should, therefore, consequently be reduced.

Habitat Creation

This involves the planting of 1ha of a multi-species grass seed and wildflower mix (*see page 44*) that will resemble the pastures that have been lost to modern farming intensification. This can be done in the conventional way by ploughing, harrowing and seeding or through stitching-in without tilling. Pre-spraying with glyphosate is not critical as the purpose is to have many grass species in the new sward, so ploughing and harrowing the old sward may be adequate for seedbed preparation.

BRIDE Multi-species Grassland Trial Mix		
Species	**Latin Name**	**Seeding Rate Kgs / ha**
Perennial Ryegrass	*Lolium perenne*	8.0
Meadow Fescue	*Festuca pratensis*	7.0
Timothy	*Phleum pratense*	4.5
White Clover	*Trifolium repens*	3.0
Smooth Meadowgrass	*Poa pratensis*	2.5
Red Fescue	*Festuca rubra*	2.0
Cocksfoot	*Dactylis glomerata*	1.5
Red Clover	*Trifolium pratense*	1.0
Black Medic	*Medicago lupulina*	0.7
Alsike Clover	*Trifolium hybridum*	0.7
Yarrow	*Achillea millefolium*	0.3
Ribwort Plantain	*Plantago lanceolata*	0.3

Habitat Management

Correct management of the multi-species grassland sward is essential to ensure its success. Do not apply sprays, as these will kill the herb species. These swards will naturally keep weeds from establishing. The sward should receive little fertiliser as this will benefit the more aggressive species leading to the herb species being out-competed. The clover in the sward will fix nitrogen and the low nutrient level will benefit the restoration of wildflowers back into the sward. The most challenging management measure will be the stocking rate. The aim is to have a low stocking rate and a longer rotation than the conventional 21 days. This will allow various plant species to grow and seed and will also facilitate the development of a tussocky sward structure that is more beneficial to biodiversity improvement. Cutting or topping the sward will lead to a sub-standard habitat.

Modern mono-cultural ryegrass swards have negatively impacted the Irish Hare population, who' s diet includes herbs, sedges and grasses. Multi-species swards could help reverse the trend.

[Photo: E.W. Delaney]

Hares, which were a common mammal on all farmland up to the 1950's, have declined significantly due to the loss of this type of habitat. Restoring these semi-natural grasslands (even on a small scale) could generate dramatic improvements in farmland biodiversity.

Wormers & Fly Repellents

It should also be noted that biodiversity of grassland is compromised with the use of many modern-day wormers and fly repellents. These products can be toxic to the invertebrates that use cow dung as a habitat. Several fly species along with dung beetles lay their eggs in cow dung and the resultant larvae break down the dung path while earthworms also contribute to the decomposition. Try to reduce the use of these products by getting faecal parasitic egg counts tested by your veterinary practice and only using treatment when absolutely necessary. Many of these products are now proving to have parasitic resistance and more preventative approaches such as a leader/follower grazing system or other alternatives are needed.

Oral and pour-on wormers as well as other parasitic applications can be toxic to dung insects and their larvae. This will lead to a slower breakdown of nutrients and less biodiversity – both over and underground.

Multi-species Sward

Multi-species swards have become topics of conversation over the last number of years. Their benefits are many –

- *the inclusion in the mix of higher clover content will allow for less use of nitrogen fertiliser*
- *root systems of the different species will travel to different depths, thereby drawing on different nutrients required by livestock*
- *same principal will mean more tolerance to different climatic conditions*
- *more species will mean less chance of weed infestation in the sward thereby reducing the need for sprays*
- *variable diet for livestock*
- *more plant species will mean more insect and bird species – more biodiversity*
- *more biodiversity underground – improved soil health*

The inclusion of this habitat by participants in the Project will allow them to trial this new concept on a small scale. It will mean a change in grassland management, particularly for dairy farmers, as the different species will require a different grazing and fertiliser strategy. More research is needed to determine if this change in grassland management will impact milk production, but the environmental and livestock benefits appear positive.

12.

NETTLE PATCH (B)

OVERVIEW

A range of butterfly species are dependent on nettles to complete their lifecycle. Most butterfly species, and indeed many other insect species, have one or more larval food plants. Larval food plants are essential for the larvae (caterpillars) of these insects. The adults lay their eggs on nettles and the resultant caterpillars feed on the plant, before metamorphosing into the adult (butterfly) stage of their lifecycle. The butterfly species that rely on the nettle include Small Tortoiseshell, Red Admiral, Peacock, Painted Lady and Comma. Other butterfly species need different food plants e.g. the Holly Blue needs Ivy or Holly and the Common Blue needs Birds-foot Trefoil.

TIMEFRAME

Dig a clump of Nettles in winter/early spring before the plant begins to grow and transplant to a suitable location.

LOCATION

Nettle patches should be located in a grass field at least 20m away from the hedgerow or boundary. This distance is required to ensure maximum sunlight and also safety from predators such as small birds.

BENEFITS

Nettles benefit five species of butterfly whose larvae depend on it as a foodplant.

Caterpillars on a Nettle plant

Habitat Creation

The nettle patch should measure approximately 2m x 2m, and if not already present a clump can be dug from nearby during winter or early spring and re-planted in the field at least 20m from the nearest hedgerow or boundary. Avoid spraying the area and try to avoid planting in silage fields.

Habitat Management

Livestock will generally avoid nettles, so the only management requirements involve cutting back the nettles in mid to late June when the plant becomes tall and woody. This will encourage a second brood of butterflies as the lush new foliage will provide the ideal food source for a second batch of caterpillars. Ensure that caterpillars are not using the plant before cutting.

Children on their BRIDE Project farm identifying caterpillars. Biodiversity awareness among children is an important part of the BRIDE Project

Topping or cutting nettle patches in late June will stimulate new growth and support a second brood of some butterfly species in August, such as the Small Tortoiseshell (right).

13.

POLLINATOR PLOT (B, C)

OVERVIEW

A pollinator plot is an area ideally adjacent to a hedgerow or other habitat that is sown using the BRIDE Native Pollinator Plants (*see page 50*). This habitat will provide wild flowers for pollinators and also act as a food source for birds and small mammals. The decline in pollinating insects has been well documented so this option is designed to reverse the trend on farmland by reintroducing wildflower species that are native and important for pollinators. Spraying field margins to control weeds has resulted in the decline of wildflowers, resulting in a severe shortage of nectar and pollen for pollinating insects.

Thistle flowers are an excellent food plant for insects. Having thistles on your farm does not mean you're a "bad" farmer!

TIMEFRAME

Sowing time – March/April or September/October

LOCATION

The ideal location for a pollinator plot is the field margin of a south facing hedgerow.

Benefits

Flower-rich field margins are vital habitats for pollinators and other insects. Wildflower seeds are also an important food source for many bird species and small mammals.

Habitat Creation - Grassland Farmer

This involves the planting of specific wildflowers (BRIDE Project Mix) in a 2 m x 100 m strip adjacent to the hedgerow or other habitat. A south-facing aspect will provide the best results. For a grassland farmer, this will be most practical if a field is being reseeded and the wildflowers can be planted in conjunction with the reseeding.

If reseeding is not an option, one alternative is to plough the 2m strip to ensure any surface material is buried. Another alternative is to scrape the existing vegetation (ensure there are no wildflowers here already) on the field margin with a mini-digger to create a seed bed and hand sow the seeds.

Pollinating strip being ploughed and sown with wildflower seed

The rate is a teaspoon (1.5g) of wildflower seed per square metre (the seeds are generally very small). It is important to ensure that the seed is measured out in sections as they are expensive, and this ensures they are not all strewn in the first half of the plot. Lightly covering with soil using a rake or harrow or just rolling to improve soil contact will ensure successful establishment. A less expensive option is to scrape off the existing vegetation with a mini-digger (or plough) and allow natural regeneration of seeds that may still be dormant in the ground and will now get the chance to grow. Try to avoid a plot where there is thick vegetation or Nettles as these will out-compete the wildflowers.

Care should be taken to ensure that the proposed pollinator plot is wildflower poor in the first place and that existing flower-rich habitat is not being damaged. If unsure consult an ecologist beforehand.

When we think of a wildflower meadow, the picture of a Monet painting with red poppies along with other cornflower annuals come to mind. While this looks very attractive to us, sometimes an untidy mess of non-descript unattractive small flowers competing with weed grasses, can be, and more than likely will be, more beneficial to pollinators and other insects.

Habitat Creation - Tillage Farmer

This is a very suitable habitat to create for tillage farmers. Plough or till the field as normal. Try to ensure that the pollinator plot does not have a deep seedbed (<2cm if practical) as the tiny wildflower seeds will get buried. It will be more practical to have a 3m margin in a tillage farm as most drills will be 3m wide. Reduce the seeding rate to 15Kgs/Ha of wildflower seed (1.5g/m^2) or hand sow. Roll in to create seed contact with the soil. Allow a buffer strip between the plot and the crop to ensure no sprays or fertilisers damage the pollinator plot. A less costly option is to repeat the above without using any seed and allow dormant seeds to re-establish. Wildflower seed can survive in the ground for many years, waiting for a chance to germinate.

Habitat Management

This area will need to be flailed every year between Sept. 15th and Feb. 28th but ideally as near to the Feb. 28th deadline as is possible and practical. Flailing this habitat will prevent scrub encroachment and will enable sufficient light through for smaller flowers to grow. Allowing plant seed heads to remain during the winter months will provide a valuable food source for birds.

No pesticides, fertilisers or slurry should be used on the field margin or hedgerow. Excessive nutrients promote the aggressive species of grass resulting in the more beneficial plants being outcompeted.

BRIDE Native Pollinator Plants	
Species	**Latin Name**
Cat's-ear	*Hypochaeris radicata*
Dandelion	*Taraxacum* agg
Hogweed	*Heracleum sphondylium*
Common Knapweed	*Centaurea nigra*
Red Dead-nettle	*Lamium purpureum*
Upright hedge-parsley	*Torilis japonica*
Silverweed	*Potentilla anserina*
Greater Bird's-foot-trefoil	*Lotus pedunculatus*
Bush Vetch	*Vicia sepium*
Tufted Vetch	*Vicia cracca*
Hedge Woundwort	*Stachys sylvatica*
Yarrow	*Achillea millefolium*

Pollinator Decline

Farmers have always strived to improve crop yields by eradicating weeds (wildflowers) and other competitors of the crop. Planting wildflowers on the other hand, especially suitable native species is both expensive and they are deceptively difficult to establish. While mentally very challenging for farmers, raising the tolerance level of some of the traditional "undesirable" weed species can be much more beneficial than trying to plant new wildflower seeds. The most detested of weeds on farms are some of the most beneficial to pollinating insects, while also providing seeds and fruit for birds. These include ***Creeping Thistle****,* ***Spear Thistle****,* ***Ragwort*** *(poisonous to livestock),* ***Dandelion*** *and* ***Bramble****. Spraying off these species, while widely advised and considered "best practice", is counter-productive to sowing wildflowers. Consider retaining small areas of weeds (wildflowers!) on your farm.*

Ivy *is an important food plant for pollinating insects as it is one of the last plants to flower and thus provides both pollen and nectar into November each year. Honey Bees in particular utilise it to replenish stores for the winter ahead. It also provides late berries (up to March) for birds as well as shelter during the cold winter months and nesting habitat in the spring. The perception that it damages trees is incorrect. It uses the tree trunk as a support and doesn't choke the tree as is the common misconception. Tearing it down will impact negatively on biodiversity.* ***Leave it to nature****.*

Ivy – an important plant for pollinators and other species as it flowers and produces berries, later in the year, than most other plant species on the farm.

14.

POND (B, C, WQ)

OVERVIEW

Ponds were a common feature on most farms until the middle of the last century. They were often artificially created as a means of storing water for livestock before electricity facilitated the widespread use of piped water. The great majority of natural and artificial ponds were filled in over the last fifty years as agriculture became increasingly intensive and piped water became the norm. A principal aim of the BRIDE Project is to create a pond in as many suitable farms as possible, to provide a very important habitat for a wide range of species and add to the visual attractiveness of the farm.

TIMEFRAME

Between the months of March and October.

LOCATION

A pond can be excavated on any farm where there is a continuous source of water in an area where it can be retained. This could include water diverted from a stream or ideally a wet area of the farm that lies close to the water table. When locating a site for a pond, ensure first and foremost that it will not be a safety hazard for small children. If the pond is adjacent to the farmyard ensure it is secure from children and livestock. While safety precautions should always be central to deciding on the location of a pond, it should also be noted that a pond located in the vicinity of the farmyard or house, where it can be most readily observed, can enhance the experience of the natural world by the farmer and his/her family as biodiversity increases over time.

Benefits

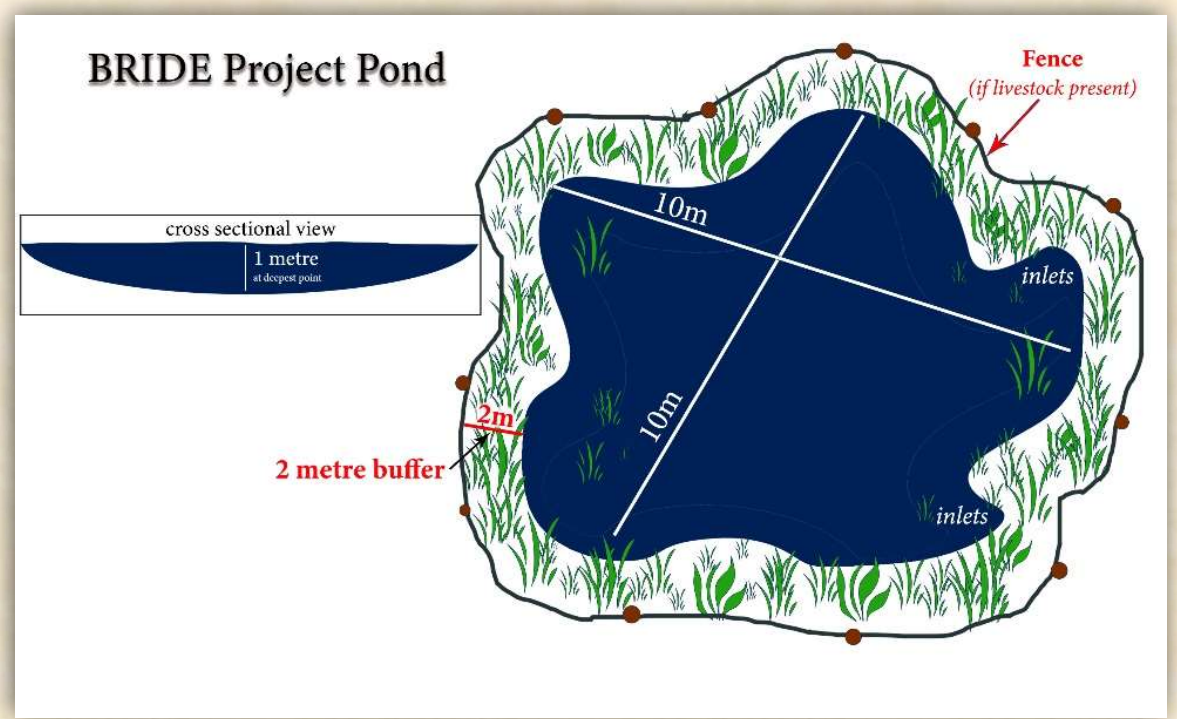
Ponds are home to dragonflies, damselflies, frogs, newts, ducks, herons, moorhens and a wide range of other plants and animals. They also provide a rich foraging habitat for most of Ireland's nine bat species.

Habitat Creation

(Consult an ecologist before commencing work)

Pond being excavated in the Bride Valley

Not every farm will have a suitable water source that is needed to create a pond but an alternative is to divert rainwater from the farm shed, otherwise divert water from a drain or stream. It is very important that the pond is not subject to a constant flow from a nearby stream as this can make the pond less suitable for many species. A small inlet for water intake and an equally small outlet are all that is required. The required dimensions are 10m x 10m with a depth in the middle of 1m, tapering gradually to the outer edge of the pond without any steps. It is important to create little bays and inlets at the pond's edge to provide secluded areas for pond dwelling invertebrates such as pond skaters and water boatmen and also a safe haven for tadpoles. When disposing of the spoil do not dump it in



another habitat as this will be creating one habitat but destroying another. The spoil can be used to construct a bank when planting a new hedgerow or a plot for wildflowers on the farm. Leave a 2m buffer strip around the edge of the pond and try to have as little shade as possible beside the pond edge – a sunny aspect is more beneficial to pond wildlife and too much shade

from trees will greatly reduce the biodiversity value of the pond. It is recommended that tree cover occupies no more than ten percent of the bank and should always be on the north-side of the pond.

If excavating a pond close to a stream it is very important to prevent siltation of the stream as excessive silt can cover spawning gravel areas used by Salmon and Trout. Carefully excavate the inflow channel from the stream (beginning at the pond side) and prevent silt entering the stream. Likewise, if excavating an outflow channel from the pond to the stream, take great care to prevent silt entering the stream. Begin excavating from the pond side and allow silt to settle before connecting the channel to the stream. When finished excavating the pond, track the area over and back a few times with the excavator to seal the base of the pond and so help retain the water.

Blue-tailed Damselfly

HABITAT MANAGEMENT

Once the pond has been created, the management is straightforward. Ensuring the pond retains water for all of the year is important but drought years can be problematic even for traditional ponds. It should be fenced off from children and livestock and great care should be taken to prevent slurry or other nutrients entering the pond. Planting two or three willow trees in the margin (north side only) will provide shade and will also help to attract additional insects and birds. It is important to curtail encroaching scrub or herb growth and to try and maintain the area of shade to about ten per cent of the bank. Plants and the pond biodiversity that they support, will often colonise the area naturally over the years and accelerating this process by introducing plants from an outside source (garden centre or other pond) can be counter-productive and could destroy the habitat if an invasive alien plant species is introduced in the process. Advice on native plant species will be provided by the ecologist. Over time, the pond may fill with vegetation and silt and at some point may have to be cleaned out to bring it back to its full potential.

Farm Spoil

When excavating a pond try to ensure the spoil is not dumped in a wildlife habitat such as a wetland, bog, quarry or other habitat. Creating a bank in which a hedgerow or tree-line can be planted is one way to utilise the spoil. This is also true for farmyard excavations such as buildings or slatted tanks.

15.

QUARRY (B, C)

OVERVIEW

Disused quarries present a good example of how existing farm habitats can be improved for biodiversity purposes. Quarries that were once used to provide stone for farm buildings and walls are found on some farms. They can become very useful habitats for a wide range of species. Wildflowers, that have become scarce elsewhere in the farm, can continue to thrive in quarries as they usually have not been exposed to pesticide and fertiliser application. Most abandoned quarries will consist of uneven ground and areas of exposed rock. These areas provide ideal substrates for a range of plants, invertebrates and small mammals. The presence of water will further enhance the quarry as a habitat. In some cases, quarries will have been colonised by native tree species such as Willow, Whitethorn, Blackthorn, Elder and Ash. In these situations, it is usually better to treat the habitat as native woodland.

Retain – not refill!

TIMEFRAME

October to March.

LOCATION

N/A

Benefits

Quarries present a wide range of habitat development possibilities and can become very useful habitats for a wide range of species.

Habitat Creation

Each quarry is unique and there is no simple solution for development. In many cases, abandoned quarries were regarded as waste ground suitable only for depositing stone, spoil and other waste material. The first step to improving the quarry as a habitat is to remove as much of the debris as possible and then explore possibilities for habitat enhancement. These may include exposing the rock face, creating a pond, planting some trees or converting to woodland. Discuss the possibilities with an ecologist.

Habitat Management

Management will depend on the type and range of habitats in the quarry. If the quarry is left unmanaged it will revert to scrub in a relatively short period of time, before eventually becoming a woodland. However, if a controlled grazing plan is implemented the quarry could become a semi-natural grassland habitat supporting a range of wildflowers and insect species. Restoration may include some scrub clearance and spoil removal but "leaving well alone" may be the best management.

As with the management of all habitats, be aware of its biodiversity potential initially, before attempting to improve the habitat. Get advice from an ecologist.

Disused quarries often contain many habitats and are important biodiversity hotspots

16.

REEDBED (B, C, WQ)

OVERVIEW

Reedbeds tend to occur along the margins of rivers, lakes and ponds. They can occur in freshwater or brackish conditions. Reedbeds are usually dominated by Common Reed or Reed Canary-grass and tend to contain a limited range of plant species. They can be natural or artificial (created for water filtration).

TIMEFRAME

N/A

LOCATION

Reedbeds occur mainly in the lower reaches of the river Bride and reeds are still harvested in places and used for thatching. They are very effective in removing nutrients and pollutants from water and they are sometimes artificially created for effluent or sewage treatment.

Reed Warbler
[Photo: Mark Carmody]

BENEFITS

They can be useful for wastewater treatment but seek specialist advice if you are considering this approach. Reedbeds are valuable habitats for a range of insect species
and specialist birds such as Water Rail, Reed Warbler, Moorehen and Reed Bunting.

Habitat Creation

Reedbeds can be created and used for the purpose of wastewater treatment whereby the reeds soak up excess nutrients and filter these from the water. If the reedbed is working properly, the water quality from the discharge should be good enough to discharge into a watercourse. Seek professional advice if a reedbed is being created to treat wastewater as water quality can be an issue.

Habitat Management

Reedbeds (if left unmanaged) will become increasingly dry over time and may be colonized by willows and other tree species. It is important to remove dead reeds to prevent a build-up of litter (but leave some areas uncut to provide shelter for insects and birds). Control encroaching scrub plants such as willow as these will accelerate the drying process.

A Reed Bunting in winter plumage
[Photo: Mark Carmody]

Reedbeds are a rare habitat and need protection

17.

RIPARIAN BUFFER STRIP (B, C, WQ)

OVERVIEW

Riparian buffer strips are strips of land between the river's edge and the field crop. In the BRIDE Project the recommended riparian buffer width is a minimum of 3m along the River Bride and 2m along its tributaries and drains. The purpose of this habitat is to help prevent any excess nutrient run-off (slurry or fertiliser) or sediment from entering the watercourse. Crops (including grass) grown adjacent to a watercourse require fertiliser or slurry and in the absence of a buffer strip, nutrients and sediment could reach the river where they will cause excessive algae and weed growth, leading to a deterioration in water quality.

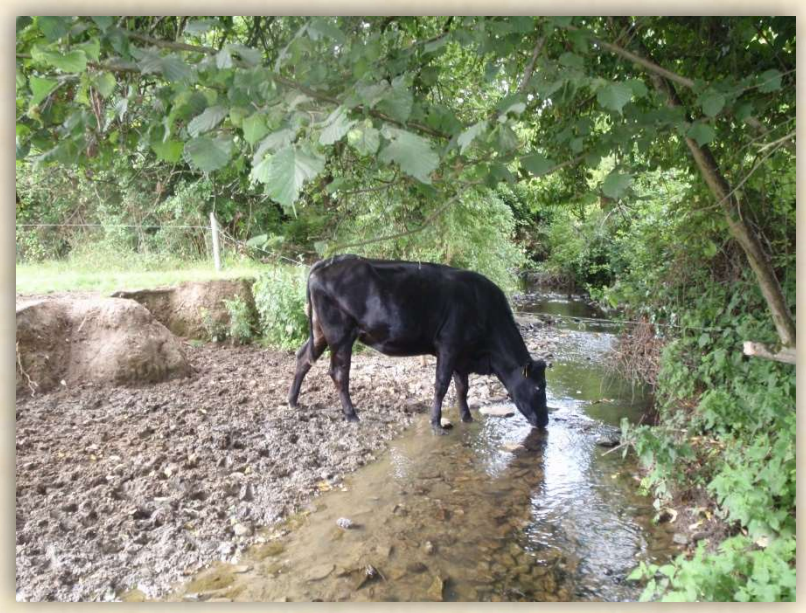
TIMEFRAME

Creating a buffer strip can be undertaken at any time but for grassland farmers it will be easier to erect fence posts during the wetter time of the year.

BENEFITS

Creating a strip beside a watercourse will prevent disturbance to the area and allow riverside plants to grow and spread along this biodiversity corridor while at the same time creating a barrier to prevent excess nutrients entering the watercourse. The buffer strip helps to slow the flow of floodwater thereby reducing the impacts of soil and bank erosion by stabilising the riverbank. Buffer strips also help to prevent soil run-off entering the river from the land during high rainfall and flooding. Siltation can damage the breeding grounds of Trout and Salmon by coating the gravel used for spawning. In the BRIDE Project pollinator survey,

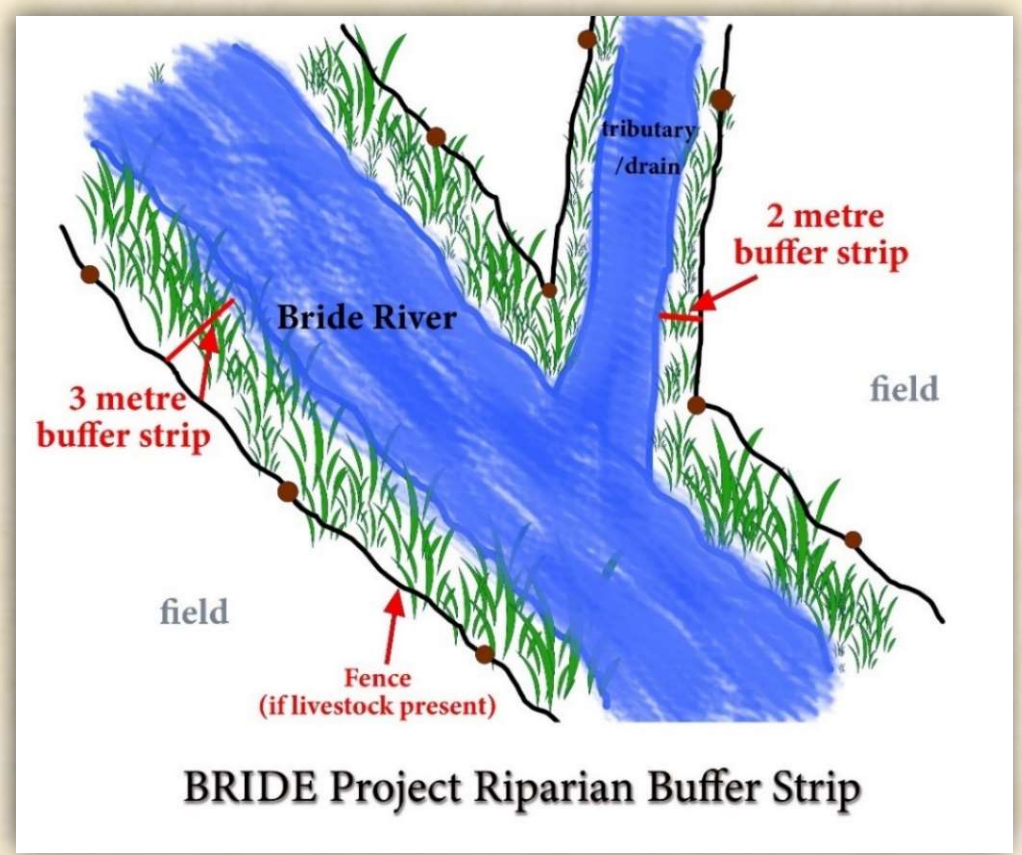
riverside margins were found to be important resources for pollinators, especially in late summer.



Bank erosion leading to siltation of the riverbed. Note the silt on the left-hand side of the stream - this damages the gravelly, oxygen-rich riverbed habitat required by trout and salmon for spawning

HABITAT CREATION

For grassland farmers with livestock, this will involve fencing off either a 3m (for Bride river) or 2m (for Bride tributary or a drain) wide strip from the bank edge using posts and electric wire fence. For tillage farmers, commencing field operations 3m from the bank edge is all that is required.



Habitat Management

The buffer strip needs to be fenced off from livestock. A management plan will be agreed between the project participant and ecologist to maintain the habitat. This is needed as planting of appropriate tree species might be beneficial in preventing soil erosion along some riverbanks. Management of the buffer strip needs to take account of any invasive species that may be present and the ecologist will advise on treatment. The strip should be free from livestock access and extreme care taken to ensure that fertiliser, pesticides and slurry are applied well back from the buffer strip. Restricted livestock access will facilitate dense vegetation growth leading to a more stable bank structure. Keeping clearways to the river from the field at suitable intervals will allow trout anglers easier access.

No electric fence leading to soil erosion, siltation and invasive species colonisation

Rivers/streams and livestock access

In times past, before the advent of piped water, cattle and other livestock, used ponds, rivers and other water sources for drinking. Nowadays, increased and more concentrated numbers of livestock can cause siltation, bank erosion and water pollution at watercourse drinking points. If possible, water should be piped to troughs, located away from the river, to prevent these problems. Alternatively, the use of nose pumps or pasture pumps can be an effective alternative to river access, especially for smaller numbers of animals.

Pasture pump for cattle

Livestock access to rivers and streams can cause pollution

Farmyard run-off in this drain will have a negative impact on watercourse biodiversity and will lead to a negative Results-based Payment.
It could also contribute to poor drinking water quality.

Riverside Management

Always consult Inland Fisheries Ireland before carrying out any remedial works on waterways. Many of these are protected habitats and require permission to make structural changes such as reinforcing banks, gravel removal, realigning streams or removing vegetation. Inland Fisheries Ireland will advise on best practice and will ensure no damage is done to the ecological quality of the river.

18.

SCRUB / WASTELAND (B, C)

OVERVIEW

The value of scrub for wildlife is often underestimated. Scrub is especially significant where little or no woodland exists on site or in the local area. Scrub is a broad term that describes areas dominated by one or more of the following species: Bramble, Gorse, Willow, Blackthorn, Hawthorn, Elder and Hazel. Scrub will gradually develop into woodland if left undisturbed. Scrub is usually found on steep or rocky ground or on abandoned or marginal farmland. Pockets of scrub around farmyards can act as a haven for wildlife.

Do not spray! Retain – not remove!

LOCATION

Where possible scrub should be retained or allowed to develop into woodland in areas where this does not interfere with farming practices or pose a threat to other valuable habitats.

Bumblebee on a Spear Thistle

Benefits

On intensive farmland, patches of scrub can be very important wildlife habitats that provide food and shelter for insects, birds and mammals. Open areas within scrub, can support a mixture of rough grassland and pollen-rich plants such as Cow Parsley, Hogweed, Thistles, Teasel and Knapweed, which in turn support numerous predatory and pollinating insects.

Another important benefit of this habitat is its capacity to reduce soil erosion and run-off. It can also buffer woodlands from spray drift and act as a valuable windbreak depending on location. These habitats also function as a carbon sink whereby they faciliate the removal of carbon from the atmosphere.

Habitat Creation

Scrub is usually created, inadvertently, through the lack of disturbance of any area of the farm. On farms where land is intensively managed, even small patches of scrub can be hugely valuable to wildlife.

Habitat Management

Scrub can be managed for biodiversity by ensuring that a mixture of species of different ages and structure are allowed to develop naturally. Scrub can be enhanced by planting native tree and shrub species. Left unmanaged, scrub will eventually develop into woodland. Should this be the preferred option, then planting some Oak, Birch and Scots Pine in clearings within the scrub will accelerate the transition to woodland. Where scrub has been neglected, structural and species diversity can be improved by rotational cutting or light grazing. Scrub encroachment needs to be prevented where it compromises farming activities, other priority habitats (for example shading out species-rich grasslands), landscape or archaeological features.

Scrub provides food and shelter for birds, mammals and insects

Cutting (if this is the chosen form of management) should take place between September and February to avoid the bird breeding season. Cut areas of scrub in a rotation, aiming to retain all ages. No more than 50% of the scrub area should be cut or trimmed in any one year so that continuous cover is available for birds and mammals.

19.

SPECIES RICH GRASSLAND (B, C)

OVERVIEW

Species-rich grasslands are unimproved grasslands that have not been ploughed, fertilised or re-sown for many years. They usually contain a wide variety of small herbs and grasses that cannot thrive in nitrogen rich swards, and are an excellent habitat for invertebrates, birds and small mammals.

Although species-rich grassland may not be widespread in the Bride valley, occasional pockets still remain on extensive farmland. This valuable and declining habitat is becoming increasingly rare due to the ongoing drive to replace it with faster growing, nutrient dependent, ryegrass monocultures. Species-rich grassland has a unique array of biodiversity – try to retain this habitat rather than se-seed it for agriculture purposes. Fertiliser application in particular, which encourages the growth of a few vigorous grasses at the expense of a great variety of smaller, slower-growing species, is a major reason for the decline of this habitat.

RETAIN NOT RE-SEED!

TIMEFRAME

It is extremely difficult to re-create species-rich grassland as this is a habitat that may take several decades to develop. This is another reason why it is so important to protect existing species-rich grassland. It is dependent on low nutrient levels and the presence of a range of herb and grass species being present. It is possible to sow many of these species but it may take several years of declining nutrient levels in the soil before the grassland

begins to acquire an adequate mixture of compatible species before it begins to function properly as a habitat.

Location

Where possible, choose a location that has been free from excessive nutrient input for at least five years and sow a mixture of native grasses and herbs.

Benefits

Species-rich grasslands are valuable wildlife habitats. Insects are particularly reliant on the food and shelter that these diverse habitats provide. Many species of bumblebee depend upon the pollen and nectar provided by the flowers found in species-rich grasslands.

Habitat Creation

Creating this habitat is challenging and perhaps the cheapest and easiest way is to let nature do the heavy lifting! Firstly, cut out all fertilisers and remove the grass each year so that the nutrients are being drawn off the field. This will eventually lead to natural recolonization of herbs and grasses that will survive in low nutrient soils.

The introduction of Yellow Rattle, a hemi-parasitic plant that obtains some of its nutrients from the roots of several grass species, reduces the vigour of these grasses and in turn creates suitable micro-sites for the establishment of a range of grassland herbs.

Habitat Management

To sustain this type of biodiversity-rich sward, allow the sward to mature and seed heads to form before cutting for hay or silage. Although the hay season is traditionally July, postponing the cutting date (if possible) until August (make baled silage instead) will benefit pollinators in particular, as flowers will be in bloom for longer. Turning the grass before baling is important to disperse the seed and renew the sward for the coming year. The traditional management of the grassland – whether it was grazed or cut in the past – is a good guide to the best management for the wildlife living there now. Fertiliser and slurry should not be applied.

High fertiliser usage can increase carbon footprint, lower water quality and decrease biodiversity

20.

TREE-LINES (B, C, WQ)

OVERVIEW

Tree-lines can transform the visual look of any farm and provide important habitats for many species. BRIDE Project tree-lines contain only native trees that are chosen from the list below and this habitat will help reduce your farm's carbon footprint.

BRIDE Tree-line Plant Mix	
Species	**Latin Name**
Alder	*Alnus glutinosa*
Aspen	*Populus tremula*
Downy Birch	*Betula pubescens*
Silver Birch	*Betula pendula*
Bird Cherry	*Prunus padus*
Wild Cherry	*Prunus avium*
Pedunculate Oak	*Quercus robur*
Sessile Oak	*Quercus petraea*
Scots Pine	*Pinus sylvestris*
Rowan	*Sorbus aucuparia*
Whitebeam	*Sorbus spp.*

TIMEFRAME

Tree-lines should always be planted between November and March.

Location

A good location for these can be along farm passageways to give an avenue effect, on field boundaries/divisions or they can be planted alongside electric fence boundaries. Never plant a treeline under power lines or near a building where the possibility of damage might arise in the future.

Benefits

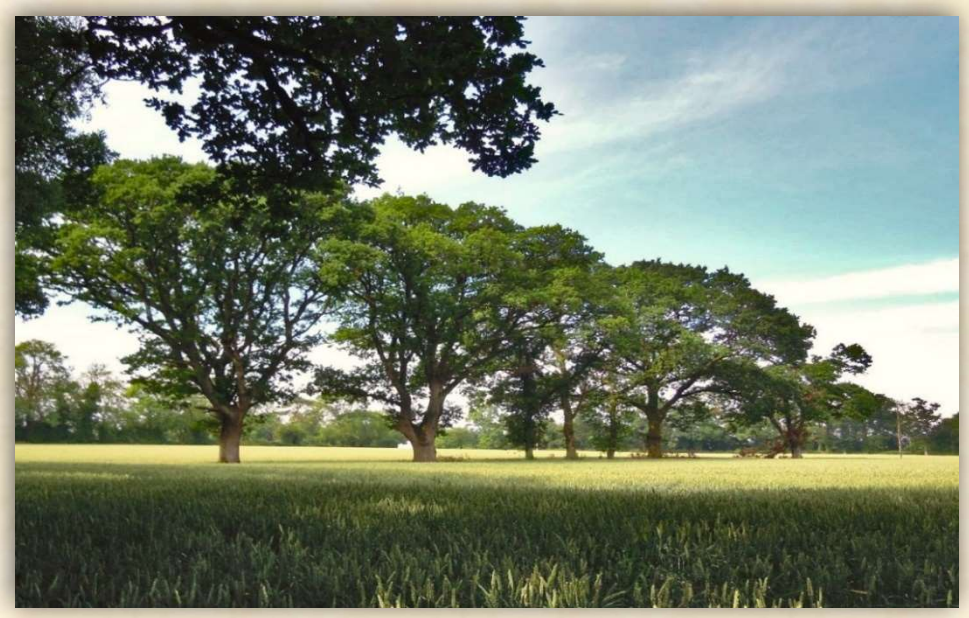
Tree-lines can be planted on all farms and provide huge environmental benefits such as food and shelter for a wide range of species, carbon sequestration and the ability to soak up water and hence reduce flood risk. Tree-lines provide shelter from severe weather conditions for crops and livestock and enhance the visual appearance of the farm landscape.

Habitat Creation

Trees are planted 5m apart to ensure the tree realises its full potential. Native species are chosen from the BRIDE Project Tree Mix according to farm soil type, location and the project participant's preference. The ideal tree size is one which is tall enough to be free from competition but small enough that it doesn't require staking, thus reducing the cost of planting and the need for sprays. Try to ensure the tree has a good root structure (not just the main root) and that the plant has only one leader (no forks on the main stem of the tree). This will minimise the risk of splitting and the need to prune in later years. Tree-lines can be planted along farm passageways where they can provide a scenic avenue effect on a farm. Ensure the tree-line is planted far enough back from the farm passageway to minimise interference from livestock and machinery and avoid planting under electricity or telephone lines. Do not plant trees adjacent to the farmyard if there is a possibility of removal due to expansion in the future. Hedgerows rather than tree-lines are more suitable for a public road boundary.

Habitat Management

Tree-lines are largely maintenance free if correctly planted initially but may need watering in their first year. Pruning may be needed in year 3 to prevent forking of the stem. Protect all trees from livestock and newly planted trees from rabbits and hares.



Mature Oak tree-line in the Bride Valley

Scots Pine Tree-line

21.

WETLAND & MARSH (B, C, WQ)

OVERVIEW

Wetland abundance in lowland agricultural areas has declined significantly. This priority habitat is most vulnerable, as wetlands are prone to drainage and reclamation for agricultural expansion. In many cases, these areas are very difficult to properly drain, often only resulting in rushes and low grass yields after the initial cost of drainage while also incurring a loss of unique wetland biodiversity. **Retain – not reclaim!**

TIMEFRAME

Marshland can be restored by blocking the drainage channels that were used to lower the water table. This can be undertaken at any time of the year but is probably less difficult during the drier summer months.

LOCATION

Former marshland area.

Lapwing formerly bred in the Bride valley
[photo: Mark Carmody]

Wetland has a unique array of biodiversity that is under threat – try to retain this habitat rather than drain it for agricultural purposes – retain not reclaim!

Benefits

Wetland habitats contain a diverse range of flora and fauna species and they also play an important role in flood mitigation and prevention. Carbon sequestration is another important function and benefit of wetland habitats. They are important for grass species such as Rough Meadow-grass and Tufted Hair-grass that have become increasingly scarce in modern farmland. A range of herbs such as Creeping Buttercup, Marsh Thistle, Silverweed and Meadowsweet frequently occur in wetland habitat and Cuckooflower or Lady's Smock, the food plant of the Orange-tip Butterfly is often common. Several bird species such as Lapwing, Curlew and Snipe feed and breed in wet grassland.

Orange Tip Butterfly
[photo: Mark Carmody]

Habitat Creation

These natural habitats cannot be created but drained areas can be re-wetted by blocking up drains and allowing them to return to their natural state.

HABITAT MANAGEMENT

Ensure that the site is not subject to artificial drainage, over-grazing, burning or scrub encroachment. Controlled grazing management, with a suitable stocking rate, is critical to maintaining healthy wetlands and its dependent biodiversity.

Marsh - high biodiversity value, high carbon sequestration, flood prevention – retain, not reclaim!

22.

WINTER STUBBLE RETENTION (B, C, WQ)

OVERVIEW

Winter cereals (cereal crops that are planted in mid-late autumn) now form a large part of most tillage farms, whereas previously, spring cereals (cereal crops that are planted in the spring) were the dominant crop. Winter cereals have spread the workload as well as the risk for tillage farmers. The green growth of winter cereals has far less biodiversity value than winter stubble (the cut stalks of spring cereal plants) during the winter months. Volunteer cereals and other green cover plants, provide an abundant supply of grains, seeds and insects over the winter months, providing both food and ground cover for birds such as Skylark, Meadow Pipit, Linnet, Goldfinch, Greenfinch, Reed Bunting and Yellowhammer.

Linnet
[photo: Mark Carmody]

Unsprayed winter stubble can provide a vital food source for many bird species during the winter months while also preventing soil erosion and nutrient leaching. Previous harvesting practices included spraying the cereal crop with glyphosate before cutting, to reduce the weed burden on the following crop. This meant a weed-free field, but it left the field open to

soil erosion through winter rainfall, and also nutrient leaching and reduced carbon sequestration, due to the lack of green cover during the winter months. Soil erosion and leaching can be reduced as the plants will bind soil particles and prevent nutrients leaching into watercourses. Post-harvest spraying of stubble to eradicate unwanted plants produces the same negative environmental effects.

Use of glyphosate spray on winter stubble will lead to nutrient leaching, higher carbon footprint and reduced winter feed for birds such as Skylark and Yellowhammer

Timeframe

Pre-harvest to at least March 1st but ideally March 31st.

Location

Any field that has been harvested for cereals.

Benefits

Winter stubble is a very important habitat for small birds as it contains spilled grains from the previous harvest along with wildflowers that have germinated post-harvest. Seed-eating bird species such as Pheasant, Grey Partridge, Stock Dove, Skylark, various finch species and Yellowhammer are very dependent on winter stubble fields for food. Volunteer cereals from the previous crop, along with other plant species, provide valuable seeds from July all the way through to March/April of the following year.

Yellowhammer in the Bride Valley

The retention of green cover over the winter lowers the farm's carbon footprint, reduces nutrient leaching and provides plant matter to improve the organic matter content of the soil for the following year's crop.

Habitat Creation

Avoid using glyphosate, pre or post-harvest, as the practice of pre-harvest spraying of cereals with glyphosate is not recommended. This will lead to a sterile field which is of little use for biodiversity. Once the crop and straw bales have been taken from the field, leave the stubble

until at least March 1st (ideally March 31st) and allow the remaining cereal and plant seeds to germinate throughout the autumn.

Habitat Management

Field operations should not commence until March 1st at the earliest. If possible, try to extend this until March 15th and ideally until March 31st as this will help to extend the winter food supply for birds. The early spring period can be especially challenging for seed-eating birds as most of the winter food resources have been exhausted by this stage. Extending the period between harvest and ploughing provides a very valuable food resource for a variety of bird species that are struggling in the modern farm landscape. Field operations or grazing with livestock should be avoided during this period to minimise disturbance of the habitat.

23.

WOODLAND (B, C, WQ)

OVERVIEW:

Native woodland (woodland that is dominated by trees that are native to Ireland) once covered most of Ireland but once the first farmers came to inhabit the island over 5000 years ago, the countryside has slowly changed to a landscape dominated by agriculture. The gradual dominance of agriculture has left the island with a very low percentage of woodland cover (one of the lowest in the EU).

TIMEFRAME

Trees can be planted anytime from October through to March

LOCATION

Locating an area to plant woodland needs to be considered carefully as the wood will change dramatically as the trees begin to mature. Furthermore, woodland has traditionally been planted on the poorest land area of the farm and if this area is not suitable for grass or cereals it may not be suitable for trees. Keep in mind the long-term view of this undertaking and ensure that it will not interfere with any future building or other development plans. Most areas of the farm should be suitable for planting but consider the potential loss of a cherished view (in years to come). Know the soil type of your farm so that the most suitable species can be planted. Ensure no overhead powerlines are present. Existing farmland habitats should be avoided.

BENEFITS

Trees provide enormous environmental benefits such as food and shelter for a wide range of species. Trees are also vital for their role in carbon sequestration and their ability to soak up

water and hence reduce flood risk. Native trees in particular are very valuable for biodiversity as they can support a huge range of insects, fungi, mosses, lichens, plants, birds and mammals. Mature woodland, especially native woodland, is one of the most biodiversity-rich habitats and even small areas of woodland can significantly improve the biodiversity of intensively managed farmland. Planting woodland, hedgerows or tree-lines will positively alter the visual landscape of the countryside for years to come. Removing these habitats will do the opposite and create a featureless landscape.

Rare native oak woodland near Conna, in the Bride valley

Habitat Creation

A native woodland plot involves the planting of 160 native trees on 0.1ha (min.) of the farm. The Native Woodland Establishment Scheme is more suitable to planting larger areas (over 0.1ha). These sapling trees consisting of nine species (Pedunculate or Sessile Oak, Scots Pine, Downy Birch, Wild Cherry, Hawthorn, Hazel, Spindle, Crab Apple, Buckthorn or Alder Buckthorn) in a fenced plot to prevent livestock access. The larger (Oak and Scots Pine) and medium-sized species (Wild Cherry and Downy Birch) are planted in the central area of the plot while the smaller species are planted on the outer perimeter but some of the more shade tolerant species (Hawthorn, Spindle and Hazel) will be interspersed throughout the wood. Willows are extremely important for biodiversity as many insect species rely on them for pollen and as a food plant. They can easily be planted from cuttings and it is recommended that at least five be planted in each wood.

BRIDE Woodland Plant Mix	
Species	**Latin Name**
Alder	*Alnus glutinosa*
Downy Birch	*Betula pubescens*
Bird Cherry	*Prunus padus*
Wild Cherry	*Prunus avium*
Hazel	*Corylus avellana*
Holly	*Ilex aquifolium*
Pedunculate Oak	*Quercus robur*
Sessile Oak	*Quercus petraea*
Scots Pine	*Pinus sylvestris*
Rowan	*Sorbus aucuparia*
Goat Willow	*Salix caprea*
Grey Willow	*Salix cinerea*

New woodland is ideally suited to an awkward corner or an area away from the farmyard, but do not put it on an existing wildlife habitat. The new wood will not be thinned as it is designed purely for biodiversity enhancement and should be planted as a legacy with future generations in mind. It is said that "an oak tree grows for 300 years, rests for 300 years and declines gracefully for the next 300 years". Leave a winding path through larger woodland plots so that the farmer and future generations can appreciate the wood as it grows and matures. Open spaces within a wood provide important habitats for wildflowers and grasses and will help to increase the biodiversity value of the wood. Native tree species (see BRIDE Project tree mix) suited to the farm's specific soil type and aspect will be chosen by the ecologist in consultation with the project participant.

HABITAT MANAGEMENT

New native woodland

It is important that newly planted trees are kept free from encroaching grass and bramble especially during the first three years after planting. It is also important to ensure that protective fencing is erected to prevent livestock access. Check for rabbit or hare damage and use guards if necessary. Pruning in the first 3-5 years, if needed, will prevent forking of the tree in future years. Water (especially in the first year) if necessary.

Pruning the tree in the first 3-5 years will prevent forking later. It is only a matter of time before this tree will split.

Established Deciduous Woodland

Existing woodland should be fenced to prevent livestock access. Deer can also damage woodland and fencing may be necessary if deer are preventing natural regeneration. Invasive species such as Cherry Laurel and Rhododendron should be eradicated. This process is best achieved by cutting and chemically treating the remnant stump - treatment may need to be continued for at least three years. Non-native trees such as Beech and Sycamore support far less biodiversity than native tree species such as Oak and these non-native species can dominate large sections of woodland if they remain unchecked. Gradual replacement of non-native tree species with native trees could be considered.

Deadwood, whether fallen or standing is a very important component of native woodland ecosystems. Dead or decaying trees provide a rich habitat for fungi and a wide range of invertebrates that recycle nutrients back into the soil during the decomposition process. No need for bug hotels in a properly functioning woodland!

Coniferous Woodland (non-commercial)

Many farms contain conifer plantations of various sizes. These woods were often planted as shelterbelts around the farmyard. Conifer woods (especially when mature) can provide useful habitats for some insects, birds and bats. Gradual replacement of non-native conifer trees with native deciduous trees could be considered as a means of enhancing the biodiversity value of a conifer wood.

Coniferous forestry

Much of our commercial woodland is plantation forestry consisting of a monoculture of Sitka Spruce. Similar to grassland that consists of a monoculture of perennial ryegrass, the biodiversity value of these forests is relatively poor. ***It is always better to have as many different plant species in an area as possible, to enhance its biodiversity value.*** *In planting these monocultural forests, on what was originally upland farmland, there is also the problem of replacing one habitat (open moorland, rough grassland) to create an inferior one. The consequence of this is that species such as Curlew, Hen Harrier, Meadow Pipit, Golden Plover, Red Grouse, Lapwing and the habitats they depend on, are being threatened. In the Bride valley, Hen Harrier, Snipe, Lapwing and Curlew were all confirmed breeders in the 1968 Bird Atlas, but alas, because of habitat loss (reclamation and forestry cover) and other factors, Hen Harrier and Snipe are all that remain, but in very low numbers.*

With climate mitigation measures sure to be part of the next CAP, there will be a great opportunity to re-establish native oak woodland on some of our lowland farmland.

BRIDE Project Biodiversity Almanac

January	🛠	Erect **bird boxes**
	🛠	When replacing broken hedgerow fenceposts keep new post 2 m from base of hedgerow to create a **field margin**
	🛠	**Woodland**, **Hedgerows** and **Tree-lines** can be planted
	🛠	Carry out **hedgerow gap filling** using BRIDE Hedgerow Mix
February	🛠	Trim **hedgerows** that are encroaching onto field margins [season ends last day of February]
	🛠	Last chance to erect **birdboxes**
	🔭	Watch out for soaring **Buzzards**
	🔭	Watch for **bumblebees** and **butterflies** emerging from hibernation
	🔭	Check your pond for first signs of **frog spawn** and also your hedgerows for **Primrose and Lesser Celandine**
	👂	**Dawn chorus** begins – tune your ear to the different species**.**
March	🛠	**Giant Hogweed** is beginning to appear, now is a good time to dig it out while it's at the early growth stage
	🛠	Conduct your first **pollinator survey** of the year on your densest hedgerow with the widest field margin. Make a note of the number of butterflies and bumblebees. Warm sunny days after 11am is best. Monitor this area monthly through-out the summer. Log results into the National Biodiversity Data Centre's website.
	🔭	**Orange Tip** butterflies are on the wing
	🔭	Keep an eye on **nestboxes** (from a distance) to see if they have been occupied
	🔭	"Mad" March **Hares** are in their mating season and can be spotted standing on their hind legs as if boxing
	🔭 👂	Circling **Buzzards**, in numbers up to 8 or 10, can be seen soaring high on wind thermals. Their call is very distinct, as they begin to pair up and look for new territories.
April	🛠	Carry out the monthly **pollinator survey**
	🔭	**Swallows, House** and **Sand Martins** will be returning for the summer
	🔭	**Willow warblers** and **Blackcaps** will also be returning from their winter migration
	👂	Listen for the first call of the **Cuckoo**

BRIDE Project Biodiversity Almanac

May	🛠	**Annual Biodiversity Plots** can be planted this month
	🛠	Carry out the monthly **pollinator survey**
	🛠	Water newly planted hedgerows & trees if conditions are dry
	🔭	**Swifts** are beginning to return from their winter migration while **Spotted Flycatchers** are usually the last of our summer migrants to return
	👂	The **dawn chorus** is at its best this month – can you decipher the different species?
June	🛠	Try to **refrain** from applying **pesticide** to **field margins**. If vegetation height is becoming an issue strim or mow.
	🛠	Cut **Nettle patches** that have become woody, at the end of the month, so that new regrowth will support a second hatch of caterpillars in August
	🛠	Carry out the monthly **pollinator survey**
	🛠	Water newly planted hedgerows & trees if conditions are dry
	👂	Listen for the distinctive "snoring" sound of **young Barn Owls** coming from old buildings or suitable nestboxes
July	🛠	This can be an ideal time to **excavate a pond**, especially in very wet areas that may be unsuitable at other times of the year.
	🛠	**Himalayan Balsam** is now beginning to form flower heads and so this is an opportune time to control this invasive plant. Pulling the plant by hand can be a very effective control measure.
	🛠	Carry out the monthly **pollinator survey**
	🛠	Water newly planted hedgerows & trees if conditions are dry
	🔭	Check Annual Biodiversity Plots and do a count of **pollinators**.
	👂	Bird song goes into decline in July as the breeding season has ended, however, **Skylark, Yellowhammer and Stonechat** may produce a second brood at this time of year.
August	🛠	Check any **newly-planted hedgerows, tree-lines or woodland** and ensure the plants are not overgrown with scrub or suffering from drought.
	🛠	Tillage farmers - once grain has been harvested and bales taken off retain an area for **winter stubble** and ensure no glyphosate is used on the stubble.
	🛠	Carry out the monthly **pollinator survey**
	🔭	**Swifts** will commence their return to Africa

BRIDE Project Biodiversity Almanac

September	🛠	The opening date for trimming **hedgerows** for BRIDE Project participants is Sept. 15th but try to hold off until winter time as berries and seed heads will still be needed by wildlife
	🛠	This is the best time to control **Japanese Knotweed** – consult an expert.
	🛠	**Pollinator Plots** can be planted this month
	🛠	Carry out the monthly **pollinator survey**
October	🛠	Clean out **nestboxes** before winter, in particular Barn Owl boxes that have been inhabited by Jackdaws
	🛠	Now is a good time to increase **field margin width to 2m** from the base of the hedgerow - tillage farmers sowing winter grain could consider this option
	🛠	**Pollinator Plots** can be planted this month
	🛠	Last chance to **excavate a pond** while ground conditions allow.
	🛠	Carry out the monthly **pollinator survey**. This is the last survey of the year. Keep all records and compare with next year.
	👀	**Swallows** will be the last to leave for the winter – watch them congregate on wires before finally heading back to Africa.
	👀	First of the winter migrants should appear this month, keep an eye out for **Fieldfares** and **Redwings** while additional numbers of **Meadow Pipits** and **Snipe** may be seen in grassland.
November	🛠	**Barn Owl boxes** can now be erected. Old buildings or suitable trees are a good location.
	🛠	**Hedgerows and tree saplings** can now be planted as they are in their dormancy stage
	🛠	**Bird feeders** can provide an extra food source for our wild birds at this time of year. Now is a good time to put them up and observe the different species from the kitchen window.
	👀	Check **winter stubble fields** and look out **for Skylarks** and **Yellowhammers**
December	🛠	**Hedgerows and tree saplings** can now be planted as they are in their dormancy stage
	🛠	Consult your **Biodiversity Management Plan** and draw up a "to do" list for the year ahead - •add an extra 2m field margin, •create a pond, •ensure buffer strips are correct width, •plant more native trees etc.

Summary to Improving Biodiversity on Farms

1. **Reduce** the use of **pesticides** on field margins and other natural habitats
2. Reduce the use of toxic **rodenticides**
3. Try to have a minimum of 10% of your farm as a **Biodiversity Managed Area** (BMA)
4. Increase the width of your **field margins** to 2m
5. If you have a **wetland habitat** – try to retain it for biodiversity rather than draining it for agricultural use. **Retain – not reclaim!**
6. Keep **slurry and fertilisers** away from field margins and other natural habitats
7. Stick rigidly to your **Nutrient Management Plan** – overuse of fertilisers leads to excess nutrients in rivers and other watercourses.
8. Retain all **natural habitats** on your farm, such as hedgerows, woodland, ponds, wetland, etc. – these are valuable ecosystems that provide clean water, biodiversity and lower your farms carbon footprint. **Retain – not remove**
9. Can you retain a small area of your old grassland as a **multi-species sward** that will be less intensive than the rest of your farm? **Retain – not reseed!**
10. How good is your farm for **pollinators** – are there **wildflowers** in bloom from February to October in some part of your farm?

BRIDE Project
Farming with Nature

What BRIDE Project farmers have to say . . .

"I think it's time we took stock of what damage we have done and try and improve the environment and hold it for future generations…"

"I was typical of a lot of farmers, we developed and developed, we shaved the ditches, there was little or nothing on our farm but the stock we had, the cows, …we have done a lot of damage and this is the start of putting that right"

"it's a great start, its encouragement for farmers, a lot of farmers have an interest in wildlife anyway, they just need that little push."

"it will become main stream in a few years , because consumers will more and more want to know where their food comes from and what kind of background it comes from, and they will want to know that we're producing food without injuring the environment."

"we can't go on as if the climate is something that is irrelevant, we can't deny that we're losing biodiversity"

"you can have your intensive farmland and your income from that, but you can also have wildlife"

BRIDE Project
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Cover Images: *front* – the Bride valley overlooking Castlelyons
back – a summer day on the river Bride