PARKE & CRIMLIN
AREA DEVELOPMENT ASSOCIATION

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ECOLOGY OVERVIEW PARKE / CRIMLIN DEVELOPMENT AREA CO MAYO

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Note: All photographs in this report are taken within the locality © Karina Dingerkus

1.0 Introduction

1.1 Site location and general overview

The area consists of two village, Parke and Crimlin and the surrounding rural agricultural land. Parke is a small village located in the southern part of the area. Crimlin is more central. The population is around 1000.

The surrounding countryside consists of agricultural farming with fields mainly surrounded by hedgerows, with occasional stonewalls. The agricultural land occurs mainly in the central, and southern part of the area, and along rivers. To the north there are wet and dry heaths and blanket bogs, with further areas of this habitat to the east and south-west.

There are numerous areas of woodland or scrub, with the area in the townland of Knockaglana designated as the protected habitat Old Oak woodland

Lough Cullin borders the north-eastern section of the project area. Other smaller lakes include Derryhick and Levallinree.

There are numerous rivers, the largest being the Clydagh and Tobergal Rivers which flow into Lough Cullin.

They are two designated sites within the area. The first is the River Moy Special Area of Conversation (SAC). SACs are seen as prime wildlife conservation areas in the country, known to be important on a European and Irish level. The legal basis on which SACs are selected and designated is the EU Habitats Directive.

The second is Cunnagher More Bog Natural Heritage Area (NHA). Natural Heritage Areas are the basic designation for wildlife. These are areas considered important for the habitats present or which holds species of plants and animals whose habitat needs protection.

1.2 Scope of current project

The scope of the current project is to look at natural habitats and biodiversity resources within the area and look at areas where the development group could focus biodiversity projects.

1.3 Why have a plan?

Having an overview of the area will allow the community development group to set priorities for projects they feel will be of most benefit to their community and their local environment.

Biodiversity loss is now a global crisis. The impact of the loss of biodiversity can also be seen here in Ireland. Of the species that have been assessed here, one in every five is threatened with extinction. For example, there are ninety-nine different types of bees in Ireland (twenty-one bumblebee species, seventy-seven solitary bees and one honey bee). Of these, one-third are threatened with extinction. Pollinators are declining for many reasons but two of the main threats are the lack of food and shelter. Fifty four species of bird (breeding, wintering and passage) are of high conservation concern. The corn bunting has become extinct since around 2000 and the once widespread corncrake is just lingering on in the western extremities of counties Donegal and Mayo.

Communities such as that represented by the Parke / Crimlin Development Association have the potential to make changes in the management of its managed green spaces, villages and natural habitats which could potentially make many positive changes for local biodiversity.

1.4 Natures Requirements

In order, to thrive, biodiversity needs a diversity of habitats. Animals and plants need places that provide shelter and cover. This can be in the form of wooded areas, areas of undisturbed tall vegetation, walls and soil banks are also important. These areas provide shelter and nesting sites for birds, small mammals and invertebrates. By limiting or eliminating the use of herbicides and pesticides a safe environment for species can also be provided.

Plants and flowers will provide food for pollinators. Native wildflowers have declined in Ireland with the loss of hay meadows and other flower-rich habitats. By providing native flowers in our factory sites, industrial estates and towns and villages we can replace this valuable resource.

Ireland is one of the least wooded countries in Europe. Trees provide nesting site and food for birds. A red squirrel has also been recorded on site and this species would benefit from having additional food sources in the form of nuts and berries from native trees.

2.0 Habitats found with the Parke / Crimlin Development Area

The area has a rich variety of natural habitats, farmland, and community spaces. All of these can be managed in a way that protects and enhances biodiversity. At the same time there is the opportunity to raise awareness of the natural assets in the area among the public, and potentially increase how these natural areas can be used by the community and the public in general.

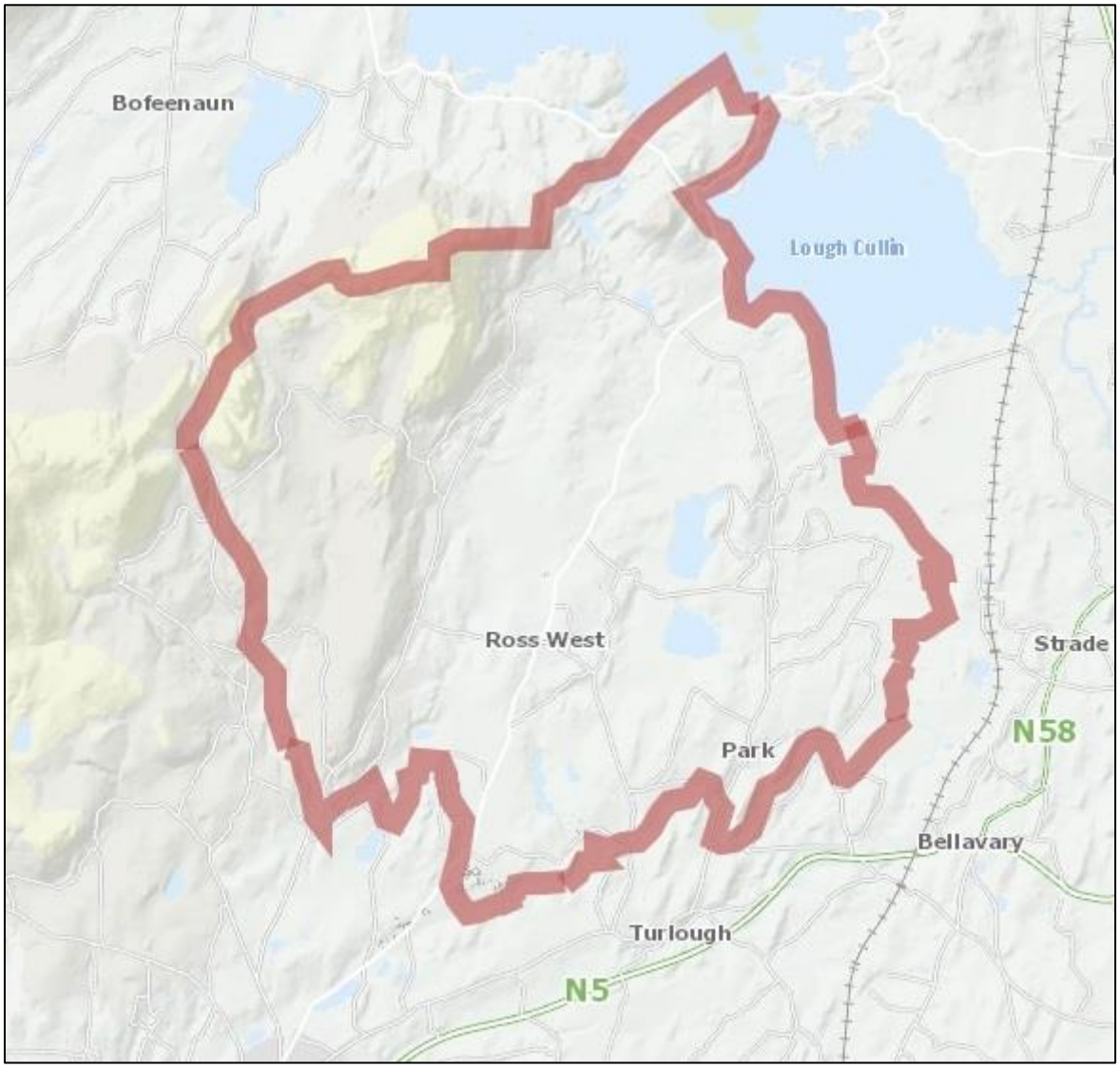


Diagram 1: Approximate area covered by this report

2.1 Farmland and Hedgerows

A large proportion of the area is made up of pasture farmland. Both cattle and sheep rearing occur in the area. Fields are separated mainly by hedgerows. Hedgerows are composed of hawthorn, blackthorn and hazel. Ash and willow trees appear common.

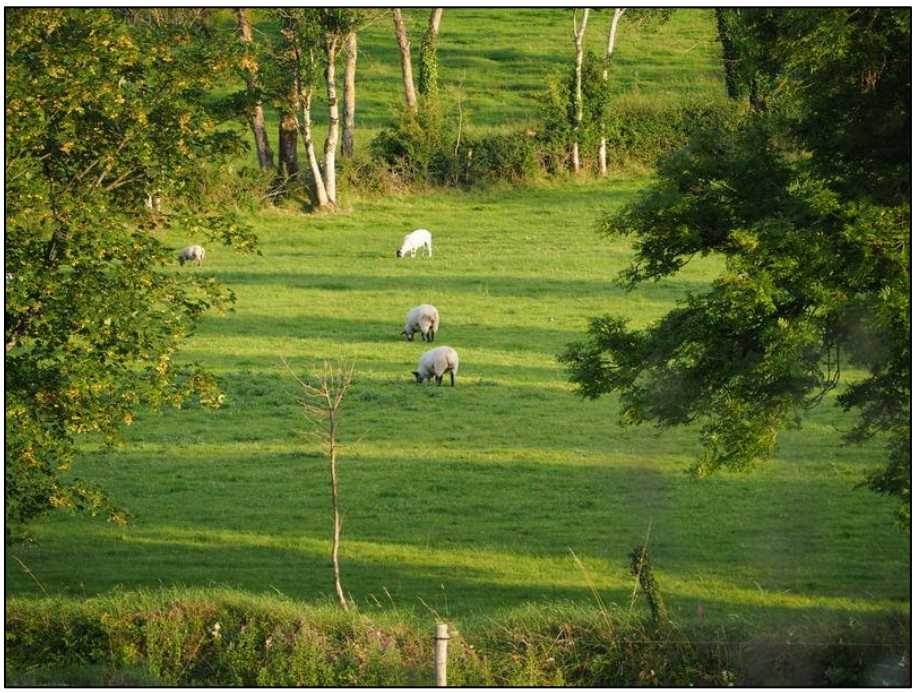
Photograph 1 farmland near the village of Parke

In a recent report on water quality the EPA have highlighted inputs from agriculture as being one of the main causes of decreased water quality. There are several good examples of how water quality can be easily improved (see project examples under river section).

Hedgerows have important role to play in farmland biodiversity, supporting plants, insects, birds and small mammals. Hedgerows also provide wildlife corridors along which animals such as bats move and forage. Hedgerows that are cut too frequently loose much of their biodiversity benefits. Many of the hedgerows in the area have mature ash trees.

Possible areas of action	Potential partners	Potential funding / similar project	Biodiversity value
Hedgerow management workshop – if hedgerows are managed sustainably, they are much more valuable in terms of biodiversity and being able to support biodiversity	hedgerowsireland.org/	Mayo Co Co Heritage Council	High
Biodiversity farming workshop – small changes in farming practices can have big positive impacts for farmland biodiversity	Farming for nature www.farmingfornature.ie/	Heritage Council E.g. BRIDE Biodiversity project ec.europa.eu/eip/agriculture/en/find-connect/projects/bride-biodiversity-regeneration-dairying	High
Farmland ponds – ponds increase farmland biodiversity,	Local farmers	Heritage Council Dept. of Agriculture	High

provide additional water storage during flooding, and traps silt and nutrients thereby helping improve water quality of local rivers		E.g. Hare's corner project (burrenbeo.com/thc/)	
Grassland management – changing from intensive grassland management to low input grasslands with lower stocking densities can have positive impacts on farmland biodiversity	Local farmers ACRES	Heritage Council Dept. of Agriculture	High



Photograph 2: Farmland grazed by sheep

2.2 Bog and heath habitats

2.2.1 Blanket Bog

Blanket bog habitat is a globally scarce habitat. It is largely confined to coastal regions with cool, wet, oceanic climates at temperate latitudes. Blanket bogs occur in areas of consistently high rainfall (>1,250mm and >225 rain days per annum) where the ground surface is waterlogged for much of the time, resulting in the development of deep peats. In Europe, this type of blanket bog is restricted to Ireland, Britain, Norway, and Iceland. Lowland blanket bog comprises less than 3% of the world's peatlands. The lowland blanket bog that occurs in Ireland is an extreme hyper-oceanic variant of the habitat type, found nowhere else in the world except on the coastal fringes of north-west Scotland.

In general, the pressures on this habitat include overgrazing, burning, afforestation, peat extraction, and agricultural activities causing nitrogen deposition. In addition, erosion, drainage, and wind farm construction are other issues of noted concern.

2.2.2 Wet and Dry Heath Habitats

Wet heath is a variable peatland habitat that generally occurs on gently sloping, poorly drained ground on peat that are usually less than 50 cm deep. It is characterised by a mixture of purple moor-grass, cross-leaved heath (a type of heather), deergrass or ling heather. Mosses and lichens are also present.

In dry heath habitats, the vegetation is dominated by dwarf shrubs, and it usually occurs on well-drained, nutrient-poor, and acidic mineral soils or shallow peats (<50cm deep) on sloping ground. Ling heather is generally the main species, but bell heather, western gorse and bilberry can also occur.

2.2.3 Cunnagher More Bog NHA

Photograph 3 Cunnagher More Bog NHA

Cunnagher More Bog is a good example of lowland blanket bog with a mosaic of heath habitats, some cutover that is gradually becoming revegetated and some areas of wet grassland. It is situated in the townlands of Cunnagher North, Crillaun, Gort and Dereens. A small lake, called Loughnambrackkeagh occurs in the north-eastern corner of the site. There is a small area of forestry within the NHA boundaries and more forestry plantations along parts of the western and southern boundaries. The

site is primarily flat or gently sloping with a few low hills throughout the area. An uncommon bog moss species, *Sphagnum fuscum*, has been recorded on the wetter, intact areas. Turf cutting still occurs on the bog. The Foxford Way walking trail transects part of the site.

Other Annex I blanket bog habit (Habitat Code: 7130) occurs close to the River Moy SAC, while other Annex I blanket bog habitat occurs which is not directly connected to the designated sites. Other blanket bog habitat occurs in the townlands of Cauranslower, Treanybrogaun, Derryvulcaun. Ross East, Ross West, Sranalee, Gort and Terryduff.

Photograph 4 Annex I Blanket bogs at Derryvulcaun

Generally, the wet heath occurs in a mosaic with the blanket bogs. However, there is an area of wet and dry heath (classified as Annex I habitats) in the townlands of Meelick and Cloonkesh.

Current threats include drainage and dumping of green waste which were both recorded on bogland sites within the areas.

Photograph 5 new drains in bog

Photograph 6 dumped garden waste in bog

Possible areas of action	Potential partners	Potential funding / similar project	Biodiversity value
Bogland rewetting - Look at which areas of bogland can be rewetted and restored	greenrestorationireland.coop/	Peatlands Community Engagement Scheme E.g. Mayo Bogs Project - greenrestorationireland.coop/mayo-bogs-project/	High
Bog Workshops - Hold information workshop importance of not draining bogs	NPWS Wild Atlantic Nature	Peatlands Community Engagement Scheme	High
Cunnagher Mor Bog NHA - Look at improved interpretation and access to Cunnagher Mor Bog	NPWS	NPWS Claggan mountain trail - www.wildnephinnationalpark.ie/visit-us/claggan-mountain-coastal-trail/	Low but raises awareness
Green waste management - Raise awareness of issues related to tipping of household green waste in natural areas	Mayo Co Co Environmental Dept	Mayo Co CO	Medium
Looped walking trails - Look at creating looped walks around bogs such as those at Derryvulcaun, Lack East and Ballygarrif	Mayo Co Co – Mayo Walking Trails	Mayo Co Co Failte Ireland LEADER Clogher Loop Walk	Low but raises awareness
Cycling routes - Look at establishing a cycling trail through the bogland areas using bog roads and tracks.	Mayo Co Co Failte Ireland	Mayo Co Co Failte Ireland LEADER Louisburgh Cycle Hubs walks.mayo.ie/CyclingInMayo/CycleHubs/LouisburghCycleHub/	Low but raises awareness

2.3 River habitats

The area falls with the Water Framework Directive (WFD) Moy and Killala Bay Catchment. The majority of the area falls with the Castlebar_SC_030 sub-catchment, while the northern end of the area falls within Moy_SC_080 sub-catchment.

The larger rivers include the Clydagh River, and Tobergal River, and there are several smaller rivers and streams through the areas.

Clydagh River

The Clydagh River starts in the Nephin Beg range not far from Croaghmoyle, first travelling in a roughly south-easterly direction before flowing south forming the southern boundary of the project area. The river is then joined by numerous small streams, and then by the Toomore river. Here it flows in a roughly northerly direction before entering Lough Cullin. The river is quiet nutrient poor, and parts of the river area still in its natural state. It supports both brown trout and salmon. Salmon have been seen jumping the falls at Carrowkeel. There is a nice diversity of flora at the bridge here including hazels, alder, dog rose, and birch to name just a few. The bank on opposite side the road to bridge appears particularly species rich and would make lovely wildflower area.

Photograph 7 River Clydagh at Carrowkeel

EPA river quality surveys (biological) for the River Clydagh show that biotic indices ("Q Values"), which reflect the average water quality at any location, as good or high for the four monitoring points along the river. Under the WFD River Bodies status (2013-2018), the Claydagh River is classified as “Good”. Under the WFD River Water Bodies Risk classification, which classifies the risk for each waterbody of failing to meet their Water Framework Directive (WFD) objectives by 2027, the part of the Claydagh River that runs along the southern boundary of the area is is classified as “At Risk”. While the section that flows north along the eastern boundary is

Photograph 8 River Clydagh where it enters Lough Cullin

classed as “not at risk”. Parts of the river fall within the River Waterbody High Status Objective (IE_WE_34C050200). See Map in Appendix1b for details. The section of the river that flows north on being joined by the Toormore river is protected under the Salmonid River Regs (S.I. 293 only).

The River Clydagh is known to be use by kayak users, and so potential for area to develop here, particularly if canoeist could be used to help survey the river.

Tobergal River

Photograph 9 Tobergal River

Tobergal River (EPA name: Crumlin (Lough Cullin)_010) consist of several smaller tributaries that merge to form a larger river. This river flows in a north-easterly direction, merging with the stream that leaves Derryhick Lough. The Tobergal continue to flow north-easterly before flowing into Lough Cullin. Much of the area the river flows through are bog and heath habitats and to a lesser extent farmland.

Under the WFD River Bodies status (2013-2018), the Crumlin (Lough Cullin)_010 is classified as “Good”. Under the WFD River Water Bodies Risk classification, the Crumlin (Lough Cullin)_010 is classified as “At Risk”.

Atttiappleton

The third river system is the area is the EPA names: Attiappleton_010. This system occurs in the northern section of the project area and is associated with Attiappleton and Bunduvowen Loughs. Under the WFD River Bodies status (2013-2018), Attiappleton_010 is classified as “Poor”. Under the WFD River Water Bodies Risk classification, Attiappleton_010 is classified as “At Risk”.

Carra River

This small river, one of whose tributaries appears to flow from Loughnambrackeagh, flows into Lough Cullin. It has no EPA name and is therefore probably not currently monitored.

The lower sections of the three smaller rivers are all pretty well wooded, giving good riparian habitats which are important for supporting birds, insects, bats and also larger mammals such as otters.

Possible areas of action	Potential partners	Potential funding	Biodiversity value
Ensure status of River Claydagh remains high by developing project working with farmers to improve water quality by reducing cattle drinking areas in river and reducing nitrate run-off	LAWCO	LAWCO EIP Fund (Department of Agriculture) Mulkear River Catchment Project https://www.mulkeareip.com/	High
Engage with local canoeists / kayakers to help map river, its habitats, species, and presence of invasive species	Canoeing Ireland IWW	Canoeing Ireland	Med-High
Install interpretation board at bridge in Carrowkeel	Inland Fisheries	Inland Fisheries	Low
Survey of invasive species along Tobernagal	LAWCO Inland Fisheries	LAWCO Inland Fisheries	High
Ecology survey of rivers	LAWCO	LAWCO	Med-High

Photograph 10 Heron on Clydagh River

2.4 Lake habitats

There are several small and large lakes scattered through the project area.

Lough Cullin

Lough Cullin borders the eastern section of the project area. Lough Cullin is part of the larger Lough Conn and Cullin complex. Lough Cullin is designated as the Lough Conn and Lough Cullin SPA and is part of the larger River Moy SAC. The lake has several small islands. Fringing swamp vegetation occurs in some sheltered areas. Lough Cullin supports important salmonid (salmon and brown trout) populations. Lough Cullin is an important area for wintering waterfowl including tufted duck, whooper and mute swans, wigeon, teal, mallard, pochard, coot, golden Plover and others. Lough Conn and Lough Cullin was one of only four breeding sites in the country for Common Scoter duck. However, the most recent survey found no evidence of these birds breeding there.

Derryhick Lough

Derryhick is the largest of the smaller lakes and is designated as part of the River Moy SAC. It is approximately 50 ha in size and is surrounded by farmland, bog habitats, scrub and some small areas of forestry. The lake supports a range of fish including pike, roach, perch, eel, and some brown trout. The lake is connected via a stream to the Tobergal river which flows into Lough Cullin.

Photograph 11 Derryhick Lough

Two crannógs occur in the south-west corner of the lake and the lake is surround by several fulachtaí fi and one rath. There is a relatively rich ground flora around much of the lake which include flowers such as meadow sweet, ox-eye daisy and knapweed.

Levallinrea Lough

This lough lies south of Derryhick. It is small, at approximately 39 hectares. It is not designated. It is surrounded by bog habitats to the south and west, with some woodland / scrub to the east and farmland to the north. The lough has three crannógs to the north and is surrounded by several fulachtaí fi and raths.

Other lakes

Other smaller lakes include Bunduvowen Lough, Lough Fadda, Lough Doovoga, Knockaglana Lough and Loughnambrackeagh.

Ross Lough which was a very small lake just south-east of the Ross West crossroads appears to have dried up. It is present on the older ordnance survey maps, but aerial photographs and recent mapping layers show that it is no longer there. Small lakes like this can dry up through natural succession, but it may also have been a result of drainage.

The EPA carried out water quality monitoring and assessments on Irish Lake Waters for the Reporting period 2007-2009, but only Lough Cullin was assessed. For the WFD Lake Water Bodies Risk assessment Lough Cullin is classified as "at risk" and Derryhick Lough as "under review".

Possible area of action	Potential partners	Potential funding	Biodiversity value
The smaller lakes which are not used by fisherman are generally undisturbed and can be good places for wildfowl and other wildlife. In most circumstances these areas are best left undisturbed.	N/A	N/A	High
Water quality of lakes – a recent EPA report shows that water quality of Irish lakes has decline by a further 3%. Lakes surrounded by agricultural land can be impacted by increased nitrate and phosphate loading.	LAWCO	LAWCO	High
Flora survey of shores of Derryhick Lough – the shores of the lake seems to have a rich diversity which would be interesting to document.	NPWS LAWCO	LAWCO	Med-high
Interpretation boards Derryhick – the lake gets many visitors particularly fisherman. Have wildlife interpretation board with information about the lake and risk of spread of invasive species	LAWCO Inland Fisheries	LAWCO Inland Fisheries	Low- but raises awareness

Photograph 12 Fishing at Derryhick

2.5 Woodland habitats

Woodland in the area can be divided into the following categories

- Old Oak woodland
- Scrub
- Wet wood
- Riparian woodland
- Planted woodlands

Old Oak woods at Knockaglana

Old oak woodland is a protected woodland habitat under Annex I of the EU Habitats Directive, and is found around Pontoon. Part of the wood in this townland has been given the status of "Possible Ancient Woodland". As the name suggests these woods are very old.

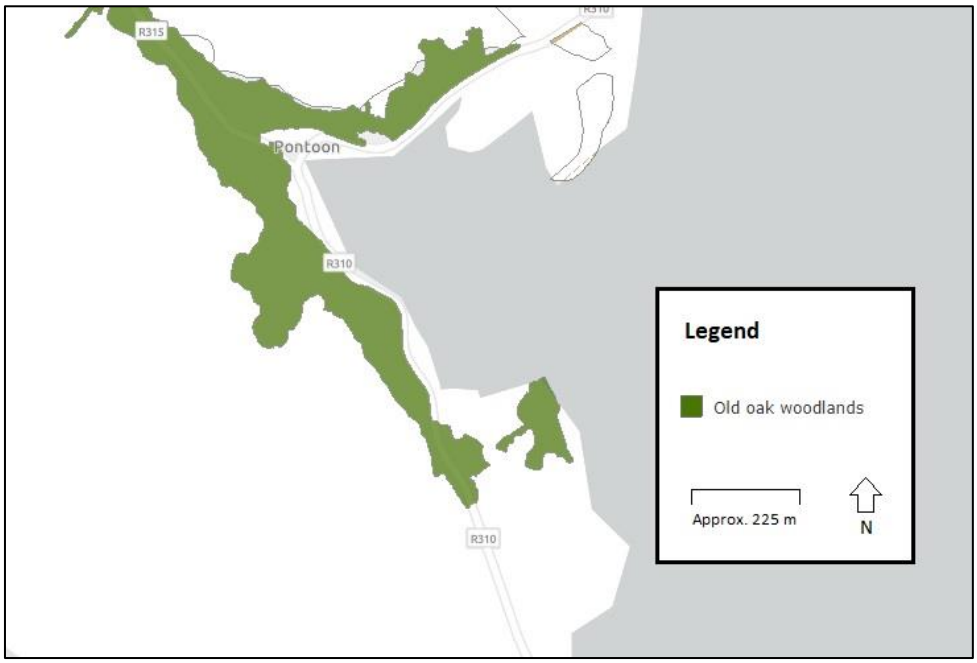


Figure 1 Location of Old oak woodland

Sessile oak (*Quercus petraea*) is the dominant tree, with an holly (*Ilex aquifolium*), downy birch (*Betula pubescens*) and hazel (*Corylus avellana*). Climbers such as honeysuckle (*Lonicera periclymenum*), and ivy (*Hedera helix)* are also present. Woods also have bilberry (*Vaccinium myrtillus*). Other species are associated with the lakeshore include rock whitebeam (*Sorbus rupicola*), aspen (*Populus tremula*), silver birch (*B. pendula*) and the shrubs guelder-rose (*Viburnum opulus*), buckthorn (*Rhamnus catharticus*) and spindle (*Euonymus europaeus*). These woods support a variety of other plants including buckler ferns (*Dryopteris aemula and D. dilatate)* and hard fern (*Blechnum spicant*) and great wood-rush (*Luzula sylvatica)*. Mosses are common and wood also support lichens and filmy ferns.

The rare Narrow-leaved Helleborine (*Cephalanthera longifolia*), protected under the Flora (Protection) Order, 2015 is said to be found here though no records appear on the National Biodiversity Data Centre database. The Plated Snail (*Spermodea lamellate*), a species associated with old natural woodlands has been recorded here (Biodiversity data centre record 2003 at G2003).

Wet woodland around lake shores

Areas of wet woodland are found around the lakes, especially along the shores of Lough Cullin, but also along some of the southern, western and northern shores of Derryhick Lough and also the northern and eastern shore of Levallinree Lough. These areas of wet woodland are dominated by willow and alder. They are important area for insects, birds, but also fish fry, which shelter under the tree branches that grow close to the water. Willows are vital for pollinators early in the spring when willow catkins provide vital source of food for bees and hoverflies emerging from hibernation. Alder seeds are an important source of food for many birds in the autumn and spring.

Riparian wood

This wood occurs in linear stripes along the rivers. All the rivers have some riparian corridors. The Clydagh has good riparian cover along the southern boundary of the site but where it turns to flow north toward Lough Cullin tree cover become more sparse.

The habitat along the Tobernagal river is more scrub-like in nature with some areas dominated with gorse, but also hawthorn and willow. The occasional ash tree also occurs. While the river was not surveyed in details, Himalayan balsam, and invasive species, was recorded in two areas along the river (M 193 994 and M 189 989).

Scrub

There are numerous areas of scrub scattered through the area. These areas are generally composed of gorse, hawthorn, bramble and willow. Scrub areas are important for wildlife.

Planted Woodlands

There are approximately eight areas of conifer plantation within the area. These are generally small blocks of no more than 20 hectares each, but many areas are smaller. These plantations are commercial forests which are primary composed of species such as Sitka spruce. They have limited biodiversity value but can provide shelter for some species.

Photograph 13 Conifer plantation and scrub

Possible area of action	Potential partners	Potential funding	Biodiversity value
Old oak wood – update survey work carried out in 2011-12	NPWS	NPWS	High
Native woodland planting – there are a number of areas that would be suitable for planting new native woodland. Engage with landowners	Forestry Service	Forestry Service – Native woodland scheme (https://forestryservices.ie/native-woodland-scheme/) E. g Belleek woods, Ballina	High
Neighbourhood Wood Scheme – this scheme aims specifically to create woodland amenity for local communities. See Appendix 5 for more details	Forestry Service (www.teagasc.ie/media/website/crops/forestry/grants/NeighbourWood-Scheme.pdf)	www.teagasc.ie/crops/forestry/grants/management-grants/neighbourwood-scheme/ E.g. Balla Woods is good local example – suggest talking with them	High

2.6 Villages

There are two villages within the area, Parke and Crimlin.

Parke, the larger of the two villages consists of a church, primary school, community centre, small housing estate, cemetery, and GAA pitches. There are several planters within the village which are maintained by the local cemetery committee. Parke has several semi-mature lime trees which have been planted in front of the community centre and also by the car park opposite the church. The green area beside the church has a beech and number of rowan trees, and a water feature that appears not to be currently used. There is an apple tree further down the path opposite the car park area. There are further mature trees through the village, including in hedgerows, the primary school and also in neighbouring farm fields.

Photograph 14 – Village of Parke

During survey work two swallow nests were recorded on the church. Common carder bees were feeding on snapdragon plants planted in the planters around the church.

Grass clippings were being piled in an area behind the community centre. Grass clippings can cause enrichment, making it more likely for docks, nettles ad brambles to take over.

Crimlin consists of a primary school and church, with a shop located approximately 900 m east of these, at the Ross West crossroads. There is less of a centre to the village and actions proposed for Parke could include Crimlin as well.

Both villages have many biodiversity assets. Of particular note, is the variety of trees and hedgerows that form part of the villages landscape, and for Parke, the proximity of the village to the picturesque Clydagh River. Many of the trees in the farmland hedgerows close to the villages are ash trees. Ash are common trees in Irish hedgerows, but ash die back is now rampant through the country. Ash dieback is a fungal disease cause by the fungus *Hymenoscyphus fraxineus.* It initially causes the outer branches and crown of the tree to die back but can quickly travel to the rest of the tree. Young trees can die within 1 to 2 years, but more mature trees are likely to die more slowly. Due to the prevalence of ash around the village the impact of tree loss could be quite significant.

Possible projects for the village	Potential partners	Potential funding	Biodiversity value
Biodiversity action plan for the villages. This could include hedgerow survey of neighbouring farms	Heritage office, Mayo Co Co	Community Foundation Biodiversity Grant	High
Tree planting within the villages. Consider collecting and growing on locally collected seeds	Parke and Crimlin Primary Schools and Forest School GAA Clubs		High
Community Orchard – look for suitable site to plant a community orchard. It may be possible to create a linear orchard in the area e.g. at Parke / Crimlin GAA club	Community Local Nurseries	Orchard for bees scheme hostinireland.com/orchards LEADER E.g Ballindine Community Orchard	High
Community composting area – Create a community composting area in the village. This can be used to compost green waste that is being dumped	Mayo Co Co Environment Section	Mayo Co Co	High
Homes for wildlife – make and install bird, bat, and insect boxes in the two villages	Parke and Crimlin Primary Schools and Forest School GAA Clubs		High
Plants for pollinators - Further planters in the community centre area and shop in Crimlin or perennial flower beds that could be planted with bee friendly perennial plants (see list of pollinator friendly plants in resources).	Cemetery committee Parke and Crimlin Primary Schools and Forest School GAA Clubs		High
Community Garden – see if there is interest in establishing a community garden if site was available	GIY	GIY LEADER E.g. Belmullet Town Garden, Straide Polytunnel	High
Verges for wildlife - Consider creating wildflower verges along some of approach roads to villages	Mayo Co Co		High
Swift boxes – install boxes in buildings in the villages	Lynda Huxley swiftconservationireland@gmail.com www.swiftconservation.ie	Mayo Co Co	High

Photograph 15 Apple tree on edge of Parke village

2.7 Other actions

Listed below are some other community actions that can help promote biodiversity in your village.

1. Check out the All-Ireland Pollinator Community Action Plan. See the following link:

   https://pollinators.ie/wordpress/wp-content/uploads/2018/04/Local-Communities_actions-to-help-pollinators-2018-WEB.pdf

2. Raise awareness among citizens and local groups of the biodiversity actions you are taking and why, through social media.
3. To establish if changes made are having a positive effect on the local biodiversity look into setting up a citizen science bumblebee and/or butterfly monitoring transect. The ideal length is a one kilometre transect which is required for this monitoring programme.
   - Bumblebee Monitoring Scheme (pollinators.ie/record-pollinators/bumblebee-monitoring-scheme/
   - Butterfly Monitoring scheme (www.biodiversityireland.ie/record-biodiversity/surveys/butterfly-monitoring-scheme/)
   - Flower – Insect Timed Count (pollinators.ie/record-pollinators/fit-count/)

3.0 Species found with the Parke / Crimlim Development Area

A search was made of the National Biodiversity Database to see what species had been recorded in the areas. In additional, casual sightings of species recorded during field visits were also noted.

The area supports a wild variety of species. Of note are the variety of rare and threatened bryophytes (mosses) recorded. The area also supports a large diversity of bird species.

Common Scoter duck

In the most recent report on Common Scoter ducks (Heffernan ML. & Hunt, J. (2022) Breeding Status of Common Scoter in Ireland, 2020. Irish Wildlife Manuals, No. 136 National Parks and Wildlife Service, Department of Housing, Local Government and Heritage, Ireland.) Lough Conn and Lough Cullin only had one pair and no broods present in 2020. The lakes had supported a stable population of around 30 pairs between 1968 and 1995 (Tierney, 2001) but by 1999 breeding number decline dramatically, with only seven pairs. Surveys found only one breeding pair in 2012 and 2020. The rapid decline of the breeding scoter population is likely to be linked to several considerable ecological changes. These include changes in fish stocks (decline in trout and increase in roach), and a serious deterioration of water quality, with water quality likely directly impacting invertebrate prey abundance.

Pollinators

Andrena coitana, a solitary bee was recorded in the townland of Levallinree in 2000. This species is classified as vulnerable. A Dingy skipper was found on the shores of Derryhick Lough in 2013. Dingy skippers are classified as “near threatened”. It is a dull speckled brown moth-like butterfly that is generally uncommon in Ireland.

Invasive Species

Himalayan Balsam, an invasive species was recorded in two locations during field visits, and is also recorded in the area on the National Biodiversity Data Centre. It is often found along riverbanks and roadside and was found along the Tobergal river. The species can spread rapidly along stream banks, with flood water spreading seeds downstream.

Zebra mussel is a highly invasive non-marine mollusc. They originate in the Caspian and Black Sea region. The zebra mussel probably arrived in Ireland in 1994 attached to the hulls of boats. There is a record of this mussel on Bunduvowen river where it exits Derryhick Lough

Photograph 16 Common carder bee recorded on knapweed

Photograph 17 Speckled wood butterflies

4.0 Resources

4.1 All Ireland Pollinator Plan Resources

All Ireland Pollinator Plan
https://pollinators.ie/

Local Community Guidelines Pollinator Plan Presentation
https://pollinators.ie/wordpress/wp-content/uploads/2018/04/Local-Community-website-presentation_2018.pdf

Gardens for pollinators presentation
https://pollinators.ie/wordpress/wp-content/uploads/2018/04/Gardens_website-presentation-2018.pdf

Collecting wildflowers guide
https://pollinators.ie/wordpress/wp-content/uploads/2018/04/How-to-guide-Seeds-2018-WEB.pdf

Managed for Wildlife Signage (see below)
https://pollinators.ie/wordpress/wp-content/uploads/2018/04/Pollinator-sign-English-2018.jpg

4.2 Other Web Resources

Wild Pollinator Gardens
https://gardensforwildpollinators.wordpress.com/

National Biodiversity Data Centre
http://www.biodiversityireland.ie

Birdwatch Ireland
http://www.birdwatchireland.ie/

Notice Nature
http://www.noticenature.ie/

Wild Flowers of Ireland
http://www.wildflowersofireland.net/

Irish Wild Flowers
http://www.irishwildflowers.ie/

Royal Horticulture Society (guides for plants for pollinators UK)
https://www.rhs.org.uk/science/conservation-biodiversity/wildlife/encourage-wildlife-to-your-garden/plants-for-pollinators

Bumblebee Conservation Trust (UK)
https://www.bumblebeeconservation.org/gardeningadvice/

Wildlife Gardening
https://sussexwildlifetrust.org.uk/discover/in-your-garden/bees

4.3 Some Suppliers for biodiversity planting

	Supplier
Perennials	• Local garden centres and nurseries • **Frogswell Nursery,** Straide, Co Mayo (visits by appointment only), Tel. 0862106166, email frogswell@gmail.com • **Moneen Garden Centre**, Castlebar, Co Mayo
Wildflower plugs	• **Mr Middleton** http://www.mrmiddleton.com (https://www.mrmiddleton.com/irish-wild-flower-plants/) • **Meadow Mania** https://www.meadowmania.ie/
Bulbs	• **Heritage Bulbs**: www.heritagegardening.com
Seed	• **Seedsavers**, Co Clare (store.irishseedsavers.ie/Organic_Fruit_Trees_s/42.htm) • **Ecoseeds** (www.ecoseeds.co.uk/products.htm) – based in N. Ireland • **Seedaholic**, Cloghbrack, Clonbur, Co. Galway, tel. 094 954 8756, www.seedaholic.com • **Thompson and Morgan** www.thompson-morgan.com/ (Mr Middleton in Dublin supplies Thompson and Morgan seeds to many garden centres - http://www.mrmiddleton.com)
Herbs	• **The Herb Garden**, Naul. Co Dublin, www.theherbgarden.ie
Trees / Shrubs	• **Turlough Nursery,** Turlough, Co Mayo (**www.turloughnursery.ie/**) Tel. 094 9022310

4.4 Pollinator friendly planting

Table showing examples of pollinator friendly perennials suitable for flower beds

Common name	***Latin name***	**Flowers**	**Comment**
Allium	*Allium* spp.	June - July	
Aquilegia	*Aquilegia vulgaris*	May - June	
Aster	*Aster ageratoides*	July - Oct	
Betony	*Betonica officinalis*	June - Sept	Also called *Stachys officinalis*
Bugle spp.	*Ajuga* spp.	March - May	
Calamint, lesser	*Nepeta nervosa*	June - Sept	
Coneflower	*Echinacea purpurea*	July - Oct	
Cornflower	*Centaurea cyanus*	June - July	Or *Centaurea montana*
Crocus	*Crocus tommasinianus*	March	
Meadow Saffron	*Colchium autumnale*	Sept-Oct	
Delphinium	Delphinium	Jun-July	
Globe thistle	*Echinops ritro*	August	
Grape Hyacinth	*Muscari armeniacum*	March-May	
Hardy Geranium	*Geranium sanguineum*	June -August	
Hellebores hybrids	*Helleborus*	April - Sept	
Jacob's Ladder	*Polemonium caeruleum*	July - August	
Japanese Anemone	*Anemone hybrid Anemone x hybrida*	July - Oct	E.g. 'Queen Charlotte', 'September Charm'
Lupins	*Lupinus*	June - July	
Oregano	*Origanum vulgare*	June - August	
Rockcress	*Arabis alpina subsp. caucasica*	April - May	
Rudbeckia	*Rudbeckia fulgida*	July-Oct	e.g. 'Early Bird Gold'
Sedum	*Sedum*	July - Oct	e.g. "Autumn Joy", *Sedum spectabile*
Snowdrops	*Galanthus nivalis, Galanthus elwesii*	Jan-Feb	
Verbena	*Verbena*	July - Oct	e.g. *Verbena bonariensis*
Wallflower	*Erysimum*	Feb - July	e.g. 'Bowles's Mauve'

Table of recommended herbs for pollinators that can be planted in beds or pots

Common name	***Latin name***	**Flowers**	**Comment**
Hyssop	*Hyssopus officinalis*	July - August	Perennial
Lavender	*Lavandula angustifolia*	July - August	Perennial
Marjoram	*Origanum majorana*	June - August	Perennial
Oregano	*Origanum vulgare*	June - August	Perennial
Thyme	*Thymus vulgaris*	May - August	Perennial

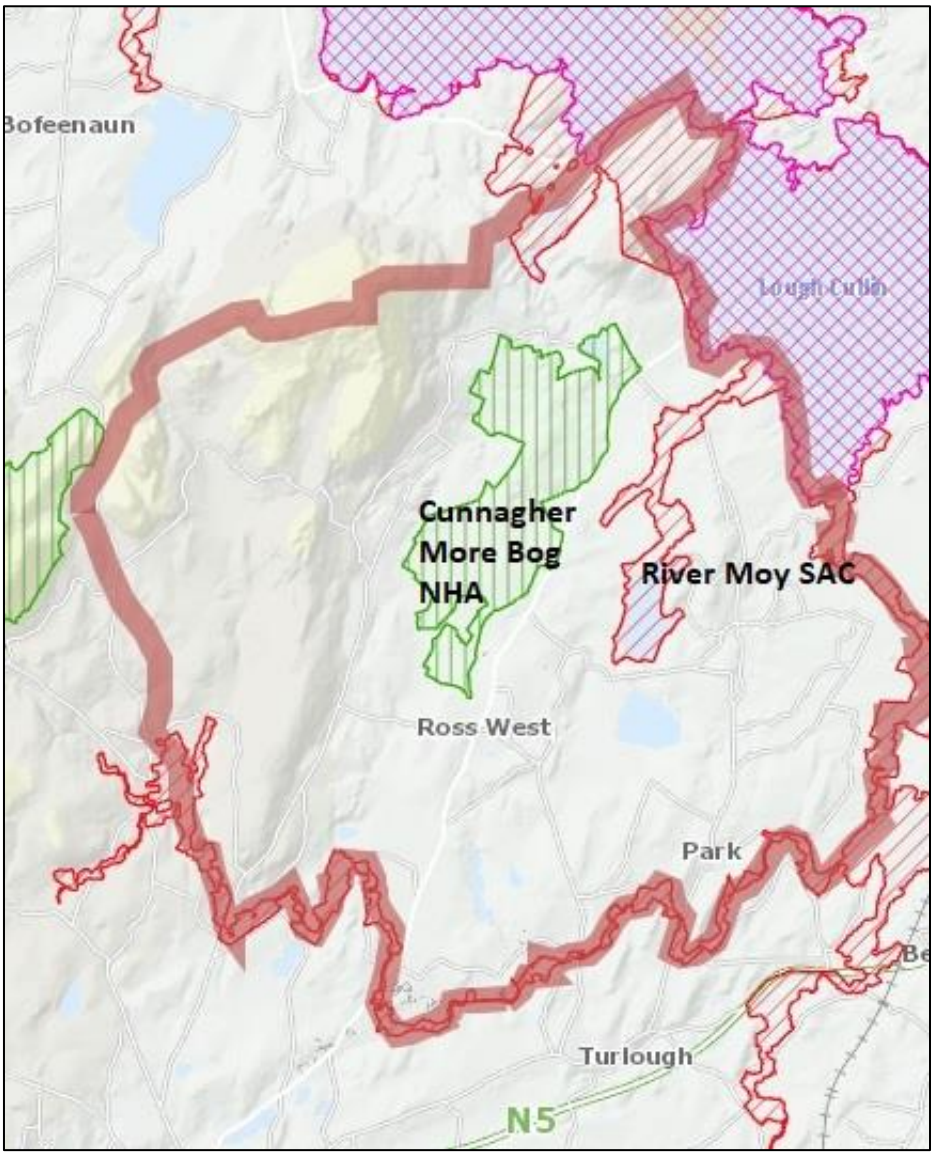
Table of pollinator friendly annual flowers that could be planted in planters / containers or beds

Common name	***Latin name***	**Flowers**	**Comment**
Cornflower	Centaurea cyanus	May - August	Annual
Cosmos	*Cosmos*	July - August	Annual
Love in the mist	*Nigella damascena*	June - August	Annual
Nasturtium	Tropaeolum	July - September	Annual
Night scented stock	Matthiola longipetala	July - September	Annual
Poppy, wild	*Papaver rhoeas*	June - August	Annual. If choosing other varieties, choose single flowers
Poppy, Californian	*Eschscholzia californica*	June - September	Single varieties
Pot marigold	*Calendula officinalis*	July - September	Annual
Scabious	*Scabiosa atropurpurea*	July - October	Annual
Snapdragon	Antirrhinum	July - September	Annual / biennial
Sunflowers, dwarf	*Helianthus annuus*	July - September	Annual, choose dwarf variety
Trailing lobelia	*Lobelia erinus*	June - September	Annual

5.0 Appendices

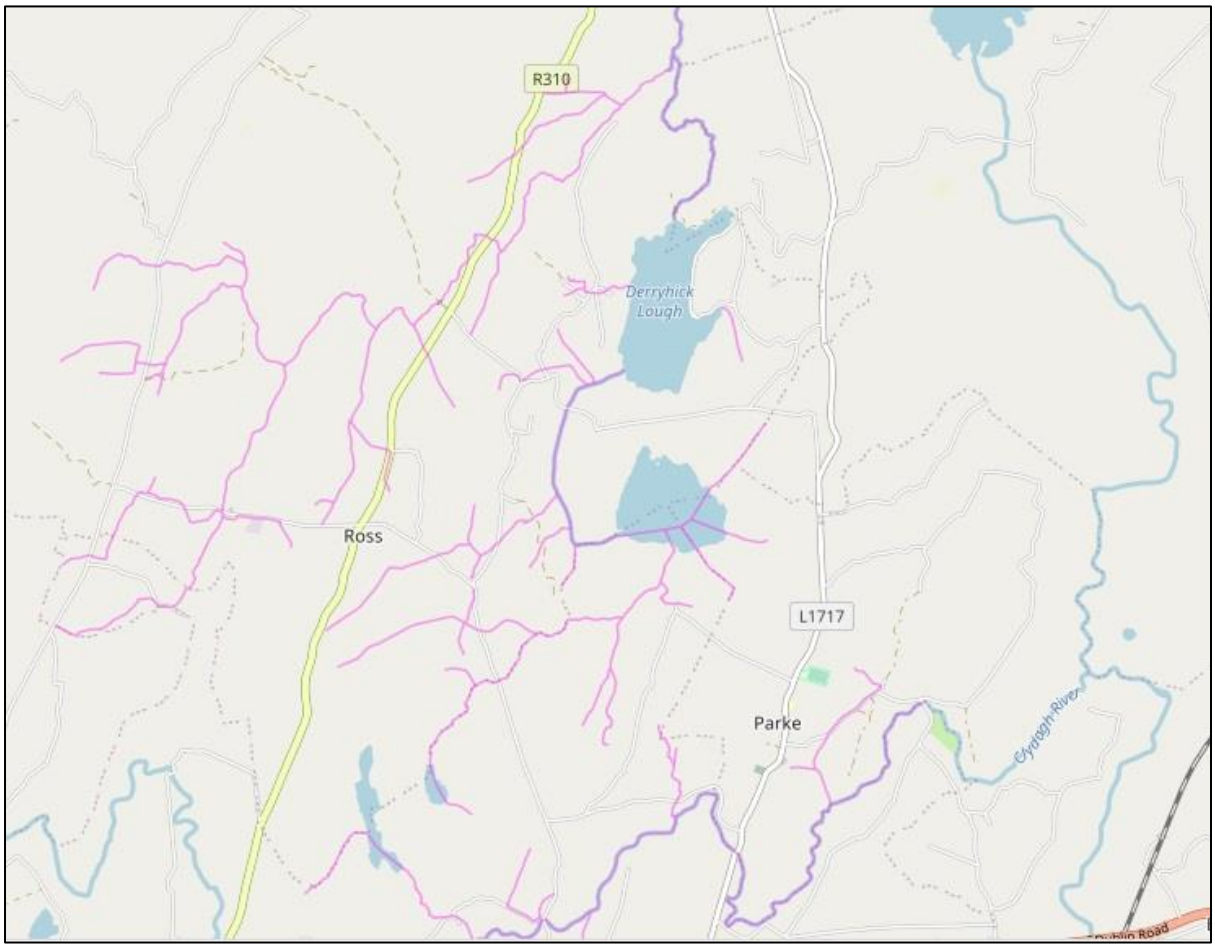
Appendix 1 Designated Areas sites within the area

Appendix 1a Natura 2000 sites



Designated Natural Heritage Areas and Special area of Conservation

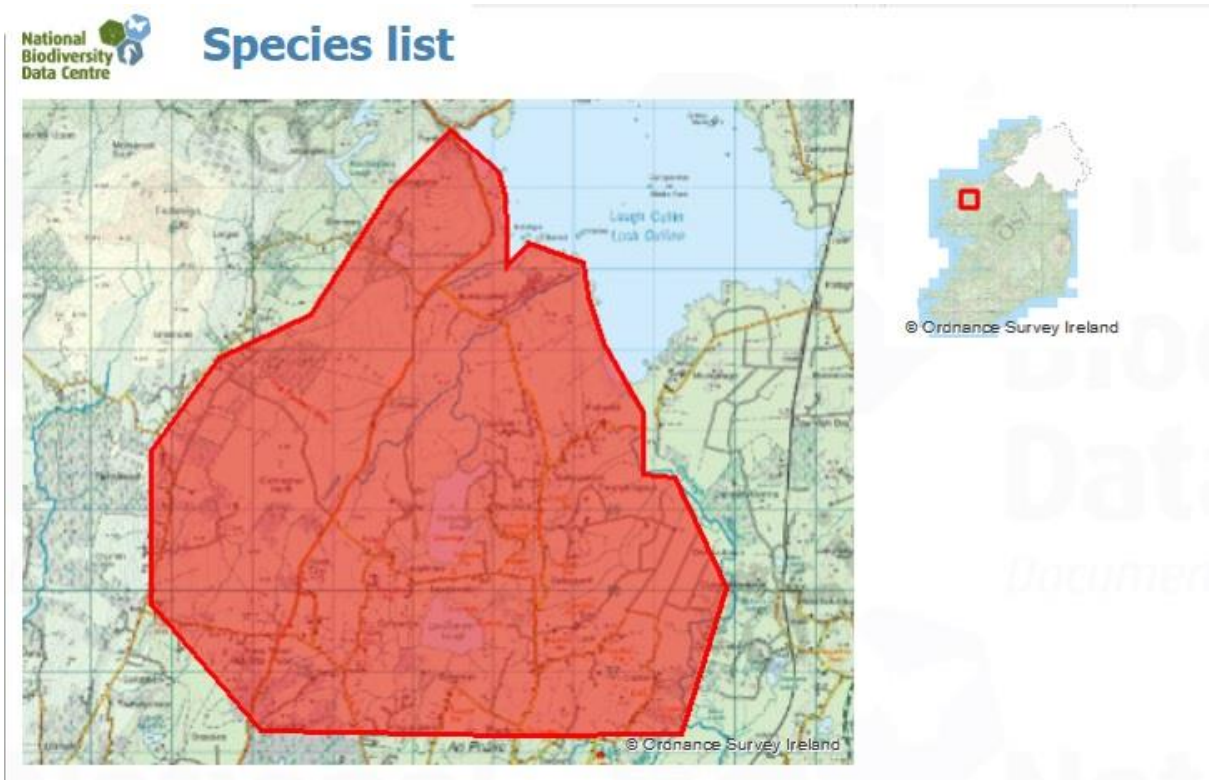
Appendix 1b High status rivers



EAP Map showing River of High Status

Appendix 2 List of species recorded in Area

Species list from the National Biodiversity data cenrte records accessed on the 21st October 2022



Species group	Species name	Record count	Date of last record	Designation
acarine (Acari)	Acari	2	02/08/2013	
alga	Ankistrodesmus	2	23/07/2003	
alga	Ceratium	1	23/07/2003	
alga	Cryptomonas	1	30/03/2001	
alga	Dictyosphaerium	1	23/07/2003	
alga	Dinobryon	1	23/07/2003	
alga	Monoraphidium	1	30/03/2001	
alga	Pediastrum	1	23/07/2003	
alga	Peridinium	1	23/07/2003	
alga	Scenedesmus	2	23/07/2003	
amphibian	Common Frog (Rana temporaria)	12	16/02/2017	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex V || Protected Species: Wildlife Acts
annelid	Helobdella stagnalis	1	30/03/2001	
annelid	Lumbricidae	2	02/08/2013	
bacterium	Anabaena	2	23/07/2003	
bacterium	Aphanizomenon flos-aquae	2	23/07/2003	
bacterium	Merismopedia	1	23/07/2003	
bird	Barn Swallow (Hirundo rustica)	1	31/07/1991	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Black-billed Magpie (Pica pica)	1	31/07/1991	

bird	Black-headed Gull (Larus ridibundus)	1	31/07/1991	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
bird	Blue Tit (Cyanistes caeruleus)	1	31/07/1991	
bird	Common Blackbird (Turdus merula)	1	31/07/1991	
bird	Common Coot (Fulica atra)	1	31/07/1991	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section II Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Common Cuckoo (Cuculus canorus)	1	05/06/2015	
bird	Common Moorhen (Gallinula chloropus)	1	31/07/1991	
bird	Common Pheasant (Phasianus colchicus)	1	31/07/1991	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section I Bird Species
bird	Common Sandpiper (Actitis hypoleucos)	2	19/05/2016	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List

bird	Common Snipe (Gallinago gallinago)	1	31/07/1991	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section III Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Common Wood Pigeon (Columba palumbus)	1	31/07/1991	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section I Bird Species
bird	Eurasian Jackdaw (Corvus monedula)	1	31/07/1991	
bird	Eurasian Teal (Anas crecca)	1	31/07/1991	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section II Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	European Robin (Erithacus rubecula)	1	31/07/1991	
bird	Great Cormorant (Phalacrocorax carbo)	1	31/07/1991	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Grey Heron (Ardea cinerea)	1	31/07/1991	
bird	Grey Wagtail (Motacilla cinerea)	1	31/07/1991	
bird	Hooded Crow (Corvus cornix)	1	31/07/1991	

bird	Mallard (Anas platyrhynchos)	1	31/07/1991	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section I Bird Species
bird	Meadow Pipit (Anthus pratensis)	1	31/07/1991	
bird	Mew Gull (Larus canus)	1	31/07/1991	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Mute Swan (Cygnus olor)	1	31/07/1991	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Northern Wheatear (Oenanthe oenanthe)	1	31/07/1991	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Ringed Plover (Charadrius hiaticula)	1	31/07/1991	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Sky Lark (Alauda arvensis)	1	31/07/1991	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List

bird	Tufted Duck (Aythya fuligula)	1	31/07/1991	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section II Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	White Wagtail (Motacilla alba)	1	31/07/1991	
bird	Winter Wren (Troglodytes troglodytes)	1	31/07/1991	
bony fish (Actinopterygii)	European Eel (Anguilla anguilla)	1	31/12/1996	Threatened Species: OSPAR Convention || Threatened Species: Critically Endangered
bony fish (Actinopterygii)	Perch (Perca fluviatilis)	1	31/12/1996	
bony fish (Actinopterygii)	Pike (Esox lucius)	1	31/12/1996	
bony fish (Actinopterygii)	Roach (Rutilus rutilus)	1	31/12/1996	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
crustacean	Asellus	1	15/07/2010	
crustacean	Asellus aquaticus	1	30/03/2001	
crustacean	Freshwater White-clawed Crayfish (Austropotamobius pallipes)	3	02/10/2007	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex V || Protected Species: Wildlife Acts
crustacean	Gammarus	4	07/08/2018	
crustacean	Gammarus duebeni	1	02/10/2007	
diatom	Asterionella formosa	2	23/07/2003	

diatom	Cyclotella	2	23/07/2003	
diatom	Fragilaria crotonensis	1	23/07/2003	
diatom	Stephanodiscus	1	23/07/2003	
diatom	Synedra	1	23/07/2003	
flatworm (Turbellaria)	Dendrocoelum lacteum	1	30/03/2001	
flowering plant	Alternate Water-milfoil (Myriophyllum alterniflorum)	1	02/10/2007	
flowering plant	Ash (Fraxinus excelsior)	1	02/10/2007	
flowering plant	Blackthorn (Prunus spinosa)	1	02/10/2007	
flowering plant	Boreau's Ramping-fumitory (Fumaria muralis subsp. boraei)	1	12/08/2018	
flowering plant	Branched Bur-reed (Sparganium erectum)	1	02/10/2007	
flowering plant	Broad-leaved Pondweed (Potamogeton natans)	1	02/10/2007	
flowering plant	Hawthorn (Crataegus monogyna)	1	02/10/2007	
flowering plant	Hazel (Corylus avellana)	1	02/10/2007	
flowering plant	Indian Balsam (Impatiens glandulifera)	1	22/04/2020	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
flowering plant	Rowan (Sorbus aucuparia)	1	02/10/2007	
flowering plant	White Ramping-fumitory (Fumaria capreolata)	1	12/08/2018	
insect - beetle (Coleoptera)	22-spot Ladybird (Psyllobora vigintiduopunctata)	1	08/10/2012	
insect - beetle (Coleoptera)	Cream-spot Ladybird (Calvia quattuordecimguttata)	1	19/04/2019	
insect - beetle (Coleoptera)	Dytiscidae	1	02/08/2013	
insect - beetle (Coleoptera)	Elmis aenea	6	07/08/2018	

insect - beetle (Coleoptera)	Esolus parallelepipedus	4	15/07/2010	
insect - beetle (Coleoptera)	Gyrinus	1	02/10/2007	
insect - beetle (Coleoptera)	Hydraenidae	4	12/09/2016	
insect - beetle (Coleoptera)	Limnius volckmari	6	07/08/2018	
insect - beetle (Coleoptera)	Orectochilus	1	30/03/2001	
insect - beetle (Coleoptera)	Oulimnius tuberculatus	3	15/07/2010	
insect - butterfly	Dingy Skipper (Erynnis tages)	3	05/06/2013	Threatened Species: Near threatened
insect - butterfly	Green Hairstreak (Callophrys rubi)	1	05/06/2013	
insect - butterfly	Green-veined White (Pieris napi)	25	12/05/2016	
insect - butterfly	Large White (Pieris brassicae)	5	05/06/2013	
insect - butterfly	Meadow Brown (Maniola jurtina)	1	25/07/2012	
insect - butterfly	Orange-tip (Anthocharis cardamines)	19	12/05/2016	
insect - butterfly	Peacock (Inachis io)	16	05/05/2016	
insect - butterfly	Ringlet (Aphantopus hyperantus)	1	25/07/2012	
insect - butterfly	Small Tortoiseshell (Aglais urticae)	1	15/04/2014	
insect - butterfly	Small White (Pieris rapae)	7	05/06/2013	
insect - butterfly	Speckled Wood (Pararge aegeria)	6	12/05/2016	
insect - caddis fly (Trichoptera)	Agraylea multipunctata	2	31/12/2013	
insect - caddis fly (Trichoptera)	Glossosomatidae	1	07/08/2018	

insect - caddis fly (Trichoptera)	Goeridae	1	07/08/2018	
insect - caddis fly (Trichoptera)	Hydropsyche	5	07/08/2018	
insect - caddis fly (Trichoptera)	Limnephilidae	4	07/08/2018	
insect - caddis fly (Trichoptera)	Mystacides longicornis	2	31/12/2013	
insect - caddis fly (Trichoptera)	Odontocerum albicorne	1	02/08/2013	
insect - caddis fly (Trichoptera)	Philopotamus	1	07/08/2018	
insect - caddis fly (Trichoptera)	Polycentropus flavomaculatus	2	31/12/2013	
insect - caddis fly (Trichoptera)	Polycentropus kingi	2	31/12/2013	
insect - caddis fly (Trichoptera)	Rhyacophila	5	07/08/2018	
insect - caddis fly (Trichoptera)	Sericostoma	3	12/09/2016	
insect - caddis fly (Trichoptera)	Sericostoma personatum	1	09/06/2018	
insect - caddis fly (Trichoptera)	Tinodes waeneri	2	31/12/2013	
insect - dragonfly (Odonata)	Banded Demoiselle (Calopteryx splendens)	1	21/07/2000	
insect - dragonfly (Odonata)	Blue-tailed Damselfly (Ischnura elegans)	1	15/07/1989	
insect - dragonfly (Odonata)	Common Blue Damselfly (Enallagma cyathigerum)	2	15/07/1989	
insect - dragonfly (Odonata)	Common Darter (Sympetrum striolatum)	2	21/07/2000	
insect - dragonfly (Odonata)	Emerald Damselfly (Lestes sponsa)	1	15/07/1989	

insect - dragonfly (Odonata)	Four-spotted Chaser (Libellula quadrimaculata)	2	15/07/1989	
insect - dragonfly (Odonata)	Keeled Skimmer (Orthetrum coerulescens)	1	15/07/1989	
insect - dragonfly (Odonata)	Large Red Damselfly (Pyrrhosoma nymphula)	1	25/05/1989	
insect - hymenopteran	Andrena (Oreomelissa) coitana	1	21/07/2000	Threatened Species: Vulnerable
insect - hymenopteran	Heath Bumble Bee (Bombus (Pyrobombus) jonellus)	1	13/07/1973	
insect - hymenopteran	Small Garden Bumble Bee (Bombus (Megabombus) hortorum)	1	13/07/1973	
insect - mayfly (Ephemeroptera)	Alainites muticus	1	07/08/2018	
insect - mayfly (Ephemeroptera)	Angler's Curse (Caenis luctuosa)	1	30/03/2001	
insect - mayfly (Ephemeroptera)	Baetis	4	12/09/2016	
insect - mayfly (Ephemeroptera)	Centroptilum luteolum	1	30/03/2001	
insect - mayfly (Ephemeroptera)	Ecdyonurus	5	07/08/2018	
insect - mayfly (Ephemeroptera)	Ecdyonurus dispar	1	31/12/1951	
insect - mayfly (Ephemeroptera)	Green Drake (Ephemera danica)	4	31/12/1977	
insect - mayfly (Ephemeroptera)	Heptagenia	2	12/09/2016	
insect - mayfly (Ephemeroptera)	Procloeon bifidum	1	30/03/2001	Threatened Species: Vulnerable
insect - mayfly (Ephemeroptera)	Rhithrogena	1	02/10/2007	

insect - mayfly (Ephemeroptera)	Serratella ignita	3	07/08/2018	
insect - moth	Beautiful Snout (Hypena crassalis)	1	30/06/1952	
insect - moth	Common Heath (Ematurga atomaria)	2	19/05/2011	
insect - moth	Crambus lathoniellus	1	23/05/2008	
insect - moth	Dark-barred Twin-spot Carpet (Xanthorhoe ferrugata)	1	23/05/2008	
insect - moth	Glaucous Shears (Papestra biren)	1	23/05/2008	
insect - moth	Grey Scalloped Bar (Dyscia fagaria)	1	23/05/2008	
insect - moth	Scorched Wing (Plagodis dolabraria)	1	30/06/1952	
insect - moth	Small Engrailed (Ectropis crepuscularia)	1	23/05/2008	
insect - orthopteran	Common Green Grasshopper (Omocestus viridulus)	1	31/12/1989	
insect - orthopteran	Common Ground-hopper (Tetrix undulata)	1	31/12/1989	
insect - orthopteran	Field Grasshopper (Chorthippus brunneus)	1	31/12/1989	
insect - orthopteran	Large Marsh Grasshopper (Stethophyma grossum)	1	31/12/1989	
insect - orthopteran	Mottled Grasshopper (Myrmeleotettix maculatus)	1	31/12/1989	
insect - stonefly (Plecoptera)	Amphinemura	2	15/07/2010	
insect - stonefly (Plecoptera)	Leuctra	3	07/08/2018	
insect - stonefly (Plecoptera)	Protonemura	1	07/08/2018	

insect - true bug (Hemiptera)	Corixidae	1	02/08/2013	
insect - true bug (Hemiptera)	Gerridae	1	02/10/2007	
insect - true fly (Diptera)	Ceratopogonidae	1	30/03/2001	
insect - true fly (Diptera)	Chironomidae	5	07/08/2018	
insect - true fly (Diptera)	Dicranota	4	07/08/2018	
insect - true fly (Diptera)	Diptera larva (Diptera)	1	30/03/2001	
insect - true fly (Diptera)	Simuliidae	5	07/08/2018	
liverwort	Bog-moss Flapwort (Odontoschisma sphagni)	1	31/08/1976	Threatened Species: Least concern
liverwort	Chiloscyphus polyanthos	1	02/10/2007	Threatened Species: Least concern
liverwort	Dilated Scalewort (Frullania dilatata)	1	04/07/2012	Threatened Species: Least concern
liverwort	Even Scalewort (Radula complanata)	1	04/07/2012	Threatened Species: Least concern
liverwort	Greasewort (Aneura pinguis)	1	04/07/2012	Threatened Species: Least concern
liverwort	White Earwort (Diplophyllum albicans)	1	31/08/1976	Threatened Species: Least concern
mollusc	Ancylus fluviatilis	1	12/09/2016	
mollusc	Brown Lipped Snail (Cepaea (Cepaea) nemoralis)	1	18/07/2003	
mollusc	Common Bithynia (Bithynia (Bithynia) tentaculata)	1	18/07/2003	
mollusc	Common Bladder Snail (Physa fontinalis)	1	18/07/2003	
mollusc	Crystal Snail (Vitrea crystallina)	1	18/07/2003	

mollusc	Dwarf Pond Snail (Galba (Galba) truncatula)	1	18/07/2003	
mollusc	Dwarf Snail (Punctum (Punctum) pygmaeum)	1	18/07/2003	
mollusc	Eccentric Grass Snail (Vallonia cf. excentrica)	1	18/07/2003	
mollusc	Euconulus	1	18/07/2003	
mollusc	Globular Pea Mussel (Pisidium hibernicum)	1	18/07/2003	Threatened Species: Near threatened
mollusc	Great Pond Snail (Lymnaea (Lymnaea) stagnalis)	1	18/07/2003	
mollusc	Henslow's Pea Mussel (Pisidium henslowanum)	1	18/07/2003	
mollusc	Horny Orb Mussel (Sphaerium corneum)	1	18/07/2003	
mollusc	Jenkins' Spire Snail (Potamopyrgus antipodarum)	4	07/08/2018	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species
mollusc	Large Amber Snail (Succinea putris)	1	18/07/2003	
mollusc	Lymnaea (Stagnicola) fuscus	1	18/07/2003	
mollusc	Margined Ramshorn (Planorbis planorbis)	1	18/07/2003	
mollusc	Marsh Slug (Deroceras (Deroceras) laeve)	1	18/07/2003	
mollusc	Pfeiffer's Amber Snail (Oxyloma (Oxyloma) elegans)	1	18/07/2003	
mollusc	Pisidium	1	02/08/2013	
mollusc	Planorbis	1	02/08/2013	
mollusc	Rayed Glass Snail (Nesovitrea (Perpolita) hammonis)	1	18/07/2003	
mollusc	Shining Pea Mussel (Pisidium nitidum)	1	18/07/2003	

mollusc	Shiny Glass Snail (Zonitoides (Zonitoides) nitidus)	1	18/07/2003	
mollusc	Short-ended Pea Mussel (Pisidium subtruncatum)	1	18/07/2003	
mollusc	Short-toothed Herald Snail (Carychium minimum)	1	18/07/2003	
mollusc	Slippery Moss Snail (Cochlicopa cf. lubrica)	1	18/07/2003	
mollusc	Smooth Grass Snail (Vallonia pulchella)	1	18/07/2003	Threatened Species: Vulnerable
mollusc	Strawberry Snail (Trochulus (Trochulus) striolatus)	1	18/07/2003	
mollusc	Wandering Snail (Radix balthica)	2	02/08/2013	
mollusc	Zebra Mussel (Dreissena (Dreissena) polymorpha)	1	19/05/2016	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
moss	Bird's-claw Beard-moss (Barbula unguiculata)	1	04/07/2012	Threatened Species: Least concern
moss	Bird's-foot Wing-moss (Pterogonium gracile)	1	04/07/2012	Threatened Species: Least concern
moss	Blunt-leaved Bog-moss (Sphagnum palustre)	2	04/07/2012	
moss	Broom Fork-moss (Dicranum scoparium)	1	04/07/2012	Threatened Species: Least concern
moss	Bryum dichotomum	1	04/07/2012	Threatened Species: Least concern
moss	Campylium stellatum var. stellatum	1	04/07/2012	
moss	Chalk Comb-moss (Ctenidium molluscum)	1	04/07/2012	
moss	Common Cord-moss (Funaria hygrometrica)	1	04/07/2012	Threatened Species: Least concern

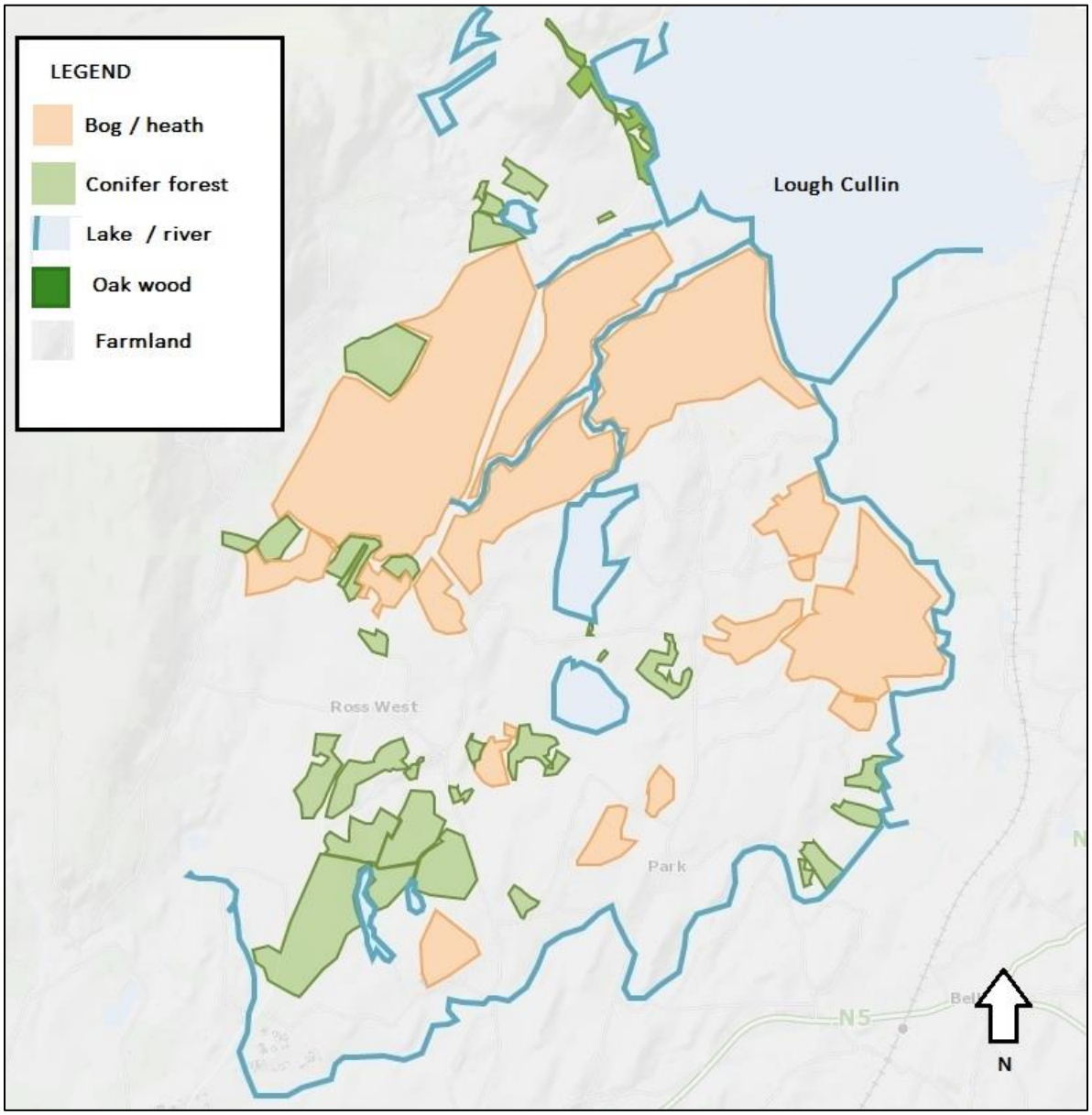
moss	Common Tamarisk-moss (Thuidium tamariscinum)	1	04/07/2012	Threatened Species: Least concern
moss	Cow-horn Bog-moss (Sphagnum denticulatum)	2	31/08/1976	Threatened Species: Least concern
moss	Creeping Feather-moss (Amblystegium serpens)	1	04/07/2012	
moss	Cylindric Beard-moss (Didymodon insulanus)	1	04/07/2012	Threatened Species: Least concern
moss	Dusky Beard-moss (Didymodon luridus)	1	04/07/2012	Threatened Species: Least concern
moss	Fallacious Beard-moss (Didymodon fallax)	1	04/07/2012	Threatened Species: Least concern
moss	Feathery Bog-moss (Sphagnum cuspidatum)	1	31/08/1976	Threatened Species: Least concern
moss	Fern-leaved Hook-moss (Cratoneuron filicinum)	1	04/07/2012	Threatened Species: Least concern
moss	Flat-topped Bog-moss (Sphagnum fallax)	1	04/07/2012	Threatened Species: Least concern
moss	Frizzled Crisp-moss (Tortella tortuosa)	1	04/07/2012	Threatened Species: Least concern
moss	Frizzled Pincushion (Ulota phyllantha)	1	04/07/2012	Threatened Species: Least concern
moss	Glittering Wood-moss (Hylocomium splendens)	1	04/07/2012	Threatened Species: Least concern
moss	Hooked Scorpion-moss (Scorpidium scorpioides)	1	04/07/2012	Threatened Species: Least concern
moss	Intermediate Hook-moss (Drepanocladus cossonii)	1	04/07/2012	Threatened Species: Least concern
moss	Isothecium myosuroides var. myosuroides	1	04/07/2012	Threatened Species: Least concern
moss	Lesser Bird's-claw Beard-moss (Barbula convoluta)	1	04/07/2012	Threatened Species: Least concern
moss	Lesser Cow-horn Bog-moss (Sphagnum inundatum)	2	31/08/1976	Threatened Species: Least concern

moss	Marsh Bryum (Bryum pseudotriquetrum)	1	04/07/2012	
moss	Neat Feather-moss (Scleropodium purum)	1	04/07/2012	Threatened Species: Least concern
moss	Pale Glaucous Thread-moss (Pohlia wahlenbergii)	1	04/07/2012	
moss	Pale Thread-moss (Bryum pallens)	1	04/07/2012	Threatened Species: Least concern
moss	Palustriella commutata var. falcata	1	04/07/2012	
moss	Papillose Bog-moss (Sphagnum papillosum)	1	31/08/1976	Threatened Species: Least concern
moss	Pointed Spear-moss (Calliergonella cuspidata)	1	04/07/2012	Threatened Species: Least concern
moss	Redshank (Ceratodon purpureus)	1	04/07/2012	Threatened Species: Least concern
moss	Rigid Beard-moss (Didymodon rigidulus)	3	04/07/2012	Threatened Species: Least concern
moss	River Feather-moss (Brachythecium rivulare)	1	04/07/2012	Threatened Species: Least concern
moss	Rock Pocket-moss (Fissidens dubius)	1	04/07/2012	Threatened Species: Least concern
moss	Rough-stalked Feather-moss (Brachythecium rutabulum)	1	04/07/2012	Threatened Species: Least concern
moss	Rusty Hook-moss (Drepanocladus revolvens)	1	04/07/2012	
moss	Silky Wall Feather-moss (Homalothecium sericeum)	1	04/07/2012	Threatened Species: Least concern
moss	Silver-moss (Bryum argenteum)	1	04/07/2012	Threatened Species: Least concern
moss	Slender Bristle-moss (Orthotrichum tenellum)	4	04/07/2012	Threatened Species: Least concern
moss	Smaller Lattice-moss (Cinclidotus fontinaloides)	1	04/07/2012	Threatened Species: Least concern

moss	Springy Turf-moss (Rhytidiadelphus squarrosus)	1	04/07/2012	Threatened Species: Least concern
moss	Tree-moss (Climacium dendroides)	1	04/07/2012	Threatened Species: Least concern
moss	Variable Forklet-moss (Dicranella varia)	1	04/07/2012	Threatened Species: Least concern
moss	Verdigris Tufa-moss (Gymnostomum aeruginosum)	1	04/07/2012	Threatened Species: Least concern
moss	Wall Screw-moss (Tortula muralis)	1	04/07/2012	Threatened Species: Least concern
moss	Wood Bristle-moss (Orthotrichum affine)	1	04/07/2012	Threatened Species: Least concern
terrestrial mammal	Brown Long-eared Bat (Plecotus auritus)	1	25/05/2009	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
terrestrial mammal	Brown Rat (Rattus norvegicus)	1	24/04/2012	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
terrestrial mammal	Daubenton's Bat (Myotis daubentonii)	1	25/05/2009	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
terrestrial mammal	Eurasian Badger (Meles meles)	5	31/12/2009	Protected Species: Wildlife Acts
terrestrial mammal	European Otter (Lutra lutra)	4	07/02/2017	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
terrestrial mammal	European Rabbit (Oryctolagus cuniculus)	1	27/02/2013	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species
terrestrial mammal	Feral Goat (Capra hircus)	1	14/02/2012	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species

terrestrial mammal	House Mouse (Mus musculus)	1	22/11/2011	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species
terrestrial mammal	Irish Hare (Lepus timidus subsp. hibernicus)	6	17/12/2014	
terrestrial mammal	Irish Stoat (Mustela erminea subsp. hibernica)	1	10/11/2012	
terrestrial mammal	Pine Marten (Martes martes)	1	11/02/2020	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex V || Protected Species: Wildlife Acts
terrestrial mammal	Red Fox (Vulpes vulpes)	5	16/12/2018	
terrestrial mammal	Soprano Pipistrelle (Pipistrellus pygmaeus)	1	25/05/2009	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
terrestrial mammal	West European Hedgehog (Erinaceus europaeus)	1	30/04/2012	Protected Species: Wildlife Acts

Appendix 3 Habitat Map



Appendix 4 NeighbourWood Scheme

What is the NeighbourWood Scheme?

The NeighbourWood Scheme offers financial assistance to create woodland amenities for local people. Funding is available to help establish woodland on greenfield sites.

Neighbourwoods can be used by the community for strolling, family visits and picnics, exercising and a host of other outdoor activities.

The scheme is available to both public and private landowners who work in partnership with local communities.

Applications are assessed by the Forest Service based on criteria such as how much the site is used or is likely to be used by the community. A range of factors are evaluated such as the level of community partnership and the focus on providing environmental education.

Funding is available under three separate elements, the most appropriate for your community is funding to set-up of new Neighbourwood on open greenfield sites

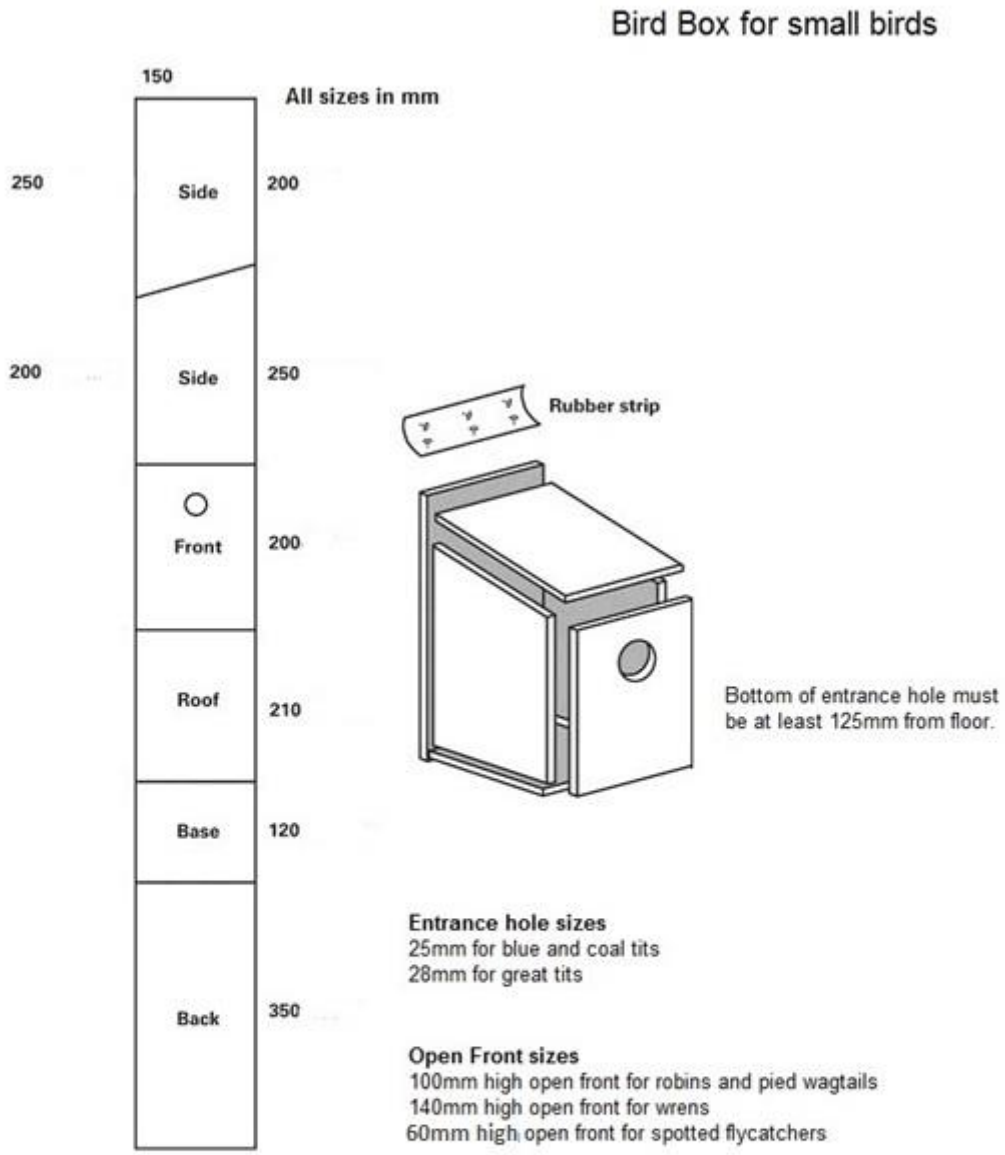
The NeighbourWood Scheme offers funding of up to 85% of eligible costs (exclusive of VAT). The maximum available grant under each element – payable as a single installment – is as follows:

- Neighbourwood Establishment: €5,000 per hectare (plus an additional fencing allowance, as under the Afforestation Scheme
- Neighbourwood Enhancement: €5,000 per hectare
- Neighbourwood Facilities: €3,800 per hectare

Individual applications can comprise establishment and enhancement either alone or in combination subject to a limit of 12 hectares in total, along with facilities subject to a limit of 12 hectares.

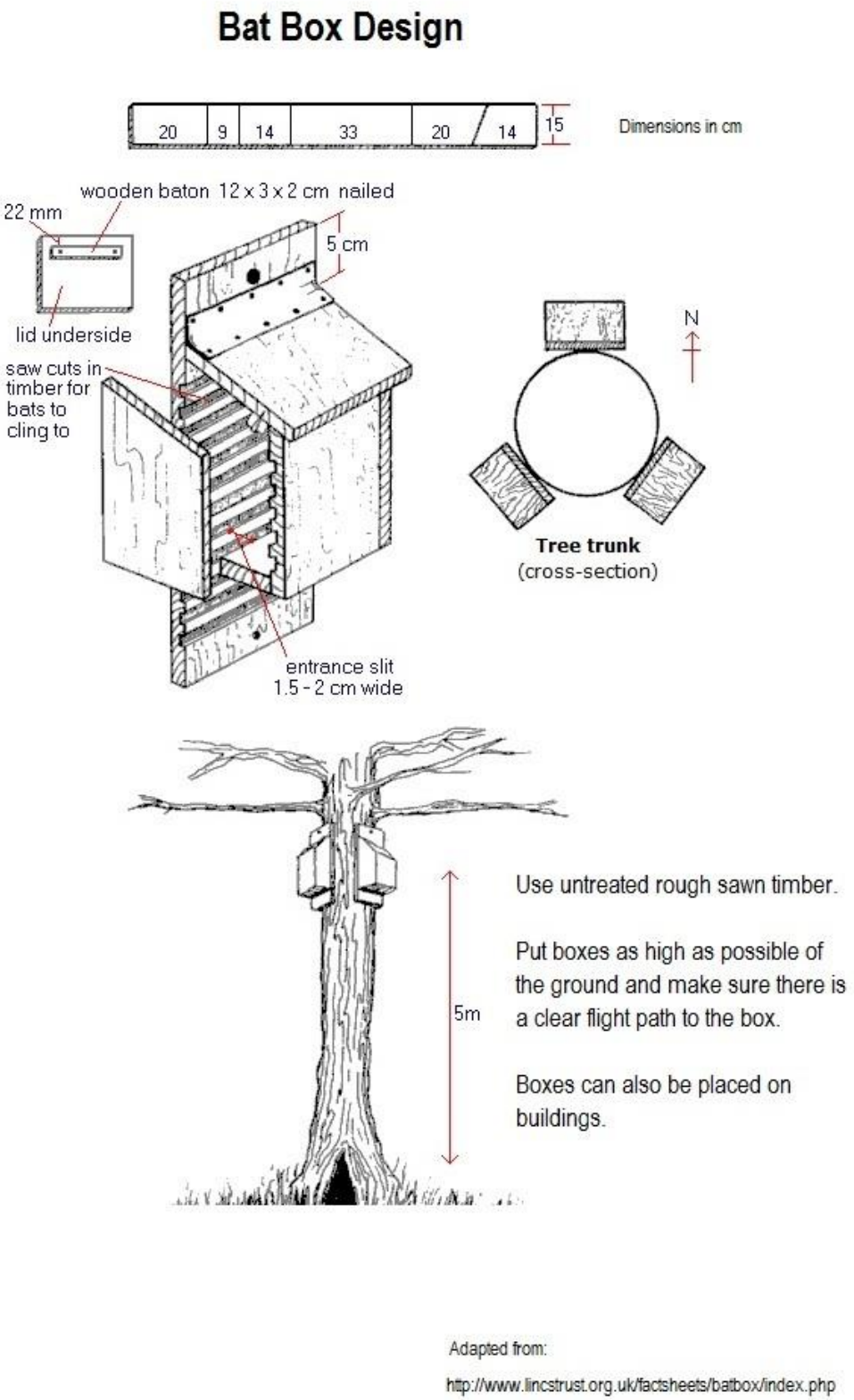
For more information see
https://www.gov.ie/en/service/2c9879-neighbourwood-scheme/

Appendix 5 Bird box plan



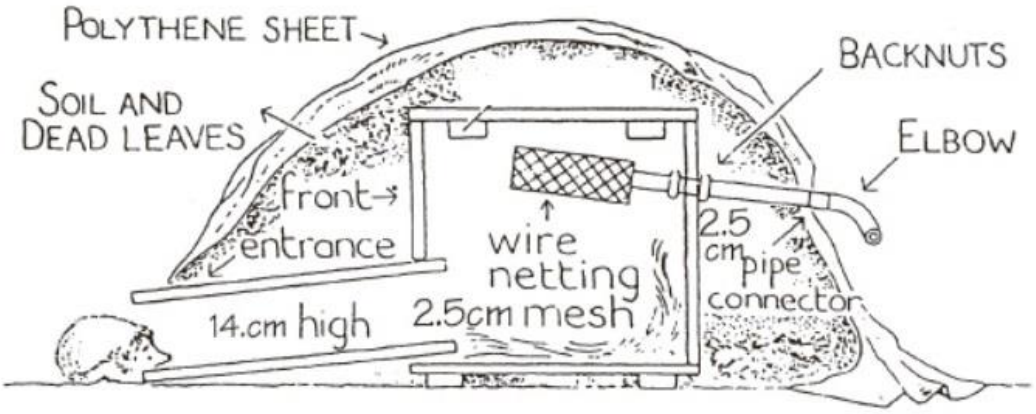
Adapted from www.rspb.co.uk

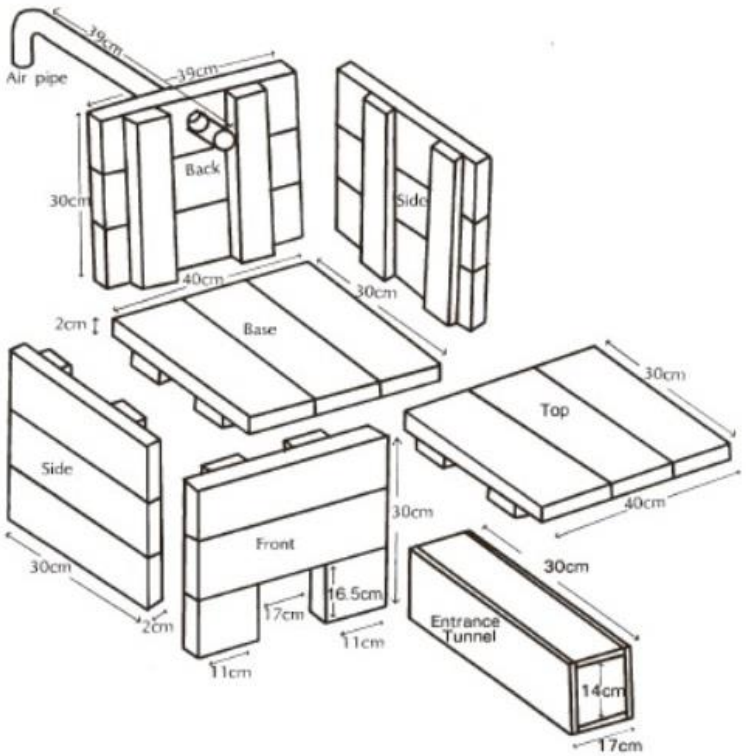
Appendix 6 Instructions to make a bat box



Appendix 7 Instructions to make a hedgehog box

Adapted from - www.hedgehogstreet.org





Appendix 8 Making a compost bin from wooden pallets

https://www.gardenersworld.com/how-to/diy/how-to-build-a-compost-bin/

Spade or rake
Strong wooden pallets (four)
Sturdy wooden stakes (six)
Sledgehammer
Bow saw
Strong wire

Step 1
Clear the area where you're going to put the compost bin and, if necessary, level the ground using a spade or a rake. You need to stand the bin on bare soil, not paving. Add a base of chicken wire if you are worried about rats getting in.

Step 2
Take a pallet and stand it on its long edge to form the back edge of the compost bin. Push a stake through the two layers of the pallet at either end, using a sledgehammer to drive them firmly into the ground – about 20-30cm deep.

Step 3
Position the remaining two pallets at right angles to the first to make the sides, butting the corners tightly together to stop compost spilling through the gaps. Fix in place with stakes in each corner, as in step 2.

Step 4
To keep the structure stable, wire or screw the pallets together at each corner. Trim the tops of the stakes with a bow saw.

Step 5
Wire the last pallet onto the front of the right side pallet to make a gate – you'll need to open it when you want to get to the compost – and start filling your bin with garden and kitchen waste.

Cover your bin and keep it moist
Cover your bin with carpet to keep it warm – this will help to speed up the composting process. And check that it is moist – you may need to water it lightly in warm weather

Biodiversity of Parke / Crimlin Community Development Area, Co Mayo

December 2022

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