



Moy Estuary and Ballina to Killala Greenway, Co. Mayo

Biodiversity Action Plan 2023-2027

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Contents

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Ecologist Contact Details: Dr Catherine O'Connell, email: cajohnfz@gmail.com, Tel: 086-3363188

Cover Photos: Top row from left to right: Wet grassland habitat at Corimla North, Ballina to Killala Greenway at Meelick Bridge and wild flower meadow on the banks of the River Moy at Crillaun Bottom Car Park. Bottom row from left to right: Castleconor above the River Moy Estuary, bumblebee on red clover at Carrick, Attymas, Co. Mayo.
Photos: © J. FitzGerald and C. O'Connell

Acknowledgements

Thanks to The Community Foundation for Ireland for funding provided under the Environment and Nature Fund 2022 to allow the development of this Biodiversity Action Plan for eleven sites associated with the River Moy, the River Brusna and the Ballina to Killala Greenway.

I am grateful to River Moy Search and Rescue Ballina for the invitation to work with them over the past year. I also wish to thank all of the members of the community who met with me on field survey days. These are Eugene FitzGerald of Carrick and John Ruane of the East Moy Anglers Association. I am grateful to all those members of the community who took the time to speak to me on the telephone and who provided much information about the sites included in this plan. These are Michael Mc Kenzie, Gary Smyth, John Ruane, Eugene FitzGerald and Shane Loftus. I am endebted to Vincent Lang of the River Moy Search and Rescue for the keen interest he has shown in all aspects of this project and for the work that he undertakes for biodiversity and communities. I wish to thank Oisín Duffy from the National Biodiversity Data Centre for his assistance with the identification of invertebrates. I am also grateful to Eamonn Delaney of the Botanical Society of the British Isles for his assistance with plant identification. I am grateful to John FitzGerald for his assistance on field work and for the use of his photographs in this report.

1. Executive Summary

The Moy Estuary and Ballina to Killala Greenway, Co. Mayo Biodiversity Action Plan 2023-2027 is supported by the Community Foundation for Ireland and is an initiative of River Moy Search and Rescue Ballina.

A diverse range of 11 sites were chosen for survey in this biodiversity study within the catchment and estuary of the River Moy. These included farmland, garden, river margin, historic buildings, lakeshore, greenway (on disused railway line), cutover bog and estuary. For each site the species and habitat richness were recorded.

551 species records of plants, birds, insects and animals were collected during the biodiversity field surveys undertaken in May, July and August 2023. These will be submitted to the National Biodiversity Data Centre and will be available for consultation by members of the public at any time. They are included in Appendix 2 of this report.

At each site the habitats present were described and classified according to the national code system developed by Fossitt (see https://heritagemaps.ie/documents/fossittclassification_heritagemaps.pdf). Freshwater, cultivated and built land, grassland, woodland and scrub, peatland and coastland habitats were included across the different sites. The specific habitats identified were drainage ditches FW4, horticultural land BC2, stone walls BL1, buildings and artificial surfaces BL3, improved agicultural grassland GA1, amenity grasland GA2, dry meadows and grassy verges GS2, wet grassland GS4, recolonising bare ground ED3, ponds FL8, wet willow-alder-ash woodland WN6, scrub WS1, ornamental non native shrub beds WS3, hedgerows WL1, cutover bog BP4 and tidal rivers CW2/salt marsh CM.

79 biodiversity enhancement actions are proposed in this plan. The key issues to be tackled across the sites are as follows:

- Reducing the mowing of grassland to create wild flower meadow is a common theme across many of the sites. Fencing off grassland strips on the farms examined to exclude grazing and provide space for wild flowers for pollinators and create wildlife corridors is a similar objective.

- Replacing missing hedges or planting new hedges is also a recommendation for a number of sites. The correct management of hedges for wildlife is also another recommendation across a number of sites.

- In addition to undertaking new actions, retaining existing wildlife rich areas and allowing time for species to naturally colonise disturbed areas are equally important.

- Disposal of grass clippings is an issue on a number of sites. Installation of composting zones on sites and/or the use of mulching mowers are practical solutions that will eliminate the issue of grass clipping collection and disposal.

- For the farmland located along the Brusna river and Ballymore Lake where animals are grazing, the installation of Aquamat pasture pumps is recommended to prevent damage to the river and lakeshore marginal habitats through trampling and pollution of the waterways from soil erosion and animal waste. These are available from https://www.odonovaneng.ie/product/aquamat-pasture-pump/.

The biodiversity actions proposed in this plan can be achieved if River Moy Search and Rescue Ballina package them in themes and seek funding for a suite of actions across a different range of sites. Suggested funding sources are provided in Chapter 7 of this plan.

To achieve the biodiversity enhancement actions in this plan, landowner and community engagement will be essential.

It is also important to engage landowners in monitoring the difference their actions make through a variety of citizen science initiatives such as FIT surveys, pond dipping and butterfly monitoring. Further information in Chapter 4. Training for community may be needed and funding should be sought to provide courses in the locality.

The complete biodiversity survey and recommendations for each site is presented in Chapter 6 of this plan. Each section can be outputted and provided to the different land owners involved.

2. Introduction

This Biodiversity Action Plan 2023-2027 for eleven sites within the Moy Estuary and for the Ballina to Killala Greenway has been created as an initiative of River Moy Search and Rescue Ballina. The project is funded by The Community Foundation for Ireland. This funding allowed the River Moy Search and Rescue Ballina to employ Dr Catherine O'Connell as an ecologist to develop the Biodiversity Action Plan, devise actions to maintain and enhance local biodiversity and to help the community to gain a better understanding of the biodiversity importance of the varied sites studied.

River Moy Search and Rescue Ballina

River Moy Search and Rescue is a non-profit voluntary organisation. The search and rescue service they provide was established on 5th May 2011. It is based at The Old Quay School in Ballina. The group is also a search and recovery organisation. The objectives of the group are:

- to perform search and recovery work on the River Moy in Ballina
- to combat the problem of marine litter and to improve the marine environment
- to promote all of the skills used in searches as sport.

Members regularly participate in recreational sport together, particularly diving and kayaking. They are also involved in a number of high profile environmental projects. They have signed up to the Ballina Green Town Charter and in this regard in addition to their work combating marine litter they are also focused on Belleek Woods, the Ballina to Killala Greenway and the River Moy Estuary. They have a number of on-going and completed projects taking place. These include:

- A project to combat the annual summer algal blooms in the Belleek Woods Duck Pond - on-going
- A study to map petryfying springs in the woods and assess their conservation status 2021. See: https://rivermoysearchandrescue.files.wordpress.com/2021/12/conservation-assessment-of-petrifying-springs-in-the-moy-estuary-2021.pdf.
- A project to develop an amenity wildflower meadow on the banks of the River Moy - on-going
- Monitoring of Red Squirrels in the woods - on-going
- Restoration feasibility studies on listed buildings - on-going
- Developing a Biodiversity Action Plan for Belleek Woods 2022-2026.
- Attracting a funding award from the Community Foundation for Ireland 2022 to develop a Biodiversity Action Plan sites within the River Moy Estuary and the Ballina to Killala Greenway.

Contact Details

River Moy Search and Rescue,
The Old Quay School, Ballina, County Mayo, F26EW63
e-mail: ballinamoyrescue@gmail.com
Website: https://rivermoysearchandrescue.com
CHY 19910

3. Methods

Meetings and Project Management
Regular email and phone calls were conducted throughout the project with River Moy Search and Rescue and with the landowners of the various sites visited.

Study Sites
Following discussions over the phone, 11 sites were chosen for study. At these sites the ecologist would determine the biodiversity present and make recommendations on its enhancement or maintenance. A map was drawn up of the location of the sites and approved by the River Moy Search and Rescue.

Biodiversity Field Visits
Field visits were undertaken to document the habitats and species present in the study sites with a view to mapping the information and making recommendations on biodiversity enhancement and maintenance. These took place on 17th and 18th May, 30th and 31st July and 1st August 2023.

Desk Top Studies
A desk top study was undertaken to establish information in the public domain about each biodiversity study site, its history, archaeology, habitats and biodiversity. Information was searched on the websites of the following groups, all of which have map viewer facilities: National Biodiversity Data Centre website (biodiversityireland.ie), the National Parks and Wildlife Service (npws.ie), Ordnance Survey Ireland (osi.ie), Archaeology Ireland (archaeology.ie) and Wetland Surveys Ireland (https://www.wetlandsurveys.ie).

Biodiversity Survey Work Sheet
A field recording sheet for biodiversity was developed for the project and is presented in Appendix 1. The information collected at each study site was as follows: plants, animals and birds present, invasive species, threats, land management, habitat description and classification, biodiversity enhancement recommendations, soil type and location co-ordinates.

Community Engagement
Personal contact was made with all landowners or their representatives involved in the 11 sites surveyed. The project background was explained and landowners were very helpful in providing information on how the lands were used and managed. In the field some landowners or their representatives accompanied the ecologist and discussed problems and successes in relation to wildlife and pollinators at the sites. Regular contact was maintained with River Moy Search and Rescue to outline findings and recommendations throughout the project.

National Biodiversity Data Centre
Species data recorded on this survey have been lodged with the National Biodiversity Data Centre in the format recommended (see Appendix 2). Contact was made directly to the NBDC in relation to species identification issues. In addition contact was made with the Botanical Society of the British Isles in relation to plant identifications.

4. What is Biodiversity?

Biodiversity is the variety of living things around us, from mammals and birds to plants and microbes, and the habitats they live in. It is a term used to mean wildlife, but more inclusive, as wildlife is often thought to refer to animals only.

The biodiversity of a site or locality is the range of species found there. A green space in any housing estate includes the familiar biodiversity of the blackbird and the robin, ducks, butterflies and the trees and grass, as well as many hundreds of species of smaller, more elusive and less familiar species such as bats, hoverflies, molluscs and fungi.

The Value of Biodiversity

Biodiversity is a key component of vibrant, rich and attractive open spaces in villages and the surrounding countryside. The values of biodiversity are listed in Table 1. Biodiversity value is reflected in the way that habitats, parks and green spaces are managed. People want nature in their public spaces and want to get involved in its management. Success will be the result of leadership, teamwork and commitment. What to aim for is that the care of parks, habitats and open spaces is informed by ecological principles. The result of this approach is the creation of more self-sustaining, cost-effective landscapes that provide better wildlife habitat and more locally distinctive surroundings. Using the biodiversity approach can put small villages and parks on the visitor map and help local communities to be proud of their village because of it.

Table 1: The Values of Biodiversity

Biodiversity Value	Notes
Biodiversity is good for people	Naturalistic landscapes offer an alternative experience to more formalised, green space, and can be used for both exercise and relaxation.
Biodiversity involves communities	Encouraging biodiversity offers opportunities for people to get involved in creating and looking after parts of their local neighbourhood or park or for recording species through citizen science initiatives.
Biodiversity is cost-effective	Because biodiversity schemes, such as planting woodland, require less intensive maintenance, resources, which are always limited, can be directed to other activities in the community.
Biodiversity creates a sense of place	Biodiversity helps to make an area reflect the character of its own locality, rather than looking and feeling the same as everywhere else.
Biodiversity is good for wildlife	Biodiversity is good for wildlife, whether rare and protected species or common, familiar plants and animals, all of which are interconnected.
Biodiversity contributes to sustainability	Less intensive techniques and the reduction of chemicals, water and fertilisers are all aspects of managing for biodiversity. The best ecological systems require low levels of intervention and are therefore readily sustainable.
Biodiversity contributes to a green infrastructure	The network of habitats, parks and green spaces in a village helps to ameliorate the effects of climatic extremes, heavy rainfall and pollutants. Naturalistic green spaces are generally more effective in this respect thanks to their more complex vegetation structure.

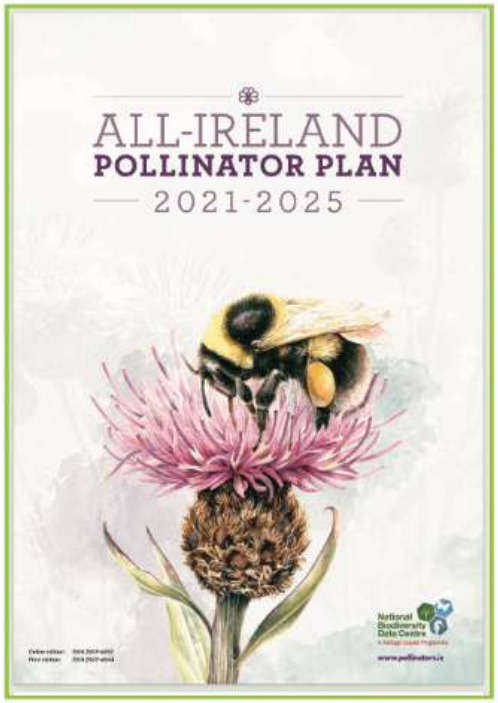
Where can we find biodiversity?

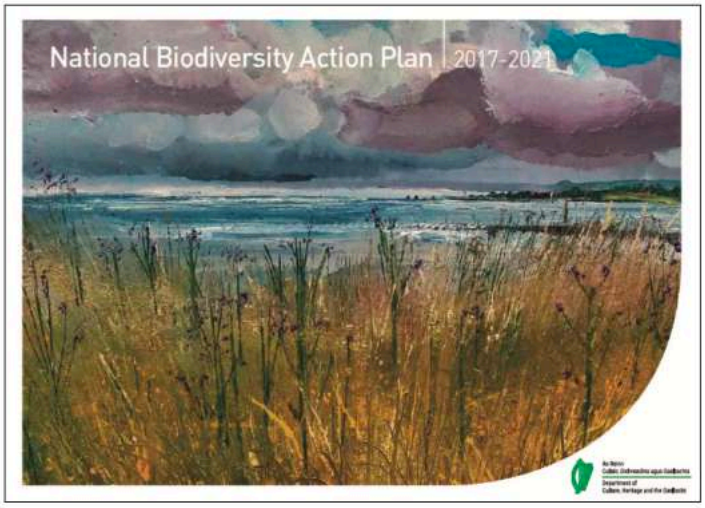
When people think of places to encourage wildlife, it is often the wilder, more out-of-the-way parts of the village or the woodland and hedges at the edge of the village. Actually everywhere has the potential for biodiversity (see Table 2). In order to enhance the opportunities for biodiversity, groups must create and encourage more species-rich and structurally diverse vegetation. Common examples include reducing mowing to encourage wildflowers and the establishment of field and shrub layers under groups of planted trees.

Table 2: Settings for Biodiversity
Biodiversity Locations in Your Area
Parks and public/private gardens
Natural and semi-natural spaces (including wastelands and derelict open land)
Green corridors
Rivers, streams and wetlands
Roadside verges
Cemeteries, churchyards and other burial grounds
Civic spaces, including market squares and other hard-surfaced areas designed for pedestrians
Accessible countryside in urban fringe areas
Urban planting schemes
Amenity green spaces
Playgrounds for children and young people
Allotments, community gardens and city farms
Outdoor sport pitches
Running tracks
Walkways

Why is a Biodiversity Action Plan Needed?

Global biodiversity is under threat. Action is required at local, national and global levels to protect our natural heritage. Habitat loss from





exploitation of resources, agricultural conversion and urbanization are the main factors contributing to the loss of biodiversity. The consequent fragmentation of habitat creates small isolated patches of land that cannot maintain populations of species into the future.

Ireland's National Biodiversity Plan 2017-2021 (see https://www.npws.ie/sites/default/files/publications/pdf/National%20Biodiversity%20Action%20Plan%20English.pdf) highlights the role that Communities can play in enhancing and protecting the biodiversity in their locality. A key action area arising from the National Biodiversity Plan is the need to take steps to protect pollinators. The All Ireland Pollinator Plan 2021-2025 (see https://pollinators.ie/wp-content/uploads/2021/03/All-Ireland-Pollinator-Plan-2021-2025-WEB.pdf/) aims to help local communities to enhance habitat for pollinators through planting native species that provide food and shelter year round (see the Pollinator-friendly Planting Code at https://www.biodiversityireland.ie/wordpress/wp-content/uploads/Pollinator-friendly-planting-code-temporary-draft.pdf).

The Basics of Biodiversity Management

Managing sites for biodiversity involves thirteen general principles that may challenge traditional practices.

1. **You don't know what you've got until it's gone.** Make the most of what is already there. Very often the value of this may not be recognised. For example, regularly-mown amenity grassland may in places contain a good number of wildflowers but these never flower because of the frequent mowing. Dandelion and clover, two of the top valuable plants for pollinators are found in grassland (see Table 3). Always make sure you know what you already have before you try to change it.

2. **Challenge the myths.** It is important to seek expert advice to ensure that myths about wildlife do not infiltrate management decisions. For example, not all birds nest in trees; many nest on the ground. Many shrubs promoted as good for butterflies are suitable only for the adults, which drink nectar, and if the food plants of their larvae are not present as well, they will not serve their purpose.

Table 3: Top 5 Plants for Biodiversity
(Source: https://www.fingal.ie/sites/default/files/2020-04/gardening-for-biodiversity-booklet.pdf)

Plant Name	Importance for Biodiversity
Dandelion	• Flowers in early spring providing vital food early in the season. • Seed heads are bird food for greenfinch and goldfinch. • Leaves are food for Garden Tiger Moth Caterpillars
Willow	• Flowers in spring providing vital food (pollen and nectar) early in the season.
Bramble	• Flowers provide vital food for pollinating insects in late summer. • Berries are loved by birds, mammals and people. • Bramble provides secure nesting sites for birds. • In spring moth larvae feed on its leaves.
Red Clover	• Flowers are a rich nectar and pollen source for bees including the common carder bee, honeybee and red-tailed bumblebee.
Ivy	• Ivy flowers in late autumn providing pollen and nectar when food is running low for insects such as bees, wasps, hoverflies and butterflies including Red Admiral, Painted Lady, Small Tortoise Shell and Speckled Wood. • Holly blue butterfly caterpillars feed on ivy flower buds in autumn and then the caterpillars pupate hidden in the ivy until spring when they emerge. • 16 species of moth use ivy as caterpillar food. • Black ivy berries are a very important source of food for birds such as blackbirds, thrushes and pigeons in late winter. • Ivy provides cover for nesting birds and hibernating butterflies.

3. **Keep it appropriate.** Most habitats, parks and green spaces have a local distinctiveness: the species and their habitats generally relate to their locality and are derived from the underlying substrates and geology, climate, hydrology and ecological characteristics. A green space in the South West will have different biodiversity from one in the North East, even if the layout and structure are broadly similar. To ensure that biodiversity has a long-term future, management objectives must be appropriate to the local ecology, as must the species that are planted.

4. **Keep it clean.** Wildness is often thought to mean leaving nature to look after itself. But it is important to make sure the site does not appear neglected. Litter picking is as important in a wildlife area as in a formal rose bed.

5. **Keep it dynamic.** Standard management practice aims to keep elements of the landscape in the same condition: shrubs are pruned to a regular shape, lawns are close mown to the same height, all self-sown plants are removed from flower beds. Change is therefore limited. Management for biodiversity, on the other hand, may actively encourage change so that more varied opportunities are present for wildlife. Some grassland might be allowed to change gradually into woodland or shrubs may be pruned less frequently. Many species have no permanent place in a green space managed to suppress all change, yet continuity of habitat is absolutely vital to many species.

6. **Size matters.** Although the quality of a park is not generally dependent on its size, in the context of increasing biodiversity it can often be crucial. Some species, mainly birds and mammals, have minimum area thresholds. So it is important to provide the largest area or mass of habitat wherever possible, as this enhances the chances for species that have large territories or that are vulnerable to disturbance. This provides the basic rationale to extending

biodiversity beyond the bounds of the nature garden and integrating it into the wider management of parks and green spaces.

7. **Safety in numbers.** A greater diversity of plants is likely to support a wider range of animals. For example, a wildflower meadow is usually thought to be better for wildlife than areas of unmown, tall grassland, because the greater variety of flowering plants supports more nectar-feeding insects than grasses alone. Similarly, a mixed planting of shrubs or a mixed hedge may help encourage more species of birds than a planting or hedge made up of a single species.

8. **The sum is bigger than the parts.** Combining different habitat types together creates a more complex and varied environment for wildlife, because of the larger number of opportunities for shelter and feeding. For example, the song thrush feeds both on invertebrates in open lawns and on berries from hedgerows or woodland edge. Thus, combining areas of short-mown grass with shrubs, hedges and woodland provides all sorts of foraging opportunities as well as nesting cover. Rich mosaics of different habitats can also be very attractive to people and are desirable if the size of the site and local circumstances permit.

9. **More structure means more diversity.** The key to providing enhanced habitats for biodiversity is generally increasing the structural diversity of the habitats. For example, long grass meadows provide more opportunities than short swards. A woodland with ground flora, dead wood and a small tree layer provides significantly more habitat than one stripped of everything except its trees.

10. **It's a matter of life and death.** We are used to thinking of nature as the living things we can see all around us, whether they are plants or animals. However, biodiversity – the totality of living things – includes also those myriad species that are scarcely visible. Many organisms are involved in death and decay and in feeding upon and recycling the dead remains of other life into soil nutrients. Therefore, one of the ways of encouraging greater biodiversity is to encourage this natural recycling by, for example, leaving dead wood on the ground in woodland areas.

11. **Life on the edge.** Biodiversity hotspots often occur at the meeting point between two or more habitats. For example, where a shrubby woodland edge meets tall grass or meadow, plants and animals from both grassland and woodland habitats can thrive. Such boundaries and edges can be very useful where space is limited, particularly if allowed to merge rather than being maintained as two or more separate areas. They can be especially valuable in warm and sunny aspects where the greatest diversity of wildlife can be expected.

12. **Remember the bigger picture.** It is easy to focus on an individual site or a particular area or feature within that site, to the exclusion of the surrounding area. However, wildlife rarely takes notice of our site boundaries. We should not forget to look at how an individual site fits into a much wider network of spaces and how that connection can be strengthened. We should also consider the role of private gardens, which extend the habitat available for wildlife beyond the public open space.

13. **Keep it sustainable.** Throughout the 20th century, managers of parks and green spaces (as well as the countryside) often unintentionally used specific techniques to remove biodiversity, which was seen to be a problem. This later rebounded through the food chain, or caused damage well away from the parks themselves. Adopting more sustainable approaches, for example reducing chemical inputs, water extraction and fertilisers, mulching to bulk up soil and avoiding the use of peat, can greatly enhance biodiversity.

Biodiversity Enhancement Actions

Practical ways in which to enhance biodiversity are recommended in the biodiversity action tables presented in Chapter 6 of this plan.

Citizen Science

This plan outlines a series of actions that the community can take to enhance biodiversity in a number of areas in the village. Before, during and after the recommendations in the plan have been achieved it is important that the community take part in citizen science activities (THAT ARE SIMPLE) to monitor for yourselves the increases in biodiversity you are seeing as a result of your work. The easiest activity which you should start is the flower insect timed count.

Flower Insect Timed Count (FIT counts)

See https://biodiversityireland.ie/app/uploads/2022/05/FIT-Count-survey-guidance_Ireland-2022.pdf

The flower insect timed count is probably the simplest thing to do – this can be a once off activity but it is preferable for it to be undertaken over a number of weeks at the same site if possible. You watch a 50x50cm square patch of ground containing a specific target flower such as buttercup, dandelion, hogweed, butterfly bush, thistle, heather or ivy (depending on the time of year). Count the number of insects that land on the flower over a 10 minute period. This activity, repeated over a number of weeks and years helps community groups and others to measure change in local biodiversity. The information you collect is submitted to the National Biodiversity Data Centre either using their APP or by uploading the information from a data sheet you use during the observation period (which can be downloaded from biodiversityireland.ie). Carrying out FIT Counts throughout the year and across future years will help track the impact of your actions on insect numbers and diversity and provides a valuable long term record for your area. See https://biodiversityireland.ie/surveys/fit-counts/ for details. FIT counts are a citizen science activity related to the All Ireland Pollinator Plan.

Plate 1: Buttercup flower with four visiting pollinator insects. FIT counts (flower insect timed counts) are a handy way for communities to measure improvements in biodiversity in a habitat following intervention. Photo: © J. FitzGerald.

Butterfly Monitoring

In this biodiversity action plan the different habitats in the village are described. A butterfly transect or walk can be developed around the village incorporating these habitats if the community would like to monitor butterflies for the National Biodiversity Data Centre. Butterflies only come out on sunny days after 11 am in the morning. Participating in the butterfly monitoring scheme involves establishing a fixed walking route (transect) of between 1 km and 2km in length that is monitored once a week from April to September. The route should be established close to where you live or work to make it convenient for you to complete the counts when the weather is suitable. The transect should be divided into 5-15 smaller sections to form sample units, and the number of butterflies seen within 2.5 m either side of yourself and 5 m in front (a 5 m3 recording 'box') are counted for each section. Counts should be completed between 11:00 and 17:00hrs, when the temperature is at least 13°C and during good weather conditions. Participation in this scheme involves a considerable time commitment but it generates very high quality data on Irish butterflies. If you would like to get involved please contact butterflies@biodiversityireland.ie and support will be provided to get your transect established. see https://biodiversityireland.ie/surveys/butterfly-monitoring-scheme/#:~:text=The%20transect%20should%20be%20divided,are%20counted%20for%20each%20section. There is a great video by Jesmond Harding you can watch about this although there's a lot of wind noise on it. There are butterfly identification charts and all sorts of resources you can draw on in at this site.

Pond Dipping

The National Biodiversity Data Centre have a ponds for biodiversity project being launched fully in 2023. If there is a suitable pond in your area this could be signed up to - the adopt a pond network. Pond biodiversity is monitored through pond dipping with nets and white trays. Information about this project is available here: https://biodiversityireland.ie/projects/ponds-for-biodiversity/ and there is a section on how to pond dip (https://freshwaterhabitats.org.uk/get-involved-2/big-pond-dip/dip/) and resources here too. This project could be undertaken as part of biology studies led by school teachers Pond dipping is carried out for a specific length of time and all the different varieties of bug and the numbers that are caught are counted. The informaton is submitted to the National Biodiversity Data Centre. This might only need to be done once per season but if you start it, ideally you should do it each year in the same pond to see how its biodiversity changes.

Plate 2: Small lake or pond at the Bog of Allen Nature Centre, Co. Kildare. The wildlife in the pond can be monitored by pond dipping and the information collected can be used to assess how well the pond is doing for biodiversity. Photo: © C. O'Connell.

5. Biodiversity Study Site Locations

Eleven study areas are the focus of this Biodiversity Action Plan centred on the Moy River and Estuary, Ballymore Lough and the Ballina to Killala Greenway (see Figure 1). The details are as follows:

5.1 Carrick, Ballymore Lough
5.2 Castleconor Farm on the River Moy Estuary
5.3 Creggaun
5.4 Ballina to Killala Greenway: Rosserk Friary
5.5 Ballina to Killala Greenway: Tobar Mhuire, St Mary's Holy Well
5.6 Ballina to Killala Greenway: Meelick Railway Bridge
5.7 Pump House, Quignamanger, Ballina
5.8 McKenzie Farm, Corimla North
5.9 Crillaun Bottom Car Park, East Moy Anglers Association, River Moy
5.10 Oldcastle and Ballintemple Car Park, East Moy Anglers Association, River Moy
5.11 Wetland south of Belleek Woods between the River Moy and the Soccer Pitch

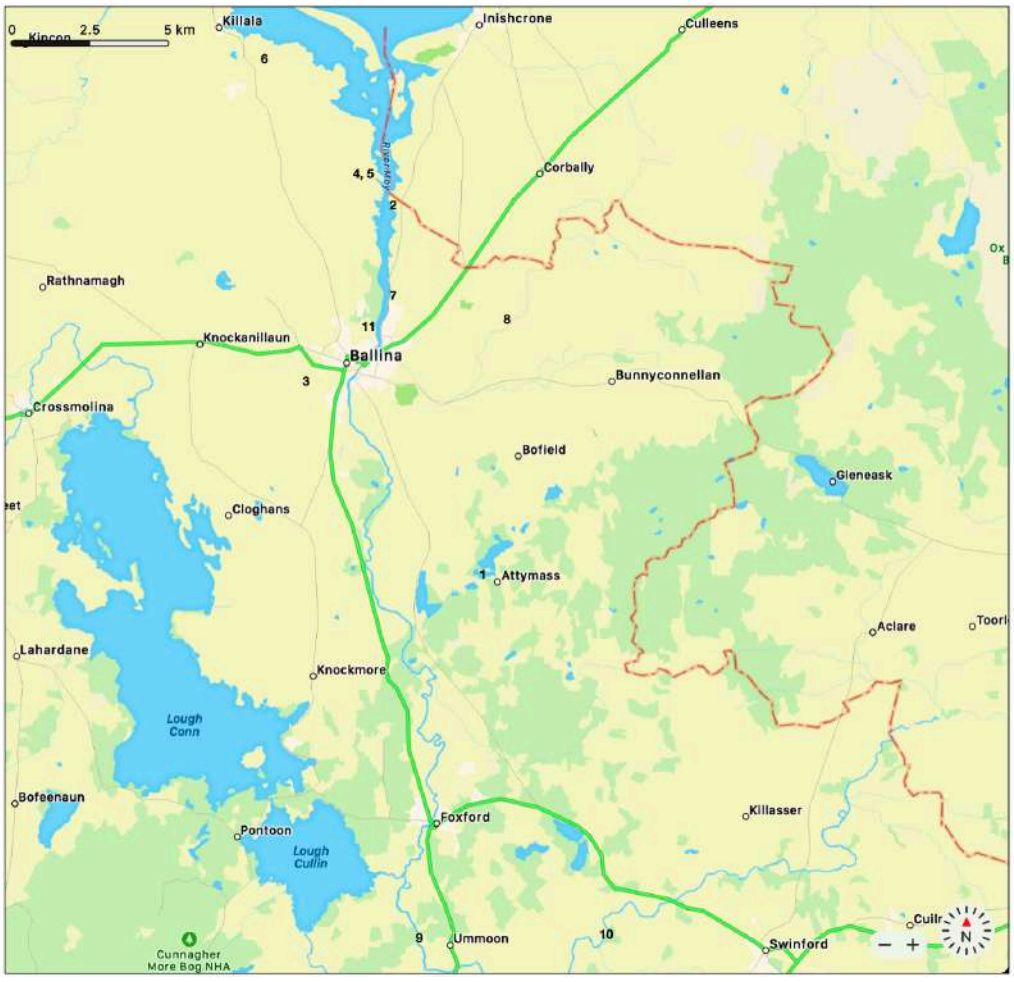


Figure 1: overview map showing the locations of the study areas targeted by this Biodiversity Plan. The codes used are as follows:
1. Carrick Ballymore Lough
2. Castleconor,
3. Creggaun,
4. Rosserk Friary,
5. Tobar Mhuire,
6. Meelick Railway Bridge,
7. Pump House Ballina
8. McKenzie Farm Corimla North
9. Crillaun Bottom Car Park, River Moy
10. Oldcastle and Ballintemple Car Park, River Moy 11. Wetland south of Belleek Woods between the River Moy and the Soccer Pitch. © Source: AppleMaps.

6. Study Site Descriptions, Screening, Biodiversity Survey and Enhancement Recommendations

Each of the biodiversity study sites is described in the eleven sections following. Each site was screened to determne the existing knowledge about its biodiversity and history. Subsequently each site was visited in the field and a biodiversity survey was conducted involving describing the habitats and species present and the management being undertaken. On the basis of this information biodiversity retention and enhancement recommendations were formulated.

6.1 Carrick, Ballymore Lough

6.1.1 Carrick, Ballymore Lough - Location 54.053002 -9.093465

Carrick biodiversity study site is a lakeside property in private ownership located on the southern shore of Ballymore Lough. The village of Attymas lies to the south east of the property and Killeen New Cemetery is located to the north west (Figure 2). On the southern margin of the property is the road between Attymas and Ballina.

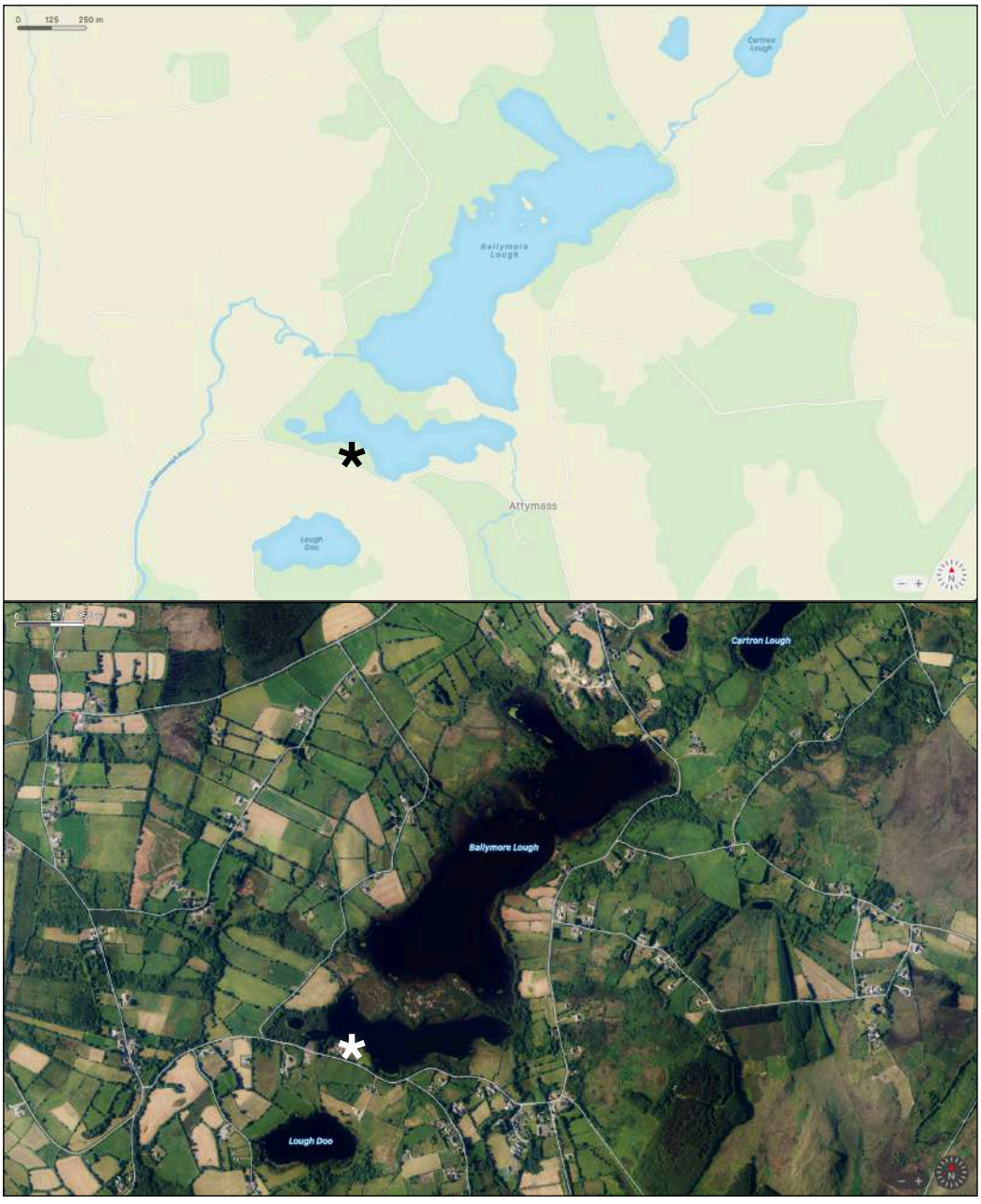


Figure 2: location map and satellite image map for Ballymore Lough near Attymass in Co. Mayo. The biodiversity study site is in private ownership and is shown with an * on the maps. The biodiversity study site is shown with an asterisk. Source: © AppleMaps.

6.1.2 Carrick - Results of Screening for Biodiversity and History

Ballymore Lough is a freshwater lake located in the parish of Attymass Co. Mayo in a scenic area with distant views to the Ox Mountains to the east and the River Moy to the west and Nephin mountain in the background. On the western shore of the lake are the ruins of Kildermot Abbey founded by the Norbertine Monks in the 13th century. See https://storiesfromthewaterside.ie/stories/ballymore-lough/ for more information. Towards the south western side of the lake there are two sites documented in the inventory of historic sites (see https://maps.archaeology.ie/HistoricEnvironment/) and shown in Figure 3. These are Ardrass Crannog MA040-086 and Ardrass Enclosure MA040-085.

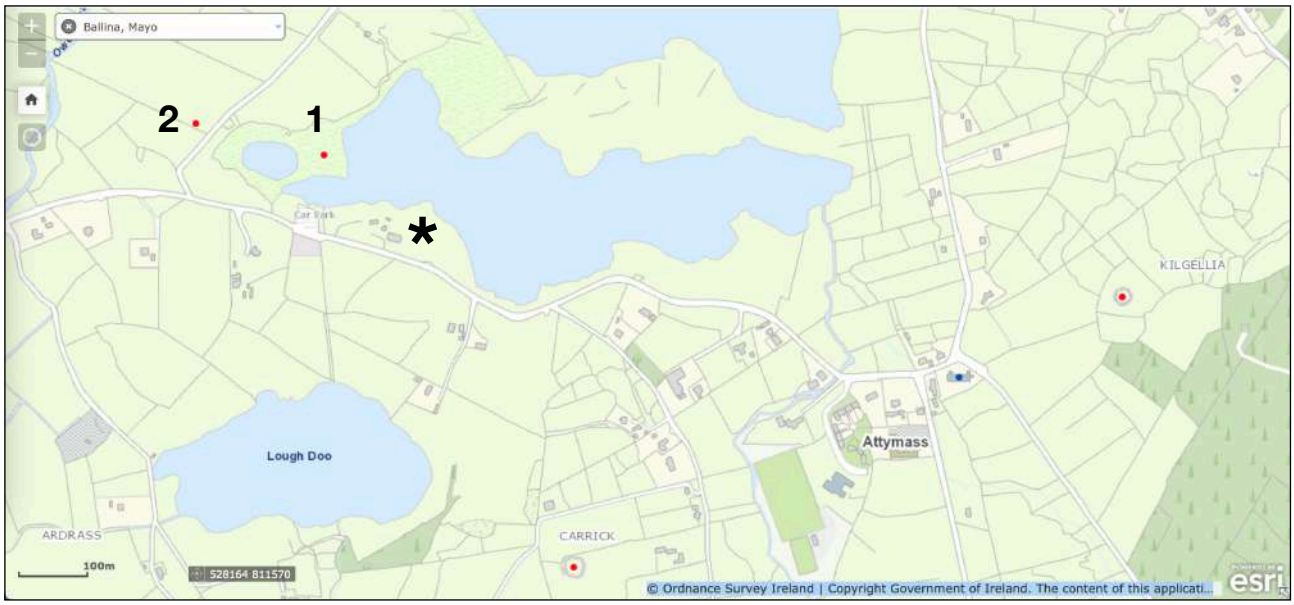


Figure 3: the southern portion of Ballymore Lough near Attymass showing the location of 1. Ardrass Crannog (code MA040-086) and 2. Ardrass Enclosure (code MA040-085) both of which are documented in the inventory of historic sites. Source: https://maps.archaeology.ie/HistoricEnvironment/. The biodiversity study site Carrick is shown with an asterisk. © Ordnance Survey Ireland/Government of Ireland

According to Wetland Surveys Ireland, Ballymore Lough is a candidate Natural Heritage Area (cNHA) of county importance (code WMI_MA43) although the site is currently not designated (see https://www.wetlandsurveys.ie) Figure 4. The cNHA area is 90ha in extent and includes a variety of habitats such as open water lake, reed swamp, riparian woodland, fen, river, wetland woodland, scrub and transition mire.

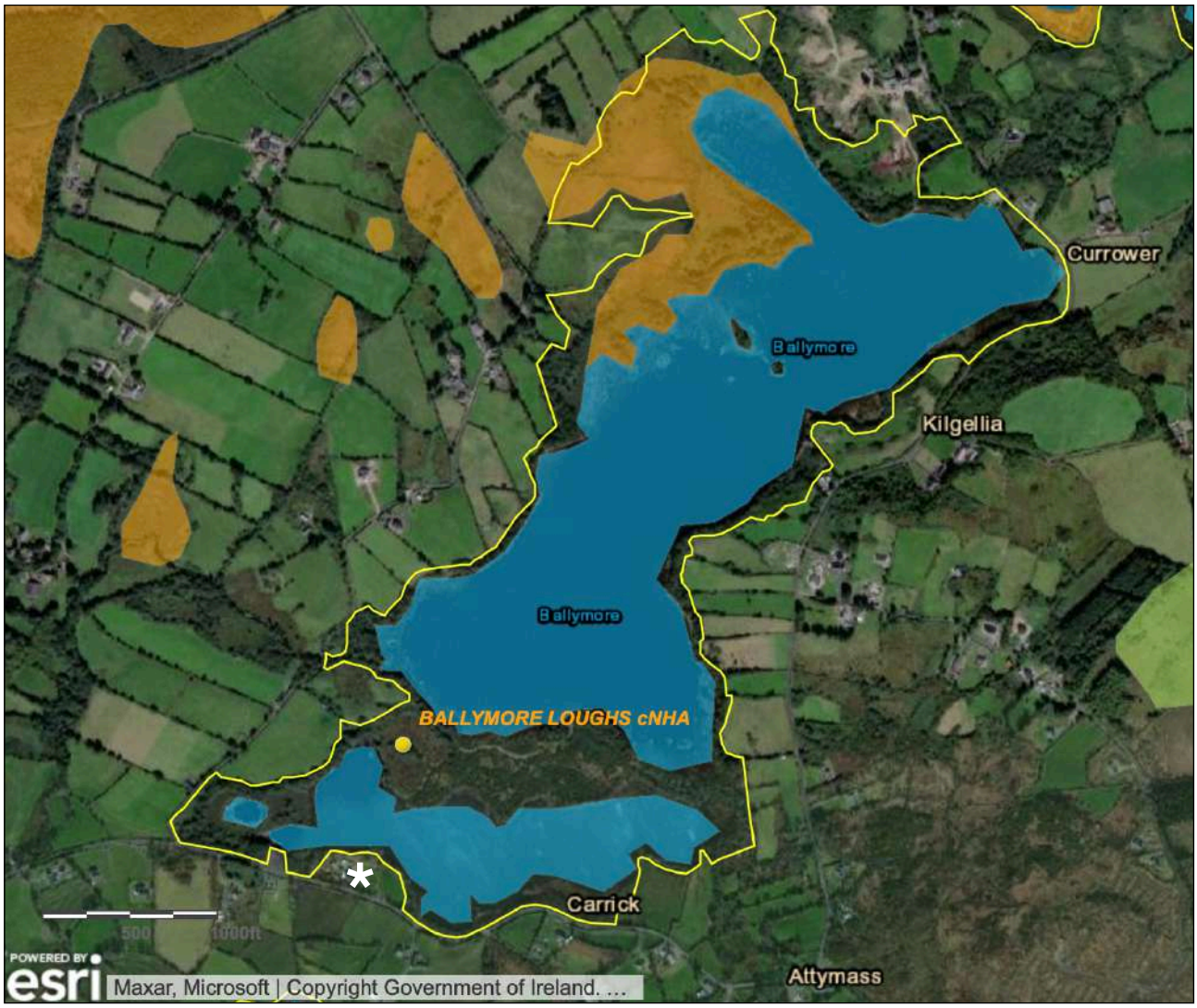


Figure 4: Ballymore Loughs candidate Natural Heritage Area near Attymass, Co. Mayo. The cNHA includes open water and a range of fringing wetland habitats. The Carrick biodiversity study site is shown with an asterisk. Source: https://www.wetlandsurveys.ie.

Information on the species diversity present in Carrick is available from the National Biodiversity Data Centre (NBDC). Species records can be found for areas of the country based on a system of 1km square grids (see https://maps.biodiversityireland.ie/Map). The grid number screened for Carrick is G2812 and there are 39 records in this square which covers a substantial portion of Ballymore Lough. Records are included from the Irish Wetland Birds Survey 1994-2001, Freshwater Fish in Irish Lakes 1997 and the All Ireland Non-Marine Molluscan Database 2003.

6.1.3 Carrick - Biodiversity Field Survey

The Carrick biodiversity study area consists of a private residence with extensive grounds and a fenced off field given over to grazing cattle to the east. Alder and willow woods form a buffer between the lake and the site on the northern boundary and on the western boundary alongside the car park for Killeen Cemetery. There are two boat docks on the northern margin with the lake, one is a permanent structure lined with timber and the other is a plastic floating pontoon. A mature hedge of ash and hawthorn screens the property from the minor road between Attymas and Ballina on the southern margin of the site and from adjacent land on the eastern boundary. Within the grounds there is a pond with a small island and an overflow ditch that is periodically flooded, a poly tunnel and formal gardens in addition to various garages and sheds. Access to different parts of the site is available from the Attymas to Ballina road in three locations. These are: gate access to the field, to the driveway up to the house and to the back yard. Carrick occupies an area of 14,673 square metres or 1.5ha. The various habitats identified at Carrick are shown in Figure 5 and are described in Section 6.1.5.

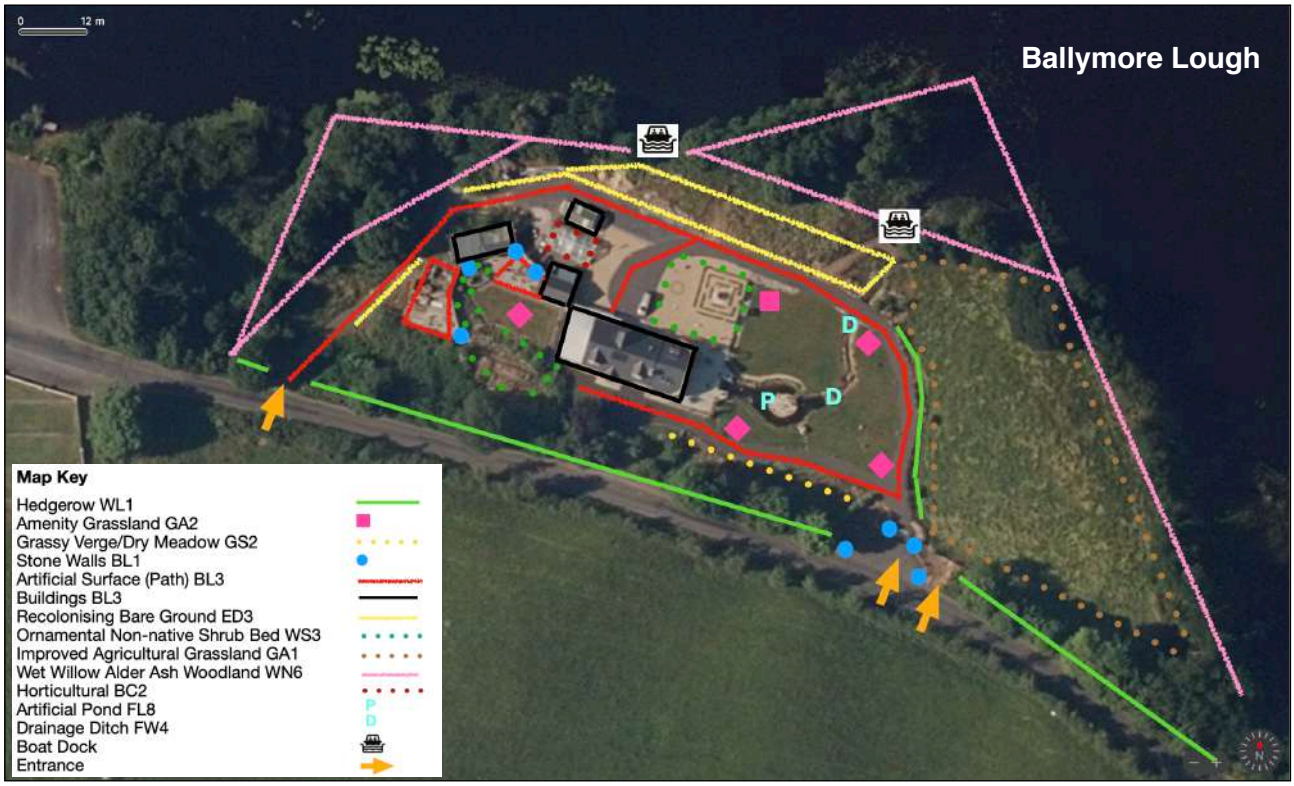


Figure 5: Habitat map for Carrick, Ballymore Lough, Co. Mayo. Map © https:// www.apple.com/maps/, amended C. O'Connell.

6.1.4 Carrick - Site Management

Carrick is managed by a private landowner. The work includes maintaining the pond and stream channel and the pump used to control water levels, using barley straw to keep the water in the pond clear, hedge management, fencing and the management of the grazing field. Grass is mowed regularly in some parts of the site, while in others cutting it is less frequent with the result that a meadow has developed which is species diverse. Some grass cuttings were being composted in cones but the remainder were dumped in various places on the site. The permanent boat dock area within the site is kept clear of reeds.

6.1.5 Carrick - Habitats and Species Present

The habitats present in Carrick are shown on Figure 5 and are described below. The species recorded in Carrick were as follows: 78 plants, 24 animals and 6 birds with a total of 108 species for the site (see Appendix 2).

Stone Walls and Other Stonework BL1
Stone walls occurred at the entrance gates and surrounded a private walled garden adjacent to the dwelling house.

Buildings and Artificial Surfaces BL3
The main house and outdoor sheds are relatively new builds of rendered bricks and had little plant cover. A variety of materials have been used across the site to provide access including, tarmack, gravel, cobblelock and wooden decking. One of the outbuildings had a swallow nest.

Improved Agricultural Grassland GA1
The field to the east of the site is grazed by cattle from April to August (see Plate 3). There is access to the lakeshore from the field and the animals can stand in the water and drink (Plate 4). Species included sweet vernal grass, cock's foot, Yorkshire fog, buttercup, and plantain.

Plate 3 (left): the field at Carrick being grazed by cattle from April to August annually. The lake shore with a mature oak tree and alder-willow woodland habitat is seen to the back. Plate 4 (right): the access point to the Ballymore Lough lake shore for cattle to drink. Cattle are polluting the water in the Natural Heritage Area with their faeces. Action 6.1.2 in Table 4 recommends moving the fence to exclude access to the water's edge by livestock and installing an Aquamat pasture pump water drinking unit as an alternative (photo inset). These are available from https://www.odonovaneng.ie/product/aquamat-pasture-pump/. Photos: © C. O'Connell

Amenity Grassland GA2
This habitat occured in the gardens of Carrick around the pond and stream (Plate 5) and in a small walled garden to the rear of the house. The grass is mowed regularly and is species poor as a result. The lack of flowering plants drastically reduces the number of insects that visit such areas.

Dry Meadow/Grassy Verge GS2
This habitat has been created at Carrick by reducing the mowing regime and allowing the grassland flora to flower and set seed. It occured as a 50cm wide verge around the stream and the pond. It also occured along the driveway (Plate 5) to the house adjacent to the roadside hedge and formed a grassy track to the permanent boat dock at the lake. Species included Yorkshire fog, lady's smock, horsetail, mint, vetch, dandelion, daisy, eyebright, red clover, ox eye daisy, ribwort plantain, black medick and speedwell.

Plate 5: The contrast between the two methods of managing grassland habitat are clearly shown in this image. To the centre the regularly mowed lawn is species poor while to the left hand side adjacent to the hedge and driveway the verge is mowed less regularly and plants are permitted to flower and set seed providing multiple benefits for pollinating insects, breeding butterflies and flies. Image inset: The flowers of ribwort plantain present in the grassy verge are pollinated by wind, flies and beetles. The plant is host to many different species of moth and butterfly, the seed heads provide food for goldfinches and other seed-eating birds in winter and the leaves are eaten by rabbits. Action 6.1.3 in Table 4 provides information on how to manage grasslands to create a wildflower meadow for the benefit of wildlife. Such an action also eliminates the need to dispose of large quantities of cut grass. Photos: © J. FitzGerald and C. O'Connell.

Recolonising Bare Ground ED3
This habitat occurred behind the willow/alder woodland adjacent to Ballymore Lough. The substrate was gravel and it has been colonised with an impressive diversity of flowers and grasses (Plate 6). The species recorded included red and white clover, bird's foot trefoil, water figwort, ox eye daisy, teasel, bluebell, ribwort plantain, buttercup, daisy, dock and thistle. White tailed bumble bees were abundant in this habitat on red clover.

Plate 6: A wealth of wild flowers have invaded the dry gravel habitat in Carrick. The pink clover was attracting pollinating bumble bees (see photo inset). Other wild flowers that occurred in this habitat were white clover, ribwort plantain, buttercup, thistle, ox eye daisy and flowering grasses such as Yorkshire fog, sweet vernal grass and cock's foot. This habitat is a pollinator destination. Action 6.1.4 in Table 4 recommends retaining this habitat for the benefit of pollinators. Photos: © C. O'Connell.

Artificial Pond FL8/Drainage Ditch FW4
The pond and drainage ditch (Plates 7 and 8) were located within grassland habitat on the site. The pond contained a small island made from gabions filled with blocks. Water is pumped into the pond as required from Ballymore Lough. The drainage ditch is an overflow channel used during periods of heavy rainfall. Its base is made from large rocks and gravel which are colonised with non aquatic plants. There is a 1m deep stone bank around the pond. *Elodea* occured in the water as an oxygenator. Within the water there were newt, water beetle, water boatman, non biting midge larvae, dragonfly nymphs and a great diving beetle nymph. Adult blue tailed damselflies were noted in the uncut grassland area adjacent to the drainage ditch. A variety of plants more typical of drier

grassland occured in the drainage ditch including wild strawberry, speedwell, dandelion, daisy and Yorkshire fog grass.

Plate 7 (left): The artificial pond and the island at Carrick, Co. Mayo. The stone structure in the grassland is the pump used to regulate water levels in the pond. Plate 8 (right): part of the drainage ditch coming from the pond which is used as an overflow in periods of heavy rain. A 50cm border of uncut grass forms a buffer between the ditch and the improved grass lawn. Action 6.1.5 in Table 4 recommends increasing the width of the buffer zone by 1m to provide a corridor for wildlife. Photos: © J. FitzGerald and C. O'Connell.

Wet Willow-Alder-Ash Woodland WN6

This habitat occurred along the lake shore in a band of 5 to 20m width. Trees of alder and willow were common reaching heights of 5-7m and there were many seedlings of alder invading areas of bare ground adjacent. Brambles dominated in parts, but in other areas the flora was more varied with climbing ivy and honeysuckle on the tree bowls and with buckler fern, yellow pimpernel, primrose, bluebell, pignut and meadow sweet in the herb layer (Plate 9). Mature oak, sycamore and ash trees were present in the woodland.

Plate 9 (right): Looking into the alder woodland at the corner of the cattle field at Carrick, Co. Mayo. Bluebells and pignut are present in the woodland herb layer. The trees are predominantly alder with some sycamore. Action 6.1.5 in Table 4 recommends the retention of the alder woodland as the natural habitat of lake shore.
Photo: © C. O'Connell

Hedgerow WL1
A mature native hedgerow was present on the southern and eastern margins of Carrick. The main species of the hedge were hawthorn but blackthorn, hazel, *Fuschia* and sycamore were present with ivy, bramble, meadowsweet, bluebell and vetch in the herb layer. An ornamental copper beech hedge was planted to screen the agricultural land to the east from the garden area.

Plate 10 The mature hedgerow along the minor road between Attymas and Ballina. Action 6.1.7 in Table 4 recommends maintaining this hedge in its present character where the upper parts of the trees are allowed to flower and set seeds providing the maximum year round benefit to wildlife such as song thrush (photo inset). Photos: © C. O'Connell.

Ornamental Non-native Shrub Beds WS3
Formal planted gardens occurred around the house to the front and the rear. A box hedge knot garden has been planted and dressed with gravel to the front of the house. The walled rear garden contains planted ornamental shrub beds with maple, *Buddleia* and bay tree and a goldfish pond.

Horticultural (Polytunnel) Land BC2
A polytunnel was located within the site. This contained raised beds filled with moss peat in which tomatoes, beans and onions were growing.

6.1.6 Carrick - Biodiversity Actions

Carrick is unique in the diversity of species it provides refuge for. This is related to the large number of habitats that are natural and man made within the site. The actions presented in Table 4 aim to protect the existing biodiversity and to implement improvements where possible. Some additional actions target sustainable best practice within the site including waste management, water harvesting and the phasing out of the use of peat and harmful sprays.

Table 4: Biodiversity enhancement actions for Carrick, Attymas, Co. Mayo

Action Number	Action	Notes
6.1.1	**Breeze Brick Walls screening**	Screening of the breeze brick walls surrounding the private garden and of sheds is recommended to enhance their value for wildlife. Species to consider planting are ivy, wild species rose and honeysuckle. Another alternative is to plant espalier apple which are attractive to wildlife and provide a crop. The top of any wall if suitable could be planted with *Sedum*.
6.1.2	**Install automated cattle drinking water system to prevent pollution of Ballymore Lough**	Cattle are currently drinking water directly from Ballymore Lough. This activity needs to stop and an automated drinking system installed. Within the River Moy fishery operated by East Mayo Anglers Association they have installed Aquamat pasture pumps along the river for cattle. The pasture pump is attached to a pipe which is placed in the lough. The cattle pump the water from the lough by pushing on the pump with their heads and a small trough fills with water for them to drink. One pasture pump services up to 16 cattle. These are available from https://www.odonovaneng.ie/product/aquamat-pasture-pump/. See Plate 4.
6.1.3	**Consider a change in management of mowed areas within the gardens to enhance biodiversity**	Grassland areas within Carrick front gardens are intensively mowed and have little wildlife value as they do not produce flowers and set seed. Consider changing the management of this area in the interests of promoting biodiversity. Only cut a 1m margin adjacent to the driveway established leaving the remainder to develop into wild flower meadow. The following publication gives guidance on how to develop and manage a wild flower meadow: https://pollinators.ie/wordpress/wp-content/uploads/2018/04/How-to-guide-Wildflower-Meadows-2018-WEB.pdf. In year 1 leave the grass to grow, flower and set seed. In autumn cut the grass very short. Pick up all of the grass and scarify the ground to create bare soil. Leave overwinter. In year 2 cut in spring and remove cuttings (to a compost heap) and leave the meadow to grow until autumn. In autumn of year 2 to keep grass at bay sew yellow rattle (*Rhinanthus minor*) - the meadow maker. This plant parasitises grass roots and weakens them giving wild flowers a better chance of taking hold. The mowing regime is crucial to the success of developing a meadow of wild flowers in these areas and needs to shift to autumn and winter. In a given calendar year the first cut should be undertaken before the end of February and the second cut after September when seeds have shed. All of the grass and flowers from each cutting needs to be totally removed to reduce nutrient levels and encourage more flowers in the following year. This action will work well with Action 6.1.5.
6.1.4	**Wildflower area retention**	On the gravel spoil to the rear of the dwelling house maintain the diversity of wildflowers that are beneficial to pollinators. Alder seedlings need to be controlled in this area to prevent a succession to woodland.
6.1.5	**Increase width of wildflower meadow buffer zone on either side of drainage ditch by 1m**	A 50cm border of uncut grass forms a buffer between the ditch and the improved grass lawn. Increasing the width of the buffer zone by at least 1m will help to create an improved wildlife corridor between the artifical pond and Ballymore Lough. This action works well with Action 6.1.3.

Action Number	Action	Notes
6.1.6	**Retain alder woodland at Ballymore Lough edge**	The alder-willow-ash woodland growing along the southern shore of Ballymore Lough is a valuable wildlife habitat. Formerly cleared areas within the woodland should be allowed to rewild if they are no longer needed.
6.1.7	**Retain existing Hedgerow management**	The existing hedgerow with mature trees along the southern margin of the site has a high biodiversity value. Continue to manage this hedge for wildlife. The ideal hedgerow for wildlife is tall, wide and dense at the base, with a wide, uncultivated, grassy margin. Such hedgerows are 'networks for nature'. Trim all existing hedges to an "A" shape, wide at the bottom and narrow at the top. Allow the upper part of hedge to produce flowers and fruit for wildlife. Encourage some trees within the hedge to mature so as to create an attractive tree line in addition to the hedge. Please note that hedge cutting between 1st March and 31st August is prohibited under the Wildlife Act. Avoid cutting all your hedgerows at once, consider a 3-5 year rotation to allow flowers and berries to grow in alternate sections. Gradually reduce cutting intensity each year to allow your hedgerow to expand and diversify. For more advice on the frequency of hedgerow trimming please visit https://www.farmingfornature.ie/resources/best-practice-guides/hedgerow-management/.
6.1.8	**Phase out the use of peat in the polytunnel**	Peat moss is being used in raised beds in the polytunnel which contain crops of tomatoes, beans and onions. Peat is extracted from raised bogs, one of the most threatened wetland habitats in Ireland and its use not only damages wild habitat but also releases the carbon that is stored long term in peat. Consider purchasing peat-free compost for growing if necessary and supplement it with home produced compost.
6.1.9	**Establish rainwater harvesting system for use in the polytunnel**	Sustainable garden management involves setting up water catchment systems on downpipes coming from the roofs of buildings. Ideally these need to be convenient to the polytunnel.
6.1.10	**Monitor and maintain swallow nesting in outhouse**	A natural swallow nest is located in one of the outhouses in Carrick. The use of the nest should be maintained by providing easy access for the birds via an open door or window. If necessary swallow nesting cups could be erected to encourage a larger number of birds to breed. Swallow are an amber listed bird of conservation concern due to loss of their habitats and food sources through the use of pesticides and herbicides.
6.1.11	**Compost heap and proper disposal of grass cuttings**	Create a compost heap for organic waste generated within the gardens and stop dumping the cuttings along the verges. The increased nutrients from decomposing grass encourages nettles. A compost heap needs to be managed correctly to get the best value from it. All brown and green waste should be picked up, chopped up and placed on a compost heap. Ideally two enclosures for compost should be constructed to allow turning. Compost produced can be used in the polytunnel.
6.1.12	**Tree Planting**	Specimen trees within the lawn area to the front of the property are not performing well. These should be replaced with native species more beneficial to wildlife. In addition a treeline could be established across the back yard on either side of the access route to the entrance gates adjacent to the Killeen Cemetery. Species to consider in these projects are crab apple, rowan, hawthorn, willow, blackthorn, spindle, guelder rose, whitebeam or alder.
6.1.13	**Enhance wildlife value of shrub beds for pollinators**	Replenish shrub beds with pollinator friendly plants to attract butterflies, bees, hoverflies and moths. Provide a range of shrubs so that there is pollen and nectar all year round for pollinators. Follow the Pollinator-friendly Planting Code (https://www.biodiversityireland.ie/wordpress/wp-content/uploads/Pollinator-friendly-planting-code-temporary-draft.pdf). The top 10 nectar plants for butterflies are: 1. *Buddleia*, 2. Ice Plant, 3. Lavender, 4. Michaelmas Daisy 5. Oregano, 6. Aubretia, 7. Red Valerian, 8. French Marigold, 9. Hebe and 10. Candytuft. In addition to providing nectar for adults, the existing area of nettles and long grass should be retained to provide food for the caterpillars of the butterflies. For more information see: https://butterfly-conservation.org/sites/default/files/1.bc_gardening_leaflet_v3.pdf
6.1.14	**Site clean up**	There is an abundance of builders rubble etc scattered thoughout the site, particularly around out buildings and in the back yard. Man made materials need to be removed to create a more naturalistic environment at Carrick.

Action Number	Action	Notes
6.1.15	**Citizen science monitoring of biodiversity improvement**	Once some of the measures have been completed it is important to undertake simple monitoring actions of how well biodiversity is doing. For example a FIT survey could be undertaken on a patch of dandelions. See further details in Chapter 4 of this plan.

6.2 Castleconor on the River Moy Estuary

6.2.1 Castleconor on the River Moy Estuary - Location 54.161342, -9.135096

The biodiversity study area is farmland that is sandwiched between the River Moy to the west and the L6611 road to the east. A tributary of the River Moy enters the main river channel on the northern boundary of the site and this marks the county line with Sligo. South of the site is farmland separated by a stone wall. The land is in private ownership and is being farmed under the ACRES Scheme (Agri-Climate Rural Environment Scheme) of the Department of Food, Agriculture and the Marine. The boundaries of the site include walls, hedge and post and wire fence. The ruins of Castleconor occur in the study site in a prominent location and a pair of peregrine falcon nest on a ledge in the ruin (see Figure 6).

Figure 6: Map showing the location of the farmland incorporating Castleconor on the banks of the River Moy, north of Ballina in Co. Mayo. The biodiversity study site is shown with an asterisk. © Source: AppleMaps.

6.2.2 Castleconor - Results of Screening for Biodiversity and History

The River Moy and its estuary are designated lands for nature conservation. Three designations occur here as follows:

Special Protection Area: Killala Bay/Moy Estuary SPA Site Code 004036
Proposed Natural Heritage Area: Killala Bay/Moy Estuary Site Code 000458
Special Area of Conservation: Killala Bay/Moy Estuary SAC Site Code 000458

Information about the importance of Killala Bay/Moy Estuary for habitats and wildlife can be found at https://www.npws.ie/protected-sites/sac/000458 and https://www.npws.ie/protected-sites/spa/004036. Figure 7 shows the location of the farm incorporating Castleconnor in relation to these nature conservation sites.

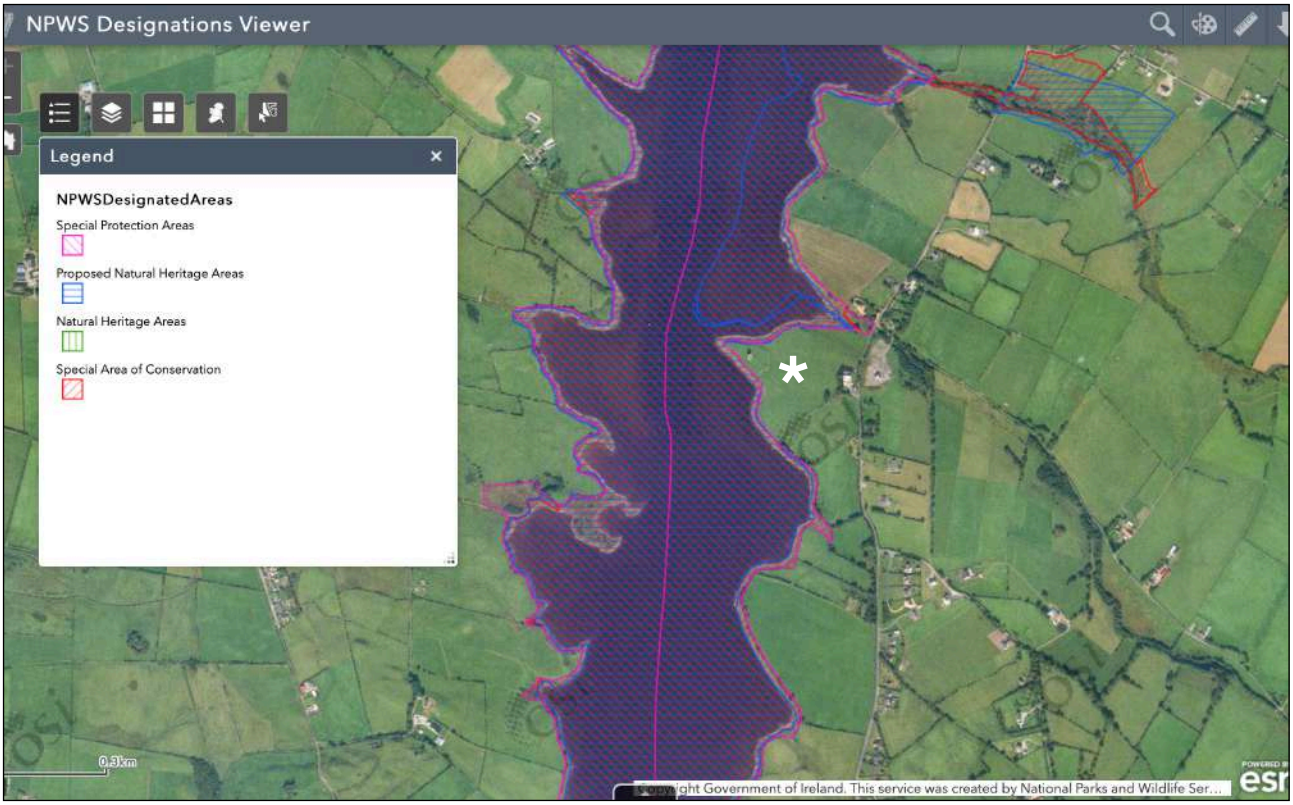


Figure 7: Map showing the location of the farm incorporating Castleconor on the banks of the River Moy, north of Ballina in Co. Mayo in relation to the Killala Bay/Moy Estuary SPA, SAC and cNHA. The biodiversity study site is shown with an asterisk. Source: https://dahg.maps.arcgis.com/apps/webappviewer/index.html?id=8f7060450de3485fa1c1085536d477ba. © Government of Ireland National Parks and Wildlife Service.

Information on the species diversity present in Castleconor is available from the National Biodiversity Data Centre (NBDC). Species records can be found for areas of the country based on a system of 1km square grids (see https://maps.biodiversityireland.ie/Map). The grid number screened for Castleconor is G2524 and there are no records in this square for the site.

The inventory of historic environments (see https://maps.archaeology.ie/HistoricEnvironment/) indicates a wealth of features located within the biodiversity study area. These include: Castleconor Inland Promontory Fort (code MA022-085001), Castleconor Castle (tall-house) (code MA022-085003), Castleconor Gatehouse (code MA022-085003), Castleconor House (code MA022-085005) and Castleconor Earthwork (code MA022-085004). The location of these sites is shown in Figure 8.

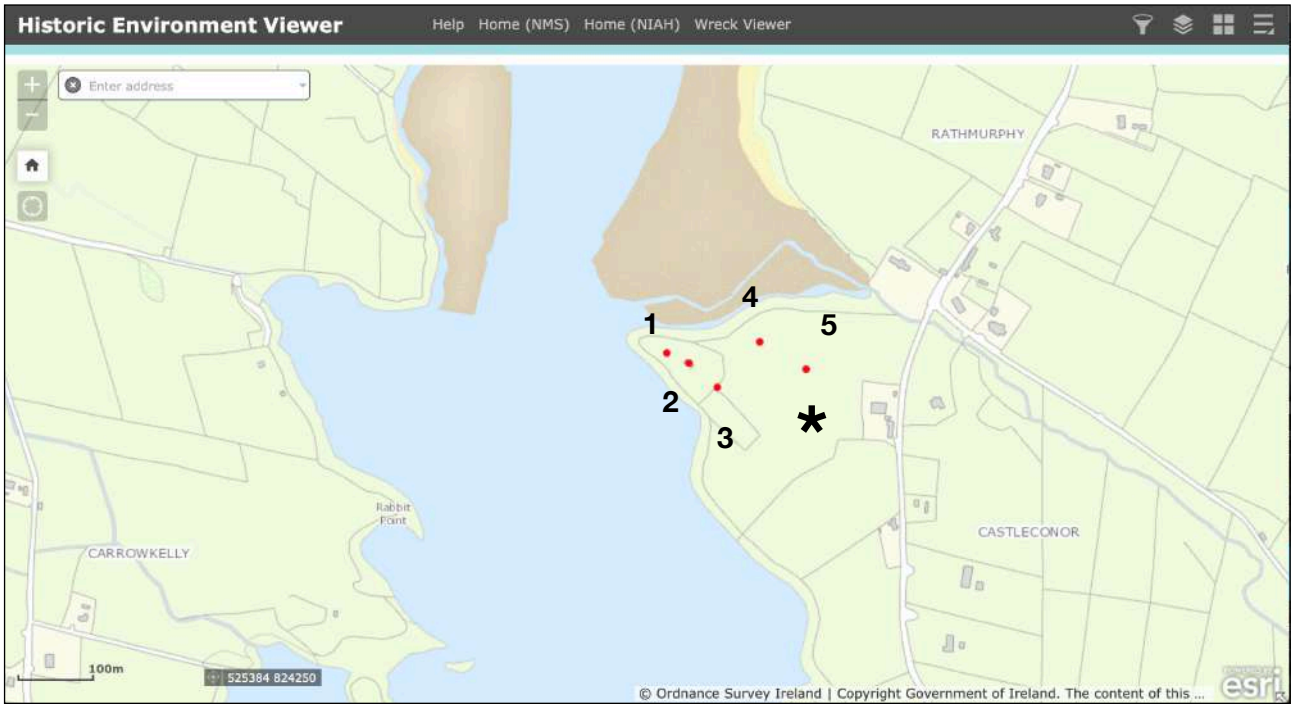


Figure 8: Map showing the location of historic features (see https://maps.archaeology.ie/HistoricEnvironment/) located within the biodiversity study area. These include:
1. Castleconor Inland Promontory Fort (code MA022-085001),
2. Castleconor Castle (tall-house) (code MA022-085003),
3. Castleconor Gatehouse (code MA022-085003),
4. Castleconor House (code MA022-085005) and
5. Castleconor Earthwork (code MA022-085004). The biodiversity study site is shown with an asterisk. © Ordnance Survey Ireland and Government of Ireland.

6.2.3 Castleconor - Biodiversity Field Survey

Castleconor is farmland in private ownership and is an elevated, exposed site positioned 10m above the banks of the River Moy. The topography is uneven and the highest point on the site is 19m. The River Moy occurs to the west and the L6611 road to the east. A tributary of the River Moy enters the main river channel on the northern boundary of the site and this marks the Mayo- Sligo county border. South of the site is farmland separated by a stone wall. The land is in private ownership and is being farmed under the ACRES Scheme (Agri-Climate Rural Environment Scheme) of the Department of Food, Agriculture and the Marine. 60-100 sheep are grazing the land. The boundaries of the site include walls and post and wire fence. Outside the walls and fence there are patchy remains of a hawthorn hedge. The ruins of Castleconor are a feature of this site and are located in a prominent position. A pair of peregrine falcon nest on a ledge in the ruin. Castleconor occupies an area of 54,294 square metres or 5.4ha (see Figure 8). There are two access points from the L6611 to the land, one is a pedestrian gate which descends down steep stairs adjacent to the stream on the northern boundary of the site, the other is a farm gate which opens onto the L6611 road. There is also gate and stile access onto the shore of the River Moy from the northern boundary as shown in Figure 8.

Figure 8: Habitat map for Castleconor on the banks of the River Moy north of Ballina, Co. Mayo. Map © https://www.apple.com/maps/, amended C. O'Connell.

6.2.4 Castleconor - Site Management

The site is farmland for sheep grazing and is managed by a private landowner. The work includes maintaining the boundary fence and access, providing supplimentary feeding and protecting the historic structures within the site.

6.2.5 Castleconor - Habitats and Species Present

The habitats present in Castleconor are shown on Figure 8 and are described below. The species recorded in Castleconor were as follows: 28 plants, 2 animals and 6 birds with a total of 36 species for the site (see Appendix 2).

Stone Walls and Other Stonework BL1
Stone boundary walls on the site were composed of lime cut blocks or limestone boulders. As these walls had many spaces within their structure and are old they had a rich wildlife including ivy, various lichens, bramble, hawthorn and hart's tongue fern (Plate 11). Most of the plant life was on the outside of the field wall as the sheep are grazing to the bottom of the walls. The castle structure and other ramparts are included in this habitat. On a ledge in the castle wall a peregrine falcon was observed (see Plate 12). This falcon is listed on Annex 1 of the Birds Directive (EU Birds Directive (79/409/EEC)) and is a protected species within Ireland and the European Union.

Plate 11 (left): Part of a stone wall at Castleconor marking the boundary on the northern part of the site. The River Moy estuary which is tidal can be seen in the background.
Plate 12 (right): Peregrine falcon standing on a ledge on Castleconor, Co. Mayo. The peregrine falcon is listed on Annex 1 of the Birds Directive and is a protected species within Ireland and the European Union. Photos: © C. O'Connell

Improved Agricultural Grassland GA1
The majority of Castleconor is included in this category and the land is grazed by 60 or more sheep. The overall appearance of the land is grassy. Species diversity within this habitat was low ranging from 6 to 12 species determined from counts undertaken in three one metre squares and included sweet vernal grass, Yorkshire fog, cock's foot, thistle, clover, dock, eyebright, lesser celendine, buttercup, chickweed and nettle (see Plate13).

Plate 13: view across the farmland pasture at Castleconor towards the castle ruin and the River Moy. The grassland habitat is being grazed by sheep and was found to be species poor. In the foreground creeping thistle is obvious. The scattered trees of hawthorn occurred outside the boundary of the site. Actions 6.2.1, 6.2.2 and 6.2.5 in Table 5 recommend planting a hawthorn hedge around the pasture, fencing off a 2m strip of land around the site to create a wild flower margin for pollinators and considering the stocking density of sheep grazing the site. Photo: © C. O'Connell

Hedgerow WL1
The remains of a hawthorn hedge were observed outside the fence and wall lines between the farmland and the River Moy estuary. The hawthorn trees wre mature and flowering and between them there were brambles. This hedge is not stock proof.

6.2.6 Castleconor - Biodiversity Actions

A number of actions are proposed to enhance biodiversity in this farmland area and are listed in Table 5. As the farmer is pariticipating in the ACRES scheme some of the actions proposed may already be planned or can be funded through the scheme. There are many good guidelines available in relation to enhancing biodiversity on farmland. The National Biodiversity Data Centre has an excellent web site to assist farmers at https://pollinators.ie/farmland/ with a great variety of easy to follow guidelines.

Table 5: Biodiversity enhancement actions for Castleconor, Co. Mayo

Action Number	Action	Notes
6.2.1	**Plant a hawthorn hedge were there is wire fence only**	Along the northern boundary of the site wire fence is used as a livestock barrier. This has no wildlife value at all. A hawthorn hedge should be planted which is typical of the area and would link up with the existing areas of hedge. It does need to be protected from grazing sheep with a second fence. This action would work well with Action 6.2.2. Guidelines on hedge planting can be found here: https://www.teagasc.ie/news--events/daily/environment/how-to-plant-a-hedge.php.
6.2.2	**Create a flowering margin around the field zone**	Create a flowering margin of 1-2m around the entire perimeter of the pasture that remains fenced off from livestock to enhance biodiversity. This will allow plants to flower and set seed providing food and shelter for wildlife. This action would work well with the hedge planting action 6.2.1. The following publication gives guidance on this and other measures that can be taken on this site to enhance biodiversity: https://pollinators.ie/wp-content/uploads/2022/12/Farmland-Pollinator-Guidelines-2022-WEB.pdf
6.2.3	**Create a flowering margin around the castle**	Fence off the castle building and manage the area around it as a wild flower area. This will encourage pollinators and foraging small mammals. Cut these areas once a year in autumn, after flowering, and remove toppings (to avoid soil enrichment because wildflowers thrive in lower fertility soils). If managed in this way, they will gradually become more flower-rich over time. The following publication gives guidance on this and other measures that can be taken on this site to enhance biodiversity: https://pollinators.ie/wp-content/uploads/2022/12/Farmland-Pollinator-Guidelines-2022-WEB.pdf
6.2.4	**Maintain land pollution free to protect the food chain of the Peregrine Falcon**	Avoid the use of fertilisers and pesticides. Control noxious weeds by pulling or using spot treatment. This is vital as the land is a foraging area for the Peregrine Falcon that nests on the castle structure. A healthy pasture with an abundance of flowers to feed insects will attract insect-eating birds, the prey of the Peregrine.
6.2.5	**Grazing intensity**	At present the species diversity across the whole of the pasture land is low and the site has an overall grassy appearance. Factors to consider are the stocking density, the seasonality of grazing and the duration of grazing across the pasture. Further guidance can be found here: https://cieem.net/wp-content/uploads/2019/07/Grazing-for-wild-plants-and-biodiversity-FL-Advisory-Note.pdf.
6.2.6	**Site clean up**	Maintain the fields rubbish free in the interests of animal welfare and safety.
6.2.7	**Citizen science monitoring of biodiversity improvement**	Once some of the measures have been completed it is important to undertake simple monitoring actions of how well biodiversity is doing. For example a FIT survey could be undertaken on a patch of dandelions. See further details in Chapter 4 of this plan.

6.3 Creggaun, Ballina

6.3.1 Creggaun, Ballina - Location 54.098254, -9.178552

The Creggaun biodiversity site is a wetland area located south west of Ballina alongside a minor road off the N26. Peat has been removed from the site in historic times and the vegetation is regenerating as a cutaway bog habitat on waterlogged acid to alkaline peat substrate. The site lies at the bottom of a low hill of farmland to the south. The land is in private ownership. There is a drain occuring along the minor road on the northern margin of the site, there are internal drains within the site dividing off the southern and eastern portions. A drainage ditch marks the western boundary of Creggaun. The site covers an area of 32,165 square metres or 3.2ha (see Figure 9).

Figure 9: Location map for Creggaun biodiversity study site (marked with an asterick), south west of Ballina, Co. Mayo. Map © https://www.google.com/maps.

6.3.2 Creggaun - Results of Screening for Biodiversity and History

The Wetlands Map of Ireland was screened to determine whether Creggaun has been included at https://wetland.maps.arcgis.com/apps/View/index.html?appid=e13b75c3bcab4932b992aa0169aa4a32&extent=-11.9317,51.0620,-3.9117,55.6465. The site has not been previously surveyed.

Information on the species diversity present in Creggaun is available from the National Biodiversity Data Centre (NBDC). Species records can be found for areas of the country based on a system of 1km square grids (see https://maps.biodiversityireland.ie/Map). The grid number screened for Creggaun is G2217. One record occurs for Badger within the 1km square that incorporates this site.

The inventory of historic environments (see https://maps.archaeology.ie/HistoricEnvironment/) was screened in relation to Creggaun and there are no structures adjacent to this site.

6.3.3 Creggaun - Biodiversity Field Survey

Creggaun is a wetland area located south west of Ballina along side a minor road off the N26. Peat has been removed from the site in historic times and the vegetation is regenerating cutover bog habitat on waterlogged acid to alkaline peat substrate. The site lies at the bottom of a low hill of farmland to the south. There is a drain occuring along the minor road on the northern margin of the site, there are internal drains within the site dividing off the western and eastern portions (see Figure 10). A drainage ditch marks the western boundary of Creggaun. The site covers an area of 32,165 square metres or 3.2ha.

Figure 10: Habitat map for Creggaun, south west of Ballina, Co. Mayo. Map © https://www.google.com/maps, amended C. O'Connell.

6.3.4 Creggaun - Site Management

Drains delineate this site from the road and the adjacent farmland. A drain to the east of the site has recently been maintained.

6.3.5 Creggaun - Habitats and Species Present

The habitats present in Creggaun are shown on Figure 10 and are described below. The species recorded in Creggaun were as follows: 26 plants, 2 animals and 2 birds with a total of 30 species for the site (see Appendix 2).

Cutover Bog PB4
Peat has been removed from this site in the past and the bog is regenerating with a dominance of purple moor grass which formed hummocks up to 1m in height (Plate 14). In some areas common rush was co-dominant with the moor grass. Between the hummocks there are wet bog indicator species including marsh cinquefoil, tormentil, devil's bit scabious, fen thistle, marsh thistle, angelica, ragged robin, bottle sedge, meadowsweet, creeping willow, meadow buttercup and pointed spear moss. Meadow pipit and skylark were observed at the site.

Plate 14: View across the wetland on peat substrate at Creggaun, Co. Mayo. The habitat is dominated by purple moor grass which forms hummocks up to 1m tall. Marginal and internal drains in this site need to be surveyed and blocked to raise the water table in the wetland (see Actions 6.3.1 and 6.3.2 in Table 6). Part of the willow and bramble hedgerow habitat can be seen in the right hand corner of the photograph and the roadside drainage ditch to the front left of the photograph. Photo: © C. O'Connell

Hedgerow WL1
A hedge dominated by willow occurred along the northern margin of the site. Bramble and gorse were also present in the hedge with bush vetch, dandelion and sweet vernal grass.

Drainage Ditch FW4
Drainage ditches surround this site and are also found internally in the site dividing it up. Water was present in the road side ditch at 1m below the surface of the wetland. This contained marsh figwort, marsh cinquefoil, tormentil, moor grass and bramble.

6.3.6 Creggaun - Biodiversity Actions

A number of actions are proposed to enhance biodiversity in this wetland habitat area and are listed in Table 6. As it was only possible to survey this site visually from the road, a full survey would be necessary with landowner consent.

Table 6: Biodiversity enhancement actions proposed for Creggaun, Co. Mayo

Action Number	Action	Notes
6.3.1	**Ground Survey**	A full survey of the site is necessary to make a complete record of the habitats and species present at Creggaun. This survey will also assess the extent of the drains and their impact on the wetland habitats. This work will require landowner consent.
6.3.2	**Block 910m drains**	As Creggaun is a wetland habitat, maintaining the species diversity depends on the land remaining wet. An estimate of the distance of drains in and around the site is 910m. These need to be blocked with dams to raise the water table closer to the surface of the site. The water table was observed at the bottom of the roadside drain which was 1m below the wetland surface. For peat to form in a wetland the water table needs to be within 20cm of the surface vegetation all year round.
6.3.3	**Maintain willow hedgerow on perimeter of the site**	Maintain the willow and bramble hedgerow at the margin of the site along the minor road as a habitat for pollinators and breeding birds. Willow and bramble are two of the top pollinator friendly plants (see Table 3).

6.4 Meelick Bridge, Kilroe

6.4.1 Meelick Bridge, Kilroe - Location 54.202684, -9.201819

Meelick Bridge which once allowed the road to cross an old railway line was the location of a biodiversity study on the Monasteries of the Moy Greenway. The Monasteries of the Moy Greenway is a 14km walking and cycling route linking the historic towns of Ballina and Killala (see https://www.greenway.ie/monasteries-of-the-moy/ for details). The study site was located 100m either side of Meelick bridge. The location is marked with a white zig zag line in Figure 11. Access to the Greenway is signposted off the R314 to the west and from the minor road at Newtownwhite in the east. A post and wire fence separates the Greenway from the surrounding lands.

Figure 11: Map showing the location of the biodiversity study site on the Monasteries of the Moy Greenway at Meelick Bridge south east of Kilalla in Co. Mayo. The biodiversity study site is shown with a white zig zag line. The Greenway marked with a pink line extends cross country for 3km from the minor road at Newtownwhite to the R314 road travelling north west to Kilalla. This part of the Greenway was not included in the study © Source: AppleMaps.

6.4.2 Meelick Bridge - Results of Screening for Biodiversity and History

The location of the Meelick Bridge part of the Greenway was screened against lands designated for conservation by the National Parks and Wildlife Service. West of the Greenway entrance off the R314 is Lough Meelick which is included in the Killala Bay/Moy Estuary SAC and proposed NHA (# 000458). A second site carries the proposed Natural Heritage Area designation (# 001517) and this is Killala Esker. This contains a hazel wood (see https://www.mayo.ie/getmedia/96ae49bb-28be-4070-9c23-cb75cad7f6d0/Killala-Nature-and-Wildlife-Plan-2014-2017.pdf). These sites are shown in Figure 12.

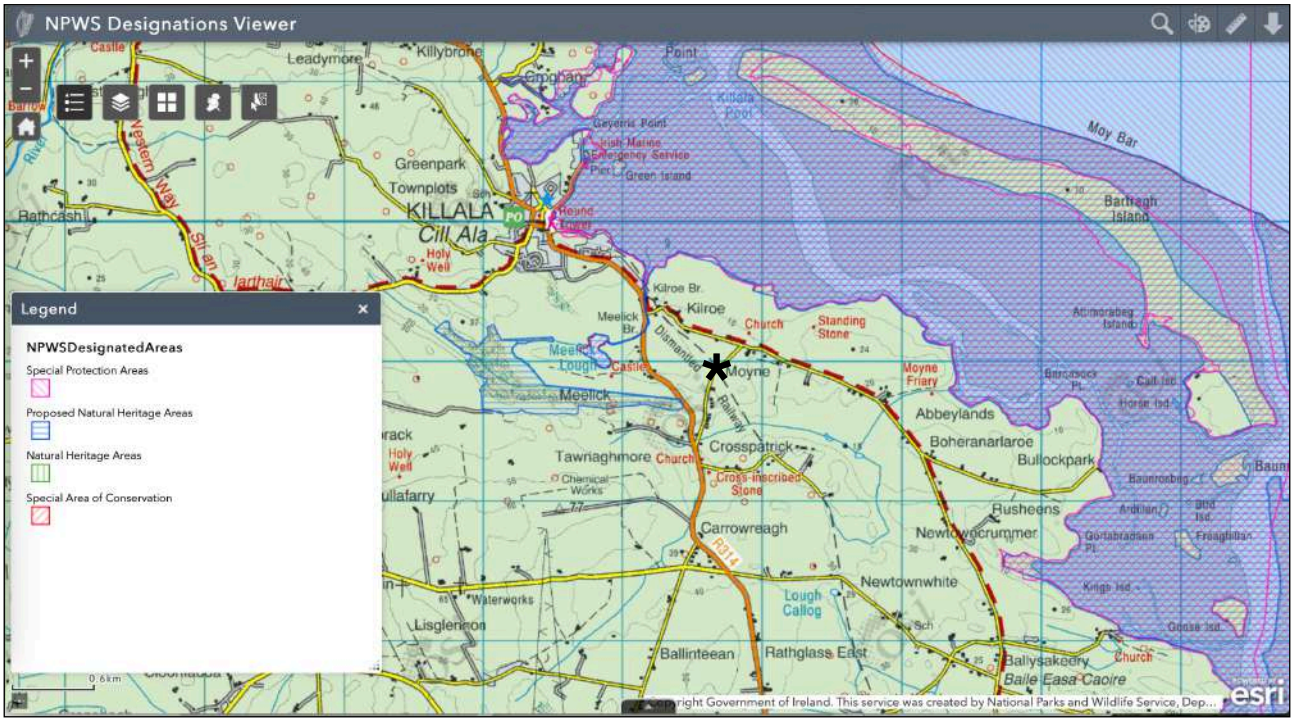


Figure 12: Discovery map showing the location of Meelick Bridge (with an asterisk) the biodiversity study site. West of the site Meelick Lough is included in the Killala Bay/Moy Estuary SAC and cNHA and Killala Esker woodland is a proposed NHA. Source: https://dahg.maps.arcgis.com/apps/webappviewer/index.html?id=8f7060450de3485fa1c1085536d477ba. © Government of Ireland National Parks and Wildlife Service.

Biodiversity information on the species diversity present on the Greenway at Meelick Bridge is available from the National Biodiversity Data Centre (NBDC). Species records can be found for areas of the country based on a system of 1km square grids (see https://maps.biodiversityireland.ie/Map). The grid number screened for Meelick is G2128. Five species records were found. These are the Birds of Ireland Survey with wren and the Atlas of Butterflies in Ireland which indicates the presence of peacock, small copper, small white and speckled wood in the 1km square grid that incorporates this site.

A screening of the Greenway against the Wetlands Map of Ireland (see https://wetland.maps.arcgis.com/apps/View/index.html?appid=e13b75c3bcab4932b992aa0169aa4a32&extent=-11.9317,51.0620,-3.9117,55.6465) indicates that the cycle way extends past Meelick Bridge and skirts along Crosspatrick Moyne Ponds (# WMI_MA719), an area of conservation interest as shown in Figure 13.

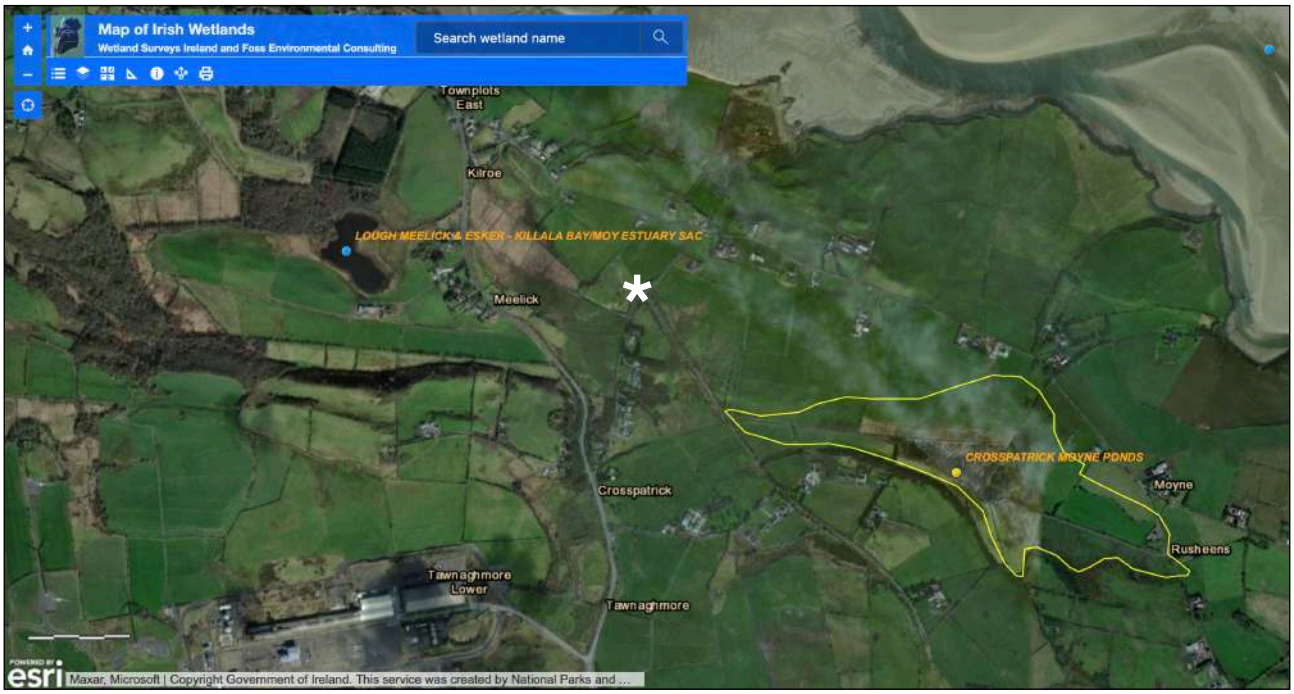


Figure 13: Crosspatrick Moyne Ponds have been identified as a site of conservation interest by Wetland Surveys Ireland. The cross country section of the Greenway skirts along the southern margin of this wetland. The biodiversity study site is shown with an asterisk. Source: https://www.wetlandsurveys.ie.

Meelick Bridge is a listed structure in the historic environments inventory (see https://maps.archaeology.ie/HistoricEnvironment/) under the name of Kilroe Bridge (Reg. No. 31302212) which dates to 1890-1895. This is described as a single-arch hump back road bridge over a railway line, opened 1893 and constructed from limestone. A second site located relatively close to the Greenway is Moyne Barrow (#MA022-046). Both sites are shown on Figure 14.

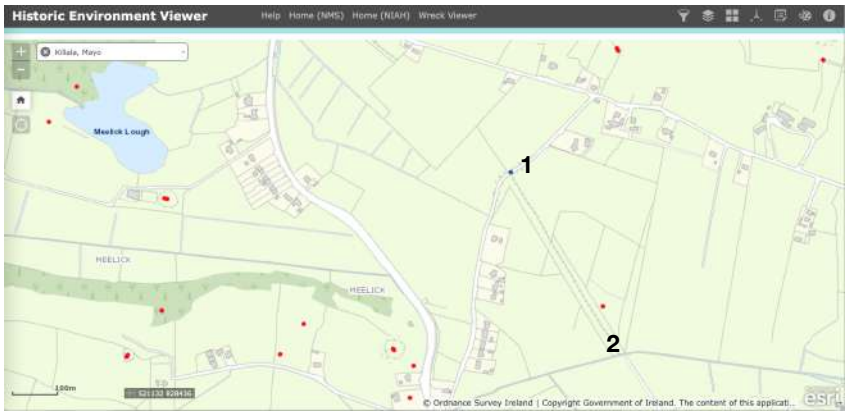


Figure 14: Map showing the location of historic features (see https://maps.archaeology.ie/HistoricEnvironment/) located within the Meelick Bridge biodiversity study area. These include: 1. Kilroe Bridge (Reg. No. 31302212) and 2. Moyne Barrow (#MA022-046) © Ordnance Survey Ireland and Government of Ireland.

6.4.3 Meelick Bridge - Biodiversity Field Survey

Meelick Bridge is located on the Monasteries of the Moy Greenway, a 14km walking and cycling route linking the historic towns of Ballina and Killala (see https://www.greenway.ie/monasteries-of-the-moy/ for details). The study site was the Greenway located 100m either side of Meelick bridge (see Figure 15). The greenway track has a tarkmacked/fine grit surface and it is delineated from the farmland on either side by a cement/wooden post and wire mesh fence (1.5m tall) or by stone wall.

Figure 15: Habitat map for Meelick Bridge on the Monasteries of the Moy Greenway, south east of Killala, Co. Mayo. Map © https://www.google.com/maps, amended C. O'Connell.

The route and the surrounding land initially rises as one travels towards Meelick Bridge from the west side R314 direction. At a high point on top of an esker the Greenway runs between two embankments on the north and south sides (see Plate 15). Continuing down the slope on the other side there is a farm animal handling area and the Greenway bends to the north following the minor road that crosses on Meelick Bridge. The Greenway then changes direction running to the south east after it runs beneath Meelick Bridge (see Plates 16-18).

The wider countryside on this part of the Greenway was rich in natural and semi-natural habitats including reed bed, hawthorn hedge, unimproved grassland given over to pasture, wetland, grassy embankments, stone walls and scrub. There was constant bird song of stonechat, reed bunting, skylark, blue tit and song thrush. All of these habitats are available to view by users of the Greenway. Not surprisingly on the day of the visit there were walkers out enjoying the countryside.

Plate 15 left: approaching the high point where the Greenway route runs between old railway embankments.
Plate 16 right: the farm animal handing area close to the minor road that crosses the Greenway at Meelick Bridge. It is possible to exit the Greenway here to the minor road. The post and wire fence can be seen in the photograph separating one side of the Greenway from the farmland while a stone wall separates the Greenway from farmland on the opposite side. Photos: © C. O'Connell

Plate 17 left: the Greenway where the route runs parallel to the minor road that crosses Meelick Bridge.
Plate 18 right: The view back towards Meelick Bridge from the most easterly point of the study. Photos: © C. O'Connell

6.4.4 Meelick Bridge - Management

The Greenway has been fenced off from the surrounding farmland where necessary and access signs have been erected where appropriate. There was some evidence of pruning of trees that were hindering safe access and line of sight on the Greenway.

6.4.5 Meelick Bridge - Habitats and Species Present

The habitats present along the Greenway at Meelick Bridge are shown on Figure 15 and are described below. The species recorded in Meelick Bridge were as follows: 52 plants, 6 animals and 9 birds with a total of 67 species for the site (see Appendix 2).

Grassy Verges GS2
Grassy verge was present along the length of the study area at the junction between the Greenway track and the fences or stone walls. There was a wealth of flowering plants in this valuable habitat including: daisy, vetch, plantain, ragweed, nettle, clover, black meddick, hogweed, horsetail, knapweed, speedwell, birds foot trefoil, thistle, buttercup, mouse-ear hawkweed, dock, cleavers, Yorkshire fog and cock's foot grass. There was evidence of feeding song thrush along the verges with many broken snail shells. This habitat also occured on the old railway embankments which marked the route of the Greenway on the western side of Meelick Bridge (see Plate 19).

Plate 19: Grassy verge habitat located on old embankments along the Greenway to the east of Meelick Bridge. These were species rich in wild flowers (see close up of primrose and vetch inset) and a variety of pollinators were observed including hoverflies, white tailed bumble bee and carder bee. Spittle bugs or froghoppers were abundant on the grass and plantain stems. Action 6.4.4. in Table 7 recommends retaining the wild flower verges as a valuable biodiversity habitat. Photo: © C. O'Connell

Hedgerow WL1
Hedgerows occurred along different parts of the Greenway and had different composition. Closer to wetland habitats adjacent to the Greenway to the west of Meelick bridge willow formed a hedge along the post and wire fence line. This was being maintained through trimming to keep the Greenway open. At the high point the stone walls on the embankment to the south side were overtopped with brambles which formed a low hedge. Brambles also formed a hedge in patches on the eastern part of the Greenway (Plate 20). Flowering hawthorn and blackthorn hedge with an earthen bank rich in woodland flowers occurred on the eastern side of the Greenway route that ran parallel to the minor road over Meelick bridge (Plate 21). In the earthen bank primrose, hart's tongue fern, bush vetch, herb robert, cleavers, ivy, wood avens and bluebell were recorded.

Plate 20 left: Brambles formed a hedge barrier along part of the Greenway route at Meelick Bridge. Brambles are regarded as one of the top plants for biodiversity and their growth along the wire posts and fence of the Greenway should be encouraged. Action 6.4.3 in Table 7 recommends encouraging the spread of brambles along bare fenceline.
Plate 21 right: Hawthorn hedge along the Greenway in the area that runs parallel to the minor road that crosses Meelick Bridge. The hawthorn has been allowed to flower and will set seed providing a rich feeding area for birds and pollinators in spring and summer.
Photos: © C. O'Connell

Stone Walls BL1
Stone walls occurred along part of the Greenway on the western side of Meelick Bridge. These were composed of limestone bricks and have become naturally colonised with plants including herb robert, mosses, lichens, hart's tongue fern and ivy-leaved toadflax (see Plate 22).

Plate 22: Stone wall habitat near Meelick Bridge on the Monasteries of the Moy Greenway. Note ivy-leaved toadflax inset. Grassy verge and hedgerow habitats are also present.
Photo: © C. O'Connell.

6.4.6 Meelick Bridge - Biodiversity Actions

A number of actions are proposed to enhance biodiversity of the Greenway at Meelick Bridge and are listed in Table 7. Many of these are focused on allowing the natural colonisation of the fence line as there is a richness of biodiversity and habitats in the wider countryside around the Greenway.

Table 7: Biodiversity enhancement actions proposed for the Greenway at Meelick Bridge, Co. Mayo

Action Number	Action	Notes
6.4.1	**Farm animal handling area**	The farm animal handling area located on the western side of Meelick Bridge needs screening. Planting space along the Greenway is an issue here. The landowner should be contacted to see if they would support planting of Gorse along the fence line in this area. This plant is being chosen as it is tougher when livestock are involved and it is already growing along part of the Greenway.
6.4.2	**Fenceline on top of old railway embankment**	Where the Greenway runs between two embankments on the western side of Meelick Bridge, there is a fenceline on the northern margin that needs screening. Planting a hawthorn and blackthorn hedge with brambles is proposed as this is typical of the area.
6.4.3	**Fencelines to the east of Meelick Bridge - allow natural colonisation to occur**	To the east of Meelick Bridge, the fenceline is being colonised by bramble and hedge bindweed naturally. This action should be encouraged as in time the entire fence will be screened. Honeysuckle (*Lonicera periclymenum*) and the native Irish wild rose (*Rosa canina*) could be planted to enhance the natural process (see Plate 23.
6.4.4	**Retain wildflower verges along the Greenway**	The wild flower verges along the Greenway are a very valuable natural habitat that change throughout the year as different flowers and grasses come into season. These habitats should be retained as a valuable resource for pollinators.
6.4.5	**Citizen science monitoring of biodiversity improvement**	Once some of the measures have been completed it is important to undertake simple monitoring actions of how well biodiversity is doing. For example a FIT survey could be undertaken on a patch of dandelions in spring or buttercups in early summer. See further details in Chapter 4 of this plan.

Plate 23: Three native Irish climbing plants that can be used to screen fencelines in addition to ivy and bramble. These are from the left: dog rose (Rosa canina), hedge bindweed (Calystegia sepium) and honeysuckle (Lonicera periclymenum). Photos: © C. O'Connell

6.5 Rosserk Friary, Lecarrow

6.5.1 Rosserk Friary, Lecarrow - Location 54.171429, -9.143335

Rosserk Friary was founded in the 15th century and is one of the largest and best preserved of the Franciscan Friaries in Ireland. The Friary is located on the banks of the Moy Estuary 10km north east of Ballina and is accessed from a minor road off the R314 to the west. Rosserk is is a National Monument in the care of the Office of Public Works. For further information about Rosserk see http://sacredlandscapes.ie/rosserk-abbey.html. Rosserk is one of the points of interest along the Monasteries of the Moy Greenway (see https://www.greenway.ie/monasteries-of-the-moy/ for details).

The biodiversity study site (see Figure 16) is the Friary grounds and the approach road for a distance of 130m. The Friary is fenced off from the surrounding farmland on three sides and by a wall on the fourth side. There is a small car parking area south of the Friary building. Access to the Moy Estuary shore is gated just beyond the Friary at two points. The minor road slopes down to the Friary passing through farmland which is fenced off on either side.

Figure 16: Map showing the location of the biodiversity study site on the Monasteries of the Moy Greenway at Rosserk Friary north east of Kilalla in Co. Mayo. The biodiversity study site is outlined with a white line. © Source: AppleMaps

6.5.2 Rosserk Friary - Results of Screening for Biodiversity and History

The location of Rosserk Friary was screened against lands designated for conservation by the National Parks and Wildlife Service. East of the Friary, the Moy Estuary is a designated site included in the Killala Bay/Moy Estuary SAC and proposed NHA (# 000458) and Special Protection Area (#004036). These sites are shown in Figure 17.

Figure 17: Discovery map showing the location of Rosserk Friary (with an asterisk) the biodiversity study site. East of the Friary the lands are designated in the Killala Bay/Moy Estuary SAC, SPA and cNHA. Source: https://dahg.maps.arcgis.com/apps/webappviewer/index.html?id=8f7060450de3485fa1c1085536d477ba. © Government of Ireland National Parks and Wildlife Service.

Biodiversity information on the species diversity present on the Greenway at Rosserk Friary is available from the National Biodiversity Data Centre (NBDC). Species records can be found for areas of the country based on a system of 1km square grids (see https://maps.biodiversityireland.ie/Map). The grid number screened for Rosserk was G2525. Six species records were found. These are from the Otter Survey of Ireland 1982, Heritage Trees of Ireland, Dragonfly Ireland and Vascular Plants Atlas 2012 onwards. The species recorded for this 1km square are otter, hawthorn, hedge woundwort, marsh woundwort, banded demoiselle and mouse-eared snail.

Rosserk Friary is a listed structure in the historic environments inventory (see https://maps.archaeology.ie/HistoricEnvironment/) together with a number of other sites in the locality associated with Tobar Mhuire - Mary's Well. These are shown in Figure 18 and are: 1. Rosserk Graveyard (#MA022-082002), Rosserk Religious House (#MA022-082001), 3. Rosserk Earthwork (#MA022-082004), 4. Rosserk Midden (#MA022-124001), 5. Rosserk Midden (#MA022-124002), 6. Rosserk Ritual Site (#MA022-083001), 7. Rosserk Inscribed Stone (#MA022-083002), 8. Rosserk Penitential Station (#MA022-083003) and 9. Carrowkelly Earthwork (#MA022-084).

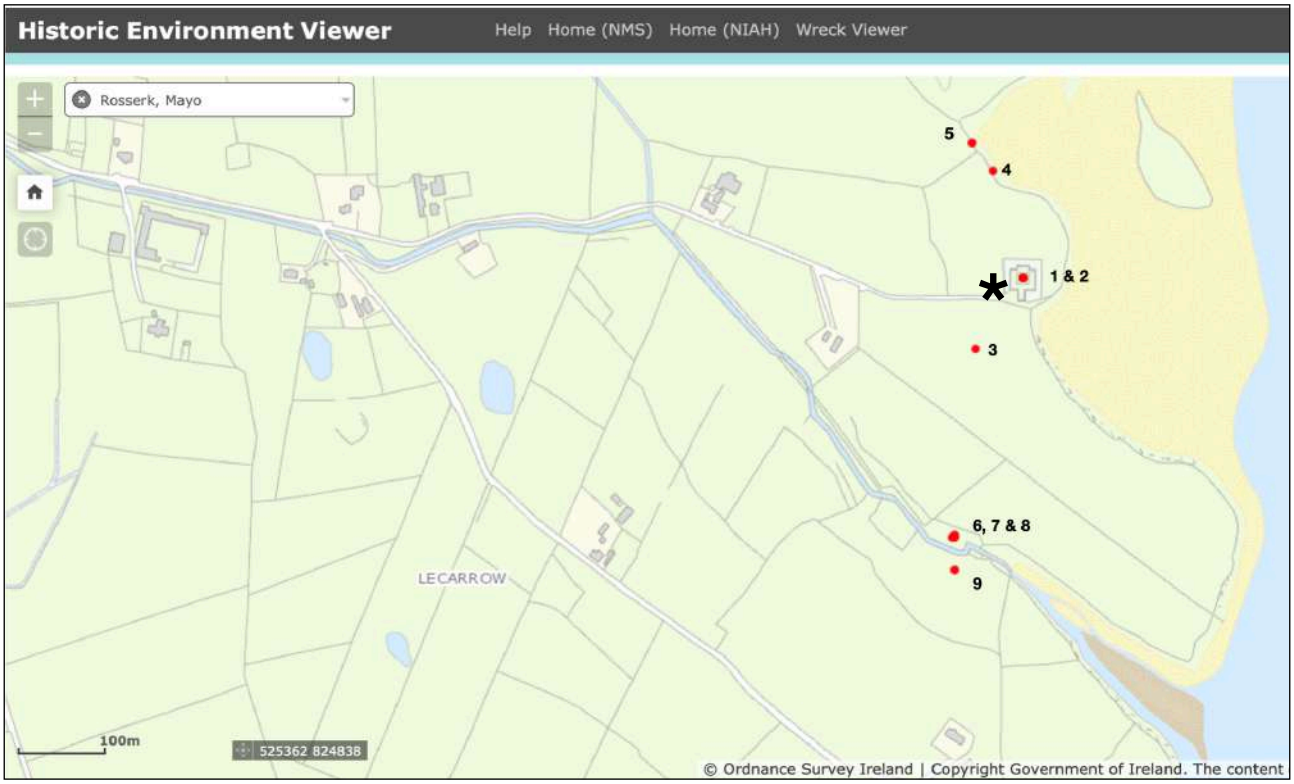


Figure 18: Map showing the location of historic features (see https://maps.archaeology.ie/HistoricEnvironment/) located within the Rosserk biodiversity study area. These are: 1. Rosserk Graveyard (#MA022-082002), Rosserk Religious House (#MA022-082001), 3. Rosserk Earthwork (#MA022-082004), 4. Rosserk Midden (#MA022-124001) and 5. Rosserk Midden (#MA022-124002). Sites 6-9 are located in the area of Tobar Mhuire - Mary's Well and are 6. Rosserk Ritual Site (#MA022-083001), 7. Rosserk Inscribed Stone (#MA022-083002), 8. Rosserk Penitential Station (#MA022-083003) and 9. Carrowkelly Earthwork (#MA022-084). © Ordnance Survey Ireland and Government of Ireland. The biodiversity study site is shown with an asterick.

6.5.3 Rosserk Friary - Biodiversity Field Survey

Rosserk Friary is located on the banks of the Moy Estuary 10km north east of Ballina and is accessed from a minor road off the R314 to the west. Rosserk is is a National Monument in the care of the Office of Public Works. The biodiversity study site is the Friary grounds and the approach road for a distance of 130m. The Friary is fenced off from the surrounding farmland on three sides (east, north and west) and by a wall on the south side. There is a small car parking area south of the Friary building. Access to the Moy Estuary shore is gated from the land surrounding the friary. The minor road slopes down to the Friary passing through farmland which is fenced off on either side and ends in a gate just beyond the Friary building (see Figure 19).

Figure 19: Location and Habitat map for Rosserk Friary on the Monasteries of the Moy Greenway, north of Ballina, Co. Mayo. Map © https://www.google.com/maps, amended C. O'Connell.

On either side of the minor road there is agricultural farmland which is fenced off from the road. A narrow margin of grassland forms a verge along the road. There are some single hawthorn trees, presumably the remains of hedges on the road and in other areas brambles form a hedge at the fence boundary. Mowed grassland occurs around the Friary building. The Moy Estuary is located east of the Friary. The rocky shore is covered with sea weeds and there are plants typical of salt marsh in the narrow shore indicating that the area is tidal.

6.5.4 Rosserk Friary - Site Management

The post and wire fencing around the Friary is well maintained, the grassland is mowed regularly which means it has a low biodiversity value and does not provide food for insects or birds. The use of sprays to control weeds is contrary to encouraging biodiversity and presents a danger to small birds and birds of prey utilising this area. Peregrine falcon and other birds were observed hunting and feeding in this area.

6.5.5 Rosserk Friary - Habitats and Species Present

The habitats present at Rosserk Friary are shown on Figure 19 and are described below. The species recorded in Rosserk Friary were as follows: 25 plants, 1 animal and 6 birds with a total of 32 species for the site (see Appendix 2).

Grassy Verges GS2
Grassy verge was present along the minor road leading to the Friary. This habitat which is not regularly mowed produces wild flowers and seeds in season. Species recorded included sweet vernal grass, chickweed, cock's foot, cleavers, Yorkshire fog, silverweed, plantain, nettle and speedwell (see Plate 24).

Plate 24: Grassy verge habitat on either side of the minor road looking back from Rosserk Friary. The cement posts and wire fencing can be seen and in the distance isolated hawthorn trees and brambles. Action 6.5.2 in Table 8 recommends planting a hawthorn hedge along the fence line while Action 6.5.5 advises the management of the verges as wild flower meadow. Photo: © C. O'Connell

Amenity Grassland GA2
Amenity grassland is improved through regular mowing. This action prevents the grasses and wild flowers present from flowering and setting seed and as a result has little wildlife value. The habitat was present around the outside of the Friary and in the inner cloister (see Plates 25 and 26).

Plate 25 left: Intensively mowed grassland around Rosserk Friary. Plate 26 right: Intensively mowed grassland inside the Rosserk Friary in the cloisters area. In the interests of providing a refuge and food for biodiversity Action 6.5.1 in Table 8 suggests managing these areas as wildflower meadows in combination with perimeter mowed areas. Furthermore Action 6.5.2 in Table 8 suggests planting a hawthorn hedge along the perimeter fenceline to screen the Friary from the surrounding farmland. Photos: © C. O'Connell

Hedgerow WL1
The remains of a hawthorn hedge were observed on the access road to the Friary and bramble was also forming a hedge structure (Plate 27).

Plate 27: The approach road to Rosserk Friary. Bramble and isolated hawthorn trees were forming a hedge barrier along the fence line in part. Action 6.5.2 in Table 8 recommends working with the local farmers to plant hedgerow in the open areas on the fence line. Hawthorn is typical of this region and should be included as the dominant species. The bramble areas should be retained as they provide valuable food and refuge for wildlife. Photo: © C. O'Connell

Artificial Surface BL3
The hard surface car park and gravel access areas around Rosserk Friary are included in this habitat.

Stone Walls BL1
The Friary walls and the perimeter wall to the south of the Friary are included in this habitat. The walls provide habitat for a variety of *Asplenium* ferns including hart's tongue, spleenwort and wall rue and should be allowed to develop this flora (see Action 6.5.3 in Table 8). White and orange lichens were also observed on the stones. Starling were nesting in the higher areas, a peregrine falcon was hunting over this area as were swallows. Herbicides were being used to control weeds on the walls and this practice must stop (Plate 28). Action 6.5.4 in Table 8 suggests weed removal methods that are biodiversity safe.

Plate 28: The very obvious use of herbicide sprays to kill off the grassland and wild flower verge along a boundary wall of Rosserk Friary. This activity is providing the wrong message to visitors who are aware of the need to protect wildlife biodiversity particularly in this area where there is an abundance of small birds such as robin, swallow and starling that need insect food and by peregrine falcon which take small birds as part of their diet. Action 6.5.4 in Table 8 provides guidance on the control of weeds. Photo: © C. O'Connell

Tidal River CW2/Salt Marsh CM

The River Moy Estuary is tidal adjacent to Rosserk Friary. This area is gated from the road. It is rocky with algae and sea weeds on the rocks exposed at low tide. Behind this zone there was salt marsh with a variety of halophytes including sea pink, sea aster, scurvy grass and buck's horn plantain. This habitat occurred within the designated lands of the Killala Bay/Moy Estuary SAC, SPA and cNHA (see Plate 29). A peregrine falcon was observed perched in this habitat (see Plate 29).

Plate 29: The algal covered rocks and the salt marsh habitat at Rosserk Friary, Co. Mayo. Both of these habitats are included in the Killala Bay/Moy Estuary SAC, SPA and cNHA and should be retained as they are (see Action 6.5.6 in Table 8). The image inset shows the peregrine falcon perched in this area. Photos: © C. O'Connell.

6.5.6 Rosserk Friary - Biodiversity Actions

A number of actions are proposed to enhance and protect the biodiversity of Rosserk Friary and are listed in Table 8. Planting hedges and managing grasslands as wildflower meadows are the key messages as well as stopping the use of herbicides. As this property is in the ownership and management of the Office of Public Works, their co-operation and liaison will be crucial if this plan is to succeed.

Table 8: Biodiversity enhancement actions proposed for Rosserk Friary, Co. Mayo

Action Number	Action	Notes
6.5.1	**Convert regularly mowed grasslands to wild flower meadows surrounded by a narrow strip of mowed grass**	The cloister area within Rosserk Friary and the grassland around the outside of the building and car park could be developed as wild flower meadows. The following publication gives guidance on how to develop and manage a wild flower meadow: https://pollinators.ie/wordpress/wp-content/uploads/2018/04/How-to-guide-Wildflower-Meadows-2018-WEB.pdf. In year 1 leave the grass to grow, flower and set seed. In the autumn cut the grass very short. Scarify the ground to create bare soil and leave overwinter for year 2. Cut in spring and remove cuttings and leave it to grow until autumn. At that stage you can sow seeds of yellow rattle - the meadow maker. This plant parasitizes grass roots and weakens them giving wild flowers a better chance of taking hold. The mowing regime is crucial to the success of developing a meadow of wild flowers in these areas and needs to shift to autumn and winter. In a given calendar year the first cut should be undertaken before the end of February and the second cut after September when seeds have shed. Mow a 1m narrow strip of grass around each meadow area to indicate that the area is being managed and erect signs to inform the public of this biodiversity measure. This measure will work well with Action 6.5.2.
6.5.2	**Hedgerow planting along the fenceline on the minor road and around the Friary**	Planting a hawthorn and blackthorn hedge is proposed for the fencelines approaching the Friary and for the fenceline around the Friary property. This type of hedgerow is typical of the area and would provide screening and a major asset for biodiversity. Guidelines on hedge planting can be found here: https://www.teagasc.ie/news--events/daily/environment/how-to-plant-a-hedge.php. This measure will work well with Action 6.5.1
6.5.3	**Stone Wall habitats**	Old stone walls with their nooks and crannies are fantastic habitat for wildlife especially species that like cooler environments such as spiders. Leave walls to become colonised by plants to create habitat for wildlife
6.5.4	**Environmentally friendly weed control - Herbicide use must be avoided.**	Environmentally-friendly plant control methods such as hoeing or digging should be used in the village. Weeds can be controlled as necessary using a homemade weedkiller recipe as follows: 1 gallon vinegar mixed with 1 cup salt and 1 tablespoon washing up liquid. Apply on warm, sunny, dry days.
6.5.5	**Retain wildflower verges along the minor road**	The wild flower verges along the minor road (Greenway) are a very valuable natural habitat that change throughout the year as different flowers and grasses come into season. These habitats should be retained as a valuable resource for pollinators and managed as wildflower meadow (See Action 6.5.1).
6.5.6	**Retain saltmarsh and tidal river habitats**	Beyond Rosserk Friary the River Moy estuary is tidal. This area is included within designated conservation lands and the salt marsh and tidal habitats should be retained as they are.
6.5.7	**Citizen science monitoring of biodiversity improvement**	Once some of the measures have been completed it is important to undertake simple monitoring actions of how well biodiversity is doing. For example a FIT survey could be undertaken on a patch of dandelions in spring or buttercups in early summer. See further details in Chapter 4 of this plan.

6.6 Tobar Mhuire - Mary's Well, Lecarrow, Knockroe

6.6.1 Tobar Mhuire - Mary's Well, Lecarrow, Knockroe - Location 54.168806, -9.144522

Tobar Mhuire - Mary's Well is situated near the confluence of the Rosserk river and the estuary of the River Moy. Tradition tells that an apparition of the Virgin Mary occurred here and this site is venerated each year on the 15th August. A stone vault has been constructed over the well from which has grown a hawthorn tree. Tobar Mhuire is located 10km north east of Ballina and is accessed from a minor road off the R314 to the west. The minor road has been widened to form a car park and the well is only accessible on foot via a green lane 0.5k long which runs alongside the Rosserk River. This venerated site is in the care of Mayo County Council. For further information about Tobar Mhuire see http://sacredlandscapes.ie/tobar-mhuire.html. Tobar Mhuire is one of the points of interest along the Monasteries of the Moy Greenway (see https://www.greenway.ie/monasteries-of-the-moy/ for details).

The biodiversity study site (see Figure 20) is the grounds of the well and the green lane leading to the well for a distance of 250m from a bridge over the Rosserk River. At this bridge the Rosserk river changes direction to run along the southern margin of the access lane to Tobar Mhuire. The lane and the open area around the well are separated from the surrounding farmland by the Rosserk River, hedge, walls and fencing.

Figure 20: Map showing the location of the biodiversity study site on the Monasteries of the Moy Greenway at Tobar Mhuire (Mary's Well) north east of Kilalla in Co. Mayo. The Rosserk River which flows through the site joins the Moy Estuary to the south east. The biodiversity study site is outlined with a white line. Rosserk Friary can be seen on the Moy River Bank to the north. © Source: AppleMaps

6.6.2 Tobar Mhuire - Mary's Well - Results of Screening for Biodiversity and History

The location of Tobar Mhuire was screened against lands designated for conservation by the National Parks and Wildlife Service. East of Tobar Mhuire where the Rosserk River joins the Moy Estuary is designated land in the Killala Bay/Moy Estuary SAC and proposed NHA (# 000458) and Special Protection Area (#004036). These sites are shown in Figure 21.

Figure 21: Discovery map showing the location of Tobar Mhuire - Mary's Well (with an asterisk) the biodiversity study site. East of the Well the lands are designated in the Killala Bay/Moy Estuary SAC, SPA and cNHA. Source: https://dahg.maps.arcgis.com/apps/webappviewer/index.html?id=8f7060450de3485fa1c1085536d477ba. © Government of Ireland National Parks and Wildlife Service.

Biodiversity information on the species diversity present on the Greenway at Tobar Mhuire is available from the National Biodiversity Data Centre (NBDC). Species records can be found for areas of the country based on a system of 1km square grids (see https://maps.biodiversityireland.ie/Map). The grid number screened for Tobar Mhuire was G2525. Six species records were found here. These are from the Otter Survey of Ireland 1982, Heritage Trees of Ireland, Dragonfly Ireland and Vascular Plants Atlas 2012 onwards. The species recorded for this 1km square are otter, hawthorn, hedge woundwort, marsh woundwort, banded demoiselle and mouse-eared snail.

Tobar Mhuire is a listed structure in the historic environments inventory (see https://maps.archaeology.ie/HistoricEnvironment/) together with a number of other sites in the locality associated with Rosserk Friary. These are shown in Figure 22 and include: 1. Rosserk Graveyard (#MA022-082002), Rosserk Religious House (#MA022-082001), 3. Rosserk Earthwork (#MA022-082004), 4. Rosserk Midden (#MA022-124001), 5. Rosserk Midden (#MA022-124002), 6. Rosserk Ritual Site (#MA022-083001), 7. Rosserk Inscribed Stone (#MA022-083002), 8. Rosserk Penitential Station (#MA022-083003) and 9. Carrowkelly Earthwork (#MA022-084).

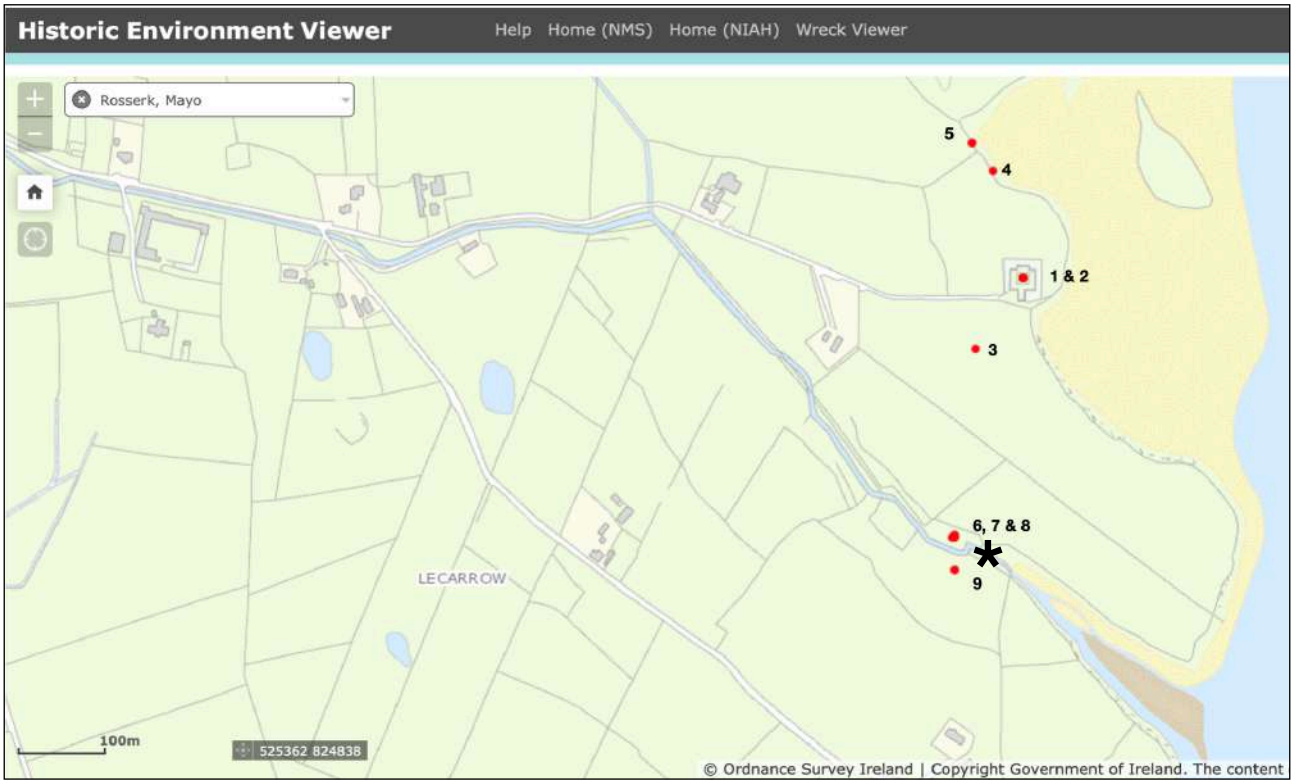


Figure 22: Map showing the location of historic features (see https://maps.archaeology.ie/HistoricEnvironment/) located within the Tobar Mhuire biodiversity study area. These include: 6. Rosserk Ritual Site (#MA022-083001), 7. Rosserk Inscribed Stone (#MA022-083002), 8. Rosserk Penitential Station (#MA022-083003) and 9. Carrowkelly Earthwork (#MA022-084). Sites numbered 1-5 are associated with Rosserk Friary and are 1. Rosserk Graveyard (#MA022-082002), Rosserk Religious House (#MA022-082001), 3. Rosserk Earthwork (#MA022-082004), 4. Rosserk Midden (#MA022-124001), 5. Rosserk Midden (#MA022-124002). The biodiversity study site is marked with an asterick. © Ordnance Survey Ireland and Government of Ireland.

6.6.3 Tobar Mhuire - Mary's Well - Biodiversity Field Survey

Tobar Mhuire - Mary's Well is situated near the confluence of the Rosserk river and the estuary of the River Moy. Tradition tells that an apparition of the Virgin Mary occurred here and this site is venerated each year on the 15th August. A stone vault has been constructed over the well from which has grown a hawthorn tree. A drainage ditch or small stream flows from the well spring across the site to join with the Rosserk River. Around the well there are penitential stones located on overgrown low stone and earthen mounds. The biodiversity study site is the grounds of the well and the green lane leading to the well for a distance of 250m from a bridge over the Rosserk River. At this bridge the Rosserk river alters its course to run along the southern margin of the access lane to Tobar Mhuire. The lane and the open area around the well are separated from the surrounding farmland by the Rosserk River, hedge, walls and fencing.

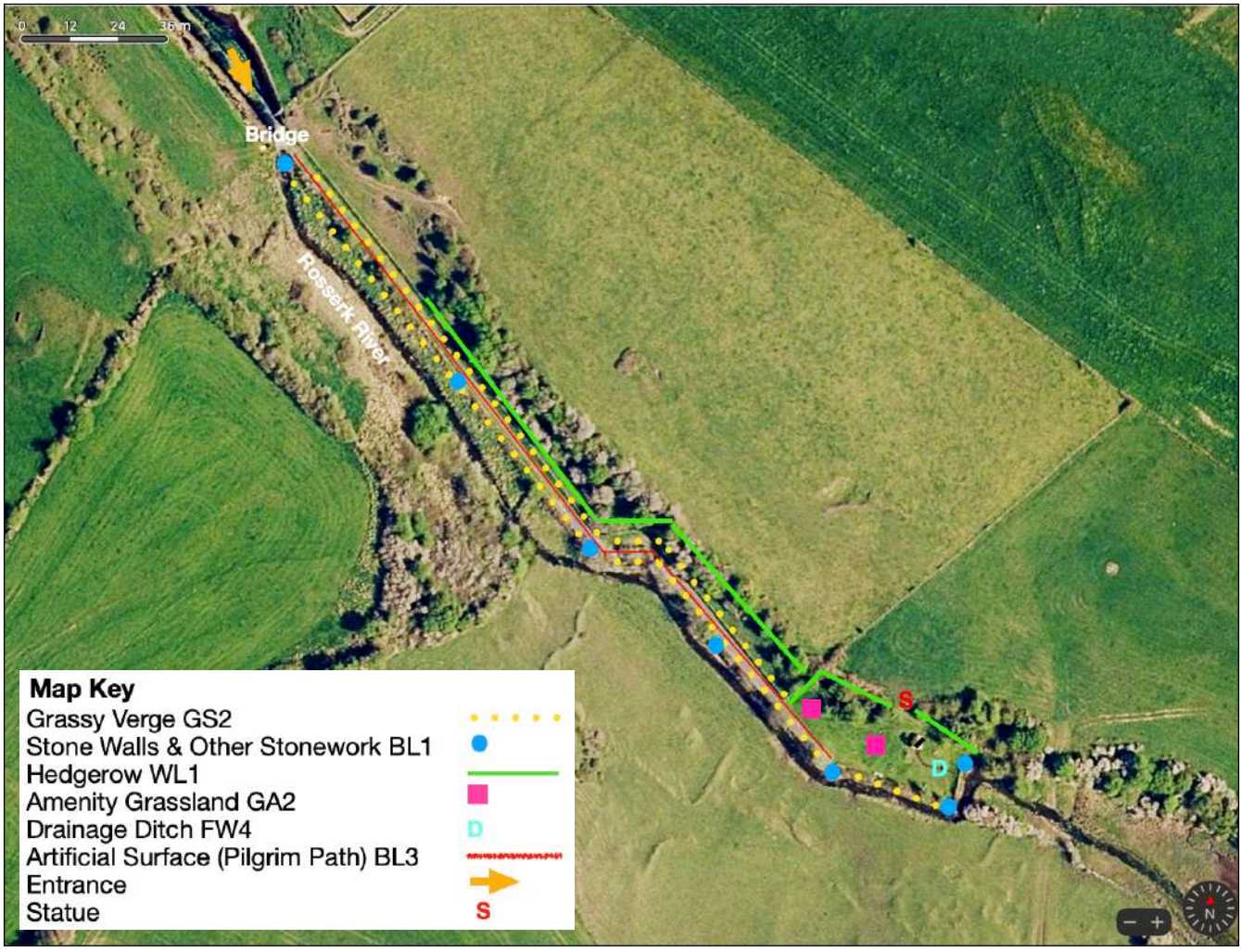


Figure 23: Habitat map of the biodiversity study site on the Monasteries of the Moy Greenway at Tobar Mhuire (Mary's Well) north east of Kilalla in Co. Mayo. The Rosserk River which flows through the site joins the Moy Estuary to the south east. The biodiversity study site is outlined with a white line. Rossert Friary can be seen on the Moy River Bank to the north. © Source: AppleMaps

6.6.4 Tobar Mhuire - Mary's Well - Site Management

The site is maintained for pilgrimage by Mayo County Council. This includes providing fencing and mowing the grass around the penitential site and access lane and providing seating, a car park and portable toilet. Tobar Mhuire is regarded as a holy site in Mayo. There is an abundance of wild flowers and trees at this site and the constant sound of water movement and bird song were noted during the visit. The air was pure as evidenced in the abundance of epiphytic lichens on the trees and walls. As a result this site is peaceful and spiritual. A few small changes to the management regime at this site will further enhance its wealth of biodiversity for the enjoyment of pilgrims.

6.6.5 Tobar Mhuire - Mary's Well - Habitats and Species Present

The habitats present at Tobar Mhuire are shown on Figure 23 and are described below. The species recorded at Tobar Mhuire were as follows: 43 plants, 2 animals and 8 birds with a total of 53 species for the site (see Appendix 2).

Grassy Verges GS2
Grassy verge was present along the lane leading to Tobar Mhuire particarly beside the boundary fenceline and walls. The central part of the lane has been walked on more often and as a result the grass is stunted (and is included in the Amenity Grassland GA2 habitat descibed in a subsequent section). Grassy verge was also recorded around the penitential stones at the well itself. There was an abundance of wild flowers at the margins of the lane including knapweed, red clover, sweet vernal grass, meadowsweet, flag iris, daisy, horsetail, herb robert, lady's smock, cleavers, pignut, water figwort, bush vetch, silverweed, dock, bluebell and dandelion (see Plate 30).

Plate 30: The grass path that leads to Tobar Mhuire. The centre of the path shows more trampling and the grass sward is short. To the sides the grass is longer and contains more wild flowers. Action 6.6.1 in Table 9 suggests a management regime for the path and penitential stones that will encourage biodiversity. The photograph also shows to the left hand side the stone wall boundary and to the right the post and wire fence. Letting part of the grass and wild flowers grow and set seed will help to screen the fenceline along the lane. Photo: © C. O'Connell

Stone Walls and Other Stonework BL1
The stone walls running along one side of the land and around the well site were ancient and have been colonised by a great variety of woodland plants and lichens. These included ivy, herb robert, hart's tongue fern, spleenwort, wall rue, bramble and moss (Plate 31).

Plate 31: Close up of the stone wall along the lane access to Tobar Mhuire showing the abundance of plants that have colonised it. The nooks and crannies within the wall provide habitat for breeding birds and insects. Action 6.6.2 in Table 9 recommends retaining the walls as they are for biodiversity. Photo: © C. O'Connell

Hedgerow WL1

Hedge occurs behind the boundary wall and along part of the fenceline of the access lane to Tobar Mhuire. It is also present around the well site itself. It is dominated by hawthorn but there are also mature trees of sycamore and ash. Wild flowers of woodland present include bluebell, ivy, pignut, bush vetch, herb robert and bindweed. The bird life was rich with bullfinch (Plate 32), dunnock, robin, blackbird, song thrush, swallow and chaffinch.

Plate 32: Mature hedge of ivy and hawthorn at the Tobar Mhuire site. The grass is mowed in this area to allow for pilgrims to undertake their prayers. Action 6.6.3 in Table 9 recommends managing the hedge by trimming at the base and allowing the treees to flower and set seed towards the top. Action 6.6.1 recommends managing a strip of grass 2m wide at the base of the hedge for wild flowers and mowing the remainder. This habitat attracted a variety of birds such as bullfinch (inset). Photo: © C. O'Connell.

Amenity Grassland GA2
This habitat occurred in the open area around the well to allow pilgrims access to the penitential stones and to Tobar Mhuire (see Plate 33). It also occurs along the middle of the lane leading to the well site where there is more visitor trampling. Regular mowing of grass reduces its biodiversity value. While this is essential at this site, not all of the grass needs to be mowed. Recommendations on the mowing regime are made in Table 9.

Plate 33: A penitential stone at the Tobar Mhuire occurs on a low mound and is surrounded by a stone circle. The grass around the stone is being mowed regularly to allow for pilgrim access. Action 6.6.4 in Table 9 recommends continuing to mow the grass provided the grass cuttings are removed from the site to a compost heap, while Action 6.6.1 suggests a less intensive mowing regime on the mound around the penitential stone to allow for the development of wild flower meadow. Photo: © C. O'Connell.

Drainage Ditch FW4

A tributary of the the Rosserk River rises from the spring in Tobar Mhuire and crosses the grassland open area of the penitential site to join with the Rosserk close by. This channel of this stream is 0.5m wide and contained brooklime and fools watercress as shown in Plate 34.

Plate 34: Tobar Mhuire building and the drainage ditch/small stream that crosses the site from the well to join with the Rosserk River (see image inset) which enters the River Moy nearby. One of the penitential mounds can be seen to the left of the well building. Action 6.6.6 in Table 9 recommends creating a 1m buffer zone of wild flower meadow on either side of this stream to enhance its wildlife value and to help protect pilgrims.
Photo: © C. O'Connell.

6.6.6 Tobar Mhuire - Mary's Well - Biodiversity Actions

A number of actions are proposed to enhance and protect the biodiversity of Tobar Mhuire and are listed in Table 9. As this property is managed by Mayo County Council, their co-operation and liaison will be crucial if this plan is to succeed.

Table 9: Biodiversity enhancement actions proposed for Tobar Mhuire, Co. Mayo

Action Number	Action	Notes
6.6.1	**Develop wild flower meadow habitat along fence lines, hedges, walls and at penitential stones**	The junction of grassland with fencelines, walls, hedges and penitential stone areas could be developed as wild flower meadows. The following publication gives guidance on how to develop and manage a wild flower meadow: https://pollinators.ie/wordpress/wp-content/uploads/2018/04/How-to-guide-Wildflower-Meadows-2018-WEB.pdf. This can be achieved by altering the mowing regime at Tobar Mhuire. In year 1 leave the grass to grow, flower and set seed. In the autumn cut the grass very short. Scarify the ground to create bare soil and leave overwinter for year 2. Cut in spring and remove cuttings and leave it to grow until autumn. At that stage you can incorporate a seed mix to enhance the number of wild flowers and to keep grass at bay incorporate yellow rattle - the meadow maker. This plant parasitizes grass roots and weakens them giving wild flowers a better chance of taking hold. The mowing regime is crucial to the success of developing a meadow of wild flowers in these areas and needs to shift to autumn and winter. In a given calendar year the first cut should be undertaken before the end of February and the second cut after September when seeds have shed. This action will work well with Action 6.6.6.
6.6.2	**Retain stone walls as they are and make repairs as necessary**	The old stone walls on the boundary with the Rosserk River are alive with wildlife and should be retained at this site. Part of the stone wall at the Well site has been removed and replaced with a wooden pallet. The wall should be restored in this area (see Plate 35).
6.6.3	**Hedge management**	Existing hedges should be managed for wildlife. The ideal hedgerow for wildlife is tall, wide and dense at the base, with a wide, uncultivated, grassy margin. Trim all existing hedges to an "A" shape, wide at the bottom and narrow at the top. Allow the upper part of hedge to produce flowers and fruit for wildlife. Encourage some trees within the hedge to mature so as to create an attractive tree line in addition to the hedge. Please note that hedge cutting between 1st March and 31st August is prohibited under the Wildlife Act. Avoid cutting all your hedgerows at once, consider a 3-5 year rotation to allow flowers and berries to grow in alternate sections. Gradually reduce cutting intensity each year to allow your hedgerow to expand and diversify. This is especially relevant for any young hedges to get established. For more advice on the frequency of hedgerow trimming please visit https://www.farmingfornature.ie/resources/best-practice-guides/hedgerow-management/.
6.6.4	**Grass mowing and waste composting**	Continue to mow the grass in the centre of the access lane to Tobar Mhuire and around the penitential stones to allow for pilgrim access to the site. Remove grass cuttings to a compost area. Do not dump them at the site as they will enrich the area in which they are dumped and encourage the development of nettle beds.
6.6.5	**Hedge planting**	Hedge habitat is interrupted at Tobar Mhuire behind a large statue of Mary (see Plate 36). A hawthorn hedge which is typical of this area should be planted. Guidelines on hedge planting can be found here: https://www.teagasc.ie/news--events/daily/environment/how-to-plant-a-hedge.php.
6.6.6	**Increase width of wildflower meadow buffer zone on either side of drainage ditch by 1m**	A 1m border of uncut grass forming a buffer between the drainage ditch/small stream and the regularly mowed grassland should be managed for wild flowers. This action will work well with Action 6.6.1. The following publication gives guidance on how to develop and manage a wild flower meadow: https://pollinators.ie/wordpress/wp-content/uploads/2018/04/How-to-guide-Wildflower-Meadows-2018-WEB.pdf.

Action Number	Action	Notes
6.6.7	**Poisonous plant awareness in Rosserk River along pilgrim route**	The Rosserk River forms the boundary of Tobar Mhuire. *Oenanthe crocata* or hemlock water-dropwort grows in the river and along its banks and is within easy access for pilgrims (see Plate 37). A warning sign needs to be erected about the poisonous nature of this plant.
6.6.8	**Citizen science monitoring of biodiversity improvement**	The Tobar Mhuire Site and access lane with the richness of habitats would make an ideal butterfly transect to be recorded by a citizen scientist. Further information can be found in Chapter 4 of this plan about butterfly transects.

Plate 35 left: The gap in the stone wall at the Tobar Mhuire site with the Rosserk River behind. Action 6.6.2 in Table 9 recommends repairing the wall here to provide habitat for wildlife and to ensure pilgrim safety.

Plate 36 right: The gap in the hawthorn hedge behind the statue of the Virgin Mary at Tobar Mhuire. Action 6.6.4 in Table 9 recommends planting a new hedge to the rear of the statue to join up with the existing hedgerow as this will provide a wildlife corridor.
Photos: © C. O'Connell.

Plate 37: Oenanthe crocata or hemlock water-dropwort grows in the Rosserk River banks and is within easy access for pilgrims. This is a native Irish plant but it is highly poisonous plant. All parts of the plant are extremely toxic and it has been known to cause human and livestock poisoning. Action 6.6.7 in Table 9 recommends putting up a pilgrim warning sign about the poisonous nature of this plant. Photos: © C. O'Connell.

6.7 Pump House, Quignamanger, Ballina

6.7.1 Pump House, Quignamanger, Ballina - Location 54.134403, -9.136651

The Pump House is located on the eastern bank of the River Moy adjacent to Quay Road (R297) in Ballina. South of the pump house is the Moy Boat Club and to the west the natural bank of the river. The Pump House is part of the sewage treatment scheme for East Ballina and is connected to the Sewage Treatment Plant on the western bank of the Moy River by pipes laid beneath the bed of the River Moy. The site is managed by Mayo County Council. The Pump House is 15m above sea level. The site has an area of 2,437 square meters or 0.24ha. The pump house building, tanks and cement apron fronts onto Quay Road. West of this structure the land falls to the Moy River level and the land is inundated by the tidal river. It is colonised by reeds. North of the built structures, there is a grassed area maintained by mowing and a hedgerow with mature trees of sycamore and alder trees.

Figure 23: Map showing the location of the biodiversity study site at the Pump House on the eastern bank of the River Moy Estuary. The biodiversity study site is shown with a white line. The The road on the eastern boundary of the site is Quay Road. © Source: AppleMaps.

6.7.2 Pump House, Ballina - Results of Screening for Biodiversity and History

The location of the Pump House was screened against lands designated for conservation by the National Parks and Wildlife Service. The entire site is included in the the Killala Bay/Moy Estuary SAC and proposed NHA (# 000458) and Special Protection Area (#004036). The boundary of these sites are shown in Figure 24.

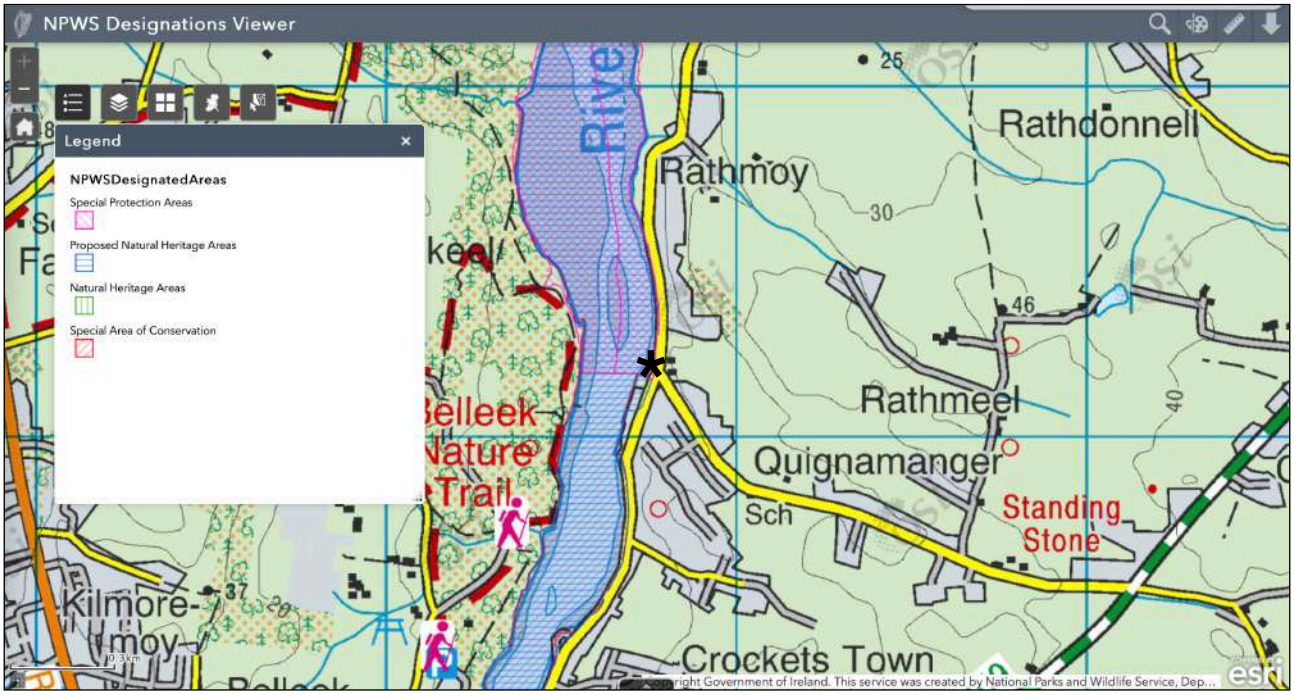


Figure 24: Discovery map showing the location of the Pump House biodiversity study site (with an asterisk). The entire site is part of the designated Killala Bay/Moy Estuary SAC, SPA and cNHA. Source: https://dahg.maps.arcgis.com/apps/webappviewer/index.html?id=8f7060450de3485fa1c1085536d477ba. © Government of Ireland National Parks and Wildlife Service.

Information on the species diversity present at the Pump House is available from the National Biodiversity Data Centre (NBDC). Species records can be found for small sites in the country based on a system of 100m square grids (see https://maps.biodiversityireland.ie/Map). The grid numbers screened for the Pump House were G257211 and G257212. There were no species records in either square for this site.

The inventory of historic environments (see https://maps.archaeology.ie/HistoricEnvironment/) was screened in relation to the Pump House and there are no structures on this site included in this database.

6.7.3 Pump House, Ballina - Biodiversity Field Survey

The Pump House biodiversity study site is located within the town of Ballina. The site is located along Quay Road behind a low wall and occurs on the banks of the River Moy Estuary. Within the site there is a man made Pump House building and ground level tank structures with man holes which are covered with gravel. The land drops behind the Pump House to the Moy estuary and is inundated with sea water at high tides. The vegetation is dominated by tall herbs and reed sweet grass. The inundated area is separated from a maintained grassland which is used as a pull in off the road and by an embankment with alder trees. The site grades into hedgerow to the north adjacent to Quay Road.

6.7.4 Pump House, Ballina - Site Management

The Pump House and Tanks area are fenced off from public access. The grassed area adjacent to the northern boundary of the tanks is maintained by mowing. However the cut grass is being dumped in the scrub vegetation adjacent. In the inundated grassland area adjacent to the river there was much pastic litter, presumably washed ashore during high tide.

6.7.5 Pump House, Ballina - Habitats and Species Present

The habitats present at the Pump House are shown on Figure 25 and are described below. The species recorded in the pump house were as follows: 34 plants, 4 animals and 0 birds with a total of 38 species for the site (see Appendix 2).

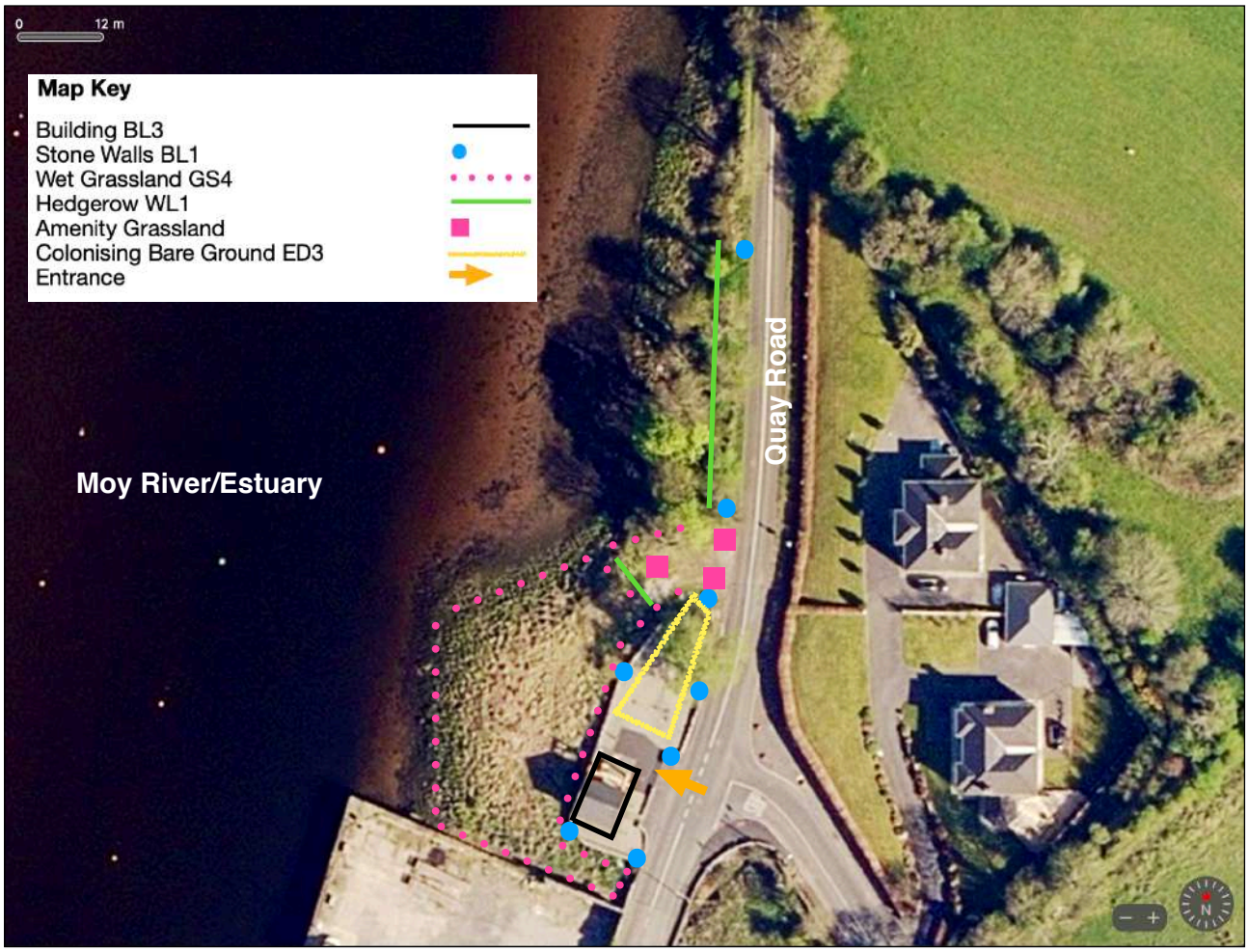


Figure 25: Habitat map for the Pump House, Ballina, Co. Mayo. Map © https:// www.apple.com/maps/, amended C. O'Connell.

Stone Walls and Other Stonework BL1
The Pump House building and tanks are separated from Quay Road by a stone wall. Brambles, *Cotoneaster* and *Fuschia* were growing in some profusion along the wall in addition to hart's tongue fern.

Buildings BL3
The Pump House building is a brick structure and is relatively free of plant life (see Plate 38).

Recolonising Bare Ground ED3
Gravel has been spread on the top of the tanks at the Pump House. This substrate is being colonised by a variety of herbs and shrubs including *Buddleia*, water figwort, ragweed, willowherb, sycamore seedlings and plantain (see Plate 39).


Plate 38 left: An overview of the Biodiversity Study site at the Pump House in Ballina, Co. Mayo. In the foreground the wet grassland habitat (GS4) can be seen with willow and alder trees. The River Moy lies to the west of this area and the Pump House to the east on Quay Road. Plate 39 right: The recolonising bare ground habitat ED3. The gravel substrate is being colonised by a variety of plants and shrubs. Photos: © C. O'Connell.

Hedgerow WL1
A mature native hedgerow occurs along the northern margin of the Pump House site with willow, sycamore and alder trees.

Amenity Grassland GA2
This habitat occurred adjacent to Quay road and provides a pull in off the busy road. It is maintained by mowing and is species poor as a result with plantain, white clover, buttercup, dandelion and silver weed.

Wet Grassland GS4
This was the most biodiverse habitat on the site and occurred in the area of inundation by the tidal river. The dominant plant in this habitat was reed sweet grass with angelica, willow herb, alder trees, willow trees, meadow sweet, valerian, silverweed, hawkbit, wild carrot and some garden escapes including ice berg plant and Montbrettia. The sward height was 2m. The ground surface was muddy, uneven and sloped. There was much litter of plastic bottles washed up from the river here (see Plate 40).

Plate 40: wet grassland habitat with reed sweet grass and yellow hawkbit at the pump house. Many invertebrates were observed here including leaf hopper (inset), bumble bee, soldier beetle and spider.
Photos: © C. O'Connell and J. FitzGerald.

6.7.6 Pump House, Ballina - Biodiversity Actions

As the Pump House biodiversity site occurs entirely within lands designated for conservation the number of actions are proposed are restricted and are listed in Table 10.

Table 10: Biodiversity enhancement actions for the Pump House, Ballina, Co. Mayo

Action Number	Action	Notes
6.7.1	**Let the Amenity Grassland area naturalise to wild flower meadow**	Change the mowing regime of the amenity grassland area to a no-mow management system to encourage wild flowers and enhance biodiversity. This action would work well with Action 6.2.2. The following publication gives guidance on how to develop and manage a wild flower meadow: https://pollinators.ie/wordpress/wp-content/uploads/2018/04/How-to-guide-Wildflower-Meadows-2018-WEB.pdf.
6.7.2	**Proper disposal of grass cuttings**	The dumping of mowed grass from the site and possibly from elsewhere must stop within this designated site. If a no-mowing management policy was established for this site, this would eliminate the need to dispose of grass cuttings. All grass cuttings should be disposed of in County Council Bring Centres (Plate 41).
6.7.3	**Site clean up**	The inundated wet grassland habitat between the river and the pump house needs to be cleaned up of plastic flotsam particularly after high tides.
6.7.4	**Maintain bramble areas and butterfly bushes for pollinators**	The brambles occurring along the boundary wall of the Pump House are a valuable food source and habitat for wildlife and should be retained. It may be necessary to cut back brambles should they protrude onto Quay Road. This can be undertaken on a three year cycle. *Buddleia* bushes naturally colonising bare ground should be retained for butterfly pollinators. Again these need to be managed on an annual basis by pruning to prevent them becomming too large. All organic cuttings from these plants should not be dumped but removed to County Council Bring Centres.
6.7.5	**Citizen science monitoring of biodiversity improvement**	Once some of the measures have been completed it is important to undertake simple monitoring actions of how well biodiversity is doing. For example a FIT survey could be undertaken on a patch of dandelions. See further details in Chapter 4 of this plan.

Plate 41: Grass clippings and other organic material dumped on the Pump House biodiversity site need to be removed to the Mayo County Council organic waste recycling facility. Grass clippings are rich in nutrients and encourage the spread of nettles. See Action 6.7.2 in Table 10. Photo: © C. O'Connell.

6.8 McKenzie Farm, Corimla North, Co. Mayo

6.8.1 McKenzie Farm, Corimla North - Location 54.126771, -9.078754

The McKenzie Farm is in private ownership and is located north east of Ballina town between the N59 and the Brusna River. The land is being farmed under the ACRES Scheme (Agri-Climate Rural Environment Scheme) of the Department of Food, Agriculture and the Marine.

The boundaries of the site include the Brusna river, drainage ditches, hedgerow and stone wall. There is an unsealed access road through the farm for motorised vehicles. The biodiversity study site (see Figure 26) consists of five fields located on the western bank of the Brusna River which is a tributary of the River Moy. The fields occupy an area of 17.6ha or 176,100 square metres. The elevation of the ground varies between 36 and 40m. The land is grazed by cattle. Electric fence is used to create grazing pastures and to keep cattle away from the Brusna river and the drainage ditches around the farm boundaries. There were however, three heavily poached areas where cattle have access to Brusna river for drinking water.

Figure 26: Map showing the location of the McKenzie Farm at Corimla North in Co. Mayo. The site consists of five fields which have been numbered for descriptive purposes. The Brusna river, a designated site for conservation forms the eastern boundary of the site. Cattle have access to the river at three points for drinking water and these are shown on the map with a yellow arrow. Farmland occurs on the other boundaries. The biodiversity study site is outlined with a white line. © Source: AppleMaps

6.8.2 McKenzie Farm, Corimla North - Results of Screening for Biodiversity and History

The location of the McKenzie Farm was screened against lands designated for conservation by the National Parks and Wildlife Service. The Brusna River which flows along the eastern boundary of the site is included in the River Moy SAC and proposed NHA designated sites (#002298). These sites are shown in Figure 27 and they include all of the freshwater catchment of the River Moy and its habitats and wildlife. A description of the site is available at https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY002298.pdf.

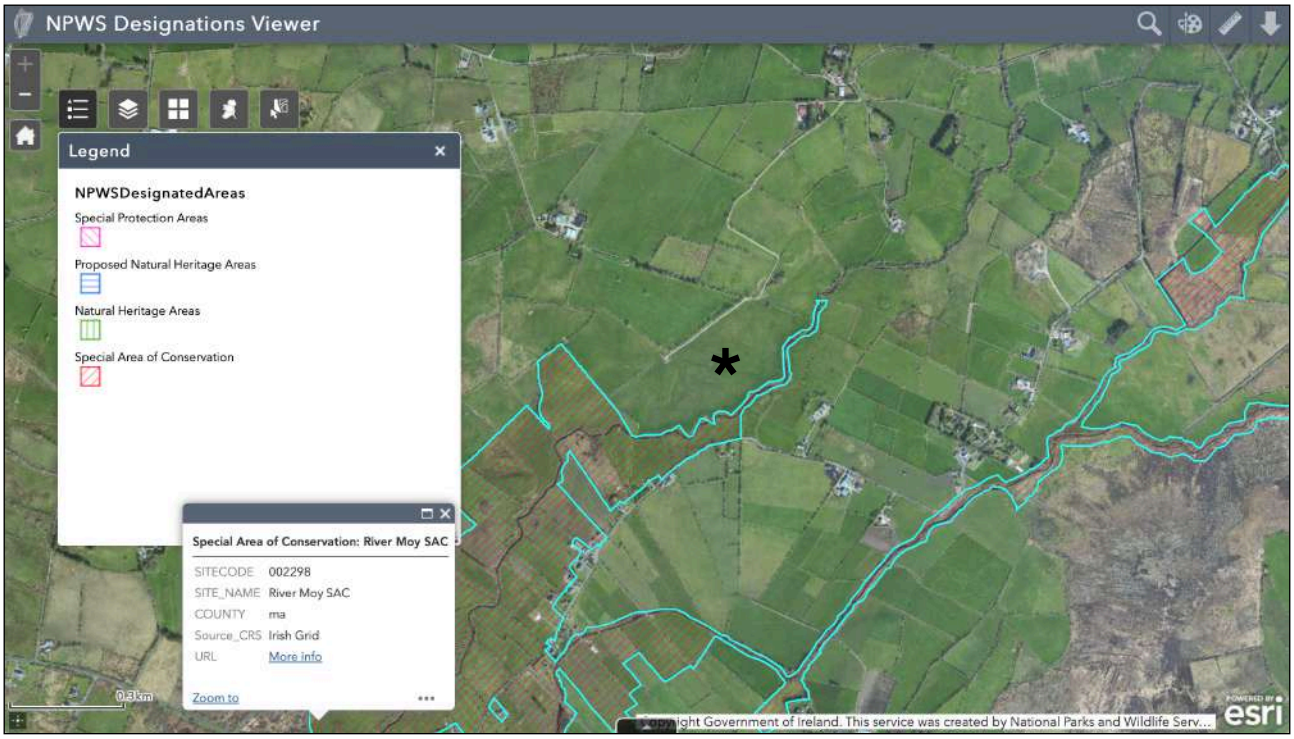


Figure 27: Air photograph showing the part of the River Moy Special Area of Conservation (#002298) that incorporates the Brusna River which flows along the eastern boundary of the biodiversity study site shown with an asterisk. Source: https://dahg.maps.arcgis.com/apps/webappviewer/index.html?id=8f7060450de3485fa1c1085536d477ba. © Government of Ireland National Parks and Wildlife Service.

Biodiversity information on the species diversity present in the McKenzie Farm is available from the National Biodiversity Data Centre (NBDC). Species records can be found for areas of the country based on a system of 1km square grids (see https://maps.biodiversityireland.ie/Map). The grid number screened for the McKenzie Farm is G2920. The only species recorded for this 1km square is otter.

The historic environments inventory (see https://maps.archaeology.ie/HistoricEnvironment/) identifies one site on the McKenzie Farm and is shown in Figure 28. This is the Corimla North Children's Burial Ground (#MA031-035).

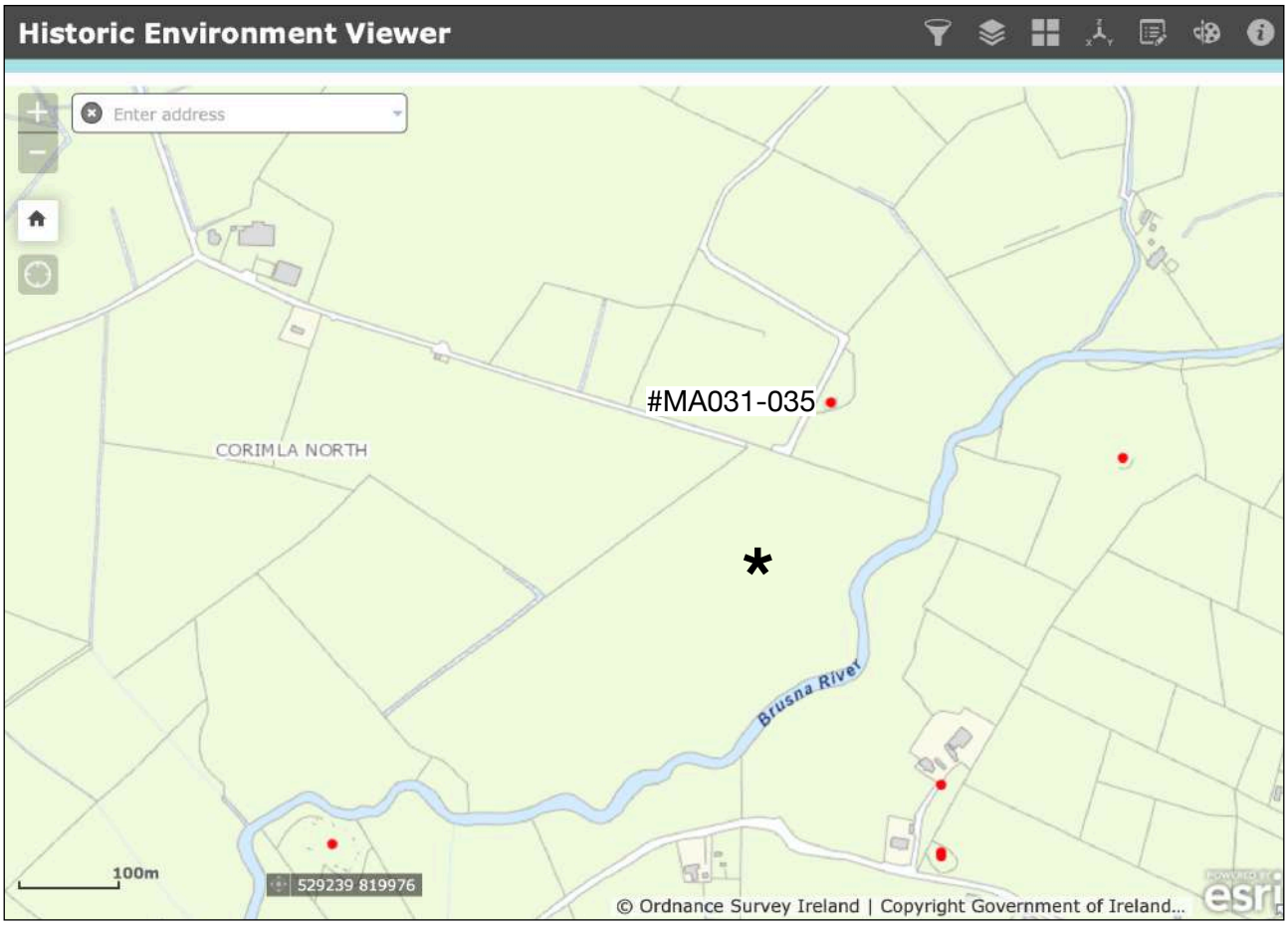


Figure 28: Map showing the location of the Corimla North Children's Burial Ground on the McKenzie Farm (see https://maps.archaeology.ie/HistoricEnvironment/) biodiversity study area. The site code is (#MA031-035). The biodiversity study site is marked with an asterick. © Ordnance Survey Ireland and Government of Ireland.

6.8.3 McKenzie Farm, Corimla North - Biodiversity Field Survey

There are five fields included in the biodiversity survey site and these are grazed at low intensity by cattle. Their north east - south west boundary is the Brusna River which is fenced off from the fields. The banks of the river are sloped and are rich in flora typical of riparian zones with tall reeds and herb plant communities. A similar flora was seen in the drainage ditch particularly along the north western boundary of the site. Mature hedges are a key part of the farm with tall ash trees and hawthorn bushes. Some of the hedges are located on earthen embankments and those that were south facing were rich in flora and fauna. The fields to the north of the site were more productive than those to the south along the river which were wetter and had an abundance of rushes and thistles.

6.8.4 McKenzie Farm, Corimla North - Site Management

The productive fields to the north of the farm have been cut for silage. Cattle are being grazed on the farm on a rotational basis and areas are segregated with electric fence. Supplimentary feeding is being implemented and cattle have access from the fields to the river Brusna in three places to drink water (shown in Figure 26 and in Plate 43). Farm hedges are being maintained with trimming.

6.8.5 McKenzie Farm, Corimla North - Habitats and Species Present

The habitats present at the McKenzie Farm are shown on Figure 29 and are described below. The species recorded in the McKenzie Farm were as follows: 62 plants, 13 animals and 9 birds with a total of 84 species for the site (see Appendix 2).

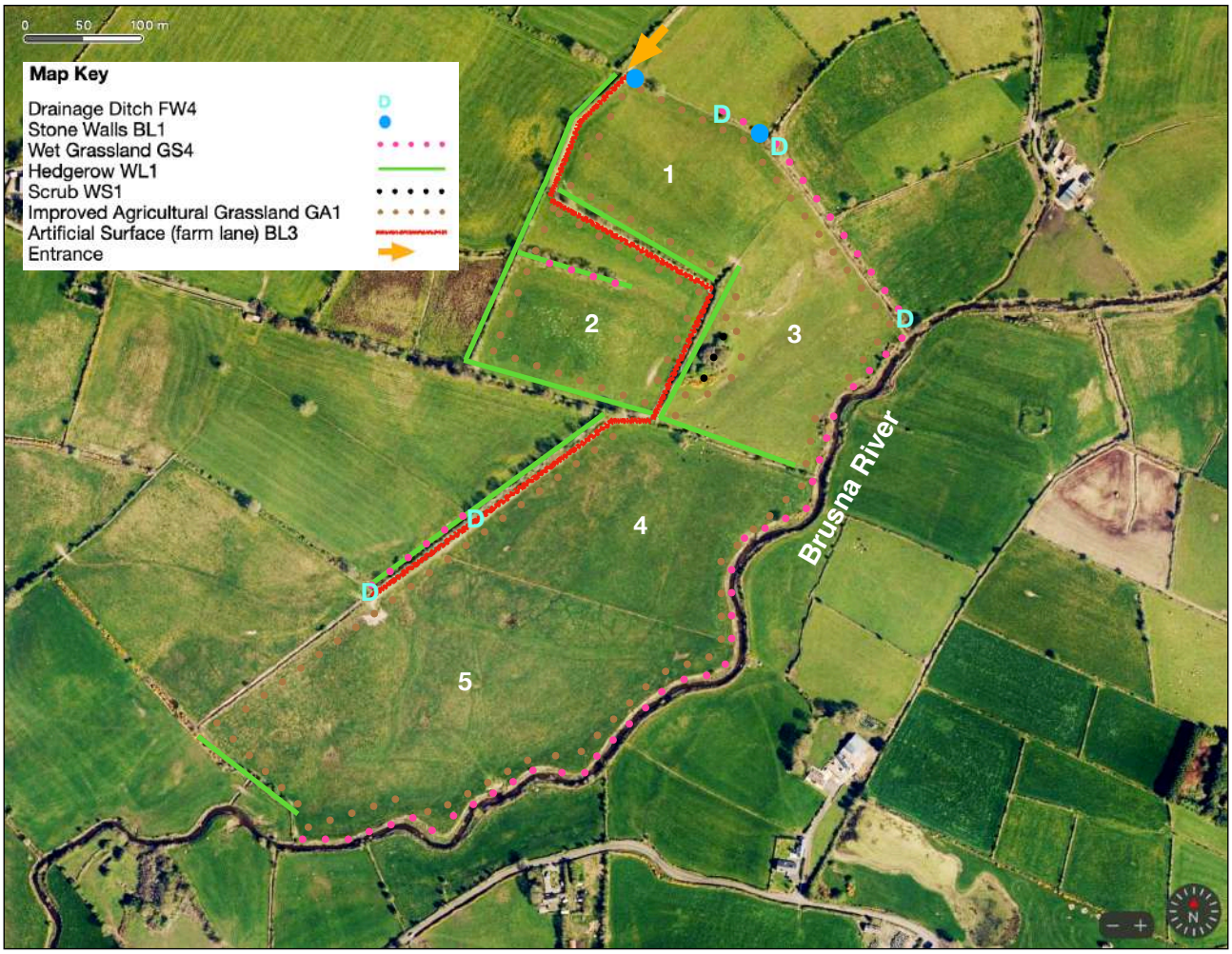


Figure 29: Habitat map of the McKenzie Farm at Corimla North in Co. Mayo. The five fields on the farm are numbered 1-5. The Brusna river which is designated for conservation and protection forms the eastern boundary of the site. Farmland is located on the other boundaries. © Source: AppleMaps

Stone Walls and Other Stonework BL1
A wall of loose stone with mortar on top occurs in Field 1 along the northern boundary. It is 50cm tall. This provides a good habitat for insects and a wren was observed nesting in it (see Plate 42).

Wet Grassland GS4
Wet grassland habitat was recorded along the banks of the Brusna river (Plate 43) and along drainage ditches (FW4) recorded on the north eastern boundary of fields 1 and 3 (Plate 42), within field 2 in association with a mature hedge and on part of the north western boundary of fields 4 and 5. The species included willow, meadowsweet, horsetail, water figwort, willowherb, purple loosestrife, self heal, speedwell, meadow vetchling, cleavers, marsh woundwort, reed, soft rush, alder, angelica, valeriana, cock's foot, Yorkshire fog, marsh thistle and lady's smock. Along the ditch in fields 1 and 3 this habitat covered a distance of 5m from the drain which contained flowing water that eventually ended up in the Brusna River. The sward height was between 1 and 2m.

Plate 42: Wet Grassland habitat associated with a drainage ditch on the north eastern boundary of the McKenzie Farm. This area is fenced off from grazing cattle and has been allowed to flower and set seed, providing a rich corridor for wildlife on the farm. The flowers of angelica provided abundant nectar for flies (image inset). The stone wall boundary on this field can be seen in the background. Again the nooks and crannies in the wall provide habitat for snails, insects and breeding birds such as wren. Photo: © J. FitzGerald.

Plate 43: Wet grassland habitat along the banks of the Brusna River. The river and this habitat are designated lands for conservation and are fenced off from grazing cattle with the exception of three areas where the cattle have access to water and are causing damage and polluting the river water (see photo inset). Photo: © C. O'Connell.

Hedgerow WL1
Hedgerows were well developed on the farm particlarly on the boundaries of fields (fields 1-3) in the northern half of the farm (Plate 44). The hedgerow on the southern boundary of fields 2 and 3 was south facing and had an earthen and stone embankment (Plate 45). The hedges were predominantly of hawthorn and blackthorn with mature trees of ash (some of which had signs of ash dieback disease). There were many species associated with the hedges and their embankments including hogweed, ivy, herb robert, vetch, nettle, blackberry, wood avens, birds foot trefoil, tormentil, thistle, speedwell, chickweed, wild strawberry, yarrow, gorse, willow, centaury, St John's wort, plantain, selfheal, knapweed, hart's tongue fern, red clover, primrose and ox eye daisy.

In these species rich hedges there was an abundance of food and shelter which attracted birds such as robin, blackbird, bluetit, wood pigeon, magpie. There was a rookery with jackdaw and rooks in the mature trees located in the hedge in field number 2.

The abundance of wild flowers attracted many pollinators including house fly, green-veined white butterfly, carder bee, meadow brown, leaf hopper and micro moths.

Plate 44: Hawthorn hedge with mature ash trees along the western boundary of fields 1 and 2 in the McKenzie Farm. The hedges are flowering providing nectar and food for insects and birds and their management is providing a stock proof division between the fields on the farm. A fox was observed in this area during the field survey (see inset). Photos: © C. O'Connell.

Plate 45: South facing hedge and embankment between fields 1 and 3 on the McKenzie Farm. In addition to hawthorn there was an abundance of wild flowers in this area of the farm which were attracting pollinators such as the green veined white butterfly. Bare soil in the ditch can also provide nesting sites for solitary bees. Photos: © C. O'Connell.

Plate 46: Scrub woodland habitat associated with the Children's Burial Ground archaeological site on the McKenzie farm. The area is poor in species in the ground layer due to trampling by cattle who also use the site as a rest area. Action 6.8.4 in Table 11 suggests fencing off this area to allow a woodland with ground flora to develop on the farm. Photo: © J. FitzGerald.

Scrub WS1

This habitat was associated with the Children's Burial Ground archaeological site located in field 3. The site was on an elevated low ridge and was colonised by stunted hawthorn trees between 3 and 4m tall and which formed a complete cover canopy in part. The ground layer was poorly developed due to trampling by cattle of the soil and grazing. Gorse, bramble, thistle, nettle, rye grass, pignut, buttercup and stitchwort were recorded in association with the trees (Plate 46).

Improved Agricultural Grassland GA1
All of the grassland habitat within the five fields is included in the improved agricultural grassland habitat (GA1). Fields 1-3 were on free draining soil in comparison to fields 4 and 5. The difference observed in the fields was in the presence of soft rush and thistles in fields 4 and 5, which were largely absent from fields 1-3. The species recorded included rye grass, buttercup, white clover, soft rush, dock, creeping thistle, vetch, Yorkshire fog, daisy, meadow sweet and dandelion. Swallows were seen foraging for insects over the fields.

Plate 47 left: Improved agricultural grassland in Field 1 on the McKenzie farm. Silage has been cut from this field. Action 6.8.3 in Table 11 suggests fencing off a 2m strip of land adjacent to the wall to let wild flowers grow on the farm.
Plate 48 right: improved agricultural grassland in field 4 adjacent to the Brusna River. Cattle can be seen in the distance. Photos: © J. FitzGerald and C. O'Connell.

Plate 49 left: the predominance of creeping thistle in Field 5 of the McKenzie Farm.
Photo: © C. O'Connell.

6.8.6 McKenzie Farm, Corimla North - Biodiversity Actions

A number of actions are proposed to enhance biodiversity on the McKenzie Farm and are listed in Table 11. As the farmer is pariticipating in the ACRES scheme some of the actions proposed may already be planned or can be funded through the scheme. Some excellent biodiversity farm guides are available from the National Biodiversity Data Centre to help. Please see https://pollinators.ie/farmland/.

Table 11: Biodiversity enhancement actions for the McKenzie Farm, Corimla North, Co. Mayo

Action Number	Action	Notes
6.8.1	**Install automated cattle drinking water system**	Cattle are currently drinking water directly from the River Brusna. This activity needs to stop and an automated drinking system installed. Within the River Moy fishery operated by East Mayo Anglers Association they have installed Aquamat pasture pumps along the river for cattle. The pasture pump is attached to a pipe which is placed in the river. The cattle pump the water from the river by pushing with their heads on the pump and a small trough fills with water for them to drink. One pasture pump services up to 16 cattle. These are available from https://www.odonovaneng.ie/product/aquamat-pasture-pump/. See Plate 50.
6.8.2	**Fence off trampled riparian zones along Brusna River**	Areas where cattle have been drinking from the River Brusna need to be fenced off and allowed to recover their natural wet grassland and woodland cover. This action will stabilise the bank of the river, prevent erosion and enhance wildlife.
6.8.3	**Increase the area of meadow wild flowers on the farm by fencing a 2m margin around the perimeter of the fields adjacent to existing hedges or the river bank.**	Allow wild flowers to grow around the farm such as clover, dandelion, knapweed, ivy, bramble and bird's foot trefoil as these produce nectar and pollen for bees. Within a matrix of long grass there will be nesting places for bumble bees. To achieve this action, fence off a 2m margin around the perimeter of the fields adjacent to existing hedges, stone walls or river banks. See https://pollinators.ie/wp-content/uploads/2022/12/Farmland-Pollinator-Guidelines-2022-WEB.pdf for more information.
6.8.4	**Children's Burial Ground - Fence off and let woodland develop**	The children's burial ground is a favoured spot of farm cattle. There is much poaching of the ground beneath the stunted hawthorn trees. This area could be fenced off from cattle to increase biodiversity by letting the trees mature and a woodland flora develop beneath them. The abundance of thistles in the area may need to be removed as a starting point allowing woodland flora to develop. There is no woodland habitat present on the McKenzie Farm and this site presents a good opportunity to let woodland develop.
6.8.5	**Maintain native flowering hedges**	Continue to manage hedges around the farm with pollinators and biodiversity in mind. Good quality hedgerows are predominantly composed of hawthorn or white thorn but will have up to four other tree species such as willow, blackthorn, elderflower and guelder rose. Such hedgerows provide the four essential needs of pollinators: sources of pollen and nectar for food, places to breed, places to overwinter and corridors and pathways to travel across the farm. Hedges managed for pollinators should ideally be cut between November and January. If they must be cut outside of these months, cut sections in rotation, so some areas remain undisturbed. Let some Bramble and Ivy grow in hedgerows, as key food sources in summer and autumn. See https://pollinators.ie/wordpress/wp-content/uploads/2018/04/How-to-guide-Hedgerows-2018-WEB.pdf and https://www.farmingfornature.ie/resources/best-practice-guides/hedgerow-management/ for more information.
6.8.6	**Protect existing flower rich areas on the farm such as the wet grassland habitat along ditches and the Brusna River**	Maintain the areas rich in wild flowers existing on the farm in the interests of biodiversity, wildlife and pollinators.

Action Number	Action	Notes
6.8.7	**Consider planting a copse of trees at the junction between fields 1 and 2 to compensate for loss of ash trees to Ash Die Back**	Ash die back is present on the farm and mature trees are already dying. To offset this loss to the farm consider planting a copse of trees for example at the junction on the farm track between fields 1 and 2 where there is a hawthorn bush. Species to consider would be rowan, birch, blackthorn, wild cherry, crab apple and hawthorn. Protect young trees against grazing until they establish.
6.8.8	**Citizen science monitoring of biodiversity improvement**	Once some of the measures have been completed it is important to undertake simple monitoring actions of how well biodiversity is doing. For example a FIT survey could be undertaken on a patch of dandelions. See further details in Chapter 4 of this plan.

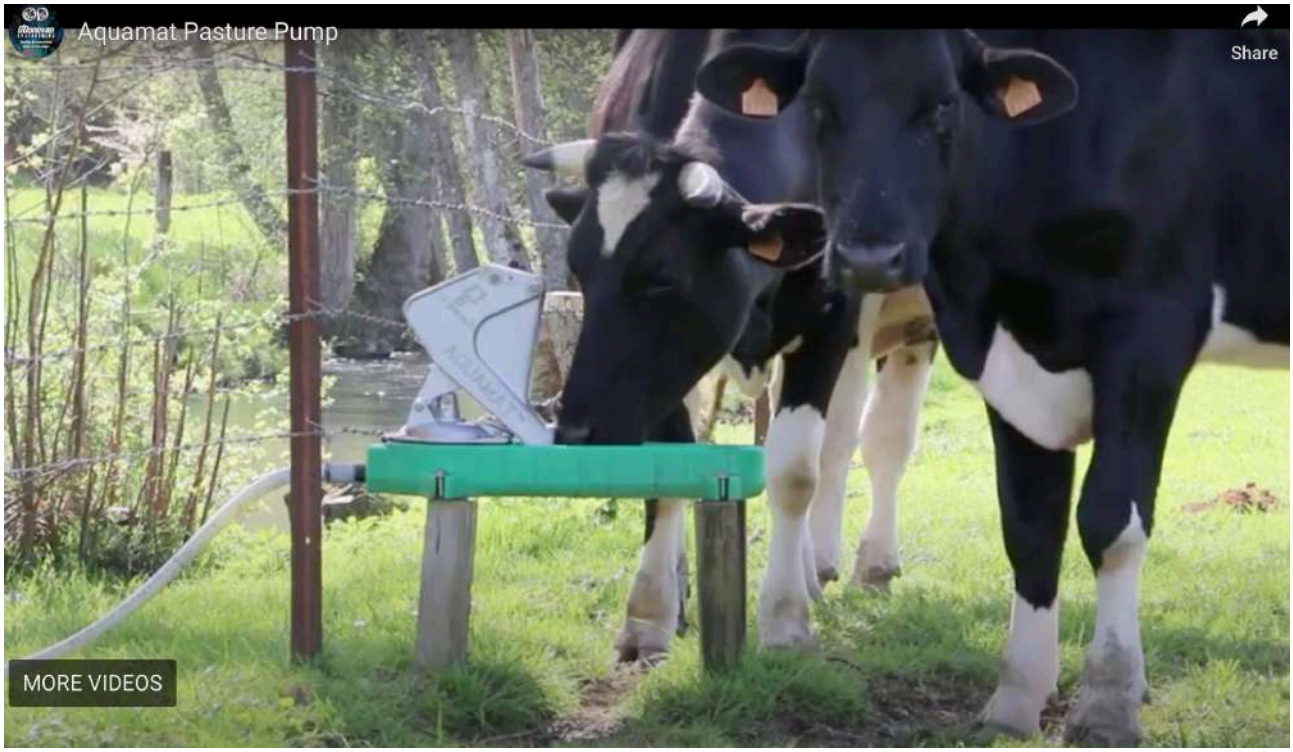


Plate 50: the Aquamat Pasture Pump is an environmentally friendly way for cattle to drink water in fields adjacent to important fresh water rivers without polluting the waterway with their waste and trampling the riparian habitats. These are available from https://www.odonovaneng.ie/product/aquamat-pasture-pump/. This device is recommended for the McKenzie Farm (see Action 8.8.1 in Table 11). Photo: © https://www.odonovaneng.ie/product/aquamat-pasture-pump/.

6.9 Crillaun Bottom Car Park, River Moy, Co. Mayo

6.9.1 Crillaun Bottom Car Park, River Moy - Location 53.948727, -9.125423

Crillaun Bottom Car Park is an access point to the River Moy Fishery which is owned and managed by the East Moy Angling Association (EMAA). The public car parkand shelter is located on the western bank of the River Moy, 4km south of Foxford town as the crow flies. It is fenced off with posts and three wooden rails. It is accessed from minor roads off the N58. At this site a 76m fishing platform, changing room, access road and car park have been provided exclusively for the use of disabled anglers. This limited mobility and wheelchair access was completed in 2019. Access to the river from the public car park is via a woodland path or via the tarmacked/gravelled access road built for disabled anglers. The southern and eastern boundaries of the disabled site are fenced off from the surrounding lands. The biodiversity study site is shown in Figure 30 outlined in white. The site occupies an area of 0.49ha.

Figure 30: Map showing the location of Crillaun Bottom Car Park with disabled access to the River Moy in Co. Mayo. The biodiversity study site is outlined with a white line. © Source: AppleMaps

6.9.2 Crillaun Bottom Car Park, River Moy - Results of Screening for Biodiversity and History

The location of Crillaun Bottom Car Park was screened against lands designated for conservation by the National Parks and Wildlife Service. The eastern boundary of the site is included in the River Moy SAC designated site (#002298). This site is shown in Figure 31 and includes all of the freshwater catchment of the River Moy and its habitats and wildlife. A description of this designated site is available at https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY002298.pdf.

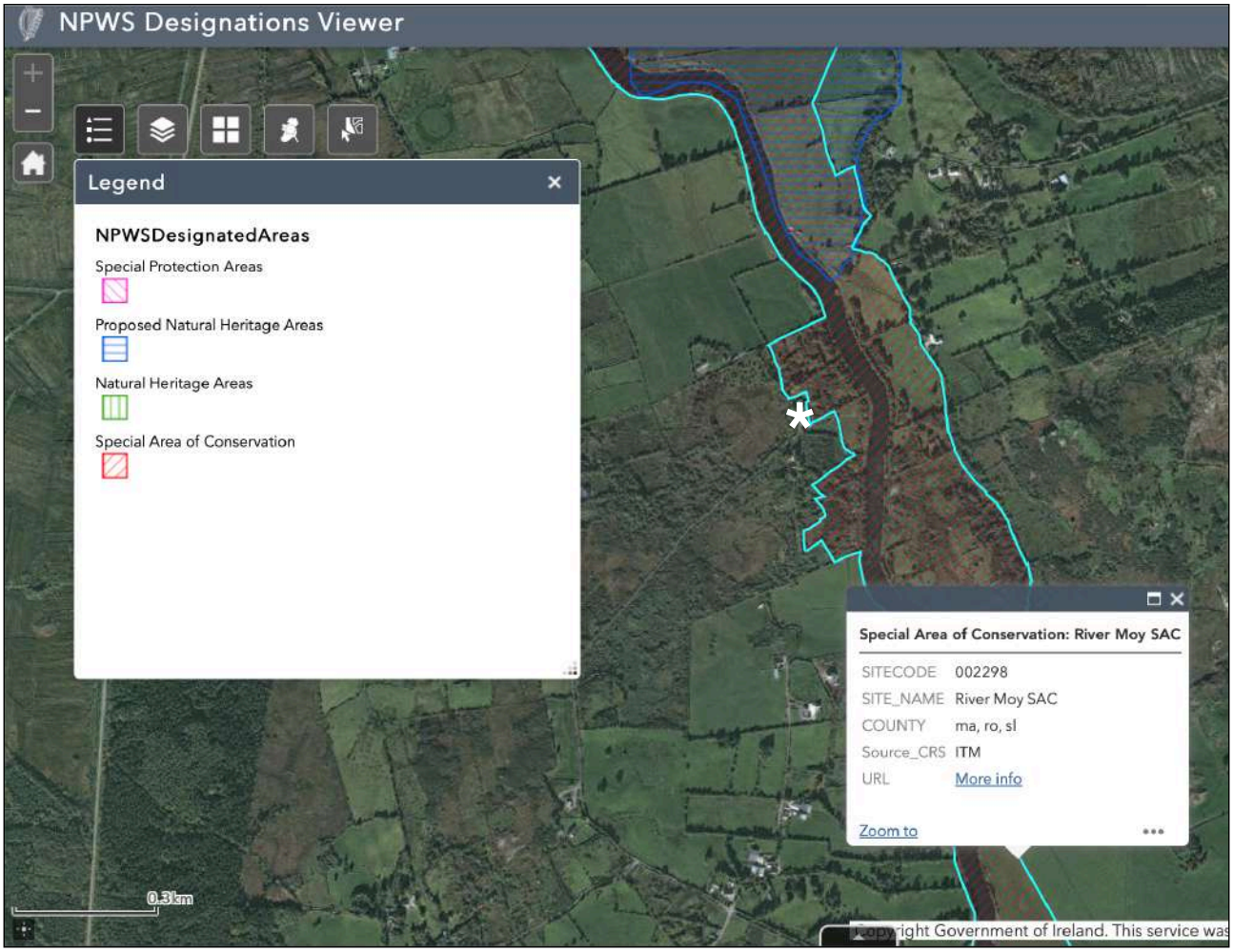


Figure 31: Air photograph showing the part of the River Moy Special Area of Conservation (#002298) that incorporates part of Crillaun Bottom Car Park and which flows along the eastern boundary of the biodiversity study site shown with an asterisk. Source: https://dahg.maps.arcgis.com/apps/webappviewer/index.html?id=8f7060450de3485fa1c1085536d477ba. © Government of Ireland National Parks and Wildlife Service.

A screening of the Crillaun Bottom Car Park against the Wetlands Map of Ireland (see https://wetland.maps.arcgis.com/apps/View/index.html?appid=e13b75c3bcab4932b992aa0169aa4a32&extent=-11.9317,51.0620,-3.9117,55.6465) indicates that west of the site there is a wetland of conservation interest - Tawnagh Beg East (# WMI_MA772). This site location is shown in Figure 32.

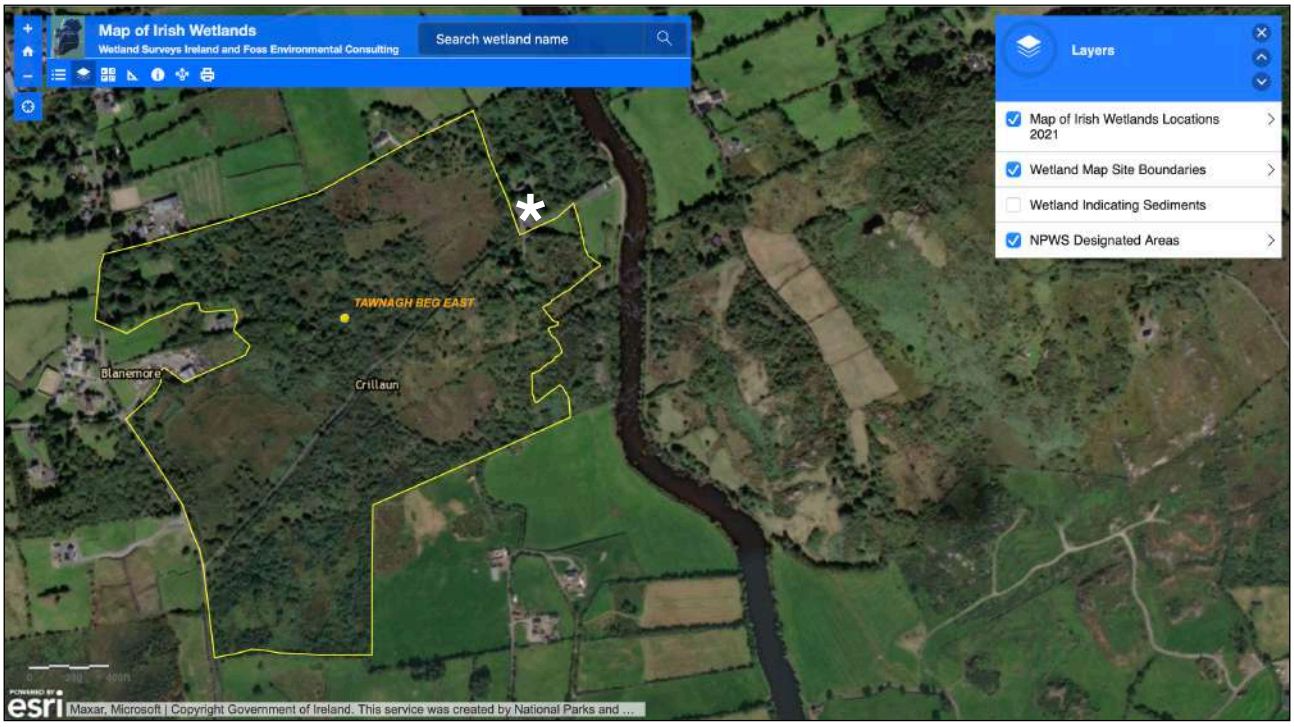


Figure 32: Tawnagh Beg East (code WMI_MA772) has been identified as a site of conservation interest by Wetland Surveys Ireland as it contains bog woodland and cutover bog habitat. This site occurs on the western boundary of the Crillaun Bottom Car Park biodiversity site which is indicated with an asterisk. Source: https://www.wetlandsurveys.ie.

Biodiversity information on the species diversity present in the Crillaun Bottom Car Park is available from the National Biodiversity Data Centre (NBDC). Species records can be found for areas of the country based on a system of 100 m square grids (see https://maps.biodiversityireland.ie/Map). The grid numbers screened for the Crillaun Bottom Car Park were G261005, G262005, G261004 and G262004. There are records for this biodiversity site from the following surveys: Atlas of Butterflies 2019 and 2021, Ladybirds of Ireland, Bees of Ireland 2021 and the Vascular plants: Online Atlas of Vascular Plants 2012 Onwards. Species recorded are Ringlet, Lesser Celendine, Primrose, 7 Spot Ladybird, Peacock Butterfly and the Common Carder Bee.

The site was also screeened against the historic environments inventory (see https://maps.archaeology.ie/HistoricEnvironment/) and no records were found.

6.9.3 Crillaun Bottom Car Park, River Moy - Biodiversity Field Survey

The Crillaun Bottom Car Park site includes a variety of quality habitats located adjacent to the River Moy. The disabled access road has wild flower meadow on either side which has been planted with fruit trees. A wild flower meadow has been created from seed alongside the fishing platform. A track to the River Moy for non disabled anglers is routed through deciduous woodland. In the public car park of this site there are two ornamental shrub beds.

6.9.4 Crillaun Bottom Car Park, River Moy - Site Management

The Crillaun Bottom Car Park is owned and managed by East Moy Anglers Association. They maintain the car parks, mow grass paths and meadow edges along the access road, remove litter, strim vegetation on the fishing platform and on the river bank to prevent fishing lines from getting snagged, erect signage, plant fruit trees and manage the wild flower meadows in addition to ensuring the sustainable use of the River Moy Fishery through patrolling and oversight. They embrace the All Ireland Pollinator Plan and planted their fruit trees under the DCs for Bees Orchards in the Community Project 2021.

6.9.5 Crillaun Bottom Car Park, River Moy - Habitats and Species Present

The habitats present at the Crillaun Bottom Car Park are shown on Figure 33 and are described below. The species recorded in Crillaun Bottom Car Park were as follows: 66 plants, 7 animals and 4 birds with a total of 77 species for the site (see Appendix 2).

Figure 33: Map of the different habitats surveyed at the Crillaun Bottom Car Park site with disabled access to the River Moy in Co. Mayo. © Source: AppleMaps

Buildings BL3
Two buildings are located within this site. Both are relatively new buildings without plant life. However swallows were nesting in the eaves of the disabled anglers changing room building. Four chicks were in the nest being fed by two adults (see Plate 54).

Wet Grassland GS4

Wet grassland habitat was recorded along the banks of the Moy River in association with the diabled anglers platform. The species included tall herbs such as valerian, meadowsweet, water figwort, marsh woundwort, dock, angelica, purple loosestrife, willowherb and willow (see Plate 51). This habitat is strimmed once or twice a year to keep access clear. This habitat and the Moy River are included in a designated Special Area of Conservation.

Plate 51: Wet grassland habitat with tall herbs including purple loosestrife and meadow sweet at the bank of the River Moy. The disabled anglers fishing platform is seen on the right and is cantilevered over the river bank. Vegetation growing through the perforations in the platform are strimmed each year as is the wet grassland habitat. Action 6.9.2 in Table 12 recommends strimming only a portion of the wet grassland habitat along the river bank at a time and in rotation to allow the plants to flower and set seed. Photo: © C. O'Connell

Grassy Verge/Dry Meadow GS2
This habitat was found along the vehicle access route to the disabled anglers platform and to the back of the platform on a raised bank. All of this habitat is included in a designated Special Area of Conservation (see Section 6.9.2 above). A wildflower seed mix was used to establish the meadow on the bank above the river Moy in 2016. Since then both the meadow on the bank and the meadows on the access road are managed by mowing once per year and removing organic material. Creeping thistle and other aggressive plants are removed by digging. A grass path is mowed to provide a walking route through the meadow on the bank. The meadow habitats were species rich with ox eye daisy, yarrow, plantain, St John's wort, hen rattle, dandelion, dock, birds foot trefoil, self heal, rye grass, crested dogs tail grass, chickweed, kidney vetch, horsetail, mallow, Yorkshire fog, creeping thistle, flag iris, clover, salad burnet, colt's foot and marsh thistle. There were numerous insects and pollinators recorded in these habitats including moths, common green grasshopper, house fly and hoverflies (see Plate 52). Birds were active including blue tit and swallow. The meadow habitat lining each side of the road has been planted with fruit trees of apple, plum and pear. Grasses and thistles are prevalent in this area and need to be tackled by hand weeding and the sowing of hen rattle to reduce their vigour.

Plate 52: Wild flower meadow habitat at the bank of the River Moy. The disabled anglers fishing platform is seen on the right. The meadow was planted from seeds and is species rich. The variety of wild flowers provide food for pollinators and include yarrow, plantain and clover. Action 6.9.1 in Table 12 recommends continuing to manage this area as a wild flower meadow and collecting seeds from hen rattle growing in this area to sow in other meadow areas on site where grasses are vigorously growing. The wild flower meadow is a valuable habitat for insects (see photos inset of common green grasshopper and hoverfly). Photos: © J. FitzGerald.

Wet Willow Alder Ash Woodland WN6
This habitat occured along the north western boundary of the Crillaun car park and is part of a designated Special Area of Conservation (see section 6.9.2). A gravelled path gives anglers access through the woodland to the Moy River (see Plate 53). The woodland trees formed a closed canopy and included wild cherry, blackthorn, willow, hawthorn, elderberry, ash, hazel and birch and shrubs such as spindle, rose, bramble and gorse. The trees had a good growth of epiphytic lichens including *Parmelia* species, *Evernia prunastri* and the yellow *Xanthoria parietina*. Some of the ash trees reached 15m in height. In the herb layer ivy, lords and ladies, horsetail, herb robert, meadow sweet, bush vetch, cleavers, nipplewort, bracken, hart's tongue fern, buttercup, pignut, daisy and dandelion were recorded. Blackbirds and chaffinches were using the area to feed.

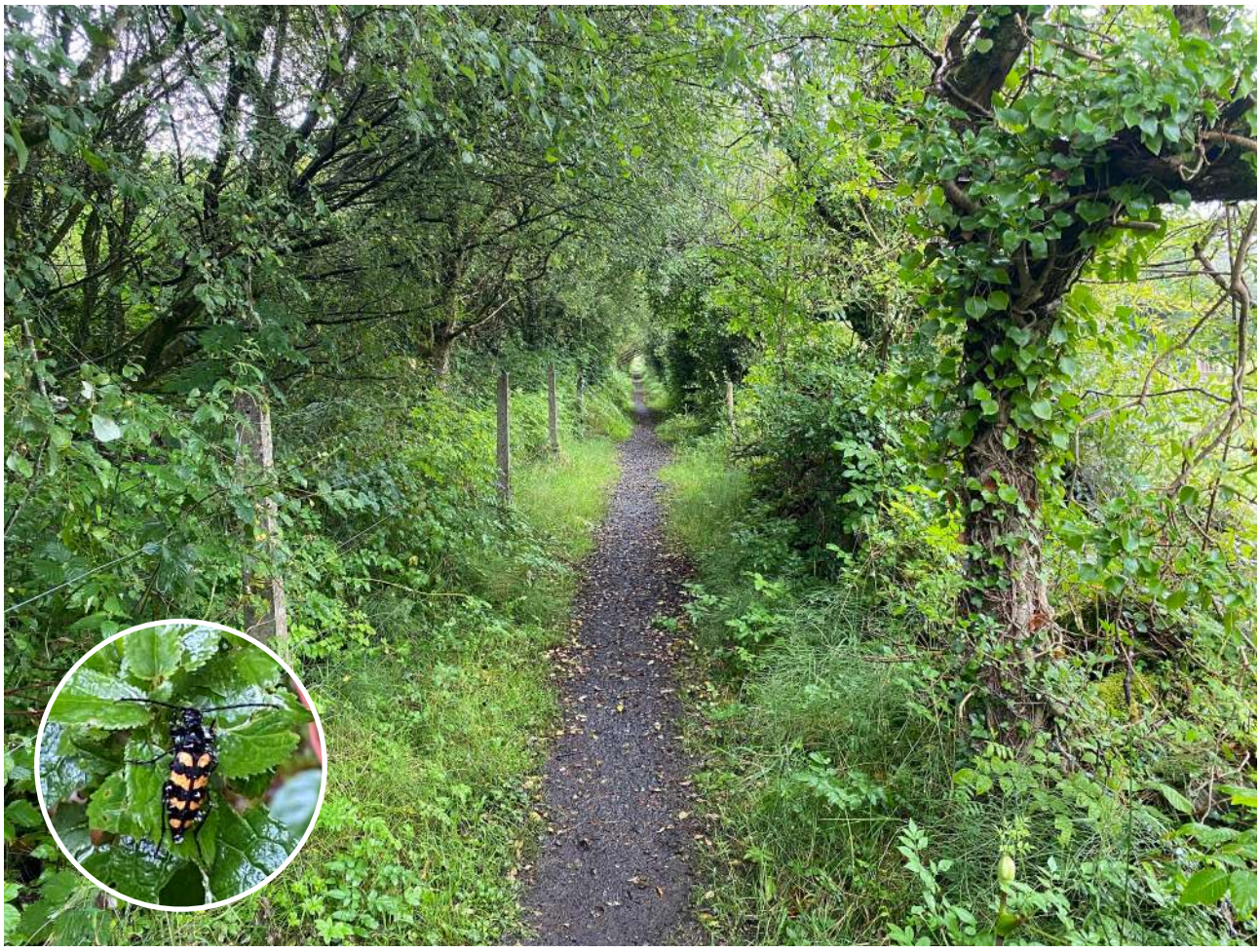


Plate 53: The access path to the River Moy through the wet willow alder ash woodland. This footpath runs parallel to the road access to the fishing platform provided for disabled anglers. The woodland is a wild valuable habitat for insects such as the longhorn beetle - Leptura quadrifasciata (see photo inset). Photos: © J. FitzGerald

Ornamental Non-native Shrub Bed WS3
Two ornamental non native shrub beds have been planted up in the main car park. These included a variety of species such as elwood, tutsan, privet, lavender, *Croscosmia,* bindweed, birch and *Erica* heather.

6.9.6 Crillaun Bottom Car Park, River Moy - Biodiversity Actions

A number of actions are proposed to enhance biodiversity on the Crillaun Bottom Car Park on the River Moy. The number of actions are restricted as most of the site with the exception of the public car park is included in land designated for nature conservation. The actions proposed for this site are included in Table 12. Some excellent biodiversity car park guides are available from the National Biodiversity Data Centre to help. Please see https://pollinators.ie/wp-content/uploads/2023/03/Car-Parks-for-Pollinators-Flyer-2022-WEB.pdf.

Table 12: Biodiversity enhancement actions for the Crillaun Bottom Car Park, River Moy, Co. Mayo

Action Number	Action	Notes
6.9.1	**Continue with the on-going management of wild flower meadow habitats**	Wild flower meadow is being successfully developed at Crillaun Bottom Car Park and the existing mowing regime plus the targeted removal of aggressive thistles and grasses should be continued. Hen rattle is already present in the wild flower meadow above the disabled anglers platform. Seeds of this plant could be collected in autumn and spread in the meadow areas adjoining the access road to the disabled anglers car park after the sward is cut hard in autumn. This will help to weaken the growth of grasses in the meadow community giving space for more wild flowers. The National Biodiversity Data Centre have useful guidelines on the managment of wild flower meadows which are available here: https://pollinators.ie/wordpress/wp-content/uploads/2018/04/How-to-guide-Wildflower-Meadows-2018-WEB.pdf.
6.9.2	**Management of wet grassland community along Moy River**	The wet grassland community along the Moy River is managed by strimming 2-3 times per year. In order to allow for the wild flowers to grow and set seed, the whole area of 100m of the river bank should not be cut at once. Rather a rotational cutting of part of it would be more valuable. This action allows for biodiversity to flourish and meets the objective of providing open un-impeded banks for anglers to cast their lines.
6.9.3	**Fruit trees maintenance**	Young fruit trees planted in the meadow areas are struggling with competition from grasses at their roots. Grasses should be weeded out around the fruit trees and the ground mulched with a peat-free compost so that rainfall and nutrients are taken up by the tree roots only. This will help the trees to establish more successfully.
6.9.4	**Fence screening with native hedge**	Fences occur along the southern boundary of the access road to the disabled changing room and behind the meadow at the disabled platform (see Plate 54). Both of these fenced areas should be screened with living plants to create a green wall and to enhance wildlife. This can be done by planting a hawthorn hedge using bare root hawthorn whips. Other species to include in the mix are guelder rose, spindle, willow, elderberry, crab apple, rowan and blackthorn. Guidelines on hedge planting can be found here: https://www.teagasc.ie/news--events/daily/environment/how-to-plant-a-hedge.php.
6.9.5	**Weed control in car parks**	The gravel base of the car parks at Crillaun Bottom Car Park requires maintenance to prevent them becomming overgrown with weeds. Weeds can be controlled as necessary using a homemade weedkiller recipe as follows: 1 gallon vinegar mixed with 1 cup salt and 1 tablespoon washing up liquid. Apply on warm, sunny, dry days.
6.9.6	**Litter**	Old carpets and some builders rubble need to be cleared from the site in the interest of safety and visitor enjoyment (see Plate 55).
6.9.7	**Replace ornamental shrubs in beds in public car park with native trees with high wildlife benefits**	Two ornamental shrub beds in the public car park are loaded with exotic species. These should be removed and replaced with a native specimen tree with a high wildlife value. Willow, rowan, crab apple, wild cherry, hawthorn (or whitethorn) and blackthorn will provide important food for pollinators to help avoid 'hunger gaps,' or times when there are no nectar or pollen-rich flowers in bloom. Willow supports up to 266 insect species and 160 lichens.
6.9.8	**Informing the public**	The EMAA have done an enormous amount of work at the Crillaun Bottom Car Park to embrace the national pollinator plan and to enhance wildlife. There are many signs at this site relating to sponsors, litter and fishing, but nothing about wildlife. Informing the public is a very important aspect of wildlife enhancement. A new sign about the wildlife present at this site should be considered which also explains the work being undertaken annually by EMAA to maintain and enhance it.

Action Number	Action	Notes
6.9.9	**Monitor and maintain swallow nesting in outhouse**	A natural swallow nest is located in the disabled changing room. Swallow nesting cups could be erected to encourage a larger number of birds to breed. Swallow are an amber listed bird of conservation concern due to loss of their habitats and food sources through the use of pesticides and herbicides.
6.9.10	**Citizen science monitoring of biodiversity improvement**	Once some of the measures have been completed it is important to undertake simple monitoring actions of how well biodiversity is doing. For example a FIT survey could be undertaken on a patch of dandelions. See further details in Chapter 4 of this plan.

Plate 54: General view from the disabled fishing platform across the wild flower meadow to the disabled changing room building which housed an active swallow nest. Behind the meadow there is wooden fencing. Action 6.9.4 in Table 12 recommends planting a hawthorn hedge along this fence as a screen and to enhance wildlife. Photo: © C. O'Connell.

Plate 55 left and right: Examples of builders rubble and old furniture dumped at the Crillaun Bottom Car Park. Action 6.9.6 in Table 12 recommends the removal of this in the interests of visitor safety and wildlife. Photos: © C. O'Connell.

5.10 Oldcastle and Ballintemple Car Park, River Moy

5.10.1 Oldcastle and Ballintemple Car Park, River Moy - Location 53.98007, -9.028173

Oldcastle and Ballintemple Car Park is an access point to the River Moy Fishery which is owned and managed by the East Moy Angling Association (EMAA). The public car park is located on the eastern bank of the River Moy, 5km west of Swinford town as the crow flies. It is accessed from minor roads off the N26.

The biodiversity study site (see Figure 34) is the car park which is divided into four bays separated by ornamental shrub beds and an amenity area with seating and picnic table adjacent to the River Moy. The site occupies an area of 0.15ha or 1,539 square metres.

Figure 34: Map showing the location of Oldcastle and Ballintemple Car Park on the River Moy in Co. Mayo. The site is owned and managed by the East Moy Anglers Association. The biodiversity study site is outlined with a white line. © Source: AppleMaps

5.10.2 Oldcastle and Ballintemple Car Park, River Moy - Results of Screening for Biodiversity and History

The location of Oldcastle and Ballintemple Car Park was screened against lands designated for conservation by the National Parks and Wildlife Service. The River Moy SAC designated site (#002298) occurs on the north western boundary of the site. This site is shown in Figure 35 and includes all of the freshwater catchment of the River Moy and its habitats and wildlife. A description of this designated site is available at https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY002298.pdf.

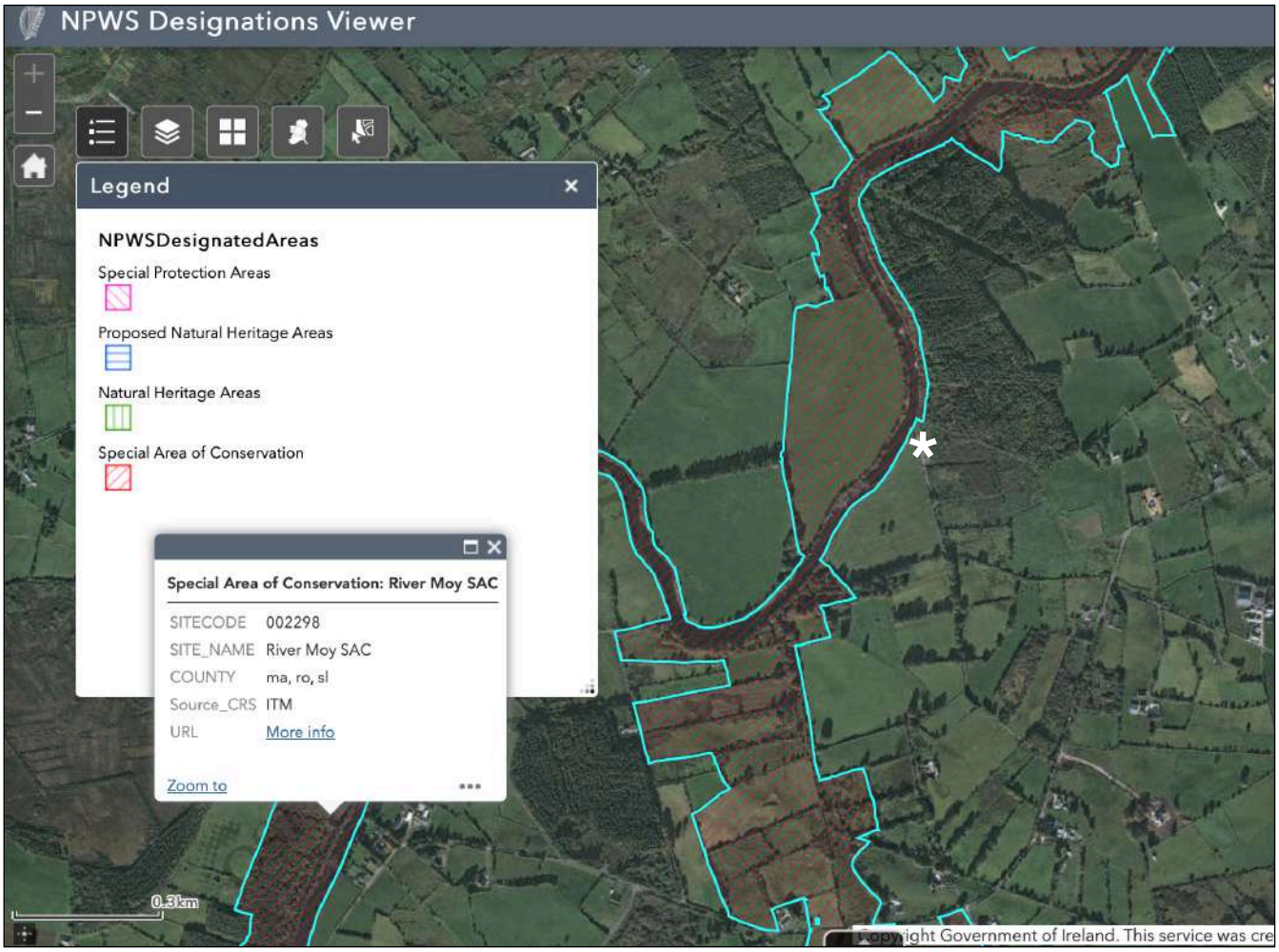


Figure 35: Air photograph showing the part of the location of the River Moy Special Area of Conservation (#002298) on the north western boundary of the Oldcastle and Ballintemple Car Park shown with an asterisk. Source: https://dahg.maps.arcgis.com/apps/webappviewer/index.html?id=8f7060450de3485fa1c1085536d477ba. © Government of Ireland National Parks and Wildlife Service.

Biodiversity information on the species diversity present in the Oldcastle and Ballintemple Car Park is available from the National Biodiversity Data Centre (NBDC). Species records can be found for areas of the country based on a system of 100 m square grids (see https://maps.biodiversityireland.ie/Map). The grid number screened for the Oldcastle and Ballintemple Car Park was G325003 and there was no species information in this grid.

The site was also screeened against the historic environments inventory (see https://maps.archaeology.ie/HistoricEnvironment/) and no records were found.

6.10.3 Oldcastle and Ballintemple Car Park, River Moy - Biodiversity Field Survey

The Oldcastle and Ballintemple Car Park site includes a variety of habitats located adjacent to the River Moy. There is a gorse and willow hedge opposite the car park along the minor road, there are ornamental shrub beds separating the four bays of the car park and there is an amenity grassland area along the river bank where some fruit trees have been planted. Gravel in the car parking area is being colonised by a variety of wild flowers. The woodland habitat that adjoins the car park on its eastern boundary has been planted with a line of exotic shrubs.

6.10.4 Oldcastle and Ballintemple Car Park, River Moy - Site Management

The Oldcastle and Ballintemple Car Park is owned and managed by East Moy Anglers Association. They maintain the car park, mow the amenity grass area more than once a year, maintain the hedge along the access road, remove litter, erect signage, plant fruit trees and ensure the sustainable use of the River Moy Fishery through patrolling and oversight. They embrace the All Ireland Pollinator Plan and planted their fruit trees under the DCs for Bees Orchards in the Community Project 2021. In the past carpet was used to suppress weeds in the gravelled car parks. The used carpet was dumped in one of the parking bays and needs to be removed.

6.10.5 Oldcastle and Ballintemple Car Park, River Moy - Habitats and Species Present

The habitats present at Oldcastle and Ballintemple Car Park are shown on Figure 36 and are described below. The species recorded in Oldcastle and Ballintemple Car Park were as follows: 51 plants, 9 animals and 2 birds with a total of 62 species for the site (see Appendix 2).

Figure 36: Map of the different habitats surveyed at Oldcastle and Ballintemple Car Park site on the River Moy in Co. Mayo. © Source: AppleMaps

Artificial Surface BL3
The gravelled public car park is being colonised by a wide variety of plants from the locality (Plate 56). Tree seedings of birch, alder and willow were present together with herbs including knapweed, willowherb, nipplewort, dandelion, plantain, colt's foot, angelica, flax, centaury, bramble and ragweed. Green veined white butterflies and carder bees were nectaring on the knapweed. There were many wolf spiders in the gravel.

Plate 56: the gravelled public car park at Oldcastle and Ballintemple Car Park showing its colonisation with wildlife. Action 6.10.4 in Table 13 recommends the application of a home made environmentally friendly solution for contolling weeds. Photo: © C. O'Connell.

Hedgerow WL1
The hedge opposite the public car park is managed by the EMAA by trimming. There was a fence within the hedge (see Plate 57). Birch, willow, blackthorn, cotoneaster, holly and hawthorn were noted in this hedge. There were gaps in the hedge. Green veined white and peacock butterflies were observed in this habitat.

Plate 57: Hedge on the road side opposite Oldcastle and Ballintemple Car Park. Part of the hedge is missing and has been fenced. Action 6.10.2 in Table 13 recommends planting new hedge in the gaps in liaison with the local landowner and suggests managing the hedge in a wild bird and pollinator friendly manner allowing shrubs to grow, flower and set seed. Photo: © C. O'Connell.

Amenity Grassland GA2

The river bank and flat ground adjacent to the Moy River are being mowed as amenity grassland. Seating, picnic tables and signage are installed here (Plate 58). There was a good variety of species present despite the mowing indicating the potential of the area to form a wild flower meadow. Species noted were eyebright, catsear, red clover, meadow sweet, St. John's wort, knapweed, perennial rye grass, ox eye daisy, meadow vetchling, daisy, white clover, horsetail, self heal and hemp agrimony. Meadow brown butterflies were sunning themselves in this habitat.

Plate 58: Amenity grassland and picnic site adjacent to the River Moy at the Oldcastle and Ballintemple Car Park. Action 6.10.1 in Table 13 recommends managing this grassland site as a wild flower meadow and mowing paths through it to the amenity features.
Photo: © C. O'Connell.

Ornamental Non-native Shrub Bed WS3

The public car park bays were separated with ornamental shrub beds and the woodland adjoining the site but not included was planted with exotics along its margin (Plate 59). *Rosa rugosa* was the dominant plant in the shrub beds separating the car park bays. It was in flower and it also carried red fruits. Both of these structures were attracting large numbers of flies while grasshoppers, leaf hoppers, brown lipped snails and spiders were hiding in its foliage. Other plants and shrubs recorded in this habitat were *Hebe*, *Fuschia*, *Cotoneaster*, gorse, ivy, dog wood, honeysuckle and privet.

Plate 59: Two car park bays at Oldcastle and Ballintemple Car Park separated by an ornamental shrub bed of Rosa rugosa. In the background the ornamental shrub border along the woodland adjoining the site can be seen. Action 6.10.6 in Table 13 recommends maintaining these beds for wildlife but replacing non native shrubs with native species as the opportunity arises. The fruits of Rosa rugosa were attracting significant numbers of flies including flesh flies and noon flies while the Common Green Grasshopper (Omocestus viridulus) was hiding in its foliage as shown in the photos inset. Photos: © C. O'Connell & J. FitzGerald.

6.9.6 Oldcastle and Ballintemple Car Park, River Moy - Biodiversity Actions

A number of actions are proposed to enhance biodiversity on Oldcastle and Ballintemple Car Park on the River Moy. The actions proposed for this site are included in Table 13. An excellent biodiversity car park guide is available from the National Biodiversity Data Centre to help. Please see https://pollinators.ie/wp-content/uploads/2023/03/Car-Parks-for-Pollinators-Flyer-2022-WEB.pdf. This flyer gives a very good overview of how car parks should be managed for pollinators and wildlife generally.

Table 13: Biodiversity enhancement actions for Oldcastle & Ballintemple Car Park, River Moy, Mayo

Action Number	Action	Notes
6.10.1	**Manage amenity grassland as a wild flower meadow with mowed access paths**	Change the mowing regime in the amenity grassland area to develop a natural wild flower meadow. A good diversity of species already exists in this area which can be enhanced by restricting mowing to once per year in autumn and removing all of the cut material to a compost area. Seeds of *Rhinanthus minor* or hen rattle can be sown to weaken the grasses in the area creating more opportunities for wild flowers. Grass paths can be mown through the meadow to allow anglers access to the River Moy and to picnic areas and seats. The National Biodiversity Data Centre have useful guidelines on the managment of wild flower meadows which are available here: https://pollinators.ie/wordpress/wp-content/uploads/2018/04/How-to-guide-Wildflower-Meadows-2018-WEB.pdf.
6.10.2	**Hedge Management and enhancement**	The hedge habitat opposite the Oldcastle and Ballintemple car park is being cut too frequently and gaps have also developed in the hedge. Gaps should be filled with bare root hawthorn whips with the co-operation of other local landowners. Guidelines on hedge planting can be found here: https://www.teagasc.ie/news--events/daily/environment/how-to-plant-a-hedge.php. The existing hedge has a good variety of trees and shrubs, but the frequency of hedge trimming does not allow for these to flower and produce fruit which significantly reduces their wildlife value. The ideal hedgerow for wildlife is tall, wide and dense at the base, with a wide, uncultivated, grassy margin. Trim all existing hedges to an “A” shape, wide at the bottom and narrow at the top. Allow the upper part of the hedge to produce flowers and fruit for wildlife. Encourage some trees within the hedge to mature so as to create an attractive tree line in addition to the hedge. Please note that hedge cutting between 1st March and 31st August is prohibited under the Wildlife Act. Avoid cutting all your hedgerows at once, consider a 3-5 year rotation to allow flowers and berries to grow in alternate sections. Gradually reduce cutting intensity each year to allow your hedgerow to expand and diversify. This is especially relevant for any young hedges to get established. For more advice on the frequency of hedgerow trimming please visit https://www.farmingfornature.ie/resources/best-practice-guides/hedgerow-management/.
6.10.3	**Fruit trees maintenance**	Young fruit trees planted in the amenity grassland area are struggling with competition from grasses at their roots. Grasses should be weeded out around the fruit trees and the ground mulched with a peat free compost so that rainfall and nutrients are taken up by the tree roots only. This will help the trees to establish more successfully.
6.10.4	**Weed control in car parks**	The gravel base of the car parks at Oldcastle and Ballintemple Car Park requires maintenance to prevent them becomming overgrown with weeds. Weeds can be controlled as necessary using a homemade weedkiller recipe as follows: 1 gallon vinegar mixed with 1 cup salt and 1 tablespoon washing up liquid. Apply on warm, sunny, dry days.
6.10.5	**Litter**	Old carpets formerly used to suppress weeds in the parking space need to be cleared from the Oldcastle and Ballintemple site in the interest of safety and visitor enjoyment (see Plate 60).

Action Number	Action	Notes
6.10.6	**Replace ornamental shrubs in beds in public car park with native trees and shrubs with high wildlife benefits**	As the opportunities arise, replace exotic shrubs with native shrubs with a high wildlife value. Willow, rowan, crab apple, wild cherry, hawthorn (or whitethorn), guelder rose, spindle and blackthorn will provide important food for pollinators to help avoid 'hunger gaps,' or times when there are no nectar or pollen-rich flowers in bloom. Willow supports circa 266 insect species and circa 160 lichens.
6.10.7	**Citizen science monitoring of biodiversity improvement**	Once some of the measures have been completed it is important to undertake simple monitoring actions of how well biodiversity is doing. For example a FIT survey could be undertaken on a patch of dandelions. See further details in Chapter 4 of this plan.

Plate 60: Old carpet used to control weeds but now dumped in the public car park at Oldcastle and Ballintemple on the River Moy. Action 6.10.5 in Table 13 recommends the removal of this carpet to the local dump while Action 6.10.4 provides a recipe for an environmentally friendly solution to control weeds. Photo: © C. O'Connell.

6.11 Wetland South of Belleek Woods, River Moy

6.11.1 Wetland South of Belleek Woods, River Moy - Location 54.125099, -9.143934

This wetland area is located on the western bank of the Moy River and is managed by Ballina Town Council. Access to the site is from a minor road from Ballina town. The wetland site is 1.7ha in extent. Opposite the site is the Ballina Town FC Soccer Club and a car park. North of the site there is access to Belleek Woods and the Monasteries of the Moy Greenway (see https://www.greenway.ie/monasteries-of-the-moy/ for details). The location of the site is shown in Figure 37.

Figure 37: Map showing the location of the wetland south of Belleek Woods on the banks of the River Moy. The biodiversity study site is outlined in white. © Source: AppleMaps

6.11.2 Wetland South of Belleek Woods, River Moy - Results of Screening for Biodiversity and History

Screening of this site against the National Parks and Wildlife Service database of designated sites indicates that the site is adjacent to the Killala Bay/Moy Estuary SAC (#458) as shown in Figure 38. A description of this site can be found at https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY000458.pdf . The wetland biodiversity site is indicated with an asterick in Figure 38.

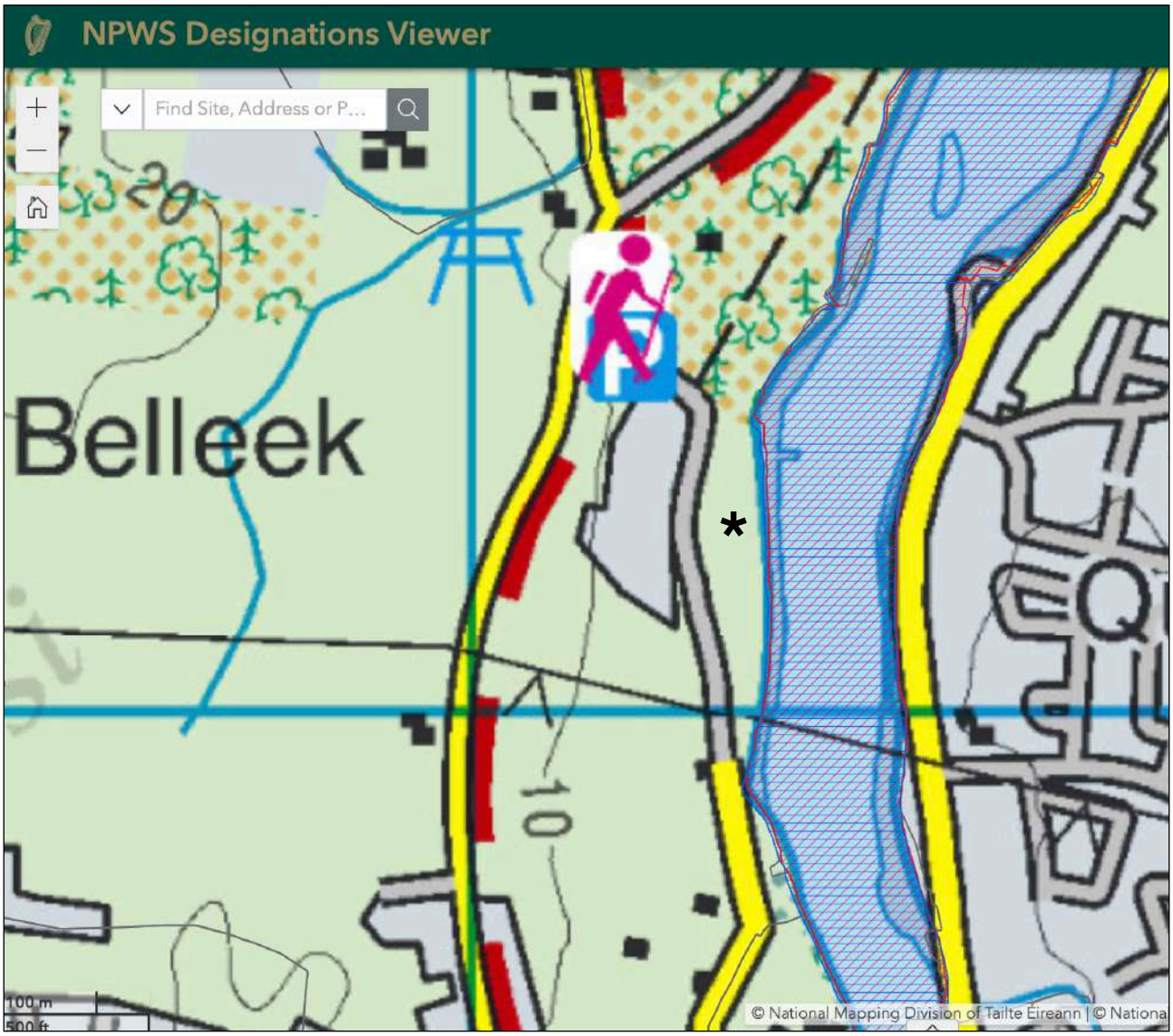


Figure 38: Discovery map showing the location of the wetland south of Belleek Woods (with an asterisk) biodiversity study site. East of the site the lands are designated in the Killala Bay/Moy Estuary SAC, SPA and cNHA. Source: https://dahg.maps.arcgis.com/apps/webappviewer/index.html?id=8f7060450de3485fa1c1085536d477ba. © Government of Ireland National Parks and Wildlife Service.

6.11.3 Wetland South of Belleek Woods, River Moy - Biodiversity Field Survey

Ballina Town Council have expressed an interest in planting a new area of woodland adjacent to Belleek Woods in the interest of biodiversity. The site was surveyed with this objective in mind on the 5th of September 2022 to determine its species and habitat composition.

6.11.4 Wetland South of Belleek Woods, River Moy - Site Management

The site is managed by Ballina Town Council. Grass paths are mowed through the wet grassland habitat and along the roadside edges. Grass cuttings should not be dumped in the site but removed to Council composting facilities. The fringing riparian vegetation along the Moy River remains intact without intervention in recognition of the conservation designation on the River Moy. A treeline of oaks have been planted along the access road to the sports fields adjacent and to Belleek Woods on the northern boundary of the site.

6.11.5 Wetland South of Belleek Woods, River Moy - Habitats and Species Present

The habitat present is amenity grassland adjacent to the access road (GA2), wet grassland (GS4) on the slopes grading into willow scrub (WS1) and reed beds (FS1) along the banks of the river. Young alder trees were noted in the area that have naturally colonised this habitat. The species composition of the grassland was typical of wet soils and included a variety of mosses, rushes and sedges as well as plants typical of damp grassland such as silverweed, birds foot trefoil, red clover, slender St John's Wort, self heal, water figwort, dock and devil's bit scabious.

A total of 22 species were recorded in this site comprising 21 plants and 1 insect.

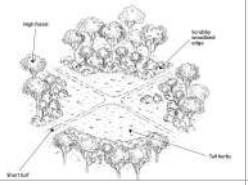
Plate 61: A view of the wetland habitat adjacent to the Moy River. In the image the regularly mowed amenity grassland (GA2) can be seen together with the treeline of oaks planted by Ballina Town Council. The wet grassland (GS4) habitat along the banks of the Moy River can also be seen. Table 13 suggests a number of actions to develop a mosaic of wet grassland and alder woodland in this area. Photo: © C. O'Connell.

6.11.6 Wetland South of Belleek Woods, River Moy - Biodiversity Actions

A wet woodland dominated by Alder (*Alnus glutionosa*) with birch (*Betula pubescens*) is proposed for this site. Wet woodlands are rare in Ireland and the site and soil here may be suited to such a development. However this does not mean planting rows upon rows of alder trees to form a plantation style woodland. Rather it is recommended that the following guidelines be followed: see https://www.woodlands.co.uk/owning-a-wood/managing-your-woodland-for-wildlife/. As well as tree planting, open areas must also be included encompassing the existing wet grassland habitats to create a mosaic structure. These will be sheltered and warm and as a result can greatly enhance wildlife within the wet woodland.

Table 14 suggests a number of recommendations for the structure of the proposed Alder woodland.

Table 14: wet woodland development proposals for the meadow south of Belleek Woods

Number	Biodiversity Action	Photo	Notes
6.11.1	Create open glade areas surrounded by wet woodland habitat		The existing wet grassland habitat is valuable for biodiversity and at least 20% of the space should be retained as open glade areas for wildlife. Open areas within the wood are valuable for wildlife providing warm and sheltered conditions. The image shows a large glade created at the intersection of two forest paths
6.11.2	Plant native Irish alder (*Alnus glutinosa*) and birch (*Betula pubescens*) trees of different ages to create an un-even aged woodland structure		Avoid planting all trees of similar age. Better to purchase some mature trees in addition to younger trees. Retain young alder seedlings that are already colonising the area.
6.11.3	Create woodland edge habitat along woodland paths		Create woodland access paths and plant and manage the edges of the paths so that there are 3 or more wildlife zones e.g. short grass, long flowering meadow, dwarf shrub and mature trees.
6.11.4	Retain willow and reed bed habitat along river margin		Willow and reeds occur as a natural barrier along the river. These should be retained and allowed to spread naturally.

See https://www.woodlands.co.uk/owning-a-wood/managing-your-woodland-for-wildlife/ for more information

Chapter 7. Funding Biodiversity Actions

The following groups provide funding for different aspects of biodiversity enhancement. Further information for each scheme can be found on the relevant organisation's web site.

- Heritage Council Grants Schemes for buildings and management works.
- Waterways and Communities Grant Schemes (see https://www.waterwaysireland.org/heritage-grant)
- Community Foundation of Ireland (see https://www.communityfoundation.ie/)
- Coca-cola Ireland (see https://www.coca-cola.com/ie/en/social)
- Mayo County Council Ballina General Municipal Allocation (GMA) Funding (https://www.mayo.ie/ballinamd/gmagrant)
- Mayo County Council Heritage Grant Scheme (https://www.mayo.ie/heritage/funding)
- Department of Agriculture, Food and the Marine have a number of funding streams available to local communities including Common Agricultural Policy (CAP) Post 2020: Pillar 2 Infrastructure, Environment and Development Support (The main schemes include ACRES, GLAS, EIP-AGRI and TAMS).
- Mayo Leader Programme for Community and Integrated Development (see https://www.mayo.ie/community/development/leader)
- Ireland Funds Community Development Grants (see https://www.irelandfunds.org/our-impact/focus-areas/community-development/)
- Department of Rural and Community Development (see https://www.gov.ie/en/organisation/department-of-rural-and-community-development/)
- Environmental Protection Agency Research and Event Grants (see https://www.epa.ie/our-services/research/epa--research-funding/)

Appendix 1 - Biodiversity Survey Record Sheet

..... Biodiversity Survey Record Sheet

Recorders **Date** **Area ha**

Site Name **#** **Location GPS** **Altitude m**

Description

Habitats Present and Location

Existing Management

Biodiversity Actions

1.

2.

3.

4.

5.

6.

7.

Invasive Species: Winter Heliotrope Cherry Laurel Japanese Knotweed Giant Hogweed Rhododendron Snowberry

Details: .....

Species Diversity: **Plants:** ..... **Animals:** ..... **Birds:** .....

Habitats Present (Fossitt Codes):

Designated Site: **Archaeology:** **NBDC Grids:**

Appendix 2 - Species recorded in the Biodiversity Study Sites and Submitted to the National Biodiversity Data Centre

National Biodiversity Data Centre
Documenting Ireland's Wildlife

Dataset Description

Data Item	Description
Title of the dataset	Moy Estuary and Ballina to Killala Greenway Biodiversity Action Plan 2023-2027
Dataset Provider	Dr Catherine O'Connell
Description	Plant, animal and bird records collected from Ballina, Co. Mayo on the 17th and 18th May, 30th and 31st July and 1st August 2023
Method of data capture	General field observations in different habitats at specific biodiversity sites
Purpose of data capture	To create a Biodiversity Action plan for a number of sites centred around Ballina Co. Mayo - funded by the Community Foundation 2022. Copy of the Plan lodged with NBDC
Geographic coverage	Ballina to Kilalla Greenway, Ballymore Lough, Castleconor, Creggan, Corimla North, Oldcastle and Ballintemple and Crillaun, East County Mayo
Status of dataset	Dataset is completed during the survey and is internally published and distributed to River Moy Search and Rescue, the Community Foundation and the NBDC
Data quality	All plant, animal and bird records were verified by Dr Catherine O'Connell. One plant record verified by Eamonn Delaney BSBI and some insect records verified by Oisin Duffy NBDC as indicated.
Data Centre use only	
Date dataset received	The date of receipt by Data Centre.

Recorder Name	Species Name	Coordinates Latitude	Coordinates Longitude	Location Name	Date	Abundance	Habitat (Fossitt where possible)	Comment	Deterimer Name
Catherine O'Connell	Aglais io	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23	1	GA2	Sunning	Catherine O'Connell
Catherine O'Connell	Aglais io	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23	1	WL1		Catherine O'Connell
Catherine O'Connell	Alauda arvensis	54.098254	-9.178552	Creggaun, Ballina, Co. Mayo	17/05/23	1	PB4	Singing	Catherine O'Connell
Catherine O'Connell	Alauda arvensis	54.171429	9.143335	Rosserk Friary, Lecarrow, Co. Mayo	18/05/23	1	GS2	singing	Catherine O'Connell
Catherine O'Connell	Alauda arvensis	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23	1	GS2	singing	Catherine O'Connell
Catherine O'Connell	Anthrocharis cardamines	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23	1	ED3		Catherine O'Connell
Catherine O'Connell	Anthus petrosus	54.161342	-9.135096	Castleconor, River Moy Estuary, Ballina, Co. Mayo	17/05/23	3	BL1		Catherine O'Connell
Catherine O'Connell	Anthus pratensis	54.098254	-9.178552	Creggaun, Ballina, Co. Mayo	17/05/23	1	PB4		Catherine O'Connell
Catherine O'Connell	Apis melifera	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23	1	ED3		Catherine O'Connell
Catherine O'Connell	Bombus lucorum	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23	1	ED3	on Red Clover	Catherine O'Connell
Catherine O'Connell	Bombus lucorum	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23	1	WL1	foraging	Catherine O'Connell
Catherine O'Connell	Bombus lucorum	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23	1	GS2	foraging	Catherine O'Connell
Catherine O'Connell	Bombus lapidarius	54.134403	-9.136651	Pump House, Quignamanger, Ballina, Co. Mayo	30/07/23	1	GS4	Foraging	Catherine O'Connell
Catherine O'Connell	Bombus pascuorum	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23	2	GS4	Foraging	Catherine O'Connell
Catherine O'Connell	Cepaea nemoralis	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23	3	WL1		Catherine O'Connell
Catherine O'Connell	Bombus pascuorum	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23	1	WS3		Catherine O'Connell
Catherine O'Connell	Cyanistes caeruleus	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23	2	WL1	Feeding	Catherine O'Connell
Catherine O'Connell	Cyanistes caeruleus	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23	1	WL1		Catherine O'Connell
Catherine O'Connell	Cyanistes caeruleus	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23	1	WN6		Catherine O'Connell
Catherine O'Connell	Corvus cornix	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23	1	WL1		Catherine O'Connell
Catherine O'Connell	Corvus frugilegus	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23	1	WL1		Catherine O'Connell
Catherine O'Connell	Corvus frugilegus	54.171429	9.143335	Rosserk Friary, Lecarrow, Co. Mayo	18/05/23	2	BL1		Catherine O'Connell
Catherine O'Connell	Corvus frugilegus	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23	1	WL1		Catherine O'Connell
Catherine O'Connell	Corvus frugilegus	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23	6	WL1	Rookery	Catherine O'Connell
Catherine O'Connell	Corvus monedula	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23	6	WL1	Rookery	Catherine O'Connell
Catherine O'Connell	Columba palumbus	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23	3	WL1		Catherine O'Connell
Catherine O'Connell	Eisenia fetida	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23	Numerous		in compost cone	Catherine O'Connell
Catherine O'Connell	Emberiza schoeniclus	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23	2	FS1	perched on reed	Catherine O'Connell
Catherine O'Connell	Erithacus rubecula	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23	1	WL1		Catherine O'Connell
Catherine O'Connell	Erithacus rubecula	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23	1	WL1	Juvenile	Catherine O'Connell
Catherine O'Connell	Erithacus rubecula	54.171429	9.143335	Rosserk Friary, Lecarrow, Co. Mayo	18/05/23	1	WL1		Catherine O'Connell
Catherine O'Connell	Erithacua rubecula	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23	1	WL1		Catherine O'Connell
Catherine O'Connell	Dytiscus marginalis	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23	1	FL8	Nymph	Catherine O'Connell
Catherine O'Connell	Falco peregrinus	54.161342	-9.135096	Castleconor, River Moy Estuary, Ballina, Co. Mayo	17/05/23	1	BL1	Nest on castle ruin ledge and seen hunting	Catherine O'Connell
Catherine O'Connell	Falco peregrinus	54.171429	9.143335	Rosserk Friary, Lecarrow, Co. Mayo	18/05/23	1	CW2/CM	Roosting on tidal river shore and flying	Catherine O'Connell
Catherine O'Connell	Fringilla coelebs	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23	2	WN6	Foraging	Catherine O'Connell
Catherine O'Connell	Fringilla coelebs	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23	1	WL1		Catherine O'Connell
Catherine O'Connell	Gerris lacustris	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23	1	FW2		Catherine O'Connell
Catherine O'Connell	Gerris lacustris	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23	Numerous	FL8		Catherine O'Connell
Catherine O'Connell	Hirundo rustica	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23	4	GA1	foraging	Catherine O'Connell
Catherine O'Connell	Hirundo rustica	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23	1	GS2 WL1	Foraging	Catherine O'Connell
Catherine O'Connell	Hirundo rustica	54.171429	9.143335	Rosserk Friary, Lecarrow, Co. Mayo	18/05/23	2	GS2	Foraging	Catherine O'Connell
Catherine O'Connell	Hirundo rustica	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23	3	WL1		Catherine O'Connell
Catherine O'Connell	Hirundo rustica	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23	6	GS2	nest with four chicks being fed by 2 adults	Catherine O'Connell
Catherine O'Connell	Hirundo rustica	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23	1	GA2	foraging	Catherine O'Connell
Catherine O'Connell	Ischnura elegans	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23	3	GS2 FL8	sitting on long grass stems	Catherine O'Connell
Catherine O'Connell	Leptura quadrifasciata	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23	1	WN6		Oisin Duffy NBDC
Catherine O'Connell	Lissotriton vulgaris	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23	2	FL8		Catherine O'Connell
Catherine O'Connell	Lymnaea stagnalis	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23	1	FL8		Catherine O'Connell
Catherine O'Connell	Maniola jurtina	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23	1	WL1		Catherine O'Connell
Catherine O'Connell	Maniola jurtina	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23	2	GA2		Catherine O'Connell
Catherine O'Connell	Musca domestica	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23	1	WN6		Catherine O'Connell

Catherine O'Connell	Musca domestica	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23	Numerous	WL1 GS4		Catherine O'Connell
Catherine O'Connell	Oryctolagus cuniculus	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23	1	GS2		Catherine O'Connell
Catherine O'Connell	Parage aegeria	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23	1	WN6		Catherine O'Connell
Catherine O'Connell	Parus major	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23	1	FS1		Catherine O'Connell
Catherine O'Connell	Phasianus colchicus	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23	1		Heard	Catherine O'Connell
Catherine O'Connell	Phasianus colchicus	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23	1		Heard	Catherine O'Connell
Catherine O'Connell	Philaenus spumarius	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23	Numerous	ED3 GS2		Catherine O'Connell
Catherine O'Connell	Philaenus spumarius	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23	Numerous	GS2		Catherine O'Connell
Catherine O'Connell	Pica pica	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23	1	WL1		Catherine O'Connell
Catherine O'Connell	Pica pica	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23	1	WL1		Catherine O'Connell
Catherine O'Connell	Prunella modularis	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23	1			Catherine O'Connell
Catherine O'Connell	Prunella modularis	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23	1	WL1		Catherine O'Connell
Catherine O'Connell	Pyrrhula pyrrhula	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23	1	WL1	Male bird	Catherine O'Connell
Catherine O'Connell	Rhagonycha fulva	54.134403	-9.136651	Pump House, Quignamanger, Ballina, Co. Mayo	30/07/23	1	GS4	Foraging	Catherine O'Connell
Catherine O'Connell	Saxicola rubicola	54.161342	-9.135096	Castleconor, River Moy Estuary, Ballina, Co. Mayo	17/05/23	1	BL1		Catherine O'Connell
Catherine O'Connell	Saxicola rubicola	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23	2	WL1 BL1	Male and female seen	Catherine O'Connell
Catherine O'Connell	Scathophaga stercoraria	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23	2	GA1	Mating on cow pat	Catherine O'Connell
Catherine O'Connell	Scotopteryx chenopodiata	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23	1	GS2		Oisin Duffy NBDC
Catherine O'Connell	Sturnus vulgaris	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23	3	GS2		Catherine O'Connell
Catherine O'Connell	Sturnus vulgaris	54.171429	9.143335	Rosserk Friary, Lecarrow, Co. Mayo	18/05/23	1	GS2	Nesting	Catherine O'Connell
Catherine O'Connell	Troglodytes Troglodytes	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23	1	BL1		Catherine O'Connell
Catherine O'Connell	Turdus merula	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23	1	WL1		Catherine O'Connell
Catherine O'Connell	Turdus merula	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23	1	WL1		Catherine O'Connell
Catherine O'Connell	Turdus merula	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23	1	WL1		Catherine O'Connell
Catherine O'Connell	Turdus merula	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23	1	WL1		Catherine O'Connell
Catherine O'Connell	Turdus merula	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23	1	WN6		Catherine O'Connell
Catherine O'Connell	Turdus merula	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23	1	WL1		Catherine O'Connell
Catherine O'Connell	Turdus philomelos	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23	1	WL1		Catherine O'Connell
Catherine O'Connell	Turdus philomelos	54.161342	-9.135096	Castleconor, River Moy Estuary, Ballina, Co. Mayo	17/05/23	1	WL1	singing	Catherine O'Connell
Catherine O'Connell	Turdus philomelos	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23	2	WL1	Adult birds singing and snail anvil sites seen	Catherine O'Connell
Catherine O'Connell	Turdus viscivorus	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23	1	GS2		Catherine O'Connell
Catherine O'Connell	Vulpes vulpes	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23	1	WL1 GA1	Foraging	Catherine O'Connell
Catherine O'Connell	Bombus pascuorum	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23	1	GS2	foraging	Catherine O'Connell
Catherine O'Connell	Bombus pascuorum	54.171429	9.143335	Rosserk Friary, Lecarrow, Co. Mayo	18/05/23		GS2	foraging	Catherine O'Connell
Catherine O'Connell	Cornu aspersum	54.161342	-9.135096	Castleconor, River Moy Estuary, Ballina, Co. Mayo	17/05/23		BL1		Catherine O'Connell
Catherine O'Connell	Cornu aspersum	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23	2	WL1	Mating	Catherine O'Connell
Catherine O'Connell	Cornu aspersum	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23	1	GS2		Catherine O'Connell
Catherine O'Connell	Cepaea nemoralis	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23	1	GS2		Catherine O'Connell
Catherine O'Connell	Mesembrina meridiana	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23	2	WS3	Feeding on ripe fruit of Rosa rugosa	Oisin Duffy NBDC
Catherine O'Connell	Musca domestica	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23	1	GS2		Catherine O'Connell
Catherine O'Connell	Musca domestica	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23	1	GS2		Catherine O'Connell
Catherine O'Connell	Omocestus viridulus	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23	1	WS3		Oisin Duffy NBDC
Catherine O'Connell	Omocestus viridulus	54.134403	-9.136651	Pump House, Quignamanger, Ballina, Co. Mayo	30/07/23	1	GS4		Oisin Duffy NBDC
Catherine O'Connell	Pieris napi	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23	Numerous	WL1	nectaring on bramble	Catherine O'Connell
Catherine O'Connell	Pieris napi	54.098254	-9.178552	Creggaun, Ballina, Co. Mayo	17/05/23	1	PB4		Catherine O'Connell
Catherine O'Connell	Pieris napi	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23	1	WS3		Catherine O'Connell
Catherine O'Connell	Rana temporaria	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23	4	WN6	Foraging	Catherine O'Connell
Catherine O'Connell	Scathophaga stercoraria	54.161342	-9.135096	Castleconor, River Moy Estuary, Ballina, Co. Mayo	17/05/23	10-12	GA1	on sheep dung	Catherine O'Connell
Catherine O'Connell	Scathophaga stercoraria	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23	1	GS2		Catherine O'Connell
Catherine O'Connell	Acer pseudoplatanus	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Acer pseudoplatanus	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Acer pseudoplatanus	54.134403	-9.136651	Pump House, Quignamanger, Ballina, Co. Mayo	30/07/23		WL1		Catherine O'Connell
Catherine O'Connell	Acer pseudoplatanus	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		WL1		Catherine O'Connell
Catherine O'Connell	Achillea millefolium	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		GS2		Catherine O'Connell

Catherine O'Connell	Angelica sylvestris	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		GS4		Catherine O'Connell
Catherine O'Connell	Angelica sylvestris	54.098254	-9.178552	Creggaun, Ballina, Co. Mayo	17/05/23		PB4		Catherine O'Connell
Catherine O'Connell	Alisma plantago-aquatica	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		FL4		Catherine O'Connell
Catherine O'Connell	Alnus glutinosa	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		WN6		Catherine O'Connell
Catherine O'Connell	Alnus glutinosa	54.161342	-9.135096	Castleconor, River Moy Estuary, Ballina, Co. Mayo	17/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Alnus glutinosa	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Alnus glutinosa	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Alnus glutinosa	54.134403	-9.136651	Pump House, Quignamanger, Ballina, Co. Mayo	30/07/23		WL1		Catherine O'Connell
Catherine O'Connell	Alnus glutinosa	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		WL1		Catherine O'Connell
Catherine O'Connell	Alnus glutinosa	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		WN6		Catherine O'Connell
Catherine O'Connell	Alnus glutinosa	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23		BL3	seedlings	Catherine O'Connell
Catherine O'Connell	Angelica sylvestris	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23		WS3		Catherine O'Connell
Catherine O'Connell	Angelica sylvestris	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		GS4		Catherine O'Connell
Catherine O'Connell	Angelica sylvestris	54.134403	-9.136651	Pump House, Quignamanger, Ballina, Co. Mayo	30/07/23		GS4		Catherine O'Connell
Catherine O'Connell	Anthriscus sylvestris	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Anthriscus sylvestris	54.161342	-9.135096	Castleconor, River Moy Estuary, Ballina, Co. Mayo	17/05/23		GA1		Catherine O'Connell
Catherine O'Connell	Anthoxanthum odoratum	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		GS2 GA1 GA2		Catherine O'Connell
Catherine O'Connell	Anthoxanthum odoratum	54.161342	-9.135096	Castleconor, River Moy Estuary, Ballina, Co. Mayo	17/05/23		GA1		Catherine O'Connell
Catherine O'Connell	Anthoxanthum odoratum	54.171429	9.143335	Rosserk Friary, Lecarrow, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Anthoxanthum odoratum	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Anthoxanthum odoratum	54.098254	-9.178552	Creggaun, Ballina, Co. Mayo	17/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Anthyllis vulneraria	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		GS2		Catherine O'Connell
Catherine O'Connell	Apium nodiflorum	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23		FW4		Catherine O'Connell
Catherine O'Connell	Armeria maritima	54.171429	9.143335	Rosserk Friary, Lecarrow, Co. Mayo	18/05/23		CW2/CM		Catherine O'Connell
Catherine O'Connell	Arum maculatum	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		WN6		Catherine O'Connell
Catherine O'Connell	Asplenium ceterach	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23		BL1		Catherine O'Connell
Catherine O'Connell	Asplenium scolopendrium	54.161342	-9.135096	Castleconor, River Moy Estuary, Ballina, Co. Mayo	17/05/23		BL1		Catherine O'Connell
Catherine O'Connell	Asplenium scolopendrium	54.171429	9.143335	Rosserk Friary, Lecarrow, Co. Mayo	18/05/23		BL1		Catherine O'Connell
Catherine O'Connell	Asplenium scolopendrium	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Asplenium scolopendrium	54.134403	-9.136651	Pump House, Quignamanger, Ballina, Co. Mayo	30/07/23		WL1		Catherine O'Connell
Catherine O'Connell	Asplenium scolopendrium	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23		BL1		Catherine O'Connell
Catherine O'Connell	Asplenium scolopendrium	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		WL1 BL1		Catherine O'Connell
Catherine O'Connell	Asplenium scolopendrium	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		WN6		Catherine O'Connell
Catherine O'Connell	Asplenium scolopendrium	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Asplenium ruta-muraria	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23		BL1		Catherine O'Connell
Catherine O'Connell	Asplenium ruta-muraria	54.171429	9.143335	Rosserk Friary, Lecarrow, Co. Mayo	18/05/23		BL1		Catherine O'Connell
Catherine O'Connell	Asplenium trichomanes	54.171429	9.143335	Rosserk Friary, Lecarrow, Co. Mayo	18/05/23		BL1		Catherine O'Connell
Catherine O'Connell	Asplenium trichomanes	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23		BL1		Catherine O'Connell
Catherine O'Connell	Bellis perennis	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		ED3		Catherine O'Connell
Catherine O'Connell	Bellis perennis	54.161342	-9.135096	Castleconor, River Moy Estuary, Ballina, Co. Mayo	17/05/23		GA1		Catherine O'Connell
Catherine O'Connell	Bellis perennis	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Bellis perennis	54.171429	9.143335	Rosserk Friary, Lecarrow, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Bellis perennis	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Bellis perennis	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		WN6		Catherine O'Connell
Catherine O'Connell	Bellis perennis	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23		GA2		Catherine O'Connell
Catherine O'Connell	Bellis perennis	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		GA1		Catherine O'Connell
Catherine O'Connell	Betula pubescens	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23		WL1		Catherine O'Connell
Catherine O'Connell	Betula pubescens	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		WN6		Catherine O'Connell
Catherine O'Connell	Betula pubescens	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		WL1		Catherine O'Connell
Catherine O'Connell	Betula pubescens	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Brassica rapa	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		ED3		Catherine O'Connell
Catherine O'Connell	Brassica rapa	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Buddleia davidii	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		WS3		Catherine O'Connell
Catherine O'Connell	Buddleia davidii	54.134403	-9.136651	Pump House, Quignamanger, Ballina, Co. Mayo	30/07/23		BL3		Catherine O'Connell

Catherine O'Connell	Buxus sempervirens	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		WS3		Catherine O'Connell
Catherine O'Connell	Calliergonella cuspidata	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23		WS3		Catherine O'Connell
Catherine O'Connell	Calliergonella cuspidata	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		GS2		Catherine O'Connell
Catherine O'Connell	Calliergonella cuspidata	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		GA2		Catherine O'Connell
Catherine O'Connell	Calliergonella cuspidata	54.098254	-9.178552	Creggaun, Ballina, Co. Mayo	17/05/23		PB4		Catherine O'Connell
Catherine O'Connell	Calliergonella cuspidata	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Calliergonella cuspidata	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		WL1		Catherine O'Connell
Catherine O'Connell	Calustegia sepium	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		WL1		Catherine O'Connell
Catherine O'Connell	Calystegia sepium	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		WS3		Catherine O'Connell
Catherine O'Connell	Calystegia sepium	54.134403	-9.136651	Pump House, Quignamanger, Ballina, Co. Mayo	30/07/23		WL1		Catherine O'Connell
Catherine O'Connell	Calystegia sepium	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Calystegia sepium	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Cardamine pratensis	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		GS4		Catherine O'Connell
Catherine O'Connell	Cardamine pratensis	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Cardamine pratensis	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Cardamine pratensis	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Carex nigra	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Carex panicea	54.098254	-9.178552	Creggaun, Ballina, Co. Mayo	17/05/23		PB4		Catherine O'Connell
Catherine O'Connell	Carex rostrata	54.098254	-9.178552	Creggaun, Ballina, Co. Mayo	17/05/23		PB4		Catherine O'Connell
Catherine O'Connell	Centaurea nigra	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		GS2		Catherine O'Connell
Catherine O'Connell	Centaurea nigra	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23		BL3 GA2		Catherine O'Connell
Catherine O'Connell	Centaurea nigra	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		GS4		Catherine O'Connell
Catherine O'Connell	Centaurea nigra	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Centaurea nigra	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Centaurium erythraea	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		WI1		Catherine O'Connell
Catherine O'Connell	Centaurium erythraea	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23		BL3		Catherine O'Connell
Catherine O'Connell	Cerastium fontanum	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		GS2		Catherine O'Connell
Catherine O'Connell	Cerastium fontanum	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		GA1		Catherine O'Connell
Catherine O'Connell	Cerastium fontanum	54.161342	-9.135096	Castleconor, River Moy Estuary, Ballina, Co. Mayo	17/05/23		GA1		Catherine O'Connell
Catherine O'Connell	Cerastium fontanum	54.171429	9.143335	Rosserk Friary, Lecarrow, Co. Mayo	18/05/23		GA2		Catherine O'Connell
Catherine O'Connell	Cerastium fontanum	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		GA1		Catherine O'Connell
Catherine O'Connell	Cerastium fontanum	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Chamaecyparis lawsoniana 'Ell	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		WS3		Catherine O'Connell
Catherine O'Connell	Cirsium arvense	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		GA1		Catherine O'Connell
Catherine O'Connell	Cirsium arvense	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		GS2		Catherine O'Connell
Catherine O'Connell	Cirsium arvense	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Cirsium arvense	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		ED3		Catherine O'Connell
Catherine O'Connell	Cirsium arvense	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Cirsium arvense	54.161342	-9.135096	Castleconor, River Moy Estuary, Ballina, Co. Mayo	17/05/23		GA1		Catherine O'Connell
Catherine O'Connell	Cirsium dissectum	54.098254	-9.178552	Creggaun, Ballina, Co. Mayo	17/05/23		PB4		Catherine O'Connell
Catherine O'Connell	Cirsium palustre	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		GS4		Catherine O'Connell
Catherine O'Connell	Cirsium palustre	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		GS4		Catherine O'Connell
Catherine O'Connell	Cirsium palustre	54.098254	-9.178552	Creggaun, Ballina, Co. Mayo	17/05/23		PB4		Catherine O'Connell
Catherine O'Connell	Cirsium vulgare	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		GA1		Catherine O'Connell
Catherine O'Connell	Cirsium vulgare	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Cirsium vulgare	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		ED3		Catherine O'Connell
Catherine O'Connell	Cirsium vulgare	54.161342	-9.135096	Castleconor, River Moy Estuary, Ballina, Co. Mayo	17/05/23		GA1		Catherine O'Connell
Catherine O'Connell	Cochlearia officinalis	54.171429	9.143335	Rosserk Friary, Lecarrow, Co. Mayo	18/05/23		CW2/CM		Catherine O'Connell
Catherine O'Connell	Conopodium majus	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Conopodium majus	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		WN6		Catherine O'Connell
Catherine O'Connell	Conopodium majus	54.161342	-9.135096	Castleconor, River Moy Estuary, Ballina, Co. Mayo	17/05/23		GA1		Catherine O'Connell
Catherine O'Connell	Conopodium majus	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		WS1		Catherine O'Connell
Catherine O'Connell	Conopodium majus	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		WN6		Catherine O'Connell
Catherine O'Connell	Conopodium majus	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23		WL1		Catherine O'Connell

Catherine O'Connell	Cotoneaster horizontalis	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Cotoneaster horizontalis	54.134403	-9.136651	Pump House, Quignamanger, Ballina, Co. Mayo	30/07/23		WL1		Catherine O'Connell
Catherine O'Connell	Cotoneaster horizontalis	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23		WL1		Catherine O'Connell
Catherine O'Connell	Corylus avellana	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Corylus avellana	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		WN6		Catherine O'Connell
Catherine O'Connell	Crataegus monogyna	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23		WL1		Catherine O'Connell
Catherine O'Connell	Crataegus monogyna	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		WN6		Catherine O'Connell
Catherine O'Connell	Crataegus monogyna	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Crataegus monogyna	54.161342	-9.135096	Castleconor, River Moy Estuary, Ballina, Co. Mayo	17/05/23		BL1		Catherine O'Connell
Catherine O'Connell	Crataegus monogyna	54.098254	-9.178552	Creggaun, Ballina, Co. Mayo	17/05/23		PB4		Catherine O'Connell
Catherine O'Connell	Crataegus monogyna	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Crataegus monogyna	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		WL1		Catherine O'Connell
Catherine O'Connell	Crataegus monogyna	54.171429	9.143335	Rosserk Friary, Lecarrow, Co. Mayo	18/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Crataegus monogyna	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Crocosmia x crocosmiiflora	54.134403	-9.136651	Pump House, Quignamanger, Ballina, Co. Mayo	30/07/23		GS4		Catherine O'Connell
Catherine O'Connell	Cymbalaria muralis	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		BL1		Catherine O'Connell
Catherine O'Connell	Cynosurus cristatus	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		GS2		Catherine O'Connell
Catherine O'Connell	Dactylus glomerata	54.171429	9.143335	Rosserk Friary, Lecarrow, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Dactylus glomerata	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		GS4 GA1		Catherine O'Connell
Catherine O'Connell	Dactylus glomerata	54.134403	-9.136651	Pump House, Quignamanger, Ballina, Co. Mayo	30/07/23		GS4		Catherine O'Connell
Catherine O'Connell	Dactylus glomerata	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		GS2		Catherine O'Connell
Catherine O'Connell	Dactylus glomerata	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23		GA2		Catherine O'Connell
Catherine O'Connell	Dactylus glomerata	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		GS2 GA1 GA2		Catherine O'Connell
Catherine O'Connell	Dactylus glomerata	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Daucus carota	54.134403	-9.136651	Pump House, Quignamanger, Ballina, Co. Mayo	30/07/23		GS4		Catherine O'Connell
Catherine O'Connell	Digitalis purpurea	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		WN6 WL1		Catherine O'Connell
Catherine O'Connell	Dipsacus fullonum	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		ED3		Catherine O'Connell
Catherine O'Connell	Dryopteris dilatata	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		WN6		Catherine O'Connell
Catherine O'Connell	Dryopteris dilatata	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Dryopteris dilatata	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Dryopteris dilatata	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		WL1		Catherine O'Connell
Catherine O'Connell	Dryopteris dilatata	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		WN6		Catherine O'Connell
Catherine O'Connell	Elodea canadensis	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		FL8		Catherine O'Connell
Catherine O'Connell	Epilobium hirsutum	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		GS4		Catherine O'Connell
Catherine O'Connell	Epilobium hirsutum	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Epilobium hirsutum	54.161342	-9.135096	Castleconor, River Moy Estuary, Ballina, Co. Mayo	17/05/23		GA1		Catherine O'Connell
Catherine O'Connell	Epilobium hirsutum	54.134403	-9.136651	Pump House, Quignamanger, Ballina, Co. Mayo	30/07/23		GS4		Catherine O'Connell
Catherine O'Connell	Epilobium parviflorum	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		GS4		Catherine O'Connell
Catherine O'Connell	Epilobium parviflorum	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23		BL3		Catherine O'Connell
Catherine O'Connell	Equisetum arvense	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23		GA2		Catherine O'Connell
Catherine O'Connell	Equisetum arvense	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		GS2		Catherine O'Connell
Catherine O'Connell	Equisetum arvense	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		FW4		Catherine O'Connell
Catherine O'Connell	Equisetum arvense	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		GS4		Catherine O'Connell
Catherine O'Connell	Equisetum arvense	54.098254	-9.178552	Creggaun, Ballina, Co. Mayo	17/05/23		PB4		Catherine O'Connell
Catherine O'Connell	Equisetum arvense	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Equisetum arvense	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Euonymous europaeus	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		WN6		Catherine O'Connell
Catherine O'Connell	Eupatorium cannabinum	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23		GA2		Catherine O'Connell
Catherine O'Connell	Euphrasia salisburgensis	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23		GA2		Catherine O'Connell
Catherine O'Connell	Euphrasia salisburgensis	54.161342	-9.135096	Castleconor, River Moy Estuary, Ballina, Co. Mayo	17/05/23		GA1		Catherine O'Connell
Catherine O'Connell	Euphrasia salisburgensis	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Evernia prunastri	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		WN6	epiphytic on Oak	Catherine O'Connell
Catherine O'Connell	Evernia prunastri	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Evernia prunastri	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		WN6	epiphytic	Catherine O'Connell

Catherine O'Connell	Fagus sylvatica	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		WL1	Planted in 2014	Catherine O'Connell
Catherine O'Connell	Festuca rubra	54.161342	-9.135096	Castleconor, River Moy Estuary, Ballina, Co. Mayo	17/05/23		GA1		Catherine O'Connell
Catherine O'Connell	Ficaria verna ssp verna	54.161342	-9.135096	Castleconor, River Moy Estuary, Ballina, Co. Mayo	17/05/23		GA1		Catherine O'Connell
Catherine O'Connell	Ficaria verna ssp verna	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		WN6		Catherine O'Connell
Catherine O'Connell	Filipendula ulmaria	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Filipendula ulmaria	54.098254	-9.178552	Creggaun, Ballina, Co. Mayo	17/05/23		PB4		Catherine O'Connell
Catherine O'Connell	Filipendula ulmaria	54.134403	-9.136651	Pump House, Quignamanger, Ballina, Co. Mayo	30/07/23		GS4		Catherine O'Connell
Catherine O'Connell	Filipendula ulmaria	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		GS4		Catherine O'Connell
Catherine O'Connell	Filipendula ulmaria	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		GS4		Catherine O'Connell
Catherine O'Connell	Filipendula ulmaria	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23		BL3		Catherine O'Connell
Catherine O'Connell	Filipendula ulmaria	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Fragaria vesca	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		WL1		Catherine O'Connell
Catherine O'Connell	Fraxinus excelsior	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		WN6		Catherine O'Connell
Catherine O'Connell	Fraxinus excelsior	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23		WL1		Catherine O'Connell
Catherine O'Connell	Fraxinus excelsior	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		WL1 WN6		Catherine O'Connell
Catherine O'Connell	Fraxinus excelsior	54.161342	-9.135096	Castleconor, River Moy Estuary, Ballina, Co. Mayo	17/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Fraxinus excelsior	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		WL1	with Ash Die Back	Catherine O'Connell
Catherine O'Connell	Fraxinus excelsior	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Fraxinus excelsior	54.134403	-9.136651	Pump House, Quignamanger, Ballina, Co. Mayo	30/07/23		WL1		Catherine O'Connell
Catherine O'Connell	Fuschia magellanica	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Fuschia magellanica	54.134403	-9.136651	Pump House, Quignamanger, Ballina, Co. Mayo	30/07/23		WL1		Catherine O'Connell
Catherine O'Connell	Fuschia magellanica	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23		WS3		Catherine O'Connell
Catherine O'Connell	Galium aparine	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		WN6		Catherine O'Connell
Catherine O'Connell	Galium aparine	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Galium aparine	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Galium aparine	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		WL1		Catherine O'Connell
Catherine O'Connell	Galium aparine	54.171429	9.143335	Rosserk Friary, Lecarrow, Co. Mayo	18/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Galium aparine	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23		GL1		Catherine O'Connell
Catherine O'Connell	Geranium robertianum	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23		WL1		Catherine O'Connell
Catherine O'Connell	Geranium robertianum	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Geranium robertianum	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Geranium robertianum	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Geranium robertianum	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		WN6		Catherine O'Connell
Catherine O'Connell	Geranium robertianum	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		WL1		Catherine O'Connell
Catherine O'Connell	Geum urbanum	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		WL1		Catherine O'Connell
Catherine O'Connell	Geum urbanum	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Glyceria maxima	54.134403	-9.136651	Pump House, Quignamanger, Ballina, Co. Mayo	30/07/23		GS4		Catherine O'Connell
Catherine O'Connell	Hedera helix	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23		WL1 WS3		Catherine O'Connell
Catherine O'Connell	Hedera helix	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		WN6		Catherine O'Connell
Catherine O'Connell	Hedera helix	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Hedera helix	54.161342	-9.135096	Castleconor, River Moy Estuary, Ballina, Co. Mayo	17/05/23		BL1		Catherine O'Connell
Catherine O'Connell	Hedera helix	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Hedera helix	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		WL1		Catherine O'Connell
Catherine O'Connell	Heracleum spondylium	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Heracleum spondylium	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Heracleum spondylium	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		WL1		Catherine O'Connell
Catherine O'Connell	Holcus lanatus	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		GS2		Catherine O'Connell
Catherine O'Connell	Holcus lanatus	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23		GA2 BL3		Catherine O'Connell
Catherine O'Connell	Holcus lanatus	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		GS4 GA1		Catherine O'Connell
Catherine O'Connell	Holcus lanatus	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		GA1 GA2 GS2 ED3		Catherine O'Connell
Catherine O'Connell	Holcus lanatus	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Holcus lanatus	54.171429	9.143335	Rosserk Friary, Lecarrow, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Hyacinthoides non scripta	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		WL1 WN6		Catherine O'Connell
Catherine O'Connell	Hyacinthoides non scripta	54.161342	-9.135096	Castleconor, River Moy Estuary, Ballina, Co. Mayo	17/05/23		GA1		Catherine O'Connell

Catherine O'Connell	Hyacinthoides non scripta	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Hypericum androsaemum	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		WS3		Catherine O'Connell
Catherine O'Connell	Hypericum pulchrum	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23		WS3		Catherine O'Connell
Catherine O'Connell	Hypericum pulchrum	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		ED3		Catherine O'Connell
Catherine O'Connell	Hypericum pulchrum	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		GS2		Catherine O'Connell
Catherine O'Connell	Hypericum pulchrum	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		WL1		Catherine O'Connell
	Hypochaeris radicata	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23		BL3		Catherine O'Connell
Catherine O'Connell	Ilex aquifolium	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		WN6		Catherine O'Connell
Catherine O'Connell	Ilex aquifolium	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Ilex aquifolium	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23		WL1		Catherine O'Connell
Catherine O'Connell	Iris pseudacorus	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		FW4		Catherine O'Connell
Catherine O'Connell	Iris pseudacorus	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		FW4		Catherine O'Connell
Catherine O'Connell	Iris pseudacorus	54.171429	9.143335	Rosserk Friary, Lecarrow, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Iris pseudacorus	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Iris pseudacorus	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		GS2		Catherine O'Connell
Catherine O'Connell	Jacobaea vulgaris	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		GS2		Catherine O'Connell
Catherine O'Connell	Jacobaea vulgaris	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Jacobaea vulgaris	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		GA1		Catherine O'Connell
Catherine O'Connell	Jacobaea vulgaris	54.134403	-9.136651	Pump House, Quignamanger, Ballina, Co. Mayo	30/07/23		GS4		Catherine O'Connell
Catherine O'Connell	Jacobaea vulgaris	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23		BL3		Catherine O'Connell
Catherine O'Connell	Juncus effusus	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		GS2		Catherine O'Connell
Catherine O'Connell	Juncus effusus	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		GS4 GA1		Catherine O'Connell
Catherine O'Connell	Juncus effusus	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Juncus effusus	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Juncus effusus	54.098254	-9.178552	Creggaun, Ballina, Co. Mayo	17/05/23		PB4		Catherine O'Connell
Catherine O'Connell	Lapsana communis	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23		BL3		Catherine O'Connell
Catherine O'Connell	Lapsana communis	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		WN6		Catherine O'Connell
Catherine O'Connell	Lathyrus pratensis	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		WL1		Catherine O'Connell
Catherine O'Connell	Lathyrus pratensis	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23		GA2		Catherine O'Connell
Catherine O'Connell	Leucanthemum vulgare	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23		GA2		Catherine O'Connell
Catherine O'Connell	Leucanthemum vulgare	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		ED3		Catherine O'Connell
Catherine O'Connell	Leucanthemum vulgare	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		GS4		Catherine O'Connell
Catherine O'Connell	Leucanthemum vulgare	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		GS2		Catherine O'Connell
Catherine O'Connell	Ligustrum ovalifolium	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23		WS3		Catherine O'Connell
Catherine O'Connell	Linum catharticum	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23		WS3		Catherine O'Connell
Catherine O'Connell	Lolium perenne	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		GS2		Catherine O'Connell
Catherine O'Connell	Lolium perenne	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23		GA2		Catherine O'Connell
Catherine O'Connell	Lolium perenne	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		GA1		Catherine O'Connell
Catherine O'Connell	Lonicera periclymenum	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23		WS3		Catherine O'Connell
Catherine O'Connell	Lonicera periclymenum	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Lotus corniculatus	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		GS2		Catherine O'Connell
Catherine O'Connell	Lotus corniculatus	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		WL1		Catherine O'Connell
Catherine O'Connell	Lotus corniculatus	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Lotus corniculatus	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		ED3		Catherine O'Connell
Catherine O'Connell	Luzula multiflora	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Luzula multiflora	54.098254	-9.178552	Creggaun, Ballina, Co. Mayo	17/05/23		PB4		Catherine O'Connell
Catherine O'Connell	Luzula multiflora	54.161342	-9.135096	Castleconor, River Moy Estuary, Ballina, Co. Mayo	17/05/23		GA1		Catherine O'Connell
Catherine O'Connell	Luzula multiflora	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Lysimachia nemorum	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		WN6		Catherine O'Connell
Catherine O'Connell	Lythrum salicaria	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		GS4		Catherine O'Connell
Catherine O'Connell	Lythrum salicaria	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		GS4		Catherine O'Connell
Catherine O'Connell	Lychnis flos floculi	54.098254	-9.178552	Creggaun, Ballina, Co. Mayo	17/05/23		PB4		Catherine O'Connell
Catherine O'Connell	Malus sylvestris	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		GS2	planted	Catherine O'Connell
Catherine O'Connell	Medicago lupulina	54.161342	-9.135096	Castleconor, River Moy Estuary, Ballina, Co. Mayo	17/05/23		GA1		Catherine O'Connell

Catherine O'Connell	Medicago lupulina	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Medicago lupulina	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		ED3 GS2		Catherine O'Connell
Catherine O'Connell	Mentha aquatica	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		GS4		Catherine O'Connell
Catherine O'Connell	Molinia caerulea	54.098254	-9.178552	Creggaun, Ballina, Co. Mayo	17/05/23		PB4		Catherine O'Connell
Catherine O'Connell	Nuphar lutea	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		FL4		Catherine O'Connell
Catherine O'Connell	Oenanthe crocata	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23		GS2		Eamonn Delaney BSE
Catherine O'Connell	Orchis mascula	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Phragmites australis	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		FS1		Catherine O'Connell
Catherine O'Connell	Phragmites australis	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		GS4		Catherine O'Connell
Catherine O'Connell	Phragmites australis	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		FL4		Catherine O'Connell
Catherine O'Connell	Pilosella officinarum	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		ED3		Catherine O'Connell
Catherine O'Connell	Plantago coronopis	54.171429	9.143335	Rosserk Friary, Lecarrow, Co. Mayo	18/05/23		CW2/CM		Catherine O'Connell
Catherine O'Connell	Plantago lanceolata	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		ED3 GS2		Catherine O'Connell
Catherine O'Connell	Plantago lanceolata	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Plantago lanceolata	54.171429	9.143335	Rosserk Friary, Lecarrow, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Plantago lanceolata	54.161342	-9.135096	Castleconor, River Moy Estuary, Ballina, Co. Mayo	17/05/23		GA1		Catherine O'Connell
Catherine O'Connell	Plantago lanceolata	54.134403	-9.136651	Pump House, Quignamanger, Ballina, Co. Mayo	30/07/23		BL3		Catherine O'Connell
Catherine O'Connell	Plantago lanceolata	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		GA1		Catherine O'Connell
Catherine O'Connell	Plantago lanceolata	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23		GA2		Catherine O'Connell
Catherine O'Connell	Plantago lanceolata	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		GS2		Catherine O'Connell
Catherine O'Connell	Plantaog major	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23		BL3		Catherine O'Connell
Catherine O'Connell	Plantago major	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		GA1		Catherine O'Connell
Catherine O'Connell	Plantago major	54.171429	9.143335	Rosserk Friary, Lecarrow, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Plantago major	54.134403	-9.136651	Pump House, Quignamanger, Ballina, Co. Mayo	30/07/23		GA2		Catherine O'Connell
Catherine O'Connell	Pentaglottis sempervirens	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		GA2 GA1		Catherine O'Connell
Catherine O'Connell	Pilosella officinarum	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Poa annua	54.171429	9.143335	Rosserk Friary, Lecarrow, Co. Mayo	18/05/23		GA2		Catherine O'Connell
Catherine O'Connell	Potentilla anserina	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		GS2		Catherine O'Connell
Catherine O'Connell	Potentilla anserina	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Potentilla anserina	54.161342	-9.135096	Castleconor, River Moy Estuary, Ballina, Co. Mayo	17/05/23		GA1		Catherine O'Connell
Catherine O'Connell	Potentilla anserina	54.171429	9.143335	Rosserk Friary, Lecarrow, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Potentilla anserina	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Potentilla anserina	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		GS4		Catherine O'Connell
Catherine O'Connell	Potentilla anserina	54.134403	-9.136651	Pump House, Quignamanger, Ballina, Co. Mayo	30/07/23		GA2		Catherine O'Connell
Catherine O'Connell	Potentilla erecta	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		GS4		Catherine O'Connell
Catherine O'Connell	Potentilla erecta	54.098254	-9.178552	Creggaun, Ballina, Co. Mayo	17/05/23		PB4		Catherine O'Connell
Catherine O'Connell	Potentilla palustris	54.098254	-9.178552	Creggaun, Ballina, Co. Mayo	17/05/23		PB4		Catherine O'Connell
Catherine O'Connell	Potentilla reptans	54.134403	-9.136651	Pump House, Quignamanger, Ballina, Co. Mayo	30/07/23		GS2		Catherine O'Connell
Catherine O'Connell	Primula vulgaris	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		WN6		Catherine O'Connell
Catherine O'Connell	Primula vulgaris	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		WL1		Catherine O'Connell
Catherine O'Connell	Primula vulgaris	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Prunella vulgaris	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		GS2		Catherine O'Connell
Catherine O'Connell	Prunella vulgaris	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23		GA2		Catherine O'Connell
Catherine O'Connell	Prunella vulgaris	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		WL1 GS4		Catherine O'Connell
Catherine O'Connell	Prunus padua	54.134403	-9.136651	Pump House, Quignamanger, Ballina, Co. Mayo	30/07/23		WL1		Catherine O'Connell
Catherine O'Connell	Prunus padua	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		WN6		Catherine O'Connell
Catherine O'Connell	Prunus spinosa	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		WN6		Catherine O'Connell
Catherine O'Connell	Prunus spinosa	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Prunus spinosa	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Prunus spinosa	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Prunus spinosa	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23		WL1		Catherine O'Connell
Catherine O'Connell	Pseudoscleropodium purum	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23		WS3		Catherine O'Connell
Catherine O'Connell	Pteridium aquilinum	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23		WL1		Catherine O'Connell
Catherine O'Connell	Pteridium aquilinum	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		WN6		Catherine O'Connell

Catherine O'Connell	Pteridium aquilinum	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Pteridium aquilinum	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Ranunculus acris	54.098254	-9.178552	Creggaun, Ballina, Co. Mayo	17/05/23		PB4		Catherine O'Connell
Catherine O'Connell	Ranunculus acris	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Ranunculus repens	54.161342	-9.135096	Castleconor, River Moy Estuary, Ballina, Co. Mayo	17/05/23		GA1		Catherine O'Connell
Catherine O'Connell	Ranunculus repens	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Ranunculus repens	54.134403	-9.136651	Pump House, Quignamanger, Ballina, Co. Mayo	30/07/23		GA2		Catherine O'Connell
Catherine O'Connell	Ranunculus repens	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		GA1		Catherine O'Connell
Catherine O'Connell	Ranunculus repens	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		GS2		Catherine O'Connell
Catherine O'Connell	Rhinanthus minor	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		GS2		Catherine O'Connell
Catherine O'Connell	Rosa canina	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		WN6		Catherine O'Connell
Catherine O'Connell	Rosa canina	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Rubus fruticosus agg	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		WN6		Catherine O'Connell
Catherine O'Connell	Rubus fruticosus agg	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		WN6 WL1		Catherine O'Connell
Catherine O'Connell	Rubus fruticosus agg	54.161342	-9.135096	Castleconor, River Moy Estuary, Ballina, Co. Mayo	17/05/23		BL1		Catherine O'Connell
Catherine O'Connell	Rubus fruticosus agg	54.098254	-9.178552	Creggaun, Ballina, Co. Mayo	17/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Rubus fruticosus agg	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Rubus fruticosus agg	54.171429	9.143335	Rosserk Friary, Lecarrow, Co. Mayo	18/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Rubus fruticosus agg	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Rubus fruticosus agg	54.134403	-9.136651	Pump House, Quignamanger, Ballina, Co. Mayo	30/07/23		WL1		Catherine O'Connell
Catherine O'Connell	Rubus fruticosus agg	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		WL1		Catherine O'Connell
Catherine O'Connell	Rubus fruticosus agg	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23		WS3		Catherine O'Connell
Catherine O'Connell	Rubus idaeus	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23		WS3		Catherine O'Connell
Catherine O'Connell	Rosa rugosa	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23		WS3		Catherine O'Connell
Catherine O'Connell	Rumex acetosa	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		GA1		Catherine O'Connell
Catherine O'Connell	Rumex acetosa	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Rumex obstusifolius	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		ED3		Catherine O'Connell
Catherine O'Connell	Rumex obstusifolius	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		GA1		Catherine O'Connell
Catherine O'Connell	Rumex obstusifolius	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Rumex obstusifolius	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Sagina procumbens	54.171429	9.143335	Rosserk Friary, Lecarrow, Co. Mayo	18/05/23		BL1		Catherine O'Connell
Catherine O'Connell	Salix alba	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Salix alba	54.134403	-9.136651	Pump House, Quignamanger, Ballina, Co. Mayo	30/07/23		WL1		Catherine O'Connell
Catherine O'Connell	Salix cinerea	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		WN6 WL1		Catherine O'Connell
Catherine O'Connell	Salix cinerea	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23		WL1		Catherine O'Connell
Catherine O'Connell	Salix cinerea	54.098254	-9.178552	Creggaun, Ballina, Co. Mayo	17/05/23		PB4		Catherine O'Connell
Catherine O'Connell	Salix repens	54.098254	-9.178552	Creggaun, Ballina, Co. Mayo	17/05/23		PB4		Catherine O'Connell
Catherine O'Connell	Sambucus nigra	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		WN6		Catherine O'Connell
Catherine O'Connell	Sambucus nigra	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Sanguisorba officinalis	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		GS2		Catherine O'Connell
Catherine O'Connell	Scrophularia auriculata	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		ED3		Catherine O'Connell
Catherine O'Connell	Scrophularia auriculata	54.161342	-9.135096	Castleconor, River Moy Estuary, Ballina, Co. Mayo	17/05/23		GA1		Catherine O'Connell
Catherine O'Connell	Scrophularia auriculata	54.098254	-9.178552	Creggaun, Ballina, Co. Mayo	17/05/23		PB4		Catherine O'Connell
Catherine O'Connell	Scrophularia auriculata	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Scrophularia auriculata	54.134403	-9.136651	Pump House, Quignamanger, Ballina, Co. Mayo	30/07/23		BL3		Catherine O'Connell
Catherine O'Connell	Scrophularia auriculata	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		GS4		Catherine O'Connell
Catherine O'Connell	Scrophularia auriculata	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		GS4		Catherine O'Connell
Catherine O'Connell	Sedum spectabile	54.134403	-9.136651	Pump House, Quignamanger, Ballina, Co. Mayo	30/07/23		GS4		Catherine O'Connell
Catherine O'Connell	Senecio vulgaris	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		BL3		Catherine O'Connell
Catherine O'Connell	Sonchus oleraceus	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Sonchus oleraceus	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		BL3		Catherine O'Connell
Catherine O'Connell	Sorbus aucuparia	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		WN6		Catherine O'Connell
Catherine O'Connell	Stachys palustris	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		GS4		Catherine O'Connell
Catherine O'Connell	Stachys palustris	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		GS4		Catherine O'Connell

Catherine O'Connell	Stellaria graminea	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		GS4		Catherine O'Connell
Catherine O'Connell	Succisa pratensis	54.098254	-9.178552	Creggaun, Ballina, Co. Mayo	17/05/23		PB4		Catherine O'Connell
Catherine O'Connell	Taraxacum officinale	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		GA1 GA2 GS2		Catherine O'Connell
Catherine O'Connell	Taraxacum officinale	54.161342	-9.135096	Castleconor, River Moy Estuary, Ballina, Co. Mayo	17/05/23		GA1		Catherine O'Connell
Catherine O'Connell	Taraxacum officinale	54.098254	-9.178552	Creggaun, Ballina, Co. Mayo	17/05/23		PB4		Catherine O'Connell
Catherine O'Connell	Taraxacum officinale	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Taraxacum officinale	54.134403	-9.136651	Pump House, Quignamanger, Ballina, Co. Mayo	30/07/23		GA2		Catherine O'Connell
Catherine O'Connell	Taraxacum officinale	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		GS2		Catherine O'Connell
Catherine O'Connell	Taraxacum officinale	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Taraxacum officinale	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23		GA2		Catherine O'Connell
Catherine O'Connell	Thuidium tamariscinum	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		WN6		Catherine O'Connell
Catherine O'Connell	Thuidium tamariscinum	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Trifolium dubium	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Trifolium pratense	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		GS2		Catherine O'Connell
Catherine O'Connell	Trifolium pratense	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Trifolium pratense	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Trifolium pratense	54.134403	-9.136651	Pump House, Quignamanger, Ballina, Co. Mayo	30/07/23		GS4		Catherine O'Connell
Catherine O'Connell	Trifolium pratense	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		ED3		Catherine O'Connell
Catherine O'Connell	Trifolium pratense	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		GA1		Catherine O'Connell
Catherine O'Connell	Trifolium pratense	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23		GA2		Catherine O'Connell
Catherine O'Connell	Trifolium repens	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23		GA2		Catherine O'Connell
Catherine O'Connell	Trifolium repens	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		GA1		Catherine O'Connell
Catherine O'Connell	Trifolium repens	54.134403	-9.136651	Pump House, Quignamanger, Ballina, Co. Mayo	30/07/23		GS4		Catherine O'Connell
Catherine O'Connell	Trifolium repens	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		ED3		Catherine O'Connell
Catherine O'Connell	Trifolium repens	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Tripolium pannonicum	54.171429	9.143335	Rosserk Friary, Lecarrow, Co. Mayo	18/05/23		CW2/CM		Catherine O'Connell
Catherine O'Connell	Tussilago farfara	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		GS2		Catherine O'Connell
Catherine O'Connell	Tussilago farfara	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23		BL3		Catherine O'Connell
Catherine O'Connell	Typha latifolia	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		FL4		Catherine O'Connell
Catherine O'Connell	Ulex europaeus	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23		WL1		Catherine O'Connell
Catherine O'Connell	Ulex europaeus	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		WS1		Catherine O'Connell
Catherine O'Connell	Ulex europaeus	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		WN6		Catherine O'Connell
Catherine O'Connell	Ulex europaeus	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Ulex europaeus	54.098254	-9.178552	Creggaun, Ballina, Co. Mayo	17/05/23		PB4		Catherine O'Connell
Catherine O'Connell	Ulex europaeus	54.134403	-9.136651	Pump House, Quignamanger, Ballina, Co. Mayo	30/07/23		WL1		Catherine O'Connell
Catherine O'Connell	Ulex europaeus	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Urtica dioica	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		WS1		Catherine O'Connell
Catherine O'Connell	Urtica dioica	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		GA2 GA1		Catherine O'Connell
Catherine O'Connell	Urtica dioica	54.161342	-9.135096	Castleconor, River Moy Estuary, Ballina, Co. Mayo	17/05/23		GA1		Catherine O'Connell
Catherine O'Connell	Urtica dioica	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Urtica dioica	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		WN6		Catherine O'Connell
Catherine O'Connell	Urtica dioica	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Urtica dioica	54.171429	9.143335	Rosserk Friary, Lecarrow, Co. Mayo	18/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Usnea subfloridana	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Valeriana officinalis	54.134403	-9.136651	Pump House, Quignamanger, Ballina, Co. Mayo	30/07/23		GS4		Catherine O'Connell
Catherine O'Connell	Valeriana officinalis	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		GS4		Catherine O'Connell
Catherine O'Connell	Valeriana officinalis	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23		WS3		Catherine O'Connell
Catherine O'Connell	Veronica beccabunga	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23		FW4		Catherine O'Connell
Catherine O'Connell	Veronica chamaedrys	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		GA2 GA1		Catherine O'Connell
Catherine O'Connell	Veronica chamaedrys	54.161342	-9.135096	Castleconor, River Moy Estuary, Ballina, Co. Mayo	17/05/23		GA1		Catherine O'Connell
Catherine O'Connell	Veronica chamaedrys	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		GS2		Catherine O'Connell
Catherine O'Connell	Veronica chamaedrys	54.171429	9.143335	Rosserk Friary, Lecarrow, Co. Mayo	18/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Veronica chamaedrys	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		WL1		Catherine O'Connell
Catherine O'Connell	Veronica serpyllifolia	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		GS2		Catherine O'Connell

Catherine O'Connell	Vicia cracca	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		WL1		Catherine O'Connell
Catherine O'Connell	Vicia cracca	53.98007	-9.028173	Oldcastle and Ballintemple Car Park, River Moy	01/08/23		GA2		Catherine O'Connell
Catherine O'Connell	Vicia sepium	54.053002	-9.093465	Carrick, Ballymore Lough, Attymas, Co. Mayo	17/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Vicia sepium	54.126771	-9.078754	McKenzie Farm, Corimla North, Co. Mayo	31/7/23		WL1		Catherine O'Connell
Catherine O'Connell	Vicia sepium	54.098254	-9.178552	Creggaun, Ballina, Co. Mayo	17/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Vicia sepium	54.202684	-9.201819	Meelick Bridge, Kilroe, Co. Mayo	18/05/23		WL1 GS2		Catherine O'Connell
Catherine O'Connell	Vicia sepium	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Vicia sepium	54.171429	9.143335	Rosserk Friary, Lecarrow, Co. Mayo	18/05/23		WL1		Catherine O'Connell
Catherine O'Connell	Vicia sepium	54.134403	-9.136651	Pump House, Quignamanger, Ballina, Co. Mayo	30/07/23		GS4		Catherine O'Connell
Catherine O'Connell	Vicia sepium	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		WN6		Catherine O'Connell
Catherine O'Connell	Xanthoria parietina	53.948727	-9.125423	Crillaun Bottom Car Park, River Moy, Co. Mayo	30/07/23		WN6	epiphytic	Catherine O'Connell
Catherine O'Connell	Xanthoria parietina	54.171429	9.143335	Rosserk Friary, Lecarrow, Co. Mayo	18/05/23		BL1	epiphytic	Catherine O'Connell
Catherine O'Connell	Xanthoria parietina	54.168806	-9.144522	Tobar Mhuire - Mary's Well, Lecarrow, Knockroe, Co. Mayo	18/05/23		WL1 BL1	epiphytic	Catherine O'Connell