Ballyhaunis

Biodiversity Action Plan 2024 - 2028

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Ballyhaunis TidyTowns

The Community Foundation for Ireland

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Ballyhaunis Tidy Towns

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1. Introduction

Sowthistles in seed

Summary

Between April 2022 and March 2023 research was carried out to develop a Biodiversity Action Plan on behalf of Ballyhaunis Tidy Towns.

Fieldwork for the BAP produced accounts of plant and bird diversity in the town, an assessment of water quality based on a freshwater survey and highlighted areas of particular geo and biodiversity interest. As a result of this research, recommendations were made for a five-year programme of actions to be promoted by Ballyhaunis Tidy Towns. Actions relate to improving awareness of biodiversity, protecting sites through improved spatial planning and landscaping works to directly improve the biodiversity value of particular sites.

1.1 The Study Area

The study area (Fig.1) was defined by Ballyhaunis Tidy Towns and features streets, shops and residences, a large public park, institutions and their grounds and small pockets of undeveloped lands within the town and some surrounding countryside.

Fig. 1 The study area

1.2 Ballyhaunis Tidy Towns

Ballyhaunis Tidy Towns group, founded in 2001 is very active. As well as managing the town's application for the National Tidy Towns competition annually, it participates in environmental awareness initiatives and campaigns organised by Mayo County Council and other organisations, i.e. Cleaner Community Campaign 'Litter Action League' & 'Sweep your Street', Anti-Litter Awareness Campaign and Leave No Trace (Mayo County Council), and National Spring Clean Campaign (An Taisce) via the annual Good Friday clean-up.

It has organised colouring competitions with environmental themes for National school children with prizes for the children and a crab apple tree for the participating schools.

It decorates the town every year with floral displays, e.g. hanging baskets, planters and tubs, adding a touch of colour and vibrancy to the streetscape.

Over the years it has completed a number of projects embracing not just the town but the surrounding hinterland.

- The Townland Signage Scheme where limestone signs were erected identifying the original townland names in Irish and English.
- The Wildlife Information panels located along the riverside walk in the Friary grounds.
- The 1916 Memorial Garden to commemorate the centenary of the 1916 Rising.
- The Old Town Well project involving the cleaning and restoration of the old well which was the only source of fresh water for local residents for centuries until the inauguration of the public supply in 1933.

It has recently embarked on the preparation of a Biodiversity Action Plan for Ballyhaunis, and through social media is promoting citizen science biodiversity surveys and awareness programmes run by environmental organisations. It is networked with most local organisations including the Community Council, the Abbey Partnership/Trust, Ballyhaunis Chamber, Annagh Magazine Society. Marks from the Tidy Towns competition show a significant increase in recent years up from 304 in 2019 to 315 in 2022 and 323 in 2023. The adjudicator in 2022 complimented them on their work on biodiversity.

Ballyhaunis Tidy Towns members planting flowers in the square.

1.3 Local spatial planning

The Draft Ballyhaunis Local Area Plan (in Mayo County Development Plan, 2022-2028) has numerous references to the environment and biodiversity. It is remarkable for the number of relevant policies and objectives related to the natural environment and particularly the protection of the river.

The introduction states that "Ballyhaunis's urban environment contains a range of habitats, flora and fauna as well as a range of areas of cultural heritage interest. Areas of important trees can also be found in the town, particularly the lands around the Abbey within the town park. This parkland area is of special civic importance to the town population and acts as a natural centre point for the town, providing an ecological transition or green lung between the north and south of the town centre".

The introduction also states that spatial planning aspires to facilitate future growth whilst ensuring that the natural and built environment is not jeopardised.

Relevant policies and planning objectives related to the natural environment are listed here.

Related to Natural Setting

"It is an objective of the Council to maximise the advantage of the natural setting of the town centre, including the river and parklands, through improved connectivity with the river and parks and encouraging appropriate high-quality development overlooking the river"

Relevant environmental policies

"It is a policy of the Council to ensure the protection of both the built and natural environment for both present and future generations of the town and to encourage a high level of environmental awareness in the town."

Environment and heritage objectives

ENV10 Natural Features of Interest
"It is an objective of the Council to protect all natural features of interest, including significant trees, hedgerows, topographical and geological features. Such features should be carefully and sensitively incorporated into the design and layout of any permitted new development".

ENV12 Watercourses
"It is an objective of the Council to protect the Dalgan River and other watercourses and to encourage appropriate developments that enhance their landscape setting and public benefit. Any proposed development adjacent or close to watercourses shall be carefully assessed to ensure that there is no significant impact to the watercourse, its riparian zone or to any other ".

Water and infrastructure objectives

WI7 Water Quality
"It is an objective of the Council, through implementation of the EU Water Framework Directive, the Western River Basin Management Project and other associated legislation, to ensure the protection and improvement of all drinking water, surface water, and ground waters in Ballyhaunis".

ENV16 River Corridor and Walkway
"It is an objective of the Council to encourage the enhancement and extension of the Dalgan River walkway and to safeguard the value of the river as an ecological "green corridor". Riverside walkway provisions should be incorporated, where appropriate, into development proposals bounding the river. All such proposals shall be carefully assessed to ensure that there is no significant detrimental impact on the watercourse or any other water body into which it flows".

UF 9: "It is an objective of the Council to support the potential creation and improvement of a green axis through the town along the river".

Preservation of Significant Trees and Wooded Areas Objectives

ENV17
"It is an objective of the Council to preserve significant trees and wooded areas within the Plan area and, in particular, those identified on the Specific and Heritage Objectives Map (Map 2)".

The plan also states that "where housing is not a feasible solution parkland should be considered".

Management guidelines containing specific requirements for all developers also relating to biodiversity

"Developers will be required to retain significant existing natural and built features on site and should ensure that such features are incorporated into the new development proposal in an appropriate and meaningful way. Features of significance may include dry stonewalls, hedgerows, mature trees, topographical or geological features and watercourses. Any planning application for development should include an accurate drawing showing the location of all existing natural and built features on site.

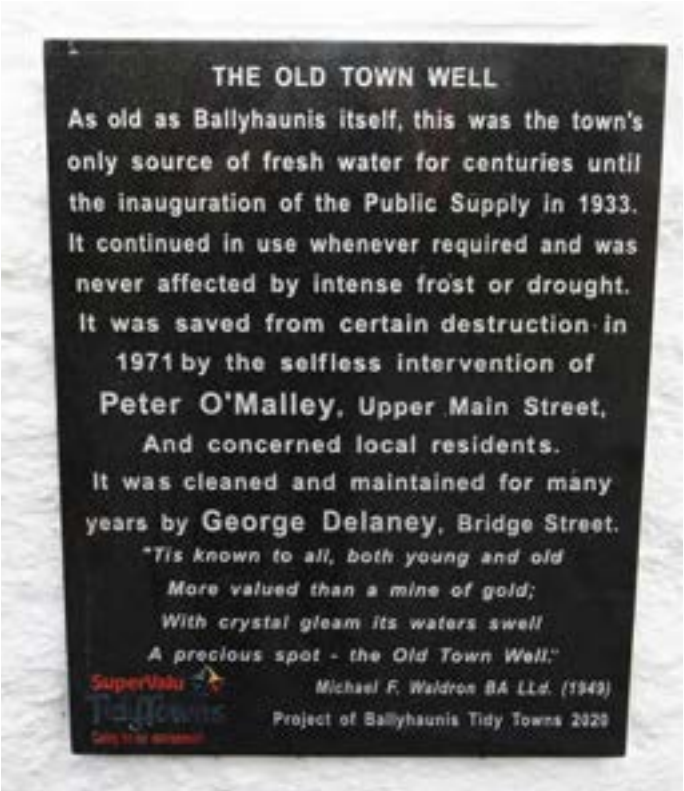
The County Council may also require a fully detailed site survey. Development proposals in riparian zones may be required to include measures to reduce and prevent pollution during construction, in addition to measures to protect the riparian zone and watercourse in the longer term. In general there should be no new development within a 10 metre buffer zone along the edge of a watercourse or water body, except where there is existing development or there is an existing roadway within the buffer zone."

The plan also contains objectives for the so-called Abbey Lands under the

Enterprise and Employment objectives:

E15 The Abbey lands
It is an objective of the Council to protect the Abbey and its associated lands as one of the town's key tourist attractions.

E16 Interpretative Walking Routes
It is an objective of the Council to support and, where possible, implement measures to create interpretative walking routes in and around the town, linking the town's special features of built and natural heritage interest.



Inscription at the site of the old town well

1.4 Approach to the study

Improved management of biodiversity is a priority, internationally, nationally, and locally. While biodiversity was initially concerned with rare species and habitats (places where species live), this has broadened to consider all habitats and species as it is now appreciated that nature provides a huge number of services to society from food, clean water, flood alleviation, pleasant amenities and carbon sequestration. It is also accepted that all sectors of society have responsibility for biodiversity, not only the specialists who are experts in plants and animals but householders, farmers, developers and excluded groups such as the very young, old and less well off. Hence funding for efforts to protect and improve biodiversity is now available to community-based groups.

Ballyhaunis Tidy Towns has benefitted from this approach to biodiversity management as funding has been made available to them from Community Foundations to support the production of a Biodiversity Action Plan for Ballyhaunis. The Biodiversity Action Plan will provide a blueprint for actions particular to Ballyhaunis. The Community Foundation for Ireland also provided guidelines to be followed in the production of such plans.

River Dalgan in the Friary Park, Ballyhaunis

1.5 Methodology

Fig. 2 Sites of particular potential identified by Ballyhaunis Tidy Towns

While the preparation of the BAP followed the methodology described by The Community Foundation for Ireland, it was tailored to meet the particular objectives of the Tidy Towns group which required a focus on particular sites shown on Fig. 2. These were the Friarsground Park, the Dalgan River and the grounds of the Community School.

Work involved desk research, consultations, and fieldwork.

Desk research involved an examination of national data bases which contain information on soils, water quality, geodiversity, areas of biodiversity importance and location of invasive species. The first edition OS map was also examined for information on the location of features of biodiversity interest in the 19th century.

The most recent results of water quality sampling by the EPA were examined. Consultations took place with the Mayo Heritage Officer, the Wildlife Officer in The Heritage Council and several local residents interested in bird biodiversity who met with the ornithologist who carried out the bird survey.

Fieldwork focused on the assessment of water quality, birds, habitats and plants.

Dr Julian Reynolds carried out a freshwater biodiversity assessment in association with several interested members of Ballyhaunis Tidy Towns at the Augustinian Priory site upstream of the town (National grid ref. M498796) on Saturday 10th September 2022. The assessment involved taking three 1- minute kick samples using a 1mm mesh, 20 cm square net in a stony riffle some 25 cm deep. Each was described and examined, and the main components identified. Each sample tray was photographed for later detailed examination. Two evaluation methods were used to provide an assessment of water quality based on the invertebrate fauna of the stream. These are the CSSI (Citizen Science Stream Index) and the Q score used by the EPA, who also evaluate the river's health on a regular basis.

A consultant ornithologist, Michael Hogan, visited the study area on two occasions on the 3rd August and 22nd August between the hours of 13.30 to 19.30 on the first occasion and 06.15 to 13.30 on the second occasion. Weather conditions were suitable and while the area was systematically covered during both visits, particular attention was paid to areas of particular interest to the community. All bird species seen or heard were recorded. Where species were in flight the largest flock count observed was recorded.

Dr Mary Tubridy identified all habitats throughout the study area but particularly in the key sites identified by the community, based on Fossitt (2000). She also assembled plant species lists, based on Smith et al (2010), in relation to habitats which were easily accessible throughout the town. She drafted the BAP based on the results of desk research, fieldwork and consultations.

(Left) Dr. Julian Reynolds carrying a freshwater kick-sample assessment and (right), citizen scientists monitoring the key indicator species in the River Dalgan under supervision of the Local Authority Waters Programme.

2. Biodiversity Baseline

Green veined white butterfly on bluebell

2.1 Results of desk research

The examination of geological mapping (GSI website) showed that limestone underlies most of the study area with sandstone (yellow zone) to the south of the town outside the study area.

Of particular significance to Ballyhaunis is the presence of large numbers of eskers, low sand and gravel hills laid down after the ice melted. These are present both within the town (see Fig. 4) and adjacent to the town.

The high concentration of these has resulted in the proposal by the Geological Survey of Ireland to designate the area shown on the map below as a geological Natural Heritage Area under the Wildlife Act (ref. Geological Heritage of County Mayo).

Fig. 3 Bedrock geology associated with Ballyhaunis

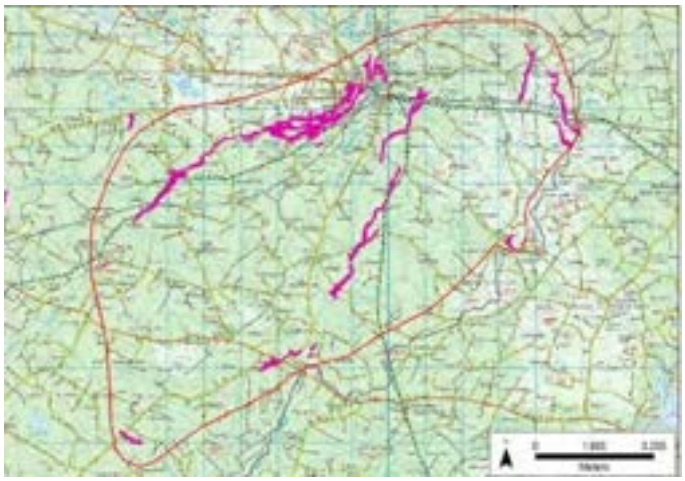


Fig. 4 Dunmore Ballyhaunis Esker System proposed for designation as a Natural Heritage Area by the GSI.

Fig. 5 Rounded stones and pebbles in exposed esker in Ballyhaunis

In the vicinity of Ballyhaunis are several sites of international biodiversity importance (Fig. 6). They include Mannin and Island lakes which drain northwards to the River Moy, and to the south there are rivers which drain into Lough Corrib. The Dalgan river which flows through Ballyhaunis eventually reaches Lough Corrib.

Fig. 6 Areas designated as being of international biodiversity importance (red hatching) in the vicinity of Ballyhaunis. They include Mannin and Island lakes.

Knowledge of landscape history in areas with similar environments suggests that the original vegetation in dry areas after the Ice Age was principally a type of woodland containing ash and hazel with a colourful spring flora featuring bluebell, anemone (*Anemone nemorosa*), primrose (*Primula vulgaris*), violet, celandine (*Ranunculus ficaria*) and orchids such as early purple orchid (*Orchis mascula*). Ash was the dominant tree but pedunculate oak may have been present as well as birch, rowan and elm (*Ulmus glabra*).

Biodiversity features of interest shown on the first detailed map of the area (Fig.7) are fields, hedgerows, a wetland to the north of the town, planted woodland in the Friarsground Park, orchards in back gardens and the Dalgan river which is associated with a townland and baronry boundary.

Landscape history

Some townland names give an indication of landscape, past land cover and land use. Townland names of particular note within the study area are:

Carrownluggaun - the quarter of the small hollow (Ceathrú an Logán in Irish), Pollnacroaghy - the hole of the rick/stack (Poll na Cruaiche in Irish) and Tooraree - the heathy bleaching green (Tuar an Fhraoigh in Irish).

These names suggest a wealth of small wetlands in the locality associated with the eskers and the possible use of some of these small wetlands as bleaching areas for flax.

The towns name Béal Átha hAmhnais, apparently refers to the river crossing as it is translated as 'ford-mouth of strife'.

Fig. 7 1st ed OS map of Ballyhaunis and surrounds c.1830

Table 1 Records of invasive species in the vicinity of the Ballyhaunis study area (from the National Biodiversity Data Centre website)

Species (English name)	Species (Latin name)	Distance from boundary (km)	Assessment of risk
Japanese knotweed	*Fallopia japonica*	7.8	Medium
Bohemian knotweed	*Fallopia japonicaXsachalinensis*	11	Medium
Giant knotweed	*Fallopia sachalinensis*	>20	Low
Himalayan knotweed	*Persicaria wallichii*	>20	Low
Giant hogweed	*Heracleum mantegazzanium*	>20	Low
Giant rhubarbs	*Gunnera tinctoria and manicata*	>20 >20	Low
Himalayan balsam	*Impatiens glandulifera*	15	Medium-Low
Hottentot fig	*Carpobrotus edulis*	>20	Low
Rhododendron	*Rhododendron ponticum*	>20	Low

Desk research also showed there was a medium risk of Japanese knotweed occurring.

An examination of water quality records from the EPA web site (samples taken in 2021) showed that water quality is good in the centre of Ballyhaunis where samples are taken at the bridge (green dot) but poor further south (orange dot).

Fig. 8 Summary results of EPA water quality assessment in Ballyhaunis 2021.

2.2 Results of field work

Fig. 9 Features of geodiversity interest associated with Ballyhaunis.

Geodiversity

An examination of the landscape revealed features of geodiversity interest shown on Fig. 9.

The Well provides access to groundwater. This is an important historic source of water in the town. It is also evidence for the existence of the aquifer which underlies the locality and which is regularly tapped into by households who obtain their water from private wells.

The River Dalgan at Ballyhaunis is a headwater stream that rises some 6 km upstream of the town, and eventually flows into the Corrib as the 3rd order Clare River. One tributary enters the Dalgan within the study area.

Invertebrate sampling was carried out in the town by members of the community in May 2022, under the supervision of Dr Ken Whelan and in April and May 2023 under the supervision of The Local Authority Waters Programme, training the first group of citizen scientists in co Mayo. This showed the presence of flattened mayflies, stoneflies and caddis species, species generally associated with good quality water.

The River Dalgan from above.

The presence of a natural watercourse is rare in a built-up area. Except for a stretch of the river in the centre of the town the course of the river remains unchanged since the end of the Ice Age c. 12,000 years ago. However, like almost all rivers in lowland areas it has lost its associated fringing wetlands due to land reclamation and channel deepening to improve its function as a drainage channel.

The small hills within the town and adjacent to it all are all eskers, sand and gravel hills laid down in melting glaciers which covered the area during the last Ice Age. Once the glaciers melted the sand and gravel which flowed along these underground rivers remained behind to form these low hills.

Cuttings such as that in the southeast corner of the Maples estate off the Clare Road reveal the materials in the eskers See Fig. 5.

While eskers are the principal features left behind by melting glaciers a field west of the town has another feature associated with that period, a Kame and Kettle landscape within the field. The field is distinguished by the presence of numerous similar sized wetlands, the Kettles. The dry land is the Kame.

This topography is due to the melting of chunks of ice which were buried in the till. When that ice melted a hummocky terrain was left behind. County Wexford has a significant part of the county covered in a Kame and Kettle landscape.

Plant biodiversity

Fieldwork revealed a total of 69 plants in semi-natural habitats in Ballyhaunis. Appendix 1 provides details of all plant species associated with the habitats in the town. The flora includes 61 native plants and 8 non-natives established in the wild. While none of these species are particularly rare the low number of non-natives established in the wild is unusual and reflects the rural influence of the environment. However one of the non-natives is the invasive alien Japanese knotweed. Its management is a priority.

Kame and Kettle landscape in a field in Ballyhaunis

Japanese knotweed present in several locations in Ballyhaunis

Cow parsley abundant in hedgerows in Spring

Self heal (Prunella vulgaris) growing among grass

Bird biodiversity

The urban bird habitat with broken scrubland, mature hedgerows and some woodland lends itself to good cover for breeding native birds. The bird survey revealed the presence of twenty-five species and even a murmuration of starlings during one of the survey days. As this was a limited survey it is likely that records could still be added. Given the available habitats within the town environs there were many local species that were not seen or heard, Dunnock, Blackcap, Magpie, Mistle thrush, Meadow Pipit, Stonechat, Linnet to name but a few. For example, it was discovered through a local resident (Bernie Freyne) that a pair of swifts were present in the town.

In the absence of a comparison with other relevant bird surveys the analysis of lists produced by BirdWatch Ireland gives an indication of the relative rarity of species identified. The Table below (column 1) identifies which of these are Red listed and Amber listed by BirdWatch Ireland. Red Listed are of High Conservation Concern in Ireland. Amber Listed are of Medium Conservation Concern. Other annotations (qualifying criteria) relate to European wide trends in the population of species. The explanation of these criteria (in Column 4) is below.

BDp1: Breeding population decline.

BDMp1: Short-term decline in breeding population.

BDMp2, BDr1: Decline in breeding range.

SPEC 3: Species with unfavourable conservation status in Europe but which are not concentrated in Europe.

SPEC 2: Species for which the global population is concentrated in Europe.

BDMr: Moderate breeding range decline over short (BDMr1) and longer (BDMr2) time periods. Equivalent breeding atlas time periods as for BDr, but with moderate percentage change (35% to 69%) to qualify species as Amber-listed.)

WDMp1: Moderate non-breeding population decline in abundance of 25% to 49% over the same short (WDMp1) and longer (WDMp2) time periods as in WDp.

BL or WL: Localised breeding or non-breeding populations. Species were considered localised if more than 50% of the population was found at <10 sites in either the breeding (BL) or the non-breeding (WL) season.

Two summer visitors to Ballyhaunis recorded for the BAP. Barn swallow above and House Martin below. Both of high conservation concern

Table 2 Results of bird survey

Species	Numbers August 3rd/ 22nd	Season	Qualifying Criteria for Conservation Concern List 2020- 2026	Comments
Robin *Erithacus rubecula*	13/20	Breeding	BDMp1	
Chaffinch *Fringilla coelebs*	3			
Blackbird *Turdus merula*	9/11			Adult & Juvenile seen. Breeding locally.
House Martin *Delichon urbicum*	6/40	Breeding	SPEC 2	In flight over Friary Park. Summer visitor
Grey Wagtail *Motacilla cinerea*	1/5		WDMp1; BDMr1; BDMr2	Adult
Song Thrush *Turdus philomelos*	1			Adult
Rook *Corvus frugilegus*	67/134			Single largest count at rookery. Rooks prevalent throughout the town
Jackdaw *Corvus monedula*	7/41			
European Herring Gull *Larus argentatus*	6	Breeding/ Winter	Spec 2; BDp1, BDr1	All adults. Observed on roof of Dawn Meats factory. Probably drawn in by food source.
Lesser Black Backed Gull *Larus fuscus*	52/43	Breeding/ Winter	BL	Adult and mixed moults. Largest count seen on roof of Dawn Meats factory. Probably drawn in by food source.
Starling *Sturnus vulgaris*	150/70	Breeding	Spec 3	Single largest count in murmuration flight pattern in town centre
Goldcrest *Regulus regulus*	1	Breeding	Spec 2	Single bird heard south of river at Sráid an Chláraigh
Blue Tit	/12			
Pied wagtail	/1			
Collared dove	/2			
Wren	/3			

Table 2 Results of bird survey (continued)

Species	Numbers August 3rd/22nd	Season	Qualifying Criteria for Conservation Concern List 2020-2026	Comments
Dipper	/5			2 Dipper on river around Friary Park. 3 at old pump hse stream. Possible breeding.
Grear tit	/7			
Mallard	/6			
Barn Swallow *Hirundo rustica*	/30	Breeding	Spec 3	Majority observed over Friary Park
Bullfinch	/2			
Coaltit	/5			
Lesser Redpoll	/3			
House Sparrow *Passer domesticus*	/3	Breeding	Spec 3	
Hooded Crow	/3			

Bullfinch with snowdrops and ivy


Juvenile blackbird (left) and robin (right).


Starling (left) and grey heron (right).

Quails in the park (below)

River Dalgan freshwater assessment

Table 3 Species found in water samples in the Dalgan River Ballyhaunis September 2022

SPECIES	SAMPLE 1	SAMPLE 2	SAMPLE 3	TOTAL
Brown trout	1			1
Tubificid worm		1		1
Lumbricid (earthworm)			2	2
Gammarus (shrimp)	7	6	7	20
Potamopyrgus (snail)	10	15	30	55
Planorbis (spiral flat snail)			1	1
Haliplids (swimming water beetle)	4	10	4	18
Elmids (crawling water beetles)		5	2	7
Mayfly nymphs (3 tails)		2	3	5
Naked caddis larva			1	1
Cased caddis (2 types)	1		1	2
Corixid (water boatman)		1	1	2
Chironomid (brown non-biting midge)	3	1	5	5

Other items seen included aquatic moss and the shell of a freshwater limpet (*Ancylus*).

Samples showed a good diversity of small invertebrate forms, listed below. As most were juvenile and small, all field counts are approximate.

The **CSSI** was calculated for each sample, based on presence or absence of 3 groups that demand high water quality (the 'good guys'- flattened mayfly nymphs, stonefly larvae and green naked caddis larvae) and 3 groups of organisms that tolerate low oxygen or other symptoms of organic pollution (the 'bad guys'- snails, water lice *Asellus*, and leeches).

Each sample had no 'good guys' present, and snails the only 'bad guys'; total score -3. This falls in the range of '**moderate pollution**', but the absence of most indicators makes it better to use the Q score.

The **Q value** was not calculated on the spot, but its assessment was briefly outlined (see calculation sheet).

Group A (most sensitive invertebrates), none were found.

Group B (less sensitive) included 2 cased caddis and perhaps some of the small mayfly nymphs.

Group C (tolerant) were in the majority, with other caddis, water beetles, water bugs (corixids), non-red chironomids (midges), shrimp (Gammarus) and snails.

Group D (more tolerant) was not represented,

Group E (most tolerant) was indicated by the tubificid worms.

The samples indicate doubtful water quality Q3 (**moderately polluted**).

This finding may appear surprising, given the variety and abundance of invertebrates, and indeed the presence of a juvenile brown trout and reports of earlier capture of a juvenile salmon, but reflects the fauna's tolerance of lowered oxygen levels at certain times.

EPA assessment in 2021 shows good quality immediately (M498796) downstream of this location but pollution downstream of Ballyhaunis. The situation is thus a recent development.

The protected White-clawed crayfish *Austropotamobius pallipes* was not seen, but populations may still be present upstream (crayfish require a minimum quality of Q3-4). Stocks in the lower Clare River were wiped out by crayfish plague disease in recent years. This disease, caused by an alien fungus-like oomycete or 'water mould', is usually carried by North American alien crayfish, but these have not been reported yet in the wild in Ireland, and water-based tourism is usually blamed.

Marsh Marigold flowers in early Spring

Crayfish (right) in one of the Dalgan monitoring samples carried quarterly by the Ballyhaunis Citizen Science group (left)

Habitat diversity

The commonest habitat in Ballyhaunis is BL3 Buildings and Artificial Surfaces. The commonest green habitat is Amenity Grassland GA2. The following table Table 4, summarises the biodiversity value of all habitats found in Ballyhaunis. The map overleaf provides a visual of habitats.

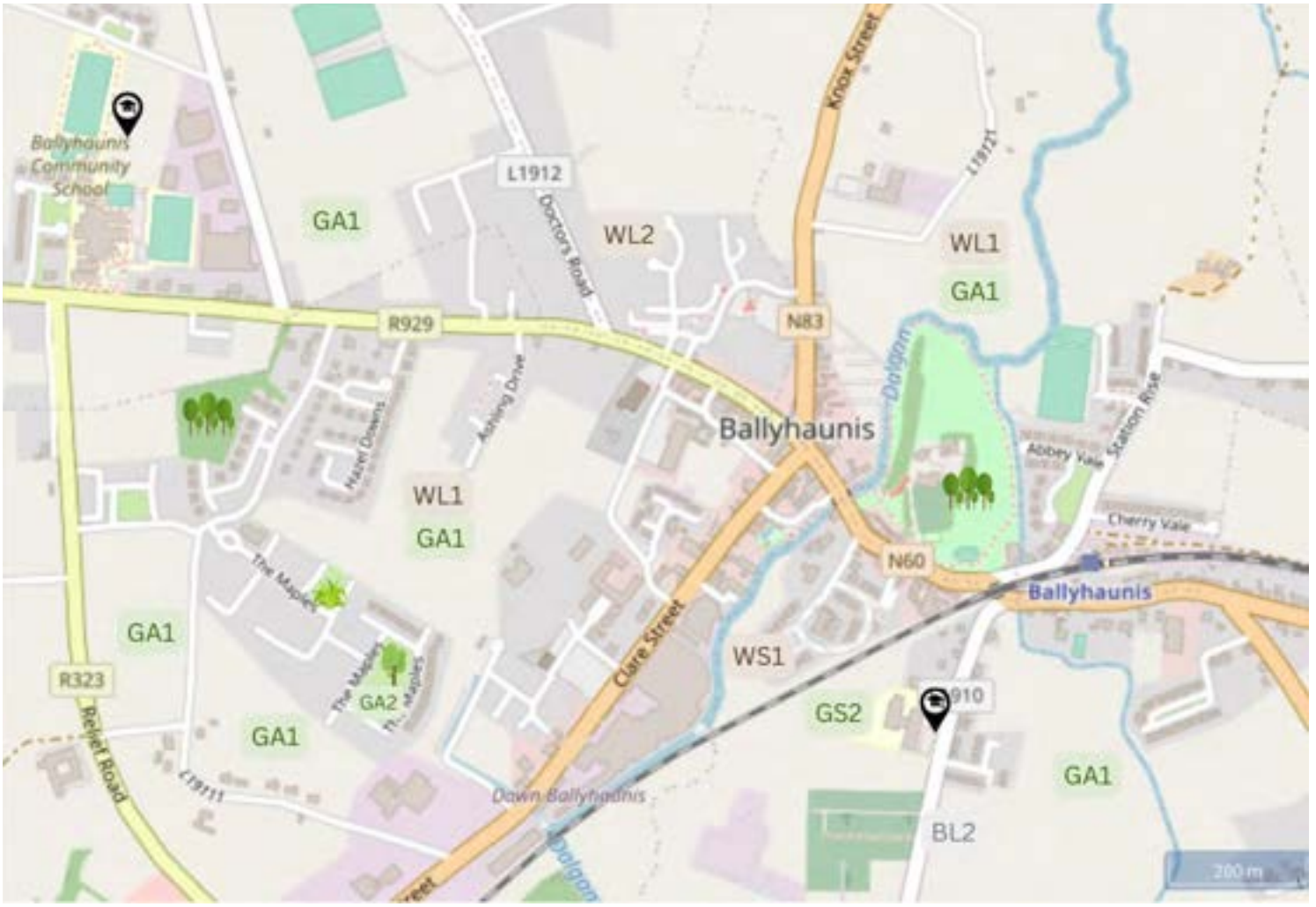
The account of biodiversity and its management should be read in conjunction with Appendix 2 which contains general guidelines on biodiversity management.

Table 4 Habitat diversity

Habitat	Location	Biodiversity value/rarity	Priorities for management
FW2 River Dalgan	Friarsground Park and throughout the town	Even though water quality moderate (Q3) river is a biodiversity hot spot and acts as ecological corridor for invertebrates and birds. Eight aquatic plant species.	Expand wetland fringe by landscaping with native herbs, shrubs and trees.
FW4 Drainage ditch	Discharging into the Dalgan in Friarsground Park	Drainage ditch is a biodiversity hot spot and acts as ecological corridor for invertebrates and birds.	Expand wetland by landscaping with native herbs, shrubs and trees. Replace dying ash with hawthorn.
GA1 Improved agricultural grassland	In dry fields used by farmers	Low biodiversity value as there is usually a limited diversity of common plants. Fifteen plant species.	Limit inputs of chemical fertilizer, adopt organic or regenerative farming practices.
GA2 Amenity grassland	Found principally in parks but also in private gardens called “lawns”	Ten plant species. Low biodiversity value as mowing prevents grassland species flowering and setting seed. Occasionally good if management allows for survival of non- grass herbs and flowering of all species through “no mow and collect cuttings” initiative.	Allow some section of this grassland to flower and set seed. Improve biodiversity by converting some of the lawn to shrubbery.
GS2 Tall uncut grass	In Friarsground Park where grassland has been allowed grow long, in derelict sites in the town and between the National School and river	By allowing species in grassland flower and set seed they will be more valuable to invertebrates both as food and over wintering places. Possibly birds, if thistles present. If scrub (WS1) is nearby adding to the value of this habitat to birds (nest in the scrub and feed in the grassland) will have twenty-six plant species.	Enhance plant species diversity by appropriate grassland management i.e cutting 2/year and removing cuttings and leaving small areas uncut. Remove knotweed from areas.

Habitat	Location	Biodiversity value/rarity	Priorities for management
GS4 Grassland with wetland plants	River's edge in Friarsground Park in the zone affected by flooding.	Adds to species and habitat diversity beside the river as it has typical wetland species which are rare due to drainage works.	Protect from development and drainage works.
WD5 Scattered Trees and Woodland	Friarsground Park where trees were planted into grassland	Good for biodiversity if trees are ancient and native.	Establish shrubberies with natives close to trees. Replace with native species where possible.
WS1 Scrub with native species	Between River Dalgan and the National School	Good for birds, pollinators, small mammals and plants in the original woodland.	Only prune outside the bird nesting season (1st March to end of August).
WL1/WL2 Hedgerow and tree line	Beside the river and drainage ditch. Along all field boundaries. If hedgerows have a continuous tree layer, they are more like a tree line called WL2	Good for birds, pollinators, small mammals and plants in the original woodland.Twenty-four plant species.	Where gaps exist plant in with native trees and shrubs. Only prune outside bird nesting season, (1st March to end of August).
WD2 Planted mixed broad-leaved/conifer woodland	Friarsground Park and private garden	High biodiversity value for birds and invertebrates as habitat has mainly native plant species and has a long history. Sixteen plant species in WD2.	Redevelop planted woodland (WD) in Friarsground Park as a native type (WN) taking care to protect section with native woodland flora from disturbance during redevelopment.
BC2 Horticultural land	Community garden in Friarsground Park	Of potential value for environmental education.	
BC4 Flower beds and borders	In Park and private gardens	Good for biodiversity if sustainable garden practices followed and species planted are good for biodiversity.	Ensure all owners of private gardens follow biodiversity friendly gardening practises.
BL1 Walls made with rock	Various locations around the town at bridges etc	Support a specialised wall flora c 4 species, which are allowed to flower and set seed thus of value to invertebrates.	Ensure management work does not lead to the removal of their flora.
BL2 Earth bank which forms a field boundary	On road past National School	Dry grassland not managed intensively thus high diversity of native plant species. Fifteen plant species.	
BL3 Buildings and artificial surfaces	Throughout Ballyhaunis	Of low biodiversity value unless buildings are providing roosting sites for bats or nesting sites for birds.	Encourage installation of artificial bat and bird nesting boxes in buildings.

Fig. 10 Map of Ballyhaunis habitats



Scrubland with native species near cemetery: WS1 habitat

River Dalgan in early Spring: FW2, GA1, GS4 habitats

Fig. 10b Detail of Friary Grounds habitats

Label	Description	
FW2 FW4	River Dalgan Drainage Ditch	
GA1 GA2	Improved agricultural grassland Amenity grassland, lawns	
GS2 GS4	Tall uncut grass Grassland with wetland plants	
WS1	Scrub with native species	
WL1/2	Hedgerow and tree line	
WD2 WD5	Planted mixed broadleaved/conifer woodland Scattered trees and woodland	
BC2 BC4	Horticultural land Flower beds and borders	
BL1	Walls made with rock	
BL2	Earth bank forming field boundary	
BL3	Buildings and artificial surfaces	

Ballyhaunis Community Garden: BC2, BC4 habitats

Smooth newt resting on a dry stone wall: BL1 habitat

3. Biodiversity Action Plan

Ladybird on a nettle leaf

3.1 SWOT

A SWOT (Strengths, weaknesses, opportunities, threats) analysis is useful to consolidate information about an issue and develop ideas for action.

Strengths

Principal strengths of biodiversity in the study area for the Ballyhaunis BAP are the sites shown on Fig. 11. The map is followed by a summary account of habitats and plant diversity at these sites.

In the Friarsground Park, habitats include many semi-natural types, including the river and drainage ditch, large block of planted amenity woodland, trees planted into grassland, hedgerows and treelines, various types of grasslands including amenity wet grassland and tall grassland and community garden.

Planted amenity woodland is found in Friarsground Park and in the grounds of a private house on Doctors Road.

Tree species include mainly non-native broadleaves, beech, field maple and sycamore and various conifers. A section of Friarsground Park woodland has primrose and violet, blackthorn and wood sedge (GPS OS 49766/79664), suggesting an older age. Dense lichens on hawthorn indicate good air quality. While bounded by old hedgerows which have sycamore, hawthorn, snowberry, sally, (*Salix cinerea*) also eared willow, (*Salix aurita*) and elder, ash is now dying.

River Dalgan

The river is an important feature of the Friarsground Park where the stream banks oc-

Fig. 11 Areas of biodiversity interest in Ballyhaunis

casionally have characteristic common species such as Reed Canary- grass *Phalaris arundinacea*, Meadowsweet *Filipendula ulmaria* and Yellow Iris *Iris pseudacorus,* with patches of Fool's -water-cress *Apium nodiflorum* at the water's edge.

Other wetland species associated with the Dalgan river elsewhere around the town are Angelica, *Juncus effusus*, watercress, bulrush sp. and broadleaved pond weed,

Beside the river *Festuca arundinacea* is occasionally found, stitchwort (*Stellaria graminea*) and bindweed. At the Friarsground Park there is comprehensive interpretation of freshwater biodiversity in a large number of panels.

Wetland at the back of the National School

This area is of biodiversity interest as it supports semi-natural dry grassland and semi-natural scrub with bramble, hawthorn, gorse and blackthorn.

Derelict site off Clare Street

A large derelict site off Clare Street has a significant diversity of mainly common native species including cocks foot, yarrow, creeping buttercup, daisy, nettle and dandelion self heal, *Prunella*, Yorkshire fog grass *Holcus lanatus*, ragwort, common buttercup, white clover, sorrel *Rumex acetosa*, creeping thistle, bent grass, dock *Rumex sanguineus* and hairy willowherb. Where management is very lax bramble and gorse are starting to invade.

Green open spaces in estates such as the Maples

While open spaces in housing estates are dominated by amenity grassland GA2 of low biodiversity value with *Dactyllus, Arrhenatherum, Lolium, Cirsium arvense, Ranunculus acr*is all have particular potential for improvement if residents can be mobilised.

Mixed woodland near R929

The large mixed woodland WD2 near the R929 has particular potential for improvement by replacing non-native conifers with more biodiversity valuable species and developing it as an amenity area to be enjoyed by residents of the nearby estate.

Old dry-stone walls throughout

As old limestone walls have a unique distinctive flora with *Ceterach, Asplenium trichomanes, Asplenium ruta-muraria* and Pellitory. Care should be taken to prevent their removal or inappropriate management i.e. replacement of mortar with cement.

Bunny in meadow

Dry –stone wall

Hedgerows and earth bank

All field boundaries consisting of hedgerows and earth banks are of biodiversity interest as their vegetation is principally dominated by native species, particularly hawthorn. Native trees may also be present. Hedgerows along townland and barony boundaries are likely to be ancient. The hedgerow bounding Beech Lawn is well managed as the adjacent householder has taken particular interest in its protection and management. In contrast the recently developed hedgerow at this estate has mainly non-native alder and rowan.

Tall grasslands

Uncut grasslands categorised as GS2 are found in pockets throughout the town and in derelict sites (which also have scrub, good for nesting birds). This vegetation is also present in the graveyard in the Friarsground Park.

Weaknesses

Principal weaknesses of biodiversity in Ballyhaunis and its management are:

- Lack of easy access to expertise and resources to support community's actions or/and fund implementation works.
- Poor water quality in the Dalgan downstream of the town.

Friary Grounds

Opportunities

Principal opportunities for biodiversity in Ballyhaunis and its management are:

- Communication of the results of the BAP to members of the community interested in biodiversity and organisations which own land or manage land of biodiversity value.
- Engagement with initiatives run by semi state agencies to support awareness of biodiversity and actions to improve biodiversity. LAWPRO (Local authority waters protection programme) can provide funding and advice, grants for feasibility studies, employ a consultant to learn about assessing freshwater biodiversity and support the holding of a meeting to communicate the importance of watercourses. The Forest Service operates grant scheme to support the conversion of coniferous woodlands to semi natural types and provide infrastructure to promote their use for amenity.
- Promotion of biodiversity friendly landscaping by planting species listed in Appendix 2.
- Partnership projects with local schools or businesses or the Local Authority i.e. through commissioning an Invasive Species Survey. See Appendix 3 for guidelines.
- Application to a wide range of funding schemes to improve local biodiversity. Details in next section.
- Participation in citizen science biodiversity survey such as 'Swift Conservation Ireland'. (swiftconservationireland@gmail.com)

Grassland at the Friary Park

Threats

Principal threats to biodiversity are:

- Development resulting in the removal of semi-natural habitats around the town without including useful compensatory works.
- Deterioration of water quality in the Dalgan.
- Landscaping in parks and private spaces without regard for biodiversity management.
- Ash dieback affecting trees in hedgerows.
- Spread of invasive Japanese Knotweed.
- Public perception that all undeveloped areas in the town are potential development sites.

Overgrown vegetation

Riverwalk

3.2 BAP Actions

The following tables list actions to implement the principal objectives of the BAP. This information should be read in conjunction with Appendices 2, 3 and 4. Information is provided on the organisations responsible and timescale over a five year period. A summary is provided on page 40.

Objective 1	**Implement a range of actions through partnership with the Abbey Trust and Mayo County Council to improve the biodiversity and amenity value of the Friarsground Park**		
Specific objective	**Actions (in chronological order)**	**Responsibility (key group underlined)**	**Timescale**
1.1 Directly improve grassland plant species diversity	Introduce the attractive flowering plant Yellow Rattle. Plant native bluebells and native garlic in drier areas. Develop mini-woodlands with perennials and fruit trees.	Abbey Trust Mayo County Council's Heritage/Biodiversity Officer Ballyhaunis Tidy Towns Local schools	**Year 1**
1.2 Improve biodiversity of hedgerows / treelines beside the river	Replace dead ash trees with either alder, oak, scots pine, wild cherry, birch or elm.	Ballyhaunis Tidy Towns	**Year 1**
1.3 Implement new mowing regime for grassland	Mow early in season (when plants start to grow, in March, April/ May). Remove all cuttings. Mow again when all plants have flowered and set seed, around August/September. Remove all cuttings. Continue indefinitely.	Abbey Trust Mayo County Council's Heritage/Biodiversity Officer Ballyhaunis Tidy Towns	**Year 2**
1.4 Improve biodiversity on river margins	Where possible, reprofile river banks to make the edges of the watercourse behave like a natural wetland. i.e. to allow flooding.	Abbey Trust Mayo County Council's Heritage/Biodiversity Officer Ballyhaunis Tidy Towns Inland Fisheries Ireland	**Year 2**
1.5 Modify existing woodland	Consult with the Abbey Trust and Mayo County Council about putting in an application for grant aid under the Native Woodland Scheme to carry out works to improve the woodland.	Abbey Trust Mayo County Council's Heritage/Biodiversity Officer Ballyhaunis Tidy Towns Forest Service	**Year 2**

Objective 1 (con't)	**Implement a range of actions through partnership with the Abbey Trust and Mayo County Council to improve the biodiversity and amenity value of the Friarsground Park**		
Specific objective	**Actions (in chronological order)**	**Responsibility (key group underlined)**	**Timescale**
1.6 Demonstrate best practice on path development	When funds allow, replace current paths with permeable surfaces.	Mayo County Council Ballyhaunis Tidy Towns	**Year 3**
1.7 Improve interpretation in the Park	Develop an interactive Story Map for the park. This will provide information and even sound about features and species at specific identifiable locations and can easily be modified. Erect all Ireland Pollinator signs throughout the park.	Abbey Trust Mayo County Council's Heritage/Biodiversity Officer Ballyhaunis Tidy Towns Heritage Officer, Galway County Council (for advice) Heritage Council (for funding)	**Years 3-5**

Bumblebee on Devil's bit scabious

Objective 2	Implement a range of actions through partnership with residents and owners to improve biodiversity and amenity in various other public sites		
Specific objective	**Actions (in chronological order)**	**Responsibility (key group underlined)**	**Timescale**
2.1 Improve landscaping between the swimming pool and the old post office (back of Costcutters' parking lot) and the value of the river downstream as a green corridor	Remove invasive and non-native species beside the river and replace them with natives or pollinator friendly species. Open up the hard landscaped area near the car park and plant trees and shrubs which reflect the diverse ethnic origins of the large minority of residents and are pollinator friendly. Provide an interpretative panel explaining the landscaping.	Mayo County Council's Heritage/Biodiversity Officer Ballyhaunis Tidy Towns Local intercultural group	**Year 2**
2.2 Improve biodiversity and amenity value of green spaces in all local housing estates	Arrange meetings of residents to promote 1) gardening for biodiversity and food 2) awareness of eskers. Use guidelines in Appendix 2 to inform gardening practices. Provide training and support to implement new landscaping initiatives.	Mayo County Council's Heritage/Biodiversity Officer Ballyhaunis Tidy Towns Residents associations	**Years 2-5**

Objective 3	Improve awareness of biodiversity in targeted sectors of the community		
Specific objective	**Actions (in chronological order)**	**Responsibility (key group underlined)**	**Timescale**
3.1 Engage local schools to carry out projects related to biodiversity	After studying briefing materials provided in appendix 2, identify target schools and initiate a relationship between them and Ballyhaunis TT to carry out some of the recommended actions.	Ballyhaunis Tidy Towns Local primary or secondary school	**Implement staged programme as in Appendix 2. Stage 1 in Year 1.**
3.2 Engage community to carry out actions to support biodiversity	Use a local launch of the BAP to recruit members to a sub committee of the Tidy Towns which would be responsible for its implementation.	Ballyhaunis Tidy Towns Mayo County Council	**Year 1**
3.3 Maximise use of social media	Use social media to highlight a species/ month and put up photos provided by local naturalists. Develop a competition for best photo etc.	Ballyhaunis Tidy Towns Local business for sponsorship	**Years 1-5**
3.4 Encourage all gardeners to carry out landscaping projects which would benefit biodiversity	Provide guidelines to households and lists of suitable species which would add biodiversity and visual interest to their property.	Ballyhaunis Tidy Towns Residents Associations of housing estates	**Year 2**

Objective 4	Carry out survey work to monitor the status of biodiversity and water quality		
Specific objective	**Actions (in chronological order)**	**Responsibility (key group underlined)**	**Timescale**
4.1 Develop relationships with statutory agencies which have outreach programmes	Contact National Parks and Wildlife Service ranger to ask for assistance to implement biodiversity awareness programmes. Contact LAWPRO to request funding and technical support for a programme of local water quality monitoring. Monitor water quality in the Dalgan 3-4 times each year.	Ballyhaunis Tidy Towns LAWPRO (Tom Carolan) NPWS local ranger	**Year 1** **Years 2-5**
4.2 Carry out invasive species survey	Request that the Co Co commission an Invasive species survey of the Ballyhaunis area and commit to implementing a control programme.	Ballyhaunis Tidy Towns Mayo County Council Heritage/Biodiversity officer	**Year 1**
4.3 Promote citizen science activities	Use TT Facebook page to both promote and report on the local uptake and results.	Ballyhaunis Tidy Towns	**Years 1-5**

Objective 5	Actively engage in local spatial planning initiatives to protect and promote local biodiversity		
Specific objective	**Actions (in chronological order)**	**Responsibility (key group underlined)**	**Timescale**
5.1 Have specific features of local biodiversity interest listed in local plans	Recommend to Co Co that all surviving hedgerows are identified in the next Local Development Plan and policy inserted to retain their value for biodiversity. Recommend that all eskers are listed and a policy inserted to retain their value for geodiversity. Recommend that any development on the other side of the river north of Friarsground Park is sympathetic to geo and biodiversity.	Ballyhaunis Tidy Towns Concerned residents Mayo County Council Planning Section	**Year 1** **Years 2-5**
5.2 Comment on the biodiversity impacts of local development	Request that all landscaping is biodiversity friendly. Suggest installation of bat and bird boxes in new builds.	Ballyhaunis Tidy Towns Mayo County Council Heritage/Biodiversity officer	**Year 1**
5.3 Have local eskers designated as a Natural Heritage Area	Lobby National Parks and Wildlife Service. Seek support from Mayo County Council and the Geological Survey which proposed them for designation.	Ballyhaunis Tidy Towns Mayo County Council Heritage/Biodiversity officer Geological Survey of Ireland	**Years 3-5**

Biodiversity Action Plan Summary

1 Improve the biodiversity and amenity value of the Friarsground Park	1.1	Directly improve grassland plant species diversity
	1.2	Improve biodiversity of hedgerows/treelines beside the river
	1.3	Implement new mowing regime for grassland
	1.4	Improve biodiversity on river margins
	1.5	Modify existing woodland
	1.6	Demonstrate best practice on path development
	1.7	Improve interpretation in the Park
2 Improve biodiversity and amenity in various other public sites	2.1	Improve landscaping between the swimming pool and the old post office and the value of the river downstream as a green corridor
	2.2	Improve biodiversity and amenity value of green spaces in all local housing estates
3 Improve awareness of biodiversity in the community	3.1	Engage local schools to carry out projects related to biodiversity
	3.2	Engage community to carry out actions to support biodiversity
	3.3	Maximise use of social media
	3.4	Encourage all gardeners to carry out landscaping projects which would benefit biodiversity
4 Monitor the status of biodiversity and water quality	4.1	Develop relationships with statutory agencies which have outreach programmes
	4.2	Carry out invasive species survey
	4.3	Promote citizen science activities
5 Engage in local spatial planning initiatives to protect and promote local biodiversity	5.1	Have specific features of local biodiversity interest listed in local plans
	5.2	Comment on the biodiversity impacts of local development
	5.3	Have local eskers designated as a Natural Heritage Area

Field mushrooms

No mow reminder

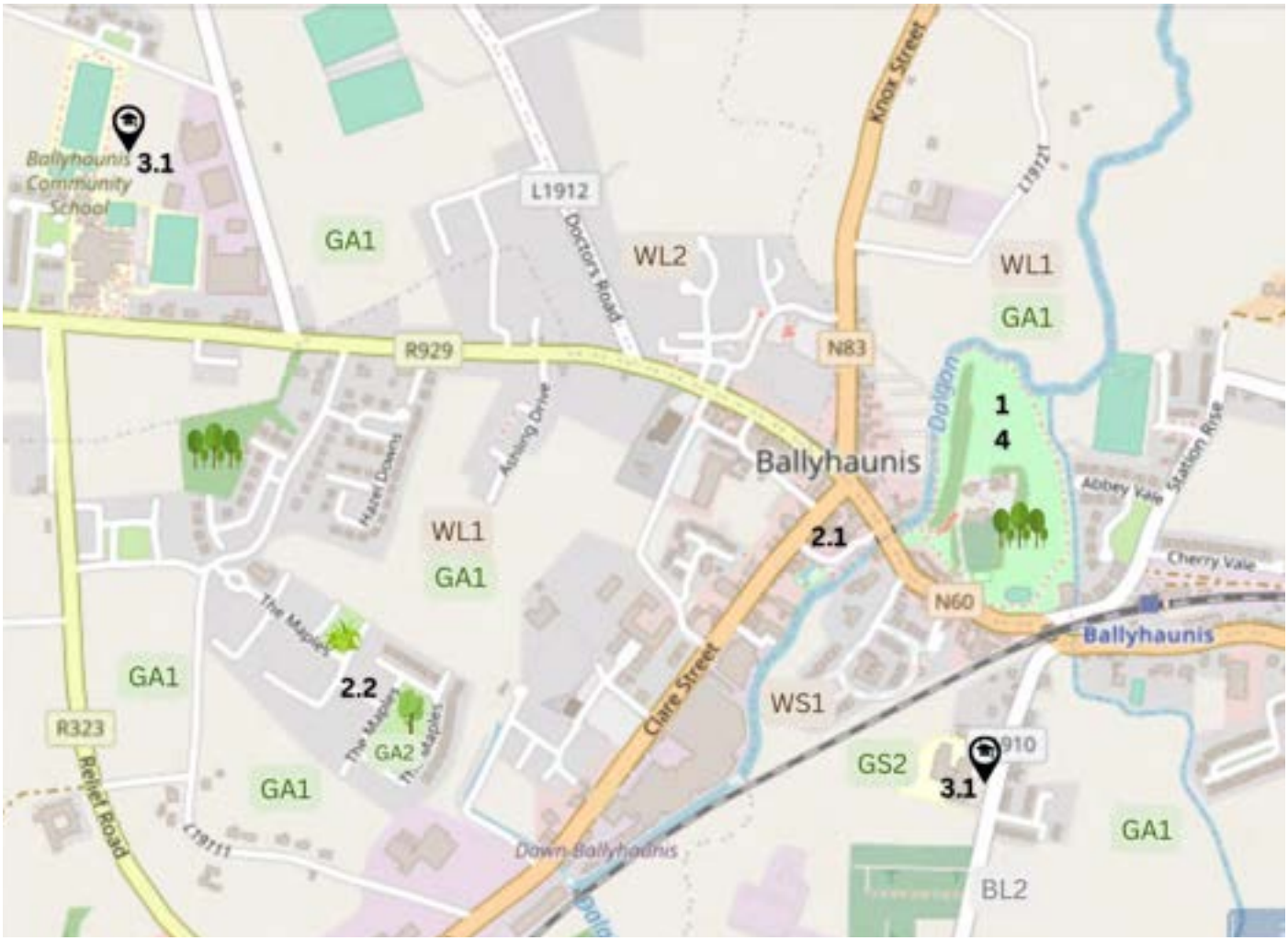
Dr Julian Reynolds leads freshwater assessment

Snow on the Friary Walk

Daffodils at the local crossroad

Wooly bear caterpillar

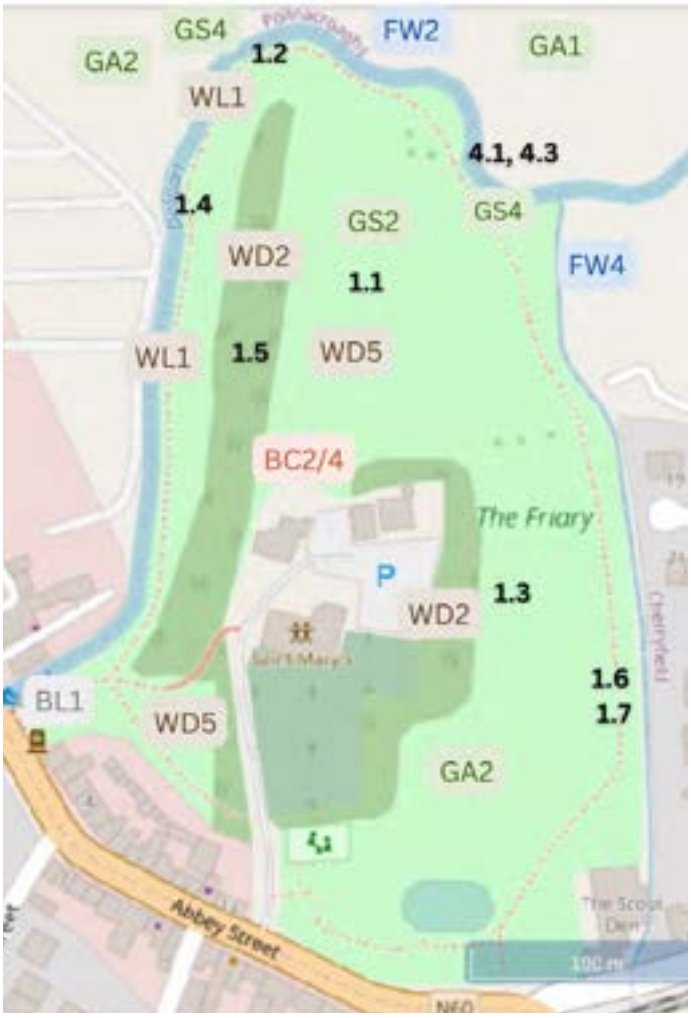
Biodiversity Action Plan Target Areas



Grey willow in winter

Improve biodiversity on river margins

Biodiversity Action Plan Target Areas in the Friary Grounds



Label	Description	
FW2 FW4	River Dalgan Drainage Ditch	
GA1 GA2	Improved agricultural grassland Amenity grassland, lawns	
GS2 GS4	Tall uncut grass Grassland with wetland plants	
WS1	Scrub with native species	
WL1/2	Hedgerow and tree line	
WD2 WD5	Planted mixed broadleaved/conifer woodland Scattered trees and woodland	
BC2 BC4	Horticultural land Flower beds and borders	
BL1	Walls made with rock	
BL2	Earth bank forming field boundary	
BL3	Buildings and artificial surfaces	

Improve biodiversity in grassland areas

School outreach and engagement activities

4. Citizen Science

Dalgan River

Ballyhaunis is close to three of Ireland's major catchments: the Moy catchment, the Corrib catchment and the River Suck/Shannon catchments.

The Dalgan River is a central habitat and attraction in Ballyhaunis. It flows through the town itself and just upstream from shops and busy streets. The limestone river is a keystone of the Friarsground area. It is also an important spawning tributary of the River Clare, or Clare-Galway River, and was once a great salmon and trout fishery.

In recent years, our committee organised guided river walks of the Dalgan River with recognized experts and ecologists who consistently give a healthy rating of the river, which has rich flora and abundance of invertebrates. With help and advice of the Local Authority Waters Programme (LAWPRO), we launched engagement activities and a Citizen Science programme involving various community groups, the first of its kind in the area and Co. Mayo.

Tom Carolan, engagement officer, and Peter Mitchell, catchment scientist, of LAWPRO demonstrated the monitoring method to the newly formed group of volunteers on 21 April 2023. The methodology follows a simple 'traffic light system' of good and bad indicator species in the fresh water. These species are easily identifiable insects indicating the health of the aquatic environment.

The sampling is carried out at specific sites each season, and the data is entered in the National Biodiversity Database, to inform water quality trends and initiatives to improve it.

Water quality is not easy to see or imagine, but identifying critters can be an educational and fun activity. It is also critical for sustainability and conservation of natural resources.

Therefore, we wish to raise awareness in as many groups as possible by inviting them to become citizen scientists.

We have already organised a water monitoring awareness-raising activity with the Ballyhaunis Community School 5th-Year students and their Agricultural Science teacher. We have plans to engage the local national school, as well as other national schools in the vicinity. We plan to repeat these water monitoring activities throughout the year.

For our efforts, the Ballyhaunis Tidy Towns was recognised as the Regional Winner of the Waters and Communities Award in the 2023 National Supervalu Tidy Towns Awards.

Guided nature walk of Dalgan River with Aengus Kennedy, Heritage Week 2023.

Local Authority Waters Programme
vibrant communities | catchment assessment | healthy waters

5. Appendices

Friarsground park in the Spring

Appendix 1. Plants recorded during fieldwork 2021-2022

Plant name	**Habitat Code (according to Fossitt, 2000) associated with the species**								
Latin Name	**Common name/Irish name**	**GA1**	**GA2**	**FW2**	**GS2/WS1**	**BL3**	**WD2**	**BL2**	**WL1**
**Acer campestre*	Field maple/ Mailp						X		
Achillea millefolium	Yarrow/ Ath-air thalún		X		X			X	
Agrostis sp	Bent grass/ Feorainn				X			X	
Alnus glutinosa	Alder/ Fearnóg						X		
Angelica sylvestris	Wild angelica/ Gallfheabh-rán			X	X				
Anthriscus sylvestris	Cow parsely/ Peirsil bhó			X	X				
Apium nodiflorum	Fool's watercress/ Gunna			X					
Arrhenatherum elatius	False oat grass/ Coirce bréige	X			X			X	X
Bellis perennis	Daisy/ Nóinín		X						
Calystegia sepium	Bindweed/ Ialus fáil								
Calystegia silvatica	Large bindweed/ Ialus mór								
**Carex sylvatica*	Wood sedge/ Cíb choille						X		
Cerastium fontanum	Chickweed/Cluas luchóige	X			X				
Cirsium arvense	Creeping thistle/ Feochadán reatha	X			X			X	X
Cirsium vulgare	Spear thistle/ Feochadán col-gach	X			X				X
Crataegus monogna	Hawthorn/ Sceach gheal				X				X
Cupressus sp	Leylandii						X		
Dactyllorhiza majalis?	Marsh orchid/ Magarlín				X				
Dactyllus glomerata	Cock's foot/ Garbhfhéar	X	X		X			X	X

Plant name	Habitat Code (according to Fossitt, 2000) associated with the species								
Latin Name	**Common name/Irish name**	**GA1**	**GA2**	**FW2**	**GS2 / WS1**	**BL3**	**WD2**	**BL2**	**WL1**
Dryopteris felix mas	Male fern/ Raithneach mhadra						X		
Epilobium hirsutum	Great willowherb/Lus naTríonoide				X				X
Fagus sylvatica	Beech/Fea						X		
Festuca arundinacea	Tall fescue/ Fesciú ard				X				
Festuca rubra	Red fescue/ Fesciú rua							X	
Filipendula ulmaria	Meadowsweet/ Airgead lu-achra				X				
Galium aparine	Robin run the hedge/ Garbhlus				X			X	X
Geranium robertianum	Herb robert/ Ruthéal rí					X	X		X
Geum urbanum	Wood avens/ Machalle coille						X	X	
Glechoma hederacea	Ground ivy/ Athair lusa							X	
Gunnera tinctoria	Giant rhubarb/ Gunnaire								
Hedera helix	Ivy/ Eidhneán				X		X	X	X
Holcus lanatus	Yorkshire fog/ Féar an chinn bháin	X			X			X	X
Hyacinthoides non scripta	Bluebell/ Coinnle corra						X		
Hyperiucum androsae-mum	Tutsan/ Meas torc allta								X
Hypericum tetrapterum	Square stalked st John's wort/ Beathnua fireann								
Juncus effusus	Smooth rush/ Geataire		X	X					
Lathyrus pratensis	Meadow vetchling Peasairín buí			X				X	X
?Ligustrum vulgare	Privet/ Pribhéad						X		X
Lolium perene	Perennial rye grass / Seagalach buí	X		X					
Lotus corniculatus	Common bird's foot trefoil / Crobh éin							X	X

Plant name	Habitat Code (according to Fossitt, 2000) associated with the species								
Latin Name	**Common name/Irish name**	**G A 1**	**G A 2**	**F W 2**	**GS2 / WS1**	**BL 3**	**WD 2**	**BL 2**	**W L 1**
Nasturtium sp	Watercress/ Biolar		X						
Phalaris arundinacea	Reed sweet grass/ Cuiscreach			X					
Picea sitenchis	Sitka spruce/ ?						X		
Plantago lanceolata	Ribwort plantain/ Slánlus	X	X		X			X	X
Potamogeton natans	Broadleaved pondweed/ Liach bhríde			X					
Primula vulgaris	Primrose/ Sabhaircín						X		
Prunella vulgaris	Self heal/ Duán seanchosach	X	X						
**Prunus laurocerasus*	Cherry laurel/ Labhras sili-								
Prunus spinosa	Blackthorn/ Draighdean						X		
Phyllitis scolopendrium	Hart's tongue/ Creacmh na muice fia						X		X
Ranunculus acris	Meadow buttercup /Fearbhán féir	X	X		X				
Ranunculus repens	Creeping buttercup/ Fearbhán reatha	X	X		X				X
**Reynoutria japonica*	Japanese knotweed/ Glúaineach bhiorach				X				
Rubus frut.agg	Bramble/Dris	X			X		X	X	X
Rumex acetosella	Sheeps sorrel/ Samhadh caorach								
Rumex sanguineus	Wood dock/Copóg choille	X			X				X
Salix aurita	Eared willow/Crann sníofa				X				
Salix cinerea	Grey willow/ Saileach liath				X				X
Sambuccus nigra	Elder/Trom								X
Senecio jacobea	Ragwort/ Buachalan buí	X			X				X
Solanum dulcamara	Bittersweet/ Fuath gorm								X

Plant name	Habitat Code (according to Fossitt, 2000) associated with the species								
Latin Name	**Common name/Irish name**	**G A 1**	**G A 2**	**F W 2**	**GS2 / WS1**	**BL 3**	**WD 2**	**BL 2**	**W L 1**
**Sorbus aucuparia (cultivated var)*	Rowan/ Caorthann								
Stellaria graminea	Lesser stitchwort/ Tursarraing								X
**Symphoricarpos albus*	Snowberry/ Pòirín sneachta				X				
Taraxacum officinale	Dandelion/ Caisearbhán	X	X		X				
**Taxus baccata Florencecourt yew*	Yew/Iúr								

Plants with * are non-native
More details of habitats in Table 7

Dandelion field (above) and bindweed (below)

Bee on ragwort (above) and primrose (below)

Privet flowers (above) and blackthorn berry/sloe (below)

Hawthorn bloom (above) and elderberries (below)

Spotted orchid (below left) and willowherb (below right)

Appendix 2. Biodiversity management. Background information and general guidelines

Where is a good place for biodiversity?

Legal protection for areas and species

How to develop good habitats (woodlands, shrubberies and wetlands) Gardening for biodiversity

Artificial habitats for birds, bats and insects

Support for community-based initiatives

Developing a partnership with the local primary school

Resources needed to support local learning about biodiversity

Where is a good place for biodiversity?

As biodiversity is much reduced due to development the best places will be where little has occurred. Therefore, a good place for biodiversity will not be covered in houses, roads or subject to drainage. It will not be covered by plants established by people but by vegetation which has been there for hundreds or thousands of years. This vegetation will principally consist of native plant species.

Native is broadly speaking a species which arrived naturally into the country in comparison to a species which has been introduced deliberately by people. Native plant and animal species are more valuable for biodiversity as they are more likely to be important as a source of food or shelter for other species. Native species are more likely to be living in their optimum location so their presence reveals information about the local environment which helps to characterize other aspects of local biodiversity.

There is a place for non-natives too as many have been *naturalised*, firmly established and can also be important for other species. There is particular concern with non- natives which have become ***invasive*** affecting natural habitats and other native species. The government has published lists of these which include Rhododendron in woodlands, Japanese knotweed in water land and Himalayan Balsam usually in rivers. People who have these species on their land must take care not to allow them spread, or they will be prosecuted.

A good place for native biodiversity will be a non-intensively managed field, a thick hedgerow, a drainage ditch, any type of wetland; areas covered in scrub or woodland or even rough grassland near a road. In these areas you will find the last remaining reservoirs of your local biodiversity. In general, the age of these habitats will be a good guide to their value. The older the habitat the more likely that it will support native species.

If you do not have a habitat map and you want to find out if you have any ancient habitats in your locality, check the first edition of the Ordnance Survey maps on the Ordnance Survey website (https://osi.ie). Click on map viewer on the home page.

Hedgehogs numbers are dwindling.

Legal protection for areas and species?

The status of a plant and animal affects the protection given to it by legislation. Our wildlife legislation provides protection for specific large rare **native** plants, all large **native** animals and all **native** breeding birds which are rare and vulnerable to disturbance. Rabbit is not given any protection under the Wildlife Acts as it probably arrived with the Normans. Because certain species listed in the Wildlife Act are protected it is necessary to get a license from the NPWS to disturb them. However, derogations have also been agreed. All teachers are allowed take tadpoles from the wild bring them into schools. Of particular relevance to farmers and gardeners is the prohibition on hedge cutting between 1st March and 1st September to protect nesting birds. Tree cutting is not regulated by legislation concerned with biodiversity but with forestry. According to these regulations there is no need to get a license to fell trees in an urban area.

To find out about areas which have been officially recognized as being of biodiversity value in your locality go into the website for the National Biodiversity Data Centre (https://maps.biodiversityireland.ie). Click on maps on the home page to move to the map of Ireland. As this principally shows physical features, topography and rivers so you might need some help from other maps to check your location. Once you have zoomed into your location of interest there are lots of options. If you want to know about internationally important areas of biodiversity interest value, then click on Protected Areas. SAC's (Special areas of Conservation) and SPA's (Special Protected Areas).

The other category NHA's are sites of national biodiversity importance protected under the Irish Wildlife Acts. The boundaries of all these areas will be shown on your map. Click anywhere on this shading to find its official name and code number. Take particular note of the number.

Common frog

To get information about the protected area (if an internationally important site or designated Natural Heritage Area) go into the NPWS website (https://www.npws.ie/maps-and-data). Click for *details* in box titled *Protected Sites Data.* Go to *search* page in section of page titled *Search for Site Documents.* In box beside *code* enter number (obtained from the map) and click. This will bring up a set of documents prepared by the NPWS about each Natura site (SAC and SPA) and designated NHA's (not all NHA's, not pNHA's, (p=Proposed) only designated ones). The most useful doc for Natura sites is the category titled *Site Synopsis.* It provides very specific (and sometimes technical) information about the types of important areas (habitats) and species found throughout the site and in areas of particular importance. As a result of the Habitats and Birds Directives all statutory agencies are obliged to protect these habitats and species and thus any work affecting the areas designated as SAC's and their surrounds must be informed by an ecological assessment called Appropriate Assessment.

Very few of these sites have Management Plans and thus there is little or no information about the biodiversity value of all the land within an SAC. NPWS have not had the resources to prepare these plans and fieldwork is needed to determine their value. Occasionally they have been prompted to prepare them due to local interest or pressure from environmental organisations. If an area has not been designated by the authorities its biodiversity value can be inferred if it contains rare habitats or species. Rarity can be assessed at various scales. Various reports can be examined to give an indication of the rarity and importance of species. BirdWatch Ireland regularly produces list of birds of conservation concern. National floras usually provide an indication of the rarity of plant species. County floras provide similar valuable information ay a county scale. *Red lists* (following convention drawn up by an international conservation organisation) have been produced for plants, bryophytes, mammals, amphibians, reptiles and freshwater fish, and various groups of invertebrates including bees, stoneflies, damselflies and dragonflies, butterflies, macro moths, cartilaginous fish, water beetles, mayflies and non-marine mollusca. Red lists have been drawn up by national experts and highlight species of particular importance. The presence of certain birds and other listed species is important in identifying areas of biodiversity value. Local naturalists may also have such information. Anglers groups are particularly valuable sources of information on water quality and fish.

How to develop habitats

Homes for biodiversity are called habitats. Habitats vary in naturalness and can include both semi natural and man made types. The Heritage Council has produced documents which lists all the habitats found in Ireland and guidelines on how to identify and map them. To obtain more information about habitats examine the publication produced by the Heritage Council. This can be accessed here (https://www.npws.ie/sites/default/files/publications/pdf/A%20Guide%20to%20Habitats%20in%20Ireland%20-%20Fossitt.pdf). You need technical knowledge to fully comprehend the distinctions at level 3 but not at levels 1 and 2 as their definition can be easily understood.

Woodlands and hedgerows

The most useful terrestrial habitat for biodiversity is a native (WN type) woodland. Information in your biodiversity action plan should suggest the original type of woodland present and provide details of where traces may be present in your locality. Biodiversity management should focus on improving the quality of existing woodlands. If a native woodland is not present or a type of woodland from which it can be converted a native woodland can be established. Guidance provided by the governments Native Woodland Scheme indicates the relevant species for your soil type (https://www.teagasc.ie/crops/foresry/grants/establishment-grants/native- woodland-establishment/).

Generous grants are available for this work for sites as small as 0.1ha. Soil type can be discovered in the soil map produced by An Foras Taluntais. A native woodland would support a variety of native trees and shrubs typical of the chosen woodland type. The larger the size of woodland the better but even mini- woodlands so called pocket forests (size between a car parking space and tennis court) can produce great benefits for biodiversity (see pocket-forests.ie for details of this initiative). Ideally a new woodland should be within hopping distance of an existing hedgerow or shrubby area. The shape should allow for maximum edges as birds and insects will use the margins for feeding or sheltering. Sunny edges will be particularly valuable for insects and pollinators.

Shrubberies

Shrubberies can be very valuable for nesting birds if they produce food for pollinators and safe nesting places for birds at chest height. They can be any shape or size. A hedgerow is essentially a specialised linear shrubbery with an A shaped structure involving trees, shrubs, possibly a bank and ditch. Original hedgerows were stock proof therefore they were very good for nesting birds. As hedgerow management is no longer practiced it is rare to find a tall A shaped hedgerow. As a replacement for a hedgerow a shrubbery should be managed to retain their compact shape and bushiness. Ideally a new hedgerow should be within hopping distance of an existing hedgerow or shrubby area.

Grasslands to improve their biodiversity value

The potential of grasslands is indicated in your Level 3 habitat map. Grasslands identified as GS type have good potential. Grasslands of type GA have less potential. It is possible to improve all grasslands (even GA type) to make them more like a wildflower meadow following a long-term management regime (10-20 years). This involves cutting twice/year (March/April and September) and removing all cuttings. This will eventually reduce the fertility of the soil to encourage growth of wildflowers i.e. forbs as opposed to

Mowing restrictions in place.

grasses. This is the most environmentally friendly way to create a wildflower meadow, manage a GS grassland and to convert a grassland of low potential GA type to a GS type.

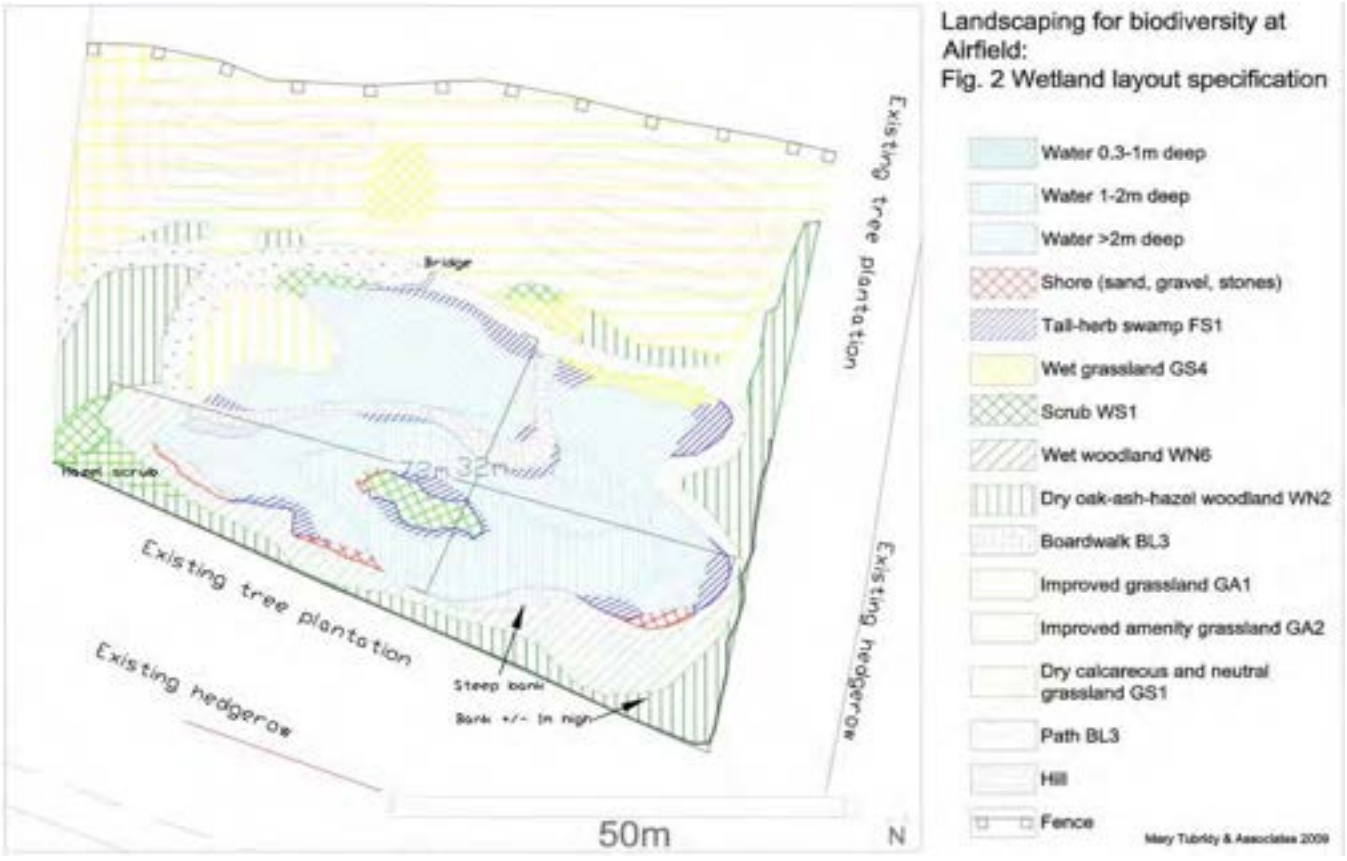
Ideally in all grassland areas the policy should be to restrict mowing until the end of the flowering season to benefit pollinators. Putting up the All Ireland Pollinator sign will let the public know why the grass is not being cut.

If you want an instant wildflower meadow spread seeds but the resulting grassland should be called a "pictorial meadow". There are lots of issues about the current practice of establishing so called "wildflower meadows". Pictorial meadows will be good for pollinators and butterflies but will require major management each year to maintain its interest. If you use wildflower seed from a packet there is also a strong risk of introducing non-natives or plants which became extinct in Ireland. Best to collect seed locally for use in establishing these types of habitats.

Wetlands

A wetland is also a very valuable habitat to establish as these have almost always been removed and they can support a wide range of flora and fauna. While ideally it should be a pond (and a large one) it could even be a birdbath which has shallow edges to allow birds drink from it. Any pond or wetland should be fed by good quality water. The hydrological regime should allow for constant/ intermittent water flow (never stagnant water). Its construction should provide for a mixture of open water 70% and surrounding vegetation 30%, an undulating profile (to maximise edge effects), and some steep and some shallow margins. A plan for a new wetland developed by Mary Tubridy and Betsy Hickey which incorporates these characteristics is shown below.

In developing wetlands, particular care is needed to prevent invasive plants or animals colonizing the pond. Resources should be available for management as wetlands are dynamic systems and artificial wetlands may silt up or suffer from changes to local hydrology.



Gardening for biodiversity

The activity of gardening for food or amenity offers great opportunities to learn about biodiversity as it demonstrates the linkages between soil, plants, animals and people. This potential is greatest following organic growing principles and establishing native species. Composting and seed saving will demonstrate the circular economy and food production will demonstrate the importance of the plant world to the survival of humanity.

If you want to benefit biodiversity then the obvious thing to do is to plant native trees, shrubs or herbs or a plant listed in the All Ireland Pollinator plan (pollinators.ie). If you do not find a native species to your taste plant a *variety* of a native species or a species that belongs to the *same genus*. The genus is the surname of the species. If the common wild Daisy is called *Bellis perennis (*Latin names are always in italics*) Bellis* is the genus and *Bellis perennis* is the species within that genus. So if you do not want to plant *Bellis perennis*, look for other plants whose name starts with *Bellis*. Because they belong to the same genus it is likely that pollinators etc. will utilize them.

Varieties are cultivated types of wild species (similar to breeds of dogs). Many wild plants are now available as varieties which are showier than the original. They are worth planting too. The species name will be provided followed by the *var* name.

Gardening course at the Community Garden

Therefore, if you plant a native tree typical of the local environment it will flower (good for pollinators), produce seeds (food for birds), branches (good for roosting birds) and eventually once it matures, has cracks in its trunk and is covered in ivy it will be a home for roosting bats and nesting birds. Remember few songbirds nest in trees.

While planting natives is the best strategy, non-natives can also be used if they can perform one of these functions. All clematis are good for birds, cultivars of *Clematis tangutica*, also provide nectar and pollen for bees, followed by wispy seedheads in autumn, birds will take the material to use in their nests in spring; climbing hydrangea, single, open flowered climbing and rambling roses, provide nectar and pollen for pollinators, followed by hips for birds. The worst species is Leylandii. Under no circumstance should this be planted.

Community Garden seed savers workshop

Here are suggestions for perennials in flowerbeds, hanging baskets and containers. Hanging baskets should always be near buildings.

- Pin cushion scabious *Knautia arvensis* and cultivars
- Oregano - Origanum vulgare 'Aureum'
- Thyme – lemon scented thyme *Thymus citriodorus aureus*
- Aubrieta cascade
- Trailing bellflower *Campanula poscharskyana*
- *Aurinia saxatilis*
- Alpine rock cress *Arabis alpina subsp. Caucasica*
- Tussock bellflower *Campanula carpatica*

Suggestions for annuals in flower beds and containers:

- Bidens and Bacopa
- *Diascia Heliotrope*
- *Lobelia 'pendula'*
- Million bells *Calibrachoas*
- Floss flower *Ageratum houstonianum*
- Snapdragon *Antirrhinum majus*
- China aster *Callistephus chinensis*
- Baby blue eyes *Nemophila menziesii*

Insect hotel built by Ballyhaunis Foroige BEY Project

Artificial habitats for birds, bats and insects

Artificial habitats are particularly appropriate when the natural habitat of a species is absent or still maturing. In general, all interventions should be regarded as temporary and removed when the natural habitat is more appropriate, thus removing the need for monitoring and cleaning. The use of artificial habitats bird and bat nesting boxes etc should be checked each year. They may need cleaning and if unused they should be moved to another location.

It is important to minimize night-time lighting near semi-natural habitats. Light should only come on when needed and only pointed at features which ensure people's safety.

Support for community-based initiatives

If you want to do further research on biodiversity in your locality, see if there is a Biodiversity Action Plan for the county. A Biodiversity Action Plan, if it exists, will have been drafted by a specialist in your local authority. This person should be contacted to address specific queries, request more information or identify local individuals interested in your aspect of biodiversity. The document may provide information about local biodiversity. It will contain objectives to improve it and provide information on the organizations (statutory or non-statutory) which are responsible. If your aspirations are aligned with these organisations there is particular potential to develop partnership working.

Large national organisations such as Waterways Ireland (which has a strong section on its website on biodiversity https:// www.waterwaysireland.org/biodiversity-on- irelands-waterways) offers support to community based groups interested in learning about biodiversity in canals. Bat Conservation Ireland (env NGO) will put you in touch with local bat groups who (for a small fee) will organize an educational event in your area. Dublin City has a very active environmental NGO, the Dublin Naturalist's Field Club which regularly organizes outings for members interested in plants and general natural history. The Irish Peatland Conservation Council has excellent educational materials and runs programmes from their base in Kildare. The network of branches of BirdWatch Ireland provides similar outings to look at birds. Membership of these NGO's is very reasonable and there are concessions for students etc. Both may allow non-members to attend events as a taster of membership.

As well as providing information and support some NGOs' may have political influence. They may be represented in your local public participation network (PPN). This is a local authority structure which feeds community concerns to all local authority departments. Your local authority will have a full time Heritage Officer, or possibly a Biodiversity Officer, who would assist with information or support for projects.

In recent years Local Authority Water Protection Officers have been appointed as a partnership between the EPA and local authorities to mobilise local support for good catchment management. They have potential to support community scale initiatives in relation to training and monitoring.

Your local representative should help to identify key members of staff in local authority departments such as parks, planning departments and drainage services who could support biodiversity related projects. Engineers in Drainage services could be interested in protecting local wetlands or developing new types, particularly in the context of climate change which is going to massively increase pressure on existing drainage networks.

All of these officials will respond to legitimate requests for information and support for practical projects which align with local objectives. However, as they are busy people it may take some time to achieve an appropriate response. A request made through the PPN should achieve a more rapid response.

In the context of the National Parks and Wildlife Service NPWS the local ranger may respond to queries. However, they are also very busy people and their priorities are the protection of designated sites. They may be able identify local enthusiasts or relevant networks.

The following organisations could be approached for financial support:

- Leader companies which fund Management Plans for community owned sites which have biodiversity value.
- Heritage Council Community Grants Scheme (for surveys and publications). Contact Heritage Officer for advice.
- Community Foundations for plans and works i.e. follow up grant scheme
- NPWS (but distributed through local authorities) and principally for designated sites)
- Company sponsorship

Donegal artist Brendan Farren was commissioned by the National Parks and Wildlife Service to create three curlews as part of its Curlew Conservation Programme. This sculpture was placed in the Friary Park for World Curlew Day in 2020.

Quails in the Friary Park

Partnerships for biodiversity with schools (and local companies)

There is particular potential to work with primary schools to enhance biodiversity as the curriculum of primary school is nature friendly. It is well known that the influence of a teacher in primary school combined with access to a site of some biodiversity interest can be of great significance to a young person in encouraging them to have a lifetime interest in biodiversity. All community-based initiatives should develop a good relationship with the primary schools in their neighbourhood. The guidelines below provide a step-by-step guide to working with primary schools. They same principles can be used to encourage co-operation between other organisations or institutions. Large organisations and commercial companies could be interested in promoting what is now called Corporate Social Responsibility. Working in partnership with local communities on projects concerned with biodiversity will allow them to fulfil this obligation.

In relation to schools a community-based initiative could involve the Tidy Towns committee working with a representative of the school community which includes children, teachers, all other staff (caretaker and Special Needs Assistants SNA's), parents and grandparents. The ideal partnership would be facilitated by someone in the school who is also active in the Tidy Towns Committee, ideally running the Green Schools initiative; where the school has some grounds to carry out a biodiversity enhancement project and there is someone around in July and August to look after plants. In relation to organisations or companies the contact will be with the CSR (Corporate Social Responsibility) officer.

There is a good chance of valuable local greening training if the contact person teacher/officer is interested in wildlife and gardening, if it is a Green School which is already doing related curricular activities and there is a sympathetic principal/manager (sympathetic to the area, community, ideally from the area). Potential is greater if the school or business grounds have potential for biodiversity friendly works (landscaping or erection of bird boxes etc.) or/and is adjacent to a site of biodiversity interest. The following programme of actions is suggested.

Step One

Research the expertise in your locality. You might have someone who knows birds or plants or is a keen gardener. You might have an artist in the locality who could go into a school/business, show people how to draw nature or bring in some of their work which is related to nature. Research the kinds of freebees offered to schools/businesses from trees to posters and present this information to the school/business.

Encourage any interested teacher to get up-skilled by doing summer courses on biodiversity or schools gardens (for which they get extra days off during the year). Courses registered with the Department of Education which fulfil all the criteria for EPV days at 1) Gort breac Tralee and 2) Burren Beo on place based learning are highly recommended.

Encourage the teacher/ school/business to join an environmental NGO such as Biodiversity in Schools, BirdWatch or the Irish Peatland Conservation Council which produces regular magazines or newsletters.

Provide resources to the school and business (see Appendix 3). Encourage schools to buy books produced by Paddy Madden (on school gardens and trails) and start to assemble a collection of picture books and novels concerned with biodiversity.

Discover the name of local Heritage in School expert on biodiversity, ideally who will bring pupils out of the classroom. These visits are subsidized by the Heritage Council.

Step Two

Encourage school to arrange outings to places which provide interpretation about biodiversity (such as the IPCC run Lullymore Peatland Centre or National Parks run by the NPWS). If the Heritage in School person visits the school encourage them to develop a relationship with them and pay for follow up visits (if successful).

Establish a school garden which is wildlife friendly.

Anti Dog Fouling Student Art Competition winners

Dawn Meats team helping plant flower baskets for its community service day

Follow up provided by the Local Tidy Towns group

Provide information so that school can bring children out (possibly with parents for insurance purposes). A trail could be set up from the school, which highlights features of biodiversity interest along it and incorporates activities, which will be carried out by pupils (questionnaire, drawings, collecting objects).

As a fun event a picnic day could take place in the outdoors each year incorporating an activity which requires observation of nature. If interested and school/business wants to promote itself an exhibition could be prepared about that space and launched with much publicity.

If school/business gets interested in biodiversity in years three or four it could sign up for surveys organized by organisations which promote citizen science (BirdWatch for garden bird survey IPCC for frog survey and the National Biodiversity Data Centre for spring flowering plant species.

A garden could be set up which includes features (wetland and log piles) of value to biodiversity and species which benefit pollinators and humans (edibles!). A school garden would encourage year-round work and observation. If space allows a native tree could be planted each year in that area. That tree could be a focus of study for whole school that year (language, folklore, science, songs and usage).

Appendix 3. Trees and shrubs good for biodiversity, birds and pollinators (Native species in green)

Shrubs and small trees

Genus	Species	Friendly for
Barberry (Berberis)	*B. stenophylla*	thrushes and blackbirds
	Berberis thunbergia 'Rose Glow'	
	B. darwinii	
	B. thunbergia atropurpurea	
	B. thunbergia atropurpurea 'Nana'	
Flowering dog woods (not the red or yellow stemmed varieties)	*Cornus mas – cornelian cherry*	finches and thrushe
	Cornus 'Porlock'	blackbirds and crows
Viburnums such as guelder rose	*Viburnum opulus, V. opulus 'Compactum'*	thrushes and **bullfinches**
Rowan berries	*Sorbus aucuparia*	blackcaps, finches, song thrushes and waxwings
	S. vilmorinii	
	Cultivars such as S. 'Joseph Rock or S. Pink Pagoda	
Hollies	Native holly *Ilex aquifolium*	greenfinches and waxwings
	Ilex C.V. van Tol (good as it has male and female flowers on the same plant)	
Roses	*Rosa pimpinellifolia*	waxwings and blackbirds
	Rosa glauca	
	Dog rose *R. canina*	
	Burnet rose	
	Rosa spinosissima	
	Rosa rugosa	
Spindles	Native *Euonymous europaeus*	robins, blackbirds, occasionally song thrushes and tits
	E. alatus	
	Euonymus europaeus 'Red Cascade'	
	Euonymus phellomanus	
Cherries	*Prunus avium*	birds, badgers and small mammals some moth caterpillars eat the leaves
	P. padus	
Hawthorns	Native hawthorn *Crataegus monogyna*	waxwings and blackbirds
	Ornamental *Crataegus laevigata 'Paul's Scarlet'*	

Genus	Species	Friendly for
Ivy		redwings, bullfinches and blackbirds
Honeysuckle		robins, song thrushes and blackbirds
Virginia creeper	*Parthenocissus*	berries are low in antioxidants, long lasting and attract blackcaps and mistle thrushes
Crab apples	*Malus 'Red Sentinel'*	blackbirds and **starlings**
	M. 'John Downie'	
	M. 'Royalty'	
	M. x purpurea 'Lemoinei'	
Cotoneaster (mostly invasive)	*Cotoneaster horizontalis*	**waxwings**, thrushes and blackbirds
	C. bullatus, C. integrifolius	
	C. microphyllus, C. simonsii	
Juneberry tree	Amelanchier	starlings, whitethroats, finches and robins
Firethorns	*Pyracantha 'Orange Glow'*	sparrows, starlings and finches
Ornamental quince	*Chaenomeles species*	
Daphne	*Daphne spp.*	blackbirds, flycatchers, finches, whitethroats
Red and black currants		blackbirds

Plant flowering X season

Spring: Currant, Barberry, Forsythia, Guelder rose

Summer: Hebe, English lavender, Honeysuckle, Elder

Autumn: Heather, St John's Wort

Winter: Ivy, witch hazel, sweet box

Moths to attract bats

Scented night-time flowers such as evening primrose and the tobacco plant attract moths on which bats may feed.

Female blackbird under a gooseberry bush

Plants for nectar and pollinators X season

Guelder rose (early), Elderflowers (mid) and honeysuckle (late)

Early season

English bluebell - *Hyacinthoides non-scripta,* good for shade or dappled shade

Currant – *Ribes sp. Aubrieta*

Lungwort – *Pulmonaria officinalis*

Barberry – *Berberis sp.*

Forsythia

Guelder rose – *Viburnum opulus*

Alyssum – *Alyssum montanum,* good for shade or dappled shade

Primrose - *Primula vulgaris,* good for shade or dappled shade

Sweet violet – *Viola odorata,* good for shade or dappled shade

Winter aconite – *Eranthis hyemalis*, good for shade or dappled shade

Abelia x grandiflora

Bugle - *Ajuga reptans*

Creeping Jenny – *Lysimachia nummularia,* good for shade or dappled shade

Alyssum – *Alyssum montanum*

Rusty foxglove – *Digitalis ferruginea*

White deadnettle – *Lamium album,* good for shade or dappled shade

Snakeshead fritillary – *Frittilaria meleargris*

Snowdrop – *Galanthus nivalis*, good for shade or dappled shade

Arabis

Wild Daffodil - *Narcissus obvallaris,* good for shade or dappled shade

Wild garlic - *Allium ursinum*, good for shade or dappled shade

Wood anemone - *Anemone nemorosa*, good for shade or dappled shade

Genista, Cytistus, require sun

Mid-season

Heather - *Erica cinerea,* requires sun

Lady's bedstraw - *Galium verum,* requires sun

Common mallow - *Malva sylvestris,* requires sun

Rock cress - *Arabis* sp., requires sun

Sea holly - *Eryngium maritimum,* requires sun

Verbena - *Verbena bonariensis,* requires sun

Wallflower - *Erysimum cheiri,* requires sun

Lavender – *Lavendula angustifolia* 'Hidcote' and other cultivars catmint

Hebes - *Hebe* 'Paula', *Hebe* 'Midsummer Beauty', full sun or dappled shade

Digitalis ferruginea

Digitalis purpurea

Elder - *Sambucus niger* and *S. racemosa* 'Black Lace' and other garden varieties

Bellflower - *Campanula latifolia*

Globe thistle - *Echinops sphaerocephalus*

Ox-eye daisy - *Chrysanthemum leucanthemum*

Purple loosestrife - *Lythrum salicaria*

Rockrose - *Helianthemum chamaecistus*

Yarrow - *Achillea* sp., requires sun or dappled shade

Meadowsweet - *Filipendula* sp.

Salad burnet - *Sanguisorba* sp. Russian Sage - *Perowskia atriplicifolia*

Fleabane – Erigeron – E. glaucus 'Four winds'

Late season

Heather – *Erica carnea* and other winter flowering heathers

Ling heather – *Calluna* sp.

Rose of Sharon – *Hypericum hidcote*

Coneflower – *Echinacea* spp., requires sun

French marigold – *Tagetes patula*, requires sun

Golden rod – *Solidago* spp., requires sun

Honeysuckle - *Lonicera periclymenum*

Ice plant – *Sedum spectabile*, requires sun

Michaelmas daisy – *Aster pyrenaeus*, requires sun

Common sunflower – *Helianthus annuus*, requires sun

Ivy – *Hedera helix* and other ivies

Witch hazel – *Hammellis mollis*

Sweet box – *Sarcococca confusa*

Old man's beard (Wild clematis)

Virginia creeper – *Parthenocissus tricuspidata*

Wisteria – *Westeria sinensis*

Oxeye daisy (left) and heather (right).

Appendix 4. Growing plants for food

To achieve a successful fruit harvest in particular outdoors, trees need to be planting into well prepared, fertile, free draining soils on a site that achieves maximum sunshine (min of 6 hours during active growth, ideally 8 hours), and is sheltered from winds when they are in bloom. The same guidelines apply to growing fruit in a polytunnel or greenhouse. If the site is not sheltered from wind in spring pollinators will not venture out and fruit will not be set. It is worth noting that the wood for many fruiting trees is laid down during late summer of the previous year and this along with the right conditions in spring and summer play a part in successful fruit harvest.

Plant tree against a south facing wall if possible as this will help fruit to ripen in autumn. While most trees will survive on open sites fruiting tends to be sporadic and occurs only in years that are exceptionally hot.

Choose varieties that suit the area where you live -check with local suppliers for help with this.

Owing to the moderating effect of the North Atlantic Current on the Irish and British temperate maritime climate, Britain, and Ireland even more so, have milder winters than their northerly position would otherwise afford. Ireland lies in UK and Ireland hardiness zone of range from H7, the hardiest (tolerant of temperatures below −20 °C (−4 °F)) to H1a (needing temperatures above 15 °C (59 °F)).

Vegetables that crop well outdoors	**Soil**	**Vegetables that crop well outdoors**	**Soil**
Asparagus P	LS	French bean	WD MR
Beetroot	LS	Garlic	WD MR
Broad bean	WD MR	Globe artichoke P	WD MR
Broccoli	WD MR	Good king henry	WD MR
Broccoli – sprouting	WD MR	Jerusalem artichoke P	WD MR
Cabbage	WD MR	Kale	WD MR
Cardoon	WD MR	Kohlrabi	WD MR
Carrot	LS	Komatsuna (oriental leaf)	WD MR
Celeriac	MR	Leaf beet	WD MR
Celery	WD MR	Leek	WD MR
Chicory	WD MR	Onion	WD MR
Courgette	WD MR	Pak choi	WD MR
Endive	WD MR	Parsnip	WD MR
Florence Fennel	WD MR	Pea	WD MR

Vegetables that crop well outdoors	Soil	Vegetables that will grow better in Poly-tunnel	Polytunnel where season can be extend-ed or overwin-tered
Potato	WD MR	Aubergine	Beetroot
Purslane	WD MR	Chilli peppers	Broad beans
Radish	LS	Courgette	Carrots
Red orache	LS	Cucumbers	Coriander
Rhubarb* P	WD MR	Garlic	Cress
Runner bean	WD MR	Gherkins	Early cabbage
Salsify B	WD MR	Melons	Early cauliflower
Scorzonera	WD MR	Okra	Early peas
Spinach	WD MR	Sweet peppers	Early potatoes
Spring onion	WD MR	Sweetcorn	Kohlrabi
Swede	WD MR		Lettuce
Turnip	WD MR		Oriental green
			Parsley
			Spinach
			Spring onion

* Rhubarb is a vegetable that likes cool, dampish and will grow in sun or semi shade, doesn't require frost protection.

Herbs

In general herbs like a sunny well drained site, soil can be poorer (but not always) than that required by vegetables and fruit. Some however will tolerate shade and some may even require it.

Soil – light sandy (LS), well drained (WD) or moisture retentive (MR).

Some herbs may be perennial but are treated as annuals as they are not frost hardy and here they are regarded as annuals. Perennial (P), Biennial (B) and Annual (A).

Herb	Sun	Shade	Soil LS/MR	P/ B/ A
Aniseed	√		WD	A
Artemisia	√		LS	P
Basil	√		WD	A
Bay – tree	√		WD	P
Borage	√		WD	A
Bugle		√	MR	P
Chives	√	√	WD MR	P
Coriander	√		WD	A
Dill	√		WD	A
Dwarf comfrey		√	MR	P
Elder flower	√	√	WD MR	P
Fennel	√		WD MR	P
Feverfew	√		WD	P
French Tarragon	√		WD	A
Horseradish	√	√	WD MR	P
Hyssop	√		WD	P
Lavender	√		LS	P
Lemon balm	√		WD MR	P
Lovage	√	√	WD MR	P
Lungwort		√	MR	P
Meadowsweet	√	√	MR	P
Mint	√	√	WD MR	P
Peppermint	√	√	WD MR	P

Herb	Sun	Shade	Soil LS/MR	P/ B/ A
Pot marigold	√		WD RR	B
Rosa – for petals	√		WD MR	P
Rosemary	√		LS	P
Sage	√		LS	P
Sorrel	√	√	MR	p
Sweet violet		√	MR	P
Swiss chard	√		WD MR	A
Thyme	√		LS	P
Water mint	√	√	MR	P
Winter savoury	√		WD	P
Woodruff		√	WD MR	P