BALLYMUN
Biodiversity Action Plan

BALLYMUN BIODIVERSITY FOCUS GROUP

Funded by The Community Foundation for Ireland,
Environment and Nature Fund 2019.
Community Biodiversity Action Plans.

Adult swallow feeding young in Ballymun.
Photography: Michael Keating

Dr Mary Tubridy, Mary Tubridy and Associates | March 2022

The Community Foundation for Ireland

Ballymun Biodiversity Action Plan

Pink and Red Valerian.
Sarah Rose Farrell

Wild Garlic.
Ricky Brady

Spear Thistle.
Sarah Rose Farrell

Apple Blossom.
Jade Maguire

Willow Catkin.
Ricky Brady

Yorkshire Fog.
Sarah Rose Farrell

7 Spot Ladybird.
Jade Maguire

Plantain Flower.
Ricky Brady

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Acknowledgements

Particular thanks to Ballymun Biodiversity Focus Group, Sinead O'Shea, John O'Donoghue, Michael Keating, Muriel Farrell, and DCC councillor Caroline Conroy, who supported research by contributing to discussions at webinars, providing information about local biodiversity, accompanying researchers carrying out fieldwork and commenting on earlier drafts of this plan.

Michael Keating, who runs the 'Ballymun Wildlife' Facebook page, was of particular assistance. He provided records of species recorded by him in Ballymun and environs since 2015, assisted with fieldwork and provided almost all the photos used in this report. Thank you to The Community Foundation of Ireland for funding the BBAP and to Ballymun Tidy Towns for sponsoring the design and printing.

"All photographs included in the Ballymun Biodiversity Action Plan were taken in Ballymun"

Summary

Between 2019 and 2021 research was carried out to develop a Biodiversity Action Plan on behalf of the Ballymun Biodiversity Focus Group. Members of the Ballymun Biodiversity Focus Group (BBFG) include The Muck and Magic Community Garden, City Farm Ballymun, Ballymun Tidy Towns (BTT), the 'Ballymun Wildlife' Facebook page, and the Dublin City Council Biodiversity Officer Lorraine Bull. Members of the BBFG have particular expertise and interest in ornithology, planting for pollinators, and general field studies. One of its members, Michael Keating maintains the Facebook page called 'Ballymun Wildlife'. He is known for his local wildlife conservation work and wildlife photography. He is a regular contributor to the National Biodiversity Data Centre to which he has provided an impressive record of invertebrates, mammals and birds including nine Red listed bird species and sixteen Amber listed bird species for the Ballymun environs.

Fieldwork for the BAP highlighted these features of particular biodiversity value in Ballymun:

• An area with fields, scrub, hedgerows, drainage ditch near the M50. This is one of the last surviving farm landscapes within Dublin City Council administrative area. In one of these fields a rare Stonewort, Tolypella intricata was found. This species is of international interest to botanists.

Fig. 1 Tolypella Intricata

• Fieldwork also revealed presence of two red listed bird species (Swift and Meadow Pipit) and four amber listed species (Sand Martin, Willow Warbler, Goldcrest and House Sparrow).

• Habitats recently developed in Poppintree Park are of value to local biodiversity, particularly wetland birds.

The priority of the BAP for Ballymun is to collaborate with the local authorities to ensure that the last remaining semi-natural areas in Ballymun are developed as local nature reserves. These include the area with fields, scrub, hedgerows, drainage ditch near the M50, the field west of Ballymun United where the rare Stonewort was found and semi-natural wetlands in the NCT lands. Another priority is to ensure that all sectors of the community and the authorities will work together to make Ballymun an exemplary area for management and enhancement of local biodiversity.

PART 1: BIODIVERSITY BASELINE

1.1 Introduction

Ballymun (Baile Munna) is a suburb on the northside of Dublin. Built in the 1960s to accommodate the housing crisis in inner city Dublin, this development consisted of high-rise tower blocks and flat complexes, as well as standard residential housing. In 1997, the regeneration of Ballymun led to the demolition of the flats over time and their replacement by new low-rise housing.
Fig.2 shows the Ballymun BAP study area.

Fig.2: Study area for Ballymun BAP

The proximity of this area to the nearest designated site is shown in Fig. 3.

***Fig.3**: Santry Demesne Proposed Natural Heritage Area beside Ballymun*

Santry Demesne is a well-known cultural resource in the community (Brittia Dartige Du Fournet, 2009). It was also well known to Dublin botanists for the presence of a rare plant Hairy St John's Wort Hypericum hirsutum associated with old woodlands. As the site is not a designated NHA it is not shown on the NPWS website.

The proximity of the study area to the NCT wetlands is shown in Fig. 4.

Fig.4: NCT wetlands

The NCT wetlands on the other side of the M50 north is also a well-known biodiversity hot spot. Field studies carried out by Michael Keating have resulted in comprehensive species lists for this area (Keating, 2019).

Ballymun has been competing in the National Tidy Towns competition since 2006. It has won awards for biodiversity since 2007 and in 2013 Ballymun won the national award for biodiversity. In 2021 it has achieved a mark of 42/50 due to their work creating natural habitats through their planting schemes and raising local awareness of pollinators. The mark achieved represented a remarkable 85% for the nature and biodiversity section.

The regeneration of Ballymun had a particular focus on enhancing biodiversity and establishing practises to improve environmental quality. All new parks incorporated features to enhance biodiversity. An NGO, Global Action Plan worked with households to support them to adopt practises to minimise their environmental impact and improve biodiversity through gardening. A widespread tree planting project 'A map to care' took place throughout Ballymun. Trees were sponsored by individuals and organisations. Commemorative plaques were placed under these trees to record some aspect of local history (Fig.5).

Fig.5: Typical plaque erected under tree

A tour of these plaques in the late 2000's revealed fascinating insights into the local environment and social history.

1.1 Introduction Continued

As part of the regeneration process a Biodiversity Action Plan was prepared for Ballymun Regeneration Ltd (BRL) in 2008 (Tubridy and Associates, (2008). It contained a habitat map, account of local biodiversity and lists of actions under the following themes:

- Increase awareness and enjoyment
- Manage appropriately areas of high biodiversity value
- To enhance biodiversity in public spaces, publicly owned or institutional lands
- Encourage and support all developers, householders and gardeners to take small actions to enhance biodiversity
- To set targets which can be used to monitor the successful implementation of this plan
- Disseminate results of biodiversity actions to interested individuals, organisations and other communities

BRL later commissioned a review of the implementation of the first BAP in 2014 Mary Tubridy & Associates, (2014) at a time when local development activities came back under the control of Dublin City Council.

The evaluation based on local consultations and fieldwork provided an account of a wide range of positive initiatives which had occurred in Ballymun since 2008.
It also recommended the establishment of a well-funded partnership between the community and local authorities to ensure the satisfactory roll out of biodiversity related activities.

The Facebook page 'Ballymun Wildlife' was set up by Michael Keating in 2015, to show records and pictures of species. Appendix 4 and 5 contains species lists recorded by Michael Keating in various locations in the Ballymun Environs and in the NCT wetlands over that time. All these records have been sent to the National Biodiversity Data Centre.

The objectives of this BAP are to provide an understanding of the value of biodiversity to the community, provide guidelines to improve biodiversity throughout Ballymun but particularly in green spaces and /or to mitigate for developments which could affect biodiversity. This includes using best practices such as Mitigation Hierarchy to avoid and minimise any negative biodiversity impacts, restoring sites no longer used by a project, before finally considering offsetting residual impacts.

Hawthorn.
Caroline Conroy

1.2 Methodology

Preparation of the BAP involved desk research, fieldwork, and consultations with representatives of the community. A face-to-face meeting took place prior to lockdown to agree on the scope of the project. During lockdown two webinars were presented by the principal consultants (Drs Mary Tubridy and Niamh Burke covering: 1) Introduction to Urban Biodiversity 2) Hedgerow Biodiversity and Freshwater Assessment. All were recorded for further usage by the community. The Ballymun Biodiversity Focus Group also carried out a questionnaire-based survey in 2021 to discover community priorities for biodiversity. Responses were received from 31 members of the community and the result are contained in Appendix 8.

Desk top research focussed on an examination of the reports on Biodiversity prepared in Ballymun, (BRL, 2008 and Tubridy and Associates, 2014), records compiled by Michael Keating and interrogation of the National Biodiversity Ireland data bases to provide information on the rare species associated with Santry Demesne pNHA and invasive species. Fieldwork took place between 2019-2021 and involved Dr Mary Tubridy (habitats /flora/ hedgerows), Joe Adamson (ornithology/winter and summer) and Dr Niamh Burke, Coisceim Consulting (freshwater biology). Dr Mary Tubridy compiled plant species lists in all habitats and prepared a habitat map based on Fossitt (2000) and Smith et al (2010).

Dr Niamh Burke, Coisceim Consulting, used a 'citizen science', simplified methodology, developed by Dr Simon Harrison UCC to assess the quality of the Santry River. This method is based on the presence or absence of 6 key aquatic invertebrates. The invertebrates are grouped into two groups of three species each. Group One are indicators of high-water quality and are least tolerant of pollution. Group Two are indicators of lower water quality and most tolerant of pollutants. Each of these species is scored either +1 or -1; depending on whether they are in group 1 or group 2, see Table 1 below. and are least tolerant of pollution. Group Two are indicators of lower water quality and most tolerant of pollutants.

Breading Damselflies.
Michael Keating

Group 1 (*'The Good Guys'*)	**Score attributed**	**Group 2 (*'The Bad Guys'*)**	**Score attributed**
Stonefly	1	Snail	-1
Flattened Mayfly	1	Leech	-1
Green Caddisfly	1	Waterlouse	-1

Table 1: ***Key species in each group and scoring system***

1.2 Methodology Continued

To carry out the assessment, surveyors used a pond net to take 3 kick samples of 30 seconds duration each, at a specified sampling spot. Each of the kick samples were spaced a few meters apart and taken from a shallow riffle/ fast flowing reach of the Santry River.
For each sample taken the overall score was calculated and then the cumulative score for all three samples is added together, see Table 2 below. The score for each kick sample will thus have a range of between plus three and minus 3. The total score for each sample site can then be between +9 and -9, with the following 'traffic light' indicator system applied:

CSSI Score	Water Quality
-9 to -5	Poor
-4 to +4	Moderate
+5 to +9	Good

Table 2: ***Cumulative score levels indicating water quality***

An assessment of water quality also occurred at Ballymun Utd Football Club and Poppintree Park. Methodology used was the citizen science 'Big Pond Dip' methodology as developed by the Freshwater Habitats Trust in the UK (https://freshwaterhabitats.org.uk/get-involved-2/big-pond-dip/dip/)

This assesses the most common families of invertebrates present in non-flowing waters and scores them according to their tolerance to water quality. Twelve groups in total are included in the big pond dip, and scores range from 10 for sensitive species such as dragonfly larvae damselfly larvae and mayfly larvae, a score of 5 is applied to water beetles, water bugs and freshwater shrimp, and the lowest score of 1 is applied to water slaters, water snails, worms, and leeches.

A one-minute 'sweep net' sample was applied to each of the pond sites sampled, with three repetitions in each, and scores averaged over the three samples taken.

The scoring system for ponds is shown in Table 3 below:

Score	Pond Water Quality (WQ)
1 -5	Low (Pond WQ could be better)
6 - 30	Medium (medium to good WQ)
31 -60	High (Pond WQ very good)

Table 3: ***'Big Pond Dip' scoring sustem for ponds***

The 'Big Pond Dip' methodology was used to assess the furrowed ditches at the Ballymun Utd. Football club site and the two ponds in Poppintree Park: The large pond (pond 1) and small pond (pond 2). The CSSI index methodology was applied only to the Santry River at Ballymun.

Joe Adamson carried out a bird survey on two days in February 2021 and April 2021 between the hours of 0900 and 1800. Weather was overcast with occasional light drizzle for the Feb survey and dry and pleasant, with light south-easterly winds for the April survey. The study area, with a particular focus on Poppintree Park was surveyed by systematically walking and recording birds heard and observed. The February survey was considered as representing wintering birds. The April survey represents summer bird diversity. Notes were added to describe the status of all species, which were assessed using Gilbert et al, (2013).

Based on the results of field work by Mary Tubridy a digital habitat map was produced by Donal Storey a GIS specialist.
Mary Tubridy drafted the BAP based on the results of all desk research and fieldwork.

Frog spawn.
Michael Keating

1.3 Results of Desk Research

that limestone underlies soils in Ballymun. With the exception of Poppintree Park and Sillogue (which have been subject to excavation close to the water table) most soils are well drained and highly fertile.

The original vegetation in dry land was a type of woodland containing ash and hazel with a colourful spring flora consisting of bluebell, anemone (Anemone nemorosa), primrose (Primula vulgaris), violet, celandine (Ranunculus ficaria) and orchids, e.g., 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).

Townland names sometimes give an indication of

past land cover. While townland names around Ballymun have been significantly anglicised an examination of Joyce's names of places

(Joyce, 1922) suggests that wetland may have been a particular feature of the area as Ballymun could mean "town of the long hair sedgy place", "the townland of the hedges", "the town of the scrubland" or "the town of Mund". Balcurris could be "the town of the marsh."

1.3 Results of Desk Research Continued

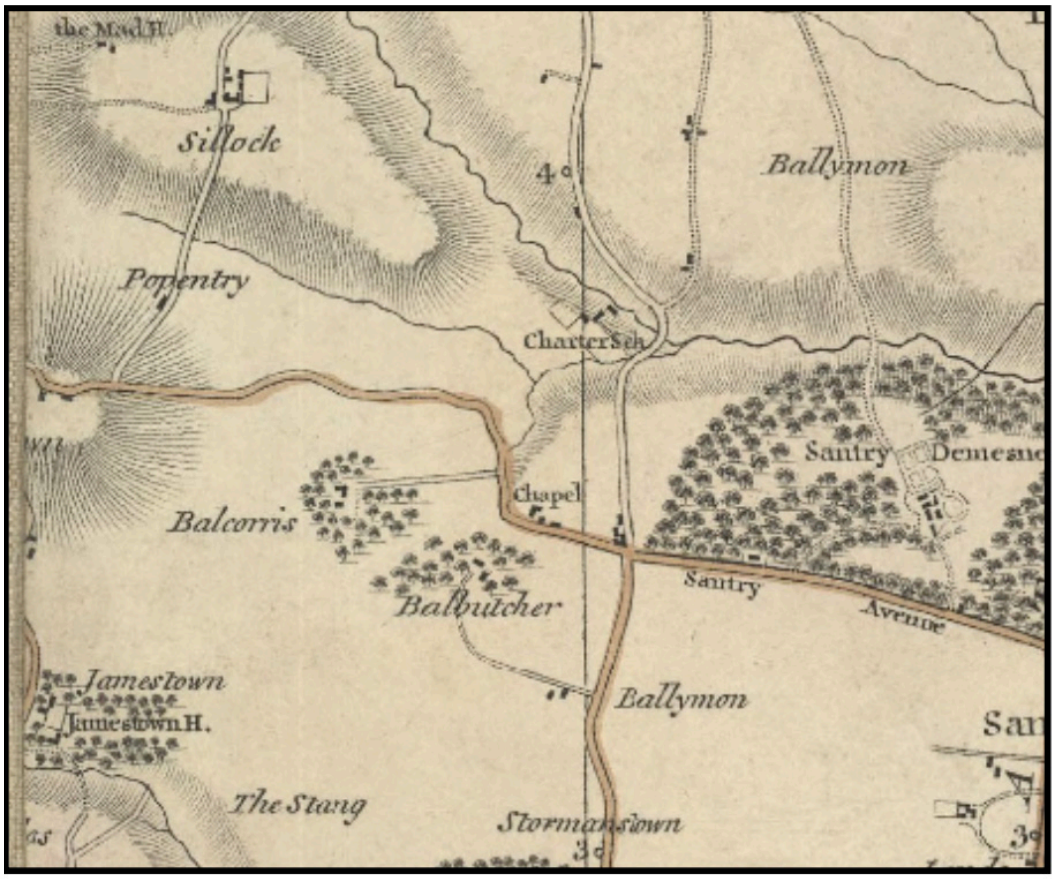


Fig.6: Taylors map of Ballymun 1777

Historic maps provide an indication of the extent of woodlands in the environs of Ballymun in the 18th century.

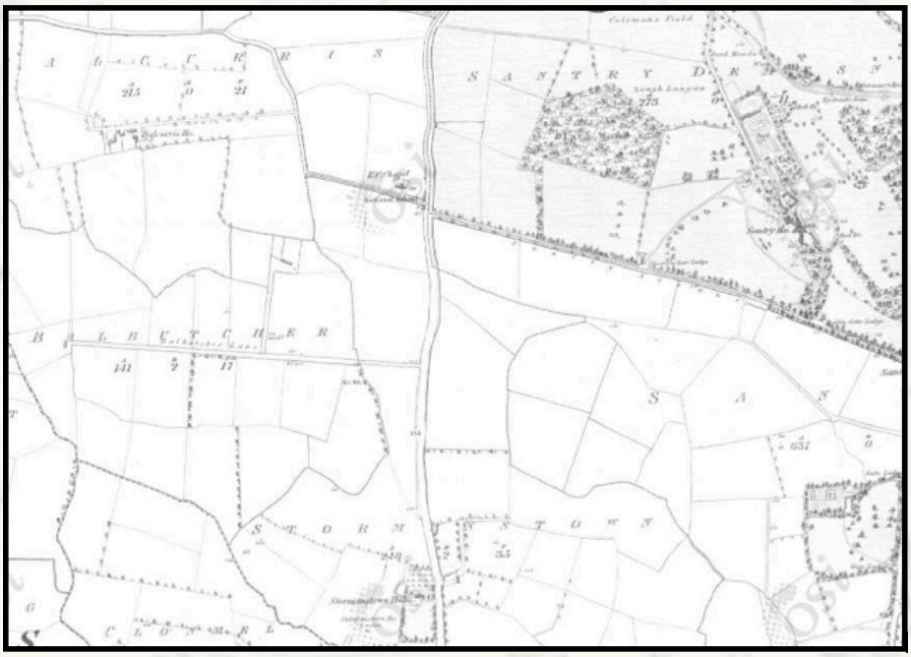
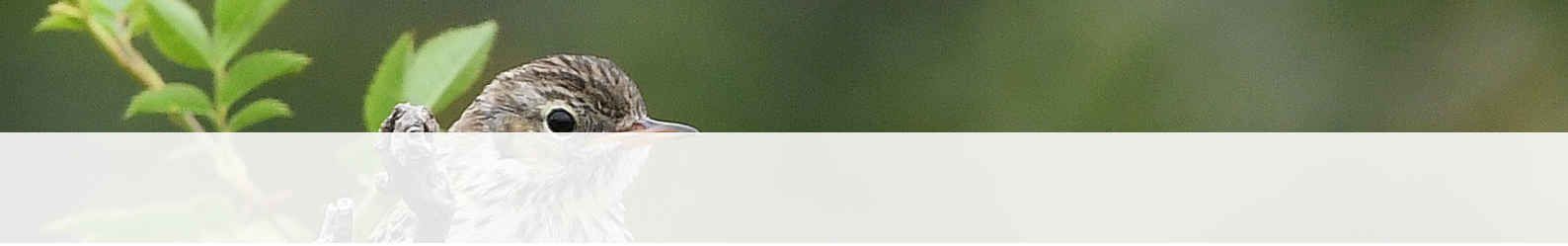


Fig.7: 1st Ed OS map of Ballymun and surrounds 1830.



1.3 Results of Desk Research Continued

More details are provided in the 1st edition Ordnance Survey map (Fig. 7) that are summarised in Table 4.

Site Number	Location Grid reference (ITM or Irish Grid) from centre	What is it?
1	715101.789 740709.582	Old road to west of Ballymun road linking to St Margaret's Road. Tree lined road, still there
2	417831. 914 740654.019	Tree lined lane to west of old road west of Ballymun Road. Small section of this tree-lined land survives.
3	714952.299 740056.721	Tree lined road. Now Balbutcher Lane

Table 4: ***Features of natural history interest shown on 1st ed OS map (Fig.7) and their current status in Ballymun.***

The first detailed map of the area (1st ed. OS map) shows the dominance of woodland in the environs of Ballymun, associated with Santry Demesne.

Elsewhere hedgerows acting as field boundaries were the most important reservoirs of terrestrial biodiversity (Fig. 7).

While the Santry River (although canalized) is the only watercourse now in Ballymun, examination of the Rivers of Dublin (Sweeny, 2017) shows that the area was crisscrossed by tributaries, which ended up in the Tolka (see Fig. 8).

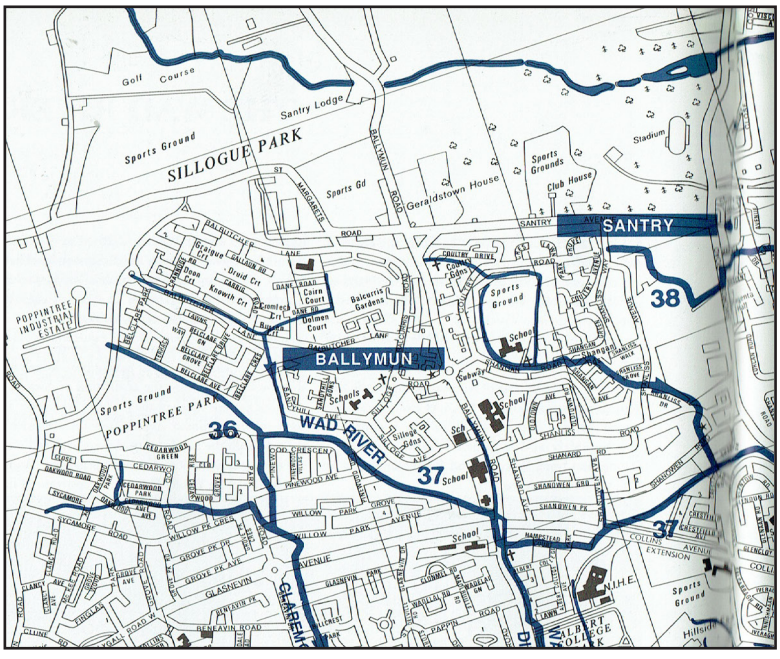


Fig. 8: Rivers in Sweeney's map now all culverted except for the Santry River

1.3 Results of Desk Research Continued

The results of desk research (Table 5) indicated that there were no records of the Hairy St John's Wort in the environs of Ballymun but a considerable risk of one invasive species: Japanese knotweed, occurring.

Species English name	Species Latin name	Distance from Ballymun Km (NBDC mapping)
Hottentot fig	*Carpobrotus edulis*	*>20*
Japanese knotweed	*Fallopia japonica*	*2*
Bohemian knotweed	*Fallopia japonicaXsachalinensis*	>20
Giant knotweed	*Fallopia sachalinensis*	8
Giant rhubarbs	*Gunnera manicata*	*3.5*
Giant hogweed	*Heracleum mantegazzanium*	*>20*
Himalayan balsam	*Impatiens glandulifera*	*3.5*
Himalayan knotweed	*Persicaria wallichii*	*18*
Rhododendron	*Rhododendron ponticum*	*10*

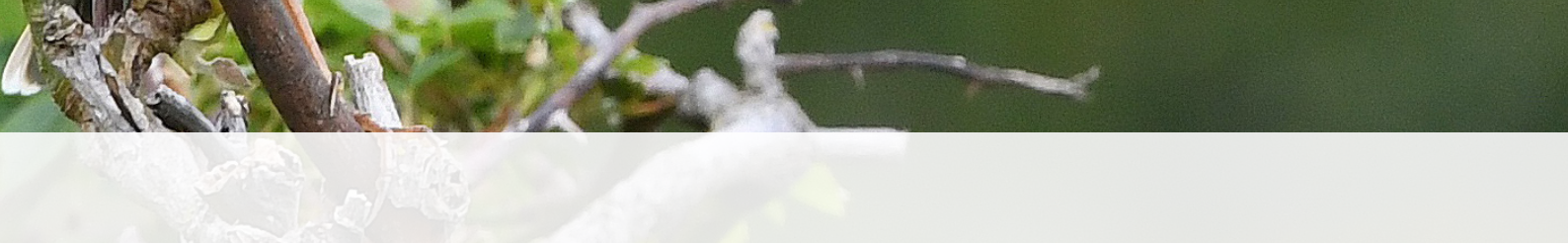
Table 5: ***Invasive species desk research***

Michael Keating's species lists compiled over six years recording (Appendix 4 and 5) suggests the presence of a significant diversity of birds, mammals, and insects in Ballymun and environs. Many of these are protected under Irish and international legislation and conventions.

Fig. 9: Juvenile Meadow Pipit (Red listed). Michael Keating

Fig. 10: Grey Wagtail (Red listed). Michael Keating

The questionnaire survey which recorded views of 31 residents showed particular appreciation of the value of Popintree Park and lands around the M50, other parks and community gardens for biodiversity. Almost all respondents were positive about doing something for biodiversity. There was particular interest in providing habitats for pollinators. Detailed results are in Appendix 8.



1.4 Results of field studies 2019-2021

1.4.1 Introduction

Habitats in Ballymun are shown on Fig. 13. A summary account of habitats in Table 6 is followed by more detailed information about native plants, birds, and freshwater biodiversity in the locality. Original reports provided to Mary Tubridy by Joe Adamson (Birds) and Niamh Burke (freshwater biodiversity) are available on request.

The checklist of plants recorded in 2021 is in Appendix 1 and annotated to distinguish native species.

Appendix 9 titled 'Biodiversity Management: Background information and general guidelines' contains information on the following topics:

- Where is a good place for biodiversity?
- Legal protection for areas and species
- Habitats and how to develop them (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 schools
- Resources needed to support local learning about biodiversity

1.4.2 Habitat Diversity

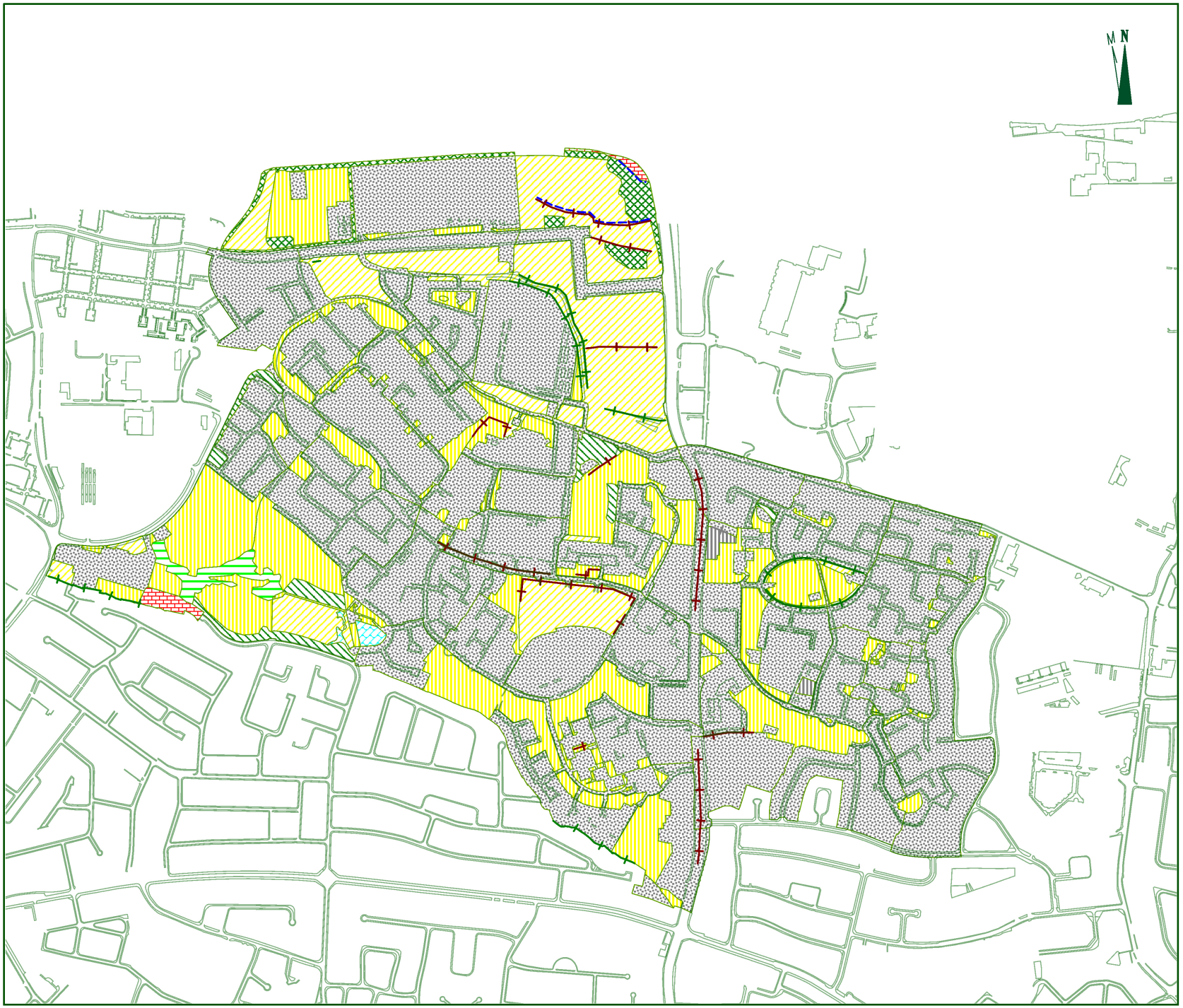
Habitats (total of 15) found in Ballymun include various types of grasslands, woodlands, and wetlands (Fig. 13) seen on page 13.

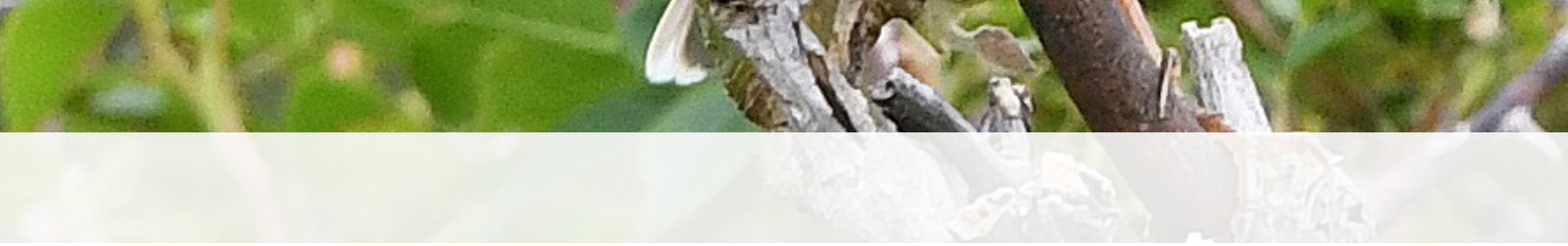
While habitat mapping generally followed conventions, in the case of the attenuation ponds a different approach was taken. Even though none of the attenuation ponds had enough water cover to reach the minimum standard for a wetland (i.e., 50M X 50M) all were identified as the wetland type FL8 (other artificial lakes and ponds) as this was considered a more realistic identification of their relative biodiversity value (See Fig. 11).

Fig. 11: Attenuation Pond

Fig. 12: Habitat BL1 from limestone

Fig. 13: Habitat Map





1.4.2 Habitat Diversity Continued

While none of the habitats in Ballymun are rare types listed in the EU Habitats Directive some are locally rare including Hedgerows (WL1) and Drainage Ditches (FW4).

Table 6 below contains an assessment of the rarity of the habitats found in Ballymun and summarises their general interest for biodiversity.

Table 6: Habitats in Ballymun and summary of their general biodiversity interest

Habitat name	Fossitt Code	Rarity (in the context of Dublin on a scale from 1-5) 1= common, 5=very rare	Biodiversity Interest
Horticultural land (i.e., community gardens)	BC2 BC4	4	Good for pollinators
Flower beds and borders (Various locations)	BC4	1	Small flower beds are in parks, under trees in streets and private gardens of varying value for biodiversity. Best examples have perennials of value to pollinators.
Buildings and artificial surfaces (i.e., roads)	BL3	1	Of low biodiversity value
Stone walls e.g., At St Pappins Church where the old National School was located (below the Better Ballymun mural)	BL1 (Not shown on habitat map due to small area)	4	Has two fern species: maiden hair spleenwort and wall rue, ivy leaved toadflax and ivy.
Recolonising Bare Ground (Which is revegetating naturally)	ED3	1	Interesting to observe natural colonisation by native plants which are important for pollinators.
Drainage ditches	FW4 (Technically all watercourses are drainage ditches FW4's as their course has been modified). Only unmodified water courses are FW1's	4	

1.4.2 Habitat Diversity Continued

Table 6: Habitats in Ballymun and summary of their general biodiversity interest (continued)

Habitat name	Fossitt Code	Rarity (in the context of Dublin on a scale from 1-5) 1= common, 5=very rare	Biodiversity Interest
Other artificial lakes and ponds **Poppintree ponds and all attenuation ponds**	FL8	2	
Amenity grassland improved **(In green spaces throughout)**	GA2	1	Generally poor plant and animal biodiversity as a result of intensive management. Occasionally good biodiversity if original grassland is retained and management lax allowing for survival of forbs (non-grass herbs)
Dry Meadows and grassy verges **(Unmown grasslands in fields awaiting redevelopment)**	GS2	4	Good for pollinators as almost all vegetation is native. Plants are allowed flower and set seed. Excellent GS2 in undeveloped land in Ballymun.
(Mixed) Broadleaved woodland **Poppintree Park**	WD1	3	
Scattered Trees and Woodland **Poppintree Park principally but also in Coultry and Balcurris Parks**	WD5	3	
Scrub	WS1	4	Near M50. Good for birds and pollinators dominated by Bramble and Hawthorn.
Ornamental /non-native scrub	WS3	2	Large gardens
Hedgerows	WL1	5	Fields near M50, old road between Ballymun Road and St Margaret's Road and off Jamestown Road south of Parkview
Treelines	WL2	3	Various streets

1.4.3 Habitat and Plant Diversity

Fieldwork in Ballymun has revealed the presence of fifteen habitats mapped to Level 3; fifty-one native plants and nineteen non-natives established in the wild. One invasive alien Japanese knotweed was found in several locations.

Habitats of particular interest are the WL1's (Hedgerows), attenuation ponds (FL8's) and Drainage Ditches (FW4).

Hedgerows have survived near the M50, some of which are associated with fields and a drainage ditch. This hedgerow dominated landscape which is typical of all farmlands is almost extinct in Dublin.

Features of the flora of particular interest are:

Presence of the rare stonewort Tolypella intricata in temporary ditches in the field west of Ballymun United Football Club (Fig. 1). This specimen was found by Mary Tubridy and sent to Irish and UK experts on stoneworts (Dr. Cilian Roden and Nick Stewart) for verification. These experts confirmed that this species had been common in the canals, that there had been a mystery about its origins and this record from Ballymun suggests that it arrived from this location (probably transported by birds). An examination of historic records showed there are a couple of off-canal records around north Dublin: sand pits near Drumcondra 1881 and ditches near the Tolka River pre-1878.

Because of the rarity of this specimen, it was suggested by these experts that a note be sent to Irish Botanical News or Irish Naturalist Journal, journals commonly used to communicate items of Irish biodiversity interest nationally and internationally.

The presence of some mature trees is of interest.

These are mainly sycamore (non-native), but ash was also found. As ash will be affected by ash die back it is likely that the locality will soon lose all its ash trees.

Associated with the project 'A map to care', individual specimens of the following species were planted in public spaces in Ballymun in the early 2000's: oak, wild cherry, white willow, ash, London plane, evergreen or holm oak, beech, copper beech, birch, lime, maple, cedar, rowan, Scots pine and Sophora japonica. While trees have survived some of the interpretative panels associated with stories provided by tree sponsors are now either worn or missing.

Japanese knotweed is present in several locations in Ballymun. Its presence is not unexpected given its distribution locally.

Fig. 14: Bright green stems of Japanese Knotweed

Fig. 15: Hedgerow in Ballymun

1.4.4 Bird Diversity

A total of thirty-six species were recorded in winter, of which eleven were Amber-listed due to their reduction in abundance in Ireland over the past twenty-five years. The remaining species are Green Listed.

The record of Water Rail was notable and coincided with a minor influx of this species at other sites in the Dublin area during the same period.

There were no observations of Brent Geese Branta bernicla hrota in Poppintree, or other playing fields within the area of survey, during the survey dates. This species and oystercatcher have been observed in Poppintree Park on previous visits, where they feed on the grass on the playing fields.

The ponds within the wetland at Poppintree can hold good numbers of waterfowl in winter. Other duck species likely to be recorded include Teal Anas crecca.

A total of twenty-eight species were recorded during the summer bird survey, of which nine were Amber-Listed. One Red-Listed species, namely Meadow Pipit was observed.

Several wetland species were observed to be breeding in Poppintree wetland, namely Tufted Duck, Little Grebe, and Coot, Moorhen, while not observed during the survey period, is likely to be present and breeding.

Species not observed during the survey visit included Hirundines, such as Swallow Hirundo rustica, House Martin Delichon urbica, and Sand Martin Riparia riparia. They are likely to be present in summer, hawking over the ponds at Poppintree.

Likewise, Swift Apus apus is likely to be present overhead in small numbers from mid-May onwards, throughout the site but mainly more open areas.

Fig. 16: Sparrowhawk in Ballymun. Michael Keating

Fig. 17: Chiffchaff eating lunch in Muck and Magic Community Garden. Michael Keating

1.4.5 Freshwater Biodiversity

A total of four sites were sampled in the Ballymun area:

- Santry River near M50 junction 4
- Ballymun Utd. Football club site
- Poppintree Park large pond (pond 1)
- Poppintree Park small pond (pond 2)

Survey work on the Santry River indicates that the water quality is 'Moderate'. In comparison with the EPA's WFD water quality ecological index for the Santry River at this location (Santry _020), the WFD 'Status' is unassigned yet. The downstream reach reported for the most recent WFD cycle is 'Poor '.

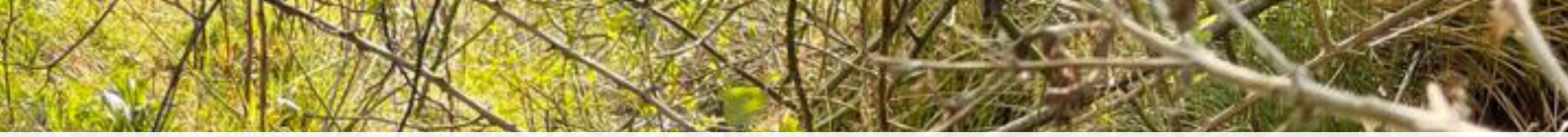
Water quality in the ditches in field west of Ballymun United Football Club grounds was shown to be of particularly decent quality.

The ponds were present in an area of deeply furrowed land, within which the depressions had filled with water. The aquatic life was abundant with many frog tadpoles present, abundant emergent plants, and algae. The rare stonewort was found in these ditches. Invertebrates found in this habitat include Caddis Larvae, Alderfly Larvae, Dragonfly Larvae, Damselfly Larvae, Mayfly Larvae, Water Beetle, Water bug, Freshwater Shrimp, Pond Skater, Water Slater, Water Snail, Leeches/ worms. Information about the water quality should be added to the account of the stonewort.

However, water quality in the large Poppintree Pond (Pond 1) was discovered to be poor based on the presence of less tolerant species, water snail and leeches/worms. In contrast to this pond, water quality was medium to good in the smaller pond (Pond 2) adjacent to this and supported a greater range of species such as caddis larvae, freshwater shrimp, and pond skater.

Fig. 18: Water scorpion in Ballymun. Michael Keating

Fig. 19: Section of the Santry River



PART 2: BIODIVERSITY ACTION PLAN

2.1 Introduction

This section of the document contains detailed suggestions for initiatives in Ballymun to protect and enhance biodiversity. Ideally consideration of these initiatives should be informed by knowledge of the current systems used to manage biodiversity which are explained in Appendix 9.

2.2 Biodiversity SWOT

A SWOT (strengths, weaknesses, opportunities, and threats) analysis provides a rationale for the biodiversity action plan.

Strengths

Habitats

- Farmed landscape near M50 with hedgerows, scrub, and small section of Santry River of value to native biodiversity. Within Dublin City farmed landscapes have almost disappeared except in Cherry Orchard and at Hill Side Farm, Drumcondra.
- Hedgerows bordering both sides of old St Margaret's Road which are ancient.
- Length of ancient hedgerow west of Poppintree Park in new housing estate, Parkview apartment complex and Cedarwood Green.
- Poppintree Park is good for birds and allows children to interact with certain types of wildlife.
- Attenuation ponds near M50 good for wetland biodiversity and have potential for improvement and interpretation.
- Some of the parks established twenty years ago still function well for biodiversity.
- Proximity of Ballymun to large expanse of planted woodland (Santry woodlands) and semi-natural wetlands beside the NCT testing centre.

Species

- Species of interest include mature native trees in hedgerows in farmed landscape as well as red and amber listed birds and frogs. See Appendix 6 for the known distribution of the common frog breeding sites in Ballymun.
- The presence of a rare stonewort in ditches west of Ballymun Utd. Football Club is particularly noteworthy.

People

- Presence of people in community with enthusiasm for learning about and improving biodiversity. The Ballymun Biodiversity Focus Group administered survey confirmed this interest. See results of questions 2 and 3 in Appendix 8.
- Community gardens are evidence of community-based initiative to work together and provide good spaces for biodiversity and food production.
- Probable interest among community/parks officials in landscaping for biodiversity based on previous experience of parks development in this locality. Poppintree Park is a recent winner of a Green Flag.
- Various community groups engaged in biodiversity actions. Local schools engaged with biodiversity actions including tree planting, litter picks, learning about biodiversity.

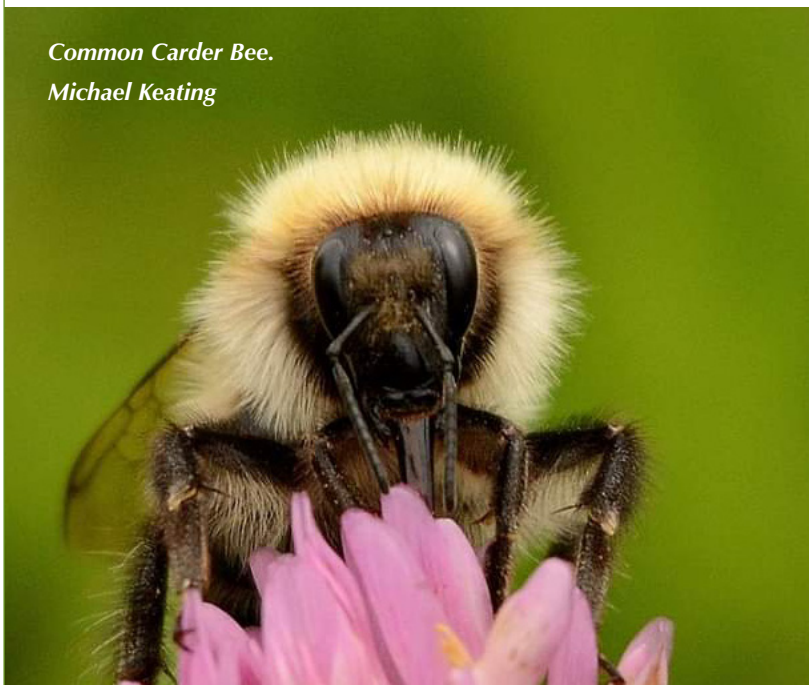
Fig. 20: Large Carder bees feeding on knapweed. Michael Keating

Fig. 21: Nettle and Ivy most important native plant species in Dublin City. Ivy is very common in Ballymun

Weaknesses

- Habitat diversity limited in most green spaces to mainly GA2 (amenity grassland).
- Some of the parks put in twenty years ago do not function well for biodiversity or amenit as resources for management have been reduced since local government was re-organised. Knowledgeable personnel in the Parks Dept have been redeployed elsewhere.
- Some signage on trees put in twenty years ago for the 'A map to care' project are poorly managed, and records are no longer available.
- Actions relied on short term projects which did not lead to long term improvements in biodiversity i.e., wildflower area beside the now demolished Ballymun shopping centre.
- Occasional poor communication between community and DCC, e.g., tree felling at St Joseph's Church.
- DCC Bylaws against paving over gardens completely are not being enforced.
- Administration of Ballymun's last semi-natural green space shared between Dublin City Council and Fingal County Council.

Lack of resources (human and financial) dedicated to Ballymun by Dublin City Council significantly lower now compared to when BRL was around.



Common Carder Bee.
Michael Keating

2.2 Biodiversity SWOT Continued

Opportunities

- Establish the Ballymun Biodiversity Action Group as a local network to implement the BAP.
- Former farmed landscape to be identified as a local nature reserve.
- Hedgerow near housing estate off Jamestown Road, Poppintree park west road rejuvenated, rubbish removed and interpreted.
- Improve Ballymun as a corridor for wildlife from Santry woodlands and NCT wetlands.
- Write up account of rare stonewort to promote Ballymun as a site of importance for biodiversity to naturalists.
- Area beside Poppintree ponds could be improved for birds, by scraping out deep holes.
- New habitats could be established in public green spaces such as shrubberies and woodlands, a variety of different types of small pockets of forests should be planted.
- Submissions could be made to County Development Plan (on hedgerow etc) and the preservation of linking green spaces within Ballymun as steppingstones for terrestrial and aquatic wildlife.
- Exploit potential for networking with other community-based groups and National Biodiversity Data Centre in relation to local biodiversity.
- Promote for co-operation between Fingal County Council and Dublin City Council on the management of Green Infrastructure along the boundary of the two local authorities.
- Interpret sites of biodiversity interest, i.e., attenuation ponds, hedgerow remnants etc
- Establish Ballymun Field Club (+ gardeners) to carry out citizen science projects / small scale practical work.
- Build up a library of surveying equipment for community use.
- Develop a biodiversity trail through Ballymun.
- Develop The City Farm, Ballymun.
- Ensure new buildings are designed to support biodiversity through appropriate landscaping and installation of artificial habitats to benefit birds and bats.

Fig. 22: Pollinator about to go into action. Michael Keating

Fig. 23: Frog spawn, Ballymun. Michael Keating

Threats

- Pressure from various developments including housing on all undeveloped lands and green spaces.
- Lack of high value given to biodiversity and green infrastructure by public and authorities.
- Introduction of non-native plant and animal species such as fish into Poppintree Ponds and its poor water quality (large pond only).
- Climate change causing changes in weather affecting pollinators

2.3 Biodiversity Actions:

The following detailed actions can be undertaken by the individual, the Ballymun community and the local authorities.

Examples of groups who can undertake these actions are: Dublin City Council; Fingal County Council; local land developers; private and public landowners; Ballymun Tidy Towns; Local Environmental Groups; Local Resident Groups; Ballymun residents; Senior Citizen Centres; Local Primary and Secondary Schools; Local Parish Churches; Ballymun Businesses; Ballymun Community Centres; Rediscovery Centre; Global Action Plan; Ballymun Regional Youth Resource; Poppintree Youth Project; Ballymun Men's Shed; City Farm & Community Gardens, Ballymun; local after school Youth Groups; local Scouts Troop; Axis theatre; Ballymun community gardens and local sports clubs.

The Ballymun Biodiversity Action Group (BBAG) is a core group of individuals who can offer advice to groups who want to undertake any actions within the Ballymun Biodiversity Action Plan. The BBAG is open to anyone who has an interest in Ballymun biodiversity and wants to play their part in retaining, enhancing, and educating the public about the importance of biodiversity. The group can be contacted via email at ballymunbiodiversityaction@gmail.com.

Common Blue Butterfly. Michael Keating

Hummingbird Hawkmoth. Michael Keating"

Cream Spot Ladybird. Michael Keating

2.3 Biodiversity Actions Continued

Objective 1: Making Ballymun more biodiversity friendly

All types of land can be used to increase the levels of biodiversity including built features and green spaces. Each landowner whether public or private can also play their part in enhancing their lands for biodiversity.

Objective 1a: Retain and enhance the biodiversity interest in Ballymun	
Recommended Actions	**Timescale**
A. Initiate a pollinator friendly mowing regime in the open green spaces by reducing the frequency of mowing as recommended in the All-Ireland Pollinator Plan 2021-2025 to facilitate the flowering of short wildflowers such as clover which is an important food source for wild bees.	1-2 years
B. Explore opportunities to manage roadside verges around the area and on approach roads as native wildflower rich verges.	1-2 years
C. Ensure DCC Community Plant donation project uses pollinator friendly perennial/ biennial plants only.	1-2 years
D. Ensure the Ballymun Tidy Towns "Ballymun in Bloom" event sells pollinator friendly/perennial/biennial, plants only.	1-2 years
E. Explore Community Composting projects for green waste and leaf mould cages in schools/church grounds.	1-3 years
F. Locations of invasive alien plants species, '*Fallopia japonica',* will be mapped and eradication actions will be implemented in conjunction with the local authorities.	1-3 years
G. Land to the west of Ballymun United Football Club will be surveyed for biodiversity and the owner encouraged to manage as a local nature reserve.	1-3 years
H. Improve biodiversity in attenuation ponds in conjunction with the Herpetological Society of Ireland and Transport Infrastructure Ireland. This would include researching the feasibility of using the attenuation pond nearest Santry Park as a living classroom. See Appendix 7.	1-3 years
I. Create Pocket Parks in the Community - identify small pieces of land that would be suited to this project. Link in with the DCC Community dept. Greener Neighbourhood's scheme.	1-3 years

Recommended Actions	Timescale
J. Develop a Ballymun Tree Plan. Plant diverse types of forests in suitable locations in Ballymun (traditional /food/ Miyawaki forest models).	1-5 years
K. Plant a native thorny hedgerow/ climbers / edible hedge along walls, around the perimeter of buildings and boundary fences.	1-5 years
L. Conduct a hedgerow resilience project by augmenting existing hedgerows in the surrounding landscape with new trees such as Hawthorn, Blackthorn, Hazel, Wild Pear, Crab Apple, and any other beneficial hedgerow plants.	1-5 years
M. Include Biodiversity Mitigation Actions for future builds such as the Mitigation Hierarchy which uses Avoidance / Minimisation / Restoration / Offset to ensure no net loss of biodiversity. Make certain Environmental Impact Studies are produced during the correct time of year.	1-5 years
N. Promote co-operation and communication protocols between Fingal County Council and Dublin City Council on the management of the Green Infrastructure along the boundary of the two local authority areas.	1-5 years
O. Locations for habitat improvement in publicly owned land will be identified such as, **1**) wildflower meadow (do not mow, let it grow areas) **2**) native thorny hedgerow along boundary walls/fences to improve habitat for small birds **3**) community edible gardens which include orchard trees, and edible hedge around the perimeter of public buildings and edible beds, **4**) pocket forests in conjunction with DCC parks department, and DCC's Greener Neighbouring Scheme.	1-5 years
P. New Community Gardens - identify suitable pieces of land that would add a benefit to the community, especially food growing.	3-5 years
Q. The M50 lands and the old St Margaret's Road to be identified as a local nature reserve and heritage site.	3-5 years
R. Run a 'Free Garden Tree Giveaway' each year on a Saturday morning in Feb/ March. Tree mix (whips only) to include native stock. Information on tree care to be included.	3-5 years
S. Explore using Meakstown Stables composted horse manure, to supply community groups once a year in the autumn as natural fertilizer / mulch.	3-5 years

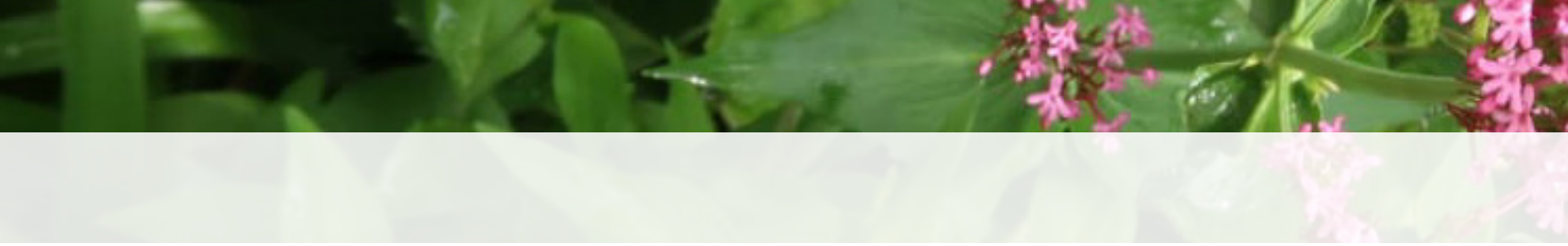
2.3 Biodiversity Actions Continued

Objective 1: Making Ballymun more biodiversity friendly

Objective 1b: Deliver species-specific conservation projects	
Recommended Actions	**Timescale**
A. Install Swift boxes on suitable locations in the area. This could be delivered as part of the environment Non-Government Organisation (NGO) project work. Lobby for Swift bricks to be included in future developments.	1-5 years
B. Encourage the planting of trees, shrubs, and hedges to create habitats for nesting birds.	1-5 years
C. Encourage the community to feed birds every winter through social media and education projects.	1-5 years
D. Install Hedgehog retreats around the area, ideally in conjunction with the schools/churches.	1-5 years
E. Install bat boxes in suitable locations.	1-5 years
F. Survey and map the old trees in Ballymun with a view to conservation.	1-5 years
G. Participate in a Japanese knotweed control project. The project should include other Invasive Species recorded.	1-5 years
H. Research and communicate the value of fungi to the biodiversity in the area.	3-5 years

Fox.
Michael Keating

Common Buzzard.
Michael Keating



Objective 2: Raising awareness of local biodiversity & how to protect it

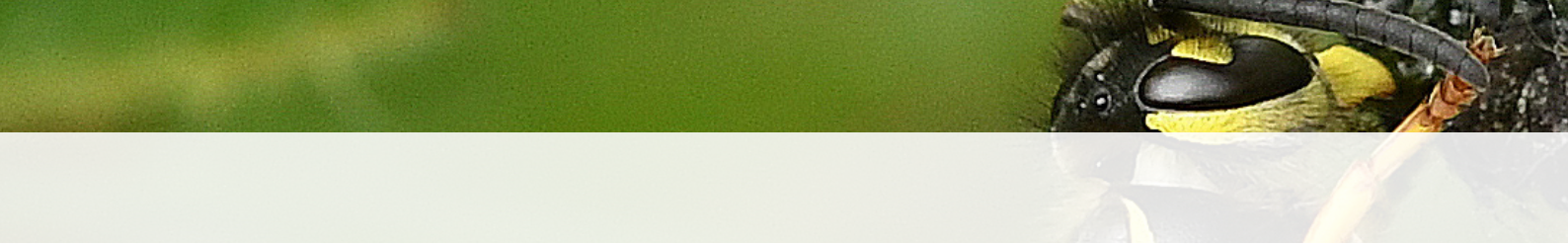
It is important to raise awareness so that the public, schools, community / residential groups, and businesses know how to help our wildlife.

Objective 2: Improve awareness within the community and schools of local biodiversity and to understand the need to conserve it	
Recommended Actions	**Timescale**
A. Launch the Ballymun Biodiversity Action Plan and the Ballymun Biodiversity Action Group.	1-2 years
B. In the annual Ballymun Tidy Towns "Ballymun in Bloom" event, set up an information stall about the Ballymun Biodiversity Action Plan.	1-2 years
C. Create a Spring/Summer and Autumn/Winter leaflet with simple and easily read information on what residents can do in their own gardens and communal areas. This could be in collaboration with other local groups such as Tidy Towns to get this information to the widest population locally.	1-2 years
D. Implement a policy of no Invasive plant species in new planting schemes in the area.	1-2 years
E. Ensure the different sectors within the community have copies of the relevant All-Ireland Pollinator Plan resource guides e.g., schools, sporting organisations, faith communities etc.	1-3 years
F. Engage with DCC on any new developments in the area that they should incorporate best practice green infrastructure design principles and biodiversity features (e.g., Swift bricks / Living Walls). This should ideally be done at the planning stage. Where plans have developed beyond planning, engage with the developers about the benefits that green infrastructure design can deliver for them.	1-3 years
G. Develop good relationships with relevant statutory bodies and NGOs. Examine Appendix 9 for information about statutory and non-statutory organizations local and national concerned with biodiversity which could support initiatives in Ballymun. Select an NGO which has local activists.	1-3 years

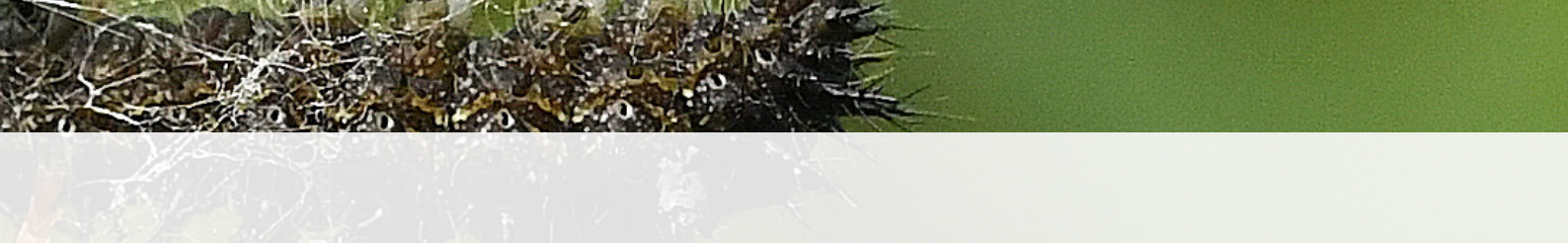
2.3 Biodiversity Actions Continued

Objective 2: Raising awareness of local biodiversity & how to protect it

Recommended Actions	Timescale
H. Efforts will be maintained to obtain the results of the *'A map to care'* project with the objective of developing a map-based app containing information about trees and their original inscriptions on their accompanying plaques.	1-3 years
I. Explore organising a Red/Amber bird species information evening to highlight the importance of the area for rarer bird species.	1-3 years
J. Create a Ballymun Biodiversity Action Plan Booklet.	1-3 years
K. Engage with the 'Heritage Keepers' a pilot program run by Burren Beo to train community facilitators / local teachers. This project looks at and raises awareness of the cultural, natural, and built heritage of an area.	1-3 years
L. Explore installation of interpretation posts / signs. These can cover the following topics: wildflower meadows, woodland plants, animals, and local cultural and built heritage.	1-5 years
M. Run a minimum of two wildlife related events (e.g., walks, talks, workshops) each year. They should include A half day practical workshop on the traditional uses of plants, e.g., Dandelions. This ties in with the idea of changing people's attitudes to 'weeds' and the need to control them using herbicide. This could also include a guided tour of Poppintree Park.	1-5 years
N. Use social media to raise awareness of local biodiversity and conservation issues within the community. Post links to the All-Ireland Pollinator Plan guides 'regularly' to all local social media.	1-5 years
O. Hold a Bat awareness event, erect boxes in partnership / conjunction with the Dublin Bats Society.	1-5 years
P. Host an All-Ireland Biodiversity Plan information event.	1-5 years



Recommended Actions	Timescale
Q. Hold a BioBlitz event during Biodiversity Week.	1-5 years
R. Introduce biodiversity themes in local arts programs.	1-5 years
S. Conduct a Community Biodiversity Awareness survey in years 1 and 5 of the Ballymun Biodiversity Action Plan.	1-5 years
T. Run Sustainable Gardening Courses for the community with an emphasis on chemical free and biodiversity friendly gardening. This will help disseminate information on how using chemicals in our gardens has a negative impact on our pollinators and water.	1-5 years
U. Support the local schools with wildlife events / activities. Where possible this should use the different areas of habitat on the school grounds. This can be a wildlife walk, talk, or workshop.	1-5 years
V. The community will be encouraged to feed birds every winter and engage with citizen science projects described in Appendix 9 of the BBAP.	1-5 years
W. Explore the potential for a looped biodiversity / heritage walk around the area connecting various sites of natural, built, and cultural heritage including trees and areas of high biodiversity. Any trail should include interpretation of local biodiversity.	3-5 years
X. Explore the use of the old St Margaret's Road as a part of a walking trail having an amenity, educational, heritage as well as a biodiversity value to the local community. This road is one of the few parts of Ballymun that still exits prior to the development in the 1960's. It is part of Ballymun's living heritage.	3-5 years
Y. If resources allow, signage will be provided in school grounds to maximise outdoor learning about biodiversity in the school grounds. This signage could be created by the pupils as part of art/woodwork class activity.	3-5 years
Z. In the long term a school educational programme will be developed, in each school, focusing on local biodiversity, e.g., birds, mammals, insects, bats, in collaboration with interested teachers and parents.	3-5 years



2.3 Biodiversity Actions Continued

Objective 3: Collecting evidence to track change & measure success

To ensure that our actions are making a difference we need to use the baseline data in the BAP and then measure our success or lack thereof against this. This ongoing data can be gathered through regular surveys and Citizen Science efforts.

Objective 3: Using the BBAP as a baseline for local biodiversity, track changes over time	
Recommended Actions	**Timescale**
A. Set up a sub-committee that will be responsible for conducting an annual review and steering the delivery of this Biodiversity Action Plan. This should include representatives of different stakeholders within the community.	1-2 years
B. Conduct a tree survey using the Curio app.	1-3 years
C. Review and survey existing bioswale(s) (SUDS) Coultry and Balcurris Parks.	1-3 years
D. The land to the west of Ballymun United Football Club to be surveyed and identified as local nature reserve.	1-3 years
E. Monitor the Swift, Meadow Pipit, and other red listed species population numbers in the area annually.	1-5 years
F. Monitor any newly installed bird/bat boxes for signs of activity.	1-5 years
G. Develop at least 2 bumblebee transects in the area and submit records to the National Biodiversity Data Centre.	1-5 years
H. Develop at least 2 butterfly transects in the area and submit records to the National Biodiversity Data Centre.	1-5 years
I. Conduct hedgehog surveys in community gardens, linking in with the Irish Hedgehog Survey.	1-5 years
J. Conduct Bat surveys in conjunction with the Dublin Bat Group.	1-5 years

Recommended Actions	Timescale
K. Establish a comprehensive distribution map for common frogs which would include generating a breeding population size estimate for the individual sites. This would facilitate a conservation plan for common frogs for the area.	1-5 years
L. Record all biodiversity records onto the National Biodiversity Data Centre. Encourage other members of the community to do likewise. Record and map all biodiversity actions delivered.	1-5 years
M. Conduct a full detailed review of the Action Plan in the final year. Plan for the updating / renewing of a subsequent 5-year plan to run from 2026-2030.	5 years

Common Wasp.
Michael Keating

Orange Tip Butterfly.
Michael Keating

Kestrel.
Michael Keating

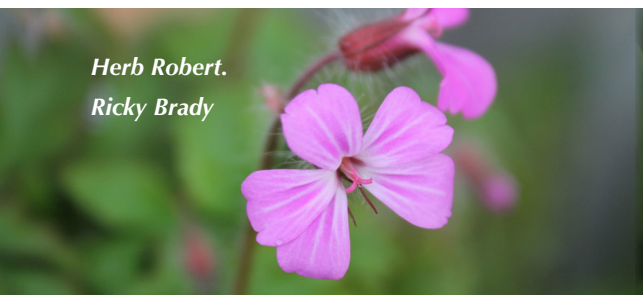
Nettle Flowers.
Sarah Rose Farrell

2.3 Biodiversity Actions Continued

Objective 4: Build local capacity to manage & record biodiversity

The following actions aim to ensure that we have the resources and capacity to carry out the actions identified in Objectives 1-3.

Objective 4: Build the capacity within the community to manage and record biodiversity	
Recommended Actions	**Timescale**
A. Identify all wildlife groups/individuals active in the area then make contact and offer help / partner on local projects.	1-2 years
B. Create an email list of local volunteers who can be called upon for practical conservation volunteering events throughout the year.	1-2 years
C. Build up a stock of biodiversity educational resources for use by the wider community. Liaise with the local library. See Appendix 10.	1-2 years
D. An event to launch the 'Ballymun Biodiversity Action Plan' will be held in the locality to celebrate its production and promote its delivery.	1-2 years
E. The record of the rare stonewort (*Tolypella intricata*) found in the field west of Ballymun United Football club grounds will be published in collaboration with locals and academics responsible for its discovery and identification. This will help improve the profile of Ballymun regarding its richness of local biodiversity.	1-2 years
F. Identify sources (sites) of native wildflowers as places for community seed collections, including adjacent doner sources.	1-3 years
G. Install bird hides / viewing platforms in areas of high species levels e.g., Poppintree Park, M50 lands, attenuation ponds, community gardens.	1-5 years



Herb Robert.
Ricky Brady

Clover.
Sarah Rose Farrell

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Appendix 1 Checklist of plants recorded by Mary Tubridy 2021

Latin name	Common name	Irish Name	Status N= Native NN= Non-native	Habitat (s)
Acer pseudoplatanus	Sycamore	Seiceamoir	NN	WL1
Aesculus hippocastanum	Horse chestnut	Crann cno capaill	NN	WL1
Agrostis tenuis	Bent grass	Feorainn mhin	NN	GS2
Allium triquetrum	Ramsons	Glaschreamh	NN	GS2
Alnus glutinosa	Alder	Fearnóg	N	GS2
Angelica sylvestris	Angelica	Gallfheabhrán	N	FW4
Anthoxanthum odoratum	Sweet vernal grass	Fear cumhra	N	GS2
Anthriscus sylvestris	Cow parsley	Peirsil bhó	N	WS1
Arrhenatherum elatius	False oat grass	Coirce clumhach	N	GS2
Arum maculatum	Lords and Ladies	Cluas chaoin	N	WL1

Appendix 1 Checklist of plants recorded by Mary Tubridy 2021 *(continued)*

Latin name	Common name	Irish Name	Status N= Native NN= Non-native	Habitat (s)
Betula pubescens	Birch	Beith gheal	N	WL1
Brachpodium sylvaticum	False brome grass	Bromas breige	N	WL1
Buddleja davidii	Butterfly bush	Tor an fheileacain	NN	WL1
Cardamine pratensis	Lady's smock	Biolar greagain	NN	GS2
Cirsium arvense	Creeping thistle	Feochadan reatha	N	GS2
Convolvulus arvensis	Field bindweed	Ainleog		WL1
Cornus species	Dogwood	Conbhaiscne	NN	WS3
Cotoneaster species			NN	WS3
Crataegus monogyna	Hawthorn	Sceach gheal	N	WS1
Cytisus scoparius	Broom	Giolcach shleibhe	N	WS3
Dactylis glomerata	Cocksfoot Grass	Garbhfhear	N	GS2
Dipsacus fullonum	Teasel	Leadan ucaire	N	GS2
Equisetum arvense	Horsetail	Scuab eich ghoirt	N	GS2
Fagus sylvatica	Beech	Fea	NN	WL1
Fallopia japonica	Knotweed		NN	In field near M50 and beside old St Margaret's Road
Ficaria verna	Lesser celandine	Gran arcain	N	WL1
Filipendula ulmaria	Meadowsweet	Airgead luachra	N	GD2
Fraxinus excelsior	Ash	Fuinseog	N	WL1
Galium aparine	Rob run the hedge, goose grass	Garbhlus	N	WL1
Glyceria species	Flote grass	Milsean uisce	N	FW4
Hedera helix	Ivy	Eidhnean	N	WL1
Heracleum sphondylium	Hogweed	Feabhran	N	GS2
Holcus lanatus	Yorkshire fog gras	Fear an chin bhain	N	GS2

Appendix 1 Checklist of plants recorded by Mary Tubridy 2021 *(continued)*

Latin name	Common name	Irish Name	Status N= Native NN= Non-native	Habitat (s)
Iris pseudocorus	Yellow flag	Feileastram	N	GS2
Juncus species	Rush	Luchair	N	GS2
Lamium purpureum	Dead nettle	Caomhneantog dhearg	NN	WL1
Lathyrus pratensis	Meadow vetchling	Peasairin bui	N	GS2
Lolium perene	Rye grass	Seagalach buan	N	GS2
Lotus corniculatus	Birds foot trefoil	Crobh ein	N	GS2
Malva sylvestris	Common mallow	Lus na meal Muire	N	GS2
Nasturtium species	Watercress	Biolar	N	Drainage ditch
Petasites hybridus	Butterbur	Gallan ban	N	GS2
Plantago lanceolata	Ribwort plantain	Slánlus	N	GS2
Potentilla anserina	Silverweed	Briosclán	N	GS2
Potentilla reptans	Creeping cinquefoil	Cuig mhear Mhuire	N	GS2
Primula veris	Cowslip	Bainne bo bleachtain	N	GS2
Primula vulgaris	Primrose	Sabhaircin	N	GS2
Prunella vulgaris	Selfheal	Duan ceannchosach	N	WL1
Prunus avium	Wild cherry	Crann silni fiain	N	WL1
Prunus spinosa	Blackthorn	Draighean	N	WS1
Pyrus communis	Wild Pear tree		NN	WL1
Quercus species	Oak sp?	Dair	N	WS3
Ranunculus repens	Creeping butter cup	Fearbán (reatha)	N	GS2
Rosa canina	Dog rose	Feirdhris	N	WL1
Rubus frut agg	Bramble	Dris	N	WL1
Rumex acetosa	Sorrel	Samhadh bo	N	GS2
Rumex species	Dock sp	Copog		GS2
Salix species	Willow sp	Saileach		GS2
Sambucus nigra	Elder	Trom	N	GS2

Appendix 1 Checklist of plants recorded by Mary Tubridy 2021 *(continued)*

Latin name	Common name	Irish Name	Status N= Native NN= Non-native	Habitat (s)
Senecio jacobea	Ragwort	Buachalan Bui	N	GS2
Sorbus aucuparia	Rowan	Caorthann	N	WS3
Taxus baccata	Yew	Iur	N	WS3
Tolypella intricata	Stonewort		N	FW4
Trifolium dubium	Lesser trefoil	Seamair bhuí	N	GS2
Trifolium repens	White clover	Seamair bhán	N	GS2
Tussilago farfara	Colt's foot	Sponc	N	GS2
Typha latifolia	Bulrush	Coigeal na mban si	Attenuation ponds	FL8
Ulex europaeus	Gorse	Aiteann gallda	N	WS1
Urtica dioica	Nettle	Neantog	N	GS2
Veronica chamaedrys	Germander speedwell	Anuallach	N	GS2
Vicia species	Vetch	Peasair	N	GS2
Viola reichenbachiana	Early dog violet	Sailchurch luath	N	WL1

Appendix 2 Water survey results 2021

Water survey results – Santry River

Group 1 ***'The Good Guys'*** ***(Score +1)***	**Score**			**Overall Water Quality**
	S1	**S2**	**S3**	
Stonefly	1			The total cumulative CSSI score for the 3 samples is **+3**
Flattened Mayfly	1	1	1	
Green Caddisfly				
Group 2 ***'The Bad Guys' (Score -1)***				**This is indicative of a Moderate Water Quality**
Snail				
Leech			-1	
Waterlouse				
TOTAL SCORE	**2**	**1**	**0**	**= 3**

Appendix 2 Water survey results 2021 *(continued)*

Water survey results – Ballymun United Football Club site					
Species & Scores	**Sample 1**	**Sample 2**	**Sample 3**	**Sample Average**	**WQ indication:**
Caddis Larvae (10)	10	10	10	45.33	**Very Good**
Alderfly Larvae (10)	-	10	-		
Dragonfly Larvae (10)	10	-	10		
Damselfly Larvae (10)	10	10	-		
Mayfly Larvae (5)	5	5	5		
Water Beetle (5)	5	5	5		
Water bug (5)	-	5	-		
Freshwater Shrimp (5)	5	-	5		
Pond Skater (5)	5	-	5		
Water Slater (1)	-	-	1		
Water Snail (1)	-	-	-		
Leeches/ worms (1)	-	-	-		
Total	50	45	41		**45.3**

Emperor Dragonfly.
Michael Keating

Green Shieldbug.
Michael Keating

Appendix 2 Water survey results 2021 *(continued)*

Water survey results – Poppintree Park (Large Pond).					
Species & Scores	**Sample 1**	**Sample 2**	**Sample 3**	**Sample Average**	**WQ indication:**
Caddis Larvae (10)	-	-	-	1.3	**Poor**
Alderfly Larvae (10)	-	-	-		
Dragonfly Larvae (10)	-	-	-		
Damselfly Larvae (10)	-	-	-		
Mayfly Larvae (5)	-	-	-		
Water Beetle (5)	-	-	-		
Water bug (5)	-	-	-		
Freshwater Shrimp (5)	-	-	-		
Pond Skater (5)	-	-	-		
Water Slater (1)	-	-	-		
Water Snail (1)	1	1	-		
Leeches/ worms (1)	1	-	1		
Total	2	1	1	**1.3**	**<5 = Poor**

Fumitory.
Sarah Rose Farrell

Rosemary Leaf Beetle.
Michael Keating

Appendix 2 Water survey results 2021 *(continued)*

Water survey results – Poppintree Park (Small Pond).

Species & Scores	Sample 1	Sample 2	Sample 3	Sample Average	WQ indication:
Caddis Larvae (10)	10	-	10	12.3	**Med-Good**
Alderfly Larvae (10)	-	-	-		
Dragonfly Larvae (10)	-	-	-		
Damselfly Larvae (10)	-	-	-		
Mayfly Larvae (5)	-	-	-		
Water Beetle (5)	-	-	-		
Water bug (5)	-	-	-		
Freshwater Shrimp (5)	5	5	-		
Pond Skater (5)	-	1	-		
Water Slater (1)	1	1	-		
Water Snail (1)	1	1	-		
Leeches/ worms (1)	-	-	1		
Total	17	9	11	**12.3**	**Medium/Good**

Ruby Tailed Wasp.
Michael Keating

Fern Fiddles.
Jade Maguire

Appendix 3 Bird survey results 2021

NOTE: Red listed bird species highlighted in **RED**, Amber list bird species highlighted in **AMBER** Qualifying criteria: Amber List Criteria- Categories that depict an unfavourable conservation status in Europe, but not necessarily of global concern. BDMp1 (short-term decline in breeding population), BDMp2 (long-term decline in breeding).

Appendix 3 Bird survey results 2021		
Bird survey results - Winter		
Species	**Qualification Criteria**	**Comments**
Mute Swan *Cygnus olor*		Four observed on the main pond in Poppintree Park
Mallard *Anas platyrhynchos*	SPEC 2	Twenty-four observed on the main pond at the east of the wetland in Poppintree Park
Tufted duck *Aythya fuligula*		Twenty-six observed on the main pond in Poppintree
Water Rail ***Rallus aquaticus***		One observed in rushes along the fringe of the Poppintree wetland
Moorhen ***Gallinula chloropus***		Two observed with Tufted Duck on the main pond
Coot *Fulica atra*	SPEC 2	Four observed on the main pond
Black-headed Gull ***Chroicocephalus ridibundus***		One observed on the Poppintree playing field
Common Gull *Larus canus*	BDMp2	Sixty observed on the main pond in Poppintree Wetland
Herring Gull *Larus argentatus*	BDMp1	Ten observed on the main pond in Poppintree and on roof tops overlooking the park
Great Black-backed Gull ***Larus marinus***		One observed on the main pond
Wood Pigeon ***Columba palumbus***		Five observed in the trees by the wetland
Collared Dove ***Streptopelia decaocto***		Two observed overhead. Occasional flyover over fields south of the M50
Pied Wagtail ***Motacilla alba yarelli***		One observed along the path around the wetland
Dunnock ***Prunella modularis***		One observed in private gardens within the survey area. Likely to be more abundant.
Robin ***Erithacus rubecula***		Common throughout the survey area

Appendix 3 Bird survey results 2021 *(continued)*

Bird survey results - Winter		
Species	**Qualification Criteria**	**Comments**
Blackbird *Turdus merula*		Two observed on the playing field at Poppintree and one observed in the Community Garden
Song Thrush *Turdus philomelos*		One flushed from the edge of the wetland at Poppintree
Mistle Thrush *Turdus viscivorus*		One observed flying over Poppintree park
Goldcrest *Regulus regulus*	SPEC 2	One heard by the wetland
Wren *Troglodytes troglodytes*		Two observed by the wetland
Great Tit *Parus major*		Four observed in total within the survey area
Blue Tit *Cyanistes caeruleus*		Two observed in total. Likely to be more numerous in gardens containing bird feeders
Coal Tit *Perparus ater*		One observed by the wetland
Long-tailed Tit *Aegithalus caudatus*		Two observed by the wetland
Magpie *Pica pica*		Quite common throughout the survey area
Rook *Corvus frugilegus*		Common over the survey area. There is a Rookery by the main pond at Poppintree
Jackdaw *Corvus monedula*		Commonly observed on roof tops by Poppintree park
Hooded Crow *Corvus cornix*		Two observed on playing fields at Poppintree and occasional on the waste ground south of the M50 and fields west of IKEA
Starling *Sturnus vulgaris*	SPEC 3	Commonly observed overhead throughout the survey area
House Sparrow *Passer domesticus*	SPEC 3	Observed by the playground at Poppintree. Common around the housing estates
Chaffinch *Fringilla coelebs*		A few observed around the wetland at Poppintree and in waste fields south of the M50
Linnet *Carduelis cannabina*	SPEC 2	One observed on waste ground by the playground
Redpoll *Carduelis flammea cabaret*		Observed flying overhead in fields west of IKEA
Goldfinch *Carduelis carduelis*		Two groups of three and two flying overhead. Frequent on waste ground south of M50 and south of the M50
Greenfinch *Chloris chloris*	SPEC 3	Two observed overhead in total
Reed Bunting *Emberiza schoeniclus*		One observed in the reed bed at Poppintree

Appendix 3 Bird survey results 2021 *(continued)*

Bird survey results - Summer		
Species	**Qualification Criteria**	**Comments**
Mallard *Anas platyrhynchos*	SPEC 2	A pair flying overhead at the additional survey area north of Poppintree. Likely to breed in the wetland
Tufted duck *Aythya fuligula*	SPEC 3	Twenty-two observed on the main pond at Poppintree. Breeding at the site
Little Grebe ***Tachybaptus ruficollis***		Pair observed on the main pond at Poppintree. Breeding at the site
Buzzard ***Buteo buteo***		Pair observed soaring over the northern survey area south of the M50
Coot *Fulica atra*	SPEC 2	Pair observed on the main pond at Poppintree, with two juveniles
Herring Gull *Larus argentatus*	BDMp1	Five observed on the main pond at Poppintree and on roof tops overlooking the park. Breed locally on roof tops
Great Black-backed Gull ***Larus marinus***		One observed on the main pond
Lesser Black-backed Gull *Larus fuscus*		One observed on the main pond
Wood Pigeon ***Columba palumbus***		Common throughout the survey area
Meadow Pipit *Anthus pratensis*	SPEC 1, 2 or 3	One observed by the playground at Poppintree. Also present on waste ground south of the M50
Dunnock ***Prunella modularis***		Pair observed by the wetland and one in the Community Garden
Robin ***Erithacus rubecula***		Common throughout the site
Blackbird ***Turdus merula***		Commonly heard. Frequent within the survey area
Song Thrush ***Turdus philomelos***		One observed at the northern survey area
Blackcap ***Sylvia atricapilla***		One heard at the northern survey area. Also heard within the Community Garden. A Summer visitor, but can also occur in Winter
Wren ***Troglodytes troglodytes***		Frequently heard throughout the site
Great Tit ***Parus major***		One observed at the northern survey area

Appendix 3 Bird survey results 2021 *(continued)*

Bird survey results - Summer		
Species	**Qualification Criteria**	**Comments**
Blue Tit *Cyanistes caeruleus*		Two observed in total
Magpie *Pica pica*		Quite common within the survey area
Rook *Corvus frugilegus*		Common over the entire survey area. There is a Rookery by the main pond at Poppintree
Jackdaw *Corvus monedula*		Commonly observed on roof tops by Poppintree Park and frequent within the housing estates
Hooded Crow *Corvus cornix*		Frequent throughout the survey area
Starling *Sturnus vulgaris*	SPEC 3	Commonly observed overhead
House Sparrow *Passer domesticus*	SPEC 3	Observed by the playground and at the southern entrance to Poppintree and frequent around the housing estates
Linnet *Carduelis cannabina*	SPEC 2	One observed on waste ground by the playground and waste ground at the northern survey site
Goldfinch *Carduelis carduelis*		One observed by the main pond at Poppintree. Occasional on waste ground at the northern part of the survey area
Greenfinch *Chloris chloris*	SPEC 3	Two observed near the playground and one observed on waste ground at the northern survey site
Reed Bunting *Emberiza schoeniclus*		One observed in the reed bed by the main pond at Poppintree. Breeding at the wetland

Red Kite.
Michael Keating

Peregrine Falcon.
Michael Keating

Appendix 4 Checklist of fauna provided by Michael Keating, BBFG for Ballymun area

BoCCI is an assessment of the conservation status of all regularly occurring birds on the island of Ireland. The criteria on which the assessment is based include conservation status at global and European levels; and within Ireland, include historical decline, trends in population and range, rarity, localised distribution and international importance. The conservation status of species is signalled using a traffic light system.

NOTE: Red listed bird species highlighted in **RED**, Amber list bird species highlighted in **AMBER**

Appendix 4 Checklist of fauna provided by Michael Keating, BBFG for Ballymun area					
Species	**Common Name**	**Protected status**	**EU Habitats Directive Annex**	**EU Birds Directive Annex**	**Other**
Mammals					
Erinaceus europaeus	Hedgehog	Wildlife Act (1976,2000)			Annex III Berne convention
Mustela erminea hibernica	Stoat	Wildlife Act (1976,2000)			Annex III Berne convention
Oryctolagus cuniculus	Rabbit				
Rattus norvegicus	Brown Rat				
Sciurus carolinensis	Grey squirrel				
Sorex minutus	Pygmy shrew				Annex III Berne convention
Vulpes vulpes	Red Fox				
Birds					
Accipiter nisus	Sparrowhawk				
Aegithalos caudatus	Long tailed tit				
Anthus pratensis	Meadow pipit				
Apus apus	Swift				
Ardea cinerea	Grey heron				
Asio otus	Long eared owl				

Appendix 4 Checklist of fauna provided by Michael Keating, BBFG for Ballymun area *(continued)*

Species	Common Name	Protected status	EU Habitats Directive Annex	EU Birds Directive Annex	Other
Asio otus	Long eared owl				
Branta bernicla	Brent goose				
Buteo buteo	Buzzard				
Carduelis carduelis	Goldfinch				
Carduelis chloris	Greenfinch				
Carduelis flammea cabaret	Redpoll				
Chroicocephalus ridibundus	Black headed gull				
Coloeus monedula	Jackdaw				
Columba palumbus	Woodpigeon				
Corvus cornix	Hooded Crow				
Corvus frugilegus	Rook			II	
Cyanistes caeruleus	Blue tit				
Delichon urbicum	House martin				
Emberiza citronella	Yellowhammer				
Emberiza schoeniclus	Reed bunting				
Erithacus rubecula	Robin				
Falco peregrinus	Peregrine falcon			I	
Falco tinnunculus	Kestrel				
Fringilla coelebs	Chaffinch				
Gallinago gallinago	Snipe			II	
Haematopus ostralegus	Oystercatcher				
Hirundo rustica	Swallow				
Larus argentatus	Herring gull				
Larus canus	Common gull				
Larus fuscus	Lesser black backed gull				
Larus marinus	Great black backed gull				
Larus melanocephalus	Mediterranean Gull			I	

Appendix 4 Checklist of fauna provided by Michael Keating, BBFG for Ballymun area *(continued)*

Species	Common Name	Protected status	EU Habitats Directive Annex	EU Birds Directive Annex	Other
Limosa limosa	Black Tailed Godwit				
Linaria cannabina	Linnet				
Locustella naevia	Grasshopper warbler				
Milvus milvus	Red kite			I	
Motacilla alba	Pied Wagtail				
Motacilla cinerea	Grey Wagtail				
Musciapa striata	Spotted flycatcher				
Oenanthe oenanthe	Wheatear				
Parus major	Great tit				
Passer domesticus	House Sparrow				
Periparus ater	Coal tit				
Phylloscopus collybita	Chiffchaff				
Phylloscopus trochilus	Willow warbler				
Pica pica	Magpie			II	
Prunella modularis	Dunnock				
Pyrrhula pyrrhula	Bullfinch				
Regulus regulus	Goldcrest				
Riparia riparia	Sand martin				
Saxicola rubetra	Whinchat				
Saxicola torquata	Stonechat				
Spinus spinus	Siskin				
Streptopelia decaocto	Collared dove				
Sturnus vulgaris	Starling				
Sylvia atricapilla	Blackcap				
Troglodytes troglodytes	Wren				
Turdus iliacus	Redwing				
Turdus merula	Blackbird				
Turdus philomelos	Song thrush			II	
Turdus pilaris	Fieldfare			II	

Appendix 4 Checklist of fauna provided by Michael Keating, BBFG for Ballymun area *(continued)*

Species	Common Name	Protected status	EU Habitats Directive Annex	EU Birds Directive Annex	Other
Turdus viscivorus	Mistle thrush			II	
Tyto alba	Barn owl				
Amphibians					
Rana temporaria	Common frog	Wildlife Act (1976,2000)	V		Annex III Berne convention
Butterflies					
Aglais io	Peacock				
Aglais urticae	Small tortoiseshell				
Anthocharis cardamines	Orange tip				
Aphantopus hyperantus	Ringlet				
Celastrina argiolus	Holly blue				
Coenonympha tullia	Small heath				IUCN-Near Threatened
Leptidea sinapis	Wood white				IUCN-Near Threatened
Maniola jurtina	Meadow brown				
Pararge aegeria	Speckled wood				
Pieris brassicae	Large white				
Pieris napi	Green veined white				
Pieris rapae	Small white				
Polygonia c-album	Comma				
Polyommatus icarus	Common blue				
Vanessa atalanta	Red admiral				
Vanessa cardui	Painted lady				
Moths					
Anania hortulata	Magpie				
Autographa gamma	Silver y				
Macroglossum stellatarum	Hummingbird hawkmoth				

Appendix 4 Checklist of fauna provided by Michael Keating, BBFG for Ballymun area *(continued)*

Species	Common Name	Protected status	EU Habitats Directive Annex	EU Birds Directive Annex	Other
Tyria jacobaeae	Cinnabar				
Zygaena trifolii	Six spotted burnet				
Dragonfly					
Aeshna grandis	Brown hawker				
Aeshna mixta	Migrant hawker				
Libellula quadrimaculata	Four-spotted chaser				
Sympetrum sanguineum	Common darter				
Misc. Invertebrates					
Andrena nigroaenea	Solitary bee				IUCN-Vulnerable
Bombus muscorum	Moss Carder bee				IUCN- Near Threatened
Calvia quattuordecimguttata	Cream Spot Ladybird				
Chorthippus brunneus	Common green grasshopper				
Chrysis ignita	Ruby Tailed Wasp				Locally rare
Coccinella septempunctata	7 spot ladybird				
Dolycoris baccarum	Hairy shieldbug				
Eumenidae	Potter Wasp				
Hymenoptera	Wasp				
Megachile centuncularis	Leaf cutter bee				
Palomena prasina	Green shieldbug				
Pentatoma rufipes	Forest shieldbug				
Piezodorus lituratus	Gorse shieldbug				
Psyllobora vigintiduopunctata	22 spot ladybird				
Scaeva pyrastri	Pied Hoverfly				
Tetrix undulata	Common Groundhopper				

Appendix 5 Checklist of fauna provided by Michael Keating, BBFG for NCT wetlands

Species	Common Name	Protected status	EU Habitats Directive Annex	Other
Amphibians				
Rana temporaria	Common frog	Wildlife Act (1976,2000)	V	Annex III Berne convention
Butterflies				
Aglais io	Peacock			
Aglais urticae	Small tortoiseshell			
Anthocharis cardamines	Orange tip			
Aphantopus hyperantus	Ringlet			
Celastrina argiolus	Holly blue			
Coenonympha pamphilus	Small heath			IUCN-Near Threatened
Cupido minimus	Small blue			IUCN-Endangered
Leptidea juvernica	Cryptic wood white			
Maniola jurtina	Meadow brown			
Pararge aegeria	Speckled wood			
Pieris napi	Green veined white			
Pieris rapae	Small white			
Polyommatus icarus	Common blue			
Vanessa atalanta	Red admiral			
Vanessa cardui	Painted lady			
Moth				
Zygaena lonicerae	Narrow bordered 5 spotted burnet			IUCN-Vulnerable
Dragonfly/ Damselfly				
Aeshna juncea	Common hawker			
Aeshna mixta	Migrant hawker			
Anax imperator	Emperor Dragon fly			

Appendix 5 Checklist of fauna provided by Michael Keating, BBFG for NCT wetlands *(continued)*

Species	Common Name	Protected status	EU Habitats Directive Annex	Other
Coenagrion lunulatum	Irish damselfly			IUCN-Vulnerable
Coenagrion puella	Azure damselfly			
Coenagrion pulchellum	Variable damselfly			
Enallagma cyathigerum	Common blue damselfly			
Ischnura elegans	Blue tailed damselfly			
Lestes sponsa	Emerald damselfly			
Libellula quadrimaculata	Four-spotted chaser			
Pyrrhosoma nymphula	Large red damselfly			
Sympetrum sanguineum	Ruddy darter			Locally rare
Sympetrum striolatum	Common darter			
Misc. Invertebrates				
Calvia quatuordecimguttata	Cream spot ladybird			
Chorthippus parallelus	Pink grasshopper (Common field grasshopper mutation)			Rare
Coccinella septempunctata	7 spot ladybird			
Dolycoris baccarum	Hairy shieldbug			
Dytiscus marginalis	Great diving Beetle (larva)			
Eumenes coarctatus	Heath potter wasp			
Misumena vatia	Crab spider			
Myrmica rubra	Red ant			
Omocestus viridulus	Green grasshopper			
Piezodorus lituratus	Gorse shieldbug			
Propylea quattuordecimpunctata	14 spot ladybird			
Psyllobora vigintiduopunctata	22 spot ladybird			
Rhagionidae	Snipe fly			
Tanyptera atrata	Tiger cranefly			Locally rare

Appendix 5 Checklist of fauna provided by Michael Keating, BBFG for NCT wetlands *(continued)*

Species	Common Name	Protected status	EU Habitats Directive Annex	Other
Volucella pellucens	Pelecuid fly			
Mammals				
Oryctolagus cuniculus	Rabbit			
Oryctolagus cuniculus	Rabbit (pure black colouring)			Locally rare

Appendix 6 Known distribution of the common frog breeding sites in Ballymun

The common frog, Rana temporaria, is the only species of frog found in Ireland and has the most widespread distribution of all amphibians on the island. It inhabits a wide array of habitats, both terrestrial and aquatic, including urban constructed and semi-natural wetlands, greenspaces, and gardens. Common frogs are protected under the Wildlife Act and amendments (1976, 2000) whereby it is an offence to kill, to deliberately disturb during breeding, rearing, hibernation or migration, or to damage a breeding site or resting place. R. temporaria, is also a notifiable species protected under international legislation (EU Habitats Directive 92/43/EEC [Article 17 / Annex V]). However due to its widespread nature and ability to persist, in sometimes high densities, in highly modified habitats it is listed as being of "Least Concern" on the Irish Red List.

In Ballymun, the common frog occurs in multiple modified habitats and green spaces adjacent to or containing wetland features such as ephemeral ponding areas in wet grassland, attenuation ponds, managed green spaces, and private gardens. Many of these areas are also highly connected with ample amounts of dispersal corridors available via ancient hedgerows and overgrown field margins. While an estimate for the local population size is not available, the known breeding sites for this species has been mapped and is provided below (Figure 24.) for the benefit of land managers and other stakeholders in the area responsible for ensuring the persistence of this species. An estimate of some 1600 individuals, constituting the breeding population size, is provided by Keating (2019) for NCT lands to the north of the M50

Fig. 24: A map indicating the known location of breeding sites for the common frog, Rana temporaria, in Ballymun (red dots).

Future projects should aim to establish a comprehensive distribution map for this species in Ballymun and, where possible, generate a breeding population size estimate for the individual sites. The creation of a "connectivity map" and identification of sites where "steppingstone" habitats could be created would also compliment and facilitate a conservation plan for common frogs for the Ballymun area.

Appendix 7 Recommendations for improving biodiversity in attenuation ponds

1. Liaise with relevant authorities and see if it's feasible to open an attenuation pop up as a living classroom
2. Attenuation #2 (the one nearest Santry Park) is the best choice (it's open, visible from the road, gentle gradient, and easily accessible. Has nice emergent and wetland associated flora already established. Known frog breeding site. See appendix 6.
3. Greater number of enhancement options available for community benefit e.g., a dipping platform.
4. May require partial clay relining in order to hold water for longer before releasing to the stream. Can be done by a community group with some guidance - transferable skills BUT won't interfere with function. These works will help the pond come into line with all 3 CIRIA criteria for SUDs - function, amenity, and biodiversity (best practice standards).
5. External/internal maintenance much easier than other sites, limited encroachment by bracken and rank grass compared to the others. Easily accessible and navigable.

Appendix 8 BBFG survey to discover community attitudes to biodiversity 2021

Methodology:

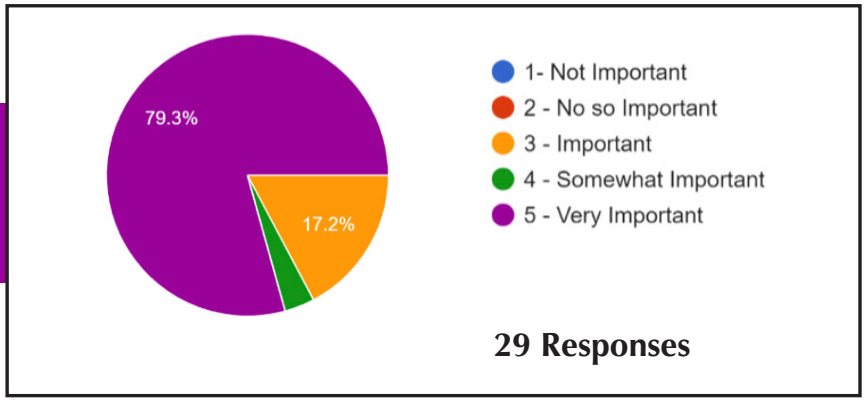
A member of Ballymun Tidy Towns compiled this questionnaire-based survey. The Google Forms questionnaire was put up on their social media channel on 22nd May 2021 and emailed to the members of BBFG, BTT and the BTT mailing list which includes members of local Ballymun environmental and residential groups. All answers received were confidential and no personal data was collected. The questionnaire was introduced as follows:

This is your community so the plan will reflect what you would like to happen to make Ballymun as biodiversity friendly as can be.

Thank you so much - Ballymun Biodiversity Focus Group."

The following section contains the results of the questionnaire survey administered by Ballymun Biodiversity Focus Group. After questions are listed, summary results of closed questions are presented in pie charts. All comments responding to open ended questions are included.
A total of thirty-one responses were received. The account below includes the questions and responses (as written).

Question 1 – How important is the natural environment to your everyday life?

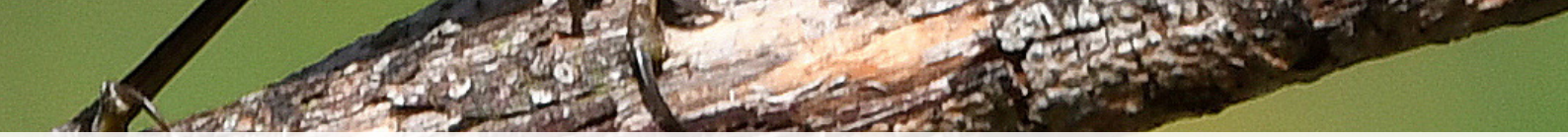


Appendix 8 BBFG survey to discover community attitudes to biodiversity 2021 *(continued)*

Question 2 - List 3 ways that you think nature and biodiversity bring benefits to Ballymun

(28 responses)

- I think it benefits mental health and well being
- Attraction for humans as a place to gather in nature. 2. As a learning tool for our youth to understand and appreciate nature more. 3. Getting people to respect their town more and bring a sense of community to those involved. Having more nature and having more of the community involved may give a sense of pride, especially in our youth, this making vandalism and littering less prevalent. 4. Nature is heckin [sic] beautiful □
- It's good for mental health, for cleaner oxygen and education our children
- Mental health cleaner environment and making a future that's hopeful to the next generation ....
- It enhances my daily life watching the school children pass my home going to the park to have a positive outdoor experience of their area ... And the wildlife it brings into the area the best bit for me was getting up to find a fox cub and cat playing in my garden
- Clean air. Greener places for kids to enjoy.
- To brings bees back to our gardens. It also encourages people to take an interest in their area. And we can give back to the planet.
- Nature should always be on our doorstep; we're part of Nature and disconnecting from it is tantamount to health problems mentally and physically; I doubt we fully understand the importance of being part of it on a daily basis. It's connection with what we're about.
- Wildflowers and trees etc bring birds, bees and colour which can have a calming effect on the mind. The more species of flora and fauna a child gets to experience adds to their education and understanding of the earth and who we share it with.
- Plants and wildlife display beauty and have a destressing and calming influence generally on us humans
- Air quality, healthier environment, connection to nature equals healthier lifestyle
- 1 good for the mind 2 walking in the nature 3. Protect environment
- It could boost the number of pollinators in the area. It will increase the wildlife Wild flowers will bring colour to Ballymun
- It's good for our health to live in an environment with nature, good to have beauty to see in the area and helps our ability to grow food
- It breaks up the full concrete, which has to improve people's moods generally, 2. It provides an understanding for the natural world and potentially opportunities for the community to be educated on being more self-sufficient, 3. Living among living things, animals in particular, can really improve young people's empathy and social skills, which is invaluable especially in disadvantaged areas such as Ballymun.
- Biodiversity in flowers, plants and trees will support birds, bees, butterflies, and many insects that are essential to the environment for 2. sustainability in food production that can be produced in people's gardens or at a community garden for the whole area. 3. Harvesting rainwater would lighten the demand for water from the mains supply and therefore, hopefully, lessen the cost of water for households.
- Nature has so much to teach our young people
- Colour, Variety of flora and development of community bodies among those creating, managing, curating, and working on the various areas



Appendix 8 BBFG survey to discover community attitudes to biodiversity 2021 *(continued)*

Question 2 Continued - List 3 ways that you think nature and biodiversity bring benefits to Ballymun

- Makes you feel better, area looks better and make a everyone mire aware if their surroundings
- Bring nature to urban areas
- 1 - mental health 2 - great for the environment 3 - makes Ballymun beautiful
- Mental wellbeing, pure clean living, nicer environment to live within
- Cleaner air. Prettier to look at and live in.

Doing our bit for the planet

- The open space looks nicer. Open spaces are more appealing. It attracts more insects therefore pollination will happen
- Take pride in your surroundings Help the bees
- Brings birds & wildlife. Encourages people to grow.

Brings community together

Question 3 - List your top three biodiversity hot-spots in Ballymun

(26 responses)

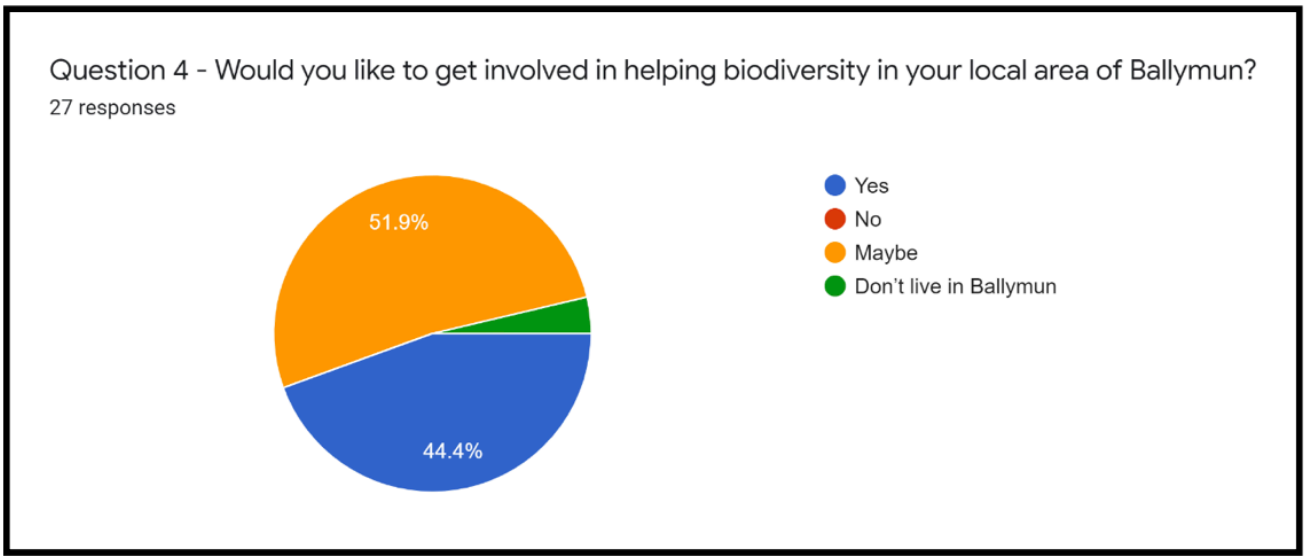
- Poppintree park, the wildflower meadow at the old stables
- Scholarship garden in trinity comprehensive, Muck & Magic, Our back garden (a.k.a. urban paradise)
- The pond in Poppintree park, love the rooftop on the rediscovery centre and community garden in Coultry
- The community gardens the comprehensive school Poppintree park
- Poppintree park... the roadside planting. The pond in the park
- Poppintree park. Muck and Magic.
- I like the area between Lidl and Santry cross The allotment area in Coultry.
- Albert Park, Poppintree,
- 1 Poppintree park 2 the wild areas at IKEA, Santry lodge. 3 the community gardens
- Poppintree park, the forest along the Santry River leading to Santry Park, and there is no third spot it seems to me
- Poppintree park, Coultry park, Muck and Magic
- 1 Popintree Park 2. Muck & Magic

community garden 3 some of the streets have wildflowers patches

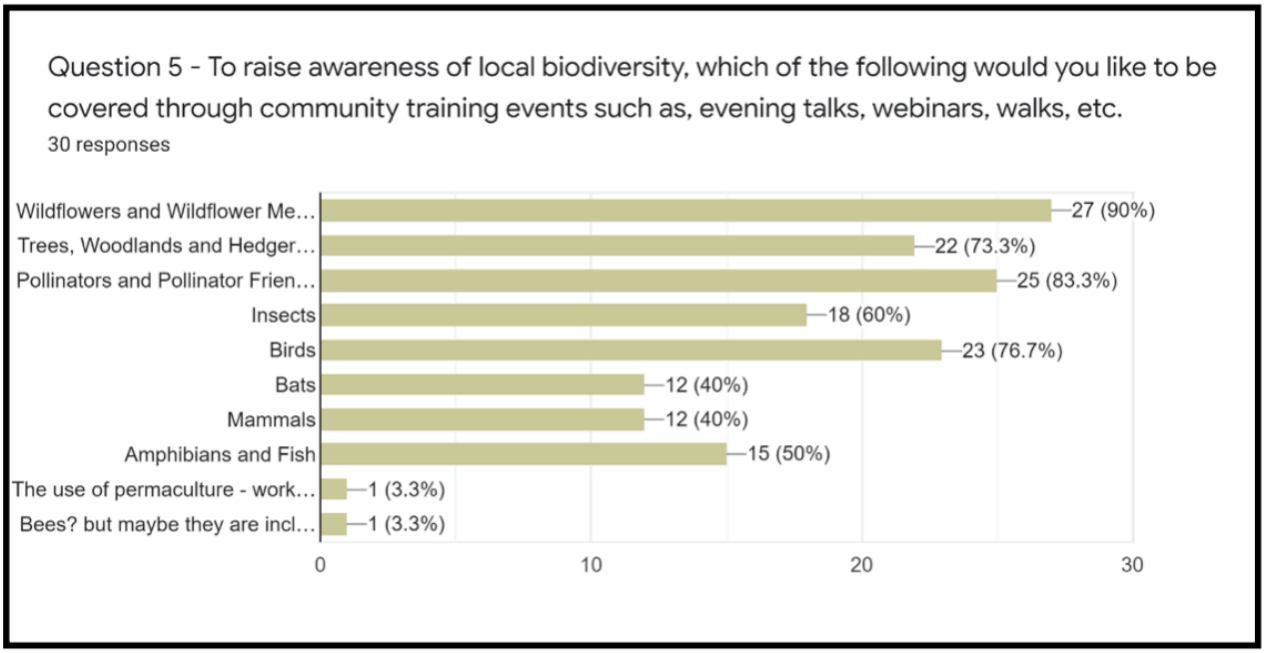
- The area at adjacent to the NCT test centre. The lands around IKEA Popintree Park
- Muck and Magic, The garden next to Ballymun Comprehensive, the fields next to IKEA and Decathlon
- I'm sorry I cannot give a realistic answer to this as I'm not yet living in the area.
- Belclare Poppintree Park Balbutcher Lane near IKEA
- Poppintree Park, Muck N Magic Garden, Balcurris Park
- Muck and Magic, Poppintree Park, Balcurris park
- 1 - M50 lands 2 - Poppintree Park 3 - Balcurris Park
- My own garden, not aware of anywhere else
- Poppintree. Muck and magic
- Housing estates, outside schools and along open spaces
- Community garden Poppintree park My garden
- Open space by IKEA, green area at Willow Grove, path verges

Appendix 8 BBFG survey to discover community attitudes to biodiversity 2021 *(continued)*

Question 4 – Would you like to get involved in helping biodiversity in your local area of Ballymun?



Question 5 – To raise awareness of local biodiversity, which of the following would you like to be covered through community training events such as, evening talks, webinars, walks, etc.?



Choices are:,Wildflower and Wildflower Meadows / Trees, Woodlands and Hedgerows / Pollinators and Pollinator Friendly Planting / Insects / Birds / Bats / Mammals / Amphibians and Fish / Other

Appendix 9 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 schools
- 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 in 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.

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 waste land and Himalayan Balsam usually along river banks. 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. The habitat map shows where these features are found. In general, the age of these habitats will be a good guide to their value. Older habitats are more likely to 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.

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 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 is not considered a native species. It arrived with the Normans. Because these 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.

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 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.

Legal protection for areas and species? Continued

Occasionally they have been prompted to prepare them due to local interest or pressure from environmental organisations. 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 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. Angler groups are particularly valuable sources of information on water quality and fish.

How to develop habitats

Homes for biodiversity are called habitats. The habitat map for your locality reveals the nature of the current habitats. 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/forestry/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 pocketforests.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.

Appendix 9 Biodiversity Management: Background information and general guidelines *(continued)*

Shrubberies

Shrubberies can be unbelievably 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 a specialised linear shrubbery with an A shaped structure involving trees, shrubs, a bank, and ditch. Original hedgerows were stock proof therefore they were invaluable 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 and trimmed and maintained every three years.

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 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.

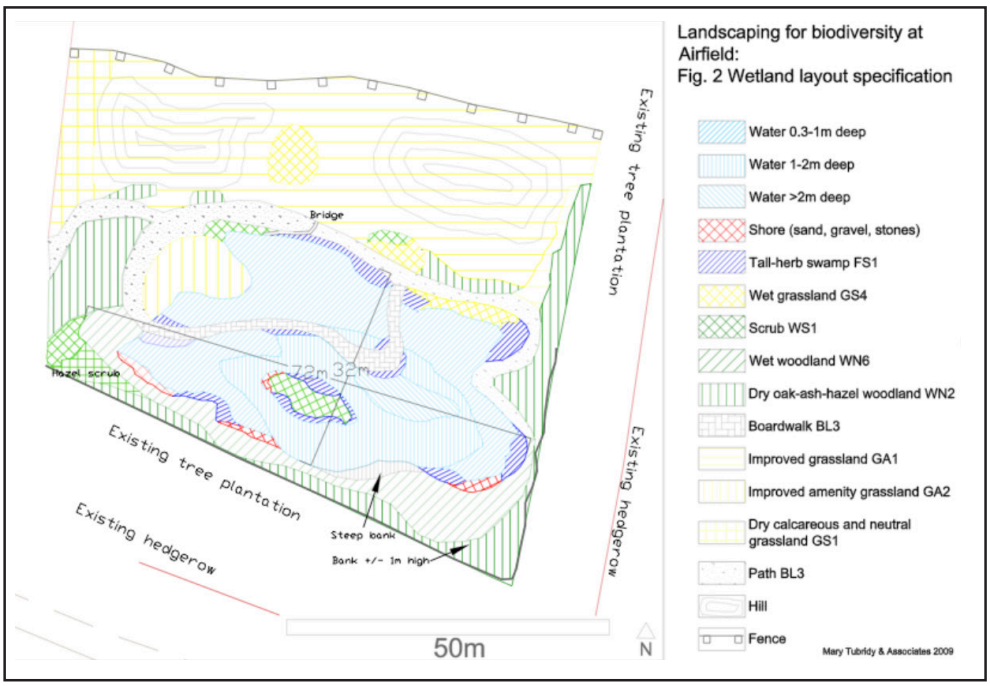
If you want an instant wildflower meadow spread seeds but the resulting grassland should be called a “pictorial meadow.” There are a lot of issues about the current practice of establishing so called “wildflower meadows.”

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.

Large Carder Bee.
Michael Keating

How to develop habitats Continued

A wetland is also an unbelievably 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 decent 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.

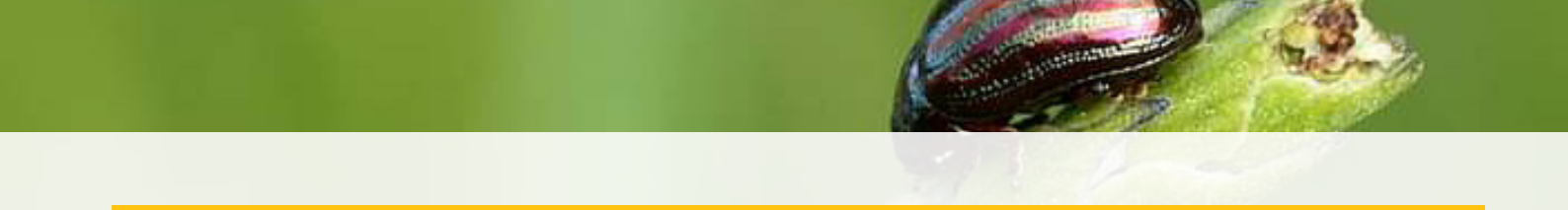
If you want to benefit biodiversity then the obvious thing to do is to plant native trees, shrubs or herbs or a plant listed in the All-Ireland Pollinator plan (pollinators.ie). If you do not find a native species to your taste plant a variety of a native species or a species that belongs to the same 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 will utilize them. Varieties are cultivated types of wild species. Some 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.

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.

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

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



Appendix 9 Biodiversity Management: Background information and general guidelines *(continued)*

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.

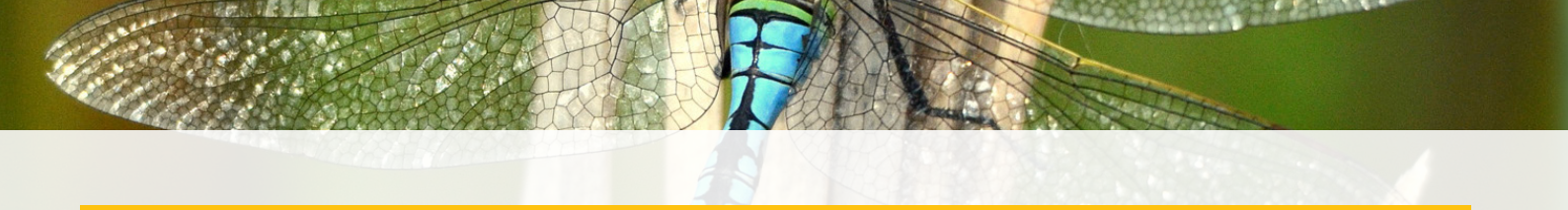
Support for community-based initiatives

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, offering opportunities to benefit from funding.

Some national organisations offer support to community-based groups such as Waterways Ireland and the National Parks and Wildlife Service. Waterways Ireland website highlights biodiversity and operates a community grants scheme. (https://www.waterwaysireland.org/biodiversity-on-irelands-waterways). NPWS has a network of rangers throughout the country which offer advice and assistance with grant applications. Local authority water protection officers could offer support to communities concerned with water quality and wetlands.

Non-governmental organisations could also be approached for advice. 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. An environmental charity in Clare Burren Beo runs courses for teachers and community leaders who are interested in learning how to interpret local heritage. 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 NGO's' may have political influence. They may be represented in your local public participation network (PPN). This is a local authority structure which feeds community



Appendix 9 Biodiversity Management: Background information and general guidelines *(continued)*

concerns to all local authority departments. Your local authority will have a full time Heritage Officer, or 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.

Wheatear.
Michael Keating

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.

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
- National Parks and Wildlife Service
- Company sponsorship

Cowslip.
Jade Maguire

Green Shieldbug eggs.
Michael Keating

Partnerships for biodiversity with schools (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. The 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.

Appendix 9 Biodiversity Management: Background information and general guidelines *(continued)*

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, shows 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 10). 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. The Heritage Council subsidize these visits.

Step Two

Encourage school to arrange outings to places which provide interpretation about biodiversity (such as the IPCC run Lullymore Peatland Centre or Wicklow mts. National Park). 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.

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 conducted 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 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 10 Resources to support local learning about biodiversity

Books to aid identification (best ordered from environmental organisation or the Heritage Council)

- Irish Grass Identification Guide Heritage Council
- Tree and Shrubs Swatch
- Bumblebee Swatch
- Butterfly Swatch
- Ladybird Swatch
- The Birds of Ireland – A Field Guide
- Britain's Dragonflies
- Guide to Freshwater Invertebrates
- Guide to Commoner Water Plants
- A Naturalist Guide to the Trees of Britain and Northern Europe
- The Wildflower Key
- Zoe Devlin Wildflowers of Ireland
- Teach yourself Irish Garden Bird Songs CD
- Field Guide to Moths of Great Britain and Ireland
- A Field Studies Council Guide to British Bats
- Flora of County Dublin (1998) Doogue, D., Nash, D., Parnell, J., Reynolds, S. & Wyse Jackson, P. Published by Dublin Naturalists Field Club c/o Dr. Declan Doogue (tel. 01-8341504)

Equipment (best ordered from NGO i.e., Birdwatch Ireland, Irish Peatland Conservation Council, or specialist supplier such as NHBS)

- Binoculars Opticron Oregon 4 PC 8x32
- Straight Tip Tweezers to examine small specimens
- Heavy Duty Sampling Trays for freshwater surveys
- Student Hand Net for freshwater surveys
- Echo Meter Touch 2 Bat Detector
- Botanical Drying Paper to preserve plant specimens
- Botanical Press to preserve plant specimens
- Bug Viewer Boxes – small x2 / x4 mag
- Bug Viewer Boxes – square x3 mag
- Field Lenses to allow for close examination of plant / animal features

Rapeseed.
Ricky Brady

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