

Myshall Biodiversity Action Plan

Prepared for Myshall Muintir na Tire and funded by
Community Foundations



Woodland (WN1) and stream (FW1) above Tobar Bride Park

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Summary

The preparation of the BAP involved fieldwork in the village and immediate environs by experienced ecologists (Dr Betsy Hickey, Dr Mary Tubridy, Dr Julian Reynolds and Joe Adamson) to provide accounts of habitats, flowering plant species, birds and invertebrates in water bodies to characterise water quality. Fieldwork took place between 2019 and 2021 and followed best practise methods to describe biodiversity. Results were integrated with previous survey work commissioned by Tidy Towns to provide information on lichens, bats and habitat enhancement in the locality.

The assessment provided in the form of a SWOT confirmed that the stream running through the village was a significant feature of biodiversity interest. Fieldwork carried out for the BAP confirmed that water quality is good. A diversity of habitats accounts for a high diversity of plants (150) and birds (29) around Myshall. Among the habitats is a small area with a rare semi natural woodland (WN) above the “so called duck pond”. Unfortunately plant species include two invasives.

The possession of these lists of plants, birds, bats and lichens provides Myshall with a unique record and an educational resource. The principal weakness of biodiversity in Myshall is the poor condition of the “duck pond” as a habitat for marginal wetland species. The presence of the invasives Himalayan Balsam and Japanese Knotweed is a problem for local biodiversity as well as the bias (common throughout Ireland) against native species or weeds.

An appendix to the BAP provides background information on biodiversity. Short notes are provided on topics such as : *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 school and resources needed to support local learning about biodiversity.*

This background information provides the rationale for the wide range of actions listed in the final section of the BAP. Actions relate to local environmental education, and landscaping projects in various locations to demonstrate best practise. A champion for pollinator friendly species is needed in the locality and events should be held based on Brigid’s feast day to highlight biodiversity.

Part 1: Biodiversity of Myshall

1.1 Introduction

Myshall or Míseal (derived from Maigh Íseal which means "the low plain") is a small village 22 km southeast of Carlow town, on the slopes of Mount Leinster, altitude 295m. The grid references S8259 and S8260 cover this area.

Myshall is near Mount Leinster and the Nine Stones and is close to tourist areas such as Huntington Castle and Altamont Gardens. Myshall Muintir na Tire want Myshall to be a place where people come to visit while visiting these and other areas within Carlow and to be a destination in its own right. The community has already implemented many projects to improve biodiversity and provide amenities in the village. Biodiversity related reports include a Cryptogam Biodiversity Report (Cullen, no date), two reports on bats and habitat management (Mullen, 2019) and recommendations on the development of Myshall's walled garden (Hickey, 2012). A Tree Trail (Fox 2017) provides detailed information on the diversity of mature trees. The community has an active Tidy Towns committee and has been involved in Carlow's Pride of Place competition (equivalent to Tidy Towns) since 2007 . It was an All Ireland Pride of Place Winner in 2007. The community achieves good marks for biodiversity in the national TT competition now 36/50 and this has steadily increased since 2005 due to the commissioning of biodiversity related studies. Preparation of this BAP allowed for the updating of the baseline description of biodiversity and development of a specific range of measures to improve it. The intention is to produce a 10-year Community Biodiversity Plan to provide a clear work schedule of large and small actions, all contributing to improve village spaces, in particular the field and roadside boundary habitats surrounding Myshall.



Fig. 1 provides an aerial view of the village and shows extent of the study area for the BAP.

1.2 Methodology

Desk top research focussed on an examination of the reports on biodiversity commissioned by the community, information compiled by the community on placenames, historic mapping and interrogation of the National Biodiversity Ireland data bases to provide information on the status of invasive species. Fieldwork took place in 2019-2021 and involved Dr Betsy Hickey (ecology/horticulture), Dr Mary Tubridy (ecology /habitat management)/ environmental education), Dr Julian Reynolds (freshwater biology/management)and Joe Adamson (ornithology/management). Betsy Hickey visited the area on several occasions. The community has benefitted from comments provided by her previously, as Dr. Betsy Hickey is the adjudicator of Carlow's Pride of Place competition. To inform the BAP she compiled plant species lists, took numerous photos, made notes about improvements needed and prepared a draft habitat map based on Fossitt (2000) and Smith et al (2010). Julian Reynolds carried out fieldwork in all freshwater habitats to provide a score compatible with EPA and Small Stream Risk Assessment systems. Joe Adamson examined the entire area to compile an account of birds. The bird survey was carried out on 5th and 25th June and the 2nd July 2020, between the hours of 0900 and 1800 when weather was bright, warm and sunny. The digital habitat map was produced by Donal Storey a GIS specialist who has prepared habitat mapping on many occasions for Mary Tubridy and Betsy Hickey. Mary Tubridy drafted the BAP based on the results of this fieldwork and direct inspection of the study area in August 2020. Consultation occurred with the community on this occasion.

1.3 Results of desk research

Place name research revealed several references to the natural environment. The name Myshall or Míseal is derived from Maigh Íseal which means "the low plain". A townland in the parish called '**Ullard**' (**Abhall Gort**), means '**Apple Garden**' or '**Orchard**' while another is called '**Knockindrane**' (**Cnocán Draoighin**) meaning '**Hill of the blackthorns or sloe bushes**' The townland of **Kylemaglush** has a Hawthorn known as '**The Crush Bush** which is believed to be haunted & stories abound of what happened to those who cut its branches. The **Townland of Raheenwood (Coill Raitín)** means '**Wood of the earthen fort**'.

The examination of geology showed that acid rocks associated with Leinster Granite underlie the area. This features two micas – Muscovite (white) and Biotite (Black). The Ribband Group material around the granite may have been its main source material. It is Ordovician to Silurian in age and was heated and pressured to Greenschist – a low grade metamorphic rock. These two rock types dominate the stone walls and tombstones in the village.

Fig. 2 Stone wall in village; habitat for *Polypodium vulgare*



Research on recent land use revealed that many green spaces are unique in County Carlow as they originate from the former Cornwall Brady Estate.



Fig. 3 19th century map of Myshall and surrounds

The village was built to serve the big house Myshall Lodge in the 17th century. Associated with this house were substantial tree planting, parkland, avenues, walled garden and a fishpond. Myshall House was destroyed by fire in 1923.

Village unique in that much of the undeveloped green space associated by the former “big house” is owned by the community. See Fig.4 for location of community owned spaces.



Fig. 4 Location of community owned spaces.

Previous reports commissioned by the community confirms the presence of five bat species, Common and Soprano Pipistrelle, Brown Long eared bat, Leisler's Bat and Daubenton in the environs of the village. This impressive diversity is due to the presence of wetlands and mature trees. The ecologists who compiled this report warn against excessive lighting in the village and recommend that all external lights only come on when required.

The results of desk research (Table 1) indicated that there was a risk of two invasive species in Myshall, Japanese knotweed and Himalayan balsam.

Table 1 Invasive species desk research

Species English name	Species Latin name	Distance from Myshall
Japanese knotweed	<i>Fallopia japonica</i>	0.8
Bohemian knotweed	<i>Fallopia japonica</i> X <i>sachalinensis</i>	>80km
Giant knotweed	<i>Fallopia sachalinensis</i>	30
Himalayan knotweed	<i>Persicaria wallichii</i>	7
Giant hogweed	<i>Heracleum mantegazzanum</i>	>80km
Giant rhubarbs	<i>Gunnera tinctoria</i>	>80km
Giant rhubarbs	<i>Gunnera manicata</i>	40
Himalayan balsam	<i>Impatiens glandulifera</i>	0.6
Hottentot fig	<i>Carpobrotus edulis</i>	70
Rhododendron	<i>Rhododendron ponticum</i>	6

1.4 Results of field studies 2019-2021

Habitats in Myshal are shown in Fig. 5. The checklist of plants of Myshall are in Appendix 1 and information about birds in Appendix 2.

Table 2 contains an assessment of the rarity of the habitats and their interest for biodiversity.

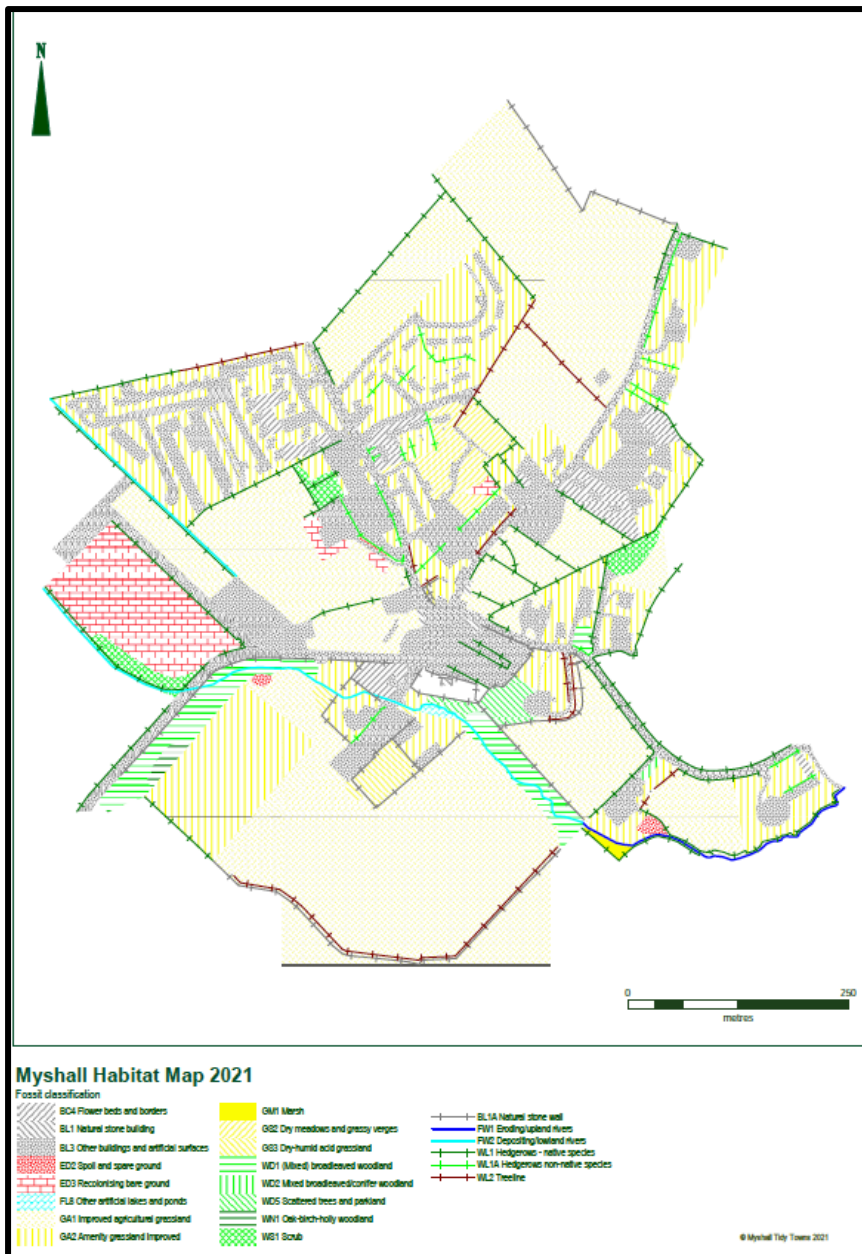


Table 2 Habitats in Myshall and summary of their biodiversity interest

Habitat name	Fossitt Code	Rarity (on a scale from 1-5)	Biodiversity Interest
Flower beds and borders	BC4	1	Of very varied interest. If suitable species present they could be useful for pollinators.

Habitat name	Fossitt Code	Rarity (on a scale from 1-5)	Biodiversity Interest
Natural Stone Building	BL1	2	Habitat for ferns and specialised plants. Could be important for bats and basking insects.
Other buildings and artificial surfaces (not of stone)	Bl3	1	Probably of low value (unless used by bats) or vegetation on walls
Spoil and Bare Ground	ED2	1	Interesting to observe natural colonisation by native plants which is therefore important for pollinators
Recolonising bare ground	ED3	1	Interesting to observe natural colonisation by native plants which is therefore important for pollinators
Other artificial lakes and ponds Pond in Brigid's garden	FL8	3	Good for freshwater invertebrates and specialised plants
Improved agricultural grassland (intensively managed grasslands in farms)	GA1	1	Poor plant and animal biodiversity which is maintained through intensive management.
Amenity grassland improved (in lawns and sports pitches)	GA2	1	Poor plant and animal biodiversity which is maintained through intensive management.

Habitat name	Fossitt Code	Rarity (on a scale from 1-5)	Biodiversity Interest
Marsh	GM1	3	Important for specialised plants and birds.
Dry Meadows and grassy verges	GS2	3	Good for pollinators as plants are allowed flower and set seed.
Dry humid acid grassland	GS3	4	Specialised plants maintained by farm management and provide forage for farm animals.
(Mixed) Broadleaved woodland	WD1	3	Supports an excellent diversity of trees (some planted) shrubs and woodland herbs.
Mixed broadleaved/ conifer woodland	WD2	3	Supports an excellent diversity of trees (some planted), shrubs and woodland herbs
Scattered trees and parkland	WD5	3	Potentially veteran trees of importance to bats and invertebrates
Oak-birch-holly woodland	WN1	5	Supports an excellent diversity of mainly native trees, shrubs and woodland herbs
Scrub	WS1	3	Good for birds and pollinators
Natural stone wall	BL11A	3	Habitat for specialist native plants and possibly roosting places for bats (if covered in ivy)

Habitat name	Fossitt Code	Rarity (on a scale from 1-5)	Biodiversity Interest
Eroding /upland rivers	FW1	4	Important for specialised plants and invertebrates linked to wider areas. Species are Black flatworms, Shrimp Snail, Baetid mayfly nymph, Ephemerellid mayfly nymph as well as frog tadpoles, small Dytiscid Diving beetle and Water cricket <i>Velia</i> sp
Depositing lowland rivers	FW2	4	Important for specialised plants and invertebrates linked to wider areas
Hedgerow-native species	WL1	3	Supports a diversity of mainly native trees, shrubs and woodland herbs providing corridors for wildlife.
Hedgerow non native species	WL1A	1	Of lesser value to native biodiversity, unless species pollinator friendly dense at chest height and not containing <i>Leylandii</i> .
Treeline	WL2	1	Of lesser value to native biodiversity unless forming a linking corridor and consisting of mature native species i.e. not <i>leylandii</i> .

Further background information about biodiversity and its management is in Appendix 3. Original reports provided to Mary Tubridy by Joe Adamson (Birds) and Julian Reynolds (freshwater biodiversity) are available for inspection.

Part 2: Biodiversity Action Plan

2.1 Biodiversity SWOT

Strengths of biodiversity are:

Good habitat diversity including types which are uncommon in lowland areas of Carlow. These include part of a natural rivercourse (FW1), a small sample of a semi-natural woodland typical of this locality (WN1) and planted woodlands dating from an original estate.

The river is known as the Tobar Bhríde Stream, a tributary of the Douglas River, which flows into the Burrin River and thence to the River Barrow. Invertebrate sampling shows that it has an EPA Water Quality Score Q 3-4, as it lacks sensitive forms but also has few very tolerant forms. This would have a Water Framework Directive [WFD] rating of 'Moderate'. While noting the absence of stoneflies, water lice *Asellus* and caddis larvae, the Small Stream Risk Analysis [SSRA] comes out as Probably not at Risk.

The river supports several specialist plant species; Fools water cress *Water-cress*, Lesser celandine, Remote sedge at edge and Brooklime. Because of water quality assessment it now has a good species list of invertebrates.

The two ponds in the environs of Myshall include the Horse pond in a field above the village. The second called the "Duck Pond" is above the water wheel. Both ponds are in acceptable condition and have potential for improvement.

The duck pond above the water wheel contains some specialist wetland plants patch of Peppermint *Mentha x piperita* (garden escape) with Water-cress *Nasturtium* sp, Common Water-starwort *Callitriche stagnalis*, Purple-loosestrife *Lythrum salicaria*, Floating Sweet-grass *Glyceria fluitans*, also many plants of the alien Indian balsam *Impatiens glandulifera*, a little Common Duckweed *Lemna minor*. Further out, on soft mud, is a patch of a non-calcified Stonewort (Charophyta).

On the bank is some Bog Stitchwort *Stellaria alsine*. One frog tadpole was found in this stretch, originating from the upstream pond. This is a habitat for the following invertebrates which require good quality water:

Baetid mayfly nymphs

Mayfly nymphs *Baetis rhodani*

Blackfly larvae *Simulium* sp.

Flatworms *Polycelis* sp.

Snails *Potamopyrgus antipodarum*

Shrimps *Gammarus duebeni*

Elmid riffle beetle

Organisms under floating grass:

Water-beetles: Diving beetles (Dytiscidae), several species.

Hemiptera: 1 small pond-skater (Gerridae)

Hemiptera: 4 Water measurers (*Hydrometra* sp.)

Mayfly: 1 *Baetis rhodani* nymph

Mollusca: Many New Zealand mud snails *Potamopyrgus antipodarum*

2 Pond snails *Radix balthica*.

Crustacea: several large Irish shrimps *Gammarus duebeni*.

Hirudinea: 1 Erpobdellid leech

The woodland upstream of the Duck Pond, is an example of the type of native woodland which was typical of this locality. It has some old Holly and Elm trees (*Ulmus glabra?*), and an understorey dominated by woodland herbs, Violets, Bluebell, and Lesser Celandine.

This woodland contrasts with a less natural type WD1 nearer the pond which has a grassy understorey.

The area is unique in having detailed information on bats, lichens and mosses, a tree trail map and guide. The cryptogram report provided by Maria Cullen provides a comprehensive list of lichens, mosses, algae, fungi, liverworts, ferns and plants growing on the mature trees (highlighted by the Tree Trail), various types of walls and individual sites of interest. Two rare lichens were found. Two species are indicators of old woodland *Normandina pulchella* and *Schismatomma quercicola*, thus confirming the importance of woodland in the locality. Another bio-indicator species, a green algae, indicates the influence of excess nitrogen in the atmosphere due to intensive agriculture practises.

This project has now added to the record of biodiversity by providing a comprehensive plant checklist (in Appendix 2) and list of birds. Plant checklist revealed the presence of 107 native plants and 43 non-natives.

The high diversity of these species is an indicator of high habitat diversity.

Bird diversity (29 species) include Buzzard, Wood Pigeon, Collared Dove, Swift, Barn Swallow, House Martin, Pied wagtail, Wren, Robin, Song Thrush, Blackbird, Blackcap, Goldcrest, Spotted Flycatcher, Great Tit, Coal Tit, Blue Tit, Magpie, Jackdaw, Rook, Hooded Crow, Starling, House Sparrow, Chaffinch, Goldfinch, Greenfinch, Siskin, Bullfinch and Yellow hammer. Information about these species is in Appendix 2.

The weaknesses of the area for biodiversity are:

- Poor quality of pond as a habitat for wetland birds and emergent plant species as well poor quality interpretation at the Duck Pond as the information in the interpretative panel is too general and inaccurate, including misspelling.
- Lack of easy access to local expertise to provide guidance about interventions to protect and enhance biodiversity
- Lack of winter bird survey as this would have revealed more species.

Opportunities

There are many opportunities to protect and enhance biodiversity involving local environmental education (formal and informal), projects in various locations around the village to demonstrate best practise and the promotion of events which will support community cohesion while taking care of biodiversity. Appendix 3 explains the rationale behind the actions listed in Table 3.

Threats

Threats to biodiversity come from a concern with tidiness as this results in the removal of “weeds” native plants of value to pollinators, lack of awareness of the value of native species and semi-natural habitats, excessive use of night-time lighting which disturbs bats and local coal burning and fertilizer use which affects lichens.

2.3 Actions to protect and improve biodiversity in Myshall

Location	Habitats Affected	Action	Whose responsibility? Key group <u>Underlined</u>	Urgency 1= Least 3=Most
Improve awareness of biodiversity and its needs	All	<p>Engage Primary School. See Appendix 3 for guidelines.</p> <p>Promote biodiversity friendly gardening and sustainable practices (better plant species, feeding birds in winter, composting, re-using water and natural materials). No Mypex, no peat based composts nor Leylandii.</p> <p>Publicise results of expert studies and encourage further research i.e. Check list of plants in Myshall against the Flora of Carlow (Booth,1979), carry out winter bird survey when it is assumed bird list could reach 60.</p> <p>Organise an annual event to promote biodiversity i.e. Tobar Bride Day on 14th September</p> <p>Encourage community to feed birds in winter every winter, consistently.</p> <p>Promote engagement with citizen science projects by the community. Some details in Appendix 3</p>	<p>Primary School Principal</p> <p>Residents Associations</p> <p><u>Tidy Towns Committee</u></p> <p><u>Myshall Muintir na Tire</u></p> <p>Heritage Officer Carlow Co Co.</p>	3
Manage invasive plants	WS1 GS2	<p>Carry out invasive species survey and carry out treatment to eradicate and control invasive plant species</p>	<p><u>Myshall Muintir na Tire</u></p> <p>Heritage Officer</p>	3

Location	Habitats affected	Action	Whose responsibility? Key group <u>underlined</u>	Urgency 1=Least 3=Most
Obtain equipment and resources to learn about biodiversity	All	See list in Appendix 3	<u>Myshall Muintir na Tire</u> Primary school	3
Put up nest boxes in buildings for Swifts and also in Millennium Park, Byrne Memorial Park and Adelaide Church grounds		Different bird species require different types of nest boxes. Spotted Flycatcher and Robin favour nest boxes with an open front. Nestboxes which are ideal for Swifts should be particularly encouraged as they now lack suitable nesting sites within buildings, due to changing building regulations regarding design e.g. lack of crevices under house eaves.		2 Action for Swifts 3
Develop relationship with relevant statutory agencies and NGO's		See Appendix 3 for information about statutory and non-statutory organizations concerned with biodiversity.	<u>Myshall Muintir na Tire</u>	3
Carry out works in village centre around the pump	BL3	Take up some of the paving and plant ground cover instead or/ plant creeping thyme in the cracks	<u>Tidy Towns Volunteer</u> Heritage Officer Carlow County Council	2
Carry out works in front of Community Centre	BL3	Plant wall with shrubs or climbers on the front façade.	<u>Myshall Muintir na Tire</u> Tidy Towns volunteers	2
Carry out works in former walled garden	GA1	Redevelop as an Orchard with heritage species associated with Carlow. Apple trees act as an important food source for birds and insects.	<u>Tidy Towns Committee</u> Muintir na Tire	2

Location	Habitats affected	Action	Whose responsibility? Key group <u>underlined</u>	Urgency 1=Least 3=Most
Carry out works in grounds of Catholic Church	GA2 (part)	Convert some GA2 to GS2 by changing the mowing regime. See Appendix 3 for guidelines for grasslands	<u>Parish Council</u> Tidy Towns Committee	1
Carry out works grounds of Catholic church near stream.	BL1 /FW 4 on sides of stream	Expose wall bordering stream. Remove all non-natives	<u>Parish Council</u> Tidy Towns volunteers	1
Rejuvenate Tobar Bride bed (as you come in gate next to Finian'a graveyard)	BC4	Remove gravel and Mypex from both beds. Remove weeds and dig over, add farmyard manure or (peat free) compost and replant under trees plus gaps in the other bed.	Tidy Towns volunteers	3
Carry out works at St Brigid's Well	BL1 /FP2	Remove gravel and stones and add soil, clear weeds off path and clean the well to expose water. Remove artificial grass under Brigid, tidy up planting behind her, paint urns or remove. Leave ferns in outer stonework.	Tidy Towns volunteers	3

Location	Habitats affected	Action	Whose responsibility? Key group <u>underlined</u>	Urgency 1=Least 3=Most
Improve Duck Pond for biodiversity	FL8	<p>Consider reprofiling the pond to provide shallow margins/ or agree not disturb vegetation which could lead to the development of an island. Otherwise put in small island.</p> <p>If left undisturbed more submerged vegetation would develop naturally, which would benefit any nesting ducks and attract more insects such as damselflies and dragonflies, while also sheltering fish and other organisms. Ensure plants of Himalayan Balsam do not flower as this annual invasive spreads by seeds. Final recommendation is High priority</p>	<u>Tidy Towns Committee</u> Heritage Officer Lawpro Officer	2
Improve biodiversity at Horse Pond in field above the park	FL8	Limit the entry of cattle thus allowing more shoreline marginal and aquatic vegetation to develop. This would encourage a bigger range of insects to colonise and perhaps spawning by newts, which are likely to be present in the vicinity.	<u>Tidy Towns Committee</u> Land manager	2
Rejuvenate Tidy Towns bed near the Duck pond		Remove the non-native Euphorbias and plant with native ferns.	Tidy Towns volunteers	1

Location	Habitats affected	Action	Whose responsibility? Key group <u>underlined</u>	Urgency 1=Least 3=Most
Carry out works in Adelaide Church grounds to improve biodiversity	GA2 BC4 WL2	<p>From the bed in corner inside gate (BC4) remove invasive Himalayan Balsam and weed it.</p> <p>Put layer of mulch around tree bases (WL2)</p> <p>Stop spraying the bank around the yew bases and behind yew (WL2)</p> <p>Leave an area of GA2 for meadow to become GS2.</p>	<u>Parish Council</u> Tidy Towns Committee	3

Location	Habitats affected	Action	Whose responsibility? Key group <u>underlined</u>	Urgency 1=Least 3=Most
Carry out works in Mountain view estate	WL1 GA2 BC4 BL3 WD5 WL2	<p>Agree defined area for dumping of garden waster. In the medium term develop local composting scheme to deal with green waste.</p> <p>Develop meadow either side of fence - part of green or at hedgerow.</p> <p>Remove evergreen Euonymous, New Zealand flax, add autumn Aster, some Easter helleborus, and more colour for autumn, winter and spring.</p> <p>Plant the walls near the ESB box and other bare walls. Use general ornamental trees <i>Acer crimson king</i></p> <p>Remove old tree ties/stakes.</p> <p>Remove 2 Leylandiis at fence in corner, take up Mypex, extend corner to upper Leylandii. Plant with roses, Berberis rose glow. As Copper beech is too close to the wall move it.</p> <p>Consider box hedging, rambler or climbing rose, carpet roses and hornbeam.</p> <p>Plant whole area at the end of estate (GA2) with trees – Develop a small drainage ditch (FW4) with a little water or a flowing stream (FW2)</p>	<p><u>Residents Association</u></p> <p>Tidy Towns Committee and volunteers</p> <p>Carlow County Council's Heritage Officer and Environmental Education Officer for advice on biodiversity and appropriate means of dealing with green waste.</p>	2

Location	Habitats affected	Action	Whose responsibility? Key group <u>underlined</u>	Urgency 1=Least 3=Most
Carry out works in St Oliver's Crescent	GA2	Plant up grass strip by fence - plant the fence with native shrubs or fruit trees, hazel or cobb nuts. Remove red robin and compost it. In the right hand side entrance to estate Plant a small woodland and meadow in front of it.	<u>Residents Association</u> Tidy Towns committee and volunteers	2
Carry out works in St Oliver's Park	GA2	Plant native woodland or hedgerow between path and road in grass margin.	<u>Residents Association</u> Tidy Towns committee and volunteers	2
Engage with Primary School to improve biodiversity and education about local biodiversity	BL3/GA 2	Plant a hedge along wall on inside of carpark. Plant shrubbery as far as wire fencing at the courts. Holly in the shadier parts. Fill in some of the gaps in shrub bed, remove dead Hebe under the Laburnum, take up gravel and Mypex.	<u>Principal and school community</u> . See Appendix ?	3
Carry out works in bed in front of old walled garden	BC4	Ensure all year round interest not just spring and summer. Berries in winter from Pyracantha and Cotoneaster. Put in spring bulbs, more aubrieta. and <i>Viburnum davidii</i>	<u>Tidy Towns committee and volunteers</u> Myshall Muintir na Tire	3
Carry out works in field below Community Centre	GA2 WL1A	Young beech hedge - recently at community hall; needs weeding and mulching	<u>Tidy Towns committee and volunteers</u> Myshall Muintir na Tire	2

Location	Habitats affected	Action	Whose responsibility? Key group <u>underlined</u>	Urgency 1=Least 3=Most
Carry out works to wall opposite hedgerow on way into GAA	BL3	Plant native ivy on the wall	<u>GAA</u> Tidy Towns committee and volunteers	2

References

Cullen, M. with contributions by Howard Fox , National Botanic Gardens, (no date), Myshall Cryptogam Biodiversity Report, unpublished report prepared for Myshall Muintir na Tire.

Fossitt, J. (2000) A guide to habitats in Ireland, Heritage Council, Kilkenny.

Fox, B. (2017) Sli Stainiul no Crainn- A historical tree trail around Myshall.

Hickey, B. (2012) Notes of meeting with representatives of the community to discuss the walled garden, unpublished record compiled by Betsy Hickey for

Mullen, D. (2019) A bat assessment of Myshall village with recommendations for habitat enhancement and lighting, unpublished report prepared for Myshall Muintir na Tire.

Mullen, D. (2019), Biodiversity Plan with Habitat enhancement measures for Myshall Village, Carlow, unpublished report prepared for Myshall Muintir na Tire.

Smith, G.F., O'Donoghue, P. O'Hora, K., and Delaney, E (2011), Best practice guidance for habitat survey and mapping, Heritage Council, Kilkenny.

Appendix 1 Checklist of plants 2021

English Name	Latin Name	Status
		Native N Non-native NN
Alder	<i>Alnus glutinosa</i>	N
Angelica	<i>Angelica sylvestris</i>	N
Ash	<i>Fraxinus excelsior</i>	N
Aspen	<i>Populus tremula</i>	N
Barren Strawberry	<i>Potentilla sterilis</i>	N
Bay	<i>Laurus nobilis</i>	NN
Berberis sp	<i>Berberis stenophylla</i>	NN
Bindweed	<i>Calystegium sepium</i>	N
Birch	<i>Betula pubescens</i>	N
Birds's foot trefoil	<i>Lotus corniculatus</i>	N
Black medick	<i>Medicago lupulina</i>	N
Bluebell	<i>Hyacinthoides non scripta</i>	N
Bog stitchwort	<i>Stellaria alsine</i>	N
Bracken	<i>Pteridium aquilinum</i>	N
Bramble	<i>Rubus fruticosus agg</i>	N
Broad buckler fern	<i>Dryopteris dilatata</i>	N
Broad leaved plantain	<i>Plantago major</i>	N
Broadleaved dock	<i>Rumex obtusifolius</i>	N
Brooklime	<i>Veronica beccabunga</i>	N
Celandine	<i>Ranunculus ficaria</i>	N
Cherry	<i>Prunus Kanzan</i>	NN
Cock's foot grass	<i>Dactyllus glomerata</i>	N
Common gorse	<i>Ulex europaeus</i>	N
Common mouse ear	<i>Cerastium fontanum</i>	N
Common sorrel	<i>Rumex acetosa</i>	N
Common valerian	<i>Valeriana officinalis</i>	N
Common water starwort	<i>Callitriche stagnalis</i>	N

English Name	Latin Name	Status
		Native N Non-native NN
Cotoneaster sp	<i>Cotoneaster horizontalis</i>	NN
Cow parsley	<i>Anthriscus sylvestris</i>	N
Cowslip	<i>Primula veris</i>	?
Creeping bent	<i>Agrostis stolonifera</i>	N
Creeping buttercup	<i>Ranunculus repens</i>	N
Creeping thistle	<i>Cirsium arvense</i>	N
Crested dog's tail	<i>Anthoxanthum odoratum</i>	N
Cupressus sp	<i>Cupressus macrocarpa</i>	NN
Cytisus sp	<i>Cytisus sp</i>	NN
Daisy	<i>Bellis perennis</i>	N
Dandelion	<i>Taraxacum officinale</i>	N
Dog rose	<i>Rosa canina</i>	N
Duckweed	<i>Lemna minor</i>	N
Elder	<i>Sambucus nigra</i>	N
English elm	<i>Ulmus procera?</i>	NN
Erysium sp	<i>Erysium cheiri</i>	NN
Euonymous	<i>Euonymus emerald and Gold</i>	NN
Euonymous	<i>Euonymus fortunei 'Harlequin'</i>	NN
Euphorbia	<i>Euphorbia characacias</i>	NN
False oat grass	<i>Arrhenatherum elatius</i>	N
Figwort	<i>Scrophularia nodosa</i>	N
Floting sweet grass	<i>Glyceria fluitans</i>	N
Fool's water cress	<i>Apium nodiflorum</i>	N
Foxglove	<i>Digitalis purpurea</i>	N
Fumitory	<i>Fumaria officinalis</i>	N
Garden heather	<i>Erica carnea</i>	NN
Garlic mustard	<i>Alliaria petiolata</i>	N
Geranium	<i>Geranium wargraves Pink</i>	NN
Germander speedwell	<i>Veronica chamaedrys</i>	N
Giant sequoia	<i>Sequoiadendron giganteum</i>	NN

English Name	Latin Name	Status
		Native N Non-native NN
Good King Henry	<i>Chenopodium album</i>	N
Grey redshank	<i>Persicaria maculosa?</i>	
Grey willow	<i>Salix cinerea</i>	N
Ground ivy	<i>Glechoma hederacea</i>	N
Hairy bird foot trefoil	<i>Lotus uliginosus</i>	N
Hard fern	<i>Blechnum spicant</i>	N
Hart's tongue fern	<i>Asplenium scolopendrium</i>	N
Hawkbit	<i>Leontodon sp</i>	N
Hawthorn	<i>Crataegus monogyna</i>	N
Hazel	<i>Corylus avellana</i>	N
Hebe	<i>Hebe sp.</i>	NN
Herb Robert	<i>Geranium robertianum</i>	N
Himalayan balsam	<i>Impatiens glandulifera</i>	NN
Hogweed	<i>Heracleum spondylium</i>	N
Holly	<i>Ilex aquifolium</i>	N
Honeysuckle	<i>Lonicera periclymenum</i>	N
Horse chestnut	<i>Aesculus hippocastenum</i>	NN
Italian rye grass	<i>Lolium perene</i>	N
Ivy	<i>Hedera helix</i>	N
Ivy leaved speedwell	<i>Veronica hederifolia</i>	N
Knapweed	<i>Centaurea nigra</i>	N
Korean spruce	<i>Abies koreana</i>	NN
Lady-fern	<i>Athyrium filix-femina</i>	N
Lady's smock	<i>Cardamine pratensis</i>	N
Larch	<i>Larix decidua</i>	NN
Laurel	<i>Prunus laurocerasus</i>	NN
Lawson's cypress	<i>Chamaecyparis lawsoniana</i>	NN
Lesser stitchwort	<i>Stellaria graminea</i>	N
London plane tree	<i>Platanus × acerifolia</i>	
Lords and Ladies	<i>Arum maculatum</i>	N

English Name	Latin Name	Status
		Native N Non-native NN
Magnolia	<i>Magnolia sp.</i>	NN
Maiden hair spleenwort	<i>Asplenium trichomanes</i>	N
Male fern	<i>Dryopteris felix mas</i>	N
Meadow thistle	<i>Cirsium dissectum</i>	N
Meadowsweet	<i>Filipendula ulmaria</i>	N
Mint	<i>Mentha x piperata</i>	NN
Mock orange	<i>Philadelphus sp</i>	NN
Monkey puzzle	<i>Araucaria araucana</i>	NN
Narrow ribbed platntain	<i>Plantago lanceolata</i>	N
Navelwort	<i>Umbilicus rupestris</i>	N
Nettle	<i>Urtica dioica</i>	N
Nipplewort	<i>Lapsana communis</i>	N
Oak	<i>Quercus robur</i>	N
Oxeye daisy	<i>Leucanthemum vulgare</i>	N
Pieris forest flame	<i>Pieris forest flame</i>	NN
Pignut	<i>Conopodium majus</i>	N
Pittosporum Tom thumb	<i>Rodgersia aesculifoliapittosporum tenuifolium T'om Thumb'</i>	
Polypody fern	<i>Polypodium vulgare</i>	N
Primrose	<i>Primula vulgaris</i>	N
Purple loosestrife	<i>Lythrum salicaria</i>	N
Pyracantha	<i>Pyracantha sp</i>	NN
Ragwort	<i>Senecio jacobea</i>	N
Red clover	<i>Trifolium pratense</i>	N
Red dead-nettle	<i>Lamium purpurea</i>	N
Red fescue	<i>Festuca rubra</i>	N
Rhododendron	<i>Rhododendron ponticum</i>	NN
Robin run the hedge	<i>Galium aparine</i>	N
Rose	<i>Rosa arvensis</i>	N
Rose	<i>Rosa x 'Noaschnee'</i>	NN
Rowan	<i>Sorbus aucuparia</i>	N

English Name	Latin Name	Status
		Native N Non-native NN
Scaly male fern	<i>Dryopteris affinis</i>	N
Scots Pine	<i>Pinus sylvestris</i>	NN
Sedge	<i>Carex sylvatica?</i>	N
Sheep's bit	<i>Jasione montana</i>	N
Shepherds' Purse	<i>Capsella bursa-pastoris</i>	N
Silverweed	<i>Potentilla anserina</i>	N
Sitka spruce	<i>Picea sitchensis</i>	NN
Skimminia	<i>Skimmia japonica</i>	NN
Slender speedwell	<i>Veronica filiformis</i>	NN
Snowberry	<i>Symphoricarphus</i>	NN
Soapwort	<i>Saponaria officinalis</i>	NN
Soft rush	<i>Juncus effusus</i>	N
Soft shield fern	<i>Polystichum setiferum</i>	N
Sowthistle	<i>Sonchus oleraceus</i>	N
Spear thistle	<i>Cirsium vulgare</i>	N
Spiraea	<i>Spiraea sp.</i>	NN
Spruce	<i>Picea sp. Dwar</i>	NN
St Johns wort	<i>Hypericum humifusum</i>	N
Sycamore	<i>Acer pseudoplatanus</i>	NN
Tormentil	<i>Potentilla erecta</i>	N
Tufted forget me not	<i>Myosotis laxa</i>	N
Upright hedge-parsley	<i>Torilis japonica</i>	N
Vetch	<i>Vicia sepium</i>	N
Water cress	<i>Nasturtium officinale</i>	N
Western red cedar	<i>Thuja plicata</i>	NN
White clover	<i>Trifolium repens</i>	N
Wild Cherry	<i>Prunus avium</i>	N
Wild Garlic	<i>Allium ursinum</i>	N
Willow herb	<i>Epilobium hirsutum</i>	N
Willow herb	<i>Epilobium montanum</i>	N

English Name	Latin Name	Status
		Native N Non-native NN
Willow herb	<i>Epilobium parviflorum</i>	N
Wood avens	<i>Geum urbanum</i>	N
Wood violet	<i>Viola riviniana</i> X <i>reichenbachiana</i>	N
Woodruff	<i>Galium odoratum</i>	N
Wych elm	<i>Ulmus glabra</i>	N
Yarrow	<i>Achillea millefolium</i>	N
Yew	<i>Taxus bacata aurea</i>	NN
Yew	<i>Taxus bacata</i> 'Moycullen'	NN
Yorkshire fog	<i>Holcus lanatus</i>	N

Appendix 2 Myshall Bird Survey 2021

Species	Comments
Buzzard <i>Buteo buteo</i>	Birds were observed circling high over farmland, southwest of the Community Centre. None observed breeding within the survey boundary
Wood Pigeon <i>Columba palumbus</i>	Frequent flyover. A common species in farm and woodland in Ireland
Collared Dove <i>Streptopelia decaocto</i>	Heard and observed in the grounds of Adelaide Memorial Church
Swift <i>Apus apus</i>	Observed breeding under the eaves of Church of the Holy Cross on the 5 th and 25 th of June, Birds had left the nesting area by the third site visit on 2 nd July. A notable species, having disappeared from many former breeding areas in Ireland. (Ref. 1)
Barn Swallow <i>Hirundo rustica</i>	Very common over the village
House Martin <i>Delichon urbica</i>	Common over the village
Pied Wagtail <i>Motacilla alba yarelli</i>	Observed feeding on the playing field south of Millennium Park and by the small pond
Wren <i>Troglodytes troglodytes</i>	Commonly heard and observed throughout the survey area
Robin <i>Erithacus rubecula</i>	Commonly heard and observed throughout the survey area
Song Thrush <i>Turdus philomelos</i>	One observed in Adelaide Memorial Church grounds
Blackbird <i>Turdus merula</i>	Two observed in Adelaide Memorial Church grounds and one in Byrne Memorial Park
Blackcap <i>Sylvia atricapilla</i>	Frequent in Millennium Park and church grounds
Goldcrest <i>Regulus regulus</i>	Frequent in Millennium Park and church grounds
Spotted Flycatcher <i>Muscicapa striata</i>	One observed at the west end of Millennium Park. Possibly bred. A declining species in Ireland (Ref. 1)
Great Tit <i>Parus major</i>	Occasional in church grounds and Byrne Memorial Park
Coal Tit <i>Periparus ater</i>	Frequent in Adelaide Memorial Church grounds.
Blue Tit <i>Cyanistes caeruleus</i>	Frequent in church grounds and gardens and Byrne Memorial Park
Magpie <i>Pica pica</i>	Frequent throughout survey area

Species	Comments
Jackdaw <i>Corvus monedula</i>	Breeding in Myshall village. Common
Rook <i>Corvus frugilegus</i>	Occasional flyover. A common species
Hooded Crow <i>Corvus cornix</i>	Occasional flyover
Starling <i>Sturnus vulgaris</i>	Occasional flyover. Observed along Croppy Road. Breeding in the village
House Sparrow <i>Passer domesticus</i>	Observed along Croppy Road. A declining species in Ireland (Ref. 1)
Chaffinch <i>Fringilla coelebs</i>	Observed along Croppy Road. A common species in Ireland
Goldfinch <i>Carduelis carduelis</i>	Occasional flyover
Greenfinch <i>Carduelis chloris</i>	Observed in Adelaide Memorial Church Grounds. A declining species in Ireland (Ref 1)
Siskin <i>Carduelis spinus</i>	Occasional flyover. Frequents conifer plantations
Bullfinch <i>Pyrrhula pyrrhula</i>	Observed in Adelaide Memorial Church grounds
Yellowhammer <i>Emberiza citrinella</i>	Not observed within the survey area. Frequently heard outside of the village, along the Kildavin Road. Formerly more widespread in Ireland. Numbers have become more stable over the last number of years. Frequents grain fields

Appendix 3 Guidelines for Biodiversity Management

How to find a good place for biodiversity?

As biodiversity is much reduced due to development 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 be principally native plant species.

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

There is a place for non natives too as many have been naturalised, have become firmly established and can also be important for other species. There is 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 and Himalayan Balsam. People who have these species on their land must take care not to allow it 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, an area 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. Your habitat map will show where these features are found in your locality. In general the age of these habitats will be a good guide to their value.

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.

Planting for biodiversity

If you want to benefit biodiversity then the obvious thing to do is to plant native trees, shrubs or herbs or a plant listed in the All Ireland Pollinator plan (pollinators.ie).

If you do not find a native species to your taste plant a *variety* of a native species or a species that belongs to the *same genus*. The genus is the surname of the species. If the common wild Daisy is called *Bellis perennis* (Latin names are always in Italics). *Bellis* is the genus and *Bellis perennis* is the species within that genus. So if you do not want to plant *Bellis perennis*, look for other plants whose name starts with *Bellis*. Because they belong to the same genus it is likely that pollinators etc will utilize them.

Varieties are cultivated types of wild species (similar to breeds of dogs). Many wild plants are now available as varieties which are more showy 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.

Or /and plant a native shrub typical of the local environment. It will flower (good for pollinators), produce seeds (food for birds) and if dense a chest height will be perfect for nesting birds. Most songbirds nest in bushes not in trees.

Plant a “mini forest” with trees and shrubs typical of the local environment. Trees in the centre, shrubs outside. If anti- social activity is a threat this can be surrounded by a secure fence.

While planting natives is the best strategy, non-natives can also be used if they can perform one of these functions.

The worst species is Leylandii. Under no circumstance should this be planted.

Homes for biodiversity

Homes for biodiversity are called habitats. The habitat map for your locality will reveal the nature of the current habitats. To obtain more information about these habitats examine the three level habitat classification 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>) and provides an excellent introduction to the biodiversity associated with them. 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.

In making places for biodiversity consider what kind of habitat is missing in your locality. In deciding on its location develop it near an existing example to improve the quality of the corridors used by wildlife.

Developing woodlands and hedgerows

The most useful terrestrial habitat is a native woodland. Information in your biodiversity action plan should suggest the original type of woodland present. If not the guidance provided by the governments Native Woodland Scheme will indicate 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 (add ref). A variety of native trees and shrubs should be planted 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.

Developing shrubberies

Shrubberies can be very valuable for nesting birds if they produce food for pollinators and safe nesting places for birds at chest height. They can be any shape or size and can be considered an amenity by the public. A hedgerow is essentially a specialised linear shrubbery with a structure involving trees, shrubs, possibly a bank and ditch. Original hedgerows were stock proof therefore they were very safe for nesting birds. As hedgerow management is no longer practiced it is rare to find a bushy hedgerow. Planted shrubberies 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.

Developing grasslands

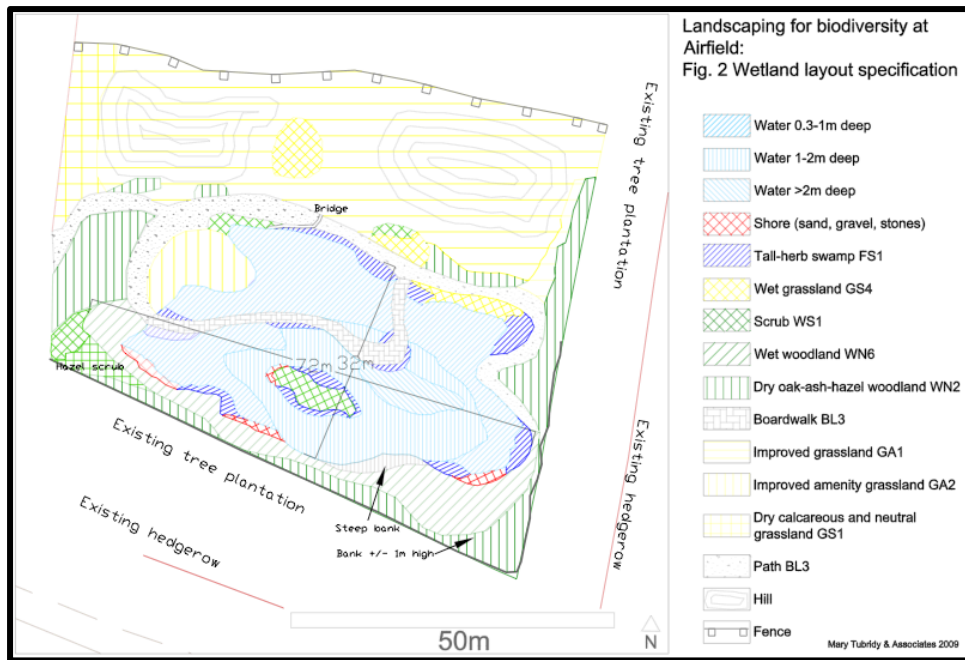
To improve grassland biodiversity first check the condition of the existing grassland. The potential of grasslands is indicated in your Level 3 habitat map. Grasslands identified as GS type have good potential. Grasslands of type GA have less potential. It may be possible to improve grasslands to make them more like a wildflower meadow following a long term management regime (10-20 years) which 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 and to convert a grassland of low potential GA type to a GS type.

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

If you want an instant wildflower meadow spread seeds but the resulting grassland should be called a “pictorial meadow”. There are lots of issues about the current practice of establishing so called “wildflower meadows”. Steer away from “wildflower meadows” Pictorial meadows will be good for pollinators and butterflies but will require major management each year to maintain its interest, far more than a natural type. 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.

Developing wetlands

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

Artificial habitats for birds, bats boxes and insects

Artificial habitats are particularly appropriate when the natural habitat of species is absent or still maturing. With the exception of Swift bricks all interventions should be regarded as temporary and removed when the natural habitat matures, thus removing the need for monitoring and cleaning.

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.

What is the 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. Rabbit is not given any protection under the Wildlife Acts as it is not a native species (they 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 etc 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 then click on Protected Areas. SAC's (Special areas of Conservation) and SPA's (Special Protected Areas). These types of areas are of international importance as they have habitats and species protected under EU legislation. 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 find information about the protected area (if an internationally important site or Natural Heritage Area) open 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, only designated ones). The most useful doc for Natura sites is the category titled *Site Synopsis*. It will provide very specific (and sometimes technical) information about the types of important areas (habitats) and species found at the site.

However very few of these sites have Management Plans i.e. details of their habitats and current interest and recommendations for management. NPWS have not had the resources to prepare these plans. Occasionally they have been prompted to prepare them due to local interest or pressure from environmental organisations.

County Biodiversity Action Plans and management

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 get in contact to develop partnership working. The capacity for these agencies to respond to requests for support varies enormously.

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

As well as providing information and support some 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 concerns to all local authority departments. Your local authority will have a full time Heritage Officer, or possibly a Biodiversity Officer, who would assist with information or support for projects. In recent years Local Authority Water Protection Officers have been appointed as a partnership between the EPA and local authorities to mobilise local support for good catchment management. They have potential to support community scale initiatives to improve water quality.

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

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

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

Financial resources for planning and works

The following organisations could be approached:

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

Making partnerships for biodiversity

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 to enhance biodiversity in your locality. Large organisations and commercial companies could be interested in promoting 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 will involve the TT committee working with a representative of the school community which includes children, teachers, all other staff (caretaker and 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, hopefully 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 officer.

There is a good chance of valuable local greening training if the contact person teacher/officer is interested in wildlife and gardening, if is a Green School which is already doing extra curricular stuff and there is a sympathetic principal/ manager (sympathetic to the area, community, ideally from the area). If those conditions exist and 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 then there is lots that can be done. The following actions are suggested. Discuss which are practical for your group.

Step One

Research the following before making a formal approach to the school/business.

Let them know about the expertise in your locality. You might have someone who knows a few birds or plants or is a keen gardener. You might have an artist in the locality who could go into a school/business, show people how to draw nature or bring in some of their work which is related to nature.

Research the kinds of freebies offered to schools/businesses from trees to posters and present this information to the school/business.

Encourage any interested teacher/official to get upskilled 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 very good.

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 ?). 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. Pass this on to school. These visits are subsidized by the Heritage Council.

Step Two

Arrange outings to places which provide interpretation about biodiversity (such as the IPCC run Lullymore peatland centre, Wicklow Mts National Park etc etc).

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.

What the community can do?

Support the school/business to learn about biodiversity in a nearby public space. Provide some information so that school can bring children out (possibly with parents for insurance purposes), learn species, take pics and samples, do project in class. As a fun event a picnic day could take place in the outdoors each year incorporating an activity which requires observation of nature. If interested and school/business wants to promote itself an exhibition could be prepared about that space and launched with much publicity.

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

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

A trail could also be set up from the school, which highlights features of biodiversity interest along it and incorporates activities, which will be carried out by pupils (questionnaire, drawings, collecting objects).

Recommended resources to support local learning about biodiversity

Books to aid identification (best ordered from NGO or Heritage Council)

Irish Grass Identification Guide

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 Carlow Evelyn Booth

Flora of County Dublin Doogue et al

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

Binoculars Opticron Oregon 4 PC 8x32 Black Binoculars

Straight Tip Tweezers

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

Magenta Bat 5 Bat Detector to hear bat signals