A BIODIVERSITY ACTION PLAN FOR BRAY

Report Prepared for Bray Tidy Towns Group
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1. GENERAL OVERVIEW

Bray is a large town located on the east coast of north County Wicklow as shown on **Figure 1** below. Part of the town is also in Dun Laoghaire Rathdown County. Bray is situated about twenty kilometres south of Dublin city centre and in the most recent census (2022) has a population of 33,512 making it the tenth largest urban area within Ireland. Bray was originally developed as a planned resort town in the 19th century and the extension of the Dublin and Kingstown Railway to Bray in 1854 ensured it was a popular and easily accessible location.

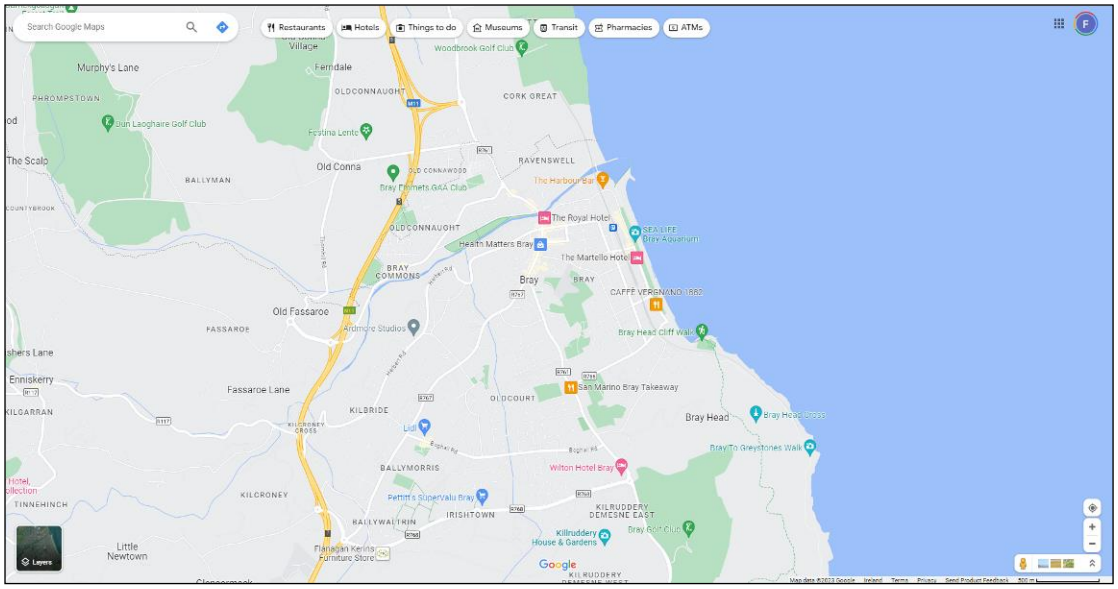

Figure 1. Bray Town, Co. Wicklow.

Bray Tidy Towns successfully received funding for this study from the Community Foundation Ireland under Strand 1 of the Environment and Nature Fund 2021. The survey was conducted by Faith Wilson (ecological consultant) on behalf of the group. The study area is located within the environs of Bray Town as shown on **Figure 2** below.

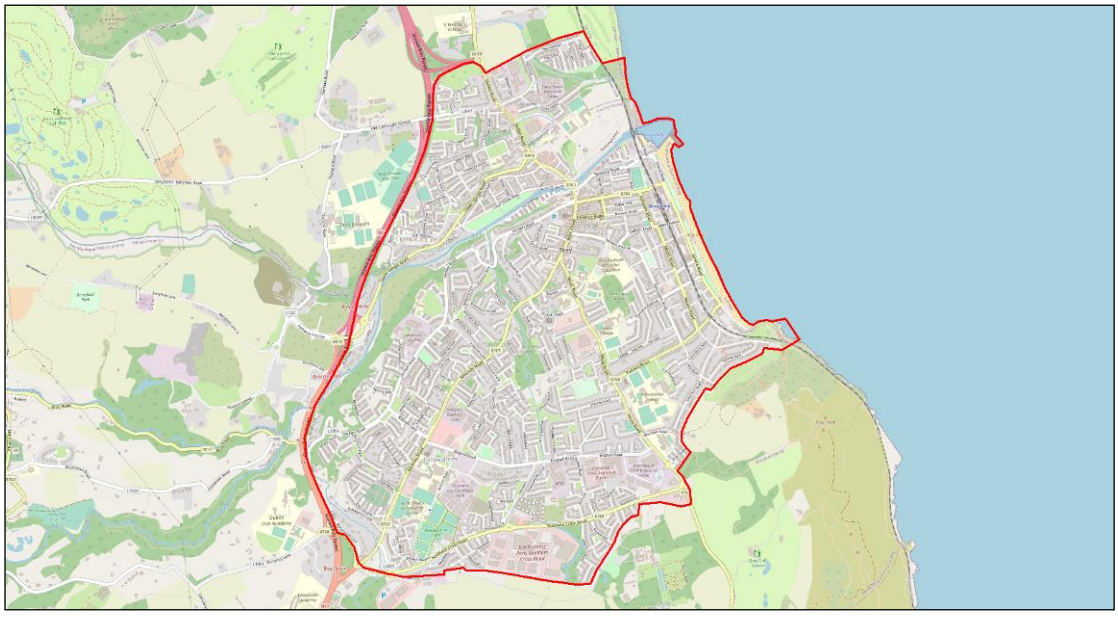

Figure 2. Biodiversity Plan Study Area shown in red.

2. METHODOLOGY

2.1 Desktop Research

A desk study was carried out to collate the available information on the ecological environment of Bray Town. The National Parks and Wildlife Service (NPWS) of the Department of Housing Local Government and Heritage (DHLGH) database of designated conservation areas and NPWS records of rare and protected plant species were checked. Information on protected species of fauna and flora listed for protection under Annex II of the EU Habitats Directive (92/43/EEC), Annex I of the Birds Directive (79/409/EEC) and the Wildlife (Amendment) Act (2000) was also sought from NPWS, the National Biodiversity Data Centre and published sources. Recent, high resolution, colour aerial photographs were also used to identify and map habitats. Various ecological surveys conducted within the environs of Bray as part of other developments and projects were also reviewed.

In addition to the identified sites which are designated for nature conservation in the environs of the town (as either Natura 2000 sites or as pNHAs) consideration was also given to other flora and fauna as defined under the following legislative instruments and red data books:

- species protected under the **Wildlife Act (1976 (amended 2000)),** such as bats, badger, pine marten and common frog,
- plant species listed under the **Flora (Protection) Order (2022)**,
- vascular plant species listed in the **Irish Red List for Vascular Plants**[1].
- bird species listed under the '**Birds of Conservation Concern in Ireland**' document[2],
- mammals listed in the **Irish Red List for Terrestrial Mammals**[3],
- amphibians and reptiles listed in the **Irish Red List for Amphibians, Reptiles & Freshwater Fish** [4],
- invasive species listed under Schedule 3 of the **'Birds and Natural Habitats Regulations 2011'** and the **EU Regulation on Invasive Alien Species (EU Regulation 1143/2014**[5].

2.2 Field Surveys

A number of locations within the town were selected for focus during the study. These were surveyed using the standard ecological methodologies and reference guides[6][7][8][9][10][11].

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[1] Wyse Jackson, M., FitzPatrick, Ú., Cole, E., Jebb, M., McFerran, D., Sheehy Skeffington, M. & Wright, M. (2016). Ireland Red List No. 10: Vascular Plants. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs, Dublin, Ireland.

[2] Gilbert G, Stanbury A and Lewis L.J. 2021. Birds of Conservation Concern in Ireland 2020 –2026. Irish Birds 43, 1-22.

[3] Marnell, F., Looney, D. & Lawton, C. (2019). Ireland Red List No. 12: Terrestrial Mammals. National Parks and Wildlife Service, Department of the Culture, Heritage and the Gaeltacht, Dublin, Ireland.

[4] King, J.L., Marnell, F., Kingston, N., Rosell, R., Boylan, P., Caffrey, J.M., Fitzpatrick, Ú., Gargan, P.G., Kelly, F.L., O'Grady, M.F., Poole, R., Roche, W.K. & Cassidy, D. (2011). Ireland Red List No. 5: Amphibians, Reptiles & Freshwater Fish. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs, Dublin, Ireland.

[5] S.I. No. 477 of 2011. The European Communities (Birds and Natural Habitats) Regulations 2011. Irish Government, Government Publications Office, Molesworth Street, Dublin 2.

[6] Fossitt, J. (2000). A Guide to Habitats in Ireland. The Heritage Council, Ireland.

[7] Scannell, M. and D. Synnott (1987). Census Catalogue of the Flora of Ireland - Clár de Phlandaí na hÉireann. Stationery Office Dublin, Dublin.

[8] Parnell, J. and Curtis, T. (2012). An Irish flora (8th edn). Cork University Press.

[9] Mullarney, K., Svensson, L., Zetterstrom, D. and P. Grant (2011). Collins Bird Guide - The Most Complete Guide to the Birds of Britain and Europe. Harper Collins.

[10] JNCC. (2010) Handbook for Phase 1 Habitat Survey – a Technique for Environmental Audit. Joint Nature Conservation Committee, Peterborough.

[11] Smith, G. F., O' Donoghue, P., O'Hara, K. and E. Delaney (2011). Best Practice Guidance for Habitat Survey and Mapping. The Heritage Council.

3. THE BIODIVERSITY OF BRAY

3.1 Geology & Soils

The northern part of Bray Town is underlain by Ordovician greywacke, slate and quartzite (known as the Maulin Formation) whereas Bray Head and the southern part of the town is underlain by Cambrian greywacke & quartzite rocks (known as the Bray Head Formation) as can be seen on **Figure 3** and **Figures 4, 5** and **6** below[12]. Extending west from the town along the Glencullen/Cookstown River towards Enniskerry the geology changes again with Ordovician greywacke and tuff rocks (known as the Glencullen Formation).

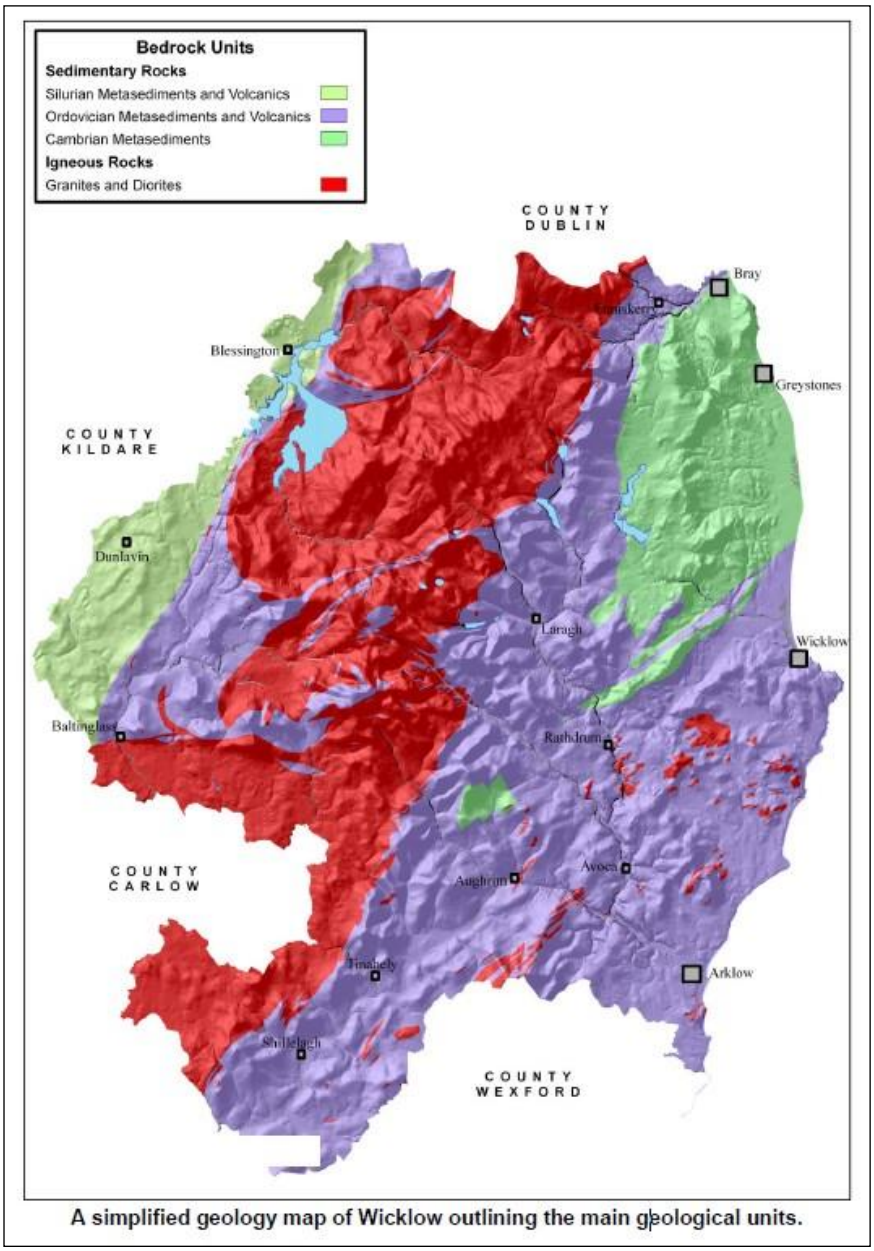


Figure 3. Geology of County Wicklow (Source: Meehan et al. (2014)).

[12] The Geological Heritage of Wicklow. An audit of County Geological Sites in Wicklow by Robert Meehan, Matthew Parkes, Vincent Gallagher, Ronan Hennessy and Sarah Gatley. 2014. An action of the County Wicklow Heritage Plan 2009 – 2014.

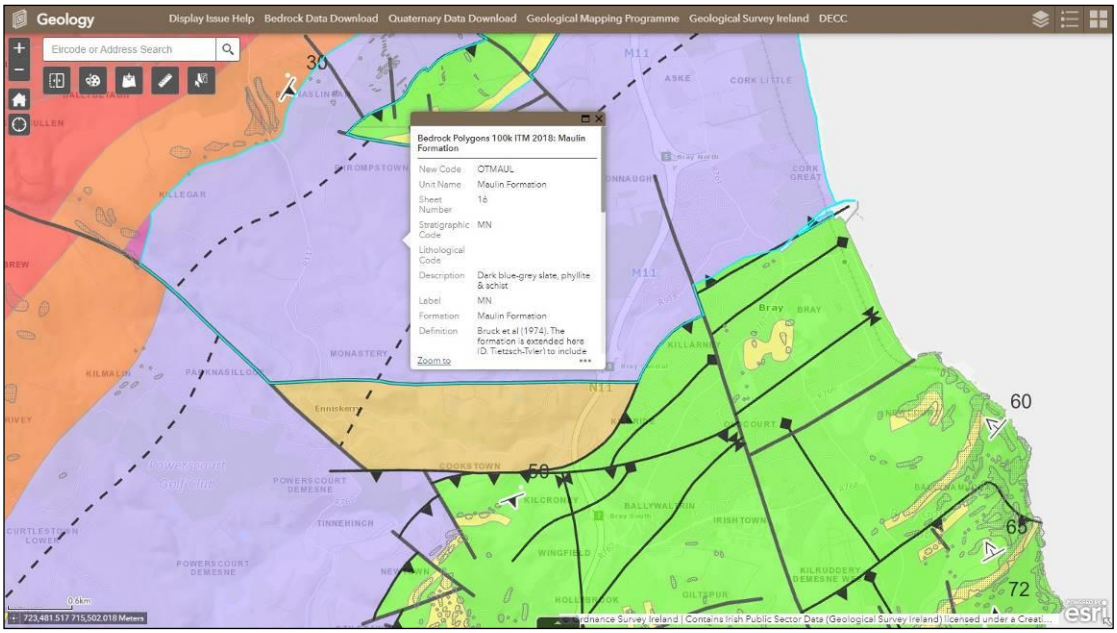


Figure 4. Underlying geology of Bray Town north of the Dargle River (Source: Geological Survey of Ireland).

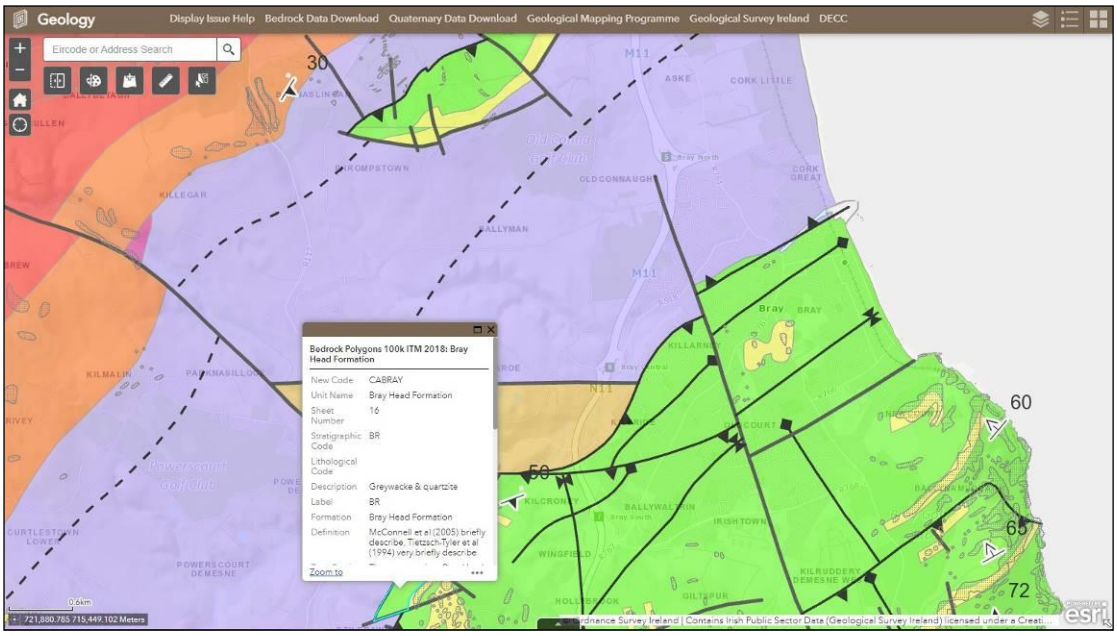


Figure 5. Underlying geology of Bray Town and Bray Head (Source: Geological Survey of Ireland).

The Cambrian Period marks an important point in the history of life on Earth; it is the time when most of the major groups of animals first appear in the fossil record. This event is sometimes called the "Cambrian Explosion," because of the relatively short time over which this diversity of forms appears. The Cambrian lasted 55.6 million years from the end of the preceding Ediacaran Period 541 million years ago (mya) to the beginning of the Ordovician Period 485.4 mya. The rocks of Bray Head and this part of Wicklow date from this time. To try and understand geological time the diagram below produced as part of The Geological Heritage of Wicklow shows how the geological timescale works if it were a 24 hour period…

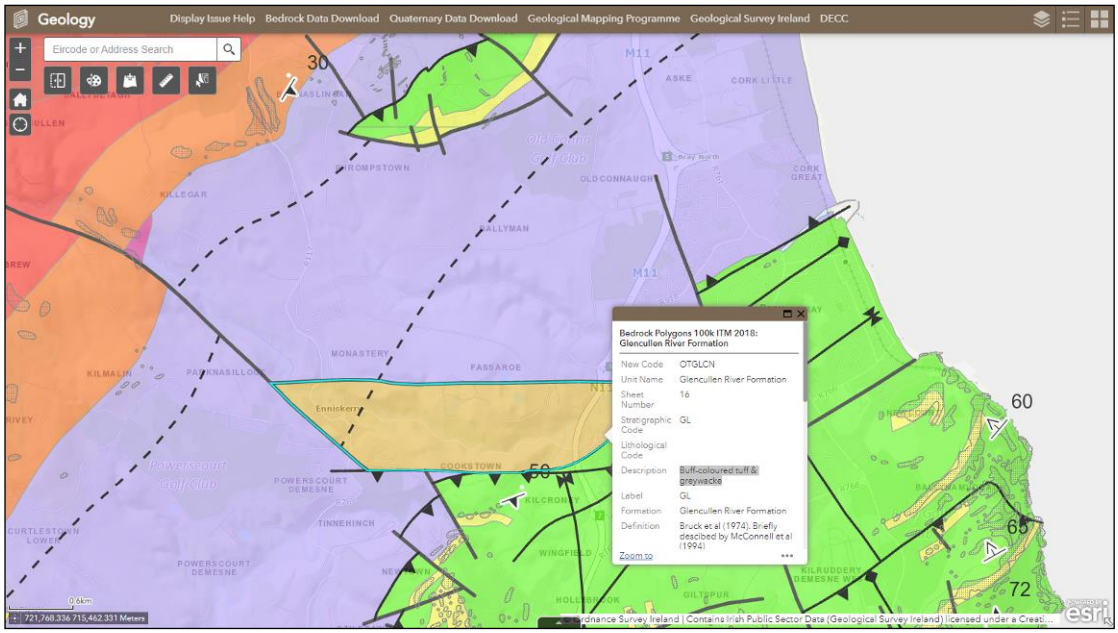


Figure 6. Underlying geology of the Cookstown River Valley towards Enniskerry (Source: Geological Survey of Ireland).

AGE (Million Years Ago)	ERA	PERIOD	EVENTS IN WICKLOW	IF THIS TIMESCALE WERE A DAY LONG ...
2.6	Cenozoic	Quaternary	Several ice ages smothering Wicklow, followed in the last 10,000 years by the spread of vegetation, growth of bogs and arrival of humans. Sculpting of corries and U-shaped valleys in the Wicklow mountains. Meltwater sculpts deep channels and deposits sands and gravels during deglaciation.	The ice ages would begin 38 seconds before midnight
66		*Tertiary*	*Erosion, weathering of rocks and denudation of land surface. No record of rocks of this age in Wicklow.*	The Tertiary period begins at 11.40 pm
145	Mezozoic	*Cretaceous*	*Erosion. No record of rocks of this age in Wicklow.*	11.15 pm
201		*Jurassic*	*Uplift and erosion. No record of rocks of this age in Wicklow.*	The age of the dinosaurs, starting at 10.55 pm
252	Palaeozoic	*Triassic*	*Desert conditions on land.*	10.42 pm
298		*Permian*	*No record of rocks of this age in Wicklow.*	10.30 pm
359		*Carboniferous*	*Land became submerged, limestones with some shales and sandstones deposited in tropical seas across much of Ireland. No record of rocks of this age in Wicklow.*	Inundation of land by sea around 10.10 pm
419		Devonian	Caledonian mountain building. Leinster Batholith Granite intruded, forming Wicklow Mountains.	Granite intruded into Wicklow, at 9.52 pm
443		Silurian	Shallow seas, following closure of the Iapetus Ocean. Slates, greywacke and shales deposited along eastern extreme of Wicklow.	Starts at 9.42 pm
485		Ordovician	Slates, siltstones and volcanic rocks form across much of southern and eastern Wicklow, as well as portions along the Glen of Imaal.	Begins at 9.28 pm
541		Cambrian	Opening of the Iapetus Ocean. Greywackes and quartzites formed between Bray Head and Roundwood.	Starts at 9.11 pm
2500	Proterozoic	*Precambrian*	*Some of Irelands oldest rocks deposited in Mayo and Sligo.*	Beginning 11.00 am
4000	Archaean		*Oldest known rocks on Earth.*	Beginning 3.00 am
4600			*Age of the Earth.*	Beginning 1 second after midnight

The Geological Timescale and County Wicklow

Figure 7. Geological Time in County Wicklow.

The bedrock around Bray (south of the town and north west of the N11) is overlain by glacial drift soils with siliceous rocks as can be seen on **Figures 8** and **9** below. These are described and mapped by the EPA soils project as part of the Clonroche Association and although the underlying geology of much of the area is acidic the soil brings a neutral to calcareous influence to the vegetation. Similarly the soils north of the river Dargle at Cork Abbey are also a fine loamy drift with siliceous stones, which forms part of the Crosstown Association (**Figure 10**).

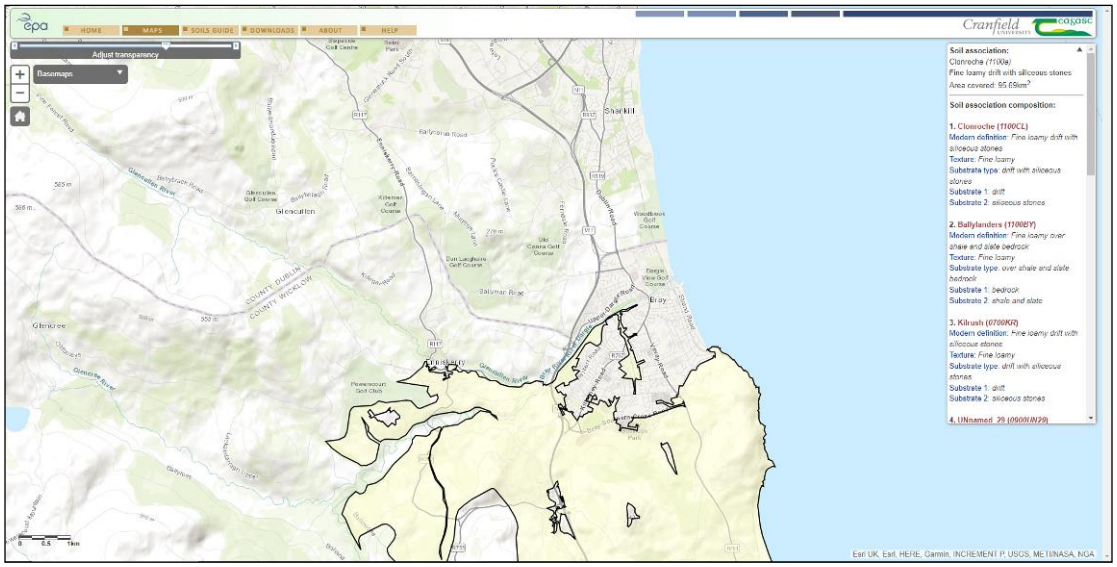


Figure 8. Soils in the southern part of Bray (Source: EPA).

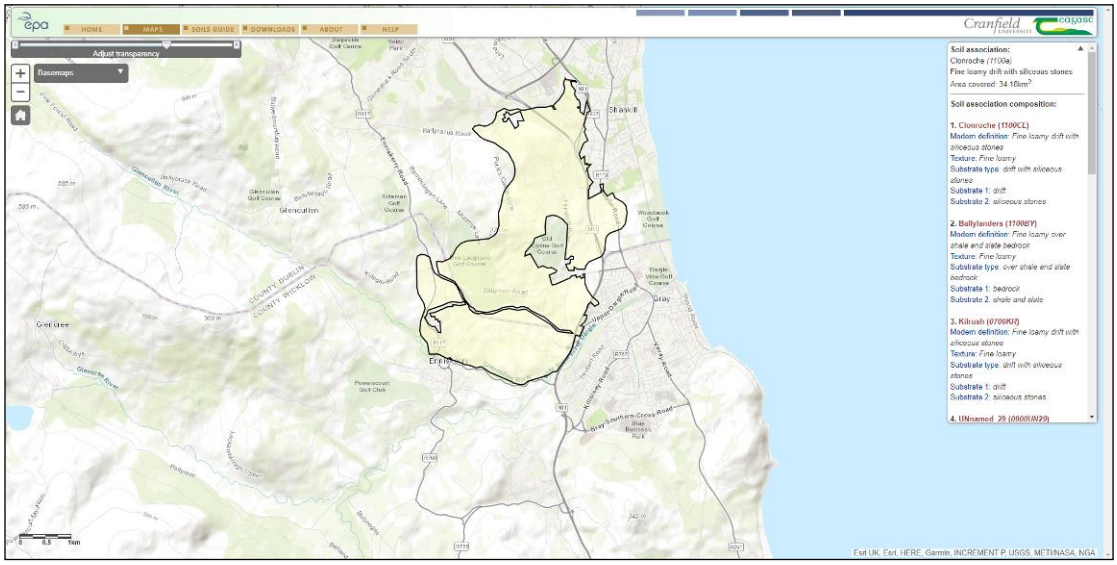


Figure 9. Soils to the north west of the N11 (Source: EPA).

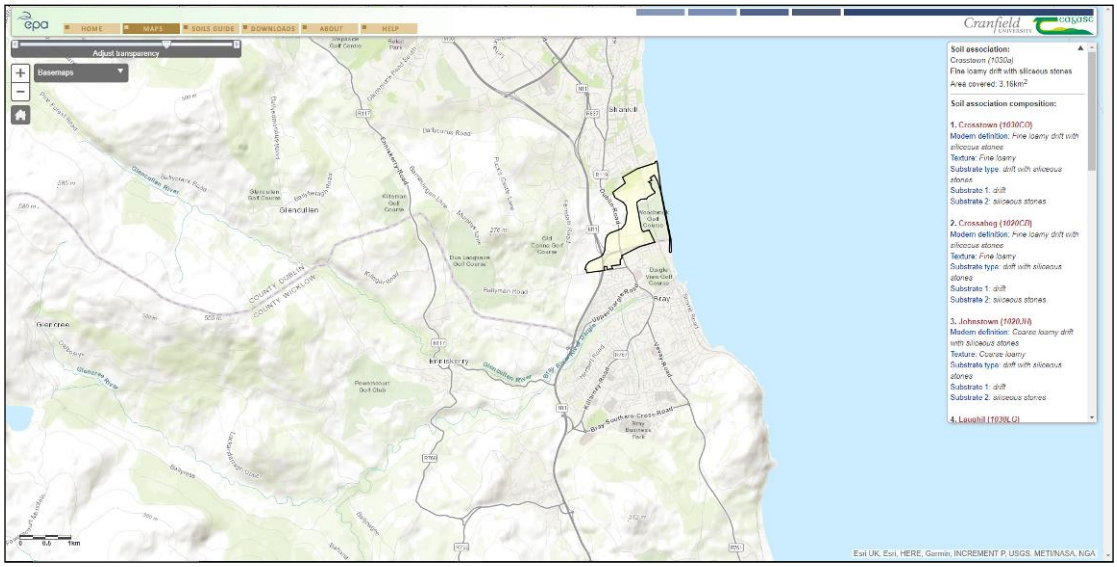


Figure 10. Soils in the northern part of Bray (Source: EPA).

Along the River Dargle the soils are alluvial in nature as shown on **Figure 11** below.

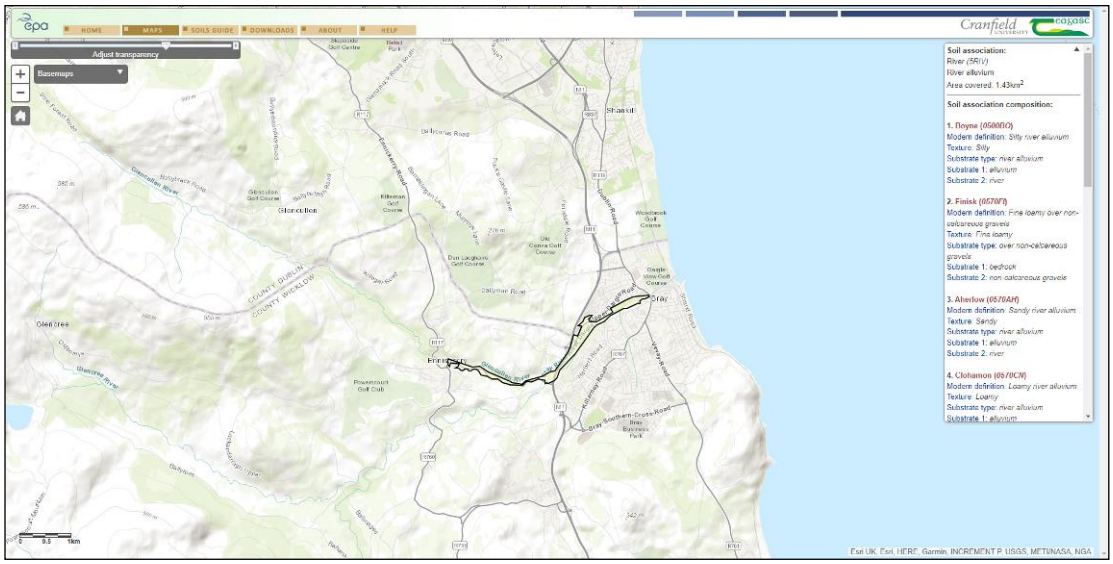


Figure 11. Soils along the River Dargle and Cookstown River are alluvial – indicated by the red arrow (Source: EPA).

Geodiversity is the often forgotten foundation for much of the biodiversity which has been identified for conservation through SAC or NHA designation, it is unsurprising that many of the most important geological sites are actually in the same areas as SAC and NHA sites.

Within the environs of Bray there are a number of designated Geological Heritage Areas. These are:

- Bray Head (Site Code: WW013)
- Enniskerry Delta (Site Code: WW020)
- River Dargle Valley (Site Code: WW051)

Their location and extent are presented below on **Figure 12** and the site reports for each are presented in **Appendix 5**.

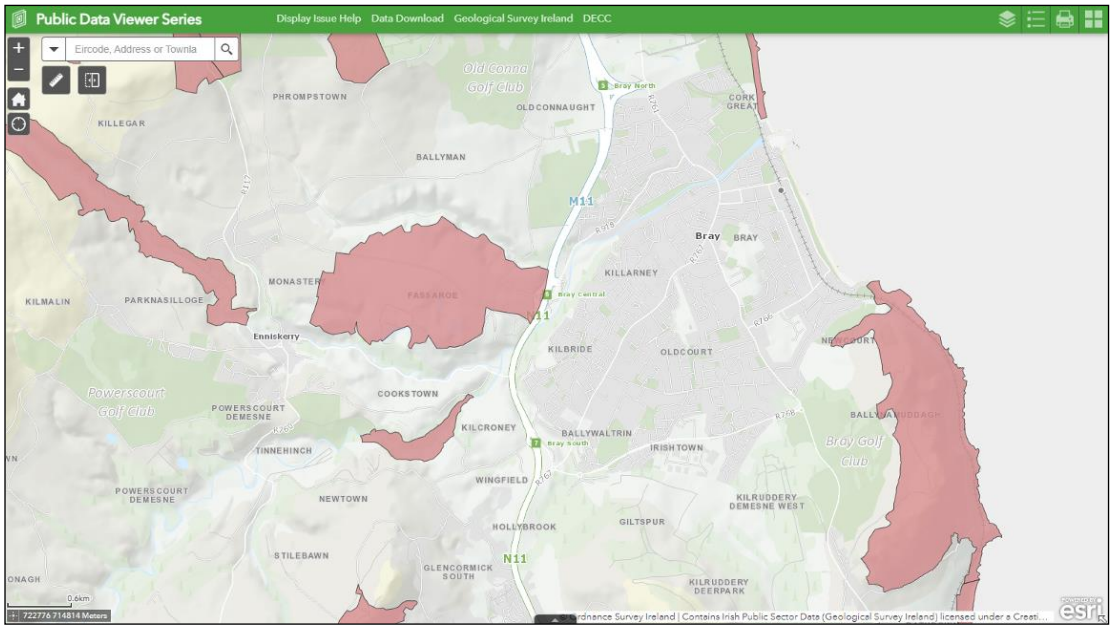


Figure 12. Geological Heritage Sites in the environs of Bray.

3.2 Nature Conservation Designations

The lands within the town are not currently the subject of any of the formal proposed nature conservation designations as described above. However the town boundary adjoins the Bray Head SAC (Site Code: 000714) which is of international importance for nature conservation. There are a number of other areas designated for nature conservation within the wider environs of Bray – the location of these is shown on **Figure 13** below. Some of these are also designated as Special Areas of Conservation and are of international importance. Those sites, which are of national importance within the general environs of Bray, are known as proposed NHAs.

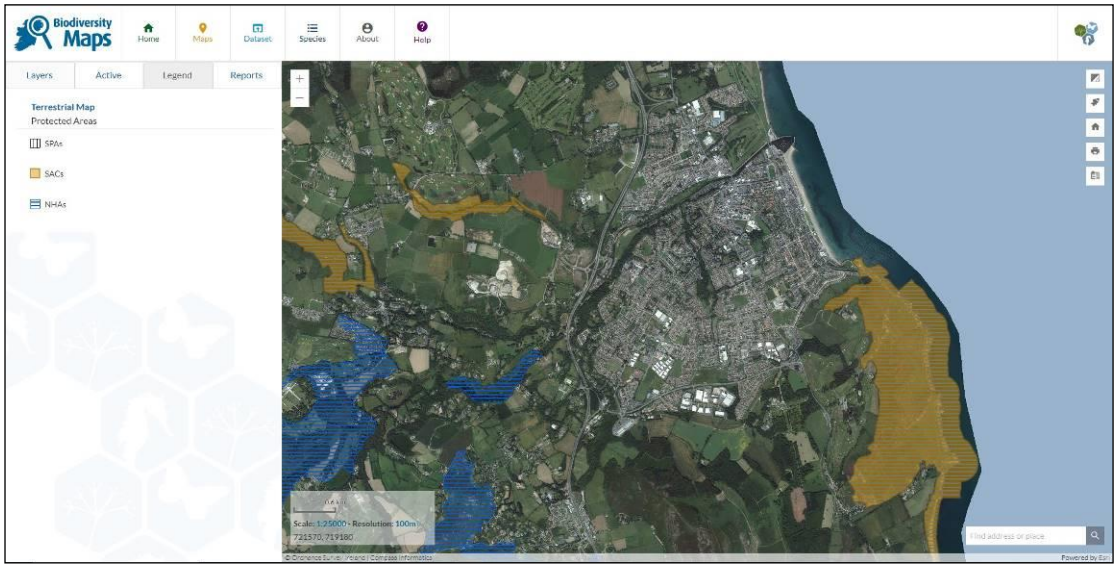


Figure 13. Areas legally designated for nature conservation within the immediate environs of Bray Town - Bray Head SAC, Ballyman Glen SAC, Knocksink Wood SAC, Powerscourt Woodland pNHA and Dargle River Valley pNHA.

South of the town lies the boundary of Bray Head SAC (Site Code: 000714). This site of international importance for nature conservation is also protected by a Special Amenity Area Order. The site is large and extends south towards Greystones Town and encompasses Bray Head and the Cliff Walk. The SAC is designated for its cliff vegetation, heathland and grassland habitats as well as a number of rare plants and species such as lizard and newt. Bray Head also supports a rich diversity of nesting seabirds.

Upstream of Bray Town and hydrologically connected to it by the County Brook is the Ballyman Glen SAC (Site Code: 000713) – this site is a site of international importance and is also designated as the Ballyman Glen pNHA (Site Code: 000713). This site is designated on account of the Tufa forming Petrifying Springs and area of Alkaline Fen found within it.

Upstream of Bray Town and hydrologically connected to it via the Cookstown/Glencullen River is Knocksink Wood SAC (Site Code: 000725) which is of international importance. The Knocksink Wood SAC lands are also designated as a proposed Natural Heritage Area (Knocksink Wood pNHA (Site Code: 000725)) and is a statutory Nature Reserve owned and managed by National Parks and Wildlife Service. Within the nature reserve/SAC are also areas of Petrifying Springs, Old Oak Woodlands and Alluvial Forests along the floodplains of the Glencullen River.

Upstream of Bray Town and hydrologically connected to it by the River Dargle are a series of wooded valleys which are of national biodiversity importance. These are the Powerscourt Woodland pNHA (Site Code: 001768), and the Dargle River Valley pNHA (Site Code: 001754). They are designated on account of the woodland habitats present and the species they support including several rare, scarce and threatened plants.

Further information on the sites of international importance in the wider environs of Bray and the reasons for their designation and legal protection are detailed in **Table 3.2.1** below and in **Appendices 2, 3** and **4**.

Table 3.2.1. Sites of international nature conservation importance near Bray, Co. Wicklow.

Site Code	Site Name and Designation	Approximate distance from Bray	Qualifying Interest (Reason for Designation)
000714	Bray Head SAC	Within and adjoins the town boundary to the south	(1230) Vegetated sea cliffs of the Atlantic and Baltic coasts, (4030) European dry heaths, (6210) Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco Brometalia*) (*important orchid sites).
000725	Knocksink Wood SAC	Within 2.2km of the town to the west and connected by the Glencullen/Cookstown River	(7220) Petrifying springs with tufa formation (*Cratoneurion*), (910E0) Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae).
000713	Ballyman Glen SAC	Within 1km of the town to the west and connected by the County Brook Stream	(7220) Petrifying springs with tufa formation (*Cratoneurion*), (7230) Alkaline fens.

3.3 Noted Flora of Bray

Botanical recording has taken place in the environs of Bray over a long period of time beginning in 1825 when Mackay's 'Catalogue of the Indigenous Plants of Ireland' was published. This included records of 74 species of plants from the county laying a solid foundation for work on the Flora of Wicklow. This work continued in earnest over the next seventy five years culminating in the publication of the Flora of County Wicklow by Brunker in 1950. Within that Flora Bray is located in the District 2 (Rathdown) and at the time of publication some 673 species had been recorded in the district. R.M. Barrington, who lived and farmed at Fassaroe, recorded many of the more unusual arable species in the area – most of these are now extinct in the county.

There are recent and historic records of rare, scarce or threatened plants from within the 10km square in which Bray is located (O21) (NPWS online database). Other species are relatively rare within the context of County Wicklow.

These include records of:

- Sea kale (*Crambe maritima*)
- Pale toadflax (*Linaria repens*)
- Climbing corydalis (*Corydalis claviculata*)
- Knotted clover (*Trifolium striatum*)
- Bird's foot clover (*Trifolium ornithopodioides*)
- Rough rigid clover (*Trifolium scabrum*)
- Bird's-foot (*Ornithopus perpusillus*)
- Spring vetch (*Vicia lathyroides*)
- Blue fleabane (*Erigeron acer*)
- Wood vetch (*Vicia sylvatica*)
- Greater broomrape (*Orobanche rapum-genistae*)
- Toothwort (*Lathraea squamaria*)
- Orchids

Many of these populations are found on Bray Head but others are found within the environs of the town.

Some of these populations are no longer extant or are threatened by either lack of management or inappropriate management.

3.3.1 Sea Kale (*Crambe maritima*)

In the Flora of County Wicklow, which was published in 1950, Brunker[13] had commented that Sea Kale (*Crambe maritima*) was probably extinct in Co. Wicklow. It was first recorded from Wicklow 'on The Murrough' in notes in Threlkeld's Synopsis Stirpium Hibernicarum (1726) and then by Hart (Cybele II) in 1872 'a few plants at the Breaches'. It had not been seen by Brunker. It was subsequently seen by Stelfox in 1959 and from then on up to the present at Newcastle, Co. Wicklow.

The Wicklow populations seem to have recovered since then as documented by Dr Tom Curtis and Faith Wilson during the Rare Plant Survey of Co. Wicklow in 2007[14], when a new population of this plant was recorded at Bray Head[15]. A small population is also known from Killiney Beach, north of Bray as shown on **Figure 14** below.

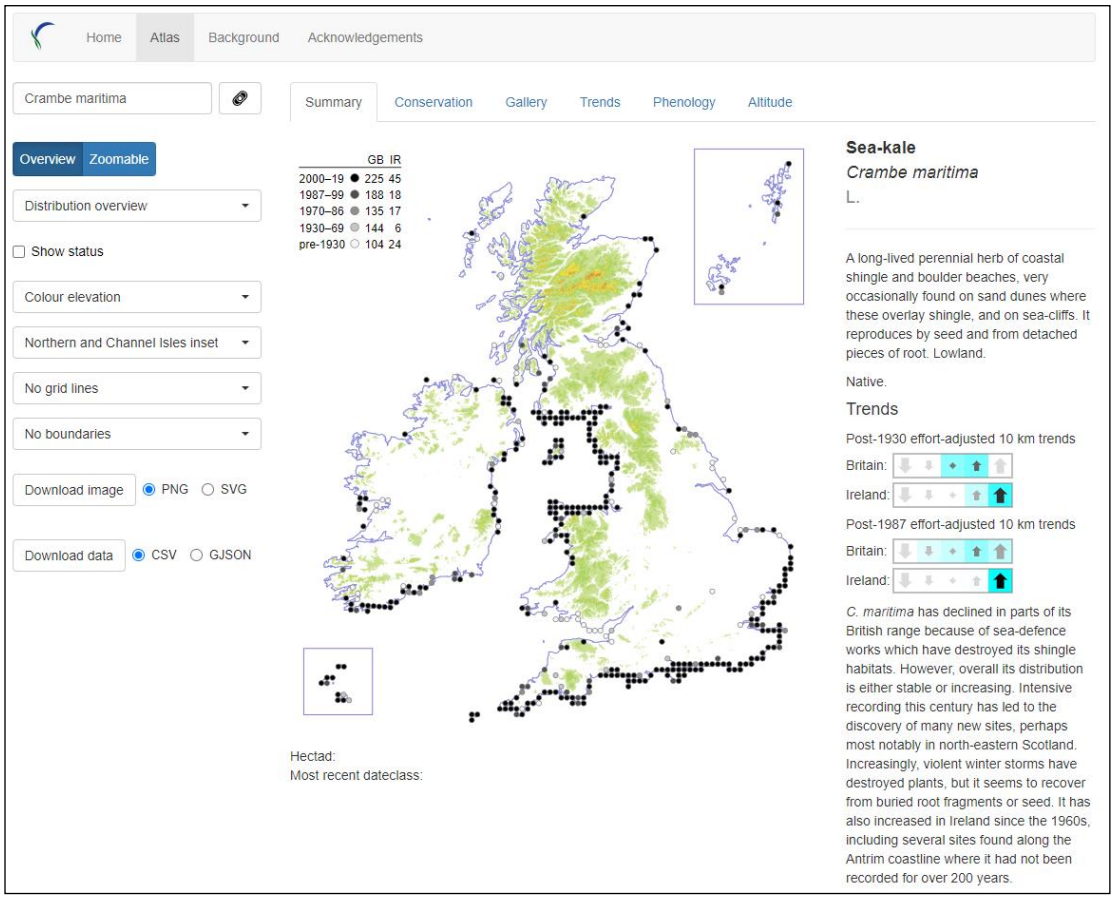


Figure 14. Distribution of Sea Kale (*Crambe maritima*) (Source: BSBI Atlas 2020).

This species requires the natural coastal processes of winter storms depositing seed and nourishment to the beach to develop – these processes are interfered with through erosion measures such as sea walls, groynes, rock armour, etc.

[13] Brunker, J. P. (1950). *Flora of the County Wicklow. Flowering Plants, Higher Cryptogams and Characeae.* Dundalgan Press (W. Tempest Ltd.), Dundalk.
[14] Curtis, T.F.G. and F.R. Wilson (2008). Field Survey Of Rare, Threatened And Scarce Vascular Plants In County Wicklow. June 2008. Unpublished report for National Parks and Wildlife Service.
[15] Curtis, T.G.F. & Wilson, F.R.G. (2011) Additions and amendments to the flora of Co. Wicklow (H20). *Irish Naturalists' Journal* **31** (2): 141–146.

3.3.2 Pale Toadflax (*Linaria repens*)

A population of Pale Toadflax (*Linaria repens*) was previously recorded from the car park adjacent to the Fatima Hall near Bray Dart Station. It was recorded here in 1972 by Tom Curtis and had been and seen since 1979. This site was then destroyed as the car park was covered in tarmacadam and the species was not refound during the Rare Plant Survey of Co. Wicklow in 2007.

It is possible that new populations of this plant might occur within the environs of Bray as it is a species that occurs on rough and waste ground, stony and cultivated land, grassy banks and along railway tracks, usually on dry, calcareous or base-rich soils, so it may reappear.

A population in Greystones was lost as a result of the development of the marina and not refound in the Rare Plant Survey of Co. Wicklow in 2007 but a new population was recorded in Greystones Town in 2023 (F. Wilson, pers. obs.) so there is hope. There was also a population by the railway just south of Greystones that may still be there.

This remains a rare species in Ireland as can be seen in the latest BSBI Atlas 2020 report on **Figure 15** below.

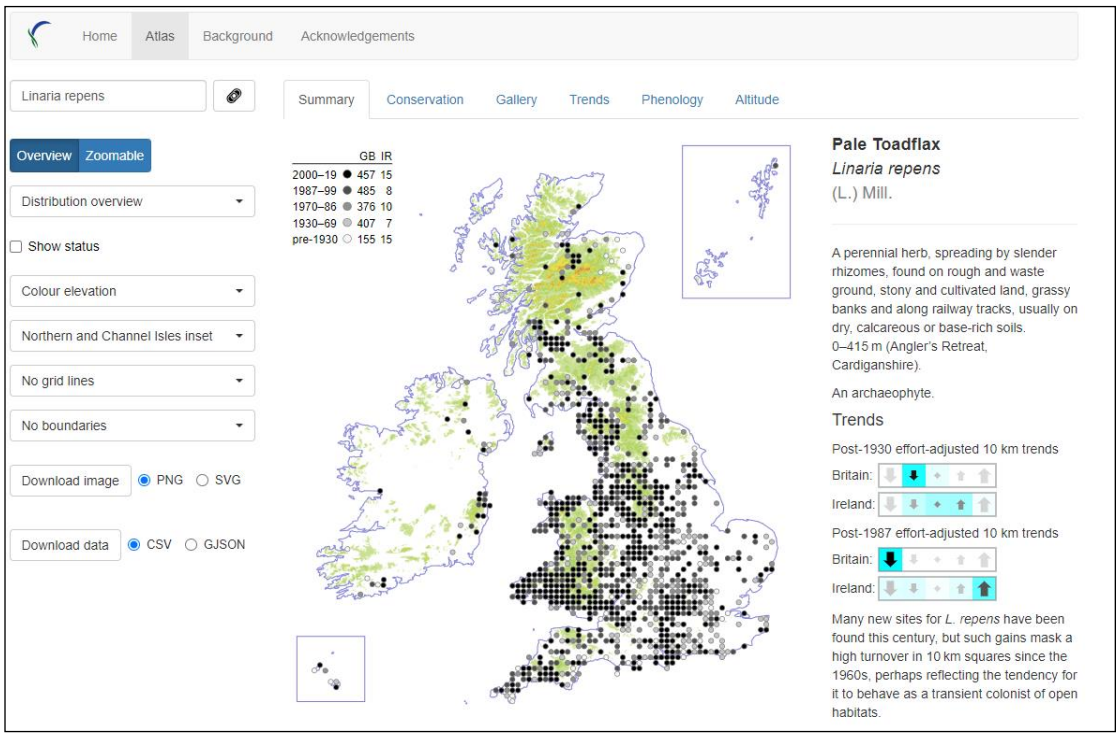


Figure 15. Distribution of Pale Toadflax (*Linaria repens*) (Source: BSBI Atlas 2020).

3.3.3 Climbing Corydalis (*Corydalis claviculata*)

This species is a real County Wicklow speciality and it is known from a number of locations in the county.

Climbing corydalis (*Corydalis claviculata*) was recorded on both the north and south sides of Bray Head during the Rare Plant Survey of Co. Wicklow in 2007.

It was first recorded from Bray Head by Barrington in 1871, who described it as 'frequent on Bray Head' and a specimen collected by him from Bray Head at that time is lodged in the National Herbarium in the National Botanic Gardens in Glasnevin.

It was then recorded from Bray Head by Brunker in 1928 and was recorded there by Dr Curtis in 1972. The species has been seen regularly there since that time.

This remains a rare species in Ireland as can be seen in the latest BSBI Atlas 2020 report on **Figure 16** below.

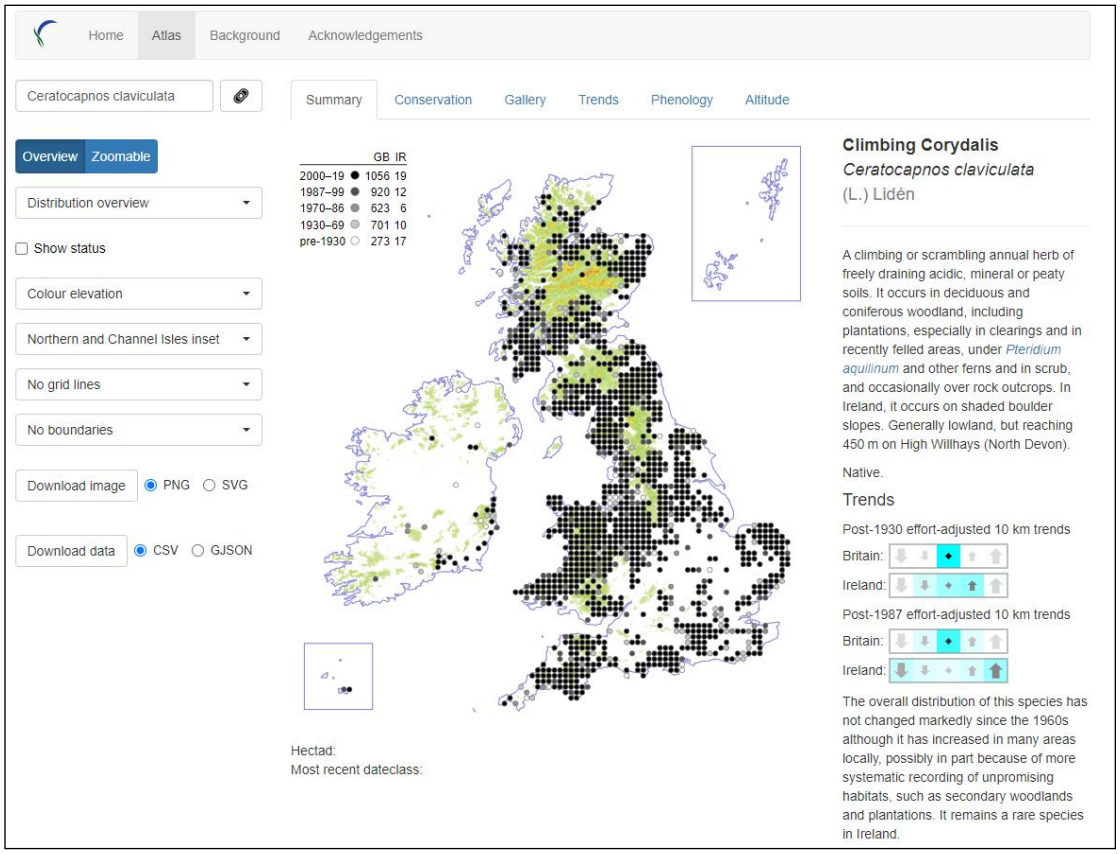


Figure 16. Distribution of Climbing corydalis (*Corydalis claviculata*) (Source: BSBI Atlas 2020).

3.3.4 Knotted Clover (*Trifolium striatum*)

Knotted Clover *(Trifolium striatum*) was first recorded from Bray Head by Brunker in 1931 and the population was seen again in 1945 by him (Brunker (1950)).

This species was found growing on the south eastern side of Bray Head during the Rare Plant Survey of Co. Wicklow in 2007.

There have been new populations of this species recorded in Ireland in recent years, particularly following work on the Flora of County Wexford, as can be seen in the latest BSBI Atlas 2020 report on **Figure 17** below.

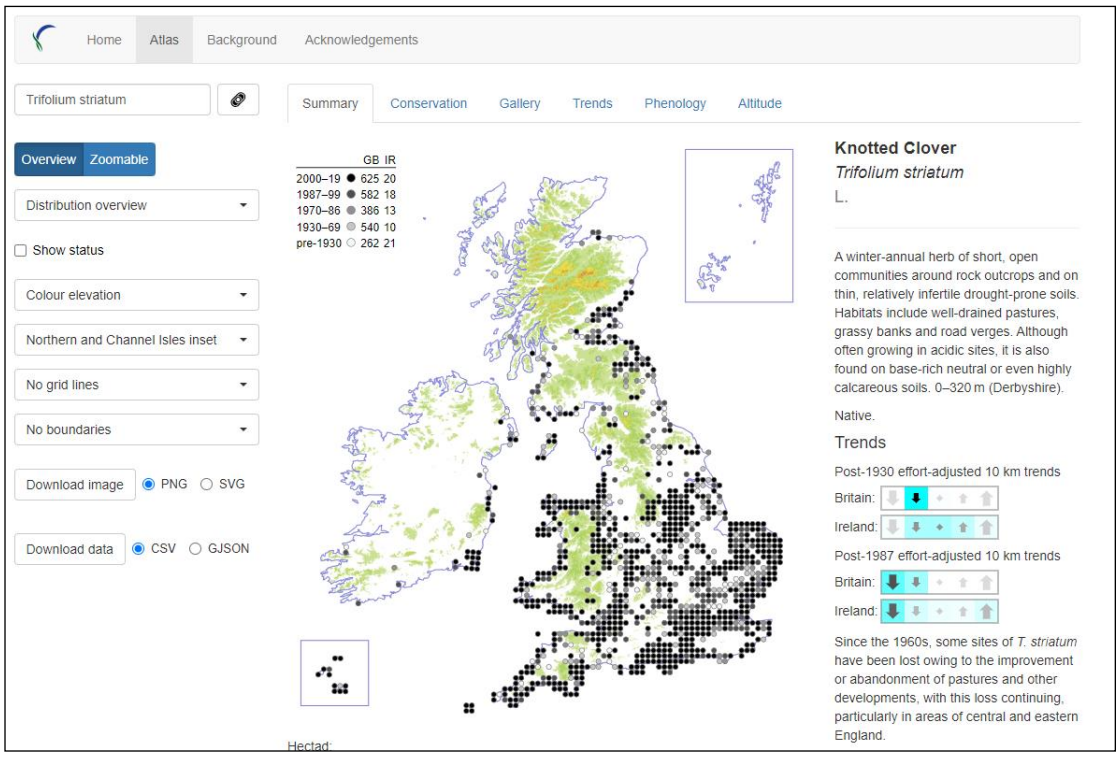


Figure 17. Distribution of Knotted Clover *(Trifolium striatum*) (Source: BSBI Atlas 2020).

3.3.5 Bird's-foot Clover (*Trifolium ornithopodioides*)

This species was first found during the British Association excursion in 1878 at Bray (Brunker, 1950).

The location of this record was never clear but a population of the species was recorded on Bray Head in 1968 by the botanist Roger Goodwillie. This population was surveyed as part of the Rare Plant Survey of Co. Wicklow in 2007.

Bird's-foot clover (*Trifolium ornithopodioides*) was found growing on the south eastern side of Bray Head during the Rare Plant Survey of Co. Wicklow in 2007. This is a rare species as can be seen in the latest BSBI Atlas 2020 report on **Figure 18** below.

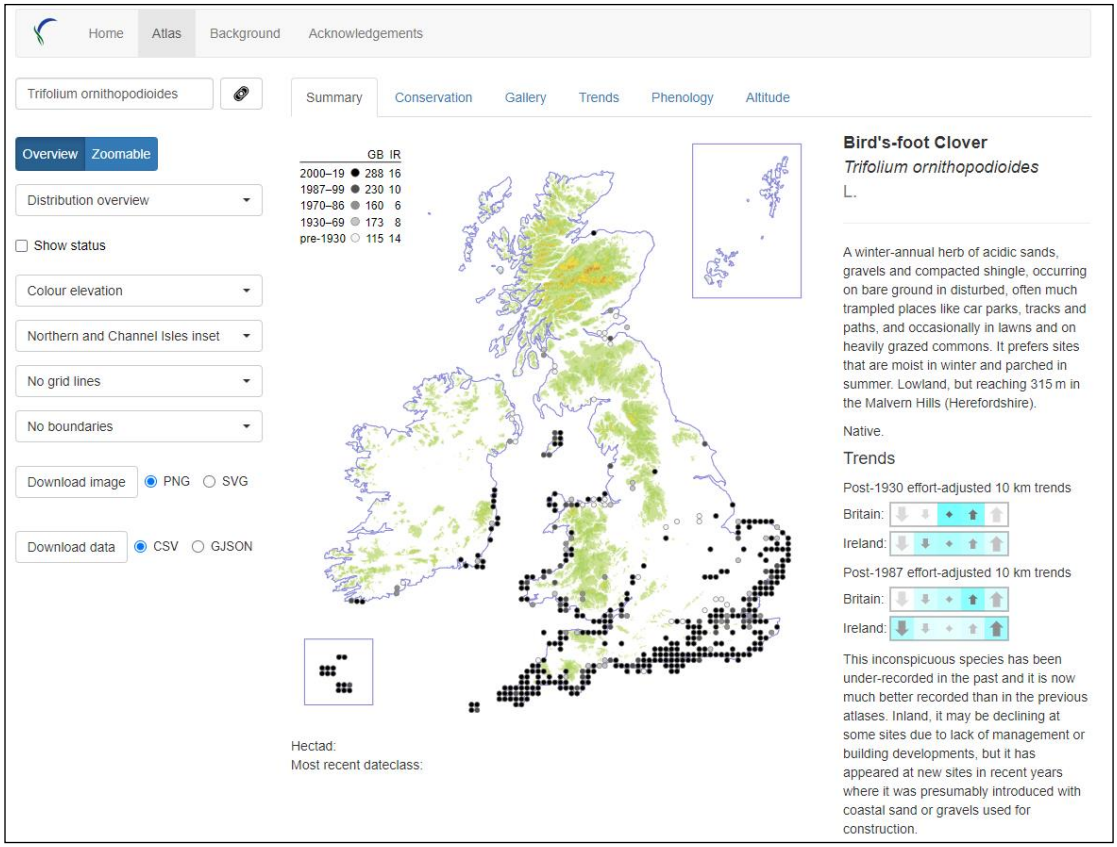


Figure 18. Distribution of Bird's-foot clover (*Trifolium ornithopodioides*) (Source: BSBI Atlas 2020).

3.3.6 Rough Rigid Clover (*Trifolium scabrum*)

Rough rigid clover (*Trifolium scabrum*) was first found on Bray Head by Brunker in 1924 and again in 1948 (Brunker, 1950).

The populations were seen here by Curtis regularly from 1972 to 2000.

The populations were not recorded during the Rare Plant Survey of Co. Wicklow in 2007 and had become overgrown by gorse.

This is a much declining species as can be seen in the latest BSBI Atlas 2020 report on **Figure 19** below.

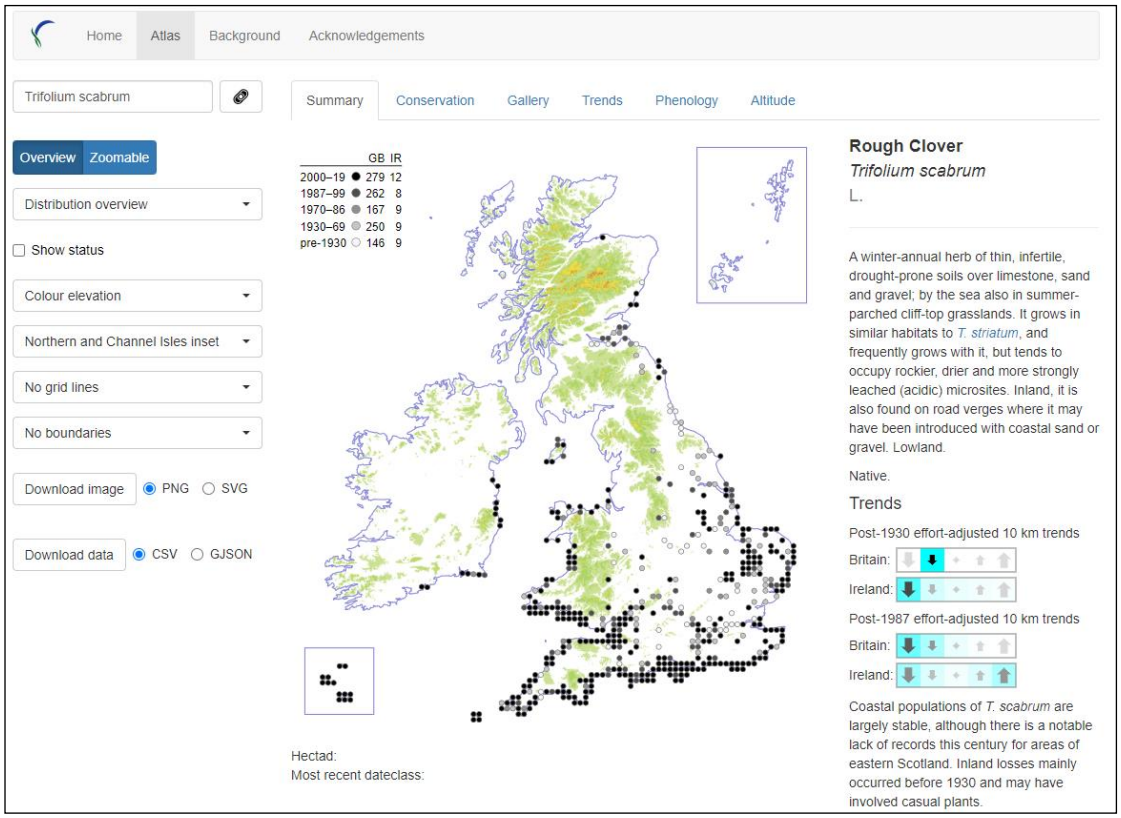


Figure 19. Distribution of Rough rigid clover (*Trifolium scabrum*) (Source: BSBI Atlas 2020).

3.3.7 Bird's-foot (*Ornithopus perpusillus*)

This species was first found in Wicklow on Bray Head by Palmer in 1929. Further sites were located for it there in 1936 and 1944 (Brunker, 1950).

It has been seen on Bray Head in quantity up to modern times.

Bird's-foot (*Ornithopus perpusillus*) is a rare species, which was found growing on the south eastern side of Bray Head during the Rare Plant Survey of Co. Wicklow in 2007.

This species may be increasing in Ireland as can be seen in the latest BSBI Atlas 2020 report on **Figure 20** below.

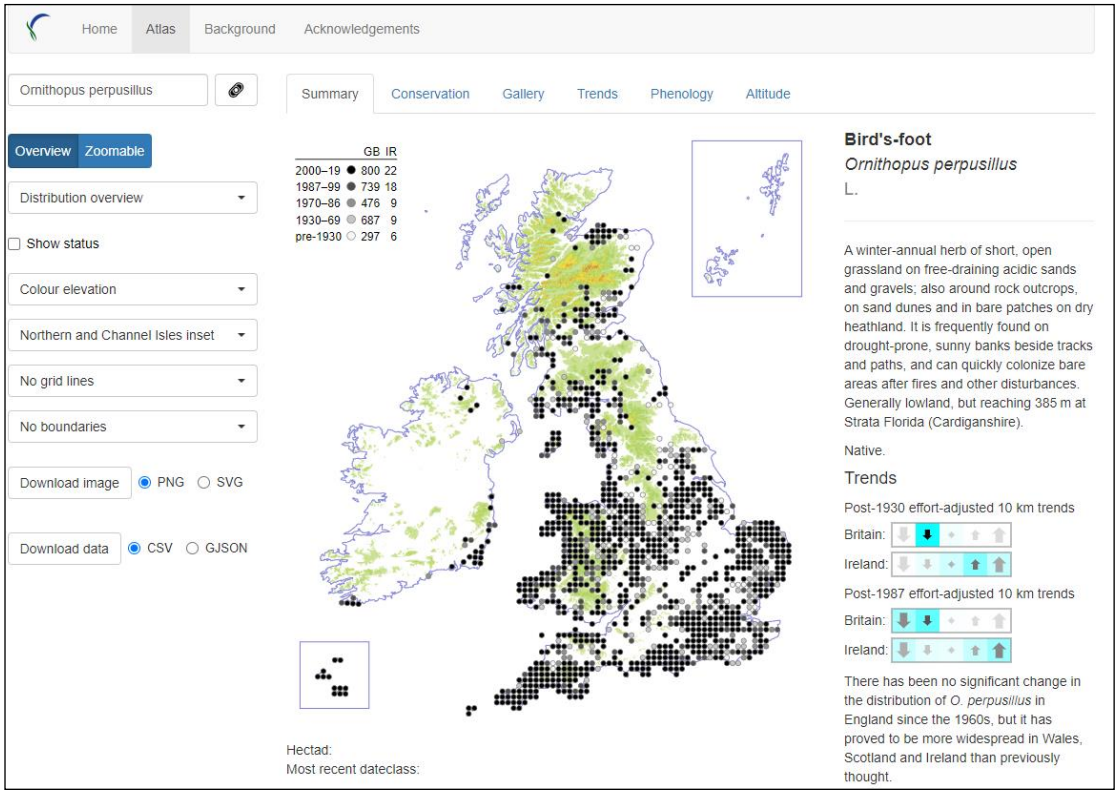


Figure 20. Distribution of Bird's-foot (*Ornithopus perpusillus*) (Source: BSBI Atlas 2020).

3.3.8 Spring Vetch (*Vicia lathyroides*)

Spring Vetch *(Vicia lathyroides)* was found growing on the south eastern side of Bray Head during the Rare Plant Survey of Co. Wicklow in 2007.

It was first recorded by here Dr Steele in 1872 and a specimen collected by him from Bray Head at that time is lodged in the National Herbarium in the National Botanic Gardens in Glasnevin.

It was then recorded from Bray Head by Brunker in 1931 and was recorded there by Dr Curtis in 1972. The species has been seen regularly there since that time.

This is a much declining species as can be seen in the latest BSBI Atlas 2020 report on **Figure 21** below.

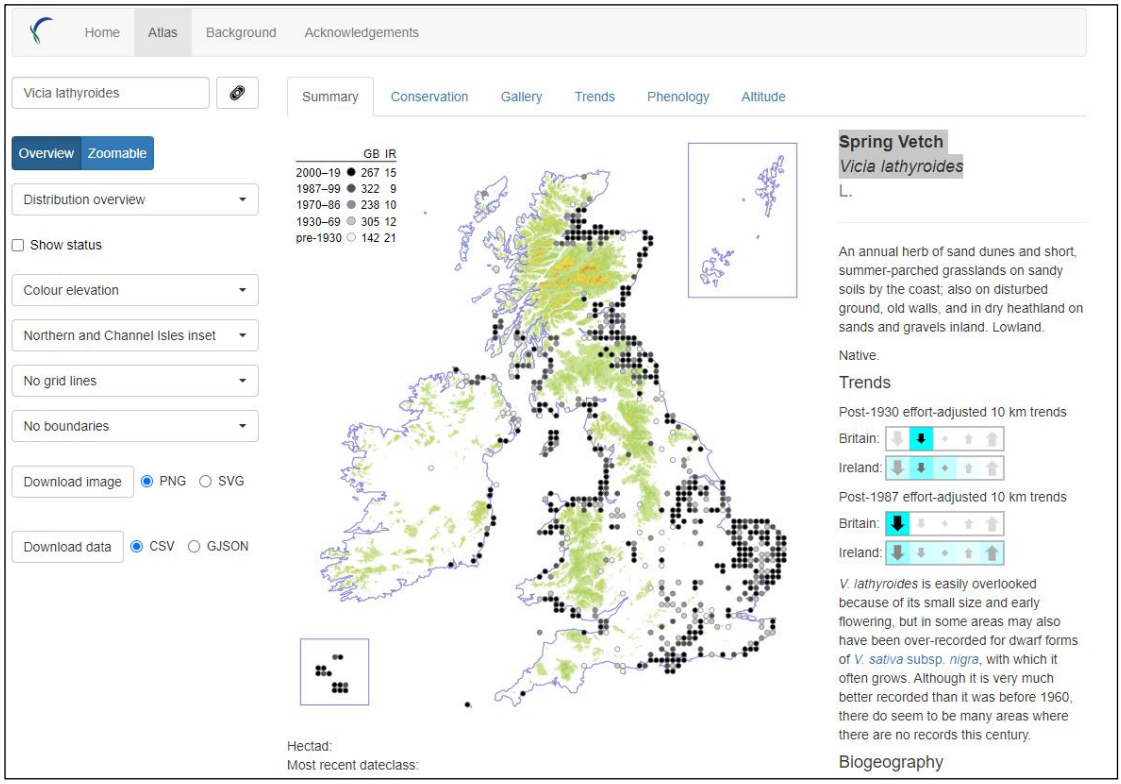


Figure 21. Distribution of Spring Vetch *(Vicia lathyroides)* (Source: BSBI Atlas 2020).

3.3.10 Blue Fleabane (*Erigeron acris*)

Blue fleabane (*Erigeron acris*) is a rare species in County Wicklow, which has much declined in the County possibly as a result of the loss of gravelled roads. It has been recorded from gravel pits in the county and also from stone walls and bridge parapets.

Garden species such as Mexican fleabane (*Erigeron karvinskianus*) are very common on the walls adjoining the River Dargle and elsewhere in the town and there is a fear that this plant may out-compete the Blue fleabane.

The Bray population which is found on stone walls on the Lower Dargle Road in Bray were first recorded there by Dr Tom Curtis and are at risk from Butterfly-bush (*Buddleja davidii*) and Bramble (*Rubus fruticosus* agg.) scrub outcompeting and shading them.

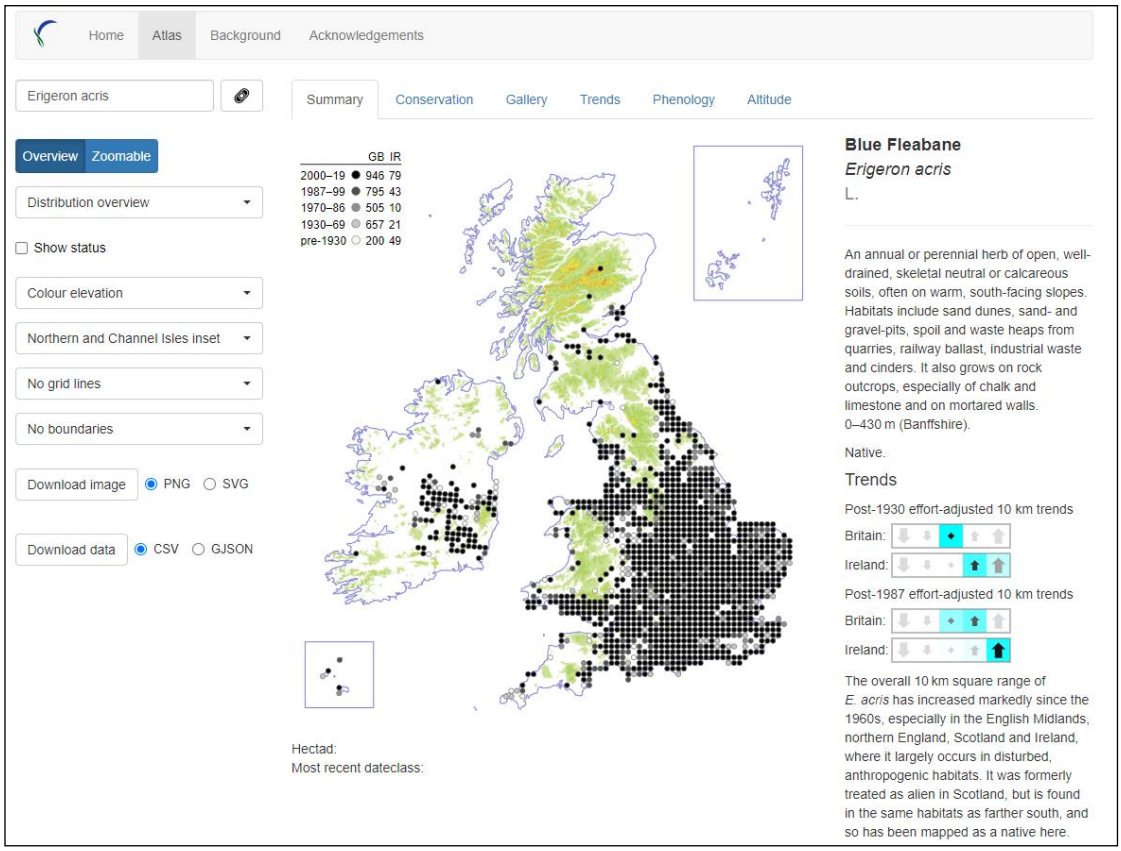


Figure 22. Distribution of Blue fleabane (*Erigeron acris*) (Source: BSBI Atlas 2020).

3.3.11 Wood Vetch (*Vicia sylvatica*)

A population of Wood vetch (*Vicia sylvatica*) was recorded along the cliff path during the Rare Plant Survey of Co. Wicklow in 2007.

There are specimens of this species, collected by R.M. Barrington of Fassaroe House from the Dargle in 1865 in the National Herbarium in the National Botanic Gardens in Glasnevin.

This species had been recorded from Bray Head in 1930 by A.W. Stelfox as reported in Brunker (1950).

This is a much declining species as can be seen in the latest BSBI Atlas 2020 report on **Figure 23** below.

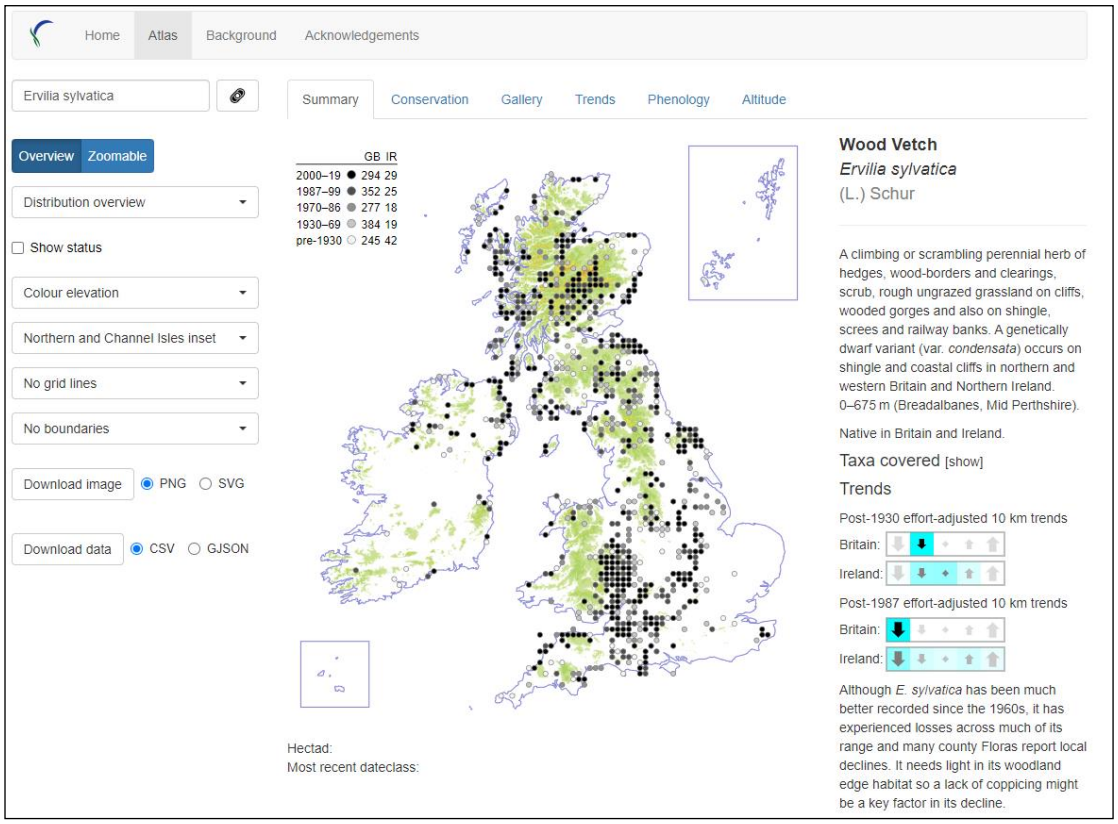


Figure 23. Distribution of Wood vetch (*Vicia sylvatica*) (Source: BSBI Atlas 2020).

3.3.12 Greater Broomrape (*Orobanche rapum-genistae*)

County Wicklow is a real stronghold for Greater Broomrape (*Orobanche rapum-genistae*) as can be seen on **Figure 24** below. Greater Broomrape is a very unusual plant as it contains no chlorophyll and is parasitic on the roots of Gorse and Broom.

There are old records of this plant from the southern side of Bray Head where it was recorded in 1930 by Brunker (Brunker (1950)).

Searches for this species during the Rare Plant Survey of Co. Wicklow in 2007 did not find this species but it may remain extant as there are large amounts of its host plant still present on Bray Head.

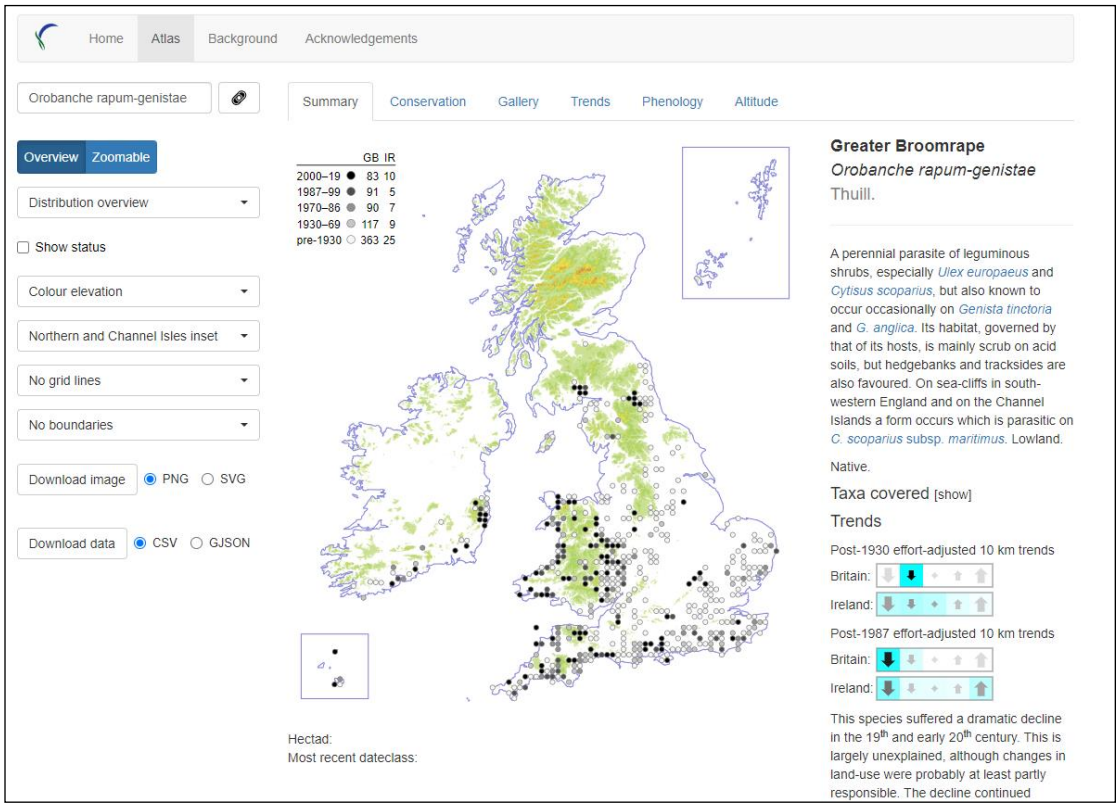


Figure 24. Distribution of Greater Broomrape (*Orobanche rapum-genistae*) (Source: BSBI Atlas 2020).

3.3.13 Toothwort (*Lathraea squamaria*)

Toothwort (*Lathraea squamaria*) is an unusual parasitic plant which has no chlorophyll and grows on the roots of various host trees. It is a species typically associated with old woodland sites (see **Figure 25**).

There were records of this species by Mrs A.L. King in the woods at Kilruddery from 1947 (Brunker, 1950).

A population of this species was recorded by Dr Curtis on the Killarney Road in Bray in 2018 and has been regularly monitored there by him.

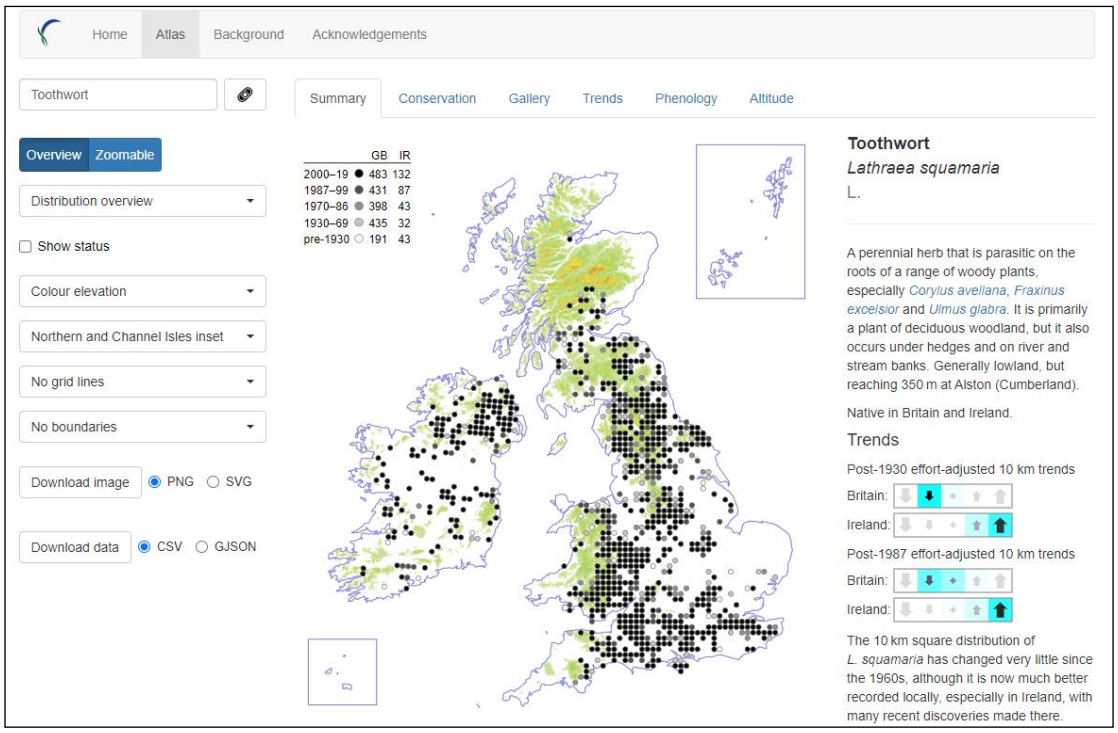


Figure 25. Distribution of Toothwort (*Lathraea squamaria*) (Source: BSBI Atlas 2020).

3.3.14 **Creeping Yellow-cress (*Rorippa sylvestris*)**

Creeping Yellow-cress (*Rorippa sylvestris*) was first discovered on the south bank of the Dargle River by Roger Goodwillie in the 1980s and subsequently Dr Curtis found a new site on the river for the species in 1996. It has not been seen recently.

This is not a protected species but this is the only location for the species in County Wicklow though it is known from other parts of the country from lake margins in the north, west and south-east as shown on **Figure 26**.

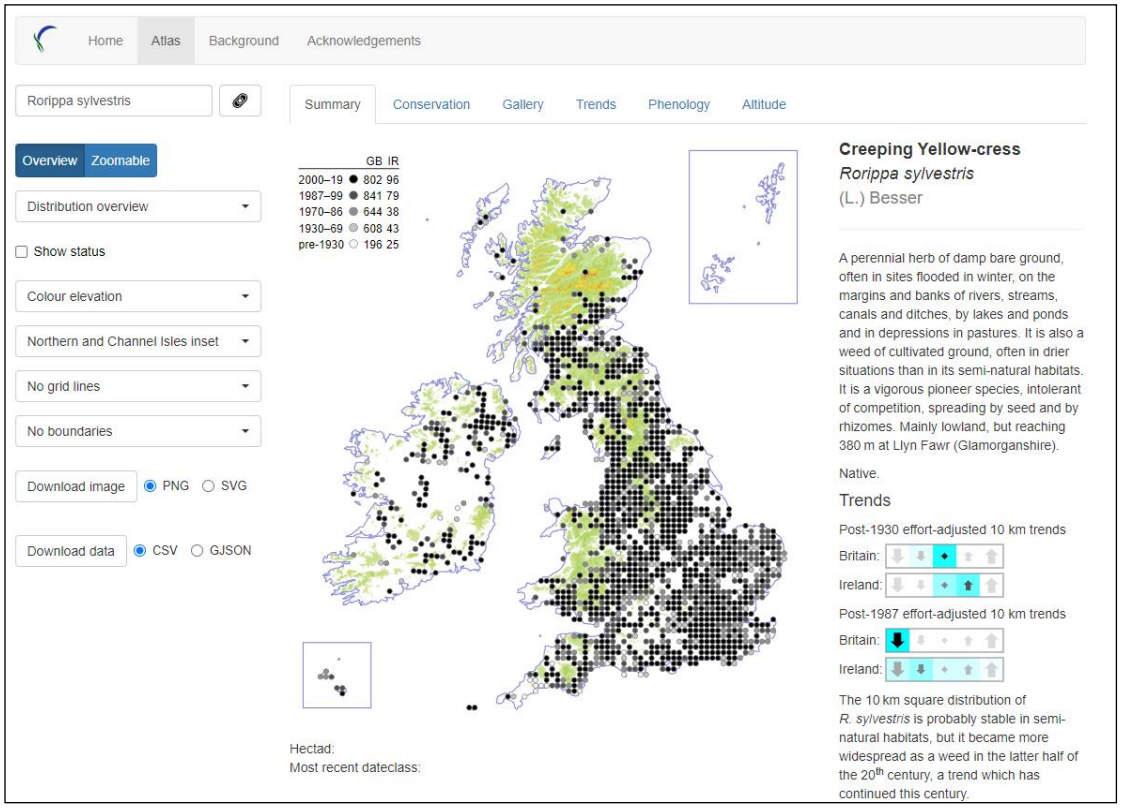


Figure 26. Distribution of Creeping Yellow-cress (*Rorippa sylvestris*) (Source: BSBI Atlas 2020).

During surveys conducted for the Dargle Flood Defence Scheme the plant was found to be still extant on the Dargle. Mitigation was recommended to ensure that the population of Creeping Yellow-cress in Bray was maintained.

3.3.15 Orchids

A variety of orchid species have been recorded within the general environs of Bray. These include some extremely rare species such as the legally protected Narrow-leaved marsh-orchid (*Dactylorhiza traunsteinerioides)* which is found in the Ballyman Glen.

Some species are much rarer in the county now than they were at the time of the publication of the Flora of County Wicklow such as Early purple orchid *(Orchis mascula).* Dr Curtis has recorded populations of that orchid and other orchid species from the clay cliffs on Bray Head from 1990-2008. Other orchids recorded here include; Common spotted-orchid (*Dactylorhiza fuchsii*), Fragrant orchid (*Gymnadenia conopsea* subsp. *conopsea*) and Broad-Leaved helleborine (*Epipactis helleborine*).

The sand and gravel pits at Fassaroe, west of the town, provide rich habitat for orchids include many Common spotted orchid (*Dactylorhiza fuchsii*) and Pyramidal orchid (*Anacamptis pyramidalis*). A population of Bee orchids (*Ophrys apifera*) recorded from the sand pit here was destroyed by the development of the Greenstar Waste facility.

Other orchid populations of note in the environs of Bray include Pyramidal orchid (*Anacamptis pyramidalis*), which have been noted within the central meridian of the M11 motorway and on the roundabout at Fassaroe/Berryfield. These have been regularly mown by motorway maintenance staff before they can set seed.

Similarly populations of Pyramidal orchid in the parish property on the Herbert Road have also been regularly mown despite signage being erected drawing attention to their presence.

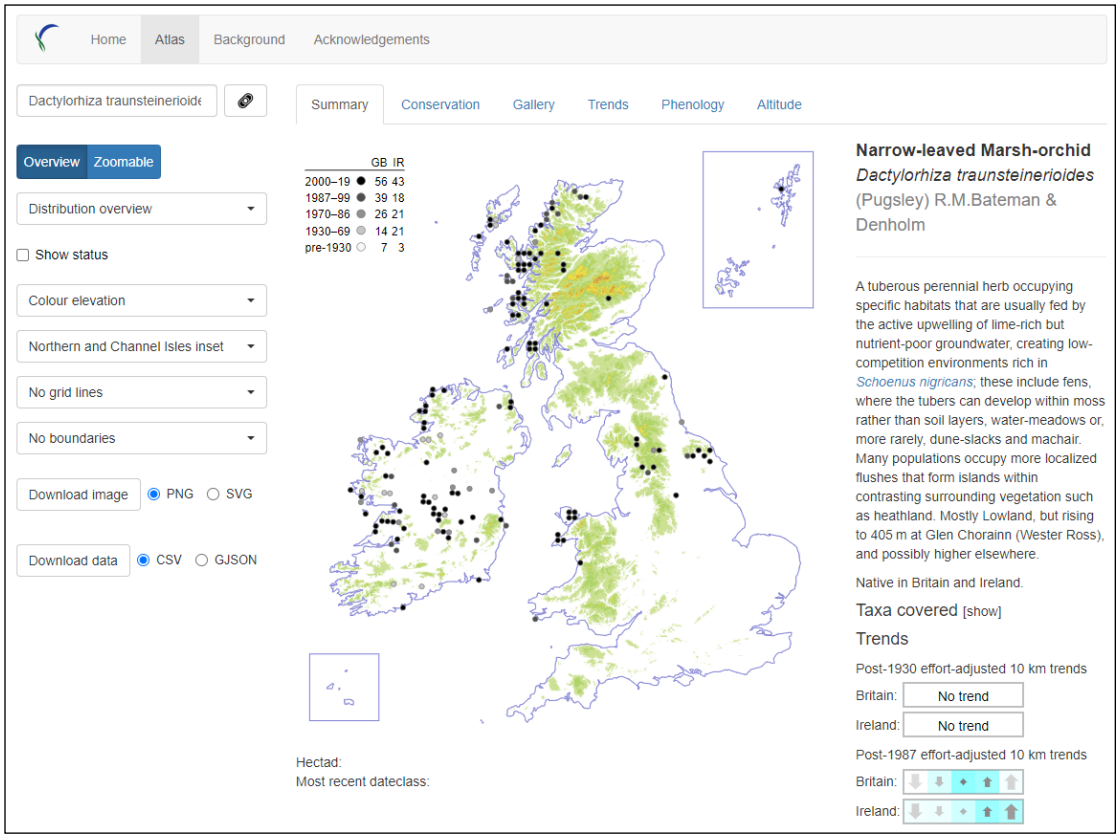


Figure 27. Distribution of Narrow leaved Marsh orchid (*Dactylorhiza traunsteinerioides*) (Source: BSBI Atlas 2020).

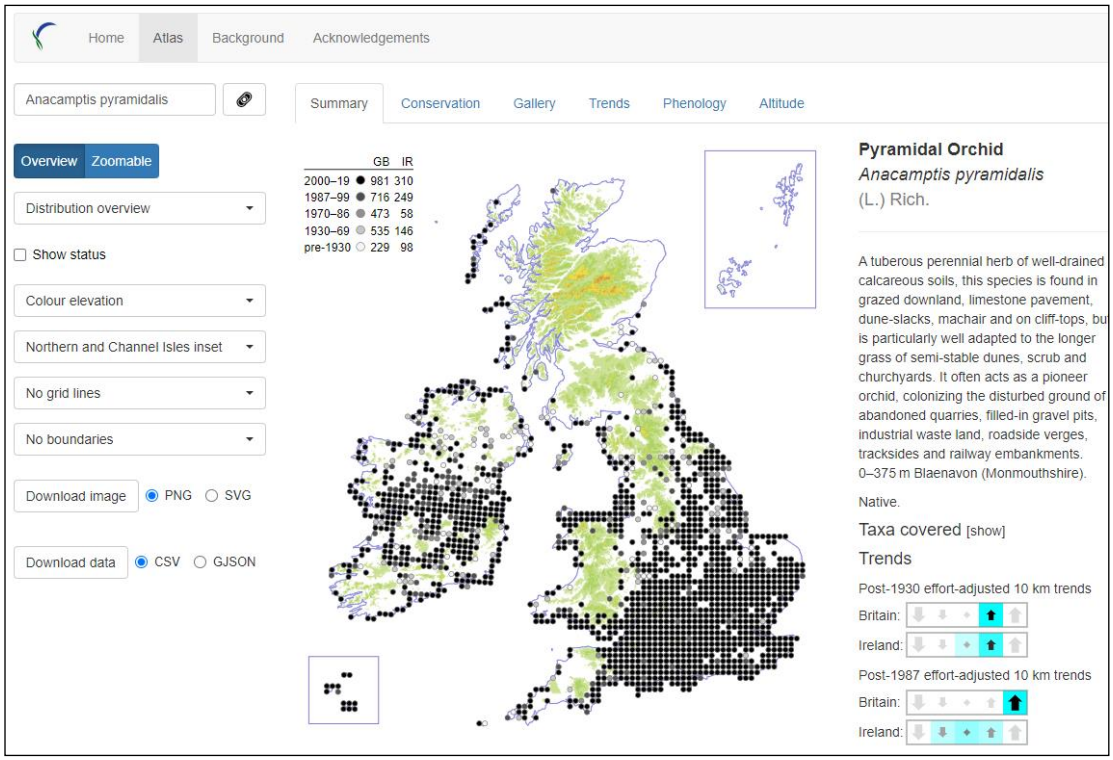


Figure 28. Distribution of Pyramidal orchid (*Anacamptis pyramidalis*) (Source: BSBI Atlas 2020).

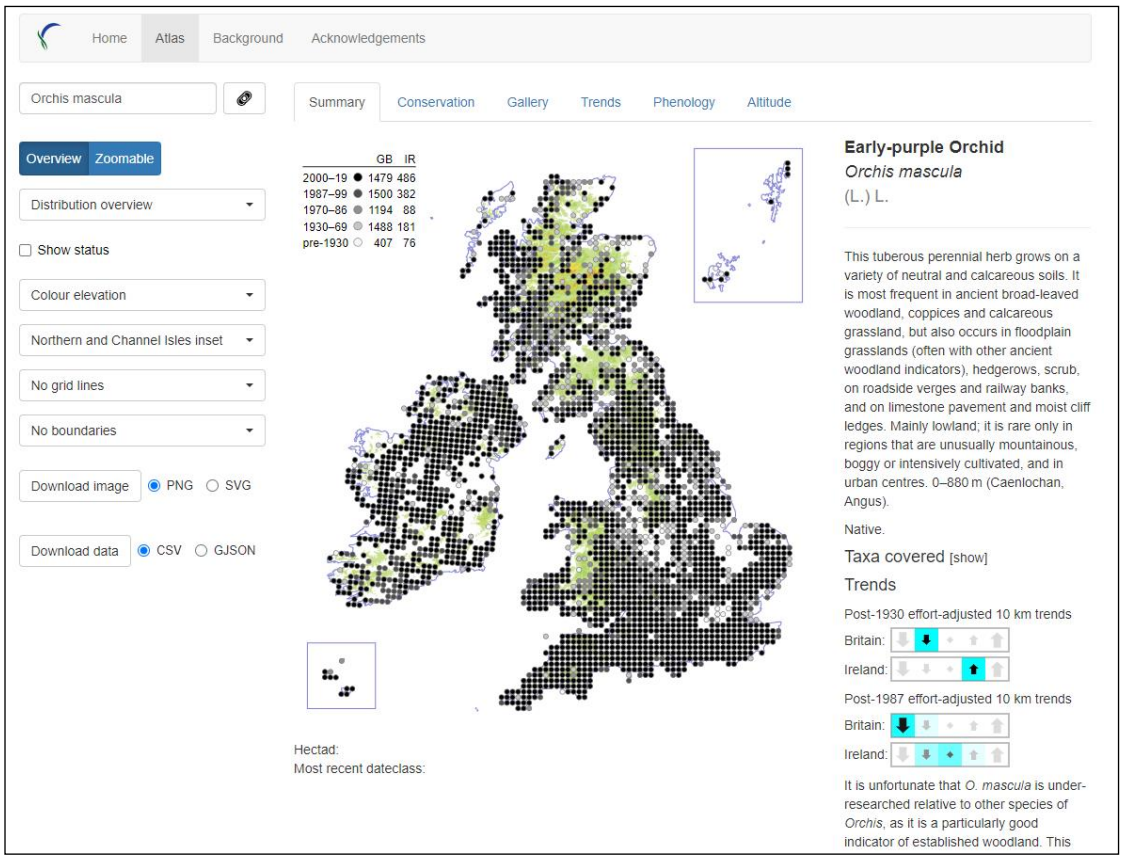


Figure 29. Distribution of Early purple orchid (*Orchis mascula*) (Source: BSBI Atlas 2020).

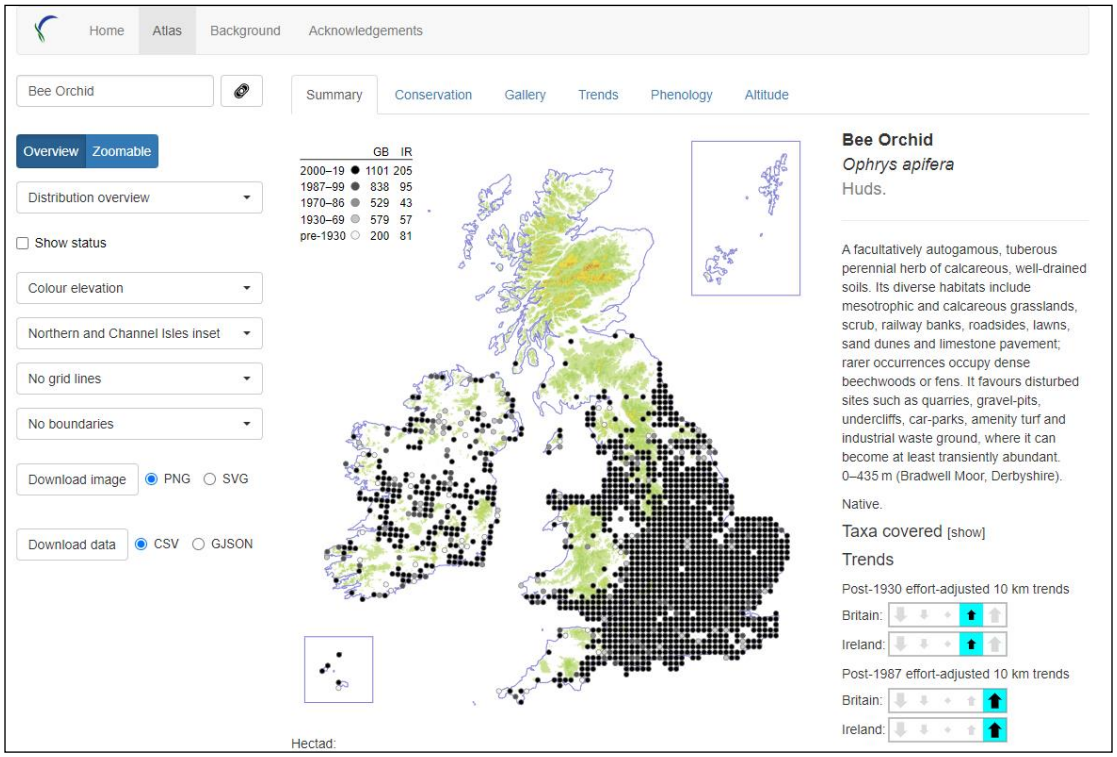


Figure 30. Distribution of Bee orchid (*Ophrys apifera*) (Source: BSBI Atlas 2020).

3.4 Woodlands and Trees in Bray Town

Two woodlands in the environs of Bray were surveyed as part of the National Native Woodland Survey[16] .

These included the woodland on Bray Head (see **Figure 31**), which was surveyed in the National Native Woodland Survey in 2005 and is listed as Site Number 0935 (see **Figure 32**).

Woodlands in the environs of Kilruddery House were mapped by National Parks and Wildlife Service as part of the Ancient and Long Established Woodland dataset as shown on **Figure 33** below. This woodland was surveyed in the National Native Woodland Survey in 2005 and is listed as Site Number 0910 (see **Figure 34**).

The woodland on Bray Head, the woods at San Souci near Loreto, the woods along the River Dargle Valley (including those along the Kilmacanogue Stream at Ballywaltrim Lane, below Ashton Wood, Pemberton, Ardmore Wood, the Ardmore Film Studios, Brook House School, and between the Herbert Road and the Maltings), the woods along the Swan River Valley and the woods east (but not south of the Southern Cross IDA Business Park) were all identified and mapped as areas of natural habitat in the 2008 study.

Many of the woodlands outside of the municipal district such as the majority of those within Kilruddery Demesne, the Corke Abbey Valley, County Brook Stream Valley (Vallombrosa), Hollybrook, Bray Head Golf Course and Woodbrook were not included in the 2008 study. Some of these have not been the subject of any recent dedicated biodiversity surveys or assessments.

A survey of the woodland adjoining the County Brook in Ballyman Glen was undertaken as part of the National Native Woodland Survey as shown on **Figure 35** below. This survey concentrated on the woodland area to the south of the river. The site report for this woodland (Site Number: 0828) identified areas of wet pedunculate oak-ash woodland (WN4) and wet willow alder ash woodland (WN6) as shown on **Figure 36**.

These all form part of the network of wooded sites of conservation and landscape importance in the environs of Bray Town.

[16] Perrin, P., Martin, J., Barron, S., O'Neill, F., McNutt, K. and A. Delaney (2008). *National Survey of Native Woodlands 2003-2008*. Botanical, Environmental & Conservation Consultants Ltd. 2008. A report submitted to the National Parks & Wildlife Service.

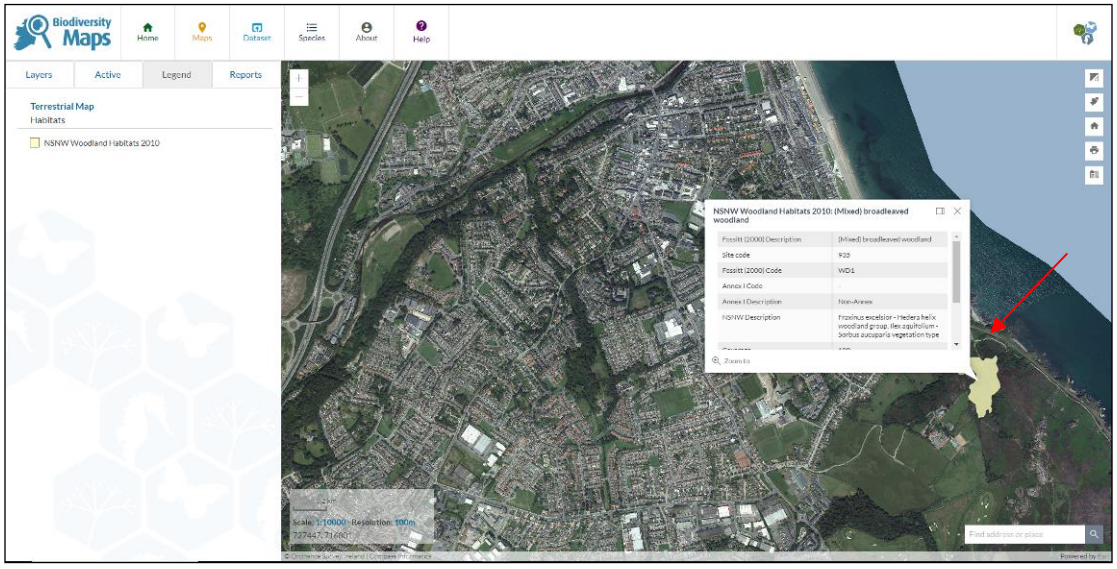


Figure 31. The woodland on Bray Head was mapped in the National Native Woodland Survey (Site Code: 0935) (Source: NBDC).

Site no.	0935	FIPS no.	38761
Date surveyed	27/04/2005		
Woodland name	Bray Head Woodland	Townland name	Newcourt
Conservation rating and score	Moderate 48	Threat rating and score	Moderate 25
Disco. map	56	Grid ref.	O278175
6 inch sheet	WI 08	County	Wicklow
NPWS region	South Eastern	NHA code	-
SAC code	714	SPA Code	-
National Park ☐	Nature Reserve ☐	Woodland present in the 1840s	Yes
Ownership	Local Authority	Area (ha)	2.5
Max. alt. (m)	120	Min. alt. (m)	60
Sub-soil	RckNCa	Soil	AminSW

Geography		Woodland habitats		Grazing		Hydrological features	
Esker	☐	WN1	0%	Deer	☐	Seasonal flooding	☐
Drumlin	☐	WN2	0%	Cattle	☐	Springs	☐
Valley	☐	WN3	0%	Sheep	☐	Lakes	☐
Lakeside	☐	WN4	0%	Rabbits	☐	Rivers/streams	☑
Bogland	☐	WN5	0%	Hares	☐	Damp clefts/ravines	☐
Hill	☐	WN6	0%	Goats	☐	Other	
Plain/Lowlands	☐	WN7	0%	Horses	☐		
Island	☐	WS1	0%	Other			
Riverside/Floodplain	☐	WD1	100%	Grazing level	0		
Coastal/Estuary	☑	WD2	0%				
		Other habitats					

Field notes

External data source: not all data recorded ☐

Small area of woodland on a coastal headland. Used extensively as a public amenity for walking. The woodland is fragmented with many pathways running through it. Sessile oak (Quercus petraea) dominates the canopy in places but sycamore (Acer pseudoplatanus) is frequent in the field, shrub and canopy layer. There is a diverse field layer with two wetter sections adding to the floral diversity of the site.

Figure 32. Bray Head Woodland National Native Woodland Survey (Site Code: 0935).

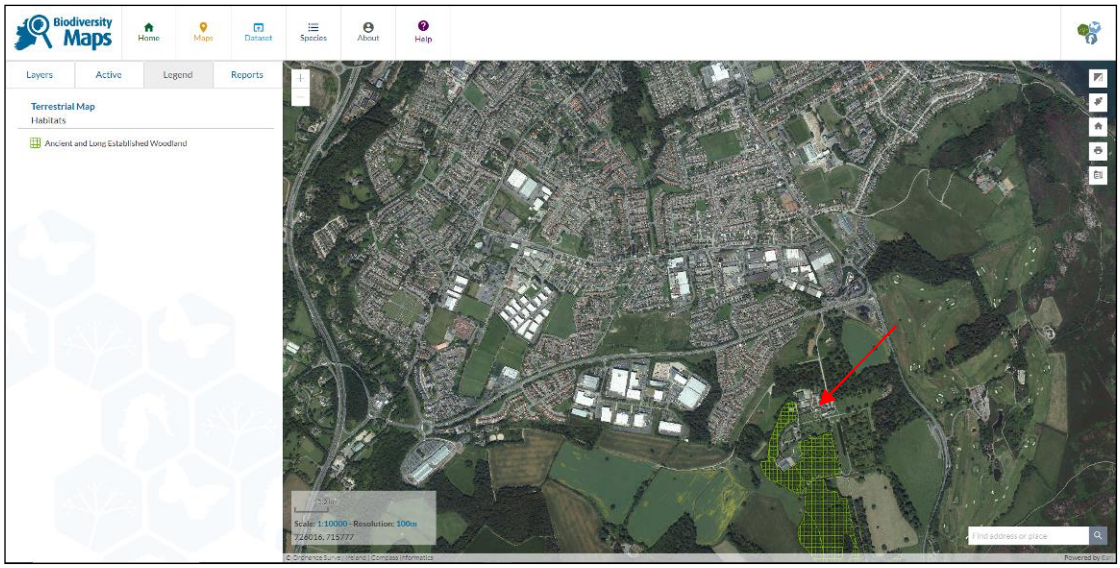


Figure 33. Woodlands in the environs of Kilruddery House were mapped by NPWS as ancient and local established woodland (Site Code: 0910).

Site no.	0910	FIPS no.	62945, 62919, 62931
Date surveyed	09/08/2005		
Woodland name	Kilruddery Deerpark	Townland name	Kilruddery Deerpark, Paddock
Conservation rating and score	Moderate 48	Threat rating and score	Low 8
Disco. map	56	Grid ref.	O272147
6 inch sheet	WI 8	County	Wicklow
NPWS region	South Eastern	NHA code	-
SAC code	-	SPA Code	-
National Park ☐	Nature Reserve ☐	Woodland present in the 1840s	Yes
Ownership	Private - Single	Area (ha)	7.4
Max. alt. (m)	120	Min. alt. (m)	90
Sub-soil	TCSsS/IrSTCSsS	Soil	AminDW/AminPD

Geography		Woodland habitats		Grazing		Hydrological features	
Esker	☐	WN1	0%	Deer	☑	Seasonal flooding	☑
Drumlin	☐	WN2	0%	Cattle	☐	Springs	☐
Valley	☐	WN3	0%	Sheep	☐	Lakes	☑
Lakeside	☐	WN4	0%	Rabbits	☐	Rivers/streams	☑
Bogland	☐	WN5	0%	Hares	☐	Damp clefts/ravines	☐
Hill	☑	WN6	100%	Goats	☐	Other	
Plain/Lowlands	☐	WN7	0%	Horses	☐		
Island	☐	WS1	0%	Other			
Riverside/Floodplain	☐	WD1	0%	Grazing level	1		
Coastal/Estuary	☐	WD2	0%				
		Other habitats					

Field notes

External data source: not all data recorded ☐

This wood forms part of a large estate (Kilruddery Estate) and is surrounded by mixed woodland. The area surveyed was mostly WN6 wet willow-alder-ash woodland. The area was dominated by ash (Fraxinus excelsior), with frequent alder (Alnus glutinosa) and sycamore (Acer pseudoplatanus). The ground flora was dominated by Rubus fruticosus agg., Filipendula ulmaria, Ranunculus repens, Dryopteris dilatata and Athyrium filix-femina. Chrysosplenium oppositifolium was also frequent. The ground was very wet underfoot, and many aquatic species were frequent, e.g. Mentha aquatica and Iris pseudacorus. Surrounding woodland areas were excluded due to the presence of non-native species, e.g. Beech (Fagus sylvatica) and conifers (see 6" map attached). A small area to the south was visited and found to have patchy canopy cover and ground flora, and a mix of native and non-native trees. This area is not included in the site. Buzzards were seen and heard at the site.

Figure 34. Kilruddery Deerpark National Native Woodland Survey (Site Code: 0910).

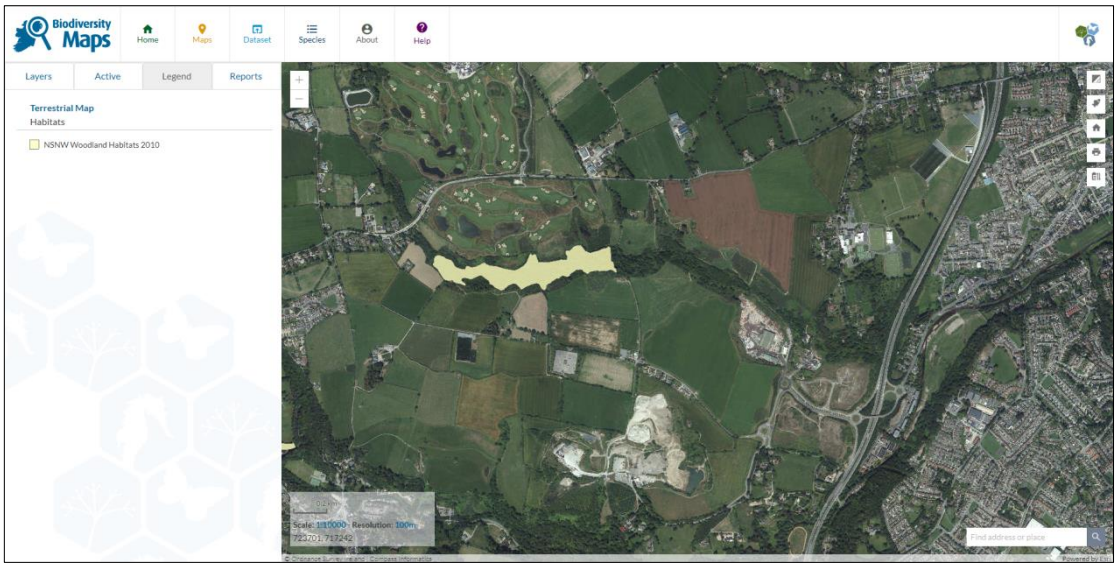


Figure 35. The woodland in Ballyman Glen was mapped in the National Native Woodland Survey (Site Code: 0838) (Source: NBDC).

Site no.	0828	FIPS no.	67306, 62525, 62518, 62522, 40917, 67307
Date surveyed	13/06/2005		
Woodland name	Ballyman Glen	Townland name	Fassaroe, Monastry, Ballyman
Conservation rating and score	Moderate	58	Threat rating and score: Low 17
Disco. map	56	Grid ref.	O237185
6 inch sheet	WI 3	County	Wicklow
NPWS region	South Eastern	NHA code	-
SAC code	713	SPA Code	-
National Park	☐	Nature Reserve	☐
Woodland present in the 1840s	No		
Ownership	Private - Multiple	Area (ha)	8.4
Max. alt. (m)	90	Min. alt. (m)	40
Sub-soil	GLs/A	Soil	BminSW/AlluvMIN

Geography		Woodland habitats		Grazing		Hydrological features	
Esker	☐	WN1	0%	Deer	☐	Seasonal flooding	☑
Drumlin	☐	WN2	0%	Cattle	☐	Springs	☑
Valley	☑	WN3	0%	Sheep	☐	Lakes	☐
Lakeside	☐	WN4	95%	Rabbits	☐	Rivers/streams	☑
Bogland	☐	WN5	0%	Hares	☐	Damp clefts/ravines	☐
Hill	☐	WN6	5%	Goats	☐	Other	
Plain/Lowlands	☐	WN7	0%	Horses	☐		
Island	☐	WS1	0%	Other	Unknown		
Riverside/Floodplain	☐	WD1	0%	Grazing level	1		
Coastal/Estuary	☐	WD2	0%				
		Other habitats					

Field notes

External data source: not all data recorded ☐

A linear strip of WN4 wet pedunculate oak-ash woodland with a small area of WN6 wet willow-alder-ash woodland at Fassaroe near Enniskerry in N Wicklow. Most of this woodland was inaccessible due to unstable slopes and dense Gorse (Ulex europaeus) and bramble (Rubus fruticosus). The area sampled was dominated by grey willow (Salix cinerea) and hazel (Corylus avellana), with occasional ash (Fraxinus excelsior), holly (Ilex aquifolium) and hawthorn (Crataegus monogyna). Alder (Alnus glutinosa) and birch (Betula pubescens) were found mainly in the WN6 area which bordered a small area of fen fed by springs. The perimeter of the site was walked as far as possible and main canopy species appeared uniformly to be as those described above for WN4 area, with frequent elder (Sambucus nigra). Ground flora was diverse and well-developed despite areas with remains of shattered clay pigeons (fen area particularly affected). Main species were Hedera helix, Lonicera, Sanicula europaea, Carex remota and Circaea lutetiana. The easternmost third of the site (from the W side of the dump eastwards to the motorway) was excluded; the eastern section of excluded area is dominated by non-native trees and manager of dump informed us that there is no woodland left between dump and river. The northern side of site was viewed from the south and seen to include conifers. Clematis is also locally abundant in that area. Parts of the woodland may be sited on, or at the edge of, a former landfill site.

Figure 36. Ballyman Glen National Native Woodland Survey (Site Code: 0828).

The woods on Bray Head are the subject of Tree Preservation Orders within the town. The woods along the Dargle Valley are also protected as are the woodlands within the Swan River Valley along with other treelines in the town. These were mapped in 2008 as shown on **Figure 37** below.

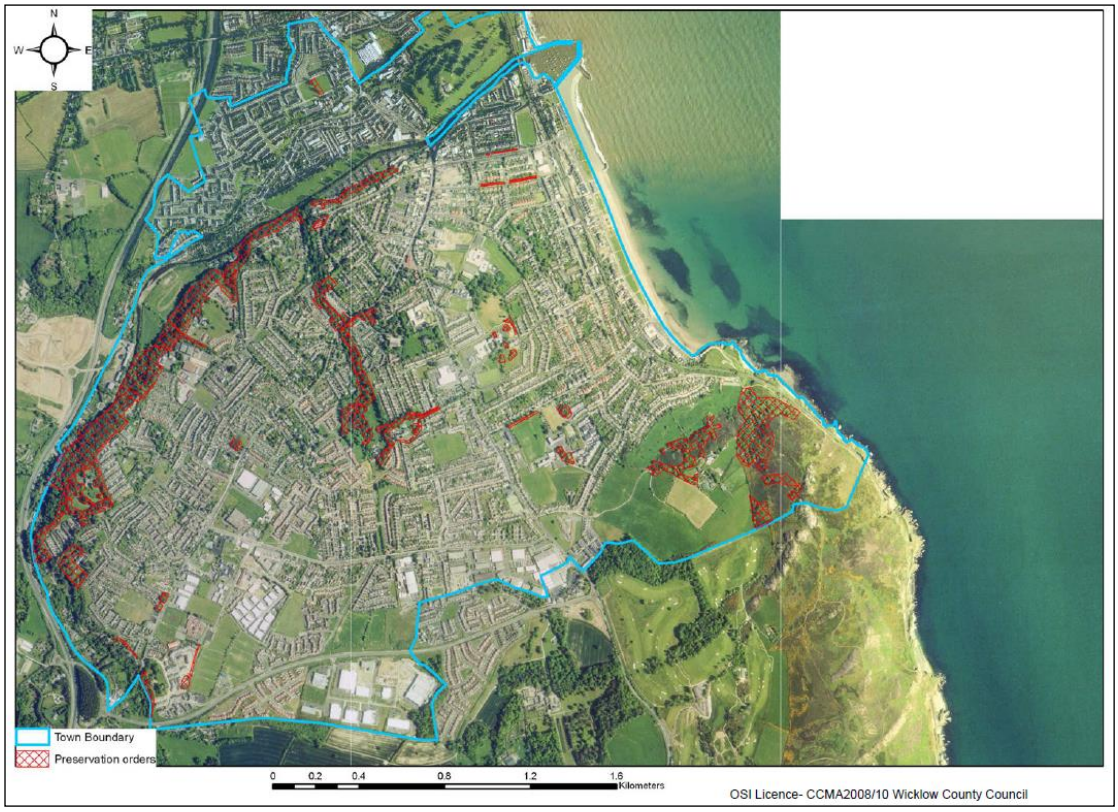


Figure 37. Tree Preservation Orders in Bray Town identified in 2008.

Plate 1. Landslip and damage to woodland during the construction of Carnhill Nursing Home at Brook Lodge, Herbert Road.

In the current Local Area Plan (2018) for Bray these wooded areas are mapped as green corridors as shown on **Figure 38** and included within the green infrastructure objectives.

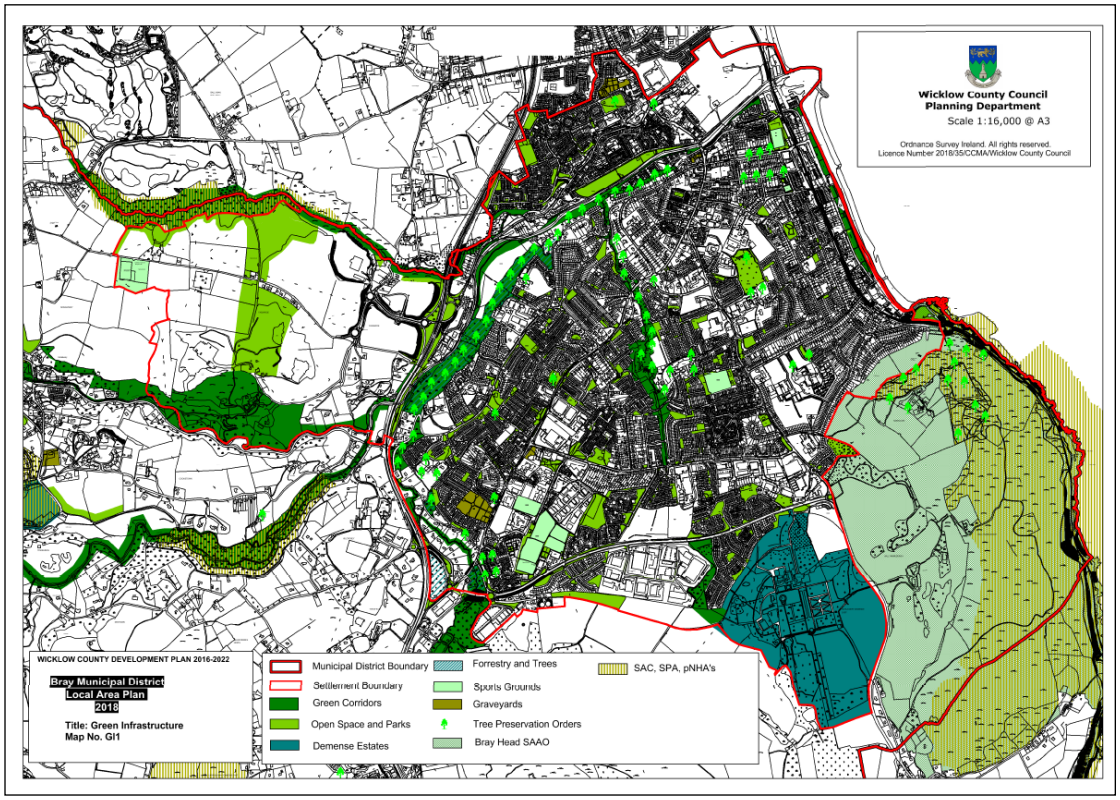


Figure 38. Tree Preservation Orders and Green Infrastructure mapped in the 2018 Bray Local Area Plan.

The Tree Preservation Orders (TPOs) were updated in 2022 (shown in blue) as follows:

ID	Location
B1	Kilbride Lane
B2	Violet Hill
B3	Brook House School and Killarney Glen, Herbert Road
B4	Ballywaltrim Grove, Killareny Road
B5	Oldcourt House and Vevay House, Swan River Valley *'including row of mature oak and beech trees along the western boundary of Charnwood Estate; stand alone mature oak in open area to west of Charnwood, to east of Swan River valley woodlands'*
B6	Grounds of Loreto Convent
B7	Grounds of Presentation College
B8	Bray Head
B9	Duncairn Terrace
B10	Swan river valley to Bray Bridge (The Maltings)
B11	Small woodland and ecclesiastical remains, Fairyhill housing estate
B12	Florence Road
B13	Ballywaltrim Lane
B14	Entrance to Elgin Wood, Killarney Road
B15	Wooded slopes east of Dargle River
B16	Wooded slopes from St. Valery's Bridge to Kilbride Church
B17	Ledwidge Crescent
B18	Richmond Park A: 1st green, Mature Redwood B: 2nd green, Scots Pine (2 No.), Beech (4 No.)
B19	Rockbrae House (FCA) Redwood, left of entrance
B20	Ravenswell School Large Pine right of entrance

The TPOs in Bray Town are shown on **Figure 39** below.

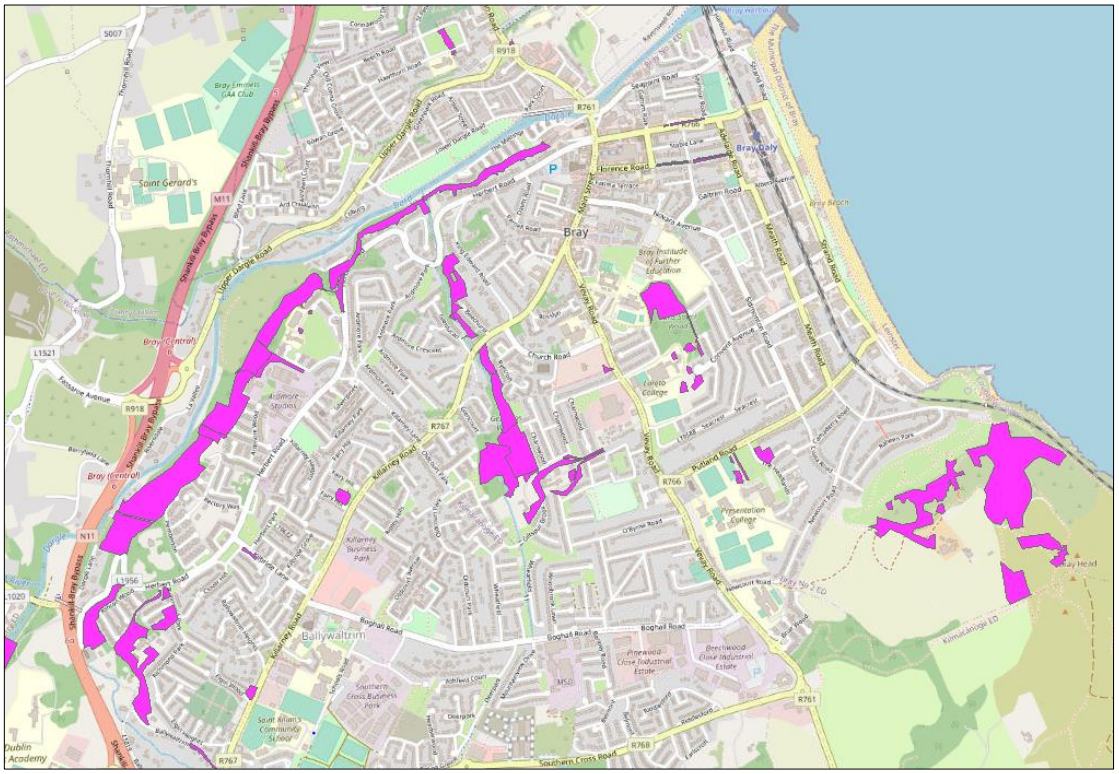


Figure 39. Tree Preservation Orders in Bray.

The locations of the new TPOs within the town are shown below on **Figures 40, 41** and **42** below.

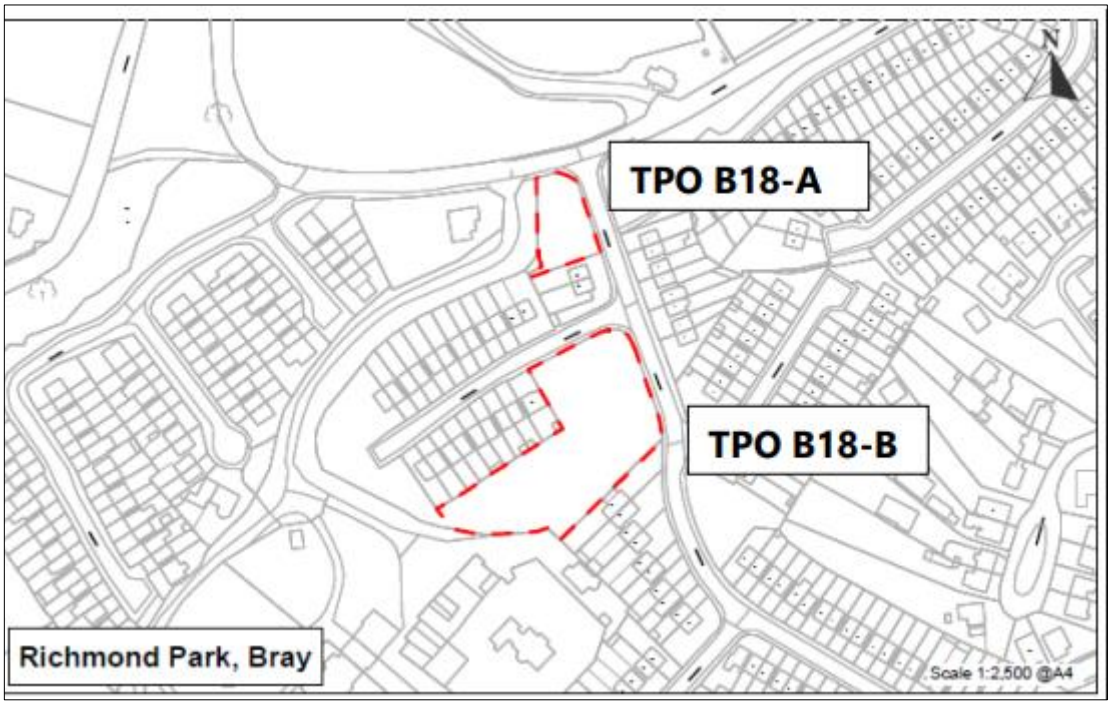


Figure 40. New TPO at Richmond Park.

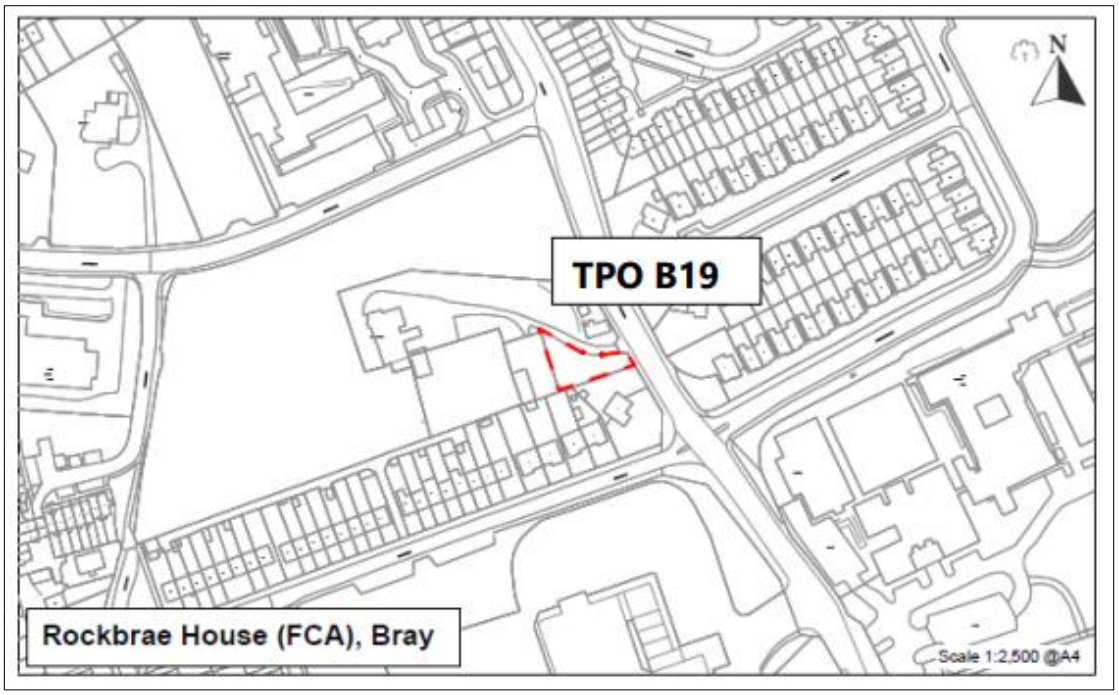


Figure 41. New TPO at Rockbrae House.

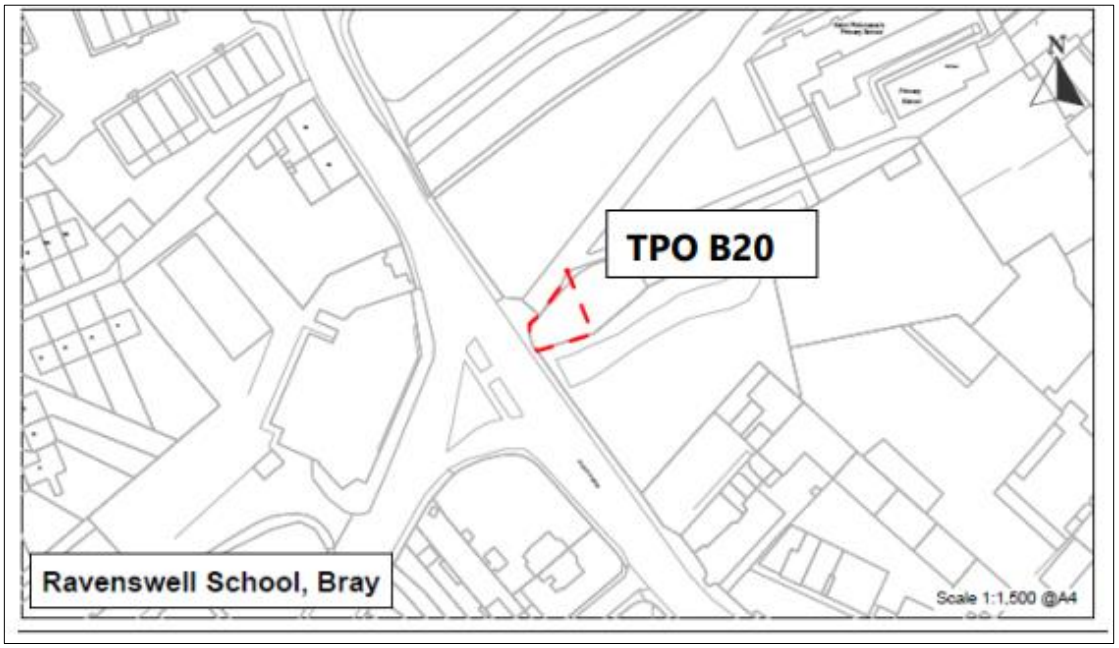


Figure 42. New TPO at Ravenswell School.

Dr Curtis, Anna Deveney and Geraldine Flanagan mapped most of the trees and woodlands in Bray just before the global Covid 19 Pandemic. The work was done at the behest of Bray Tidy Towns but was not written up.

3.5 Watercourses

There are five watercourses in the environs of Bray as shown on **Figure 43** below. These are:

- The River Dargle
- The County Brook
- The Swan River
- The Rathmichael Stream
- The Kilmacanogue Stream

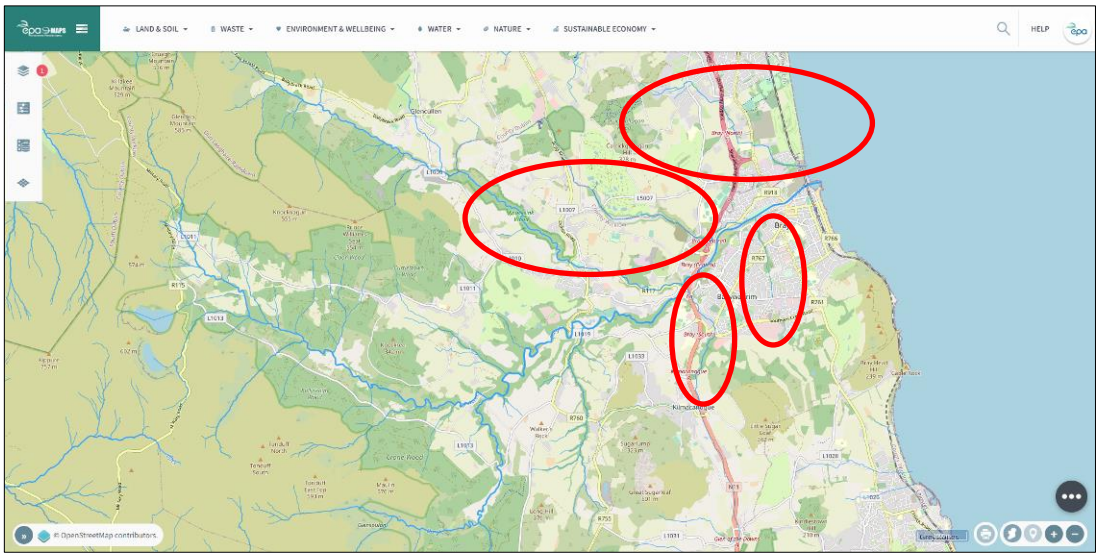


Figure 43. Watercourses in the environs of Bray. The smaller watercourses are indicated in red.

Bray is located within the Ovoca - Vartry catchment (Catchment 10) and within the Dargle sub-catchment (Dargle_SC_010). Water quality is monitored on some of these watercourses – see **Section 3.8**.

3.6 Wetlands

Bray has only a small number of identified wetlands. These include freshwater springs, wet woodland, watercourses, and artificial lakes and ponds. Many of these are shown on the Wetland Map of Ireland (see **Figure 44** below). The freshwater springs in the environs of Bray are often tufa forming and hence may have an affinity to the Annex I priority habitat.

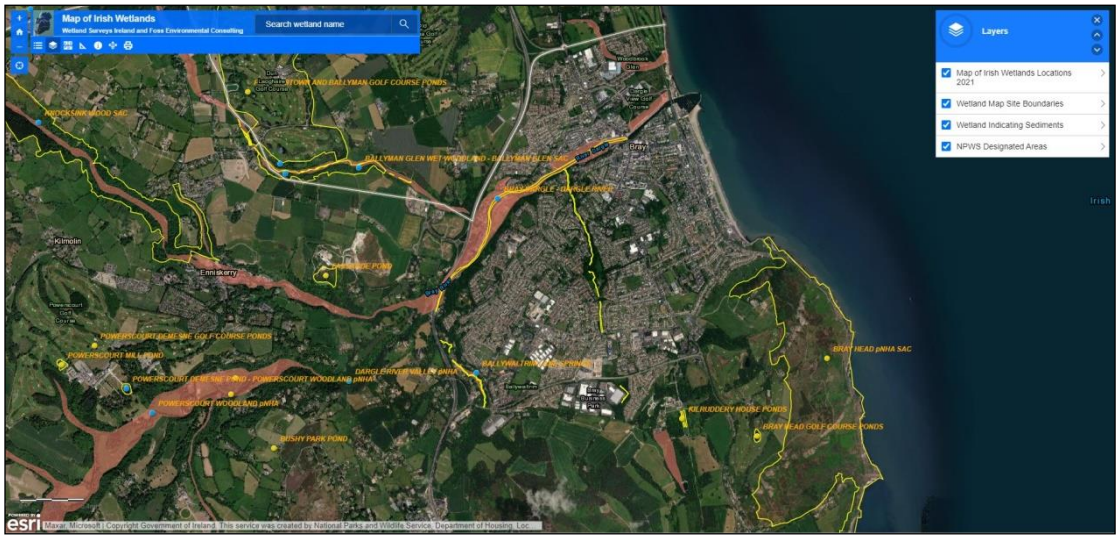


Figure 44. Wetlands in the environs of Bray (Source: Wetland Map of Ireland).

The tufa springs in the Ballyman Glen were the subject of detailed surveys by Wetland Surveys Ireland as part of the Fassaroe SHD application.

Tufa springs on the northern bank of the Kilmacanogue Stream in Ballyman Glen[17] were surveyed by Denyer Ecology in 2019 in a study commissioned by the Ballywaltrim Lane Residents' Group. This study mapped thirteen current and historic springs in this area. Two of these were considered to be examples of the Annex I priority habitat 'Petrifying springs', while others are tufa forming springs that are in poor condition and could be restored. The study noted that petrifying springs occur on the southern side of the river and recommended that with landowner permissions, that these areas and the woodlands upstream of the Killarney Road within Kilruddery/Hollybrook Estates are surveyed as they have the potential to contain examples of the Annex I priority habitat 'Petrifying springs'. The study also recorded the presence of American Skunk-cabbage (*Lysichiton americanus*) in the glen.

The main factors that affect the condition of petrifying tufa springs are water quality (e.g. pH, mineral composition and nutrient levels) and quantity (e.g. flow rate). Other factors such as artificial disturbance; trampling; engineering works; invasive species and, illegal dumping are potential negative pressures. Changes to the catchment of petrifying springs (which can sometimes be very large) can arise from developments. Any developments which block/ divert water flow, which can result in drawdown, or changes to ground level or from cutting below the springs can impact on these rare and localised habitats. Other changes in the catchment arising from pollution/ nutrient enrichment can lead to changes in water quality.

The geological and hydro-geological conditions in and around the watercourses west and south of Bray are conducive to these under recorded spring habitats which are potentially of international conservation importance.

[17] Denyer Ecology (2019).

3.7 Fauna

3.7.1 Birds

Birds within the Town
One of the benefits of living in a town such as Bray is that many of the properties developed during Victorian times had reasonable sized back gardens which are now mature in terms of their plantings. These support a good variety of birds species including species associated with gardens, parklands and urban habitats. These include; blackbird (*Turdus merula*), song thrush (*Turdus philomelos*), mistle thrush (*Turdus viscivorus*), robin (*Erithacus rubecula*), dunnock (*Prunella modularis*), wren (*Troglodytes troglodytes*), chaffinch (*Fringilla coelebs*), blackcap (*Sylvia atricapilla*), great tit (*Parus major*), long-tailed tit (*Aegithalos caudatus*), greenfinch (*Carduelis chloris*), goldfinch (*Carduelis carduelis*), goldcrest (*Regulus regulus*), coal tit (*Parus ater*), willow warbler (*Phylloscopus trochilus*), chiff chaff ((*Phylloscopus collybita*) and blue tit (*Parus caeruleus*).

Other bird species which are regularly recorded include hooded crow (*Corvus corone cornix*), jackdaw (*Corvus monedula*) and magpie (*Pica pica*).

Species such as pied wagtail (*Motacilla alba*) and house sparrow (*Passer domesticus*) were recorded from in and around the town.

Birds at Bray Harbour
A suite of birds are regularly recorded from along the lower stretches of the River Dargle and at Bray Harbour. These include black headed gull (*Chroicocephalus ridibundus*), herring gull (*Larus argentatus*) grey wagtail (*Motacilla cinerea*), grey heron (*Ardea cinerea*), mallard duck (*Anas platyrhynchos*), and large numbers of mute swan (*Cygnus olor*).

The birds at Bray Harbour (site code 0T907) are monitored as part of the Irish Wetland Bird Survey[18], which is run by BirdWatch Ireland. Only species with sufficient data can be assessed – these are Mute Swan, Turnstone and Mallard. The long term trend for this I-WeBS site is that bird populations here are stable or increasing as shown on **Figure 45** below.

Site Summary

	Trend (%)			
Species	Bray Harbour - 5 Year	Bray Harbour - 12 Year	Bray Harbour - 23 Year	Long Term Trend
Turnstone	-20.0	-33.7	11.3	Stable or Increasing
Mallard	-12.8	-40.4	13.3	
Mute Swan	21.1	-30.3	22.7	

Figure 45. Long term trend for waterbirds at Bray Harbour.

[18] Kennedy, J., Burke, B., Fitzgerald, N., Kelly, S.B.A., Walsh, A.J. & Lewis, L.J. 2023. Irish Wetland Bird Survey: I-WeBS National and Site Trends Report 1994/95 – 2019/20. BirdWatch Ireland Waterbird Report to the National Parks and Wildlife Service. BirdWatch Ireland, Wicklow.
(https://birdwatchireland.ie/app/uploads/2023/08/iwebs_trends_report.html)

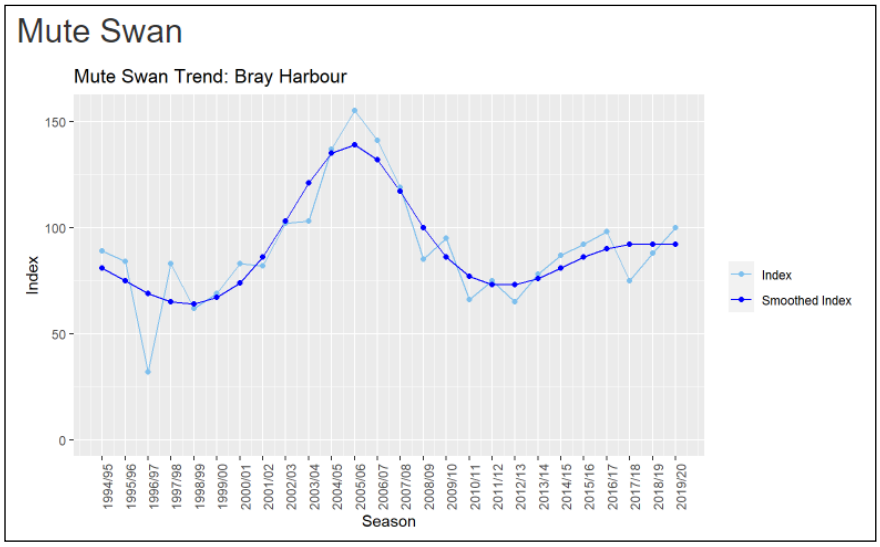


Figure 46. Long term trend for Mute Swan at Bray Harbour.

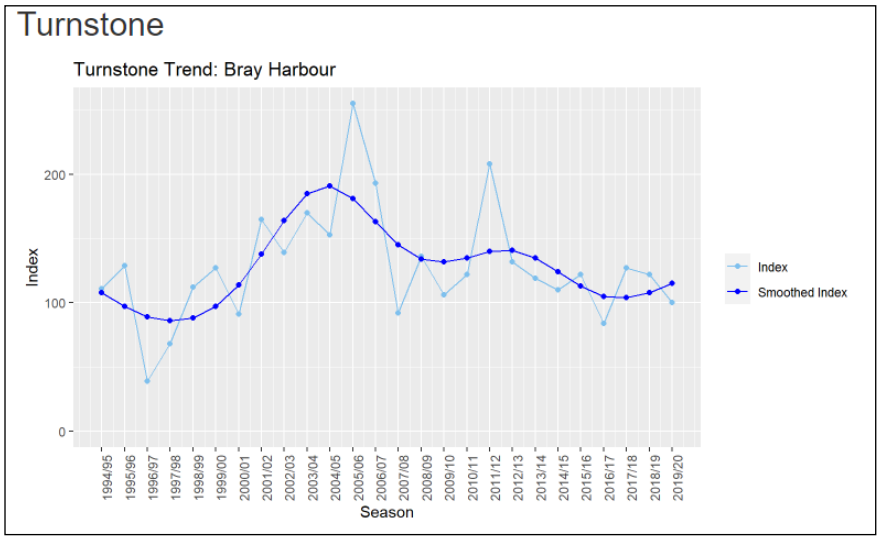


Figure 47. Long term trend for Turnstone at Bray Harbour.

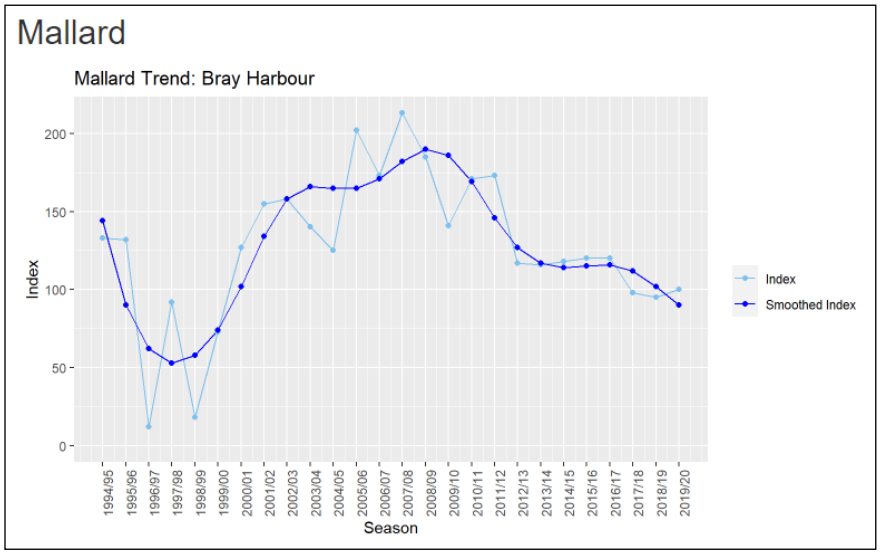


Figure 48. Long term trend for Mallard at Bray Harbour.

Other gulls such as Mediterranean gull (*Larus melanocephalus*) and more rarely species such as little gull (*Larus minutus*), ring-billed gull (*Larus delawarensis*) and Iceland gull (*Larus glaucoides*) are also recorded from the harbour/seafront. Rock pipit (*Anthus petrosus*) can be seen here too.

Birds of Bray Head
The cliffs at Bray Head support breeding populations of guillemot (*Uria aalge*), kittiwake (*Rissa tridactyla*), black guillemot (*Cepphus grylle*), razorbill (*Alca torda*), fulmar (*Fulmarus glacialis*), and shag (*Phalacrocorax aristotelis*).

Peregrine falcon (*Falco peregrinus*) nest on Bray Head. Species such as raven (*Corvus corax*) and short-eared owl (*Asio flammeus*) have also been recorded here. A population of tree sparrow (Passer montanus) are recorded near Windgates and stonechat (*Saxicola rubicola*) and linnet (*Carduelis cannabina*) are regularly seen. Cuckoo (*Cuculus canorus*) may be heard in the spring.

Great spotted woodpecker (*Dendrocopos major*) - a recent colonist to Ireland, has been recorded at Kilruddery and in the woods on Bray Head.

River Birds
There are several records of kingfisher (*Alcedo atthis*), which is a species, listed under Annex I of the EU Birds Directive, from the River Dargle and one was recorded there as recently as 19th July 2023. The Kingfisher is an Amber listed species on the Birds of Conservation Concern in Ireland (2020- 2026) list. Dipper (*Cinclus cinclus*) is common on the river Dargle.

There were no observations of kingfisher, dipper or grey wagtail on the River Swan during the recent study.

Birds of Prey
Birds of prey such as sparrowhawk (*Accipiter nisus*), kestrel (*Falco tinnunculus*) and buzzard (*Buteo buteo*) are regularly seen with increasing sightings of red kite (*Milvus milvus*). The latter were reintroduced to Ireland and are now spreading from their core habitat in the Avoca Valley to other parts of the county.
Summer Visitors
Sand martin (*Riparia riparia*) nest in the clay cliffs north of the town near Shankill. They and other hirundines such as swift (*Apus apus*) and swallows (*Hirundo rustica*) are summer visitors to Bray having travelled here from their wintering grounds in Africa. They rely on flying insects to feed on.

Other summer visitors include whitethroat (*Sylvia communis*), grasshopper warbler (*Locustella naevia*) and more rarely spotted flycatcher (*Muscicapa srtiata*).

Summer visitors such as the iconic cuckoo (*Cuculus canorus*) are also threatened through the loss of breeding habitat for their target species – meadow pipit (*Anthus pratensis*) which along with the skylark (*Alauda arvensis*) requires meadows/rough grassland and scrub areas to breed in.

Winter Visitors
Winter visitors include redwing (*Turdus iliacus*) and fieldfare (*Turdus pilaris*). These thrushes migrate to Ireland during the winter months and rely on hedgerows and fields to forage in, where they normally feed on berries and worms.

Farmland Birds
Increasingly rare species associated with farmland and the open countryside around Bray include; yellowhammer (*Emberiza citrinella*) and barn owl (*Tyto alba*). Barn owls, which were reported from the lands near St. Valery's west of the N11, have been lost as a breeding bird

from North Wicklow. They are unlikely to remain extant within the Bray area given the level of urbanisation, development and loss of both nesting and foraging habitat.

Corke Abbey Valley Park
Breeding bird surveys conducted in Corke Abbey Valley in June-July 2022 recorded 31 species during the two surveys conducted here. These were: Robin, Wren, Dunnock, Chaffinch, Blackbird, Song Thrush, Sand Martin, Woodpigeon, Coal Tit, Long-tailed Tit, Blue Tit, Great Tit, Blackcap, Chiffchaff, Bullfinch, Goldfinch, Linnet, Starling, Grey Wagtail, Goldcrest, House Sparrow, Herring Gull, Rook, Magpie, Jackdaw, Hooded Crow, and Feral Pigeon. 11 species were confirmed as breeding in the park.

3.7.2 Swifts in Bray

Swifts are a migratory species which travel from tropical Africa to breed in Ireland every year. Swift numbers have declined by over 40% in the past twenty years. The main cause of this decline is loss of their breeding sites. They nest in buildings in towns. Their traditional nests can usually be found at the top of walls or in cavities in brick work. They gain access to the tops of walls by climbing behind the fascia board. When repairs or renovation work are carried out to roofs and guttering the birds can no longer gain access to their traditional nesting site. Since Swifts are colonial birds, repair or renovation work can often affect more than one pair of birds.

Swifts have traditionally bred in Bray for many years and were recorded there in the First Atlas of Breeding Birds in Britain and Ireland, which was completed between 1968-1972[19], again in the New Atlas which was completed between 1988–1991[20], and in the Bird Atlas 2007 – 2011[21].

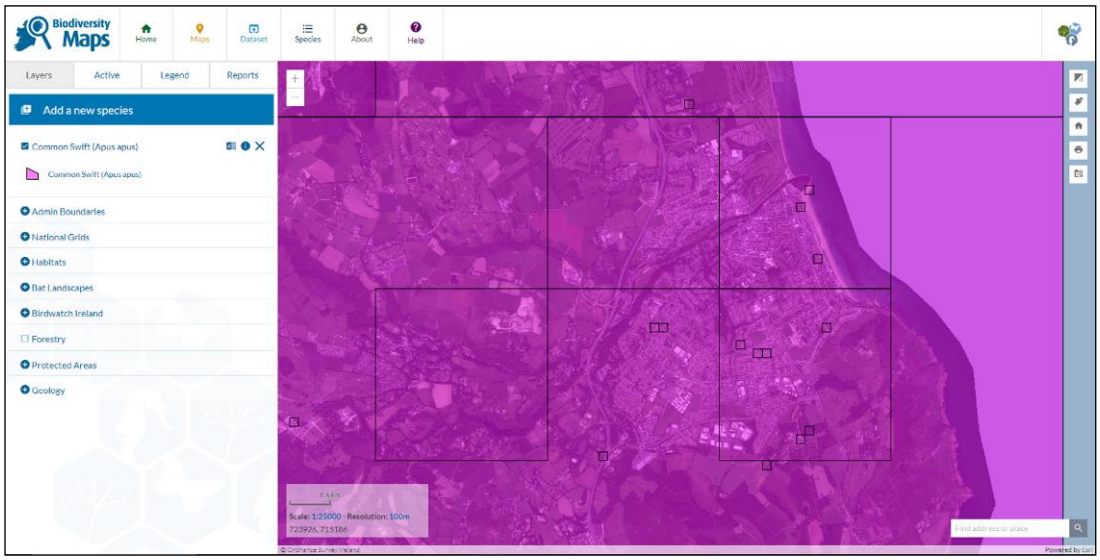


Figure 49. Swift records from Bray (National Biodiversity Data Centre).

Bray was surveyed as part of the County Wicklow Swift Survey[22], which was completed in 2019. The town was surveyed on four occasions and a peak number of sixty birds were

[19] Sharrock, J. T. R. 1976. The Atlas of Breeding Birds in Britain and Ireland. T. & A. D. Poyser, Berkhamsted.
[20] Gibbons, D.W., Reid, J.B. & Chapman, R.A. 1993. The New Atlas of Breeding Birds in Britain and Ireland: 1988–1991. T. & A.D. Poyser, London.
[21] Balmer, D.E., Gillings, S., Caffrey, B.J., Swann, R.L., Downie, I.S. & Fuller, R.J. 2013. Bird Atlas 2007–11: The Breeding and Wintering Birds of Britain and Ireland. BTO Books, Thetford.
[22] Whelan, R. and O., O'Sullivan (2019). Wicklow Swift Survey 2019. A project funded by The Department of Culture, Heritage and the Gaeltacht and Wicklow County Council as an action of the National Biodiversity Action fund.

encountered and elven nests were confirmed at that time, making Bray the fourth most important town for swifts in the county.

Since then a maximum count of 20 swifts have been observed flying over the town during the breeding season and several nest sites were confirmed in 2023.

Bray Tidy Towns have erected swift boxes on Presentation College Bray.

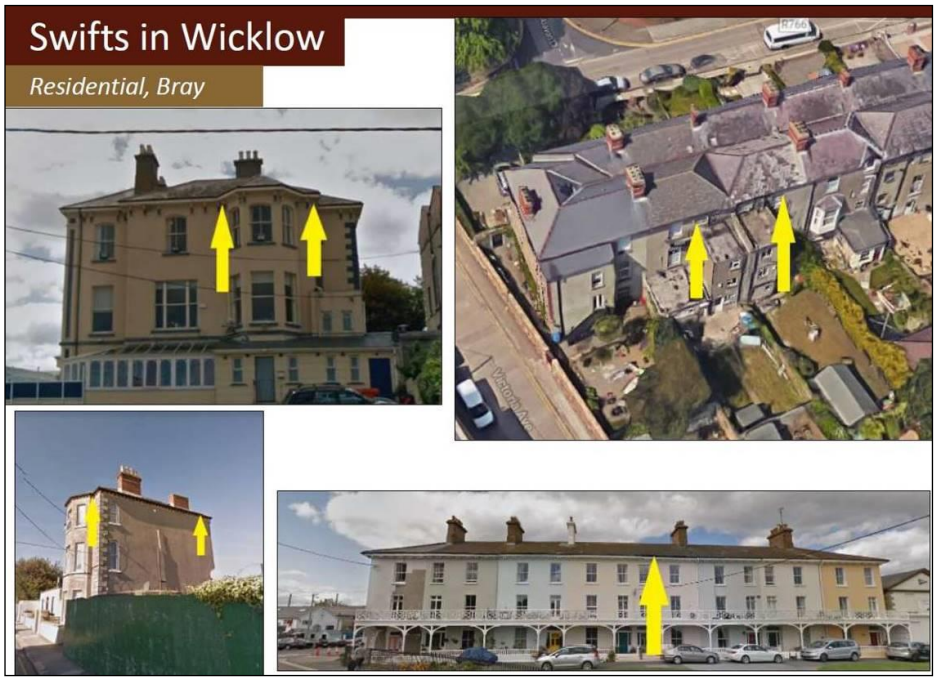


Plate 2. Swift sites in Bray recorded during the swift survey in 2019.

Plate 3. Swift sites in Bray recorded during the swift survey in 2019.

3.7.3 General Mammal Records

The National Biodiversity Data Centre contains records of mammals from the 10km square in which Bray is located (O21). These are presented in **Table 3.7.3** below.

Table 3.7.3. Mammal records from within the 10km square in which Bray is located (O21).

Species	No. of records	Date	Record Source/ Dataset	Designation/Legal Protection
American Mink (*Mustela vison*)	1	22/10/1990	Badger and Habitats Survey of Ireland	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Brown Long-eared Bat (*Plecotus auritus*)	8	05/06/2013	National Bat Database of Ireland	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Brown Rat (*Rattus norvegicus*)	6	20/05/2016	Mammals of Ireland 2016-2025	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Daubenton's Bat (*Myotis daubentonii*)	81	29/08/2014	National Bat Database of Ireland	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Eastern Grey Squirrel (*Sciurus carolinensis*)	94	05/09/2022	Mammals of Ireland 2016-2025	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> EU Regulation No. 1143/2014 || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Eurasian Badger (*Meles meles*)	64	31/03/2018	Mammals of Ireland 2016-2025	Protected Species: Wildlife Acts
Eurasian Pygmy Shrew (*Sorex minutus*)	4	29/06/2018	Mammals of Ireland 2016-2025	Protected Species: Wildlife Acts
Eurasian Red Squirrel (*Sciurus vulgaris*)	55	28/08/2022	Mammals of Ireland 2016-2025	Protected Species: Wildlife Acts
European Otter (*Lutra lutra*)	12	04/09/2017	Mammals of Ireland 2016-2025	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
European Rabbit (*Oryctolagus cuniculus*)	16	16/09/2018	Mammals of Ireland 2016-2025	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species

Species	**No. of records**	**Date**	**Record Source/ Dataset**	**Designation/Legal Protection**
Fallow Deer (*Dama dama*)	2	31/03/2015	Atlas of Mammals in Ireland 2010-2015	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland) || Protected Species: Wildlife Acts
Feral Goat (*Capra hircus*)	1	21/12/1968	Northern Ireland Mammal Database	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species
House Mouse (*Mus musculus*)	4	17/02/2017	Mammals of Ireland 2016-2025	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species
Irish Hare (*Lepus timidus* subsp. *hibernicus*)	19	02/09/2018	Mammals of Ireland 2016-2025	
Irish Stoat (*Mustela erminea* subsp. *hibernica*)	8	02/01/2018	Mammals of Ireland 2016-2025	
Lesser Noctule (*Nyctalus leisleri*)	11	22/07/2014	National Bat Database of Ireland	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Natterer's Bat (*Myotis nattereri*)	3	18/05/2009	National Bat Database of Ireland	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Pine Marten (*Martes martes*)	27	11/07/2021	Mammals of Ireland 2016-2025	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex V || Protected Species: Wildlife Acts
Pipistrelle (*Pipistrellus pipistrellus sensu lato*)	11	06/06/2013	National Bat Database of Ireland	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Red Deer (*Cervus elaphus*)	3	31/12/2008	Deer of Ireland Database	Protected Species: Wildlife Acts
Red Fox (*Vulpes vulpes*)	39	14/10/2018	Mammals of Ireland 2016-2025	
Sika Deer (*Cervus nippon*)	10	20/04/2018	Mammals of Ireland 2016-2025	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland) || Protected Species: Wildlife Acts
Soprano Pipistrelle (*Pipistrellus pygmaeus*)	15	22/07/2014	National Bat Database of Ireland	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts

Species	**No. of records**	**Date**	**Record Source/ Dataset**	**Designation/Legal Protection**
West European Hedgehog (*Erinaceus europaeus*)	109	23/06/2021	Hedgehogs of Ireland	Protected Species: Wildlife Acts
Whiskered Bat (*Myotis mystacinus*)	1	18/05/2009	National Bat Database of Ireland	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Wild Boar (*Sus scrofa*)	2	14/02/2012	National Invasive Species Database	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Wood Mouse (*Apodemus sylvaticus*)	4	02/07/2016	Mammals of Ireland 2016-2025	

3.7.4 Bats

Records of bats (which are all listed under Annex IV of the EU Habitats Directive) from the 10km square in which Bray is located (O21) are held within the Bat Conservation Ireland database. These records include records of bat roosts and other records made from ad hoc observations, Daubenton's bat monitoring surveys, woodland monitoring surveys, car monitoring transect surveys, dedicated EIS work by other bat specialists and the BATLAS 2010 and 2020 projects. The following species have been recorded from the 10km square O21:

- Common pipistrelle (*Pipistrellus pipistrellus*),
- Soprano pipistrelle (*Pipistrellus pygmaeus*),
- Leisler's bat (*Nyctalus leisleri*),
- Brown long-eared bat (*Plecotus auritus*),
- Daubenton's bat (*Myotis daubentonii*),
- Natterer's bat (*Myotis nattereri*),
- Whiskered bat (*Myotis mystacinus*).

Several species of bats have been recorded from the general environs of Bray Town. These include records of roosts sightings and other observations and are recorded within the Bat Conservation Ireland database. Bat surveys of several key areas of ecological importance in the town have been completed. These include:

- Swan River Valley
- The former Bray Golf Course lands - Coastal Quarter SHD site
- People's Park
- Corke Abbey Valley
- County Brook

The results of these surveys are presented below.

Swan River Valley

Surveys of the Swan River Valley have confirmed that this important biodiversity area and wildlife corridor is used by a minimum of five species of bats for foraging and commuting purposes. These were:

- Leisler's bat (*Nyctalus leisleri*)
- Soprano pipistrelle (*Pipistrellus pygmaeus*)
- Common pipistrelle (*Pipistrellus pipistrellus*)
- Unidentified pipistrelle (*Pipistrellus* spp.)
- Daubenton's bat (*Myotis daubentonii*)
- Brown long-eared bat (*Plecotus auritus*), and a
- Possible Whiskered bat (*Myotis mystacinus*)

The former Bray Golf Course lands - Coastal Quarter SHD site

The lands north of the River Dargle within the People's Park and at Ravenswell (the former Bray Golf Course lands) were surveyed for bats as part of the application for the 'Coastal Quarter' Strategic Housing Development there.

These studies confirmed the importance of these lands for three species of bats (Leisler's bat, Common pipistrelle and Soprano pipistrelle) which were recorded as shown on **Figures 50, 51** and **52** below. Daubenton's bat was recorded on the Dargle River in the Peoples Park in Bray as shown on **Figure 53** below.

Figure 3a: Common pipistrelle bat encounters recorded during Walking Transects (Map source: ArcGIs).

Figure 50. Common Pipistrelle bats recorded as part of the Coastal Quarter SHD studies on the former Bray Golf Course lands.

Figure 3c: Leisler's bat encounters recorded during Walking Transects (Map source: ArcGIs).

Figure 51. Leisler's bats recorded as part of the Coastal Quarter SHD studies on the former Bray Golf Course lands.

Figure 3b: Soprano pipistrelle bat encounters recorded during Walking Transects (Map source: ArcGIs).

Figure 52. Soprano Pipistrelle bats recorded as part of the Coastal Quarter SHD studies on the former Bray Golf Course lands.

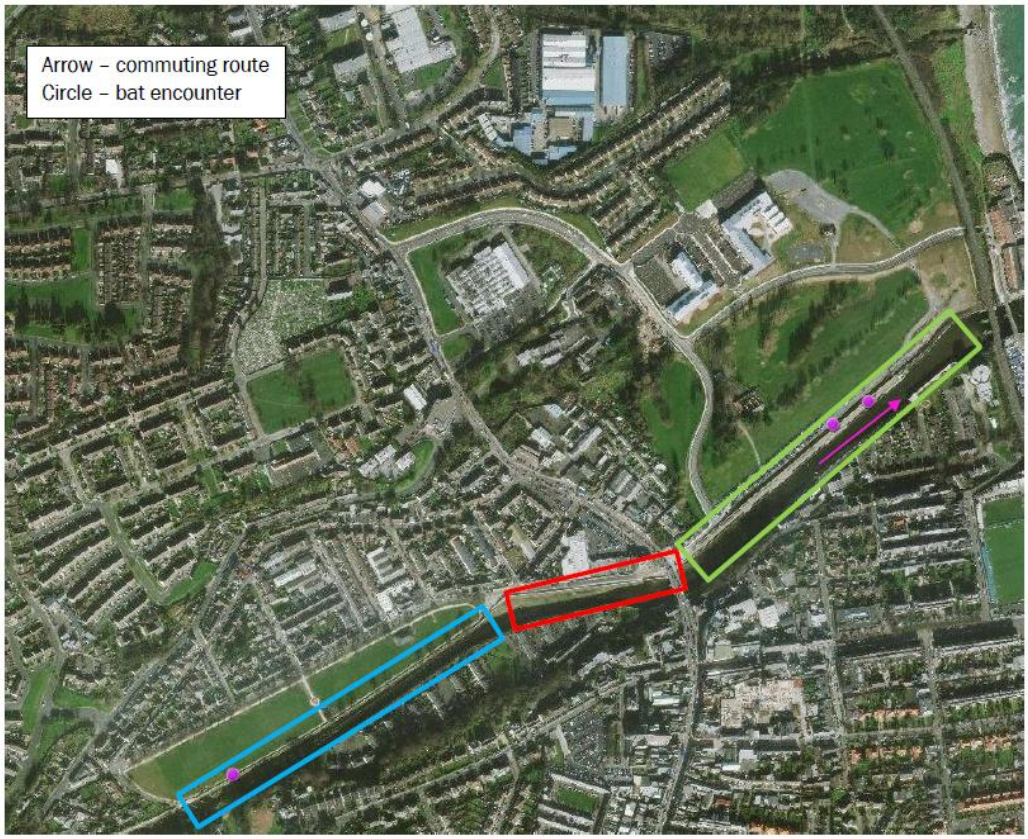


Figure 3d: Daubenton's bat encounters recorded during Walking Transects (Map source: ArcGIs).

Figure 53. Daubenton's bats recorded as part of the Coastal Quarter SHD studies.

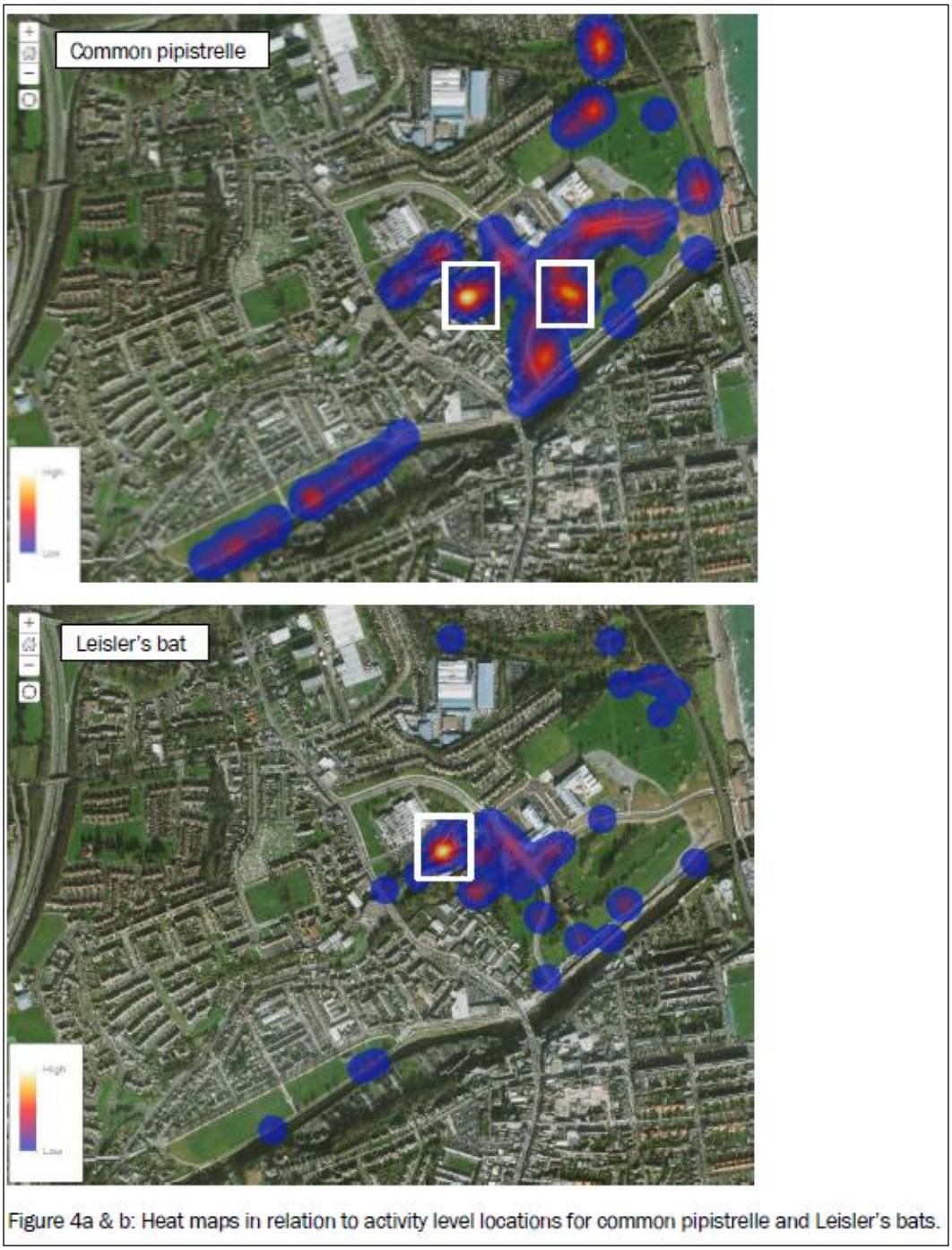


Figure 54. Heat maps produced as part of the Coastal Quarter SHD studies highlight the likely importance of Ravenswell House and former school grounds for bats.

This study reported the following:

- Two tree roosts for common pipistrelle were recorded.
- Additional common pipistrelle roosts in buildings were recorded but these are located adjacent to the proposed development site.
- Results indicate that there is a Leisler's bat roost located close to the proposed development site while soprano pipistrelle roosts are likely to be within the town environ of Bray.
- A high level of foraging was recorded along the treelines within the proposed development site.
- Commuting routes are principally along the treelines within the proposed development site.

The study noted that:

As this site is one of the last remaining green field sites in this area of Bray, it is essential that there is commuting and foraging habitat retained for local bat populations to ensure connectivity between the River Dargle and Rathmichael Stream.

Corke Abbey Valley
Bat surveys of Corke Abbey Valley have confirmed that this important biodiversity area and wildlife corridor is used by two species of bats – Common pipistrelle and Soprano pipistrelle. Leisler's bats would also be expected.

County Brook/Ballyman Glen
Bat surveys conducted as part of the Fassaroe SHD application recorded Soprano pipistrelle (*Pipistrellus pygmaeus*), Common pipistrelle (*Pipistrellus pipistrellus*), Leisler's bat (*Nyctalus leisleri*), Brown long-eared bat (*Plecotus auritus*), Natterer's bat (*Myotis nattereri*) and Whiskered bat (*Myotis mystacinus*) from the County Brook/Ballyman Glen. This accounts for six of the nine resident species of bats in Ireland.

Bats will feed wherever their food source (insects) is found in abundance in dark, sheltered areas. Therefore secluded stretches of the stream with overhanging trees and a wide belt of trees and shrubs on the bankside offer a higher probability of being used by bats. They require darkened areas with good levels of cover and native vegetation to hunt along.

3.7.5 Badger

There are a number of records of badgers (*Meles meles*) from within the general environs of Bray Town as shown on **Figure 55** below. Unfortunately the majority of these are records of road kill on the M11 motorway which are submitted to the Road Kill Survey (biology.ie). These animals are likely to arise from known badger territories on lands to the west of the motorway (F. Wilson, pers. obs.).

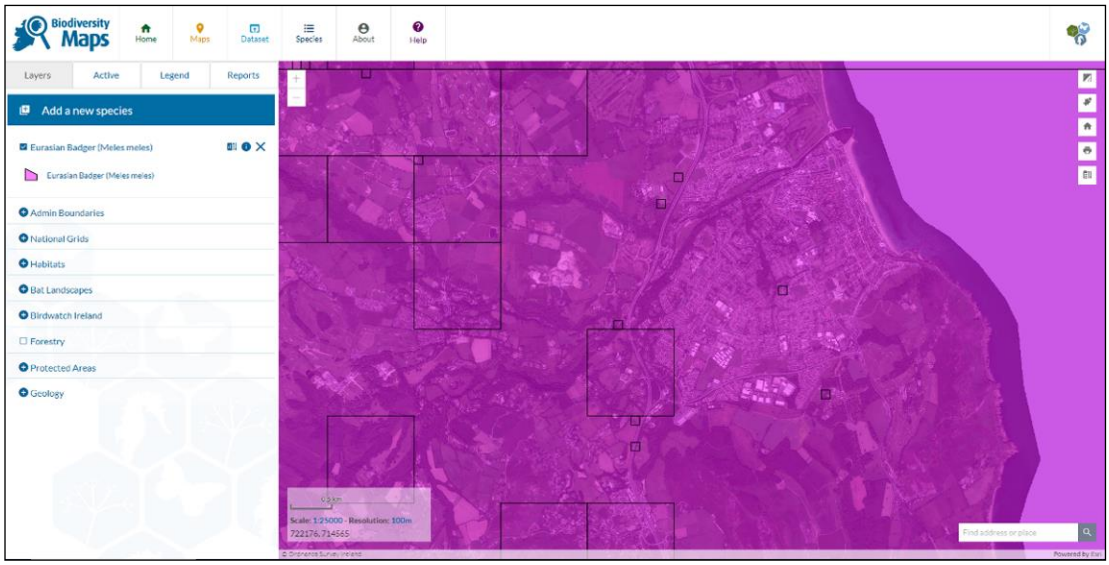


Figure 55. Badger records from the environs of Bray (Source: NBDC).

Former Bray Golf Course Lands at Ravenswell

Studies conducted as part of the Coastal Quarter SHD application recorded badger activity on the former Bray Golf Course lands at Ravenswell north of the River Dargle. This study noted that:

'The former golf club lands are within badger territory and are active badger foraging areas, there were confirmed sightings of an adult badger accompanied by 3 no. badger cubs. These sightings were for a period of 20 minutes in August 2020 during dawn surveys (undertaken for bat activity assessment). The location of the badger sighting was within scrubland habitat site ca. 200m west of the Site.

Terrestrial mammal surveying within the same week in this area of scrubland also found extensive areas of foraging / digging activity along densely vegetated slopes and banks.

Site survey evidence indicates the proposed development site is within the foraging territory and commuting area of badgers which have a sett located north of the Site in the Woodbrook area. ***It is considered likely that the local badgers in this area have territorial range throughout the Site, all of the former Bray Golf Club lands, the wooded corridor along the Rathmichael Stream, scrub lands to the east of the railway line as well as across the extensive areas of agricultural lands and Woodbrook Golf Club lands located north of the proposed development site.***

Local badgers are likely to range across both sides of the railway line utilising gaps in railway fencing and significantly the railway underpass and level crossing at the Woodbrook Golf Club and likely use the railway underpass directly adjacent to the proposed development site. The large area of scrubland / undeveloped lands on the east side of the railway line (adjacent to the Site) with dense vegetative cover provides connectivity from the Woodbrook Golf Club lands (north of the Site) to the railway underpass adjacent to the Site.

Site surveys indicate the boundary fence line along the railway line on the eastern side of the Site is intact with no noticeable gaps which could provide mammal access to the Site. The large gap (used for public access) in the Site's northern fence line leading to Woodbrook Stream/woodlands and also the railway underpass on the east side of the Site are considered key areas which are currently providing access for badgers utilising the former Bray golf clubs lands as foraging areas'.

These observations are presented below on **Figure 56**.

Figure 4-12 – Field survey evidenced badger activity within and around Site.

Figure 56. Badger activity recorded as part of the Coastal Quarter SHD application on the former Bray Golf Course lands.

3.7.6 Otter

Otters tend to occupy linear territories along watercourses and are rarely found far away from water. There have been a number of national surveys of otters in Ireland[23][24] which have been conducted for National Parks and Wildlife Service.

Bailey (2006) surveyed 35 sites within the Eastern River Basin District, of which 22 (62.9%) recorded the presence of otter, the lowest rate in the country.

A more recent survey conducted in 2010 (Reid *et al.* (2013)) surveyed 65 sites within the Eastern River Basin District, of which 34 (52.3%) recorded the presence of otter.

[23] Bailey, M & Rochford, J., (2006). Otter survey of Ireland 2004/2005. Irish Wildlife Manual, No 23. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin.
[24] Reid, N., Hayden, B., Lundy, M.G., Pietravalle, S., McDonald, R.A. & Montgomery, W.I. (2013). National Otter Survey of Ireland 2010/12. Irish Wildlife Manuals No. 76. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.

None of these national studies have specifically surveyed the River Dargle or its associated tributaries such as the Swan River and County Brook.

NBDC Records

The Atlas of Mammals in Ireland 2010-2015 has a record from 2012 of a sighting of a live otter within the Swan River at Glenwood Estate just upstream of the Dargle.

The Mammals of Ireland 2016-2025 database has a record of a sighting of an otter in 2017 on the River Dargle.

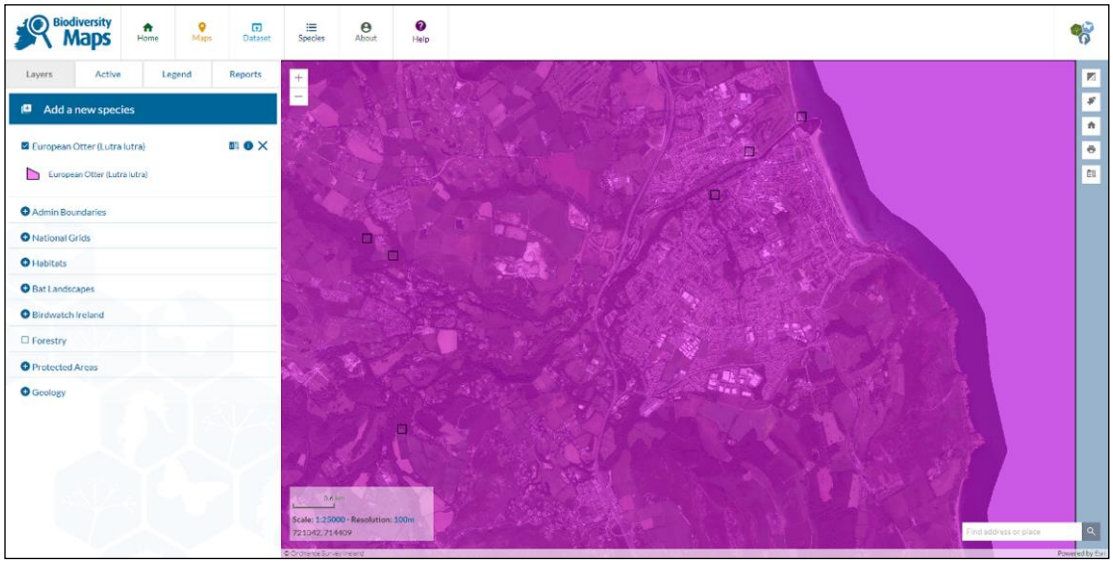


Figure 57. Otter records from the environs of Bray (Source: NBDC).

River Dargle

The River Dargle was surveyed in March-June 2020 by Triturus[25] as part of a wider survey of watercourses in Dun Laoghaire Rathdown.

That study describes the River Dargle as follows:

'The lowermost 3.5km of the River Dargle (EPA code: 10D01) formed part of the study area, i.e. from the R117 road bridge to sea. Whilst the river restrained a good degree of naturalness upstream of the M11 (upland eroding watercourse, natural channel form, good quality substrata, high fisheries value etc.), the river and its banks had been straightened and modified extensively downstream of this point as part of previous flood relief works. High flood retaining walls and boulder revetments flanked the river channel, with clear evidence of historical instream works despite some natural recovery. Slow-flowing homogenous glide was dominant in most areas of channel, with largely open banks (artificial floodplain) upstream of the town centre providing poor otter seclusion. In the town, the tidal river had been straightened and canalised (very poor-quality river hydromorphology), with retaining walls along both banks. Although otter usage was confirmed in the tidal reaches during site surveys (see section 4.1.20), otter potential was compromised over historical norms. The Dargle is a renowned sea trout river and such migratory fish considerably improved otter foraging potential despite sub-standard otter habitat.

Contemporary EPA biological water quality data was available for the River Dargle survey area at several locations, according to the EPA database. In 2018 the river achieved Q4 (good status) at the R117 road bridge (RS10D010100; upper extent of survey area). Good status (Q4)

[25] Brazier, B. & Macklin, R. (2020). Dún Laoghaire-Rathdown otter survey. Report prepared by Triturus Environmental Ltd. for Dún Laoghaire-Rathdown County Council. November 2020.

was also achieved in 2019 along the Upper Dargle Road (RS10D010250). Good status was also achieved in 2012 and 2015, respectively near the People's park in Bray town. The EPA River Waterbodies Risk projection for the reaches between the R117 road bridge at the People's Park were considered 'at risk' at the time of survey, with the lower reaches 'not at risk' (Dargle_030 sub-catchment)'.

A low number of otter signs (6) were recorded on the River Dargle. The hydromorphology and naturalness of the River Dargle was assessed as part of this study as follows:

'The hydromorphology of the lowermost 3.5km of the River Dargle (EPA code: 10D01) ranged from semi-natural (upstream of the N11 road crossing) to highly modified (downstream of the N11).

Whilst section DARR_001 demonstrated a good degree of naturalness upstream of the N11 road crossing, the river had been extensively modified downstream (flood relief scheme). Although enhancement works had resulted in some good evident recovery (e.g. substrate diversity), the channel's hydromorphology had been significantly impacted in terms of channel morphology, channel vegetation, riparian land use and floodplain interactions. This was particularly evident in Bray town where flood retaining walls were present throughout. In the context of the lowermost reaches of channel, the mean hydromorph score for the stream was 0.3, equating to 'poor' WFD status'.

The impacts of humans (Human Disturbance Index (HDI)) on otters and other riparian wildlife on the River Dargle was assessed as part of the study:

'The HDI scores for the lowermost 3.5km of the River Dargle (EPA code: 10D01) ranged from moderate (upstream of the N11 road crossing) to high-very high (downstream of the N11). Despite extensive historical modifications throughout (flood relief scheme), sections DARR_002 and 003 were limited to moderate disturbance levels by virtue of high retaining walls which prevented human access and provided good otter seclusion. However, moving downstream, human access became more frequent in addition to increasingly modified land usage adjoining the channel. Otter seclusion, whilst moderate in the immediate riparian zone (0-10m) due to retaining walls, became poor in an overall context due to urban encroachment. Nevertheless, the river here was still evidently of value to otter. The mean HDI score for the stream was 0.65 (high disturbance) although it should be noted that the river featured far lower levels of disturbance upstream of the survey area'.

County Brook Stream

The County Brook Stream was also surveyed in March-June 2020 by Triturus as part of the Dun Laoghaire Rathdown otter survey. That study describes the County Brook Stream as follows:

'The County Brook Stream (EPA code: 10C06) was a short watercourse which rose near Ballybetagh Bog and flowed predominantly south-eastwards for approx. 7km before joining the River Dargle in Bray Town. The upper reaches of the stream contained little to no water at the time of survey (June 2020) at drying-out appeared to be a regular, seasonal occurrence. Downstream of the Ski Club of Ireland, the channel made an abrupt turn southwards along the R117 Enniskerry Road. Here, the low-flow (seasonal) stream had been straightened and modified historically but soon flowed through Barnaslingan Wood, an extensive area of pine woodland on granite outcrops. Whilst channel morphology improved (natural valley form, unmodified), stream flow volumes were still very low at the time of survey (too low to support fish or otter) and channel gradient was often very high. Where water was present (e.g. Barnaslingan Lane), the channel resembled more of a drainage stich habitat with high rates of siltation.

Downstream of Dún Laoghaire Golf Club, the stream supported much greater water flows and fisheries habitat improved significantly. Whilst local straightening of the channel was present upstream of the L5007 Ballyman Road crossing, the stream flowed through an extensive area of natural (invariably very wet) woodland downstream of the bridge. Willow, hazel and holly predominated, with increasing amounts of alder and ash downstream. Despite adjoining the southern extent of Dún Laoghaire Golf Club, levels of naturalness were very high, with a natural cascading stream profile, varied substrata and high sinuosity in addition to well-buffered riparian zones and low to zero human accessibility. Otter habitat was excellent.

Downstream of the woodland, the stream was adjoined by intensive agricultural lands (pasture and tillage) but retained substantial riparian buffers and a steep natural valley form maintained good separation from land use pressures. However, the stream became increasingly modified moving towards Bray town, with greater encroachment from invasive species such as Japanese knotweed (*Fallopia japonica*) and Buddleja (*Buddleja davidii*) as well as several defunct artificial weirs, which presented some fish migration barriers. In the vicinity of Greenstar Recycling and Thornhill Road, dense scrub became more prevalent along the channel and heavy tunnelling plus siltation was frequent, reducing overall hydromorphological quality.

Downstream of the M11, the stream became heavily modified (straightened, retaining walls, culverts etc.) in its lowermost reaches as it flowed through heavily urbanised areas. Otter potential was poor although connectivity between the River Dargle and upper County Brook Stream remained.

No biological water quality data was available for the County Brook Stream according to the EPA database. The EPA River Waterbodies Risk projection was 'at risk' at the time of survey (Dargle_030 sub-catchment)'.

The County Brook Stream featured a moderate number of otter signs (9).

The hydromorphology and naturalness of the County Brook Stream was assessed as part of this study as follows:

'The County Brook Stream (EPA code: 10C06) featured highly varied degrees of naturalness along its 7.2km length. Whilst the upper reaches supported little water flow at the time of survey (May-June 2020) and thus had poor hydromorphology (despite locally natural channel form), the middle survey reaches achieved relatively high hydromorph scores (≥0.6).

Downstream of the L5007 Ballyman Road crossing, the stream flowed through an extensive area of mature, natural woodland and the channel featured excellent channel morphology, channel vegetation, substrate diversity & condition, bank structure & stability, banktop vegetation and flood plain interactions in addition to a lack of barriers to continuity.

However, moving downstream, the stream's hydromorphology became compromised as it flowed through increasingly urbanised areas near Bray. The lowermost section of channel was frequently culverted and, evidently, had been extensively modified. Despite some high area of naturalness, the mean hydromorph score for the stream was 0.4, equating to 'moderate' WFD status'.

The impacts of humans (Human Disturbance Index (HDI)) on otters and other riparian wildlife on the County Brook Stream was assessed as part of the study:

'The County Brook Stream (EPA code: 10C06) featured varying levels of disturbance throughout its length. The uppermost reaches featured moderate (borderline high) disturbance levels, with localised low and high disturbance sections located downstream of

Barnaslingan Wood. Low water/dry channel at the time of survey precluded otter presence from these upper reaches,

However, in the vicinity of and downstream of the L5007 Ballyman Road the stream flowed through an extensive area of mature, natural woodland. Here, levels of human disturbance were low for approx. 2.5km. Three survey sections received the lowest possible HDI score of 0.2 (i.e. lowest disturbance levels). Otters were present in these low disturbance areas. The mean HDI score for the stream was 0.49 (moderate disturbance**)** although it should be noted that this was only elevated by the presence of two very high disturbance sections of channel in Bray town'.

Swan River

Bray Tidy Towns commissioned Mayfly Ecology[26] to conduct a survey of the Swan River in 2023 with LAWPRO funding. This study looked for signs and evidence of otters as part of this survey and also found this interesting record:

'Further upstream within Kilruddery estate Lord Meath's Kilruddery Natures Diary indicates that otter have been spotted within the estate and the diary notes that "The other mustelid which occurs occasionally is the otter. The Swan River, which is culverted by urbanisation north of Kilruddery, is one route for their journey to arrive into the estate". It is unconfirmed what year this sighting was noted or exact location within the Swan'.

No evidence of otters were recorded on the Swan River during this survey – this was attributed to a number of reasons as follows:

'One reason for lack of otter signs may be due to the fact that otter are simply not able to access the Swan River from the Dargle. The Swan enters the Dargle via a large stepped weir, while the weir itself would not present a barrier to otter, the green palisade fencing spanning the top of the weir may be a barrier. The fencing here was covered in dense scrub and the time of survey making it difficult to assess whether a gap that otter could fit through was present.

Other barriers to otter movement are present along the Swan also. Although otter are at home in water they generally prefer not to swim through deep or long dark culvert and use mammal ledges were provided or alternatively will travel up the bank and cross the road. None of the culverts present along the Swan contain mammal ledges. Finally, otter are blocked from accessing land any further north than German Woods by a pipe culvert with a trash screen and high walls. The poor water quality observed (Q3 and Q2-3) within the Swan may have also resulted in a poor fisheries resource for otter discouraging the species from the Swan'.

Rathmichael Stream

The Rathmichael Stream was also surveyed in March-June 2020 by Triturus as part of the Dun Laoghaire Rathdown otter survey. That study describes the Rathmichael Stream as follows:

'The Rathmichael Stream (EPA code: 10R18) was a short minor watercourse which flowed south-eastwards for approx. 5km from its source near Rathmichael Woods to St. George's Channel near Bray Harbour.

The upper reaches of the stream were adjoined by intensive agricultural pasture and tillage and the narrow (<1.5m), shallow (<0.2m) channel was evidently impacted by such land use

[26] Mayfly Ecology (2023). Freshwater Ecology Survey and Biodiversity Management Plan for the Swan River, Bray. A report prepared for Bray Tidy Towns and the Swan River Conservation Group. March 2023.

practices (i.e. high siltation, compaction of gravels). Flows were also low in the upper reaches during the survey period, which reduced fisheries and otter potential considerably.

Passing under the M11 and into more peri-urban environment, the stream then followed in an easterly course past Woodbrook College under the R119 into the Woodbrook Estate south of Woodbrook Gold Club where it was bordered by mixed broad-leaved woodland. The stream had abundant gravels that appeared in better condition than upstream. Both brown trout and three-spined stickleback were present. The stream at Woodbrook was very secluded within the estate and thus offered better potential for otter. The stream, whilst straightened historically at Woodbrook, retained some semi-natural characteristics with riffle and glide sequences and pool habitat below artificial weirs near Woodbrook House pond (FL8 habitat).

The pond habitat at Woodbrook was heavily silted with clear water and limited macrophyte growth, although undoubtedly the pond supported fish (not visible at time of survey). The stream exited the pond via a spill-over weir and the continued south along a historically straightened and deepened section for some 200m. The weir was poorly fish passable and passage for species such as eel. Below the pond outfall, the Rathmichael Stream was bordered by the old walls of the Woodbrook Estate to the east and grazing land to the west. The stream then entered a very steep spill-over of approx. 2m (vertical drop) before entering a pipe culvert under the Fairways residential housing estate at Woodbrook Glen. This second spill-over structure (effectively a vertical retaining wall) was not only poorly passable to fish but would make passage for otter extremely difficult also.

Downstream of Woodbrook estate, the stream flowed though Woodbrook Glen, a block of mixed broad-leaved woodland situated in a public park and surrounded by residential areas. Disturbance levels were high both in-stream (poor water quality, high siltation levels, in-stream trash, blockages etc.) and in the surrounding area (humans, dogs, etc.). Fisheries potential was reduced given the poor water quality (trout present). The channel was often narrow (<1.5m wide), heavily silted and heavily vegetated, although some more open areas existed. However, towards the eastern extent of the woodland, a relatively large, largely inaccessible, secluded area of wet willow woodland (WN6) was nestled in the valley which provided good habitat for otter. Here, the stream braided into several smaller channels before unifying and becoming culverted (pipe) for some 120m under the Bray-Dublin rail line and discharging onto low-disturbance area of shingle beach (CB1).

No biological water quality data was available for the Rathmichael Stream according to the EPA database. The EPA River Waterbodies Risk projection was 'not at risk' at the time of survey (Dargle_040 sub-catchment)'.

The Rathmichael Stream featured a small number of otter signs (6).

'A total of *n*=6 otter signs were recorded along the Rathmichael Stream, also known locally as the Crinken Stream. All signs were recorded downstream of the M11 road, in the lower reaches of the river. Upstream of this point the stream was heavily degraded/silted and offered little fisheries or otter potential. Two spraint sites were recorded on a culvert retaining wall at the downstream extent of Woodbrook Glen Park. Although the 120m-long pipe culvert was accessible to otter, no signs were recorded at the sea confluence. However, this may have reflected the washing effect of large spring tides rather than a lack of otter activity at this location (i.e. signs may have been recently washed away at the time of the survey)'.

The hydromorphology and naturalness of the Rathmichael Stream was assessed as part of this study as follows:

'The Rathmichael Stream (EPA code: 10R18) was a short watercourse which had been modified and straightened throughout much of its length. Much of the stream demonstrated

moderate levels of naturalness, with hydromorph scores reduced given the modified agricultural landscape in the upper catchment. Although the stream became increasingly modified near the M11 and residential areas, the channel retained better hydromorphology as it flowed through Woodbrook Glen Park, an extensive area of mixed broad-leaved woodland (evidently of value to otter despite high siltation & water quality issues). Connectivity with the sea was poor via a pipe culvert and this resulted in a low hydromorph score. No sections received greater than moderate RHAT scores. Overall, the mean hydromorph score for the stream was 0.4, equating to 'moderate' WFD status'.

The impacts of humans (Human Disturbance Index (HDI)) on otters and other riparian wildlife on the Rathmichael Stream was assessed as part of the study:

'The Rathmichael Stream (EPA code: 10R18) was a short watercourse which had been modified and straightened throughout much of its length. However, despite this, much of the stream was limited to moderate levels of human disturbance (HDI scores ≤0.55). Primarily, this reflected adjoining land use (agricultural/urban areas) rather than human activity or poor otter seclusion. A low number of otter signs were recorded in the lower reaches and these were associated with areas of lower disturbance relative to the surrounding area. Overall, the mean HDI score for the river was 0.56 (moderate disturbance)'.

3.7.7 Amphibians

There are a small number of records held by the National Biodiversity Data Centre of common frog (*Rana temporaria*) from garden ponds in Bray including several in private residences in and around Ardmore. These are shown on **Figure 58** below.

There are no records of smooth newt (*Lissotriton vulgaris*) held by the National Biodiversity Data Centre but they are known from a transitional site on Bray Head (pers. obs.). They may also occur within ponds in private gardens in Bray.

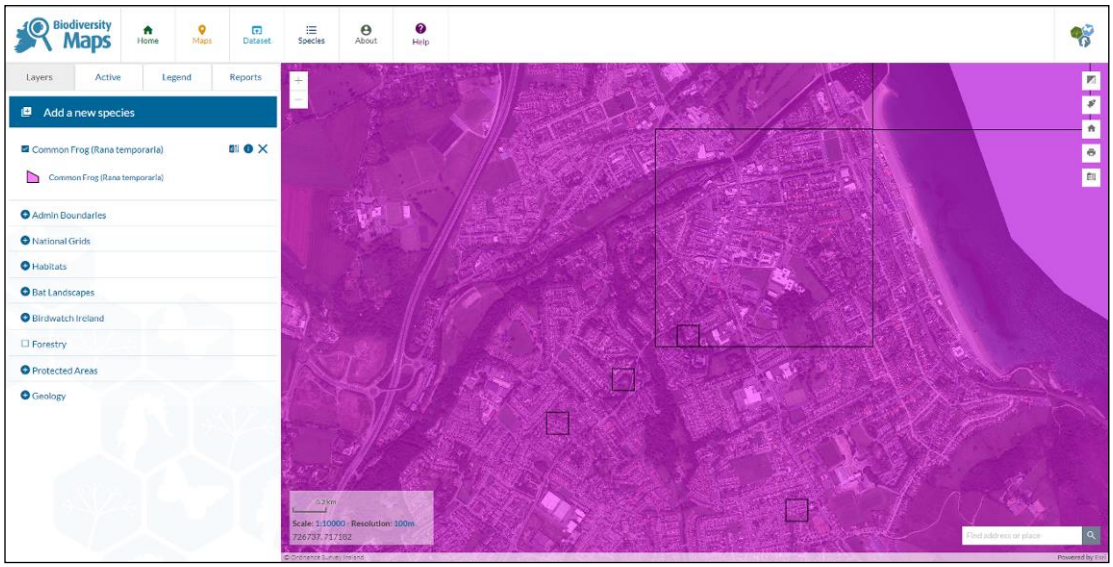


Figure 58. Records of common frog from the environs of Bray (Source: National Biodiversity Data Centre).

3.7.8 Fisheries

The main channel of the River Dargle is designated as Salmonid Waters under the European Communities (Quality of Salmonid Waters) Regulations, 1988 (S.I. No. 293/1988).

The river is within the Eastern River Basin District and Inland Fisheries Ireland (formerly the Eastern Regional Fisheries Board, ERFB) survey fish stock within this district along the River Dargle catchment (incorporating River Dargle, Glencree River, Killough River and Glencullen River).

The surveys completed by IFI in 2017[27] and 2018[28] detail the River Dargle catchment as accommodating the following fish species; Brown trout (*Salmo trutta*), Salmon (*Salmo salar*), European eel (*Anguilla anguilla*) and Stone loach (*Barbatula barbatula*). Of these species trout were the most abundant species captured during surveys.

In relation to the River Dargle the IFI report;

'The river is one of Ireland's best sea trout rivers and also gets a small run of salmon (grilse)'.

The River Dargle from the Silver Bridge downstream and within the town was subject to flood alleviation works conducted by Wicklow County Council and the Office of Public Works between 2012 and 2017. These works transformed the river banks and channel rendering much of it completely artificial with vertical walls (flood walls) or shallow reinforced slopes (rock armour)

The banks of the river were further developed into a formalised promenade and public amenity space in the environs of Bray Bridge.

County Brook Stream

The most recent and detailed study of the County Brook Stream was that conducted as part of the Fassaroe SHD application[29]. A map showing the aquatic sampling locations in this assessment is presented below on **Figure 59**.

This study described the river as follows:

'The County Brook stream was generally less than 2.5m wide for most of its length assessed with depths averaging 12 cm (Site 1) to 20 cm (Site 4 and 5) at the time of sampling. Run (fast, rippled flow) habitat interspersed with pool predominated at most sites except Site 5, which had mainly relatively fast-flowing glide habitat. The benthic substrates were dominated by gravel and cobbles at all sites. These were heavily embedded at Sites 2 and 3 due to calcium carbonate concretion and were consequently difficult to dislodge during kick sampling. Site 5 was sandy in places, with moderate to heavy fine sediment deposition and a high cover of filamentous algae. There were some small patches (<5% cover) of filamentous algae at Site 3 but no evidence of sediment problems at this or the other sites, apart from the aforementioned cattle access which is bringing bankside soil into the reach c. 10m downstream of Site 3.

The study sites were located in reaches which had circa 40% (Sites 1, 2 and 3) and 80% (Site 4) cover of overhanging vegetation. Site 5 was not shaded. The tree cover was predominantly

[27] Matson, R., Delanty, K., Gordon, P., O'Briain, R., Garland, D., Cierpal, D., Connor, L., Corcoran, W., Coyne, J., McLoone, P., Morrisey-McCaffrey, E., Brett, T., Ní Dhonnabhain, L. and Kelly, F.L., (2018) Sampling Fish in Rivers 2017 – Dargle Factsheet No. 5. National Research Survey Programme. Inland Fisheries Ireland.

[28] Matson, R., Delanty, K., Gordon, P., O'Briain, R., McCarthy, E., Cierpal, D., Connor, L., Corcoran, W., Coyne, J., McLoone, P., Morrisey-McCaffrey, E., Brett, T., Gavin, A and Kelly, F.L., (2019) Sampling Fish in Rivers 2018 - Dargle, Factsheet No. 1. National Research Survey Programme. Inland Fisheries Ireland.

[29] Aquens Ltd. 2021. Assessment of Water Quality in the Stream Flowing through Ballyman Glen, Co. Wicklow. Appendix 5A. Fassaroe SHD EIAR.

willow (*Salix* sp.) and hazel (*Corylus* sp.) with some ash (*Fraxinus* sp.) and sycamore (*Acer pseudoplatanus*) and dense understorey of brambles and some ferns at Site 3. Due to the considerable shading there was little instream vegetation apart from isolated small patches of mosses attached to cobbles and *Helosciadium nodiflorum* (fool's water cress) along the stream margins at Site 1, 4 and 5'.

No electrofishing surveys were done on the County Brook as part of the Fassaroe SHD application but the alkaline nature of the river here was confirmed.

Figure 59. Water sampling on the County Brook as part of the Fassaroe SHD application.

3.8 Water Quality

Both the River Dargle, the County Brook Stream, the Swan River and the Rathmichael Stream are all currently listed by the Environmental Protection Agency as being 'Not at Risk' of failing to achieve 'Good' water quality status under the Water Framework Directive (WFD) by 2027 as shown **Figure 60** below, whereas the Kilmacanogue Stream is deemed 'At Risk'.

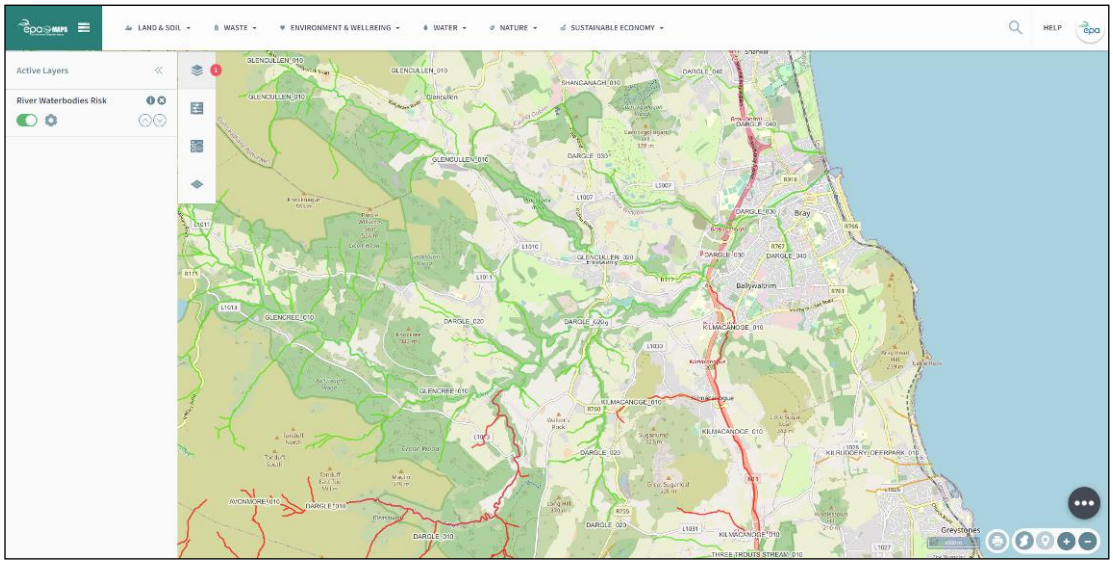


Figure 60. River waterbody risk of not achieving 'Good' status by 2027 under the Water Framework Directive. Green 'Not at Risk', Red 'At Risk'.

During the last monitoring period (2016 – 2021) the upper portions of the River Dargle and the Glencullen River were assessed as 'High' water status however below Enniskerry Village water quality in the Glencullen River declines and by the time it joins the Dargle at Cookstown water quality remains diminished and the River Dargle, County Brook, and Swan River are assessed as 'Good' water status. The Kilmacanogue Stream was assessed as 'Moderate' during the last monitoring period (2016 – 2021) and the Rathmichael Stream as 'Good' as shown **Figure 61** below.

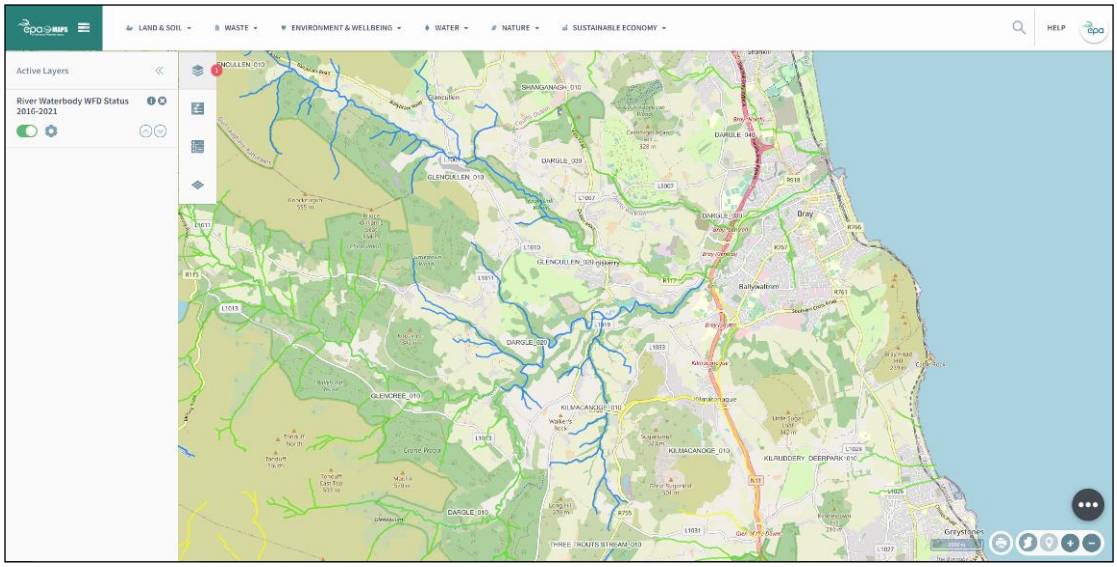


Figure 61. The status of watercourses in the environs of Bray during the last monitoring period (2016 – 2021). Blue – High, Green – Good, Yellow – Moderate.

River Dargle

Biological water monitoring is undertaken on the River Dargle on a yearly basis and the sampling results are undertaken at a location 1 km upstream of Bray Bridge.

The results of this monitoring is presented on **Figure 62** below and these results detail the watercourse as having a Biological Quality Rating (Q Value) of 4 within the 2019, 2020 and 2022 survey periods.

There was an improvement in water quality since the 2018 survey when the River Dargle was assigned a Q Value of 3-4 and this improvement was highlighted in the 2020 EPA assessment report which states for the River Dargle;

'The diversity and abundance of pollution sensitive macroinvertebrate fauna indicated a welcome improvement to good ecological conditions at Rivervale when surveyed in July 2019'.

A Q Value 4 indicates a WFD Status of 'Good', a Pollution Status of 'Unpolluted' and a Condition of 'Satisfactory'.

Q Value*	WFD Status	Pollution Status	Condition **
Q5, Q4-5	High	Unpolluted	Satisfactory
Q4	Good	Unpolluted	Satisfactory
Q3-4	Moderate	Slightly polluted	Unsatisfactory
Q3, Q2-3	Poor	Moderately polluted	Unsatisfactory
Q2, Q1-2,	Bad	Seriously polluted	Unsatisfactory

Figure 62. Biological Quality Rating (Q Value).

DARGLE **10D01**

Date Surveyed (last survey year only): 14/06/22

Biological Quality Rating (Q Values)

Station Code	1974	1978	1982	1986	1990	1994	1997	2000	2003	2006	2009	2012	2015	2018	2019	2020	2021	2022
RS10D010010			5	5	5	5	4-5	4-5	5	5	4-5	4*	4-5	4-5		4-5	4-5	
RS10D010050			4-5	5	5													
RS10D010100	5		5	4-5	4-5	4-5	4	3	4	4	4	4	4	4		4-5		
RS10D010200	5	5	5	5														
RS10D010250					4-5	4	3-4	3	3-4	4	3-4		3	3-4	4	4		4
RS10D010260												4						
RS10D010270													4*					
RS10D010300	4	5	4	5														

Most Recent Assessment:

The macroinvertebrate community continues to indicate good ecological conditions at Rivervale (0250) in 2022.

Figure 63. Q-values on the River Dargle 1974 – 2022.

County Brook

Aquatic surveys were completed on the County Brook Stream as part of the Fassaroe SHD application[30]. These surveys documented Q values of Q3 – Moderately Polluted ecological status at one station, Q3/4 – indicating a Slightly Polluted 'Moderate' ecological status at three stations, and Q4 - Unpolluted, 'Good' ecological status at one station.

[30] Aquens Ltd. 2021. Assessment of Water Quality in the Stream Flowing through Ballyman Glen, Co. Wicklow. Appendix 5A, Fassaroe SHD EIAR.

3.9 Local Biodiversity Areas

In 2008 the Bray Urban Habitat Mapping Project[31] was completed by MERC Consultants for Wicklow County Council. This project identified a number of sites in the town and environs, which contained natural habitats.

They noted that:

> 'The natural habitats within Bray urban area are often overlooked as the town is located within County Wicklow, known for its many sites of conservation importance.
>
> However, a number of areas within the town are of high conservation value, not only in a local context but also at a national scale. Of particular importance are those areas of Bray Head located within the Bray Urban Boundary, and also stretches of costal sea cliffs and their associated habitats in addition to the River Dargle.
>
> Smaller pockets of green space within the town, which include both public and private parks, areas of railway embankments and small areas of woodland along roadsides and streams all provide areas of valuable biodiversity importance. Many of these areas are in close proximity to each other and as such can provide corridors to link smaller green spaces, further contributing to the enhancement of biodiversity within the town.'

The 2008 study identified 14 areas of ecological value in the town. These are best described as Local Biodiversity Areas[32].

Their locations are shown on **Figure 64** below. They are:

1. Swan River and Grassland Areas at Wheatfield/Giltspur Brook
2. Treeline on Royal Marine Terrace
3. Embankment of the Railway Line
4. Coastal grassland on the Former Dump north of Bray Harbour
5. Sidmonton Park
6. Private Park on the junction of Novara Terrace/Novara Road
7. San Souci Wood
8. Rockbrae House
9. Woodland Strip between LIDL and Ravenswell
10. People's Park
11. Woodland between Hollybrook Park and TAKEDA (IDA Business Park Southern Cross Bray)
12. Dargle River valley and Kilmacanogue Stream Valley
13. Swan River Valley
14. Bray Head

[31] MERC Consultants Ltd. (2008). Bray Urban Habitat Mapping. An Action of the County Wicklow Heritage Plan 2004-2008. Report prepared for Wicklow County Council.

[32] Wilson, F. and R. Nairn (2005). Local Biodiversity Areas. A Pilot Study On The Identification And Evaluation Of Local Areas For Wildlife And Nature Conservation. Report prepared for The Heritage Council, Wicklow County Council and Westmeath County Council.

Figure 64. Natural Habitats Identified in Bray Town (MERC 2008).

3.10 Main Areas Surveyed in 2022/2023

A description of each of the main study areas examined in 2022/2023 in Bray and the habitat types encountered within them as described by Fossitt (2000) in the Heritage Council 'Guide to Habitats' is presented below. An assessment of their importance for fauna is also noted.

3.10.1 Areas of Natural Habitat Identified in 2008

The areas of natural habitat that were identified in 2008 were resurveyed (with the exception of Bray Head as these lands are the subject of a detailed management plan commissioned by Wicklow County Council). These are listed in **Table 3.10.1** below. They contain habitats and features that support wildlife and were given an evaluation at that time of their importance to local biodiversity.

Table 3.10.1. Local Biodiversity Areas identified in 2008 within the town.

Site No.	Grid Reference	Habitats present	Threats	Evaluation
1	326141/217232	FW2/GA2/WD5	Non-native planting.	D: Moderate value, locally Important
2	326904/218941	WL2	None evident.	E: Low value, locally Important
3	326874/218962	ED2	Herbicide application. Introduction of invasive non-native species.	D: Moderate value, locally Important
4	326726/219515	GS2/CS3	Development pressure. Spread of invasive non-native species.	C: High value, locally Important
5	326891/218349	BC4/WL2	None evident.	D: Moderate value, locally Important
6	326731/218461	WS3	None evident.	D: Moderate value, locally Important
7	326635/218113	GA2/WL1/WD1/WD5	Domestic dumping.	C: High value, locally Important
8	326316/217929	WL2/GA2	Possible development pressure.	D: Moderate value, locally Important
9	326142/219215	WD1	None evident.	D: Moderate value, locally Important
10	325904/218694	WL2/GA2	Undetermined damage to young trees	D: Moderate value, locally Important
11	326437/216438	GS2/FW2/WD1	Scrub encroachment. Domestic dumping.	C: High value, locally Important
12	325018/216242	WD1/FW2/WS1/WL1/ED1	Spread of invasive non-native species. Domestic dumping.	C: High value, locally Important
13	325811/218309	WD1/FW2	Spread of invasive non-native species. Domestic dumping.	C: High value, locally Important
14	327480/217123	GA1/WL1/WS1/HH1/HD1/ WD1/LR2/CS1/CS3	Burning. Spread of Bracken. Land reclamation	B: Nationally Important

3.10.2 Corke Abbey Valley

Surveys were conducted in Corke Abbey Valley in 2022 by Faith Wilson and Dr Joanne Denyer. This survey recorded seven different habitats within the valley. These are summarised in **Table 3.10.2** below and their ecological importance was assessed.

Table 3.10.2. Habitats recorded within the Corke Abbey Valley.

Habitat/ species	Ecological importance	Reason for evaluation
Depositing/lowland rivers (FW2)	County ecological importance	Part of the wetland habitat system within the site and supports the Annex I alluvial woodland
Amenity grassland (GA2)	Local (higher) ecological importance	This only includes the moderately diverse wetland area
Marsh (GM1)	Local (higher) ecological importance	Linked to the stream and wet woodland
Riparian woodland (WN5)	Local (higher) ecological importance	Example of Annex I priority habitat 'Alluvial woodland' *91E0
Mixed broadleaved woodland (WD1)	Local (higher) ecological importance	Largely dominated by non-native trees, but does have some typical native woodland species.
Treeline (WL2)	Local (higher) ecological importance	Largely comprised of non-native species but habitat for fauna and link to adjacent habitats.
Recolonising bare ground (ED3)	Local (higher) ecological importance	Dominated by Winter Heliotrope but some species of calcareous grassland present.

The most important of these are two areas of wet woodland within the valley. These are examples of the priority habitat '*Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) [91E0]' listed under Annex I of the EU Habitats Directive. This habitat is referred to as 'Alluvial woodland' and was identified on the presence of several positive indicator species for the habitat. These were: Alder *Alnus glutinosa,* Ash *Fraxinus excelsior,* Rusty Willow *Salix cinerea* spp. *oleifolia,* White Willow *S. alba,* Crack-willow *S. fragilis*, Bittersweet *Solanum dulcamara,* Creeping Bent, Angelica *Angelica sylvestris*, Remote Sedge *Carex remota,* Marsh Bedstraw *Galium palustre,* Yellow Iris, Water Mint *Mentha aquatica,* Reed Canary-grass, Creeping Buttercup, Wood Dock *Rumex sanguineus,* Common Nettle and the bryophyte *Thamnobryum alopecurum.* The other main habitat of significance is the Rathmichael Stream and associated areas of marsh and adjoining woodland habitat.

The terrestrial fauna within the Corke Abbey Valley Park consists of several non-volant mammals associated with the watercourse and surrounding marsh and wet woodland habitats, and the hedgerows and treelines along the boundaries of the valley. These support species such as brown rat, long tailed field mouse, house mouse, hedgehog and fox. There are records of hedgehog from Woodbrook Glen adjoining the park and hedgehogs were also reported by locals from the park. Other common fauna that might occur include Irish stoat and pygmy shrew. There was no evidence of any badger setts or foraging activity within the valley although badgers are known from the Woodbrook lands to the north of Corke Abbey and were recorded from the environs of Ravenswell House to the south. Otters have been recorded on the Rathmichael Stream within the Corke Abbey Valley as detailed above. Winter heliotrope (*Petasites fragrans*), Montbretia (*Crocosmia* x *crocosmiiflora*), Three-cornered leek (*Allium triquetrum*), Butterfly-bush (*Buddleja davidii*) and Japanese knotweed (*Fallopia japonica*) were recorded here.

3.10.3 Swan River Valley

The Swan River rises on the slopes of the Little Sugarloaf within Kilruddery Demesne as shown on **Figure 65** below.

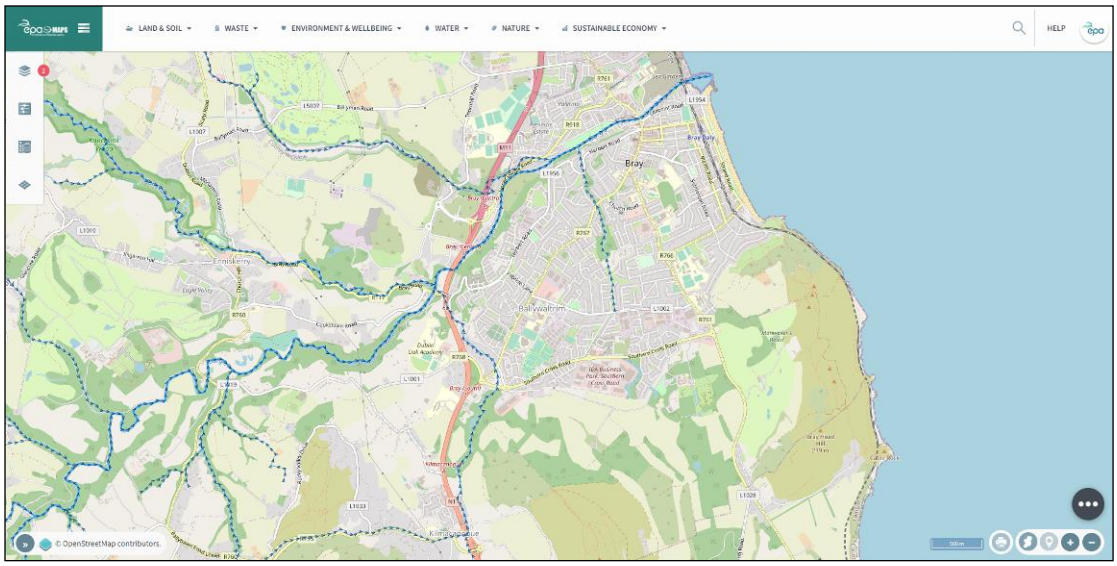


Figure 65. The Swan River in Bray (Source: EPA).

An area of mature mixed broadleaved woodland (WD1) mainly consisting of holly (*Ilex aquifolium*) and oak (*Quercus sp.*) mixed with hawthorn (*Crataegus monogyna*), sycamore (*Acer pseudoplatanus*), ash (*Fraxinus excelsior*) and beech (*Fagus sylvatica*) is found along the river near the IDA Business park on the Southern Cross.

American skunk cabbage (*Lysichiton americanus*) was recorded in the upper portions of the river near Hollybrook Estate.

Bordering the Swan River downstream of the Boghall Road is an area of mixed broad-leaved woodland (WD1) which is known locally as 'Oldcourt' or 'Giltspur Wood'. This woodland is present on the First Edition 6" maps as shown on **Figure 66** below.

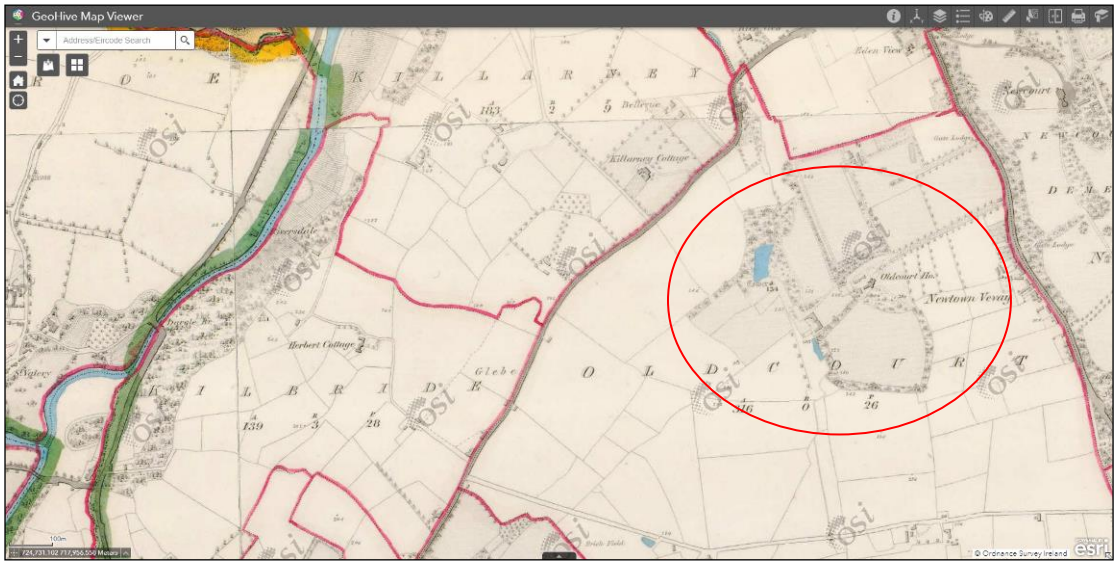


Figure 66. First edition six inch mapping showing the woodland at Giltspur or Oldcourt (Source: Ordnance Survey Ireland).

A good diversity of species are recorded in the woodlands at Giltspur and some magnificent tall mature specimen trees of Oak (*Quercus robur*), Scots pine (*Pinus sylvestris*), Yew (*Taxus baccata*), and Ash (*Fraxinus excelsior*) occur, with occasional Wild cherry (*Prunus avium*), Crack Willow (*Salix fragilis*) and an understorey of Holly (*Ilex aquifolium*), Wych elm (*Ulmus glabra*), Elder (*Sambucus nigra*), Bramble (*Rubus fruticosus* agg.), Ivy (*Hedera helix*) and Honeysuckle (*Lonicera periclymenum*). Non-native species include Poplar (*Populus* sp.), Horse chestnut (*Aesculus hippocastanum*), Larch (*Larix decidua*), Beech (*Fagus sylvatica*), Sycamore (*Acer pseudoplatanus*), and several non-native conifers. Along the river Wych elm (*Ulmus glabra*), Alder (*Alnus glutinosa*) and Grey willow (*Salix cinerea*) occur.

The valley is relatively steeply slopes in parts and on the drier parts under the shade of the oak and other mature trees typical woodland species such as Soft-shield fern (*Polystichum setiferum*), Lords-and-Ladies (*Arum maculatum*), Common Dog-violet (*Viola riviniana*), Hogweed (*Heracleum sphondylium*), Primrose (*Primula vulgaris*), Hart's-tongue (*Asplenium scolopendrium*) and Wild garlic (*Allium ursinum*) are present.

Along the floodplain of the River Swan and at the base of the valley a suite of species representative of these habitats occur including Meadowsweet (*Filipendula ulmaria*), Hemlock Water-dropwort (*Oenanthe crocata*), Pendulous Sedge (*Carex pendula*), Wild garlic (*Allium ursinum*) and Opposite-leaved Golden-saxifrage (*Chrysosplenium oppositifolium*).

The Swan River Valley and Giltspur Wood is of high biodiversity value within the context of Bray both on account of the maturity of the trees and the diversity of both standing and fallen dead wood which is of high ecological value in a woodland ecosystem. There are a number of invasive species within the woodlands at Oldcourt. These are Cherry Laurel (*Prunus laurocerasus*), Winter heliotrope (*Petasites fragrans*), Three cornered leek (*Allium triquetrum*) and Himalayan Honeysuckle (*Leycesteria formosa*). Infestations of Winter heliotrope are particularly bad in the woods near the Killarney Road below Ryecroft.

Downstream of the Killarney Road the Swan River is bounded by a narrow band of trees. These include; Ash (*Fraxinus excelsior*), alder (*Alnus glutinosa*), elder (*Sambucus nigra*) and the non-native species Beech (*Fagus sylvatica*) and Sycamore (*Acer pseudoplatanus*).

Areas of wet willow alder ash woodland (WN6) have developed on the boundaries of the former lake at Oldcourt – the river was dammed here to form an artificial lake and a series of weirs were developed on the river. These areas should be the subject of further detailed studies to determine if they have any affinity to the Annex I priority habitat '*Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) [91E0]. American skunk cabbage (*Lysichiton americanus*) was recorded here.

There are also a series of freshwater springs within the woods which should be subject of further detailed studies to determine if they have any affinity to the Annex I priority habitat 7220 *Petrifying springs with tufa formation (Cratoneurion)).

Plate 4. Woodland in the Swan River Valley at Oldcourt Castle. Skunk cabbage can be seen.

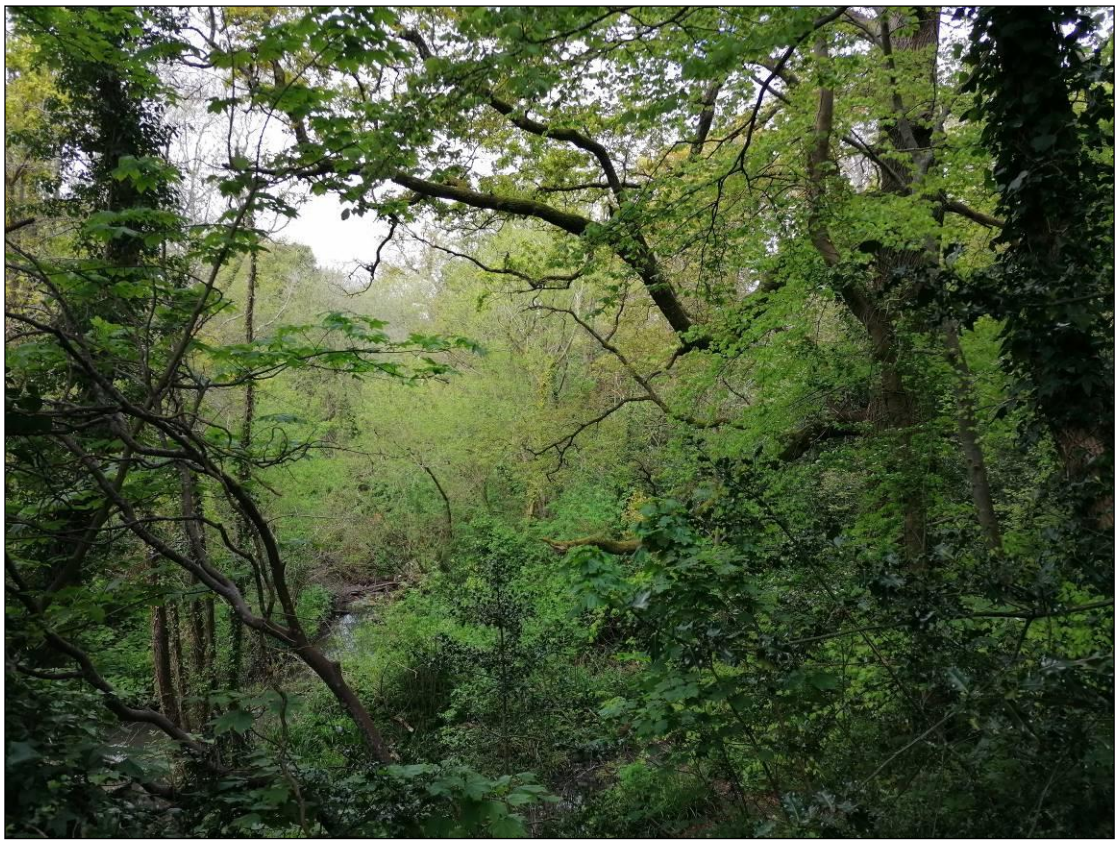


Plate 5. Swan River Valley.

Plate 6. Swan River.

Plate 7. Winter heliotrope dominating the ground flora near the Killarney Road.

Plate 8. Gabions on the river bank below Glenbrook/Glencourt.

Plate 9. Poor water quality in the Swan River.

Plate 10. Weirs on the river create barriers to fish passage.

The one remaining undeveloped field east of the valley, which is to the west of Charnwood, is encircled by a treeline of large specimen oaks – these are shown on the first edition six inch maps and are part of the original shelterbelts associated with Oldcourt House (now Sunbeam House Services). This field is no longer grazed and hence is becoming encroached by Bramble scrub (WS1) and consists of dry meadow and grassy verge grassland (GS2) with Cock's-foot (*Dactylis glomerata*), Docks (*Rumex* sp.), Nettle (*Urtica dioica*) and Creeping Buttercup (*Ranunculus repens*).

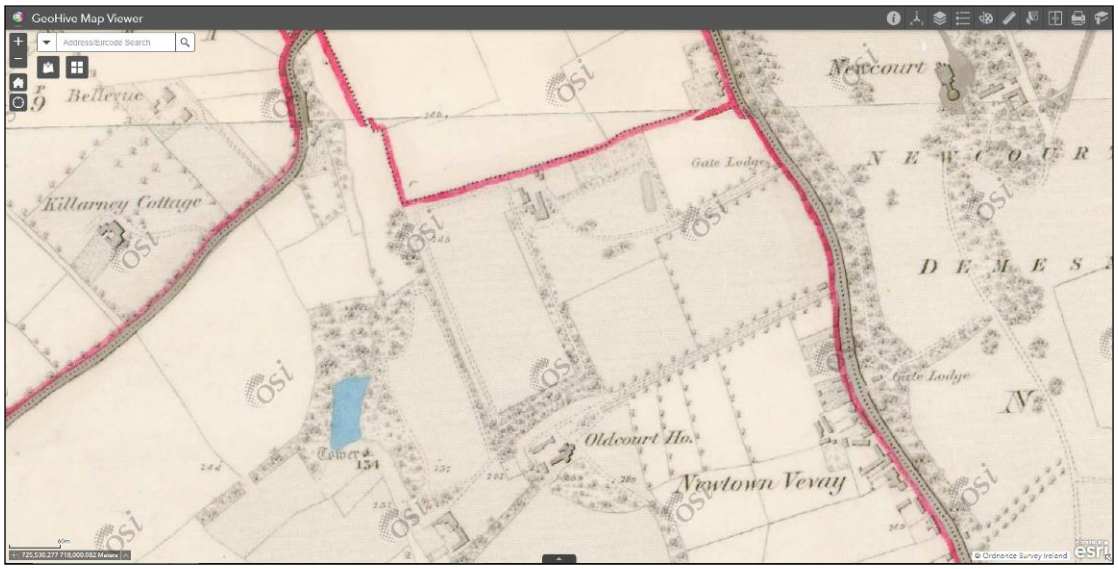


Figure 67. Treelines and shelterbelts in the environs of Oldcourt House are shown on the first edition 6″ map series (colour edition) (Source: Ordnance Survey Ireland).

Figure 68. Treelines and shelterbelts associated with Oldcourt House.

Plate 11. Mature treelines and field near Charnwood.

Plate 12. Mature treelines and scrub habitat for nesting birds.

The listed alien invasive Grey squirrel (*Sciurus carolinensis*) has been recorded in Oldcourt.

Six species of bats have been recorded foraging and commuting along this river corridor and over the open fields and mature treelines beside Charnwood and Sunbeam House.

The Swan River has suffered from pollution events in the recent past (including the release of detergents in 2018 and some localised sewage effluent) but the undisturbed nature of this important river corridor continues to provide rich foraging for bats and other wildlife, forming an important wildlife corridor and has been identified as a very important area for biodiversity within the environs of Bray.

A misconnection study of the housing estates in the environs of the Boghall Road is recommended to try and resolve some of these pollution issues.

3.10.4 County Brook Stream

The County Brook Stream rises near the Scalp above Enniskerry. For many years in the 1980s this stream was regularly polluted by leachate and substances from an illegal dump in the Scalp.

The Ballyman Glen SAC is an important designated site of international conservation importance on either side of the valley adjoining the river containing a series of tufa forming freshwater springs (FP1), wet willow alder ash woodland (WN6) and an area of alkaline fen (PF1). A detailed survey of the petrifying springs here was undertaken as part of the Fassaroe SHD application as shown on **Figure 69** below.

Downstream of here in Vallombrosa the river was modified with a number of sluices to provide a power source for a water driven turbine and a series of artificial lakes (which have silted up) and a waterfall were developed on the river.

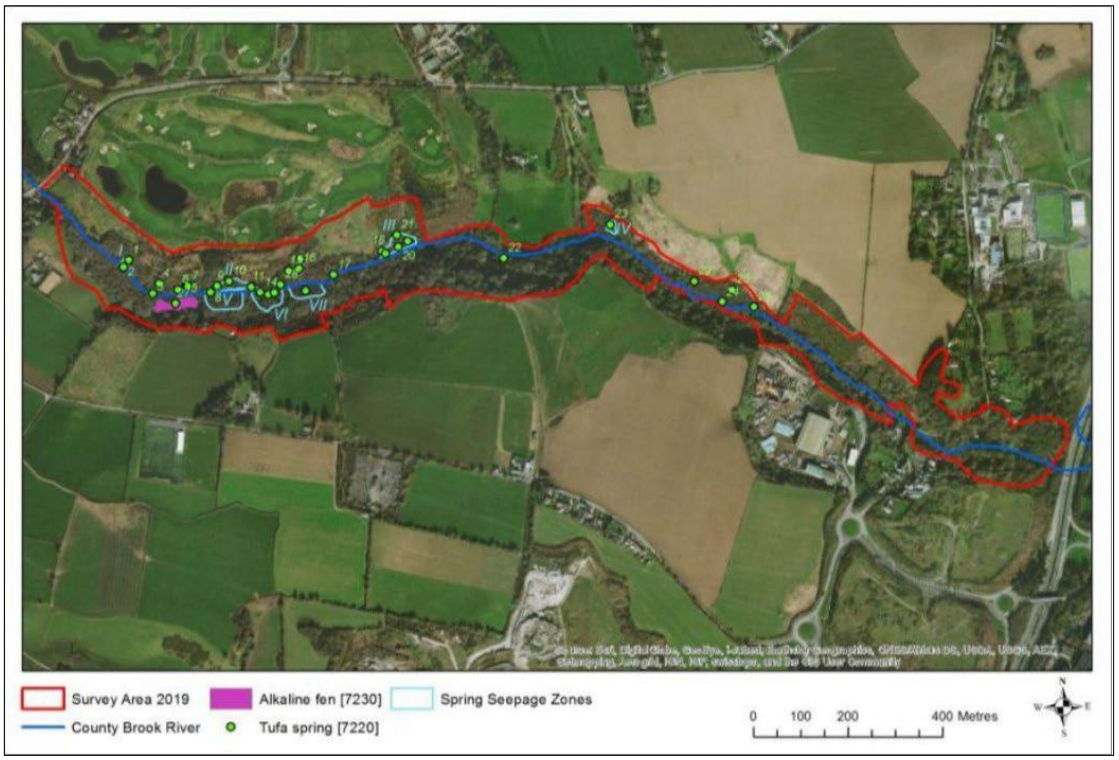


Figure 69. Petrifying Spring and Alkaline Fen Habitats Recorded within Ballyman Glen SAC (Source: Fassaroe SHD EIAR).

Plate 13. Alkaline fen and tufa springs in Ballyman Glen.

Areas of wet willow alder ash woodland (WN6) are found along the banks of the river upstream of the sluices and species such as Fool's-water-cress (*Apium nodiflorum*), Hemlock Water-dropwort (*Oenanthe crocata*), Brooklime (*Veronica beccabunga*), Marsh marigold (*Caltha*

palustris), Cow Parsley (*Anthriscus sylvestris*), Yellow flag (*Iris pseudacorus*), Angelica (*Angelica sylvestris*), Water mint (*Mentha aquatica*), Nettle (*Urtica dioica*) and opposite leaved golden saxifrage (*Chrysosplenium oppositifolium*) and sedges (*Carex* spp.).

Figure 70. County Brook Stream.

The slopes of the valley above the river contain mixed broad-leaved woodland (WD1) with Beech (*Fagus sylvatica*), Sycamore (*Acer pseudoplatanus*), Yes (*Taxus baccata*), Wych elm (*Ulmus glabra*), Scots pine (*Pinus sylvestris*), Holly (*Ilex aquifolium*), Hawthorn (*Crataegus monogyna*), Horse chestnut (*Aesculus hippocastanum*), Oak (*Quercus robur*), Strawberry-tree (*Arbutus unedo*), Cabbage-palm (*Cordyline australis*), Laurustinus (*Viburnum tinus*) and Eucalyptus. Large parts of the wood are choked with Cherry laurel (*Prunus laurocerasus*). There are areas of Wood anemone (*Anemone nemorosa*), False-brome (*Brachypodium sylvaticum*), Lords-and-Ladies (*Arum maculatum*), Bugle (*Ajuga reptans*), Lesser celandine (*Ranunculus ficaria*), Enchanter's-nightshade (*Circaea lutetiana*), Bluebells (*Hyacinthoides non-scriptus*) and a rich diversity of ferns in the ground flora.

The areas of wet woodland here should be the subject of further detailed studies to determine if they have any affinity to the Annex I priority habitat '*Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) [91E0].

There are also a series of freshwater springs within the woods at Vallombrosa which have not been formally surveyed to date. These should be subject of further detailed studies to determine if they have any affinity to the Annex I priority habitat 7220 *Petrifying springs with tufa formation (Cratoneurion)).

Japanese knotweed (*Fallopia japonica*), Himalayan Honeysuckle (*Leycesteria formosa*), Snowberry (*Symphoricarpos albus*), Spanish Bluebell (*Hyacinthoides hispanica*) and American skunk cabbage (*Lysichiton americanus*) occur in the valley at Vallombrosa and downstream of here large populations of Winter Heliotrope (*Petasites fragrans*), Old man's Beard (*Clematis vitalba*) and Giant hogweed (*Heracleum sphondylium*) occur.

The County Brook was culverted under the M11 motorway and no provision for mammal passage was provided. Eel and freshwater crayfish were previously recorded in the river (Fiona Wilson, pers. obs).

The woodlands here support a rich diversity of bats.

Barn owl was previously recorded on the fields at Fassaroe adjoining the M11.

The lands adjoining this valley are zoned for development and there are planning applications in progress for a large Strategic Housing Development and a park and ride facility on these lands.

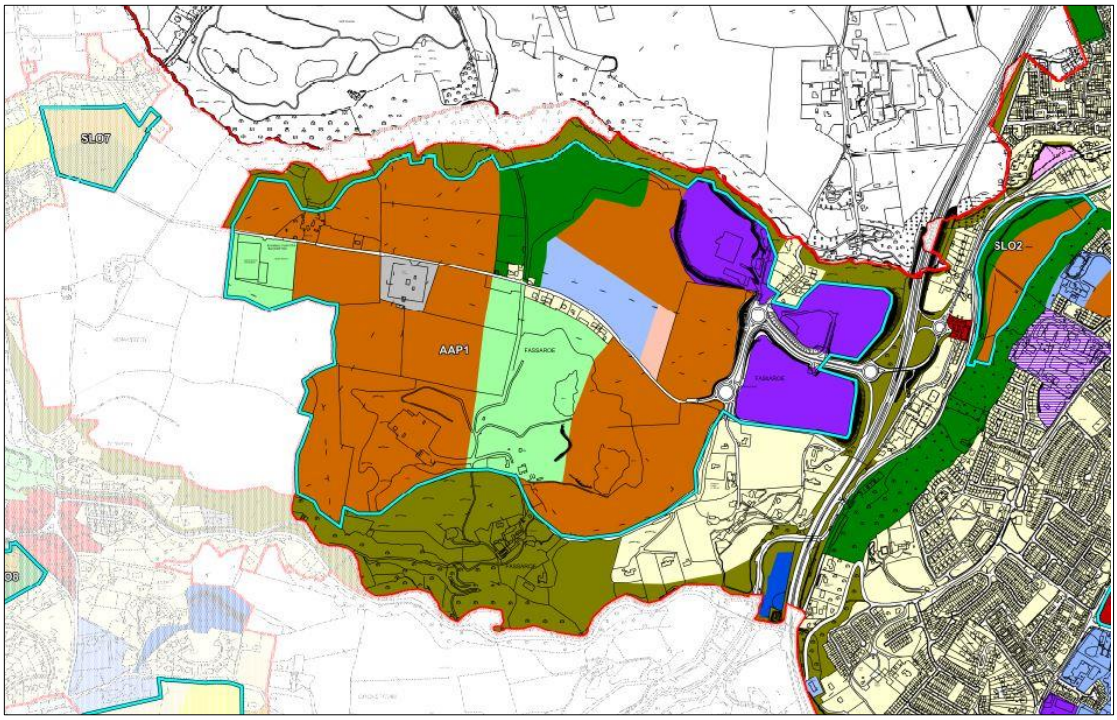


Figure 71. Land zoning in the vicinity of the County Brook/Ballyman Glen.

3.10.5 Bray Head

Areas of calcareous grassland on the lower slopes of Bray Head have been degraded or lost through inappropriate management.

The diversity in the grassland on the lands developed as a pitch and putt course should be restored through appropriate management.

A Conservation Management Plan 2023-2028 has been prepared for Bray Head[33] and adopted by Wicklow County Council, which includes grassland management in this area.

Figure 72. Conservation Actions on Bray Head.

3.10.6 Dargle River

Post construction monitoring of the mitigation measures implemented on this site was a condition of planning permission. This does not seem to have been completed from the perspective of ecology and should be completed.

[33] ALC Nature (2023). Bray Head Conservation Management Plan 2023-2028. Wicklow County Council. September 2023

3.11 Invasive Species

A number of invasive plant species which threaten native flora, habitats and biodiversity were recorded within the wider area of Bray town. These are:

- Japanese Knotweed (*Fallopia japonica*)
- Giant Hogweed (*Heracleum mantegazzianum*)
- Three-cornered Leek (*Allium triquetrum*)
- Himalayan Balsam (*Impatiens glandulifera*)
- American Skunk Cabbage (*Lysichiton americanus*)
- Montbretia (*Crocosmia* x *crocosmiiflora*)
- Butterfly-bush (*Buddleja davidii*)
- Himalayan Balsam (*Impatiens glandulifera*)
- Himalayan Honeysuckle (*Leycesteria formosa*)
- Traveller's-joy (*Clematis vitalba*)
- Cherry Laurel (*Prunus laurocerasus*)
- Canadian Fleabane (*Conyza canadensis*)
- Winter Heliotrope (*Petasites fragrans*)
- Giant Viper's-bugloss (*Echium pininana*)
- Red Valerian (*Centranthus ruber*)
- Alexanders (*Smyrnium olusatrum*)
- Snowberry (*Symphoricarpos albus*)
- Spanish Bluebell (*Hyacinthoides hispanica*)
- Mexican fleabane (*Erigeron karvinskianus*)

Plate 14. Mexican fleabane.

The River Dargle corridor contains some of the largest populations of these invasive species and many are likely to have arisen and spread from ornamental gardens in demesnes in the environs of Enniskerry.

Species such as the Giant hogweed on the River Dargle have been present for over forty years. Large volumes of soil and invasive species were excavated and disposed of to an invasive species treatment bund at 'The Slang' during the Dargle Flood Defence Scheme.

Follow up treatment of populations within the environs of the scheme was to be implemented on completion of the project but it is not known if this took place.

Plate 15. Himalayan balsam (*Impatiens glandulifera*) on the River Dargle.

Giant hogweed and Japanese Knotweed are 'High-impact' species restricted under Section 49 of the European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. No. 477 of 2011, as amended). Dun Laoghaire Rathdown County Council have begun treatment of these species in Corke Abbey Valley and on the County Brook.

Canadian fleabane (*Conyza canadensis*), is a rapidly spreading non-native invasive species which is now widespread by the River Dargle; Castle Street and on the Davitt and Herbert Roads in Bray. This species is now thoroughly established in the town.

Giant viper's-bugloss (*Echium pininana*) was recorded from the wild on Bray Head by Dr Curtis – this species has escaped and naturalised on the cliffs at Howth where it is outcompeting native cliff vegetation (impacting on the SAC there) and likewise the species also poses a risk to the Bray Head SAC.

Large populations of Red valerian (*Centranthus ruber*) have been spread along the railway line and Bray Tidy Towns have tackled these on the walls and in the environs of Bray Harbour.

3.12 Biodiversity Records

A review of biodiversity records from within the study area held by the National Biodiversity Data Centre was completed. For the purposes of biological recording the country is divided up into 10km squares. Bray Town lies within 10km square O21 as shown on **Figure 73** below.

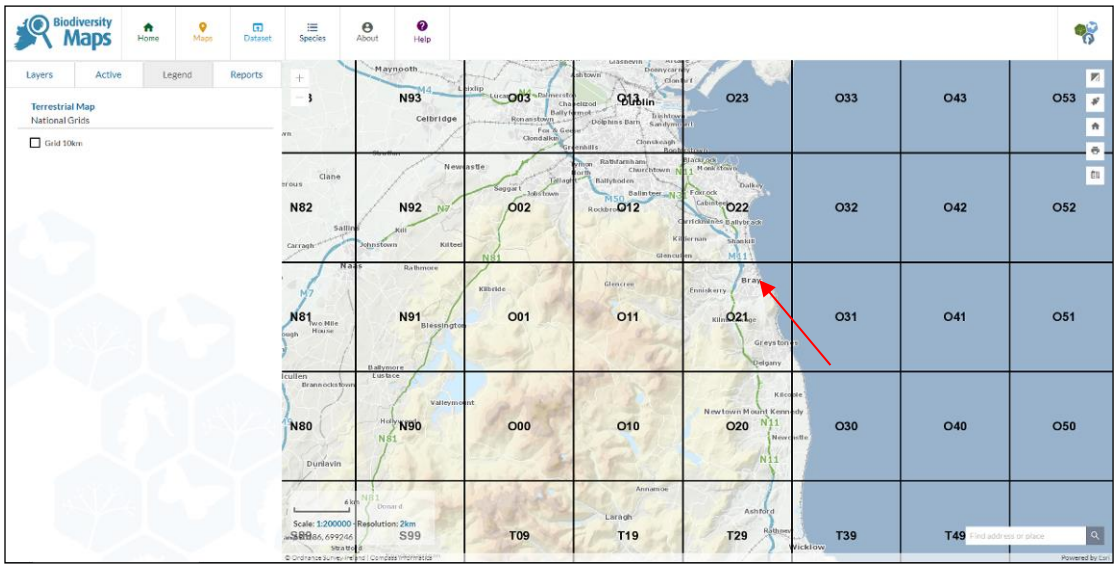


Figure 73. 10km grid squares – Bray Town is located in square O21.

Approximately 3547 species (both terrestrial and marine) are recorded from within this square (O21) including records of:

- Algae
- Amphibians
- Worms
- Birds
- Fish – bony and cartilaginous
- Centipedes
- Cnidarians
- Comb jellies
- Crustaceans
- Echinoderms
- Flatworms
- Insects – beetles
- Insects – butterflies
- Insects – bees and wasps
- Insects – caddis fly, may fly, stone fly and true flies
- Insects – moths
- Insects – true bugs
- Millipedes
- Molluscs
- Spiders
- Springtails
- Mammals
- Marine mammals
- Slime moulds
- Sponges
- Tunicates
- Fungi
- Flowering plants
- Conifers

- Horsetails
- Ferns
- Mosses, liverworts and lichens

At a finer scale (within the town) as shown on **Figure 74** below there are fewer species with only 453 species recorded and submitted to the National Biodiversity Data Centre.

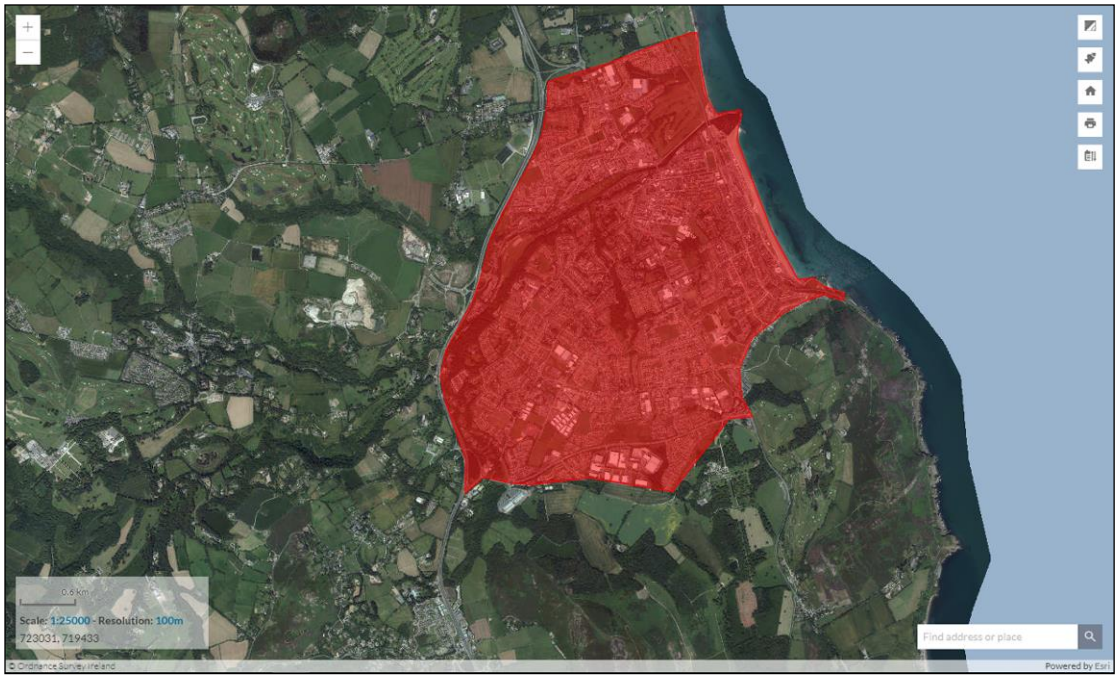


Figure 74. Records from Bray Town.

These records are presented in **Table 1** in **Appendix 8**. They include records of:

- Amphibians
- Worms
- Birds
- Conifers
- Crustaceans
- Ferns (only one species recorded!)
- Flowering plants
- Insects - beetles
- Insects – butterflies
- Insects – dragonflies
- Insects – bees and wasps
- Insects – moths
- Insects - bugs
- Insects – caddis fly, may fly, stone fly and true flies
- Molluscs
- Mosses, Lichens and Liverworts
- Slime moulds, and
- Mammals

4. LARGE SCALE ACTIONS FOR BRAY TOWN

4.1 Actions for Biodiversity Areas in Bray

A resurvey of the previously identified areas of natural habitat from the 2008 study and a number of new areas within the town were surveyed in 2022 /2023 as part of this study.

Observations on the current condition and management of these areas from the perspective of biodiversity were conducted as part of this survey and recommendations for action are presented. These are summarised below in **Table 4.1.**

Many actions may require the permission of private landowners, residents groups, businesses or collaboration with the local authorities (Wicklow County Council and Dun Laoghaire Rathdown County Council) or the statutory agencies (Inland Fisheries Ireland, National Parks and Wildlife Service and the EPA) and may need to be integrated into a wider plan or project.

Table 4.1. Areas of Biodiversity Importance identified in 2008 and 2022/2023 within the town and its environs and actions for same.

Site No.	Location	Habitats Present	Threats Identified in 2008	Comments/observations in 2022/2023	Recommended Actions
1	Swan River and grassland areas at Wheatfield/Giltspur Brook	FW2 – Swan River GA2 – Amenity Grassland WD5 – Parkland trees	Non-native planting.	Area threatened by the proposed Swan River Greenway Lighting impacts associated with Greenway River corridor is very narrow here – too much mowing Poor water quality	Implement recommendations from LAWPRO funded study of the Swan River Opportunity to implement less intensive mowing for pollinators Grassland management – the grassland here is being manged by Bray Municipal District for Biodiversity Grassland management – do not allow cuttings to go into the river Allow native vegetation to grow tall along the watercourse Long term strategy to decrease non-native and increase native species here Misconnection survey of these housing estates
2	Treeline on Royal Marine Terrace	WL2 - Treeline	None evident.	No TPO on these trees Unable to access as private laneway	Extend Tree Preservation Order to these trees?

Site No.	Location	Habitats Present	Threats Identified in 2008	Comments/observations in 2022/2023	Recommended Actions
3	Railway Line and lands owned by Iarnród Éireann	ED2 – Exposed Bare ground	Herbicide application. Introduction of invasive non-native species.	Invasive species – Red valerian	Iarnród Éireann have published new Biodiversity Guidelines which are to provide a comprehensive handbook to all infrastructure staff to protect the natural environment – including animal, plant and marine life - encountered in the management of maintenance of tracks, stations, bridges, signalling and electrical equipment. Monitoring and documenting how these Biodiversity Guidelines are being implemented along the railway line in Bray could be completed with follow up engagement with Iarnród Éireann. The main action is control of invasives which have spread along the railway line
4	Former dump north of Bray Harbour	GS2 – Dry meadow grassland CS3 -	Development pressure. Spread of invasive non-native species.	Unable to access	Survey
5	Sidmonton Square	BC4/WL2	None evident.	Not surveyed	Grassland management – short mow meadow would be an option and some areas allowed to grow long Pollinator friendly planting
6	Private Park on the junction of Novara Terrace/Novara Road	WS3	None evident.	Not surveyed	Grassland management Pollinator friendly planting

Site No.	Location	Habitats Present	Threats Identified in 2008	Comments/observations in 2022/2023	Recommended Actions
7	San Souci Wood	GA2/WL1/WD1/WD5	Domestic dumping.	TPO on some trees here Invasive species – cherry laurel, old man's beard, cotoneaster Anti-social behaviour and possible homeless/tents	Woodland management plan needed Some trees here are the subject of a Tree Preservation Order Grassland management – short mow meadow would be an option and some areas allowed to grow long Protect from development Establish 'Friends of San Souci Wood' Survey for bats Possible geological heritage site at old quarry pit Ensure pathway remains unlit Development pressures
8	Rockbrae House	WL2/GA2	Possible development pressure.	House destroyed by fire in April 2023 Not surveyed Development pressure	Only small number of trees here are the subject of a Tree Preservation Order - TPO B19 Protect from development Survey
9	Woodland strip between LIDL and Ravenswell	WD1	None evident.	Invasive species No TPO on these trees	Ensure the protection of these trees

Site No.	Location	Habitats Present	Threats Identified in 2008	Comments/observations in 2022/2023	Recommended Actions
10	People's Park	WL2/GA2	Undetermined damage to young trees	Opportunity to implement less intensive mowing for pollinators Lighting proposals No Tree Preservation Order on trees here	Check if bat boxes erected as part of the Dargle Flood Defence Scheme remain intact and if they are used by bats Grassland management – short mow meadow would be an option and some areas allowed to grow long Extend Tree Preservation Order to these trees Create native hedgerow along park edges
11	Swan River and Woodland between Hollybrook Park and TAKEDA (IDA Business Park Southern Cross Bray)	GS2/FW2/WD1	Scrub encroachment. Domestic dumping.	Potential development pressure. These trees are not protected under any Tree Preservation Order High value mature oak woodland Invasive species – American Skunk Cabbage	Extend Tree Preservation Order rder to these trees Improve planting with native tree and shrub species on TAKEDA/IDA lands Implement recommendations from LAWPRO funded study of the Swan River
12	Dargle River Valley	WD1/FW2/WS1/WL1/ ED1	Spread of invasive non-native species. Domestic dumping.	Development pressures Large scale changes have arisen here as a result of the Dargle Flood Defence Scheme Damage to woodland habitats from development Tufa forming springs noted in the woods adjoining the Dargle Valley below Herbert Road	Protect area known as 'The Slang'/Bray Commons from development Commission survey of area of young alluvial woodland which may flood periodically on the Dargle River to determine if it has any affinity to the Annex I priority habitat 'Alluvial woodland' Commission survey of Tufa forming springs noted in the woods adjoining

Site No.	Location	Habitats Present	Threats Identified in 2008	Comments/observations in 2022/2023	Recommended Actions
				Invasive Species Sanitisation and amenitisation of adjoining lands at Lower Dargle Road Development pressures for 'The Slang' lands Presence of habitats listed under Annex I of the EU Habitats Directive Damage to woodlands on banks below Cairnhill Nursing Home Tree Preservation Order only covers some trees in this important corridor Development pressures in the Kilmacanogue Stream Valley - Planning application on Ballywaltrim Lane (Planning reference : 19391). Refused by Wicklow County Council and An Bord Pleanála (Planning reference PL27.304778). Red data book plants species at Lower Dargle Road – Blue Fleabane New population of Blue Fleabane recorded Wetlands with Stoneworts (*Chara* sp.) identified on floodplain of river used by dragonflies	the Dargle Valley below Herbert Road by a spring specialist to map and determine if any springs here have an affinity to the Annex I priority habitat 'Petrifying springs' Review extent of invasive species present on the River Dargle following the Dargle Flood Defence Scheme Invasive species management Investigate if the artificial banks created for Kingfisher on the Dargle have been utilised Resurvey for rare plants Management of habitat at Lower Dargle Road for Blue Fleabane – cutting back and controlling the brambles and Butterfly bush Protection and further creation of small wetland habitats in the floodplain of the river for invertebrates and Charophytes Extend Tree Preservation Order to all woodland habitats in this corridor – these are mostly covered by TPO Numbers B3 and B16.

Site No.	Location	Habitats Present	Threats Identified in 2008	Comments/observations in 2022/2023	Recommended Actions
13	Swan River Valley/Killarney Glen	WD1/FW2	Spread of invasive non-native species. Domestic dumping.	Area threatened by the proposed Swan River Greenway Lighting impacts associated with Greenway Development pressure for remaining lands around Oldcourt House Invasive species Dumping of garden waste Poor water quality Barriers to fish migration Trampling pressure Tree Preservation Order in place for most of the woodland	Implement actions set out in the LAWPRO funded Swan River Study Extend Tree Preservation Order to entire river corridor Ensure lands are not zoned for development and protected for biodiversity
14	Bray Head	GA1/WL1/WS1/HH1/ HD1/WD1/LR2/CS1/ CS3	Burning. Spread of Bracken. Land reclamation	Presence of habitats listed under Annex I of the EU Habitats Directive Development pressure Amenitisation Trampling Inappropriate tree planting in areas of grassland habitat Inappropriate grassland management Tree Preservation Order in place – TPO B8	The Bray Head Conservation Management Plan for Bray Head has been prepared for Wicklow County Council so this area was not surveyed as part of the BAP Implement the management recommendations in the Bray Head Conservation Management Plan 2023-2028 Conservation objectives for the restoration and protection of habitats on Bray Head must be met by any plan Resurvey for Rare plants

Site No.	Location	Habitats Present	Threats Identified in 2008	Comments/observations in 2022/2023	Recommended Actions
15	Corke Abbey Valley	FW2/GM1/WN5/GA1 /WS1	Not Surveyed	Biodiversity Study Completed to inform park plan for Dun Laoghaire Rathdown County Council Presence of priority habitats listed under Annex I of the EU Habitats Directive identified Valley used by several species protected under Annex II and IV of the EU Habitats Directive identified Invasive species	Implement biodiversity management recommendations Consultation with local community/residents associations re. biodiversity objectives Invasive species management Grassland management – short mow meadow would be an option and some areas allowed to grow long Development of a wetland habitat in progress Tree Preservation Order on all woodland habitats in this corridor

Site No.	Location	Habitats Present	Threats Identified in 2008	Comments/observations in 2022/2023	Recommended Actions
16	County Brook Stream Valley and Vallombrosa	FW2, WD1, WN6, FP1	Not Surveyed	Important wildlife corridor and link to Ballyman Glen SAC Mature mixed woodland and possible riparian woodland and tufa spring habitats at Vallombrosa Invasives Barriers to fish migration Development pressure – Berryfield/Fassaroe lands Barriers to otter movement from culvert under the M11 Lighting impacts Valley used by several species protected under Annex II and IV of the EU Habitats Directive identified Poor water quality in the County Brook	Commission spring survey of potential Annex I habitats - Tufa forming springs and wet woodland recorded here outside the SAC as well as within Tackle invasives Water quality study Protect from development Develop buffer to the SAC Tree Preservation Order on all woodland habitats in this corridor Comprehensively survey by specialists in various ecological disciplines and protect from development
17	Former Dell Factory	WS1	Not Surveyed	Re-wilded area of importance to local biodiversity Not accessed Invasive species	Survey in detail

Site No.	Location	Habitats Present	Threats Identified in 2008	Comments/observations in 2022/2023	Recommended Actions
18	Putland Road, Presentation College Grounds & The Headlands		Not Surveyed	Development pressures	Grassland management – short mow meadow would be an option and some areas allowed to grow long Tree Preservation Order on trees here – TPO B7 Establish native hedgerow inside fence along Putland Road
19	Lands at Fassaroe Housing Estate near M11		Not surveyed	Not surveyed	Grassland management – short mow meadow would be an option and some areas allowed to grow long
20	Land at the Blind Lane near Vallombrosa		Not surveyed	Invasive species – Buddleia, Old man's beard, Giant hogweed, Large bindweed	Deal with invasives
21	Woodland between the M11 and La Vallee/Riversdale/ grounds of same	WD1	Not surveyed	Mostly non-natives – Eucalyptus, Alder, Cherry Laurel Invasive species – Buddleia, Old man's beard, Giant hogweed, Large bindweed Weed killing Grassland management	Invasive species management plan Grassland management – short mow meadow would be an option and some areas allowed to grow long Stop herbicide use
22	Hollybrook/ Brennanstown/ Kilruddery/ Belmont Demesnes	WD1/GA1/WS1/FW2	Not surveyed	Remaining green belt between Bray and Kilmacanogue	Comprehensively survey by specialists in various ecological disciplines and protect from development
23	Cookstown Stream Valley/21 Bends/Fassaroe House	WD1/GA1/WS1/FW2/ PF1	Not surveyed	Remaining green belt between Bray and Enniskerry	Comprehensively survey by specialists in various ecological disciplines and protect from development

Site No.	Location	Habitats Present	Threats Identified in 2008	Comments/observations in 2022/2023	Recommended Actions
24	Grounds of Violet Hill	WD1	Not surveyed	Not surveyed Tree Preservation Order TPO B2	Survey Ensure tree protection Woodland management probably needed
25	Land at Shoreline Leisure	GA2/WL2	Not surveyed	Amenity grassland with treelines Non-native treelines – Horse chestnut, Lime, Beech, Field Maple. Some Ash and Birch Non-native hedgerows (beech)	Grassland management – short mow meadow would be an option and some areas allowed to grow long Native hedgerow planting along palisade fence at back of Shoreline Leisure Introduce native species to sections of beech hedge which have failed
26	Woodlands west and south of IDA Business Park	WD1	Not surveyed	Wooded bank at rear of IDA lands – Italian Alder, Ash, Sycamore, Willows, Norway Maple, Whitebeam, Poplars, Bramble, mature ivy Invasive species – Conyza canadensis, Buddleia, Cherry laurel, Old Man's beard, No Tree Preservation Order	Survey Woodland management probably needed Put Tree Preservation Order on trees here?

Site No.	Location	Habitats Present	Threats Identified in 2008	Comments/observations in 2022/2023	Recommended Actions
27	Woodlands east of Riddlesford (between it and Wilton Hotel)	GA2/WD1/WD5	Not surveyed	Lime, Oak, Sycamore, Ash, Wych elm, Holly, Beech, Yew, mature Elm, Sweet chestnut Grassland management Invasives –Alexanders, Cherry laurel, Conyza, Buddleia, Old man's beard Dumping of garden waste New tree planting	Invasive species management plan Grassland management – short mow meadow would be an option and some areas allowed to grow long
28	Area north of Riddlesford (back of Boghall tyres)	GA2/WD5	Not surveyed	Cutting of ivy Mature trees – Black pine, Sweet chestnut, Scot's pine, Oak, Holly, also Hazel, Beech, Norway maple, Silver birch Invasives –Alexanders, Cherry laurel, Periwinkle Dumping of garden waste New tree planting	Put Tree Preservation Order on trees Invasive species management plan Grassland management – short mow meadow would be an option and some areas allowed to grow long Some trees have failed
29	Lands on southern cross road east of SuperValu	WS1	Not surveyed	Naturally re-wilded area – lots of regenerated willow scrub High biodiversity value for birds and insects Development pressure – lands for sale	Ensure some areas of native vegetation are left intact in any development plans

Site No.	Location	Habitats Present	Threats Identified in 2008	Comments/observations in 2022/2023	Recommended Actions
30	Lands west of Deerpark/Ashfield	GA2/WD5/WL1	Not surveyed	Amenity grassland Mature oak Grassland mowing	Grassland management – the grassland here is being manged by Bray Municipal District for Biodiversity Establish Tree Preservation Order on oak tree Pocket tree planting Native hedgerow planting along fence of new development and along palisade fence
31	St. Fergal's GAA Club	GA2	Not surveyed	Mown amenity grassland	Establish native hedgerow along fence at St. Fergal's school Grassland management – short mow meadow would be an option and some areas allowed to grow long
32	Lands either side of entrance to Oldcourt Housing Estate on Boghall Road	GA2/WL2	Not surveyed	Mown amenity grassland Treelines	Grassland management – the grassland here is being manged by Bray Municipal District for Biodiversity Potential for pocket tree planting Increase shelterbelt/band of scrub on east and west boundaries
33	Clover Hill	GA2	Not surveyed	Mown amenity grassland Recent tree planting Tree Preservation Order – TPO B1	Grassland management – short mow meadow would be an option and some areas allowed to grow long
34	Treeline on Herbert Road @ Ardmore Studios	WL2	Not surveyed	No Tree Preservation Order here	Protect these trees
35	Lands east of the Gardaí Station	GA2/WD5	Not surveyed	Not surveyed	Survey

Site No.	Location	Habitats Present	Threats Identified in 2008	Comments/observations in 2022/2023	Recommended Actions
36	Woodlands at Deepdales (west of IDA)/north of Giltspur Lane	WD1	Not Surveyed	Not surveyed	Survey and develop woodland management plan Protect with Tree Preservation Order here
37	St. Peter's	WL2/GA2	Not Surveyed	Tree Preservation Order in place TPO B17 – mature oaks Mown amenity grassland	New planting of oaks Grassland management – the grassland here is being manged by Bray Municipal District for Biodiversity
38	Lands between Glenwood, Killarney Glen and River Dargle	WD1	Not Surveyed	Tree Preservation Order in place – TPO B3 Not surveyed	Survey and develop woodland management plan
39	Waltrim Grove/Saran Wood	WL2	Not Surveyed	Tree Preservation Order in place – TPO B4 - lime trees	Grassland management – short mow meadow would be an option and some areas allowed to grow long
40	Ballywaltrim Lane/Kilmacanogue Stream	WD1	Not Surveyed	Mature oaks near filling station have no protection Invasive species – Winter heliotrope, Snowberry bush, Old man's beard, Buddleia	Control invasive species Extend Tree Preservation Order to mature beech near Elgin Wood, mature oaks near filling station and other woodland habitats surrounding Ballywaltrim Lane
41	Entrance to Elgin Wood	GA2/WD5	Not Surveyed	Tree Preservation Order in place – TPO B14 Mown amenity grassland Ash have ash die-back	Grassland management – short mow meadow would be an option and some areas allowed to grow long Replacement planting for Ash die back
42	Killarney Road – opposite Sunbeam House Services and at entrance to Cedar Estate	WD5	Not Surveyed	No Tree Preservation Order – magnificent mature Spanish chestnut and lime at entrance to	Implement Tree Preservation Order here

Site No.	Location	Habitats Present	Threats Identified in 2008	Comments/observations in 2022/2023	Recommended Actions
43	Richmond Park	GA2/WL2	Not Surveyed	Tree Preservation Order in place – Horse chestnut and Scots pine Tree Preservation Order - TPO B18 Mown amenity grassland	Grassland management – short mow meadow would be an option and some areas allowed to grow long Pocket tree planting
44	Thornbrook	WD1	Not Surveyed	No Tree Preservation Orders in place	Survey and implement Tree Preservation Order here
45	Fairyhill	WD4/GA2	Not Surveyed	Tree Preservation Order in place – conifer woodland and specimen ash – TPO B11 Weed killing at base Ash seems healthy so far St Sarain's Cross - National monument – 12th century Cross	Monitor for Ash die back disease and plan to replant with natives Grassland management – potential long meadow near low wall on northern side of green space – yarrow rich Stop herbicide use Establish more native shrub species along road
46	Ardmore Park and Crescent	GA2	Not Surveyed	Mown amenity grassland	Grassland management – the grassland here is being manged by Bray Municipal District for Biodiversity
47	Herbert Place/Maltings	WD1	Not Surveyed	Mature woodland on bank Tree Preservation Order in place – TPO B10	Tree Preservation Order here Grassland management – short mow meadow would be an option and some areas allowed to grow long
48	Entrance to Seacrest on Vevay Road	GA2	Not Surveyed	Mown amenity grassland	Grassland management – short mow meadow would be an option and some areas allowed to grow long

Site No.	Location	Habitats Present	Threats Identified in 2008	Comments/observations in 2022/2023	Recommended Actions
49	Sunbeam House Services and avenue to Oldcourt House	WL2	Not Surveyed	Tree Preservation Order in place – TPO B5 Development pressures at Oldcourt Castle and Swan Greenway Good to see lighting on avenue switched off at night unless required	Replacement planting of non-natives on drive over time
50	Ripley Court and Ripley Hills	GA2	Not Surveyed	Mown amenity grassland Invasives – winter heliotrope	Invasive species management Potential to create native hedgerow along boundary wall with industrial estate Grassland management – short mow meadow would be an option and some areas allowed to grow long
51	Mountain View Drive	GA2	Not Surveyed	Mown amenity grassland	Pocket planting of native scrub species in triangles of grass
52	Earlscroft	GA2	Not Surveyed	Mown amenity grassland New tree planting	New native hedgerow along boundary of green area with Southern Cross Road/Kilruddery Grassland management – short mow meadow would be an option and some areas allowed to grow long
53	Belmont	GA2	Not Surveyed	Silver birch, Mountain Ash, Sycamore Mown amenity grassland New tree planting	Grassland management – short mow meadow would be an option and some areas allowed to grow long
54	Stone walls on Southern Cross Road		Not Surveyed	Mostly bare – some ivy	Protect existing ivy for its pollinator and biodiversity value Establish new native climbers – ivy, honeysuckle on bare areas

Site No.	Location	Habitats Present	Threats Identified in 2008	Comments/observations in 2022/2023	Recommended Actions
55	Heatherwood and Deerpark	GA2/WL2/WS2	Not Surveyed	Mown amenity grassland New native planting in triangle at southern end of road near Super Valu doing well, native grassland species recorded here – possibly a seed mix? Dumping of garden waste	Grassland management – short mow meadow would be an option and some areas allowed to grow long
56	Rynville/Killarney Road	WD1	Not Surveyed	Fantastic population of Toothwort on Poplar here	Excellent educational signage in place Protect tree with Tree Preservation Order Light tending/management
57	Conna Wood	WD1/GA2	Not Surveyed	No Tree Preservation Order in place Mown amenity grassland	Implement Tree Preservation Order here Grassland management – short mow meadow would be an option and some areas allowed to grow long
58	Woodlands below Brook House	WD1	Not Surveyed	Tree Preservation Order in place – TPO B3	Survey woodland and implement woodland management
59	Lands north of Cois Cairn at M11 slip road	WS1/GS2	Not Surveyed	Rewilded land	Survey
60	Bray Institute of Further Education	GA2	Not Surveyed	Grassland management Development pressure	Grassland management – short mow meadow would be an option and some areas allowed to grow long Native hedgerow could be established around perimeter Protect open space

Site No.	Location	Habitats Present	Threats Identified in 2008	Comments/observations in 2022/2023	Recommended Actions
61	St. Andrew's National School/Newcourt School	GA2	Not Surveyed	Grassland management Development pressure	Grassland management – short mow meadow would be an option and some areas allowed to grow long Protect open space
62	St. Kilian's Community School		Not Surveyed	Limited space for actions	Erect swift boxes on the school sports hall Establish native hedgerow along southern boundary with Saran Wood, northern boundary with South Bray Business Park and western boundary along Killarney Road
63	Conifer woodland at Killarney Road exit on N11	WD4	Not Surveyed	No Tree Preservation Order in place	Some woodland management probably needed Invasive species Retain standing deadwood where safe to do so
64	Woodland between Ashton Wood & Herbert Road	WD1	Not Surveyed	Tree Preservation Order TPO B16	Some woodland management needed Invasive species Retain standing deadwood where safe to do so
65	Millers Wood	GA	Not surveyed	Tree Preservation Order TPO B3	Grassland management Protect open space

Site No.	Location	Habitats Present	Threats Identified in 2008	Comments/observations in 2022/2023	Recommended Actions
66	Kilmacanogue/Ballywaltrim Stream and Ballywaltrim Glen	FW2,/WS1/WD1/ PF1	Spread of invasive non-native species. Surveyed as part of Site 12	Development pressures Damage to woodland habitats from development Invasive Species Development pressures in the Kilmacanogue Stream Valley - Planning application on Ballywaltrim Lane (Planning reference : 19391). Refused by Wicklow County Council and An Bord Pleanála (Planning reference PL27.304778). Presence of priority habitats listed under Annex I of the EU Habitats Directive 'Alluvial woodland' and 'Petrifying springs'.	Commission survey of area of woodland which may flood periodically on the Kilmacanogue Stream to determine if it has any affinity to the Annex I priority habitat 'Alluvial woodland' Commission survey of Tufa forming springs on the southern bank of Ballywaltrim Glen and upstream of the Killarney Road on the Kilmacanogue Stream by a spring specialist to map and determine if any springs here have an affinity to the Annex I priority habitat 'Petrifying springs' No Tree Preservation Order in place to protect woodland habitats here – implement Tree Preservation Order for woodlands surrounding Hollybrook AGI (between Blind lane and Southern Cross) Invasive species management
67	Bray Estuary and Harbour	FW2/LS2	Not Surveyed	Important waterbird site especially for Mute swans which occur here in internationally important numbers as well as wintering birds such as Turnstones and gulls Nursery area for fish	Known as a Swan Sanctuary Feeding guidance for swans and waterfowl
68	Loreto Grange	GA2/WL2	Not Surveyed	Grassland Management	Grassland management – short mow meadow would be an option and some areas allowed to grow long

Site No.	Location	Habitats Present	Threats Identified in 2008	Comments/observations in 2022/2023	Recommended Actions
69	St. Patrick's Girls National School	GA2	Not Surveyed	Grassland Management Development pressure	Grassland management – short mow meadow would be an option and some areas allowed to grow long Protect open space
70	Elgin Heights/Elgin Wood	WD1	Not Surveyed	Tree Preservation Order in place on northern side of the valley below Elgin Heights – TPO B13	Protect linear woodland
71	Kilbride Church	BL3	Not Surveyed	Bat potential	Survey for bats
72	Christ Church	BL3	Not Surveyed	Bat potential	Survey for bats
73	Charnwood	GA2	Not Surveyed	Grassland Management Invasive species	Grassland management – short mow meadow would be an option and some areas allowed to grow long Stop dumping garden waste into the woods Control invasive species
74	Florence Road Trees	WL2	Not Surveyed	Treelines on the Florence Road are protected by a Tree Preservation Order – TPO B12	
75	Quinsborough Road Trees	WL2	Not Surveyed	Treelines on Longford Terrace and at the Boulevard are protected by a Tree Preservation Order – TPO B9	
76	Albert Walk	BC4	Not Surveyed	Pollinator friendly planting included here	
77	Killarney Heights	GA2	Not Surveyed	Grassland Management Invasives – Old Man's beard	Grassland management – the grassland here is being manged by Bray Municipal District for Biodiversity Potential to establish native hedgerow along back of houses and along road Control invasives

Site No.	Location	Habitats Present	Threats Identified in 2008	Comments/observations in 2022/2023	Recommended Actions
78	Deepdales	GA2	Not Surveyed	Grassland Management	Grassland management – the grassland here is being manged by Bray Municipal District for Biodiversity
79	Briar Wood	GS	Not Surveyed	Grassland Management	Grassland management – the grassland here is being manged by Bray Municipal District for Biodiversity
80	M11 Corridor Meridian and Verges	GS2/ WL1	Not Surveyed	Grassland Management Orchids Invasives – Giant hogweed, Old man's beard, Winter heliotrope Woodland planting – management needed	See **Section 4.2**
81	Bray Beach	CB1/CS1/CS3	Not Surveyed		
82	Martello Terrace	GA2/BC4	Not Surveyed	Ornamental planting Grassland Management	
83	Bray Promenade Grasslands	GA2/BC4	Not Surveyed	Grassland Management	Grassland management – short mow meadow would be an option
84	Loreto Cemetery		Not Surveyed	Not Surveyed	Survey
85	Loreto	GA2	Not Surveyed	Grassland Management	Grassland management – short mow meadow would be an option and some areas allowed to grow long Protect from Development
86	Wolfe Tone Football Club	GA2	Not Surveyed	Grassland Management	Grass Grassland management – short mow meadow would be an option and some areas allowed to grow long Protect from Development
87	Lauderdale Estate	GA2	Not Surveyed	Grassland Management	Grassland management – short mow meadow would be an option and some areas allowed to grow long

Site No.	Location	Habitats Present	Threats Identified in 2008	Comments/observations in 2022/2023	Recommended Actions
88	Woodbrook Lawn	GA2	Not Surveyed	Grassland Management	Grassland management – short mow meadow would be an option and some areas allowed to grow long
89	Kilbride Grove	GA2	Not Surveyed	Grassland Management	Grassland management – short mow meadow would be an option and some areas allowed to grow long
90	Herbert Park	GA2	Not Surveyed	Grassland Management	Potential to establish native hedgerow Grassland management – short mow meadow would be an option and some areas allowed to grow long
91	Cill Saran	GA2	Not Surveyed	Grassland Management	Grassland management – short mow meadow would be an option and some areas allowed to grow long
92	Treeline at Killarney Heights	GA2/WL2	Not Surveyed	Grassland Management	Potential to establish native hedgerow species below treeline Grassland management – short mow meadow would be an option and some areas allowed to grow long
93	Newcourt Lands at Bray Head		Not Surveyed	Development Pressures	Protect from Development
94	Bray Golf Course		Not Surveyed	Grassland Management	Develop a standalone Biodiversity Action Plan for the Golf Course

The locations of these areas for biodiversity action are presented in the maps in **Appendix 1**.

4.2 M11 Corridor and Roadside Verges

The central meridian on the M11 Bray Bypass and some of the roundabouts in the vicinity of Fassaroe/Berryfield interchange support populations of wild orchids (Pyramidal and Common Spotted Orchid) and these are regularly being mown as part of motorway maintenance operations before they can set seed and complete their lifecycle. In order to change this regime to a more biodiversity friendly one it is necessary to determine who is in charge of the mowing operations (Transport Infrastructure Ireland/Local Authority/Bray Town Council/Landowner at Fassaroe, etc.) and the contractor responsible for same. These areas should be left uncut until the orchids have finished flowering and the seed is ripe – i.e. not mown between April and the end of August.

There are a number of invasive species which need targeted action on the M11 – these include Old man's beard, Winter heliotrope and Giant hogweed.

The woodland planting along the roadside verges was never managed or thinned and the Ash trees here are showing signs of Ash die back. A targeted plan for the management of these areas needs to be developed to ensure their ecological value is preserved – their planting formed part of the ecological mitigation for the development of the raod from a wildlife perspective and cutting down trees and chipping them does not meet that requirement.

4.3 Invasive Species

There is an increasing issue with non-native species escaping from gardens and establishing themselves in the wild in many of our towns and villages as well as the wider countryside. Bray is no exception to this and a number of species are ubiquitous in particular along the River Dargle, County Brook and Swan Rivers.

Dun Laoghaire Rathdown local authority has a specialist team engaged to tackle invasive species on their watercourses in particular and have been working on the County Brook Stream and the Rathmichael Stream in Corke Abbey.

A dedicated plan for the removal and control of these species needs to be developed by the local authority and implemented on the ground.

Local groups including Bray Tidy Towns and other community groups can assist with dealing with those species that can be managed by pulling, cutting or mowing whereas those that require the use of herbicide will need specialist contractors engaged to deal with them.

5. BIODIVERSITY ACTIONS YOU CAN DO

Forty actions and ideas for how you can individually respond to the biodiversity crisis are set out below. Which will you do in your back garden, public space or in the town?

5.1 Meadow management

This action can be undertaken by anyone with a small area of grass, a local housing estate or a larger piece of land and will provide habitat for a wide variety of invertebrates including many pollinators.

A number of grassland areas within the town are being manged by Bray Municipal District for Biodiversity. These are shown on **Figures 76** to **85** below.

Guidance is available from the All Ireland Pollinator Plan on how to manage both long flowering and short flowering meadows. Short flowering meadows shouldn't be cut until after the 15th April allowing dandelions to flower (an important resource for pollinators to forage on in spring) and then cut every six weeks – see **Figure 75** below. Long flowering meadows can be left till the autumn, the seeds allowed to fall and all the cuttings then removed to reduce fertility over time.

Figure 75. Managing a short flowering meadow.

Figure 76. Ardmore Park

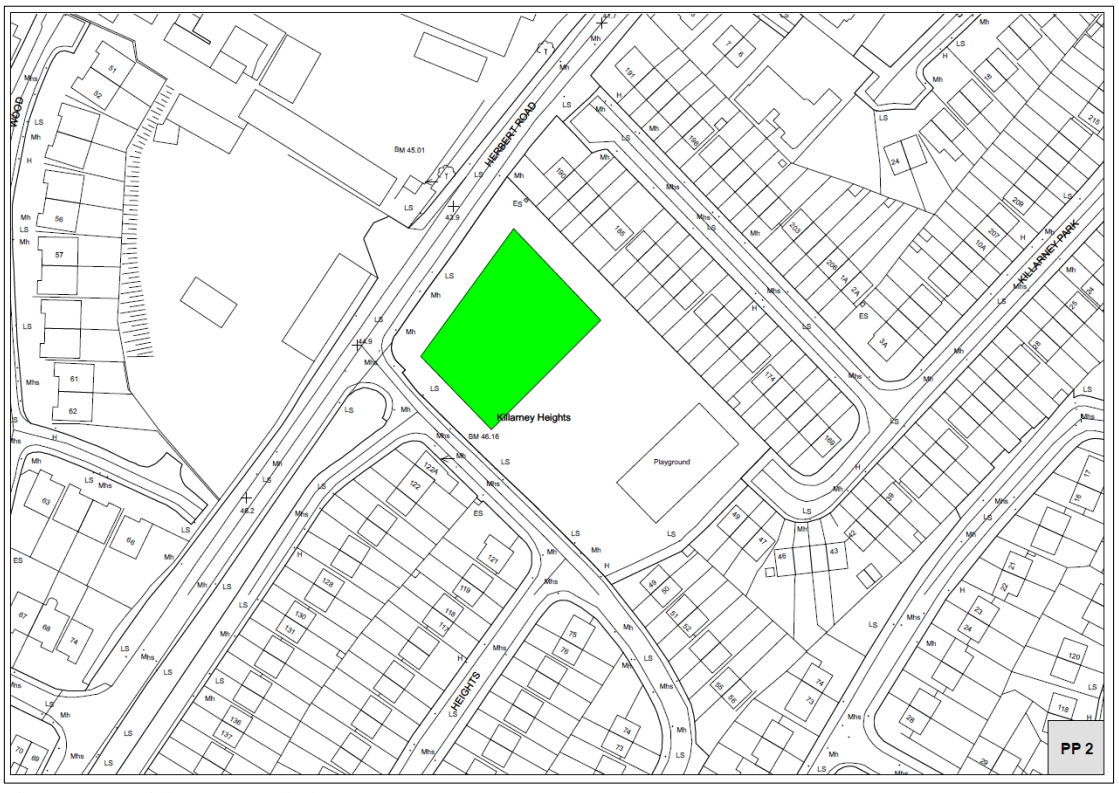


Figure 77. Killarney Heights.

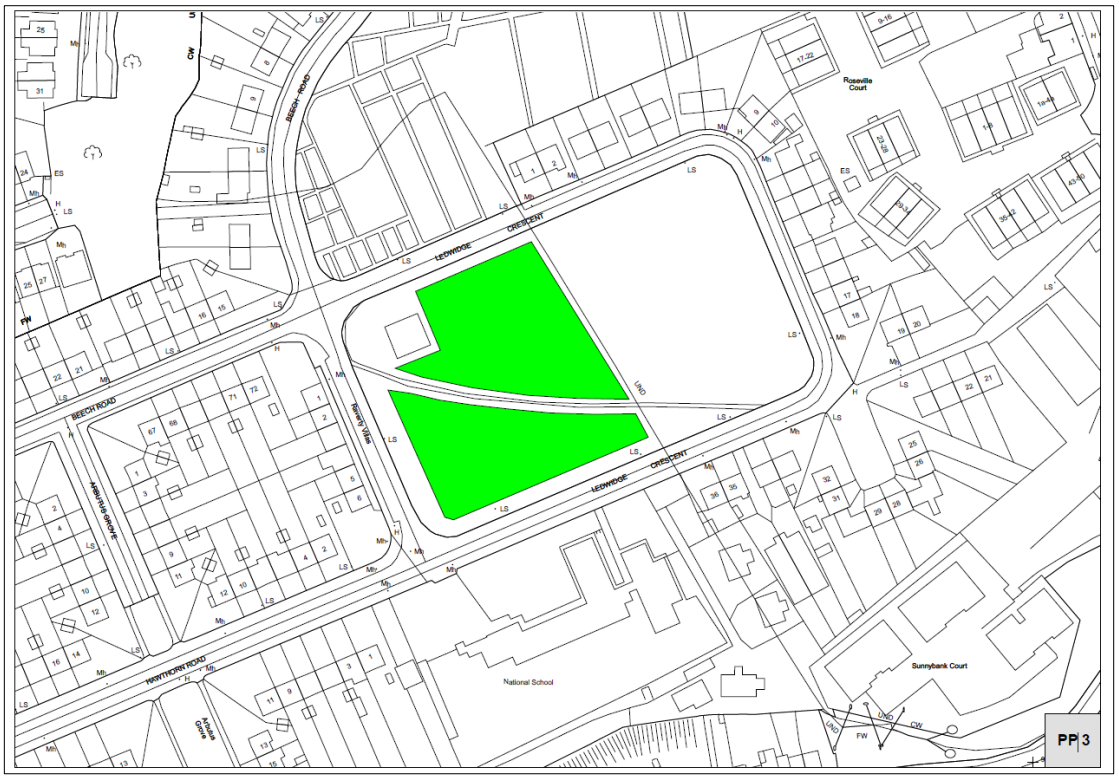


Figure 78. Ledwidge Crescent/St. Peter's.

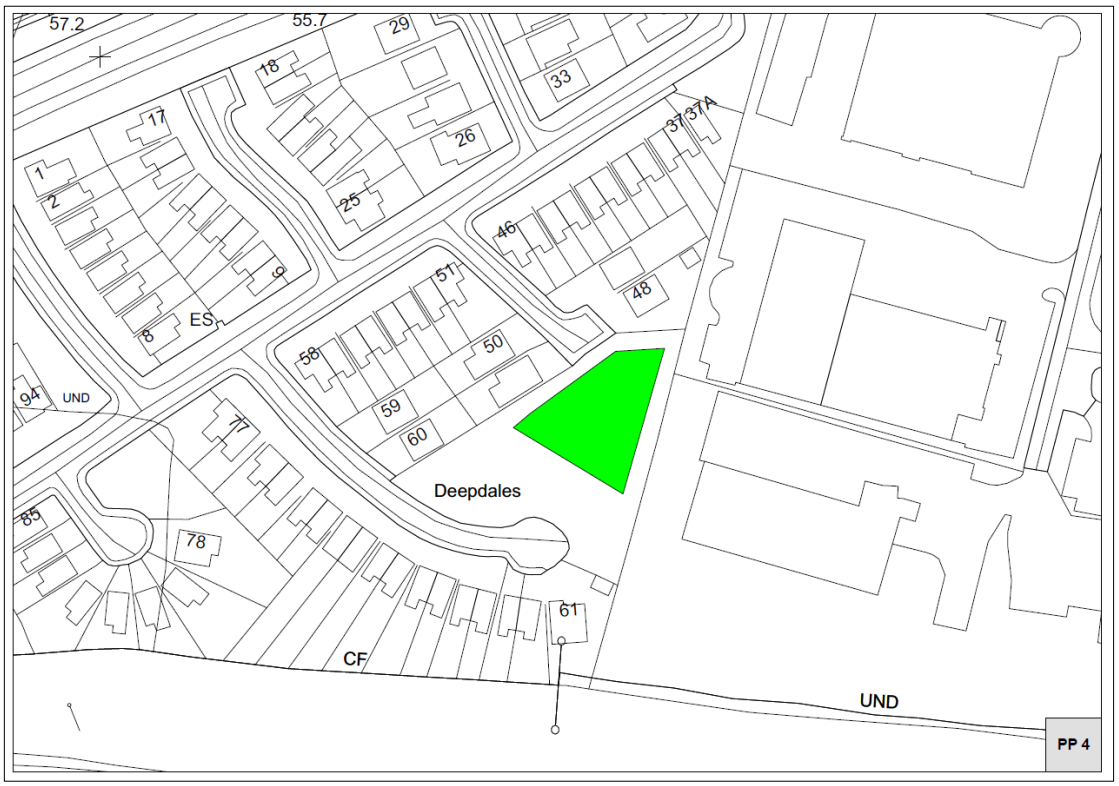


Figure 79. Deepdales.

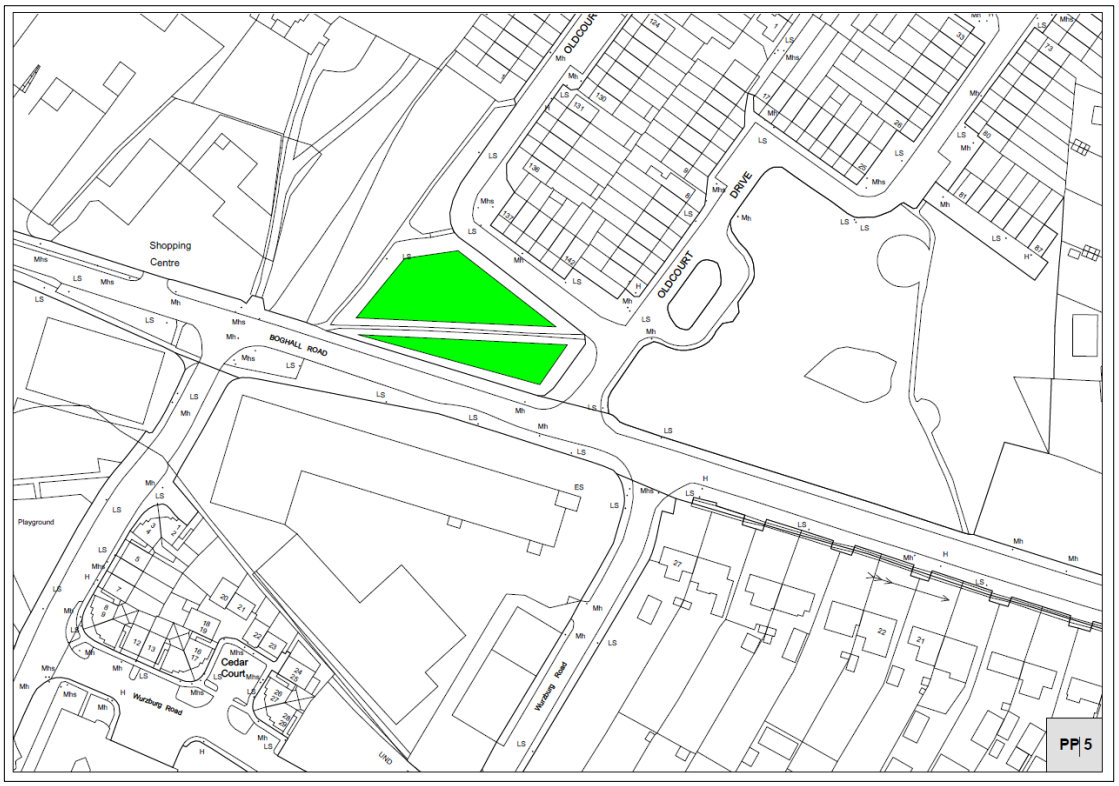


Figure 80. Oldcourt Drive.

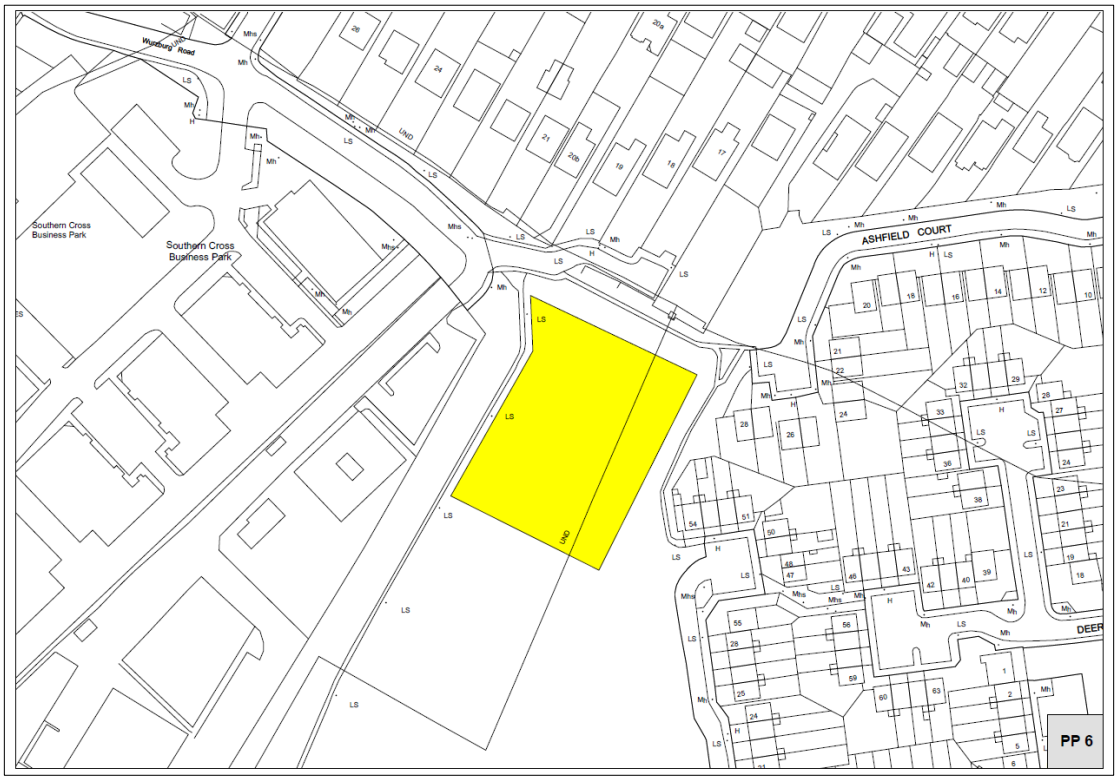


Figure 81. Ashfield Court.

Figure 82. Giltspur Brook.

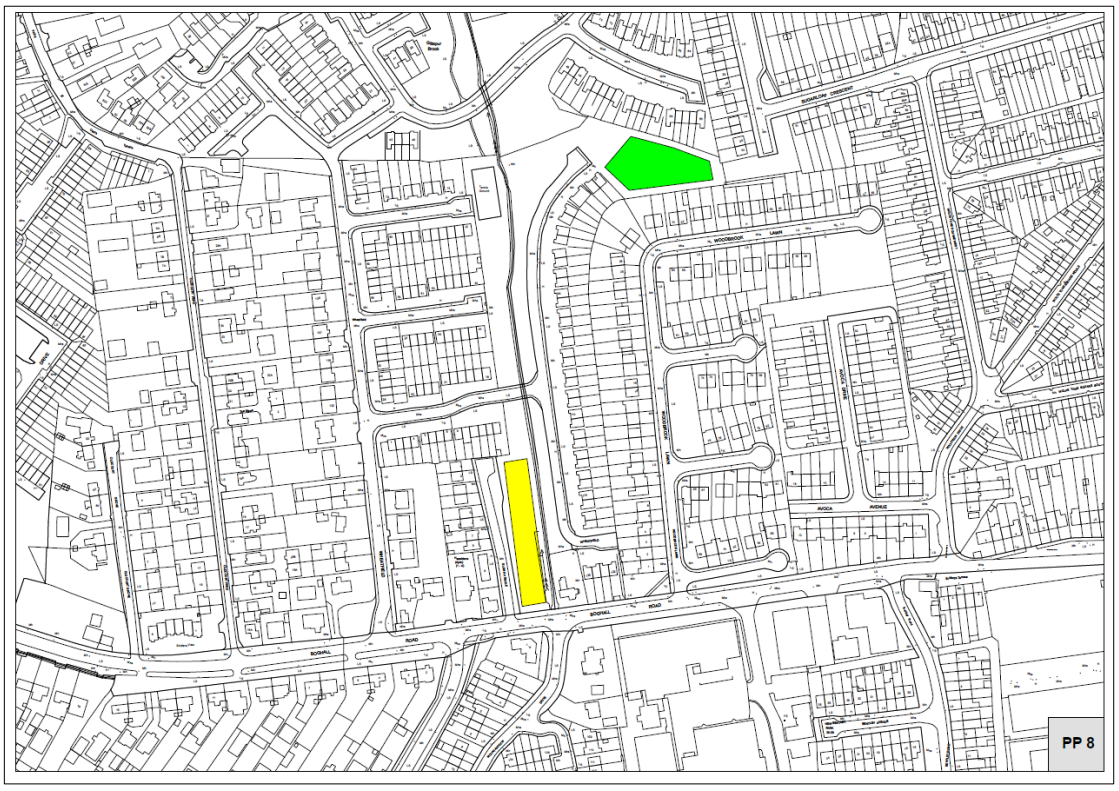


Figure 83. Wheatfield/Woodbrook Lawn.

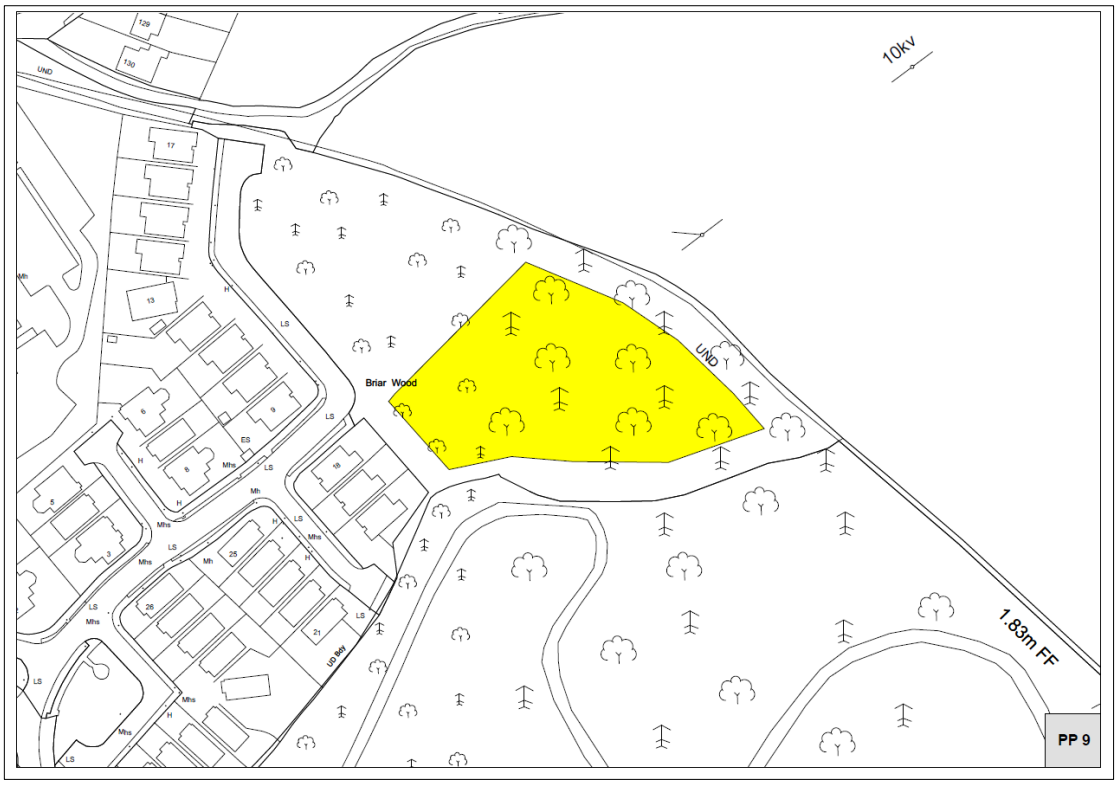


Figure 84. Briar Wood.

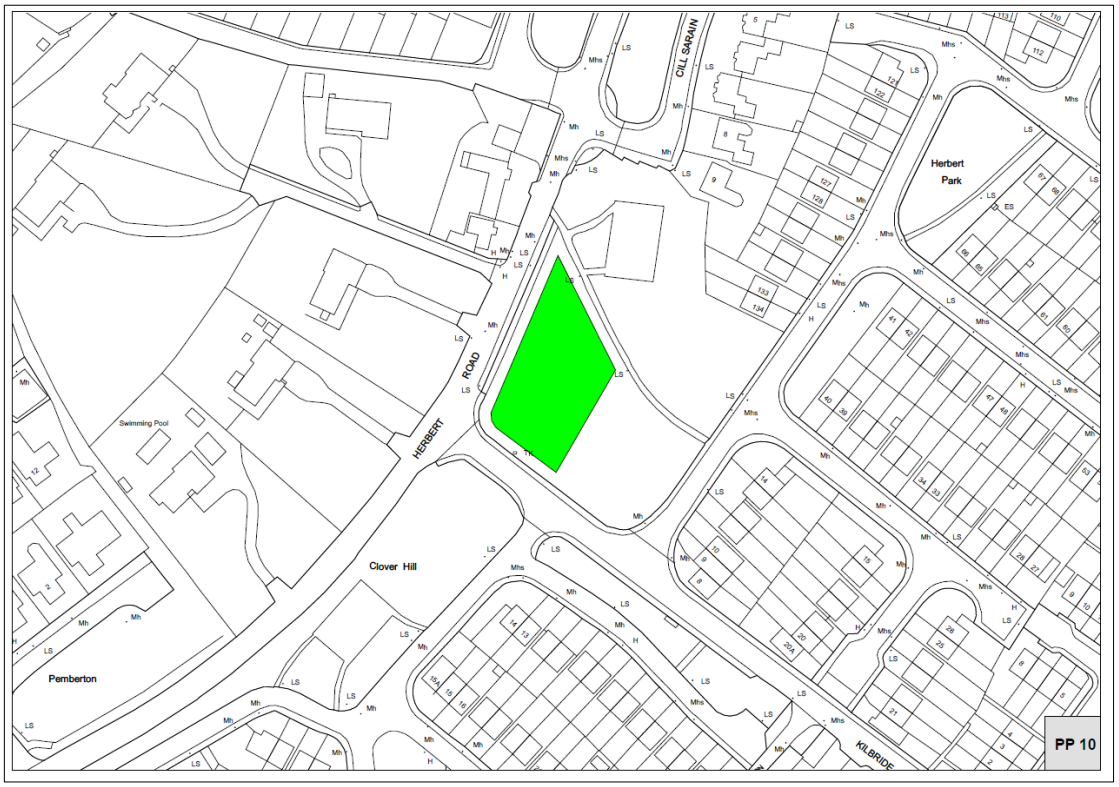


Figure 85. Herbert Road.

5.2 Create a Wildlife Pond

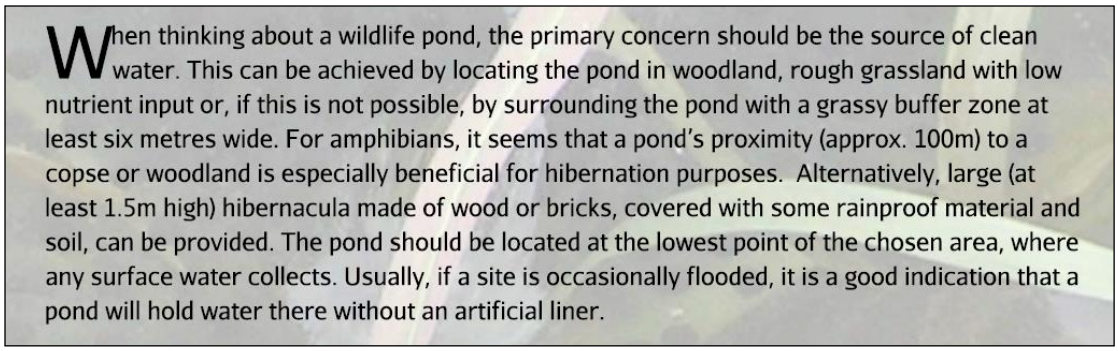
A garden wildlife pond could be something that people might be interested in doing in their back garden. Why not add yours to the Wetland Map of Ireland if you have one already. A pond is a great way to attract wildlife. Something as small as 1-2m² could provide frogs with somewhere to breed. There are very few records of common frog or newts from the environs of Bray.

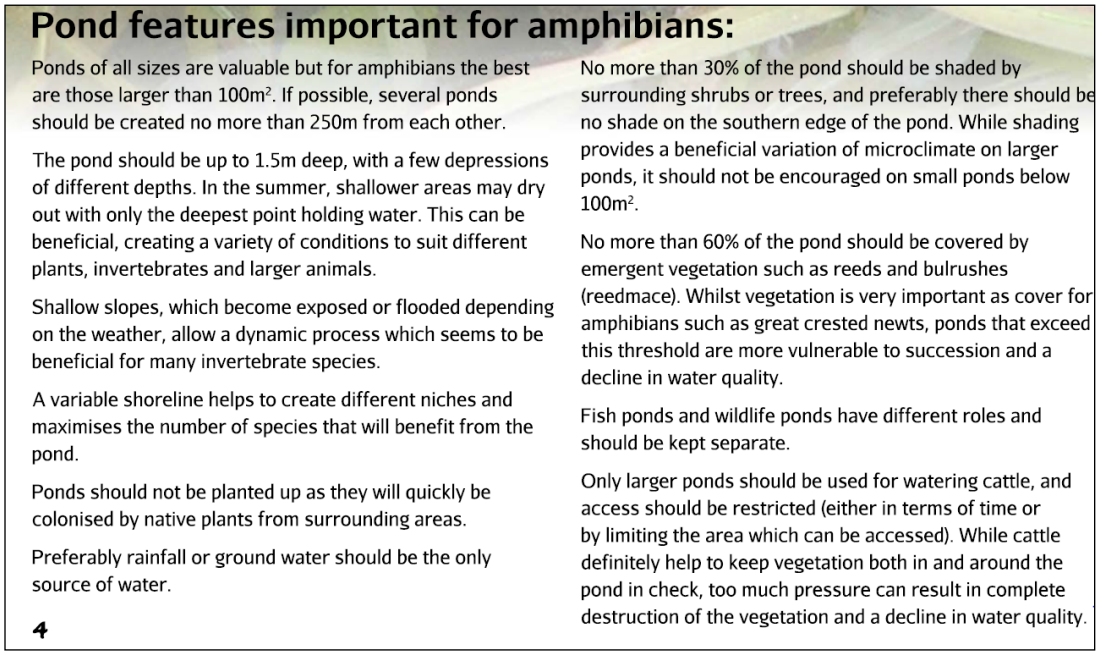
The pond should be designed to provide habitat for breeding frogs in that they need to have a minimum depth of 60cm of water present all year round following the advice provided by the amphibian conservation charity Froglife as set out below.

Suitable species for planting in a pond include:

- Marginals - Yellow flag iris (*Iris pseudacorus*), Marsh marigold (*Caltha palustris*), Water plantain (*Alisma plantago-aquatica*), Water forget-me-not (*Myosotis scorpioides*), Brooklime (*Veronica beccabunga*), and Ragged robin (*Lychnis flos-cuculi*).
- Emergents - Greater spearwort (*Ranunculus lingua*), Branched bur-reed (*Sparganium erectum*), Purple loosestrife (*Lythrum salicaria*), Water mint (*Mentha aquatica*).

Care should be taken when purchasing aquatic plants from nurseries as many species have the potential to become invasive. Attention is drawn to the invasive species listed under the Birds and Natural Habitats Regulations 2011.





5.3 Hibernaculum for Frogs

In addition to the design recommendations for the pond/water feature above it is also recommended that a hibernaculum for frogs is created. This is done by creating a pile of stones or logs with gaps between them in a mound in an undisturbed part of the property – preferably near a pond/water feature that could be used for breeding.

5.4 Native Tree and Shrub Species Suitable for Planting in Gardens

Any small trees or shrubs used for planting from a biodiversity perspective in the environs of Bray should be native species as these support more wildlife.

Suitable shrub/small tree species include: Hawthorn (*Crataegus monogyna*), Blackthorn (*Prunus spinosa*), Guelder rose (*Viburnum opulus*), Spindle (*Euonymus europaeus*), Elder (*Sambuccus nigra*), Hazel (Corylus avellana), Wych elm (*Ulmus glabra*), Crab apple (*Malus sylvestris*), Dog rose (*Rosa canina*).

Suitable tree species include; Oak (*Quercus robur*), Whitebeam (*Sorbus aria*), Silver birch (*Betula pendula*), Willows (*Salix cinerea*, *Salix caprea*, *Salix aurita*).

All species should be of certified Irish genetic provenance as they are best adapted to Irish growing conditions – nurseries that supply the Forest Service native woodland scheme grow stock form Irish collected seed.

5.5 Measures for Butterflies in Bray

Butterflies recorded from Bray include;

- Comma (*Polygonia c-album*)
- Common Blue (*Polyommatus icarus*)
- Green-veined White (*Pieris napi*)
- Holly Blue (*Celastrina argiolus*)
- Large White (*Pieris brassicae*)
- Meadow Brown (*Maniola jurtina*)
- Orange-tip (*Anthocharis cardamines*)
- Peacock (*Inachis io*)
- Red Admiral (*Vanessa atalanta*)
- Small Copper (*Lycaena phlaeas*)
- Small Tortoiseshell (*Aglais urticae*)
- Small White (*Pieris rapae*)
- Speckled Wood (*Pararge aegeria*)

We need to consider the life cycle of butterflies and some other principles to conserve them in our communities. Therefore we need to think about:

- Providing food plants for caterpillars
- Nectar supply for adult butterflies
- Keeping ivy (both immature and mature) on trees and walls
- Providing shelter for butterflies – roosting habitat
- Providing overwintering habitats for butterflies
- Do not buy a "butterfly kit" with caterpillars or release adult butterflies

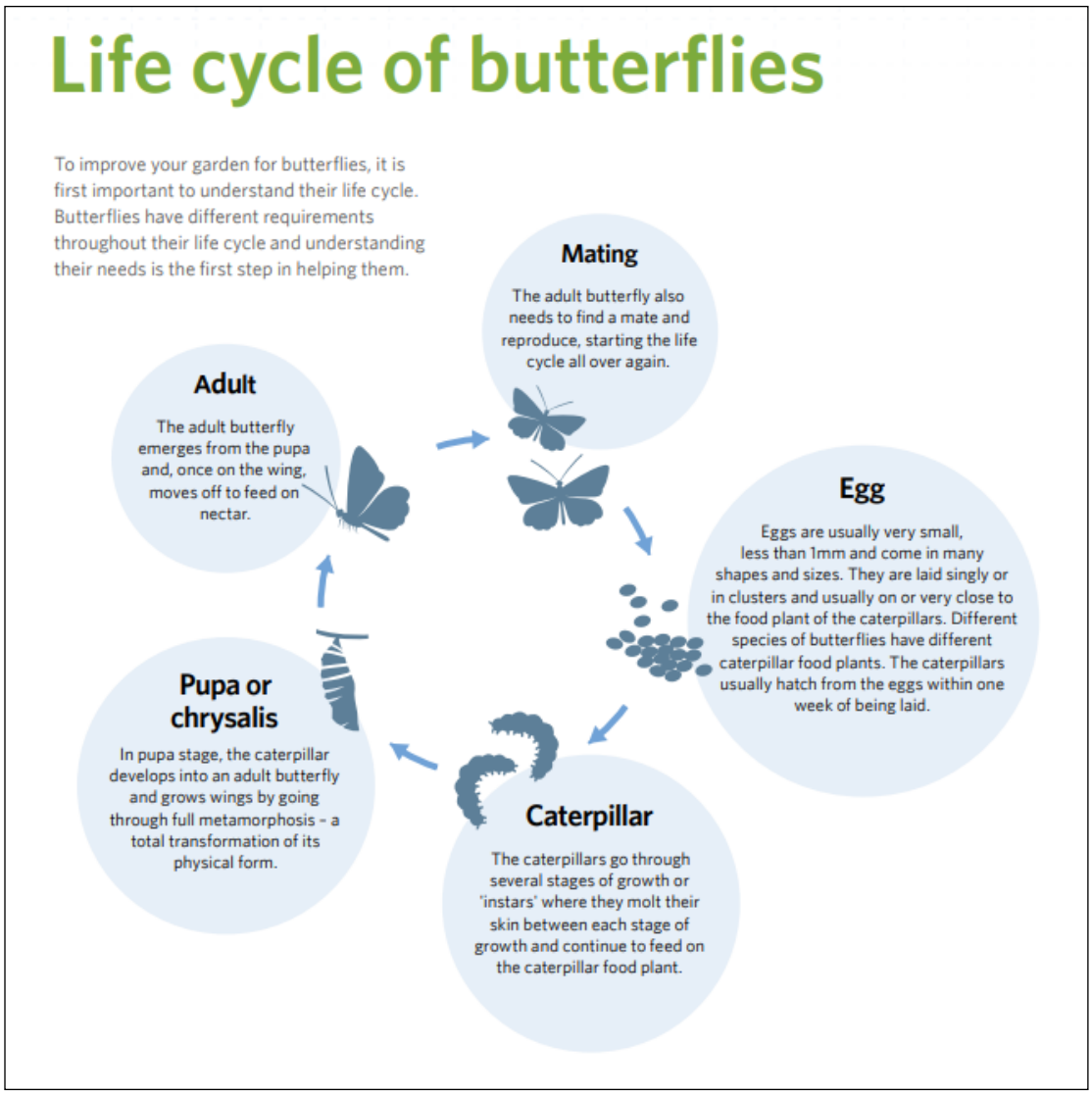


Figure 86. The life cycle of butterflies.

5.6 Food Plants and Habitat for Butterflies and Invertebrates

Several plant species used by butterflies, moths and other insects for their food plant already exist within Bray Town and could be confused for 'weeds'.

On the island of Ireland, 18% of butterflies and 8% of macro-moths are threatened with extinction. By planting suitable food plants and native species that support them we can help reverse this decline.

One plant – 140 different insect species

Ivy is often considered to be a threat to buildings, trees and in need of 'tidying up'. The Jersey Biodiversity Centre gives an excellent explanation of its ecological importance, as presented below:

Ivy is, arguably, the most important flowering plant for pollinators in the autumn which is at a time when there is often less on offer for them to feed on. Many late-flying pollinators depend heavily on Ivy for pollen and nectar at this time of year. Ivy (*Hedera helix* spp *hibernica*) is a native evergreen plant which is widespread and common. Their flowers appear between early September to early November. As well as their flowers being vital in the autumn for many insect pollinators, their berries, which ripen in winter, are a very valuable food source for overwintering birds such as blackbirds and thrushes and they are largely responsible for dispersing the seeds which produce more plants elsewhere. Ivy is also an important winter hibernation site for many insects due to its dense foliage.

Ivy is vital to a wide variety of native pollinators such as hoverflies, butterflies, flies, wasps, solitary bees and bumblebees with, for instance, as many as 140 different insect species feeding on Ivy in the autumn including many overwintering queen bumblebees which rely on this plant to help them survive the winter and also 89% of pollen collected by honeybees in autumn comes from Ivy.

Ivy takes around 10 years of growing before it is able to flower and so for them to be available to pollinators then they must be left to grow for at least this amount of time.

Often the Ivy seen growing in gardens, amongst flower borders and up trees, is the juvenile form of the plant and has lobed glossy leaves with no flowers but it is this plant that will eventually provide vital food sources for pollinators if allowed to grow until it matures and its leaves become an oval shape and it flowers.

So, given that this plant is so vital to many pollinators as a late-flowering food source enabling them, or their young, to survive the winter and that it also gives excellent winter protection to many other species it is very important that if you do have Ivy in your garden and up your trees then please do resist cutting it down!

Despite the common myth, Ivy does not kill trees. It has its own root system so does not tap into the tree's vital resources. It only uses trees in order to climb higher to get maximum sun exposure for photosynthesis. But if Ivy appears to be swamping trees, and it is getting into their leaf canopy where it can affect the tree's own ability to photosynthesize, then it can be thinned out, or reduced, but this should be kept to a minimum as complete removal does much more harm than good for insects and other wildlife.

A list of the food plants used by the various species of butterfly is outlined below. These plants also support many other invertebrates too.

5.7 Roosting Habitats for Butterflies

Butterflies roost on the underside of leaves, in long grass, rock crevices or similar sheltered places. Butterflies roost with their wings closed, often their wings camouflage with their background to protect them from predators while they sleep. If we mow and tidy away everywhere around our homes and in our landscape there is nowhere for them to roost.

Butterfly	Caterpillar foodplant
Brimstone	Buckthorn (*Rhamnus cathartica*) and Alder Buckthorn (*Frangula alnus*)
Clouded Yellow*	Clovers (*Trifolium* spp.)
Comma	Nettle (*Urtica dioica*)
Common Blue	Bird's-foot-trefoil (*Lotus corniculatus*)
Green-veined White	Garlic Mustard (*Alliaria petiolate*), Cuckooflower (*Cardamine pratensis*), Water- cress (*Rorippa-nasturtium aquatica*) and other members of the Brassicaceae family
Holly Blue	Holly (*Ilex aquifolium*) and Ivy (*Hedera helix*)
Large White	Brassicaceae family
Meadow Brown	Grasses: Fescues (*Festuca* spp.), Meadow-grasses (*Poa* spp.) and Bents (*Agrostis*)
Orange-tip	Cuckooflower (*Cardamine pratensis*) and Garlic Mustard (*Alliaria petiolate*)
Painted Lady*	Thistles (Cirsium spp. and Carduus spp.)
Peacock	Nettle (*Urtica dioica*)
Red Admiral*	Nettle (*Urtica dioica*)
Ringlet	Grasses: Cock's-foot (*Dactylis glomerata*), False Brome (*Brachypodium sylvaticum*), Tufted Hair-grass (*Deschampsia cespitosa*) and Common Couch (*Elymus repens*)
Silver-washed Fritillary	Common Dog-violet (*Viola riviniana*)
Small Copper	Common Sorrel (*Rumex acetosa*) and Sheep's Sorrel (*R. acetosella*)
Small Heath	Fine grasses, especially fescues (*Festuca* spp.), Meadow-grasses (*Poa* spp.)
Small Tortoiseshell	Nettle (*Urtica dioica*)
Small White	Brassicaceae family and nasturtiums (*Tropaeolum*)
Speckled Wood	Feed a on a variety of grasses but most commonly on: False Brome (*Brachypodium sylvaticum*), Cock's-foot (*Dactylis glomerata*) and Yorkshire Fog (*Holcus lanatus*)
Wood White	Meadow Vetchling (*Lathyrus pratensis*), Bitter-vetch (*Lathyrus linifolius*), Tufted Vetch (*Vicia cracca*) and Common Bird's-foot-trefoil (*Lotus corniculatus*)

Figure 87. The food plants required for the life cycle of butterflies.

5.8 Overwintering Habitats for Butterflies

Butterflies can enter diapause (overwinter) in all four stages, but the majority will overwinter in their caterpillar stage. Before diapause, butterflies produce a form of internal antifreeze to protect them from the cold weather. Because diapause is triggered by shorter day lengths and lower temperatures, they generally overwinter outside. The habitats that butterflies need for overwintering in one of their immature stages are:

- Leaf litter

- Thick/uncut vegetation
- Log piles

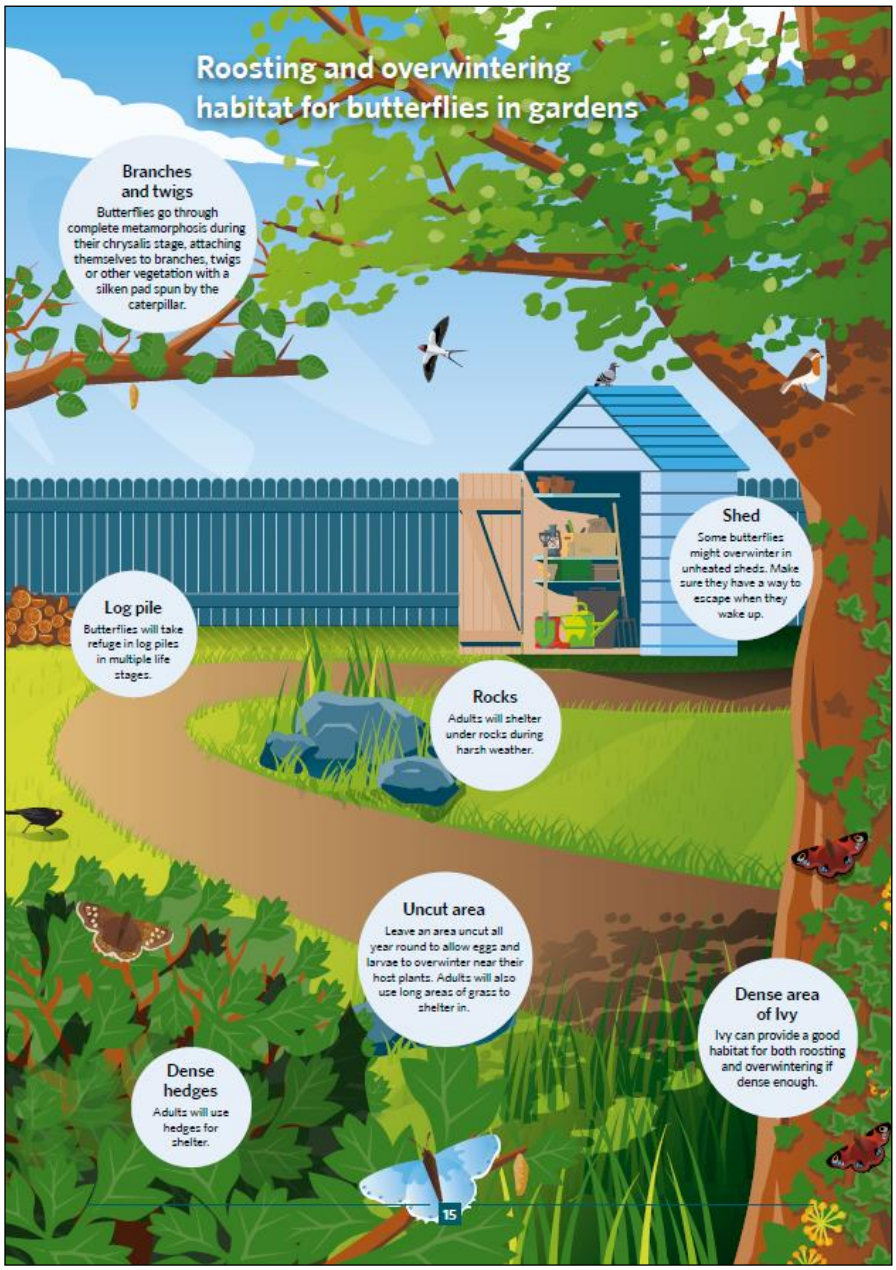


Figure 88. Overwintering and roosting habitats for butterflies.

5.9 Ornamental Pollinator Planting

There are a wide variety of species currently planted by people in their gardens and in Bray Town by Tidy Towns for ornamental purposes. Many of these were completely alive with insects during the site visits. Other species that could be considered include:

Shady areas - *Anemone*, *Aquilegia*, *Dicentera*, *Digitalis*, *Erythronium*, *Geranium*, *Hellebore*, *Pulmonaria*, *Trillium*.

Dry areas - *Bergenia*, *Echinops*, *Echinacea*, *Kniphofia*, *Sedum*, *Stachys*, *Verbena*.

Damp areas - *Helenium*, *Astrantia*, *Astilbe*, *Euphorbia*, *Heuchera*, *Hosta*, *Achillea*, *Ligularia*, *Rudbeckia*.

5.10 Management of Stone Walls

The old walls in and around Bray Town (those built with stone and lime mortar) as opposed to those that are pointed in concrete or made out of blocks and rendered provide a rich habitat for a variety of species including nesting birds and invertebrates. They should not be cleaned of their vegetation (unless tackling an invasive species – such was done by Bray Tidy Towns at Bray Harbour).

Areas of concrete/block walls which are ugly to look at and offer no biodiversity value could be planted up with native climbers such as:

- Dog Rose (*Rosa canina*)
- Ivy (*Hedera helix*)
- Honeysuckle (*Lonicera periclymenum*)

5.11 Pesticides

Pesticides (herbicides, insecticides and fungicides) and chemicals such as fertilisers are used by many gardeners and landowners/land managers. They can cause huge damage to butterflies, other insects, and the plants they feed on. Please set out to make Bray Town a pesticide free zone.

The wide scale use of herbicide in our surroundings needs to stop and only be used in very targeted areas and for very specific purposes such as the treatment of invasive species.

A number of county councils now use organic weed control methods such as treatment with a strong solution of Vinegar, or acetic acid, (30% solution), in preference to the use of herbicides which can be carcinogenic and damaging to wildlife and would require professional application.

5.12 Composting

Compost heaps can not only sustainably reduce green waste from the garden but can also provide homes for many insects including:

- Springtails
- Woodlice
- Earthworms
- Millipedes
- Centipedes
- Beetles

Maybe you could develop a compost heap in your garden?

5.13 Actions for Woodlands

Trees are often planted by community groups but are then managed with mown grassland (or even worse circles of dead vegetation sprayed with herbicide). Why not consider instead developing natural looking mini-woodland by establishing native species under the trees such as:

- Foxglove – introduced by seed collected at the end of the summer from nearby woodland tracks
- Primrose
- Common Dog Violet
- Red Campion
- Wood Anemone
- Lesser celandine
- Native bluebells (from seed – please do not dig them up from the wild)
- Ferns

Woodlands outside of the municipal district such as those within Kilruddery Demesne, the Corke Abbey Valley, County Brook Stream Valley (Vallombrosa), Hollybrook Estate, Bray Head Golf Course and Woodbrook have not been the subject of any dedicated biodiversity surveys. These all form part of the network of wooded sites of conservation and landscape importance in the environs of Bray Town. A specialist survey of these areas should be commissioned from the perspective of local biodiversity and how to manage and improve them.

5.14 Citizen Science

Members of the community in Bray could help monitor and identify species within the town and in their gardens and record their findings with the National Biodiversity Data Centre. There are a number of schemes that could be implemented in the town. These include:

- The Garden Butterfly Monitoring Scheme
- Complete a Flower Insect Timed Count
- Map your actions for pollinators
- The Irish Garden Bird Survey

The Garden Butterfly Monitoring Scheme

The Garden Butterfly Monitoring Scheme helps to keep track of which butterflies regularly use gardens, and how numbers vary across the country year on year. Participants make regular 15-minute counts of the 20 most common butterflies found in Ireland. No expert knowledge is required, and it's perfect for beginners.

This recording scheme is a great way of finding out which butterflies are visiting your garden, and how you can support them.

The National Biodiversity Data Centre have developed a free online course for the Garden Butterfly Monitoring Scheme. By going through this eCourse you will learn:

1. How to identify the 20 most common garden butterfly species
2. How to take part in the Garden Butterfly Monitoring Scheme
3. How to register your garden on the National Sampling Framework
4. How to submit your data

If you would like to get involved, please email the NBDC at butterflies@biodiversityireland.ie

Complete a Flower Insect Timed Count

- Flower Insect Timed (FIT) Counts are an initiative of the All Ireland Pollinator Plan.
- FIT Counts are open to everyone
- You can do a 10-minute FIT Count at any time between the 1st April and the 30th September
- Your location can be anywhere e.g., garden, farm, park, school, business site
- You don't need to identify the insects to species level, but only to tally within broad groups e.g., bumblebee, butterflies & moths, wasp, beetle
- Watch the short video for more details and see the step-by-step guide and resources sections at https://biodiversityireland.ie/surveys/fit-counts/
- From 2022, a new FIT Count app allows you to take a FIT Count and upload the results in one go.

Map your actions for Pollinators

It is great to see that there are several mapped areas being managed for pollinators within the town. Could you add your garden, could the local sports clubs do a bit? What about the church grounds? See the maps and add new areas on https://pollinators.biodiversityireland.ie/

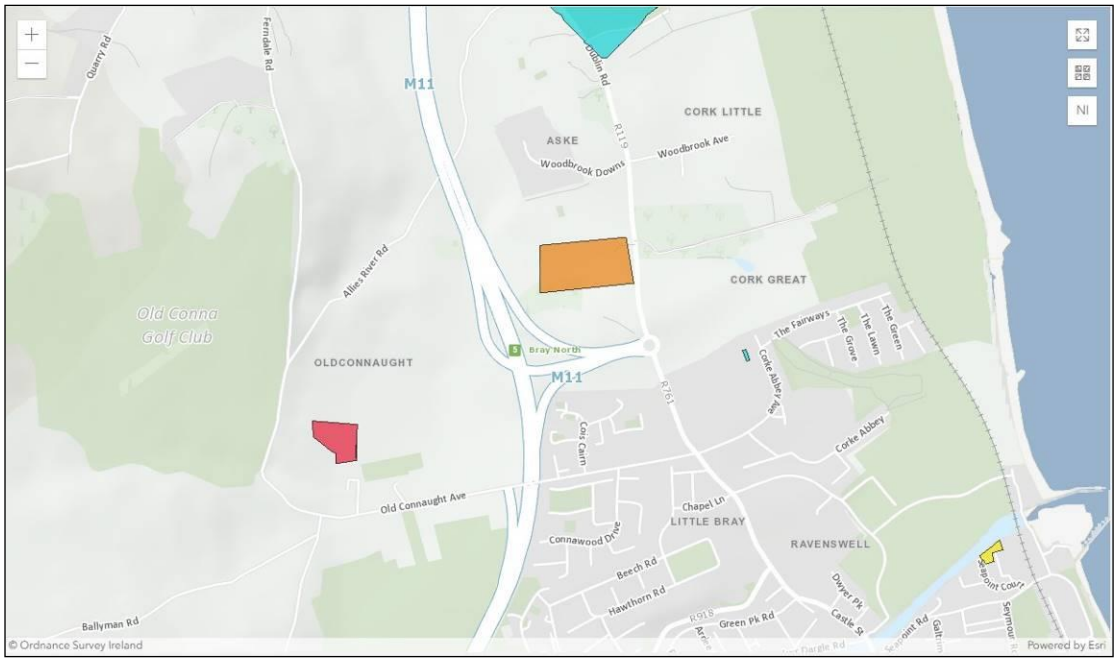


Figure 89. Mapped locations of actions for pollinators in North Bray.

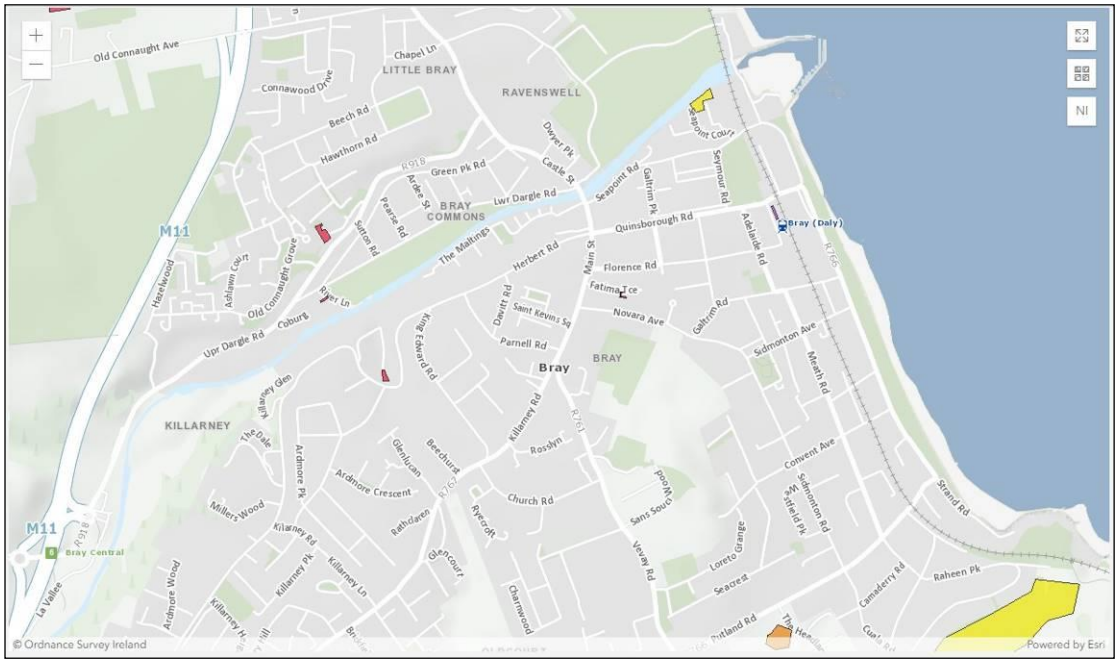


Figure 90. Mapped locations of actions for pollinators in Central Bray.

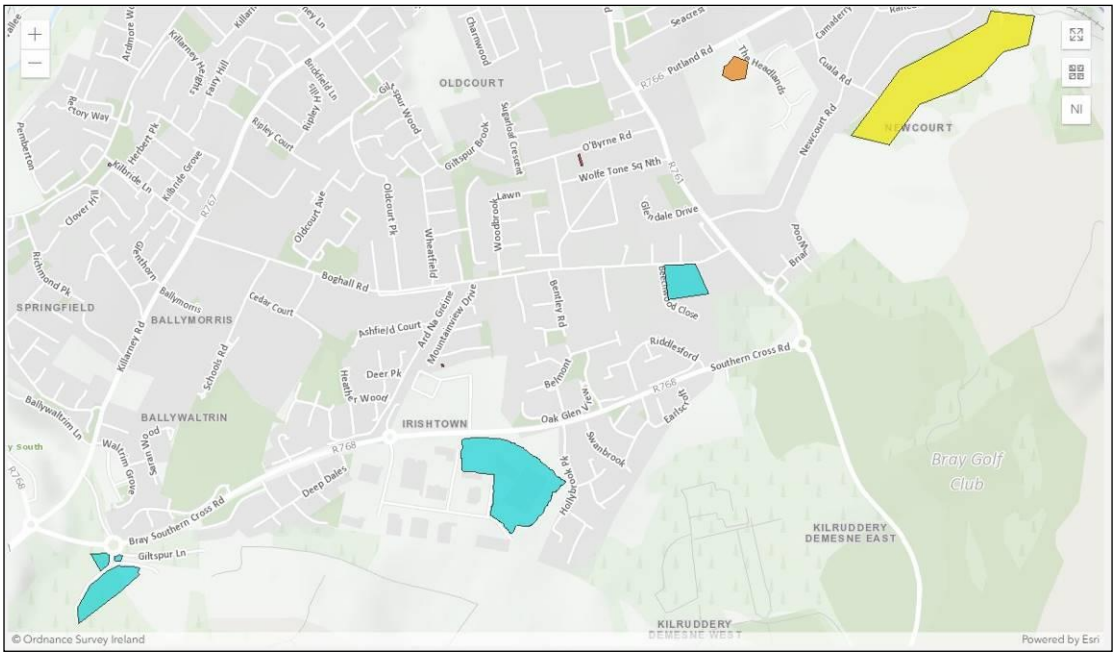


Figure 91. Mapped locations of actions for pollinators in South Bray.

Bray Tidy Towns has ensured that ornamental planting schemes in the town include pollinator friendly species as well as those pleasing to the human eye. They include the following planting:

1. 25 no. wooden planter boxes along the seafront (Pollinators)
2. 6no. white planter boxes on the seafront (Pollinators)
3. Clearing Valerian on seafront (Biodiversity)
4. Albert Walk (Pollinators/biodiversity)
5. Ravenswell river Walk (Pollinators)
6. Corner site at Ravenswell river walk
7. Dargle River Park (Biodiversity)
8. Springfield alcove (Pollinators)
9. Springfield meridian (Pollinators) - This is now managed by BMD
10. Peoples Park memorial (Pollinators)
11. Peoples Park entrance (Pollinators) - very limited
12. Dock Hill (Pollinators) - this area has been significantly invaded with Red Valerian, which is an issue from a biodiversity perspective
13. Briarwood Planter box (Pollinators)
14. Ravenswell Planters (Pollinators)
15. Dargle Road Planter (Pollinators)
16. Bray Head (Biodiversity)
17. Vevay Road Planters (Pollinators)
18. Royal Hotel Planters (Pollinators)
19. Ard Na Grainne wooded area beside playing fields (Biodiversity/ Pollinators)
20. Elgin Heights (Pollinators)
21. Glendale Drive (Pollinators)
22. Library (Pollinators)

Other areas that are not managed by Bray Tidy Towns but by independent volunteers include:

- Martello Terrace
- Brennans Parade
- Stephen's Bed, Raheen Park
- Entrance to Woodies (managed by Woodies)

Spring bulb planting has also taken place. 80% of the bulbs planted are included in the All Ireland Pollinator Plan. The remaining 20% were chosen for their floral display and limited pollinator impact.

1. Wooden planter boxes seafront (Muscari and Tete-a-tete)
2. Black Planters (Muscari and Tete-a-tete)
3. White Planters (Tete-a-tete)
4. Ard Na Graine wooded area (Muscari, hyacinthoides non scripta, Crocus, anemone
5. Ard Na Graine stone and slightly raised bank (Crocus, anemone, allium)
6. Peoples Park memorial (Crocus, Anemone)
7. Peoples Park (Allium, Tulip, anemone, crocus, daffodil). These have all been planted between the raining and the footpath
8. Library (Allium, anemone, crocus, tulip)
9. Springfield alcove (snowdrops, Anemone, crocus, allium, tulip)
10. Springfield meridian (Allium)
11. Springfield, beside fields (Daffodils snowdrops)
12. Glendale Drive (Crocus, Anemone, Tete-a-tete)
13. Elgin Heights (Crocus, Anemone, Tete-a-tete, Allium)
14. Elgin Wood (Crocus, Anemone, Tete-a-tete, Allium)
15. Dock Hill (Crocus, Anemone, Allium, Tulip)
16. Vevay Road Planters (Tulip, Tete-a- tete, Anemone)
17. Vevay Road below trees (Anemone, crocus)
18. Ravenswell river walk (Anemone, Allium, Muscari, cyclamen)
19. Sydenham Mews (Anemone, Tete-a-tete, Crocus, Muscari)

The Irish Garden Bird Survey

Why not take part in the BirdWatch Ireland annual Irish Garden Bird Survey, which takes place over the winter months. The Irish Garden Bird Survey is BirdWatch Ireland's most popular citizen science survey, with around two thousand gardens taking part each year. Between December and February each year, members of the public keep note of the highest number of each bird species visiting their garden every week. Information on the size of the garden being surveyed, the kinds of food, if any, being offered to the birds, and so on is also collated. Taking part is fun, easy and an ideal way to get to know your garden birds better. As the Irish countryside changes, gardens are becoming increasingly important havens for many species. The Irish Garden Bird Survey can give us a good idea of how the garden birds themselves are doing, but also an indication of how the biodiversity actions in Bray are delivering for wildlife.

5.15 Measures for Roosting Bats

Bat boxes can offer small numbers of bats a safe place in which to roost. These can be either wooden boxes or woodcrete *'Schwegler'* bat boxes (which are composed of a mixture of concrete and wood shavings) and are available online from http://www.jacobijayne.co.uk/nest-boxes-by-species/bats/.

Maybe these could be built by a local men's shed or school woodworking class and erected within the environs of the town or in peoples back gardens. The bat boxes erected in the People's Park as part of the Dargle Flood Defence Scheme should be checked to see if they are still present and inspected for signs of bat usage.

Plate 16. Bat boxes erected in the People's Park as part of the Dargle Flood Defence Scheme.

5.16 Conservation of Water

The water running off the roof of your house, school, office, garage, garden shed, etc. could be collected in rainwater butts or diverted to feed a pond or to create a rainwater garden or bog garden.

5.17 Measures for Nesting Birds

The breeding success of many of our suburban birds can be improved by the provision of artificial breeding boxes made from timber. These could be built by a local men's shed or

school woodworking class and erected within gardens or around the town. Leave areas where brambles have become established to develop further into a natural area of bramble scrub with a sign to show that this area is being left for nesting birds. The insects will appreciate it too.

5.18 Invasive Species

We are becoming increasingly aware of the threat that invasive species pose to our native habitats and biodiversity in general. Try to make sure that you aren't part of the problem – don't dump your garden waste into the countryside or wild area and try and control or stop the spread of invasive species where you live.

Plate 17. Giant hogweed.

Plate 18. During the Dargle Flood Relief Scheme a large bund was constructed at The Slang to contain soil contaminated with invasive species excavated from the river banks.

The resurvey of the River Dargle for invasive species, following completion of the project, which was a condition of planning, needs to be actioned.

An inventory and map of the locations of invasive species within the environs of the town should be completed and a number of awareness events held to disseminate same.

A targeted action plan for their control and eradication can then be developed by the community in collaboration with the relevant authorities.

Plate 19. Dumped garden waste (including Three cornered leek) on the edge of Giltspur Wood.

5.19 Bat Survey

If you have a bat roost you can report it to Bat Conservation Ireland and national Parks and Wildlife Service so it is registered on the National Database.

An annual bat walk in various locations in the town could be planned.

5.20 Development Pressures

Development pressures have really increased in north County Wicklow and Bray Town in the last number of years. Once land is zoned it is very difficult to conserve biodiversity in these lands. We need to zone lands for biodiversity and nature as well as for people. The work that Fingal County Council have done conducting ecological surveys in advance of zoning of lands has helped to identify areas that are ecologically sensitive and then ensure that some of the zoned areas are managed and conserved for local biodiversity.

Submissions to the local authority at planning stage requesting that trees and areas of native vegetation are retained and native species are used in the landscaping planting proposals and that lighting is wildlife friendly can help to ameliorate some of these impacts.

5.21 Measures for Hedgehogs

The retention of the area of old cuttings, leaves and branches provides cover and shelter for hedgehogs and other species in the garden. Could you make a small area for them to hibernate safely in? Maybe they are under your shed?

Can hedgehogs move through your garden or the gardens in your housing estate?

Could you make a small opening in your fence for them, which would them (and amphibians) to move safely through back gardens in your community?

5.22 Signage
There is a need for signage at Bray Head to explain how this is a protected site for nature conservation and how you can help to protect it.

5.23 Ash Dieback Disease
Ash dieback is a serious disease of Ash trees caused by the invasive fungal pathogen *Hymenoscyphus fraxineus* (previously known as *Chalara fraxinea*), which originated in Asia and was brought to Europe in the 1990's. The pathogen has now spread across most of the natural range of Ash in Europe causing high mortality rates of Ash trees. Ash dieback was first detected in 2012 in Ireland on plants imported from continental Europe. The disease is now prevalent across Ireland and will likely cause the death of over 90% of Ash trees here in the next decade. The disease can affect Ash trees of any age and in any setting. The disease can be fatal, particularly among younger trees. A number of Ash trees in the environs of Bray show signs of ash die back. Where safe to do a proportion of this Ash could be allowed to transition naturally to standing deadwood which has a high biodiversity value. It is recommended that a summer survey of healthy Ash trees not displaying Ash dieback symptoms is carried out in the environs of Bray. These trees should be recorded and mapped and protected from any knee jerk tree felling as they could have a natural resilience to the disease.

5.24 Educational Resources
The National Biodiversity Data Centre have produced a series of very useful and attractive swatches which help in identifying various species groups such as ladybirds, shield bugs, dragonflies, butterflies, moths, etc. Having these resources to hand help in identifying species and understanding more about the world we share with them.

5.25 Keeping the Wild 'Wild'
Please refrain from introducing non-native and ornamental species into the countryside and along roadside verges and edges particularly on the edges of Bray and in those areas identified as local biodiversity areas.

5.26 Engaging Children with Nature
Recently there has been a trend for the development of 'Fairy Walks and trails' in many woodlands and natural areas. These invariably involve painted doors, plastic items, glitter and other unnatural materials. Please do not promote or encourage fairy doors or trails in your local wild area. Why not teach children to engage directly with the natural world around them by observing and learning about where they are and how to protect it instead.

5.27 Leave No Trace
Our visits and actions when we visit wild places can have a variety of impacts. These include:

1. Wildlife Impacts
Disturbance, altered behaviour

2. Vegetation Impacts
Vegetation loss, the introduction of invasive species.

3. Water Resource Impacts
Siltation, sedimentation, pollution.

4. Cultural Resource Impacts
Congestion, theft or damage to cultural feature.

5. Soil Impacts
Soil compaction

6. Social Impacts

Crowding, conflicts between groups.

Visitors to Bray Head and the Cliff Walk should be encouraged to follow the 7 Leave no trace Principles. The 7 Principles are:

1. Plan Ahead and Prepare
2. Be Considerate of Others
3. Respect Farm Animals and Wildlife
4. Travel and Camp on Durable Ground
5. Leave What You Find
6. Dispose of Waste Properly
7. Minimise the Effects of Fire

Practising a Leave No trace ethic is very simple: Make it hard for others to see or hear you and LEAVE NO TRACE of your visit.

5.28 Lighting

Consider the impacts of lighting on wildlife in your community. We should be conserving energy and only illuminating what is really necessary for health and safety purposes.

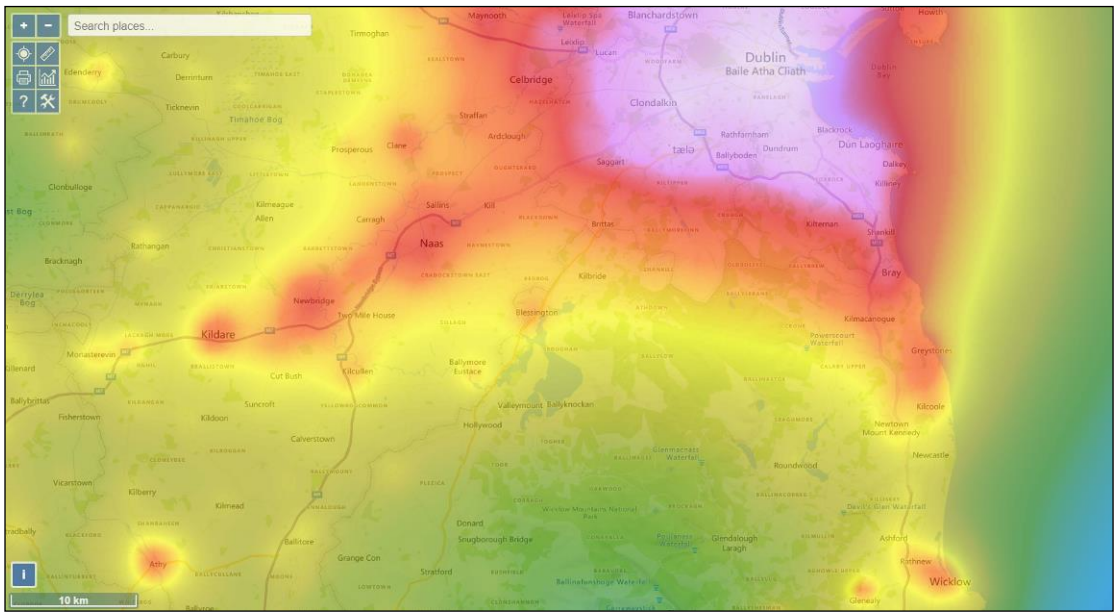


Figure 92. Light pollution in north County Wicklow.

5.29 Educational Walks and Talks

It is recommended that a series of educational biodiversity based walks and talks are held in Bray. Education is key to improving our understanding of the natural world. These could be seasonally themed or have a particular focus such as fungi, bats, moths, breeding birds, spring flowers, autumn leaves, winter bark, etc.

5.30 Community Events

The Bray Tidy Towns Group is very active and it would great to see some more of that energy focused on helping to do our bit for the biodiversity and climate change crisis. Get involved – don't just leave it all up to the great team who got the funding and commissioned this report.

5.31 Develop a Sense of Wonder

The more you spend time in the natural world the more engaged you become with it. Spending time in nature be it walking, sitting and sketching, gardening, watching the activity

at a bird feeder from your sofa or looking at the night sky will improve your mental health and offer you a perspective on our time on the planet – use it wisely.

5.32 Actions for Rare Plants in Bray

Bray is unique as a town in having a rich diversity of rare and interesting plants in its environs. Many of these have not been formally surveyed since 2007 and it is unknown as to what their current status is or if they remain extant.

Plate 20. Blue fleabane on the Lower Dargle Road.

A rare plant survey of Bray and environs is recommended and an action plan for their conservation should then be prepared and implemented. As some of these plants are legally protected a licence from the National Parks and Wildlife Service will be required and the work should be completed by specialists.

Bray Tidy Towns has been completing vegetation clearance and management of invasive species for some of our unusual and rare plants in Bray. Could you help out?

5.33 Action for Swifts in Bray

The county swift survey completed in 2019 noted:

'Bray Town is undergoing a boom of sorts in construction of commercial buildings and apartment blocks. The best concentration of birds is in the established housing estates of Wolfe Tone Square, again liable to disturbance through renovation and retrofitting. Potential for Swift conservation might best be focussed on the big houses of Kilruddery and Powerscourt, though the Tidy Towns group may have a role to play in Wolfe Tone Square'.

A remarkable count over 100 swift were recorded passing through the town at the end of the breeding season – presumably these birds were gathering to begin their migration. Many of these birds could return and breed in Bray if suitable nesting locations were retained or provided for them.

There are a number of locations in the town which would be a great place to erect swift boxes. The Heritage Office in Wicklow County Council have swift boxes available for groups to avail of.

Swifts will nest even on a two storey house if given a suitable location and some encouragement. Could you provide a home for them?

Swift Conservation Ireland provides really great advice on how to offer swifts a home as follows:

'Artificial nest boxes can be used very successfully for Swifts if they are placed in the correct location.

LOCATION OF BOXES
They should be at least 4 metres above ground level and placed such that they do not receive full sun in summer. There must be a clear flyway in front.

BUILT-IN OR EXTERNAL?
While it is preferable to incorporate nesting places into a building structure, external nest boxes placed near to nest sites that have been lost can be particularly effective to mitigate the loss.

HOW MANY BOXES? Swifts are colonial nesters so you need more than one nest box at your chosen location, however, that being said they need to have the own nest space. Nest boxes come as either a single boxes or with multiple cavities (that have a dividing wall between each nest area).
SIZE OF ENTRANCE HOLE
The entrance hole size is critical and should ideally be 28mm x 60mm but no bigger than 30mm x 65mm. If the hole is bigger than this then starlings can enter the box and they out compete the swift and will take over a nest box. Other birds, such as sparrows, will be able to get in to the 30mm x 65mm hole but this is not a problem because the swift is able to evict them'.

You could make a swift box at home using the design template below on **Figure 93**.

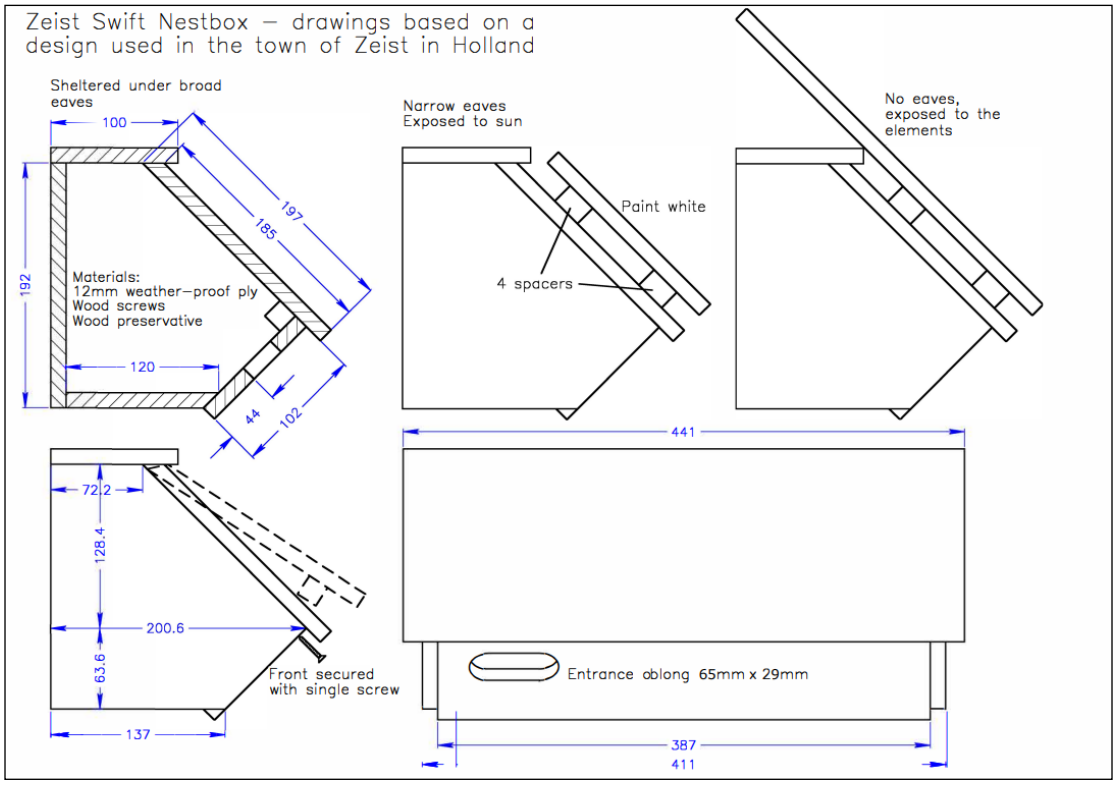


Figure 93. Swift box design.

To increase the chance of swifts finding your box you can play a call to attract them as outlined by Swift Conservation Ireland:

'PLAYING ATTRACTION CALLS
Speed of occupancy of a nest box can be considerably accelerated by playing swift attraction calls. The attraction calls make the swift think that other swifts are nesting in this location and so indicate that this is an attractive place to breed. So any swift looking for a nest site will explore this area for a vacant place.

Whichever sound system you are using should be placed as near as possible to the nest boxes e.g. on a window sill or attached to the box. The calls should be played for as long as possible during the day from mid-April to end August. Playing the calls 24 hours a day is best but if not then as long as possible from 8.00 am to 11am and 8.00 pm to 11pm.

Patience is essential, it could take a year or three for swifts to find the boxes even when playing the calls. You will need to play calls from mid-April until end August each year until the swifts have started to breed in one or more of the boxes'.

Further advice on using a swift caller can be obtained from Swift Conservation Ireland: swiftconservationireland@gmail.com

If you know of a nesting site for swifts in Bray please log it here
https://records.biodiversityireland.ie/record/common-swift#7/53.455/-8.016

If you see a planning application or building works commencing on a site you know is used by swifts please speak to the owners as these works could result in the loss of a breeding site. Contact the Heritage Officer in Wicklow County Council or National Parks and Wildlife Service.

5.34 Action for Barn Owls

Barn owls have become an increasingly rare species in County Wicklow but thankfully populations of barn owls in the county are slowly beginning to show signs of recovery with five confirmed nests in the county in 2023. Erecting a barn owl box could help improve the breeding success of this iconic species in the environs of Bray/Greystones/Enniskerry/Kilmacanogue. The Wicklow Barn Owl Project can assist with supplying a suitable box that can be erected in either an outdoor or indoor (in an open hay barn shed) site. Maybe you know of a landowner with suitable land on the edges of Bray which might support barn owls.

5.35 Native Hedgerow Establishment

If you are considering planting a hedge on your property could you use native species such as Hawthorn, Blackthorn, Holly, Spindle and Guelder rose? Typical hedging species such as Laurel, Beech, Hornbeam, or even worse Leylandii offer little for our native species.

5.36 Actions for the River Swan

A number of recommendations were identified for the River Swan to restore and enhance the ecological quality of the watercourse in the study completed in 2023.

Plate 21. Weir at Swan River – a barrier to fish migration.

These included:

- River Bird Nesting Box Scheme for Dipper and Grey Wagtail.
- Signage on the major bridges that the Swan flows under (Herbert Road, Boghall Road, Killarney Road) and within the Peoples Park opposite the confluence with the Dargle.
- Low mow meadow management along both banks of the Swan though Wheatfield and Giltspur Brook.
- Invasive species management on the river.
- Citizen science initiatives.
- Addressing barriers to wildlife movement.
- Restoration of river habitat.
- Addressing Water Quality.

These should be actioned.

5.37 Household Check – Are You Part of the Problem?

Everyone in the community can make a difference by checking their own home to see if it too could be contributing to poor water quality in local watercourses (the Swan River in particular). This is known as a misconnection survey.

A property is typically serviced by two types of drains namely **foul** and **surface water**.

The **foul** drain conveys wastewater from foul appliances such as washing machines, dishwashers and toilets to the wastewater treatment plant.

The **surface water** drain conveys "clean" rainwater from your roof and hard standing to local rivers and streams.

When correctly plumbed the foul water does not enter a local drain or watercourse and goes to the waste water treatment plant, which once it has capacity and is properly operated ensures that the waste is treated before discharge as shown on **Figure 95**.

A misconnection occurs when a foul drain is incorrectly plumbed to the surface water network, causing pollution of nearby surface waters.

During construction or following renovations or repairs a misconnection can occur where a foul drain is incorrectly plumbed into a surface water drain as shown on **Figure 96** below. It can also commonly occur if an existing foul appliance is moved to a new location i.e. moving a washing machine from a kitchen to an outbuilding.

Similarly if surface waters are plumbed to the foul network it can result in the wastewater treatment system being overloaded and discharging in storm events.

A good place to start is to inspect your rainwater downpipes. If there is any additional pipework connected to the downpipe, this could indicate a misconnection. Shampoos, soaps, chemicals & detergents can have a detrimental effect on the flora & fauna in our rivers.

Take a look at the pipework at your home or business and see if anything is going where it shouldn't and get it fixed!

Figure 94. Correctly plumbed premises.

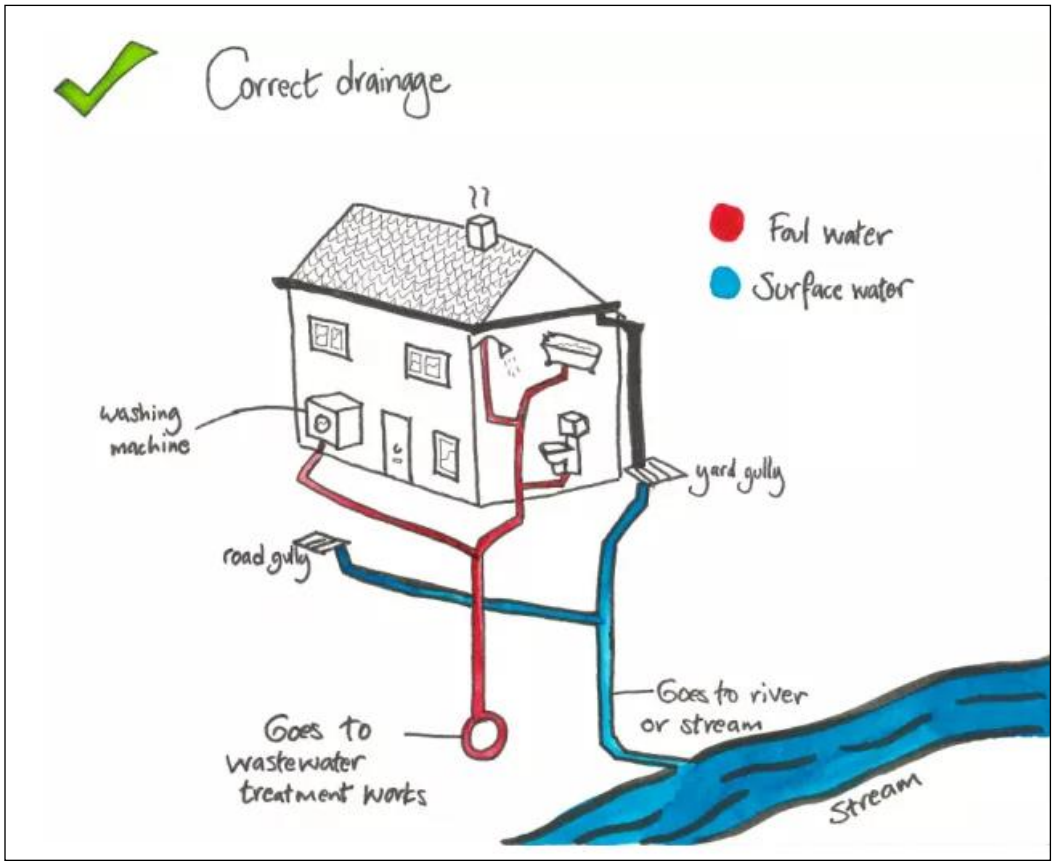


Figure 95. Correctly plumbed house where only clean surface water enters the river.

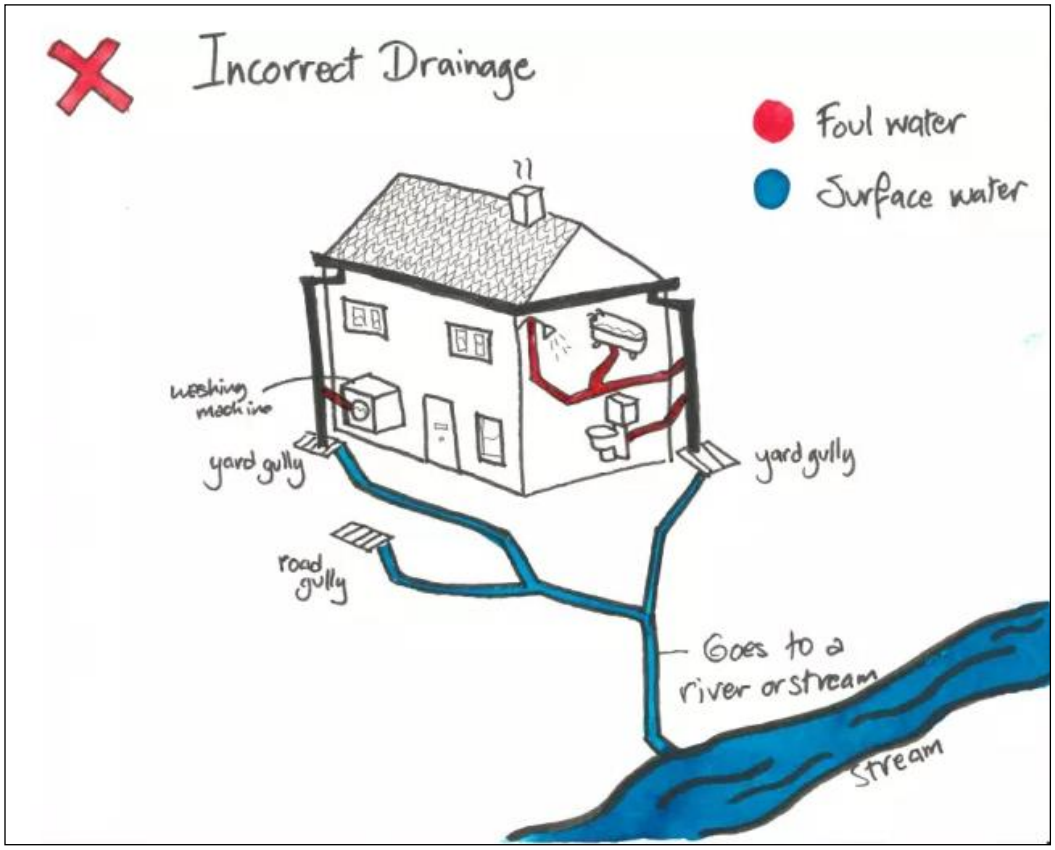


Figure 96. Incorrect drainage showing possible misconnections from washing machines, baths and toilets which can enter surface water systems.

5.38 People Pressures in North Wicklow

The numbers of people accessing and using our wild and natural areas has increased significantly in recent years, both as a result of increasing human populations in north eastern Wicklow, social media promotion and the global Covid pandemic when people explored and discovered wild places on their doorsteps.

The cliff walk and Bray Head has long been used for amenity purposes and as a place for a walk/exercise.

The proposed greenway through the Swan River, which is an objective of the Wicklow County Development Plan can seem like a lovely idea but it has negative impacts for wildlife, the river corridor and the adjoining woodland habitats.

Greenways should result in a net biodiversity gain for nature – not further erode and impact on those increasingly fragmented and degraded natural areas in our landscapes.

As BirdWatch Ireland recently stated in their response to proposals for a greenway through bird habitat in Co, Meath:

'There is a clear need for strategic guidance on greenway proposals, guidance which gives equal footing to biodiversity, climate and the needs of local residents. Not only would this approach prevent environmental damage, it would also reduce the amount of time and public money spent deliberating such proposals.

BirdWatch Ireland fully supports the development of greenways and initiatives that promote a modal shift in transport. These have obvious important benefits to climate but also economic and well-being benefits. However, it is vital that such developments do not come at a cost to our biodiversity, which is already experiencing pressures from all sides. In May 2019, Dail Éireann declared a climate and a biodiversity emergency. Both must be addressed together'.

5.39 Support Nature Conservation Charities

Join and support the nature conservation charities who do tremendous work in our society for nature conservation and sustainability. You can also take part in many recording events, monitoring studies, fund raising actions or other activities with them. Be a voice for nature in your community.

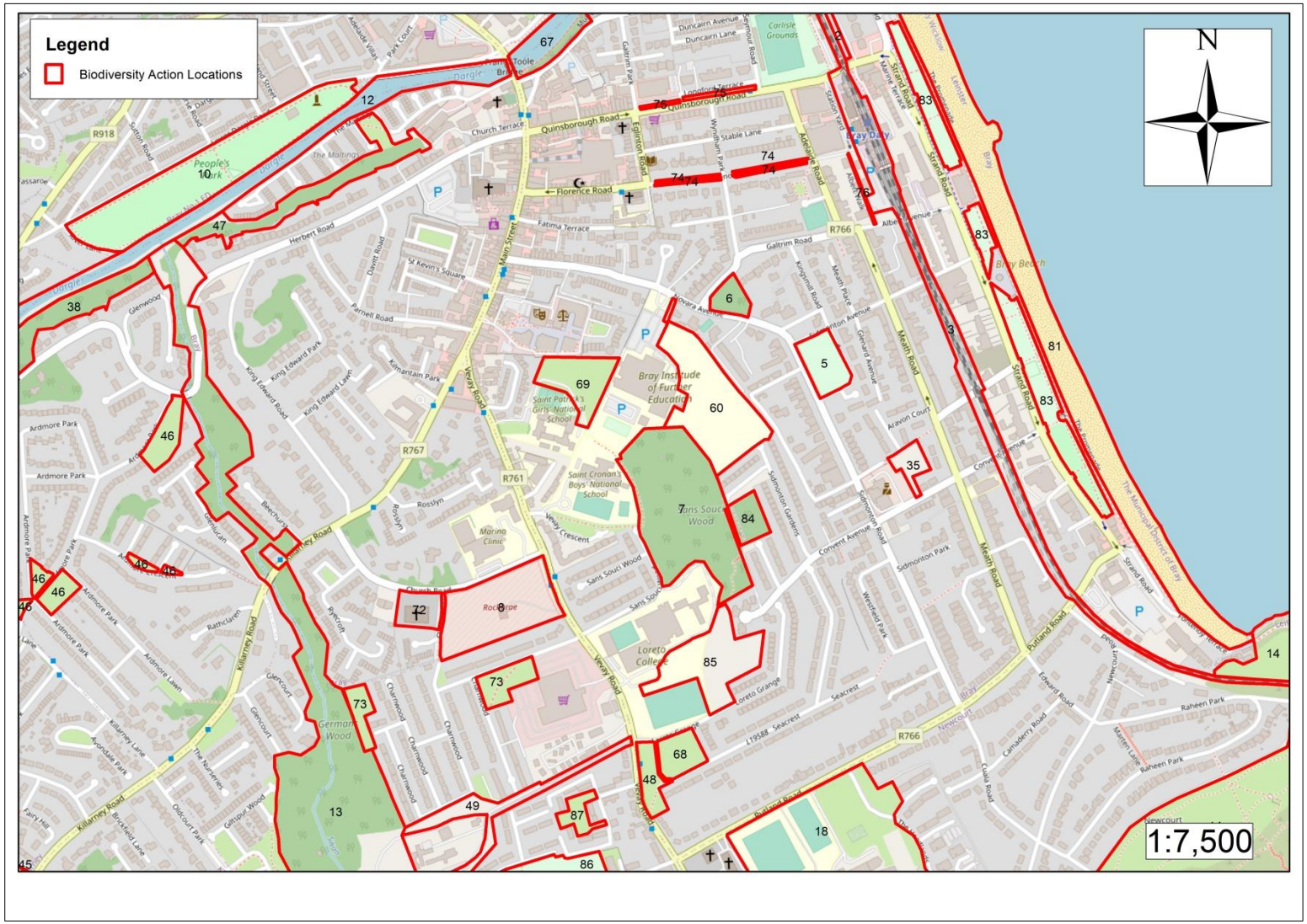
5.40 Be An Active Citizen at Planning Stage

Wicklow County Council will be preparing the next Local Area Plan for Bray soon. Make your voice for nature be heard at planning stage and to your local elected councillors and TDs.

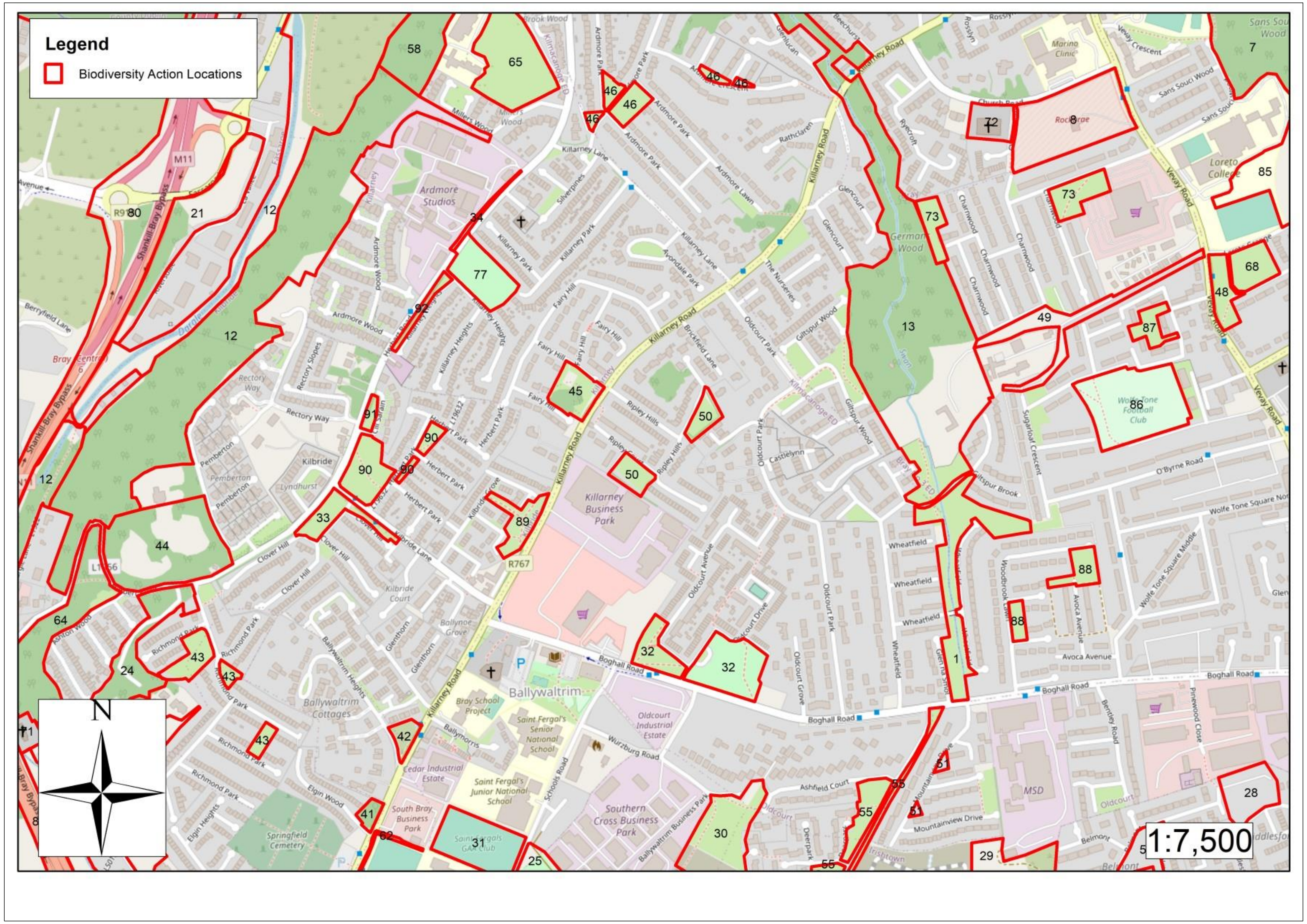
6. APPENDICES.

6.1 Appendix 1 – Locations of Biodiversity Action Areas

Legend
Biodiversity Action Locations
N
1:7,500
80
59
15
4
57
57
9
37
67
19
19
12
10
47
81
83
2
3
74
75
76
82
Shankill-Bray Bypass
Dublin Road
Corke Abbey
Solus Tower Industrial Estate
Bray Harbour
Beech Road
Hawthorn Road
Little Bray
Upper Dargle Road
Quinsborough Road
Strand Road
People's Park
Carlisle Grounds
St Peter's Cemetery
Ravenswell Road
Seapoint Road
Church Terrace
Eglinton Road
Adelaide Road
Station Yard
Old Connaught Avenue


Legend
Biodiversity Action Locations
N
1:7,500
Bray Institute of Further Education
Saint Patrick's Girls' National School
Saint Cronan's Boys' National School
Loreto College
Marina Clinic
Sans Souci Wood
Rockrose
German Wood
People's Park
Bray Beach
Quinsborough Road
Florence Road
Church Terrace
Main Street
Fatima Terrace
Galtrim Road
Meath Road
Strand Road
Killarney Road
Vevay Road
Convent Avenue
Sidmonton Road
Sidmonton Park
Westfield Park
Portland Road
Newcourt
Raheen Park
Loreto Grange
Seacrest
Adelaide Road
Albert Avenue
Herbert Road
Parnell Road
Vevay Crescent
Rossmore Park
Ardmore Park
Ardmore Lawn
Glenwood
Glencourt
Charnwood
Rathclaren
Rosslyn
Beechurch
Ryecroft
Glenlucan
Killarney Lane
Arundale Park
Brickfield Lane
Oldcourt Park
Gilspur Wood
Fairy Hill
The Nurseries
Duncairn Avenue
Duncairn Lane
Carlisle Grounds
Stable Lane
Wyndham Park
Kingsmill Road
Meath Place
Glenard Avenue
Aravon Court
Sidmonton Gardens
Convent Avenue
Camaderry Road
Edward Road
Warren Lane
Claula Road
Toole Bridge
Darrell Road
Kilmantain Park
King Edward Park
King Edward Lane
King Edward Road
St Kevin's Square
Davitt Road
Avenue Villas
Park Court
Station Yard
Marine Terrace
Longford Terrace
Albert Terrace
Howard Avenue
Kingsmill Road
Meath Place
Glenard Avenue
Aravon Court
Convent Avenue
Sidmonton Gardens
Sidmonton Road
Sidmonton Park
Westfield Park
Portland Road
Newcourt
Raheen Park
Loreto Grange
Seacrest
Adelaide Road
Albert Avenue
Herbert Road
Parnell Road
Vevay Crescent
Rossmore Park
Ardmore Park
Ardmore Lawn
Glenwood
Glencourt
Charnwood
Rathclaren
Rosslyn
Beechurch
Ryecroft
Glenlucan
Killarney Lane
Arundale Park
Brickfield Lane
Oldcourt Park
Gilspur Wood
Fairy Hill
The Nurseries
Duncairn Avenue
Duncairn Lane
Carlisle Grounds
Stable Lane
Wyndham Park
Kingsmill Road
Meath Place
Glenard Avenue
Aravon Court
Sidmonton Gardens
Convent Avenue
Camaderry Road
Edward Road
Warren Lane
Claula Road
Toole Bridge
Darrell Road
Kilmantain Park
King Edward Park
King Edward Lane
King Edward Road
St Kevin's Square
Davitt Road
Avenue Villas
Park Court
Station Yard
Marine Terrace
Longford Terrace
Albert Terrace
Howard Avenue
R918
R766
R767
R761
P


Legend
Biodiversity Action Locations
N
1:7,500
35
83
84
3
81
85
68
48
18
86
14
93
61
79
17
28
94
Loreto College
Presentation College
former Dell office
Beechwood Close Industrial Estate
Periwinkle Rocks
Bray Cross
Newcourt
Bridle Path
Raheen Park
Putland Road
Vevay Road
Meath Road
Strand Road
Newcourt Road
Bray Greystones Cliff Walk
Brandy Hole
Boghall Road
Glendale Drive
Wolfe Tone Square North
Scott Park
Briar Wood
Beechwood Close
Pinewood Close
R766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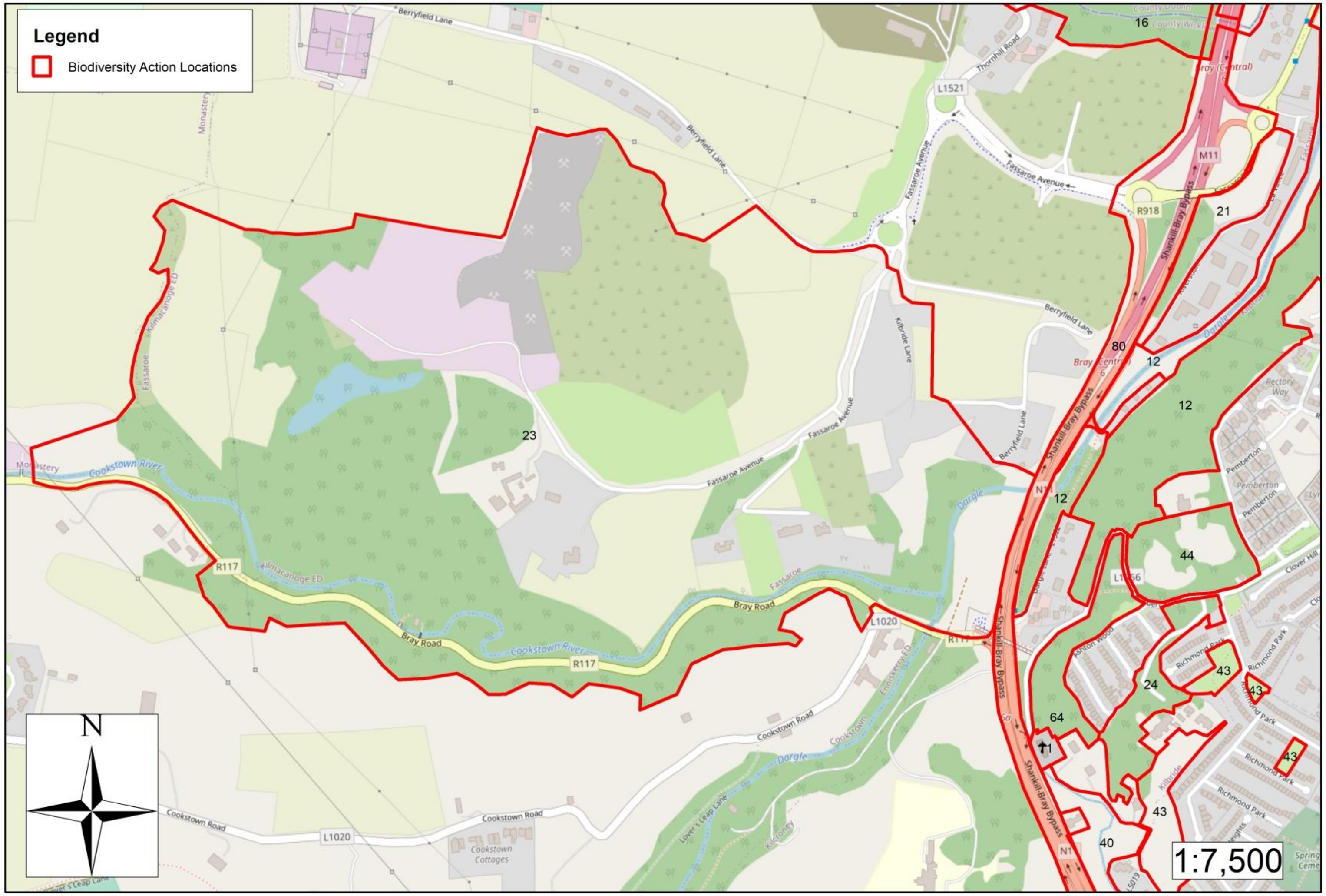
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Biodiversity Action Locations
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Berryfield Lane
Fassaroe Avenue
Kilbride Lane
Bray Road
R117
L1020
Cookstown River
Cookstown Road
Cookstown Cottages
Shankill-Bray Bypass
M11
R918
L1521
Thornhill Road
Dargle
Richmond Park
Pemberton
Clover Hill
23
16
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43
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64
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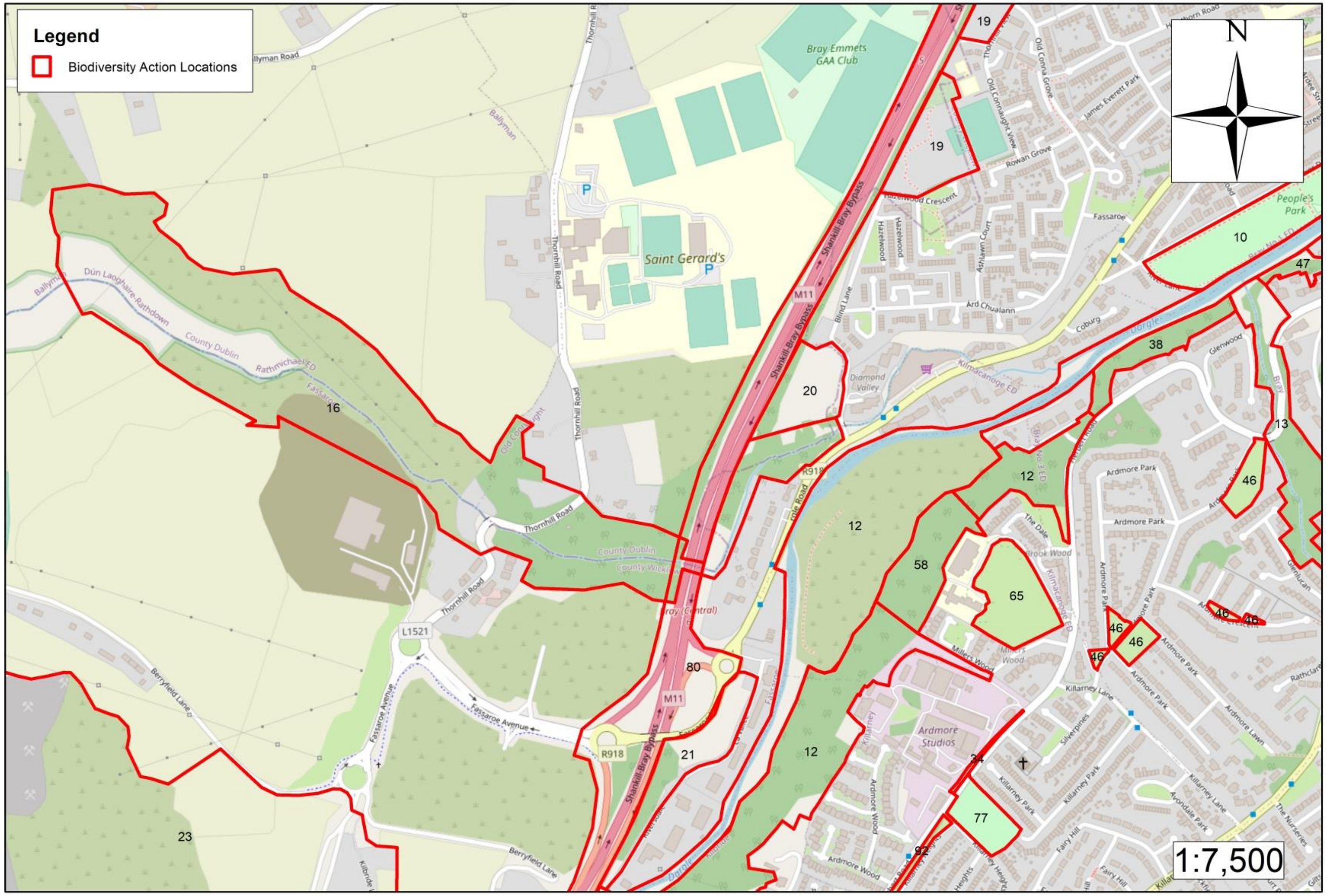
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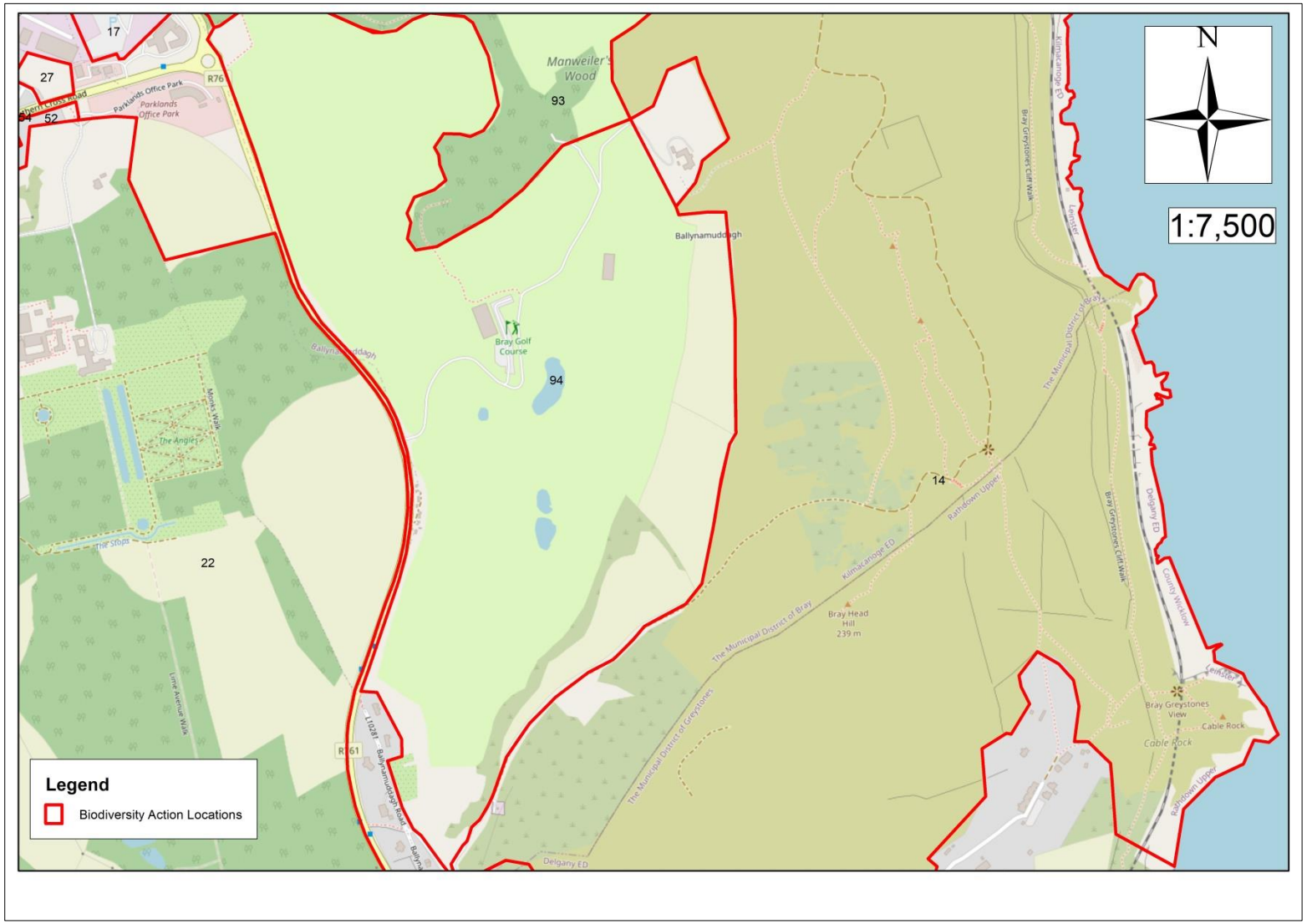
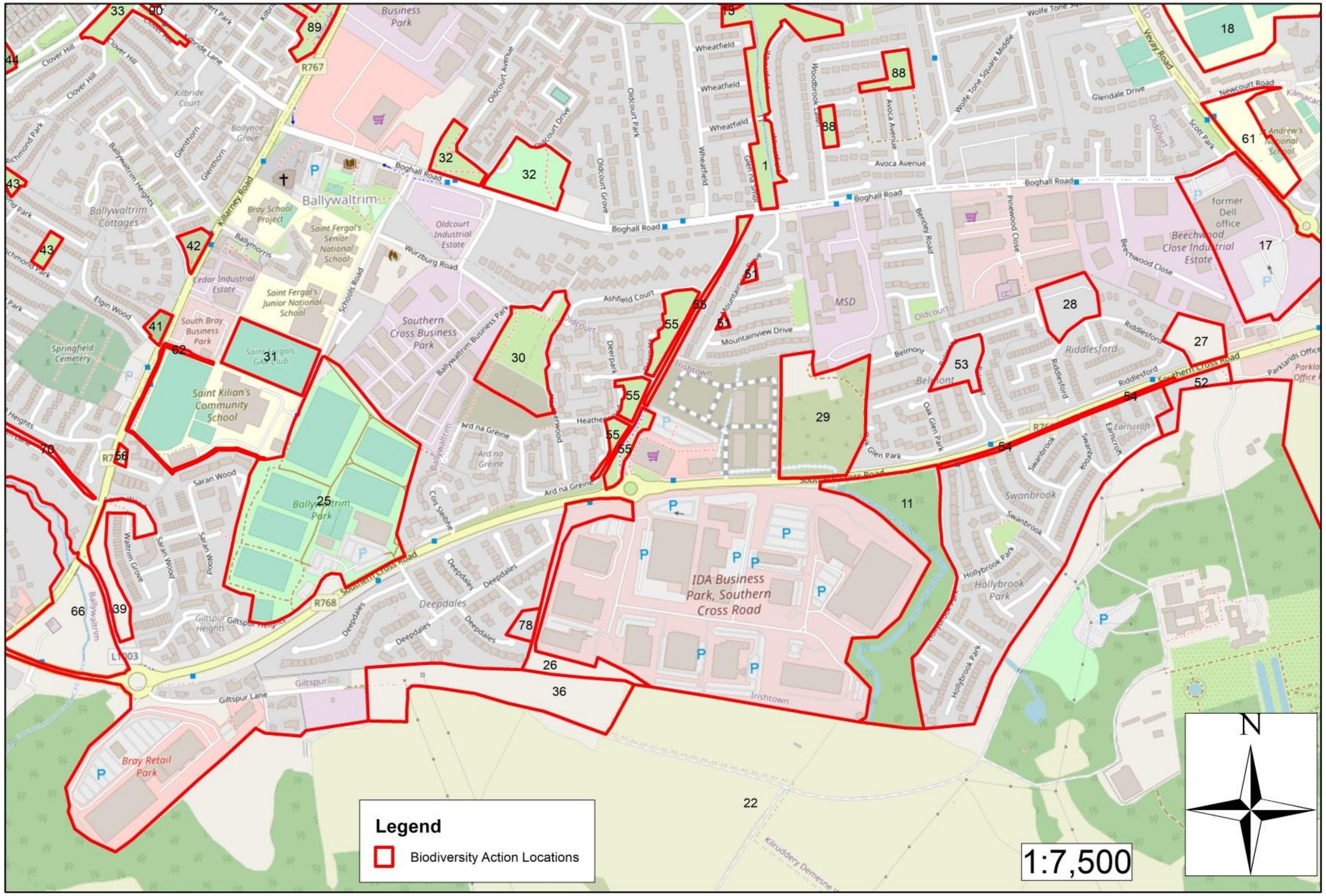
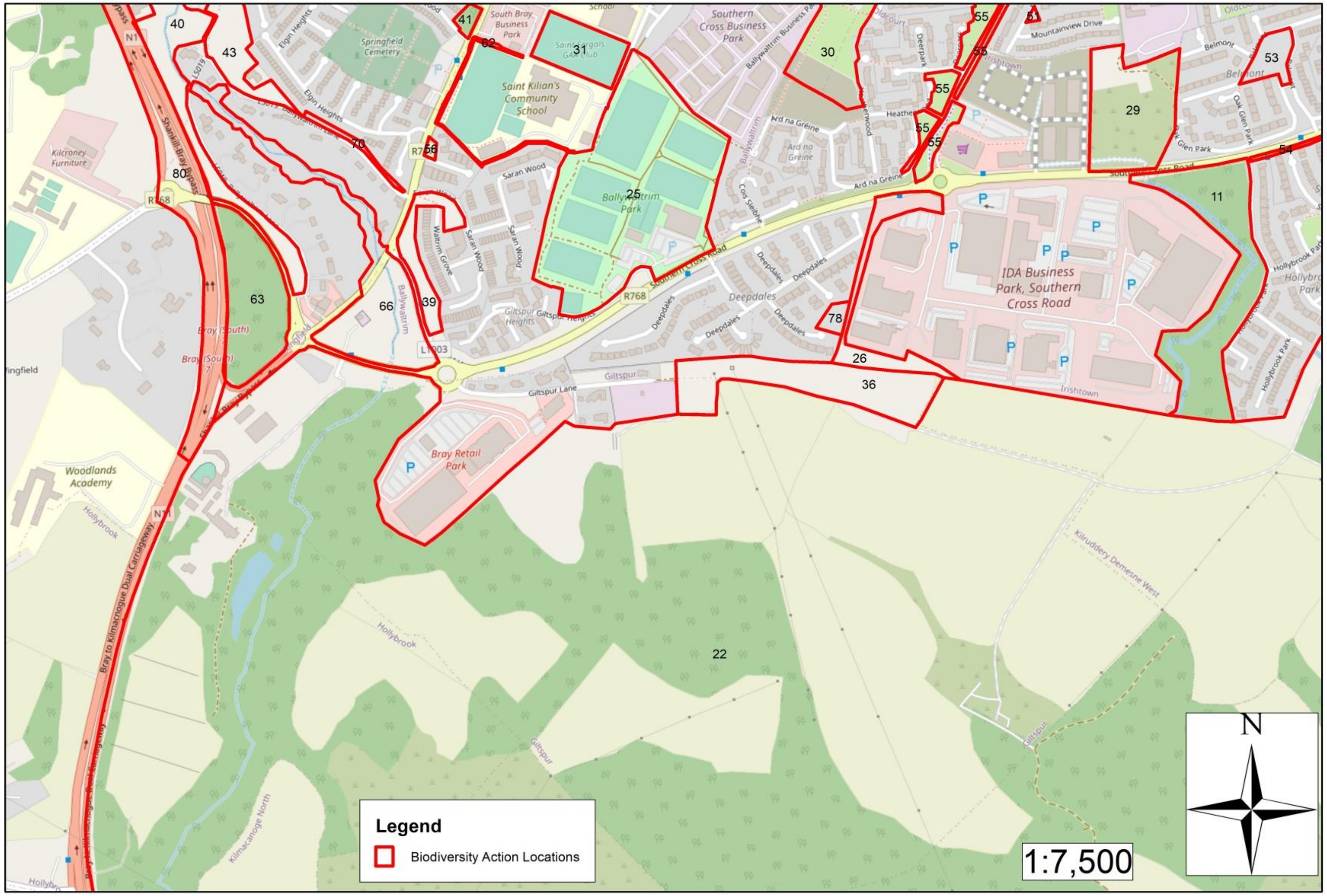
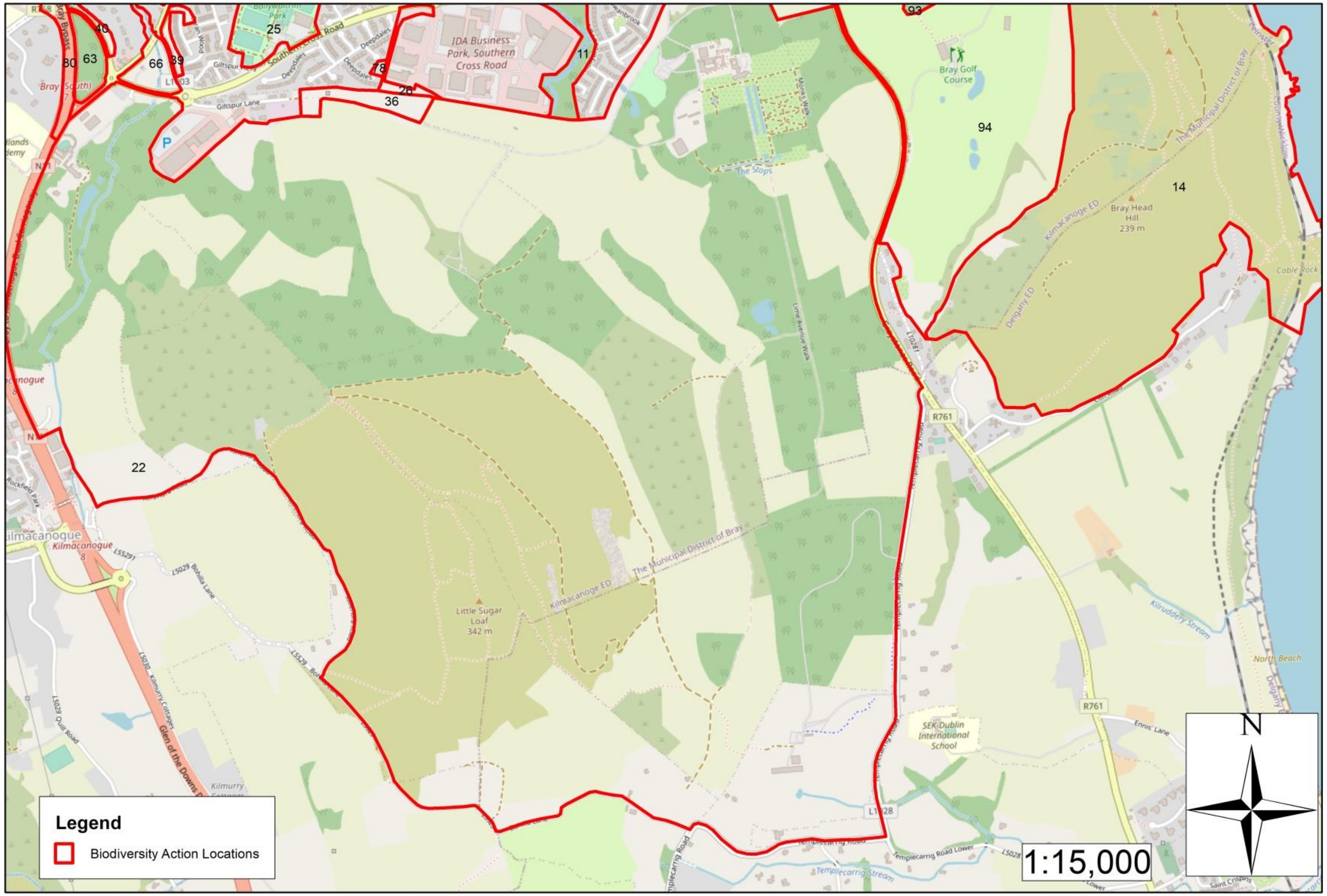

N
1:7,500
Legend
Biodiversity Action Locations
Manweiler's Wood
Ballynamuddagh
Bray Golf Course
Parklands Office Park
Bray Head Hill 239 m
Bray Greystones View
Cable Rock
Rathdown Upper
The Municipal District of Bray
The Municipal District of Greystones
Kilmacanogue ED
Delgany ED
Bray Greystones Cliff Walk
17
27
52
93
94
14
22


Legend
Biodiversity Action Locations
1:7,500
N
IDA Business Park, Southern Cross Road
Southern Cross Business Park
Bray Retail Park
Ballywaltrim Park
Saint Kilian's Community School
Boghall Road
Southern Cross Road
Ballywaltrim


Legend
Biodiversity Action Locations
1:7,500
N
IDA Business Park, Southern Cross Road
Bray Retail Park
Saint Kilian's Community School
Southern Cross Business Park
Woodlands Academy
Springfield Cemetery
South Bray Business Park


Legend
Biodiversity Action Locations
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IDA Business Park, Southern Cross Road
Bray Golf Course
Bray Head Hill 239 m
Little Sugar Loaf 342 m
SEK-Dublin International School
Kilmacanogue
The Municipal District of Bray
Kilmacanogue ED
Delgany ED
North Beach
Templecarrig Stream
Kilruddery Stream
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6.2 Appendix 2 – Site Synopsis for Bray Head SAC

Site Name: Bray Head SAC

Site Code: 000714

This coastal site is situated in the north-east of Co. Wicklow between the towns of Bray and Greystones. The bedrock geology is Cambrian quartzites and shales (with mudstones and greywackes). Bray Head consists of a plateau of high ground, with five prominent quartzite knolls and has a maximum height of 241 m. The more exposed higher ground has a covering of shallow acidic soils, with protruding bedrock and scree. Elsewhere, deeper soils are formed by drift deposits and are calcareous in character.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes):

- [1230] Vegetated Sea Cliffs
- [4030] Dry Heath

Dry heath is the principal habitat over much of Bray Head. The vegetation of the upper plateau area is dominated by dwarf shrubs, mainly Heather (*Calluna vulgaris*), Bell Heather (*Erica cinerea*) and gorse (*Ulex europaeus* and *U. gallii*). Broom (*Cytisus scoparius*) also occurs, and associated with the gorse and broom is the Red Data Book species Greater Broomrape (*Orobanche rapum-genistae*). In the areas where the shrubs are less dense Tormentil (*Potentilla erecta*), Common Milkwort (*Polygala vulgaris*), Heath Bedstraw (*Galium saxatile*) and a variety of grasses (e.g. *Aira praecox, Agrostis tenuis, Deschampsia flexuosa*) are present. Where rock outcrops occur species such as English Stonecrop (*Sedum anglicum*) and Sheep's-bit (*Jasione montana*) are found. Bracken (*Pteridium aquilinum*) is dominant in some areas.

The heath communities which occur on the dry slopes above the sea cliffs, especially those south-facing, are more open in character and dominated by grasses rather than dwarf shrubs. The annual plant communities which develop here are typical of those found only on sites in south-eastern Ireland. Common species include Wood Sage (*Teucrium scorodonia*), clovers (*Trifolium dubium* and *T. campestre*), Scarlet Pimpernel (*Anagallis arvensis*) and Field Madder (*Sherardia arvensis*). An uncommon annual species which can appear abundantly in the heath after a fire event is Yellow Fumitory (*Corydalis claviculata*). Some rare plants are found in this habitat, notably Bird's-foot (*Ornithopus perpusillus*) and Spring Vetch (*Vicia lathyroides*), both Red Data Book species.

Calcareous dry grassland, typically species-rich, occurs on deposits of glacial till. The primary grass species are Quaking-grass (*Briza media*), Smooth Meadow-grass (*Poa pratensis*) and Red Fescue (*Festuca rubra*). Typical calcicole herbs include Pale Flax (*Linum bienne*), Salad Burnet (*Sanguisorba minor*), Burnet-saxifrage (*Pimpinella saxifraga*), Carline Thistle (*Carlina vulgaris*) and Kidney Vetch (*Anthyllis vulneraria*). Orchids are a feature of this habitat, with five species known from the area - Pyramidal Orchid (*Anacamptis pyramidalis*), Common Spotted-orchid (*Dactylorhiza fuchsii*), Common Twayblade (*Listera ovata*), Fragrant Orchid (*Gymnadenia conopsea*) and Bee Orchid (*Ophrys apifera*). Bloody Crane's-bill (*Geranium sanguineum*) was re-found recently in this community at Bray Head - this is a typical species of the Burren and associated areas, and is very rare in eastern Ireland.

Rocky sea cliffs, another Annex I habitat, form most of the seaward boundary at this site and extend for approximately 2 km. Steep clay cliffs extend southwards for a further 1 km, with a small area of clay cliff also at the northernmost part of site. The rocky cliffs are divided by a railway track built in the 1800s. The lower cliffs are fairly steep in places but above the track they are less steep, and often support heath or dry grassland vegetation. In parts the cliffs are up to 60 m in height. Typical species of the more exposed rock areas are Common

Scurvygrass (*Cochlearia officinalis*), Rock Sea-spurrey (S*pergularia rupicola*), Thrift (*Armeria maritima*), Sea Campion (*Silene vulgaris* subsp. *maritima*), and Sea Samphire (*Crithmum maritimum*). On some sections of the cliff face, the locally scarce Tree Mallow (*Lavatera arborea*) is found. Species of the upper cliff flora include Kidney Vetch and Red Fescue. A widespread species found from the mid to upper zones of the cliff face is Ivy (*Hedera helix*), and associated with this is the scarce Wild Madder (*Rubia peregrina*). The clay cliffs in the southern part of the site are steep and unstable and have little vegetation.

A stand of mostly native woodland occurs in the northern part of the site. This is a fairly pure Sessile Oak (*Quercus petraea*) dominated woodland, with some Ash (*Fraxinus excelsior*) and Downy Birch (*Betula pubescens*). Understorey trees include Holly (*Ilex aquifolium*) and Hawthorn (*Crataegus monogyna*). The wood is on shallow drift and the ground flora often has species more associated with heath than woodland. Other habitats which are found at this site include bedrock shore, a sandy/shingle beach and an area of shallow marine water.

Bray Head has an important seabird colony. A census in 1999 gave the following populations: Fulmar (55 pairs), Shag (8 pairs), Kittiwake (781+ pairs), Guillemots (286 individuals), Razorbills (191 individuals) and Black Guillemots (123 individuals). A few pairs of gulls also breed. Both the Kittiwake and Black Guillemot populations are of national importance.

Peregrine Falcon, an Annex I species of the E.U. Birds Directive, breeds at the site, as do Raven and Kestrel. Characteristic bird species of the heath areas include Stonechat, Whitethroat, Linnet and Skylark.

The heath and grassland habitats at this site are threatened by reclamation for agriculture and also by frequent burning. The site is a popular recreational area and is especially used by walkers.

Bray Head is of high conservation importance as it has good examples of two habitats (sea cliffs and dry heath) listed on Annex I of the E.U. Habitats Directive. It also supports a number of rare plant species and has ornithological importance.

23.09.2013

6.3 Appendix 3 – Site Synopsis for Knocksink Wood SAC

Site Name: Knocksink Wood SAC

Site Code: 000725

Knocksink Wood is situated in the valley of the Glencullen River, just north-west of Enniskerry in Co. Wicklow. The fast flowing Glencullen River winds its way over granite boulders along the valley floor. The steep sides of the valley are mostly covered with calcareous drift, and support extensive areas of woodland.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes):

- [7220] Petrifying Springs*
- [91A0] Old Oak Woodlands
- [91E0] Alluvial Forests*

The south-western end of Knocksink Wood comprises oak woodland which is dominated by Sessile Oak (*Quercus petraea*) with a sparse shrub layer of Holly (*Ilex aquifolium*) and Hazel (*Corylus avellana*). In many areas the ground layer consists of a carpet of Great Wood-rush (*Luzula sylvatica*). Other areas are characterised by mixed woodland, with Sessile Oak, Ash (*Fraxinus excelsior*), Beech (*Fagus sylvatica*), Sycamore (*Acer pseudoplatanus*) and occasional conifers. The ground flora includes Ivy (*Hedera helix*) and Bramble (*Rubus fruticosus* agg.), and often luxuriant ferns, including Hart's-tongue (*Phyllitis scolopendrium*), Soft Shield-fern (*Polystichum setiferum*), and mosses. Lichens occur abundantly on some trees.

A notable feature of the wooded slopes are the frequent and extensive springs and seepage areas, and there is tufa formation in several places. Bryophytes are abundant in some areas, and species include *Cratoneuron filicinum*, *Palustriella commutata*, *P. falcata* and *Leiocolea turbinata*. Associated vascular plant species include Golden- saxifrage (*Chrysosplenium oppositifolium*), Water-cress (*Nasturtium officinale*) and Great Horsetail (*Equisetum telmateia*).

Associated with the springs and the river are stands of wet alluvial forest. These areas are dominated by Ash and Alder (*Alnus glutinosa*), and are assigned to the group Carici remotae-Fraxinetum. Other species which occur include willows (*Salix* spp.), Downy Birch (*Betula pubescens*) and Hazel.

Islands in the river and open gravelly areas provide further habitat diversity in this site.

A number of scarce or rare plants occur within the site including Blue Fleabane (*Erigeron acer*), Ivy-leaved Bellflower (*Wahlenbergia hederacea*) and Yellow Archangel (*Lamiastrum galeobdolon*).

This site contains a substantial area of potentially ancient woodland. It has one of the most diverse woodland invertebrate faunas in Ireland, including some wet woodland organisms which are threatened at an international level. Vertebrates noted in the vicinity, either by tracks, sett or sight, include Red Squirrel, Badger, Rabbit and Deer. The woodland supports large populations of birds, including many common passerines (Robin, Blackbird, Song Thrush, Wren, Chaffinch) and crows, such as Rook, Hooded Crow, Magpie, Jackdaw and Raven. Buzzard have been recorded in the area and Dipper are occasionally seen on the river.

The importance of this site lies in the diversity of woodland habitats which occur. Three habitats listed in Annex I of the E.U. Habitats Directive, two of which have priority status

(petrifying springs and alluvial woodland), occur at this site. The presence of rare or threatened plants and invertebrates adds to the interest. Much of this site has been designated a Statutory Nature.

Version date: 23.08.2019

6.4 Appendix 4 – Site Synopsis for Ballyman Glen SAC

Site Name: Ballyman Glen

SAC Site Code: 000713

Ballyman Glen is situated approximately 3 km north of Enniskerry and straddles the County boundary between Dublin and Wicklow. It is orientated in an east-west direction with a stream running through the centre. The glen is bounded mostly by steeply sloping pasture with Gorse (Ulex europaeus) and areas of wood and scrub.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes):

- [7220] Petrifying Springs*
- [7230] Alkaline Fens

Ballyman Glen contains a small strip of alkaline fen which is associated with petrifying spring/seepage areas that have given rise to thick deposits of marl. The vegetation of the main part of the fen is dominated by Greater Tussock-sedge (*Carex paniculata*), Tall Fescue (*Festuca arundinacea*), butterworts (*Pinguicula vulgaris* and *P. lusitanica*), Black Bog-rush (*Schoenus nigricans*) and Broad-leaved Cottongrass (*Eriophorum latifolium*). The site is particularly notable for its orchids, with species including Early Marsh-orchid (*Dactylorhiza incarnata*), Narrow-leaved Marsh-orchid (*D. traunsteineri*) and Marsh Helleborine (*Epipactis palustris*) occurring. In addition, twenty species of sedge have been recorded in the area, including the scarce Long stalked Yellow-sedge (*Carex lepidocarpa*). The fen area is being invaded by Downy Birch (*Betula pubescens*).

Associated with the fen, and also with the woodland elsewhere in the site, are petrifying springs. These lime-encrusted seepage areas are rich in bryophytes including such diagnostic species as *Cratoneuron commutatum* and *C. filicinum*.

Wet woodland and scrub occur along the margins of the stream for most of the length of the glen, extending outwards in areas to create inaccessible and species-rich patches of woodland. The canopy is dominated by Alder (*Alnus glutinosa*), willow (*Salix* spp.) and Ash (*Fraxinus excelsior*). The woodland has a dense shrub layer which includes Hawthorn (*Crataegus monogyna*) and Spindle (*Euonymus europaeus*), and a diverse ground flora with Marsh Hawk's-beard (*Crepis paludosa*), Sanicle (*Sanicula europaea*), Herb-Robert (*Geranium robertianum*), Bugle (*Ajuga reptans*), horsetails (*Equisetum* spp.), Meadowsweet (*Filipendula ulmaria*) and some sedges (*Carex* spp.). Areas of marsh are found in the wetter areas by the stream, particularly at the western end of the site.

There is an area of broadleaved woodland on the steeper southern slopes of the glen. Common species occurring here are Ash and Sycamore (*Acer pseudoplatanus*), with Bramble (*Rubus fruticosus* agg.) colonizing the more open areas. An area of land that slopes towards the fen has been used as a landfill site for domestic refuse. The site is also used for a clay pigeon shoot and shattered clay pigeons are scattered throughout the area.

The fen vegetation at this site is well developed, with an unusually large number of sedge species present. The presence of alkaline fen and of petrifying spring/seepage areas is also particularly notable, as these habitats are listed, the latter with priority status, on Annex I of the E.U. Habitats Directive. Fens are rare in Wicklow and Dublin, and this is one of only two sites in Wicklow for the Narrow-leaved Marsh orchid.

23.09.2013

6.5 Appendix 5 - Sites of Geological Interest in the Environs of Bray

(Source: https://www.gsi.ie/en-ie/publications/Pages/The-Geological-Heritage-of-Wicklow.aspx)

WICKLOW - COUNTY GEOLOGICAL SITE REPORT

NAME OF SITE	**Bray Head**
Other names used for site	
IGH THEME	**IGH 2 Precambrian to Devonian Palaeontology**
TOWNLAND(S)	**Newcourt, Ballynamuddagh, Rathdown Upper**
NEAREST TOWN/VILLAGE	**Bray**
SIX INCH MAP NUMBER	**8**
ITM CO-ORDINATES	**728020E 717060N (summit of headland)**
1:50,000 O.S. SHEET NUMBER	**56 GSI BEDROCK 1:100,000 SHEET NO: 16**

Outline Site Description
Coastal headland with extensive natural exposure and sea cliffs, plus railway cuttings.

Geological System/Age and Primary Rock Type
Bray Head is composed of Cambrian rocks classified as the Bray Group. Most of the rock is greywacke slate, but the best exposed rocks are large sections of quartzite. These thick sandy units were formed as channels during original deposition. They are now more resistant to erosion and form the summit ridges.

Main Geological Interest
Bray Head is a prominent landmark, an important public amenity area and a designated conservation area for its heathland. The scientific and other characteristics result from the geological foundation of hard Cambrian slates and quartzite rocks, for which this is the best place to see them in eastern Ireland. The site is interesting because of a variety of trace fossils found and described first from Bray Head. Although the animals that made them are not known, these traces left behind are now recognised throughout the world. The most notable is *Oldhamia*, a probable feeding trace, which has a radial pattern or a fan shaped pattern. The site is very important for the Irish fossil record it provides from Cambrian rocks, at a time when common invertebrate life forms were just beginning to proliferate.

Site Importance - County Geological Site; recommended for Geological NHA
In terms of Cambrian palaeontology, the Irish record is very sparse. The numerous trace fossils found on Bray Head, which is the type locality for some species, are an important element of Cambrian faunas, best represented on Bray Head. The site should receive protection as a Natural Heritage Area for the palaeontological interest.

Management/promotion issues
The site is relatively robust against most operations. Commercial fossil collecting should not be allowed, but in any case most museum specimens collected were probably found when fresh rock exposure was available in rail cuttings, as it is very difficult to find any fossils today. Any rock operations which compromise the railway line cuttings should be strictly forbidden. Any work on footpaths or other development which is permitted for any reason and which provides new exposures of fresh rock should be notified to GSI or the National Museum by NPWS. The walking path along the coast is very popular and surface upgrades make the site more accessible to all. The summit and paths on the top are well managed by the Council for amenity and recreation.

From the summit area looking south.

Bray Head from the seafront in Bray.

Looking north along the cliff path, with footpath above the railway line.

On the cliff path.

Looking north towards the summit.


BRAY
Bré
Bray Head
Ceann Bhré
Muir Bhreatain
Bray Head
Bray Head

WICKLOW - COUNTY GEOLOGICAL SITE REPORT

NAME OF SITE	**Enniskerry Delta**
Other names used for site	Fassaroe Delta
IGH THEME	**IGH7 Quaternary**
TOWNLAND(S)	**Fassaroe**
NEAREST TOWN/VILLAGE	**Enniskerry**
SIX INCH MAP NUMBER	**3, 4, 7, 8**
ITM CO-ORDINATES	**723500E 717600N (centre of feature)**
1:50,000 O.S. SHEET NUMBER	**56 GSI BEDROCK 1:100,000 SHEET NO. 16**

Outline Site Description
The Enniskerry Delta includes a large accumulation of sands and gravels which has been quarried extensively historically, just outside Enniskerry town.

Geological System/Age and Primary Rock Type
The 'delta' is comprised of deep glaciofluvial and glaciolacustrine sediments and bedrock is at great depths throughout the area of the feature. This bedrock is of Ordovician age, and consists of greywackes, schists and slates. The 'delta' is Quaternary in age, having been deposited at the edge of the northward-retreating ice sheet during deglaciation after the last Ice Age.

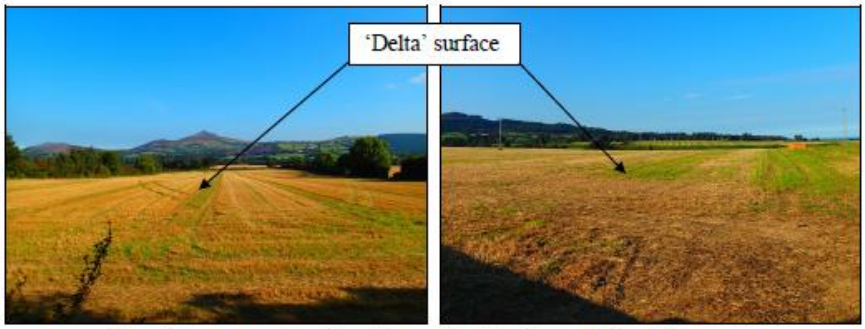
Main Geological or Geomorphological Interest
The delta is a striking feature, a large sand and gravel accumulation deposited into Glacial Lake Enniskerry by meltwaters flowing from ice of the large glacier which occupied the Irish Sea and encroached inland into Wicklow, as it stood between Carrickgollogan and Bray Head. The delta was built out from this ridge into the lake, the surface of which was at about 100m above present sea level. The delta surface at this level can be viewed from the road from Old Connaught to Enniskerry, where one gets an impression of this large, level surface dissected by the small stream that flows from the mouth of The Scalp.

The delta is just under 3 kilometres long and up to 2.5 kilometres wide, covering an area of approximately 6 square kilometres. The 'sands and gravels' are comprised largely of limestone from the Irish Midlands (no limestone bedrock occurs in Wicklow). The sediments are arranged in the typical delta sequence: topset gravels composed of up to 2m depth of horizontally bedded gravels on top; foreset gravels which are steeply dipping and well bedded deposited at the front of the delta; and bottomset, finer sediments of sands and silts, usually underlying the foresets and representing sediment that was originally deposited beyond the steep delta front on the lake floor. There are many old gravel pits in the area around Fassaroe itself, but exposure is poor today.

The delta also affords a very fine view of the Scalp to the northwest, through which much of the sediment making up the delta feature passed. To the south, the low point on the skyline between the two Sugar Loaves indicates the position of the Glen of the Downs.

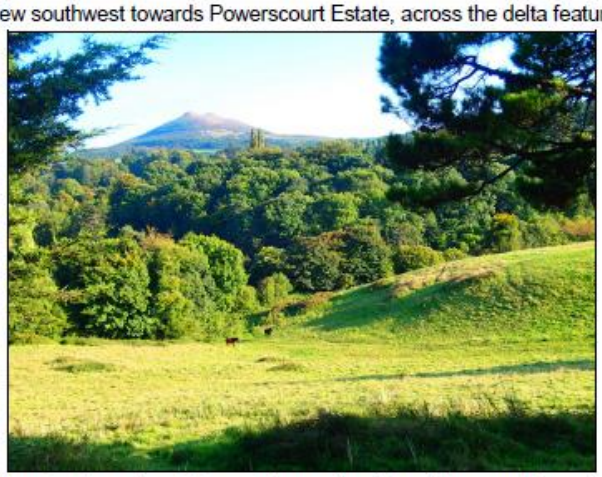
Site Importance – County Geological Site
The feature is a high, striking example of a dry sand and gravel ridge, and stands proud of the surrounding landscape. This is an excellent example of a deglacial, ice marginal, meltwater-deposited feature.

Management/promotion issues
Much of the delta has been removed by quarrying, and access to pits is by permission of the owners or operators and subject to safety protocols. Viewing from the Old Connaught to Enniskerry road, as detailed above, is the best means of viewing the delta surface.

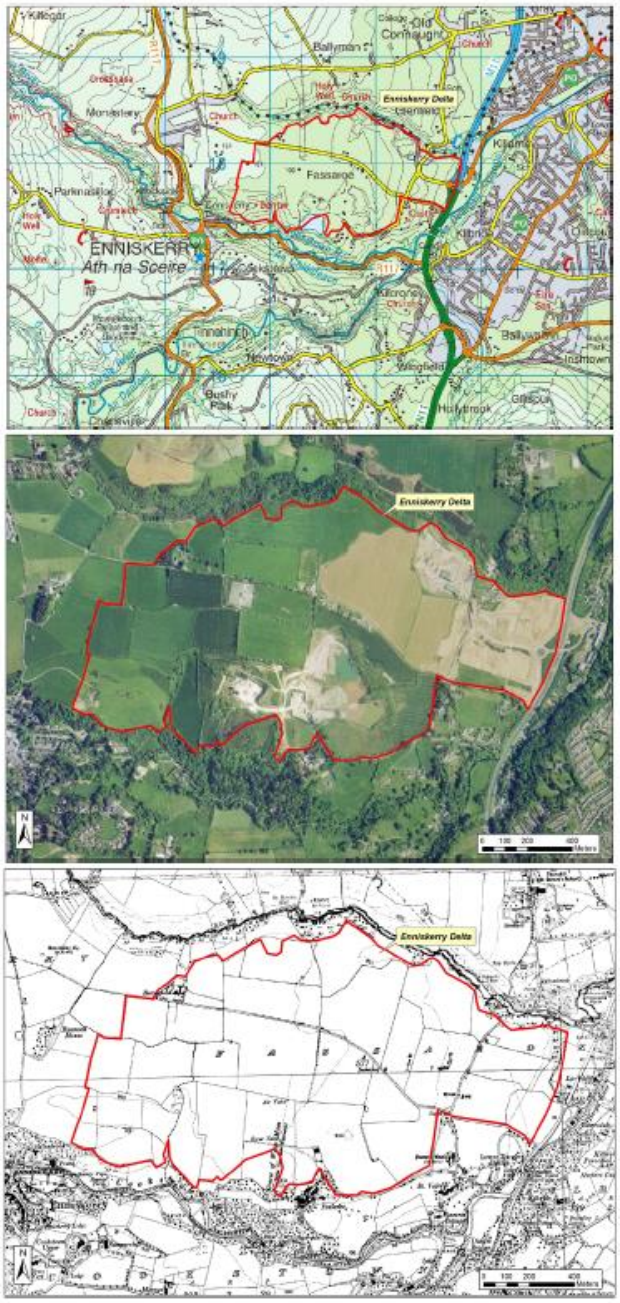


Two views across the flat surface of the Enniskerry Delta at Fassaroe.

View southwest towards Powerscourt Estate, across the delta feature.



Small channel at the edge of the southern edge of the delta near Fassaroe House.


ENNISKERRY
Áth na Sceire
Enniskerry Delta
Enniskerry Delta

WICKLOW - COUNTY GEOLOGICAL SITE REPORT

NAME OF SITE	**River Dargle Valley**
Other names used for site	Dargle Gorge, Lover's Leap
IGH THEME	**IGH7 Quaternary, IGH14 Fluvial\Lacustrine Geomorphology**
TOWNLAND(S)	**Tinnehinch, Cookstown, Kilcroney, Newtown**
NEAREST TOWN/VILLAGE	**Enniskerry**
SIX INCH MAP NUMBER	**7**
ITM CO-ORDINATES	**723380E 716400N (centre of feature)**
1:50,000 O.S. SHEET NUMBER	**56 GSI BEDROCK 1:100,000 SHEET NO. 16**

Outline Site Description
A stretch of the River Dargle meandering from a wide and flat valley into cascades in a deep, steep-sided rocky gorge.

Geological System/Age and Primary Rock Type
The River Dargle gorge is a Quaternary feature, formed during deglaciation towards the end of the last glaciation (after 22,000 years ago). The river course flows over glaciofluvial drift, underlain by Ordovician slates (from Tinnehinch Bridge to gorge) into a rocky gorge cut into Cambrian quartzite and greywacke bedrock (from the gorge to Dargle Bridge near the N11).

Main Geological or Geomorphological Interest
The River Dargle gorge is one of several spectacular subglacial meltwater channels cut into solid bedrock in north Wicklow (see also Glen of the Downs, the Scalp, Glencullen River). This deeply incised landscape feature was formed when high pressure waters, flowing at the base of the overlying ice sheet, cut into and eroded solid bedrock. The gorge is up to 60m deep below Lovers Leap.

The Dargle River rises in granite uplands between War Hill (686m) and Tonduff North (642m) and flows 3km eastwards to Powerscourt Waterfall (120m high), where it descends to the floor of a wide and flat valley (between Maulin and Great Sugar Loaf). The river course meanders northeastwards, meeting the waters of the Glencree River at Onagh Bridge.

Much of the Dargle valley, like that of the Cookstown River to the north, is drift-filled. After it passes 1km east of Tinnehinch Bridge, the river cuts into a ridge of quartzite and becomes constricted into a wooded rocky gorge. At the floor of the gorge, the riverbed steepens, cascading over greywacke and quartzite bedrock, and continues on to Dargle Bridge where it is joined by the waters of the Cookstown (Glencullen) River, and henceforth to the sea at Bray.

Site Importance - County Geological Site
This is an important County Geological site partly because of its dramatic gorge landform, and also because it is one of several meltwater channels in Wicklow that are essential to understanding deglaciation processes, and the recent formation of the Wicklow landscape.

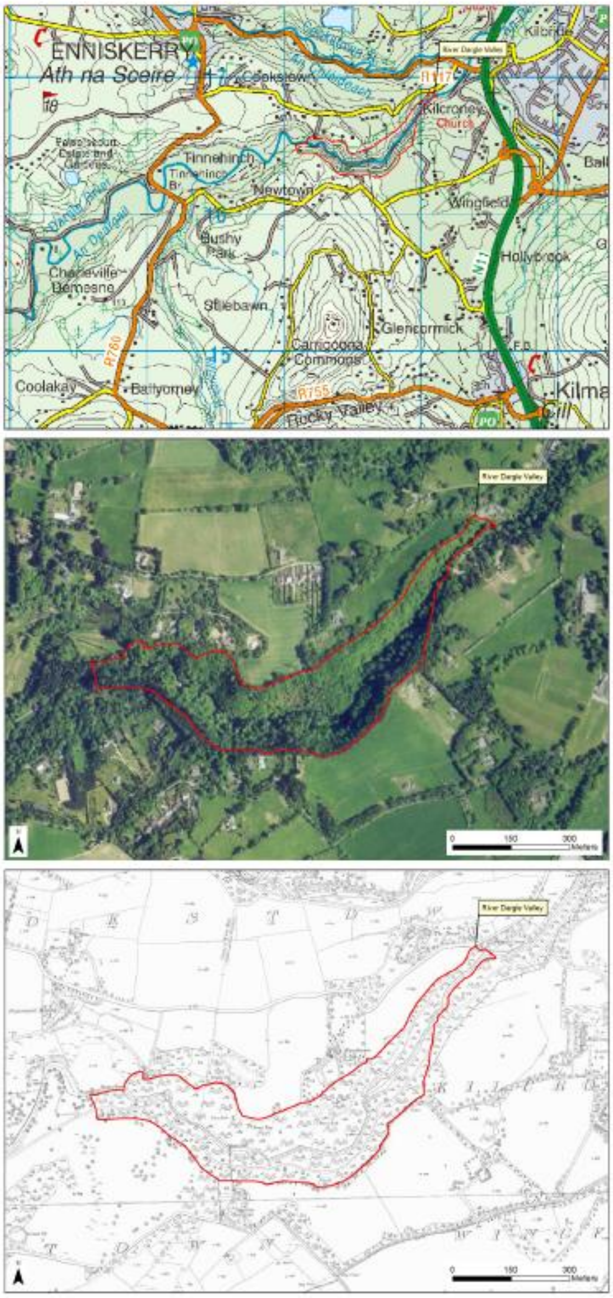
Management/promotion issues
The River Dargle gorge is less widely known or seen than the meltwater channels of the Scalp and the Glen of the Downs on the N11. The northern ridge overlooking the gorge (e.g. at Lover's Leap) is accessed via a wooded path. It is a steep scramble to the riverbank, and obvious caution should be exercised. Public signboards are not recommended in this relatively unspoilt and secluded site, however its value in terms of geological education and as a local natural amenity is ideally suitable for promotion in any relevant literature.

Cascades over Cambrian greywackes below The View\Lover's Leap looking upstream (west).

View downstream from north bank below The Lodge (ruin) towards The View\Lover's Leap.

Wasting on south bank viewed from north bank below Lover's Leap.

Cascades on gorge floor viewed from The View and Lover's Leap looking upstream.



ENNISKERRY
Áth na Sceire
Cookstown
Kilcroney
Church
Tinnehinch
Newtown
Wingfield
Bushy Park
Charleville Demesne
Stilebawn
Hollybrook
Glencormick
Carricoona Commons
Coolakay
Ballyorney
R760
R755
R117
N11
Rocky Valley
River Dargle Valley
0
150
300
Metres

6.6 Appendix 6 - Biodiversity and Nature Conservation Legislation

Nature Conservation Designations

International Conservation Designations
Special Areas of Conservation (SACs) are habitats of international significance that have been identified by NPWS and submitted for designation to the EU. SAC is a statutory designation, which has a legal basis under the EU Habitats Directive (92/43/EEC) as transposed into Irish law through the European Communities (Natural Habitats) Regulations, 1997, which were amended in 1998, 2005 and 2011. The European Communities (Birds and Natural Habitats) Regulations 2011 consolidate the European Communities (Natural Habitats) Regulations 1997 to 2005 and the European Communities (Birds and Natural Habitats)(Control of Recreational Activities) Regulations 2010, as well as addressing transposition failures identified in the Court of Justice of the European Union (CJEU) judgements.

A Special Protection Area (SPA) is a statutory designation, which has a legal basis under the EU Birds Directive (79/409/EEC). The primary objective of SPAs is to maintain or enhance the favourable conservation status of the birds for which the SPAs have been designated.

National Conservation Designations
Proposed NHAs are habitats or sites of interest to wildlife that have been identified by NPWS. These sites become NHAs once they have been formally advertised and land owners have been notified of their designation. NHAs are protected under the Wildlife (Amendment) Act, 2000, from the date they are formally proposed. NHA is a statutory designation according to the Wildlife (Amendment) Act, 2000.

Bats
Eleven species of bats occur in Ireland and all are protected under both national and international law. Nine species are resident and have confirmed breeding populations while two species are deemed to be vagrants as set out in **Table 1** below.

Table 1. Legal protection and status of the Irish bat fauna.

Common and scientific name	Wildlife Act 1976 & Wildlife (Amendment) Acts 2000 & 2010	Irish Red List status	Habitats Directive	Bern & Bonn Conventions
Common pipistrelle *Pipistrellus pipistrellus*	Yes	Least Concern	Annex IV	Appendix II
Soprano pipistrelle *P. pygmaeus*	Yes	Least Concern	Annex IV	Appendix II
Nathusius' pipistrelle *P. nathusii*	Yes	Not referenced	Annex IV	Appendix II
Leisler's bat *Nyctalus leisleri*	Yes	Near Threatened	Annex IV	Appendix II
Brown long-eared bat *Plecotus auritus*	Yes	Least Concern	Annex IV	Appendix II
Lesser horseshoe bat *Rhinolophus hipposideros*	Yes	Least Concern	Annex II Annex IV	Appendix II
Greater horseshoe bat *Rhinolophus ferruginous*		Data Deficient	Annex II Annex IV	Appendix II
Daubenton's bat *Myotis daubentonii*	Yes	Least Concern	Annex IV	Appendix II
Natterer's bat *M. nattereri*	Yes	Least Concern	Annex IV	Appendix II
Whiskered bat *M. mystacinus*	Yes	Least Concern	Annex IV	Appendix II
Brandt's bat *M. brandtii*	Yes	Data Deficient	Annex IV	Appendix II

<u>Wildlife Act 1976</u>

In the Republic, under Schedule 5 of the Wildlife Act 1976, all bats and their roosts are protected by law. It is unlawful to disturb either without the appropriate licence. The Act was amended in 2000.

Bern and Bonn Convention

Ireland has also ratified two international conventions, which afford protection to bats amongst other fauna. These are known as the 'Bern' and 'Bonn' Conventions. The Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention 1982), exists to conserve all species and their habitats, including bats. The Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention 1979, enacted 1983) was instigated to protect migrant species across all European boundaries, which covers certain species of bat.

EU Habitats Directive

All bat species are given strict protection under Annex IV of the EU Habitats Directive, whilst the lesser horseshoe bat (*Rhinolophus hipposideros*) and greater horseshoe bat (*Rhinolophus ferrumequinum*) are given further protection under Annex II of the EU Habitats Directive. Both are listed as a species of community interest that is in need of strict protection and for which E.U. nations must designate Special Areas of Conservation (SACs). The latter is only known from a single site and no breeding populations have been recorded to date. The former are a species of the western seaboard of Ireland and have not yet been recorded on the east coast.

Eurobats

This is a Europe-wide (and neighbouring jurisdictions including North Africa and the Middle East) agreement that originates from efforts to apply the Bonn Convention to the protection of bats within areas to which they may migrate from their European summer or winter sites. There are 33 parties (including Ireland) that have entered into a UN forum to protect the 52 species of bat (based on current knowledge) of Europe.

Threats to Irish bats:

The principal pressures on Irish bat species have been identified as follows:

- urbanized areas (e.g. light pollution);
- bridge/viaduct repairs;
- pesticides usage;
- removal of hedges, scrub, forestry;
- water pollution;
- other pollution and human impacts (e.g. renovation of dwellings with roosts);
- infillings of ditches, dykes, ponds, pools and marshes;
- management of aquatic and bank vegetation for drainage purposes;
- abandonment of pastoral systems;
- speleology and vandalism;
- communication routes: roads; and
- inappropriate forestry management.

Badgers

Badgers (*Meles meles*) are common and widespread in Ireland, and are found in all lowland habitats where the soil is dry and not subject to flooding (Hayden and Harrington, 2000). Badgers are social animals that live in complex underground tunnel systems called setts. Badger territories may vary in size from about 60-200 ha (Smal, 1995). Badgers and their setts legally are protected under the provisions of the Wildlife Act, 1976, and the Wildlife Amendment Act, 2000. It is an offence to intentionally kill or injure a protected species or to wilfully interfere with or destroy the breeding site or resting place of a protected wild animal.

Otter

The otter (*Lutra lutra*) is a legally protected species under the EU Habitats Directive (where it is listed under Annex II) and is found throughout Ireland (Hayden and Harrington, 2000). The otter is listed as internationally important in the Irish Red Data book (Whilde, 1993), is classified as 'near threatened' in Ireland (Marnell, et al. 2009), on a European scale (Temple & Terry, 2007) and on a global scale by the IUCN (2009). It is listed as a strictly protected species under Appendix II of the Bern convention (Council of Europe, 1979). Because it is listed in Appendix 1 of CITES (1979), trade in otter specimens is permitted only in exceptional circumstances.

Annexes II and IV of the E.U. Habitats Directive (92/43/EEC) list the otter as a species of community interest that is in need of strict protection and for which E.U. nations must designate Special Areas of Conservation (SACs). The E.U. Habitats Directive was transposed into Irish law in the European Union (Natural Habitats) Regulations, (SI 94/1997) and 40 candidate SACs have been designated for the otter in Ireland (NPWS (2008)[34]). A Species Action Plan and a Threat Response Plan has been prepared for the otter by NPWS (2008 & 2009)[35].

Kingfisher
The kingfisher (*Alcedo atthis*) is a species listed under Annex I of the EU Birds Directive for which EU nations must designate Special Protection Areas (for birds) (SPAs).

Invasive Species
The Birds and Habitats Regulations (2011) included new legislation on invasive and non-native species in Sections 49 and 50. Since then the EU Regulation on Invasive Alien Species (EU Regulation 1143/2014) also came into force on the 3rd August 2016.

The plant and animal species to which the Birds and Habitats Regulations (2011) apply are presented in Schedule Three. Part 1 details the plants species, while Part 3 outlines those animal or plant vector materials and are presented below.

Third Schedule: Part 1 Plants

Non-native species subject to restrictions under Regulations 49 and 50.

First column	**Second column**	**Third column**
Common name	**Scientific name**	**Geographical application**
American skunk-cabbage	*Lysichiton americanus*	Throughout the State
A red alga	*Grateloupia doryphora*	Throughout the State
Brazilian giant-rhubarb	*Gunnera manicata*	Throughout the State
Broad-leaved rush	*Juncus planifolius*	Throughout the State
Cape pondweed	*Aponogeton distachyos*	Throughout the State
Cord-grasses	*Spartina* (all species and hybrids)	Throughout the State
Curly waterweed	*Lagarosiphon major*	Throughout the State
Dwarf eel-grass	*Zostera japonica*	Throughout the State
Fanwort	*Cabomba caroliniana*	Throughout the State
Floating pennywort	*Hydrocotyle ranunculoides*	Throughout the State
Fringed water-lily	*Nymphoides peltata*	Throughout the State
Giant hogweed	*Heracleum mantegazzianum*	Throughout the State
Giant knotweed	*Fallopia sachalinensis*	Throughout the State
Giant-rhubarb	*Gunnera tinctoria*	Throughout the State
Giant salvinia	*Salvinia molesta*	Throughout the State
Himalayan balsam	*Impatiens glandulifera*	Throughout the State
Himalayan knotweed	*Persicaria wallichii*	Throughout the State
Hottentot-fig	*Carpobrotus edulis*	Throughout the State

[34] NPWS (2008). The status of EU protected species and habitat in Ireland. NPWS, Dublin.
[35] NPWS (2009). Threat Response Plan: Otter (2009-2011). National Parks & Wildlife Service, Department of the Environment, Heritage & Local Government, Dublin.

First column	Second column	Third column
Common name	**Scientific name**	**Geographical application**
Japanese knotweed	*Fallopia japonica*	Throughout the State
Large-flowered waterweed	*Egeria densa*	Throughout the State
Mile-a-minute weed	*Persicaria perfoliata*	Throughout the State
New Zealand pigmyweed	*Crassula helmsii*	Throughout the State
Parrot's feather	*Myriophyllum aquaticum*	Throughout the State
Rhododendron	*Rhododendron ponticum*	Throughout the State
Salmonberry	*Rubus spectabilis*	Throughout the State
Sea-buckthorn	*Hippophae rhamnoides*	Throughout the State
Spanish bluebell	*Hyacinthoides hispanica*	Throughout the State
Three-cornered leek	*Allium triquetrum*	Throughout the State
Wakame	*Undaria pinnatifida*	Throughout the State
Water chestnut	*Trapa natans*	Throughout the State
Water fern	*Azolla filiculoides*	Throughout the State
Water lettuce	*Pistia stratiotes*	Throughout the State
Water-primrose	*Ludwigia* (all species)	Throughout the State
Waterweeds	*Elodea* (all species)	Throughout the State
Wireweed	*Sargassum muticum*	Throughout the State

EU Regulation 1143/2014 on Invasive Alien Species

On 14 July 2016 the European Commission published Commission Implementing Regulation 2016/1141 which set out an initial list of 37 species to which the EU Invasive Alien Species Regulation 1143/2014 applies. The associated restrictions and obligations came into force on 3rd August 2016.

Three distinct types of measures are envisaged under the Directive, which follow an internationally agreed hierarchical approach to combatting IAS:

- Prevention: a number of robust measures aimed at preventing IAS of Union concern from entering the EU, either intentionally or unintentionally.
- Early detection and rapid eradication: Member States must put in place a surveillance system to detect the presence of IAS of Union concern as early as possible and take rapid eradication measures to prevent them from establishing.
- Management: some IAS of Union concern are already well-established in certain Member States and concerted management action is needed so that they do not spread any further and to minimize the harm they cause.

Plant species listed on the directive include:

- American skunk cabbage *Lysichiton americanus*
- Asiatic tearthumb *Persicaria perfoliata* (*Polygonum perfoliatum*)
- Curly waterweed *Lagarosiphon major*
- Eastern Baccharis *Baccharis halimifolia*
- Floating pennywort *Hydrocotyle ranunculoides*
- Floating primrose willow *Ludwigia peploides*
- Green cabomba *Cabomba caroliniana*
- Kudzu vine *Pueraria lobata*
- Parrot's feather *Myriophyllum aquaticum*
- Persian hogweed *Heracleum persicum*
- Sosnowski's hogweed *Heracleum sosnowskyi*
- Water hyacinth *Eichhornia crassipes*
- Water primrose *Ludwigia grandiflora*
- Whitetop weed *Parthenium hysterophorus*

Animal species listed on the directive include:

- Amur sleeper *Perccottus glenii*
- Asian hornet *Vespa velutina*

- Chinese mitten crab *Eriocheir sinensis*
- Coypu *Myocastor coypus*
- Fox squirrel *Sciurus niger*
- Grey squirrel *Sciurus carolinensis*
- Indian house crow *Corvus splendens*
- Marbled crayfish *Procambarus* spp.
- Muntjac deer *Muntiacus reevesii*
- North american bullfrog *Lithobates (Rana) catesbeianus*
- Pallas's squirrel *Callosciurus erythraeus*
- Raccoon *Procyon lotor*
- Red swamp crayfish *Procambarus clarkii*
- Red-eared terrapin/slider *Trachemys scripta elegans*
- Ruddy duck *Oxyura jamaicensis*
- Sacred ibis *Threskiornis aethiopicus*
- Siberian chipmunk *Tamias sibiricus*
- Signal crayfish *Pacifastacus leniusculus*
- Small Asian mongoose *Herpestes javanicus*
- South American coati *Nasua nasua*
- Spiny-cheek crayfish *Orconectes limosus*
- Topmouth gudgeon *Pseudorasbora parva*
- Virile crayfish *Orconectes virilis*

On 13 July 2017 the European Commission published Commission Implementing Regulation 2017/1263 which added a further 12 species to the current list of 37 species regulated under the EU Invasive Alien Species Regulation (1143/2014). These are:

Plant species

- Alligator weed (*Alternanthera philoxeroides*)
- Milkweed (*Asclepias syriaca*)
- Nuttall's waterweed (*Elodea nuttallii*)
- Chilean rhubarb (*Gunnera tinctoria*)
- Giant hogweed (*Heracleum mantegazzianum*)
- Himalayan balsam (*Impatiens glandulifera*)
- Japanese stiltgrass (*Microstegium vimineum*)
- Broadleaf watermilfoil (*Myriophyllum heterophyllum*)
- Crimson fountaingrass (*Pennisetum setaceum*)

Animal species

- Egyptian goose (*Alopochen aegyptiacus*)
- Raccoon dog (*Nyctereutes procyonoides*)
- Muskrat (*Ondatra zibethicus*)

Other Invasive Species

The main guidance document that has been prepared dealing with invasive species/noxious weeds on sites is the NRA *'Guidelines on The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads'* which was published in 2010. This document details other non-native species of note which threaten biodiversity. Observations of these species were also made during the field surveys.

6.7 Appendix 7 - Biodiversity Resources & Linkages

The following is a list of useful links to guides on a range of common biodiversity subjects.

Subject	Link(s)
Bats	www.batconservationireland.org/ www.facebook.com/dublinbatgroup/
Birdwatching	www.birdwatchireland.ie/irelands-birds-birdwatch-ireland/ www.irishbirding.com
Children's Biodiversity Activities	www.birdwatchireland.ie/our-work/fun-learning/for-kids/ www.woodlandtrust.org.uk/blog/2020/03/kids-nature-activities-self-isolation/ www.rspb.org.uk/fun-and-learning/
Garden Biodiversity	https://laois.ie/wp-content/uploads/Garden-Wildlife-Booklet-WEB-17MB.pdf
General Biodiversity Issues	www.biodiversityireland.ie www.npws.ie
Habitat and Nest Boxes	www.biodiversityireland.ie/wordpress/wp-content/uploads/Pollinator-How-to-Guide-1-ALT_FINAL.pdf www.birdwatchireland.ie/app/uploads/2019/09/Nestboxes-factsheet.pdf www.batconservationireland.org/wp-content/uploads/2015/05/BCIrelandGuidelines_BatBoxes.pdf
Hedgerows	www.biodiversityireland.ie/wordpress/wp-content/uploads/Pollinator-How-to-Guide-3-FINAL-1.pdf https://www.heritagecouncil.ie/content/files/conserving_hedgerows_2mb.pdf https://63273-649646-raikfcquaxqncofqfm.stackpathdns.com/wp-content/uploads/2019/04/Hedgerow-CasestudyASPaul21-Send-for-New-Website.pdf https://mosart.ie/wp-content/uploads/2016/02/Irish-Hedgerows-Networks-for-Nature.pdf www.hedgelaying.ie
Interpretative Signage	https://www.nature.scot/sites/default/files/2019-11/Guidance%20-%20Natural%20heritage%20interpretation_1.pdf https://www.heritagecouncil.ie/content/files/bored_of_boards_1mb.pdf https://pollinators.ie/resources/signage-templates/
Invasive Alien Species	https://invasivespeciesireland.com/ https://www.fisheriesireland.ie/Invasive-Species/invasive-species.html
Orchards	http://www.irishseedsavers.ie/blog/wp-content/uploads/2014/10/CreatingAnOrchard.pdf https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/11466/1973262.pdf http://www.wetlandsystems.ie/goephow.html https://www.theorchardproject.org.uk/
Pollinator Friendly Planting Schemes	https://pollinators.ie/resources/ https://pollinators.ie/wordpress/wp-content/uploads/2018/04/Planting-Code-2018-WEB.pdf www.rhs.org.uk
Pollinators	https://pollinators.ie/
Recording Biodiversity	https://www.biodiversityireland.ie/record-biodiversity/
Reducing Herbicide Use	https://greensideup.ie/16-natural-alternatives-to-herbicide-why-you-should-use-them/

Subject	**Link(s)**
Schools & Biodiversity	https://greenschoolsireland.org/biodiveristy/ https://pollinators.ie/schools/ http://www.heritageinschools.ie/teachers-resources/strand/living-things-science/p3?q=&c=
Swifts	https://birdwatchireland.ie/our-work/surveys-research/research-surveys/swift-surveys/ www.swiftconservation.ie/
Tree Identification & Selection	www.treecouncil.ie/nativeirishtrees www.clarecoco.ie/services/planning/publications/tree-design-guide-for-towns-and-villages-in-co-clare-2017-28115.pdf
Urban Watercourses	https://www.fisheriesireland.ie/extranet/fisheries-management-1/1756-ifi-urban-watercourses-planning-guide-2020-update.html
Water Quality	EPA Maps – maps with details about soils, water quality, habitat http://gis.epa.ie/EPAMaps/EnvironmentAndWellbeing https://gis.epa.ie/EPAMaps/Water
Wildflower Meadows	https://pollinators.ie/wordpress/wp-content/uploads/2018/04/How-to-guide-Wildflower-Meadows-2018-WEB.pdf
Wildflowers	www.wildflowersofireland.net/index.php www.bsbi.org
Wildlife Ponds	https://www.wildlifetrusts.org/actions/how-build-pond https://invasivespeciesireland.com/wp-content/uploads/2017/10/AQUATICS_BOOK5.pdf
Woodland	http://www.woodlandsofireland.com/sites/default/files/Management%20Guidelines%20for%20Ireland%27s%20Native%20Woodlands%202017.pdf https://www.forestryfocus.ie/social-environmental-aspects/biodiversity-and-nature-conservation/biodiversity-in-forests/conservation-and-restoration/ http://www.woodlandsofireland.com/sites/default/files/Silvicultural%20Guidelines%20for%20Native%20Trees.pdf

6.8 Appendix 8 - Records held by the National Biodiversity Data Centre for Bray Town (National Biodiversity Data Centre)

Table 1. Records held by the National Biodiversity Data Centre from Bray Town.

Species group	Species name	Record count	Date of last record	Title of dataset	Designation
acarine (Acari)	Acari	3	26/07/2018	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
amphibian	Common Frog (Rana temporaria)	10	13/06/2020	Amphibians and reptiles of Ireland	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex V || Protected Species: Wildlife Acts
annelid	Eiseniella	1	07/07/2009	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
annelid	Eiseniella tetraedra	1	07/07/2009	River Biologists' Database (EPA)	
annelid	Erpobdella	2	02/07/2015	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
annelid	Lumbricidae	1	02/07/2015	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
annelid	Lumbriculidae	3	26/07/2018	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
annelid	Naididae	1	02/07/2015	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
annelid	Tubificidae	3	02/07/2015	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
bird	Alpine Swift (Apus melba)	3	20/03/2023	Birds of Ireland	

Species group	Species name	Record count	Date of last record	Title of dataset	Designation
bird	Arctic Tern (Sterna paradisaea)	1	15/11/2017	Birds of Ireland	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Barn Swallow (Hirundo rustica)	2	21/05/2016	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Black Guillemot (Cepphus grylle)	2	21/05/2016	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Black-billed Magpie (Pica pica)	5	20/03/2023	Birds of Ireland	
bird	Blackcap (Sylvia atricapilla)	1	22/12/2022	Birds of Ireland	
bird	Black-headed Gull (Larus ridibundus)	15	20/03/2023	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
bird	Black-legged Kittiwake (Rissa tridactyla)	7	15/03/2023	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Blue Tit (Cyanistes caeruleus)	2	20/03/2023	Birds of Ireland	
bird	Brent Goose (Branta bernicla)	1	24/03/2016	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Chaffinch (Fringilla coelebs)	3	20/03/2023	Birds of Ireland	
bird	Common Blackbird (Turdus merula)	6	20/03/2023	Birds of Ireland	
bird	Common Buzzard (Buteo buteo)	16	22/12/2022	Birds of Ireland	

Species group	Species name	Record count	Date of last record	Title of dataset	Designation
bird	Common Guillemot (Uria aalge)	2	21/05/2016	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Common Kestrel (Falco tinnunculus)	1	06/04/2021	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Common Kingfisher (Alcedo atthis)	2	15/11/2017	Birds of Ireland	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Common Linnet (Carduelis cannabina)	1	31/01/2011	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Common Moorhen (Gallinula chloropus)	4	10/06/2011	Birds of Ireland	
bird	Common Snipe (Gallinago gallinago)	1	05/02/2017	Birds of Ireland	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section III Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Common Starling (Sturnus vulgaris)	6	21/05/2016	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List

Species group	Species name	Record count	Date of last record	Title of dataset	Designation
bird	Common Swift (Apus apus)	10	21/07/2023	Swifts of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Common Tern (Sterna hirundo)	1	21/05/2016	Birds of Ireland	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Common Whitethroat (Sylvia communis)	1	21/05/2016	Birds of Ireland	
bird	Common Wood Pigeon (Columba palumbus)	1	25/05/2013	Birds of Ireland	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section I Bird Species
bird	Eurasian Collared Dove (Streptopelia decaocto)	3	20/03/2023	Birds of Ireland	
bird	Eurasian Curlew (Numenius arquata)	3	17/01/2023	Birds of Ireland	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section II Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
bird	Eurasian Jackdaw (Corvus monedula)	7	02/02/2023	Birds of Ireland	
bird	Eurasian Jay (Garrulus glandarius)	2	22/12/2022	Birds of Ireland	
bird	Eurasian Oystercatcher (Haematopus ostralegus)	1	26/08/2012	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	European Goldfinch (Carduelis carduelis)	3	02/02/2023	Birds of Ireland	

Species group	Species name	Record count	Date of last record	Title of dataset	Designation
bird	European Shag (Phalacrocorax aristotelis)	4	02/02/2023	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Great Black-backed Gull (Larus marinus)	10	19/06/2017	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Great Cormorant (Phalacrocorax carbo)	5	21/05/2016	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Great Spotted Woodpecker (Dendrocopos major)	6	15/02/2023	Birds of Ireland	
bird	Grey Heron (Ardea cinerea)	6	02/02/2023	Birds of Ireland	
bird	Grey Wagtail (Motacilla cinerea)	1	15/11/2017	Birds of Ireland	
bird	Hedge Accentor (Prunella modularis)	2	06/04/2011	Birds of Ireland	
bird	Herring Gull (Larus argentatus)	15	02/02/2023	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
bird	Hooded Crow (Corvus cornix)	8	05/11/2011	Birds of Ireland	
bird	House Martin (Delichon urbicum)	3	19/06/2017	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	House Sparrow (Passer domesticus)	3	21/05/2016	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Kumlien's Iceland Gull (Larus glaucoides subsp. kumlieni)	1	10/03/2012	Rare birds of Ireland	

Species group	Species name	Record count	Date of last record	Title of dataset	Designation
bird	Lesser Black-backed Gull (Larus fuscus)	5	10/06/2011	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Little Egret (Egretta garzetta)	2	15/11/2017	Birds of Ireland	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species
bird	Little Gull (Larus minutus)	1	03/03/2010	Birds of Ireland	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species
bird	Mallard (Anas platyrhynchos)	11	02/02/2023	Birds of Ireland	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section I Bird Species
bird	Marsh Tit (Poecile palustris)	1	17/12/1990	Rare birds of Ireland	
bird	Meadow Pipit (Anthus pratensis)	1	19/12/2010	Birds of Ireland	
bird	Mediterranean Gull (Larus melanocephalus)	3	31/01/2011	Birds of Ireland	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Mew Gull (Larus canus)	8	02/02/2023	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Mistle Thrush (Turdus viscivorus)	1	15/01/2016	Birds of Ireland	
bird	Montagu's Harrier (Circus pygargus)	1	01/10/1848	Rare birds of Ireland	

Species group	Species name	Record count	Date of last record	Title of dataset	Designation
bird	Mute Swan (Cygnus olor)	19	02/02/2023	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Northern Fulmar (Fulmarus glacialis)	2	11/03/2010	Birds of Ireland	
bird	Northern Wheatear (Oenanthe oenanthe)	1	20/03/2023	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Pallid Swift (Apus pallidus)	1	28/03/2006	Rare birds of Ireland	
bird	Pied Wagtail (Motacilla alba subsp. yarrellii)	10	26/08/2012	Birds of Ireland	
bird	Razorbill (Alca torda)	2	11/03/2010	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Red Grouse (Lagopus lagopus)	1	05/02/2017	Birds of Ireland	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
bird	Red-throated Diver (Gavia stellata)	7	11/03/2010	Birds of Ireland	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Redwing (Turdus iliacus)	1	20/01/2010	Birds of Ireland	
bird	Ring-billed Gull (Larus delawarensis)	6	15/01/2016	Birds of Ireland	

Species group	Species name	Record count	Date of last record	Title of dataset	Designation
bird	Rock Pigeon (Columba livia)	2	02/02/2023	Birds of Ireland	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species
bird	Rock Pipit (Anthus petrosus)	5	19/06/2017	Birds of Ireland	
bird	Rook (Corvus frugilegus)	12	20/03/2023	Birds of Ireland	
bird	Ruddy Turnstone (Arenaria interpres)	10	02/02/2023	Birds of Ireland	
bird	Sand Martin (Riparia riparia)	1	21/05/2016	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Sandwich Tern (Sterna sandvicensis)	1	21/05/2016	Birds of Ireland	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Swan Goose (Anser cygnoides)	4	31/01/2011	Birds of Ireland	
bird	White-throated Dipper (Cinclus cinclus)	1	15/11/2017	Birds of Ireland	
bird	Winter Wren (Troglodytes troglodytes)	4	20/03/2023	Birds of Ireland	
bird	Yellow-billed Cuckoo (Coccyzus americanus)	1	31/12/1832	Rare birds of Ireland	
bird	Yellow-legged Gull (Larus michahellis)	1	08/01/2016	Birds of Ireland	
cartilagenous fish (Chondrichthyes)	Lesser Spotted Dogfish (Scyliorhinus canicula)	1	25/04/2017	Purse Search Shark and Ray Eggcase Sightings Scheme Data, 2007-2018	
cartilagenous fish (Chondrichthyes)	Spotted Ray (Raja montagui)	1	20/03/2018	Purse Search Shark and Ray Eggcase Sightings Scheme Data, 2007-2018	Threatened Species: OSPAR Convention
cartilagenous fish (Chondrichthyes)	Thornback Ray (Raja clavata)	1	20/03/2018	Purse Search Shark and Ray Eggcase Sightings Scheme Data, 2007-2018	Threatened Species: OSPAR Convention
conifer	Stone Pine (Pinus pinea)	1	28/09/2009	Heritage Trees of Ireland	
conifer	Yew (Taxus baccata)	1	28/09/2009	Heritage Trees of Ireland	
crustacean	Asellus	2	02/07/2015	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	

Species group	Species name	Record count	Date of last record	Title of dataset	Designation
crustacean	Gammarus	3	26/07/2018	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
crustacean	Gammarus duebeni	3	14/06/2012	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
fern	Wall-rue (Asplenium ruta-muraria)	1	19/06/2017	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flatworm (Turbellaria)	Arthurdendyus triangulatus	3	04/05/2014	New Zealand Flatworm (Arthurdendyus triangulates) Database	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species
flowering plant	Alexanders (Smyrnium olusatrum)	3	11/04/2020	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Annual Meadow-grass (Poa annua)	1	11/04/2023	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Autumn Hawkbit (Leontodon autumnalis)	1	14/07/2017	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Biting Stonecrop (Sedum acre)	1	19/06/2017	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Black Medick (Medicago lupulina)	2	11/04/2023	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Bluebell (Hyacinthoides non-scripta)	1	12/05/2019	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Broad-leaved Helleborine (Epipactis helleborine)	1	05/08/2014	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Broad-leaved Willowherb (Epilobium montanum)	1	02/06/2019	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Buck's-horn Plantain (Plantago coronopus)	1	19/06/2017	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Bush Vetch (Vicia sepium)	2	11/04/2020	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Butterfly-bush (Buddleja davidii)	1	11/04/2023	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species
flowering plant	Charlock (Sinapis arvensis)	1	14/07/2017	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Chicory (Cichorium intybus)	1	10/09/2019	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	

Species group	Species name	Record count	Date of last record	Title of dataset	Designation
flowering plant	Cleavers (Galium aparine)	2	11/04/2023	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Cock's-foot (Dactylis glomerata)	1	14/07/2017	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Coltsfoot (Tussilago farfara)	4	02/06/2019	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Common Bird's-foot-trefoil (Lotus corniculatus)	3	02/06/2019	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Common Chickweed (Stellaria media)	3	11/04/2023	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Common Dog-violet (Viola riviniana)	4	06/04/2021	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Common Field-speedwell (Veronica persica)	1	02/06/2019	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Common Knapweed (Centaurea nigra)	1	14/07/2017	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Common Mallow (Malva sylvestris)	2	02/06/2019	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Common Mouse-ear (Cerastium fontanum)	1	14/07/2017	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Common Nettle (Urtica dioica)	1	21/05/2016	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Common Ragwort (Senecio jacobaea)	2	11/04/2023	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Common Sorrel (Rumex acetosa)	1	14/07/2017	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Common Spotted-orchid (Dactylorhiza fuchsii)	1	14/07/2017	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Cowslip (Primula veris)	2	09/05/2019	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Creeping Buttercup (Ranunculus repens)	2	02/06/2019	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Creeping Cinquefoil (Potentilla reptans)	1	14/07/2017	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Creeping Thistle (Cirsium arvense)	2	02/06/2019	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Cuckooflower (Cardamine pratensis)	2	11/04/2020	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	

Species group	Species name	Record count	Date of last record	Title of dataset	Designation
flowering plant	Curled Dock (Rumex crispus)	2	19/09/2017	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Cut-leaved Crane's-bill (Geranium dissectum)	1	02/06/2019	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Daisy (Bellis perennis)	1	11/04/2020	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Dove's-foot Crane's-bill (Geranium molle)	1	19/06/2017	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Early Dog-violet (Viola reichenbachiana)	1	11/04/2020	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Enchanter's-nightshade (Circaea lutetiana)	1	29/06/2021	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Erophila verna sens.lat.	1	14/02/2023	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Fairy Flax (Linum catharticum)	1	14/07/2017	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Field Forget-me-not (Myosotis arvensis)	1	14/07/2017	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Field Wood-rush (Luzula campestris)	1	23/04/2018	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Foxglove (Digitalis purpurea)	1	02/06/2019	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Giant Hogweed (Heracleum mantegazzianum)	2	31/12/1987	National Invasive Species Database	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
flowering plant	Gorse (Ulex europaeus)	1	21/05/2016	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Great Willowherb (Epilobium hirsutum)	1	14/07/2017	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Greater Plantain (Plantago major)	3	19/09/2017	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Green Alkanet (Pentaglottis sempervirens)	1	11/04/2020	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Groundsel (Senecio vulgaris)	3	11/04/2023	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	

Species group	Species name	Record count	Date of last record	Title of dataset	Designation
flowering plant	Gypsywort (Lycopus europaeus)	1	29/08/2022	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Hedge Mustard (Sisymbrium officinale)	1	02/06/2019	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Hemlock Water-dropwort (Oenanthe crocata)	1	07/07/2009	River Biologists' Database (EPA)	
flowering plant	Herb-Robert (Geranium robertianum)	2	11/04/2020	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Hogweed (Heracleum sphondylium)	2	14/07/2017	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Holly (Ilex aquifolium)	1	13/04/2020	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Ivy (Hedera helix)	1	13/04/2020	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Ivy-leaved Toadflax (Cymbalaria muralis)	3	13/04/2020	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Japanese Knotweed (Fallopia japonica)	3	31/05/2021	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
flowering plant	Kidney Vetch (Anthyllis vulneraria)	1	19/06/2017	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Lesser Celandine (Ranunculus ficaria)	10	11/04/2023	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Lesser Hawkbit (Leontodon saxatilis)	1	19/09/2017	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Lesser Trefoil (Trifolium dubium)	1	14/07/2017	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Marsh Thistle (Cirsium palustre)	1	14/07/2017	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Marsh Woundwort (Stachys palustris)	1	14/07/2017	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Meadow Saxifrage (Saxifraga granulata)	2	15/04/2020	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Threatened Species: Regionally Extinct
flowering plant	Meadow Vetchling (Lathyrus pratensis)	1	14/07/2017	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	

Species group	Species name	Record count	Date of last record	Title of dataset	Designation
flowering plant	Meadowsweet (Filipendula ulmaria)	1	14/07/2017	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Mexican Fleabane (Erigeron karvinskianus)	3	02/06/2019	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Navelwort (Umbilicus rupestris)	1	24/05/2020	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Nipplewort (Lapsana communis)	1	02/06/2019	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Oxeye Daisy (Leucanthemum vulgare)	2	02/06/2019	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Pale Willowherb (Epilobium roseum)	1	08/09/2020	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Pellitory-of-the-wall (Parietaria judaica)	1	11/04/2023	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Petty Spurge (Euphorbia peplus)	1	13/04/2020	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Pineappleweed (Matricaria discoidea)	2	06/08/2022	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Portland Spurge (Euphorbia portlandica)	1	19/06/2017	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Primrose (Primula vulgaris)	7	09/04/2020	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Purple Toadflax (Linaria purpurea)	1	19/06/2017	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Purple-loosestrife (Lythrum salicaria)	1	07/07/2009	River Biologists' Database (EPA)	
flowering plant	Ramsons (Allium ursinum)	2	03/05/2020	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Ranunculus ficaria subsp. ficaria	1	07/04/2015	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Red Clover (Trifolium pratense)	3	02/06/2019	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Red Dead-nettle (Lamium purpureum)	1	13/04/2020	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Red Valerian (Centranthus ruber)	5	09/05/2023	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Redshank (Persicaria maculosa)	1	19/09/2017	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	

Species group	Species name	Record count	Date of last record	Title of dataset	Designation
flowering plant	Ribwort Plantain (Plantago lanceolata)	1	14/07/2017	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Rock Sea-lavender (Limonium binervosum)	1	02/10/2016	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Rosebay Willowherb (Chamerion angustifolium)	1	14/07/2017	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Russian Comfrey (Symphytum officinale x asperum = S. x uplandicum)	1	14/07/2017	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Selfheal (Prunella vulgaris)	2	04/07/2021	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Shepherd's-purse (Capsella bursa-pastoris)	3	11/04/2023	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Silverweed (Potentilla anserina)	1	14/07/2017	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Slender Speedwell (Veronica filiformis)	1	11/04/2020	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Slender St John's-wort (Hypericum pulchrum)	1	14/07/2017	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Smooth Sow-thistle (Sonchus oleraceus)	1	11/04/2023	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Spear Thistle (Cirsium vulgare)	2	11/04/2023	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Sycamore (Acer pseudoplatanus)	1	21/05/2016	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species
flowering plant	Taraxacum aggregate	1	19/09/2017	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Three-cornered Garlic (Allium triquetrum)	6	19/02/2021	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
flowering plant	Toothwort (Lathraea squamaria)	1	03/04/2021	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Tormentil (Potentilla erecta)	1	14/07/2017	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	

Species group	Species name	Record count	Date of last record	Title of dataset	Designation
flowering plant	Traveller's-joy (Clematis vitalba)	2	11/04/2023	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species
flowering plant	Tufted Vetch (Vicia cracca)	1	14/07/2017	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Turnip (Brassica rapa)	1	09/05/2023	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Tutsan (Hypericum androsaemum)	1	25/04/2020	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Wall Barley (Hordeum murinum)	1	19/06/2017	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Water Mint (Mentha aquatica)	1	14/07/2017	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	White Clover (Trifolium repens)	3	02/06/2019	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Wild Carrot (Daucus carota)	1	14/07/2017	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Wild Teasel (Dipsacus fullonum)	2	21/07/2022	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Winter Heliotrope (Petasites fragrans)	4	11/03/2018	National Invasive Species Database	
flowering plant	Yarrow (Achillea millefolium)	1	19/09/2017	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Yellow Corydalis (Pseudofumaria lutea)	1	19/05/2018	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Yellow Loosestrife (Lysimachia vulgaris)	1	04/07/2021	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
horsetail	Marsh Horsetail (Equisetum palustre)	1	14/07/2017	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
insect - beetle (Coleoptera)	14-spot Ladybird (Propylea quattuordecimpunctata)	1	31/05/2022	Ladybirds of Ireland	
insect - beetle (Coleoptera)	22-spot Ladybird (Psyllobora vigintiduopunctata)	2	05/06/2021	Ladybirds of Ireland	
insect - beetle (Coleoptera)	2-spot Ladybird (Adalia bipunctata)	8	05/07/2023	Ladybirds of Ireland	
insect - beetle (Coleoptera)	7-spot Ladybird (Coccinella septempunctata)	20	07/07/2022	Ladybirds of Ireland	
insect - beetle (Coleoptera)	Dendroxena quadrimaculata	1	31/12/1911	Carrion Beetles of Ireland	

Species group	Species name	Record count	Date of last record	Title of dataset	Designation
insect - beetle (Coleoptera)	Dytiscidae	1	26/07/2018	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
insect - beetle (Coleoptera)	Elmidae	1	26/07/2018	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
insect - beetle (Coleoptera)	Elmis aenea	6	26/07/2018	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
insect - beetle (Coleoptera)	Harlequin Ladybird (Harmonia axyridis)	1	01/11/2019	Ladybirds of Ireland	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
insect - beetle (Coleoptera)	Hydrophilidae	1	02/07/2015	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
insect - beetle (Coleoptera)	Lily Beetle (Lilioceris lilii)	1	12/07/2018	General Biodiversity Records from Ireland	
insect - beetle (Coleoptera)	Limnius volckmari	5	26/07/2018	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
insect - beetle (Coleoptera)	Rutpela maculata	1	07/07/2022	Longhorn Beetles of Ireland	
insect - butterfly	Comma (Polygonia c-album)	5	12/08/2021	Atlas of Butterflies in Ireland 2021	
insect - butterfly	Common Blue (Polyommatus icarus)	4	17/05/2021	Atlas of Butterflies in Ireland 2021	
insect - butterfly	Green-veined White (Pieris napi)	2	20/05/2019	Atlas of Butterflies in Ireland 2021	
insect - butterfly	Holly Blue (Celastrina argiolus)	12	10/08/2021	Atlas of Butterflies in Ireland 2021	
insect - butterfly	Large White (Pieris brassicae)	4	03/08/2021	Atlas of Butterflies in Ireland 2021	
insect - butterfly	Meadow Brown (Maniola jurtina)	1	03/08/2021	Atlas of Butterflies in Ireland 2021	
insect - butterfly	Orange-tip (Anthocharis cardamines)	7	16/04/2020	Atlas of Butterflies in Ireland 2021	
insect - butterfly	Peacock (Inachis io)	8	17/08/2021	Atlas of Butterflies in Ireland 2021	
insect - butterfly	Red Admiral (Vanessa atalanta)	5	20/06/2021	Atlas of Butterflies in Ireland 2021	
insect - butterfly	Small Copper (Lycaena phlaeas)	2	31/12/1969	Distribution Atlas of Butterflies in Ireland 1979 (An Foras Forbartha)	
insect - butterfly	Small Tortoiseshell (Aglais urticae)	9	06/08/2021	Atlas of Butterflies in Ireland 2021	
insect - butterfly	Small White (Pieris rapae)	2	01/05/2020	Atlas of Butterflies in Ireland 2021	
insect - butterfly	Speckled Wood (Pararge aegeria)	8	08/05/2021	Atlas of Butterflies in Ireland 2021	

Species group	Species name	Record count	Date of last record	Title of dataset	Designation
insect - caddis fly (Trichoptera)	Drusus annulatus	4	26/07/2018	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
insect - caddis fly (Trichoptera)	Glossosomatidae	5	26/07/2018	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
insect - caddis fly (Trichoptera)	Goeridae	2	26/07/2018	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
insect - caddis fly (Trichoptera)	Halesus radiatus	1	19/10/2016	Caddisflies (Trichoptera) of Ireland	
insect - caddis fly (Trichoptera)	Hydropsyche	2	02/07/2015	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
insect - caddis fly (Trichoptera)	Lepidostomatidae	1	14/06/2012	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
insect - caddis fly (Trichoptera)	Limnephilidae	3	02/07/2015	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
insect - caddis fly (Trichoptera)	Odontocerum albicorne	1	07/07/2009	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
insect - caddis fly (Trichoptera)	Philopotamidae	2	02/07/2015	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
insect - caddis fly (Trichoptera)	Rhyacophila	2	14/06/2012	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
insect - caddis fly (Trichoptera)	Rhyacophila dorsalis	3	26/07/2018	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
insect - caddis fly (Trichoptera)	Sericostoma	3	02/07/2015	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
insect - dragonfly (Odonata)	Blue-tailed Damselfly (Ischnura elegans)	1	03/06/2019	Dragonfly Ireland 2019 to 2024	
insect - dragonfly (Odonata)	Common Hawker (Aeshna juncea)	1	25/09/2021	Dragonfly Ireland 2019 to 2024	

Species group	Species name	Record count	Date of last record	Title of dataset	Designation
insect - dragonfly (Odonata)	Large Red Damselfly (Pyrrhosoma nymphula)	1	31/07/2000	Dragonfly Ireland	
insect - earwig (Dermaptera)	Common Earwig (Forficula auricularia)	1	23/08/2012	Grasshoppers, Crickets and Allied Insects (Orthoptera) of Ireland	
insect - hymenopteran	Andrena (Andrena) clarkella	1	30/03/2021	Bees of Ireland	
insect - hymenopteran	Arachnospila (Ammosphex) anceps	2	07/06/1921	Wasps of Ireland	
insect - hymenopteran	Bombus (Bombus) lucorum	19	22/01/2023	Bees of Ireland	
insect - hymenopteran	Bombus (Bombus) terrestris	35	28/01/2021	Bees of Ireland	
insect - hymenopteran	Bombus lucorum agg.	40	07/07/2022	Bees of Ireland	
insect - hymenopteran	Ceropales maculata	1	01/08/1912	Wasps of Ireland	
insect - hymenopteran	Common Carder Bee (Bombus (Thoracombus) pascuorum)	11	31/05/2022	Bees of Ireland	
insect - hymenopteran	Common Wasp (Vespula (Paravespula) vulgaris)	3	03/08/2021	Wasps of Ireland	
insect - hymenopteran	Early Bumble Bee (Bombus (Pyrobombus) pratorum)	9	31/05/2022	Bees of Ireland	
insect - hymenopteran	Ectemnius (Clytochrysus) cavifrons	1	03/08/2021	Wasps of Ireland	
insect - hymenopteran	German Wasp (Vespula (Paravespula) germanica)	2	11/09/1923	Wasps of Ireland	
insect - hymenopteran	Gooden's Nomad Bee (Nomada goodeniana)	1	03/05/2021	Bees of Ireland	Threatened Species: Endangered
insect - hymenopteran	Heath Bumble Bee (Bombus (Pyrobombus) jonellus)	1	03/08/2021	Bees of Ireland	
insect - hymenopteran	Honey Bee (Apis mellifera)	2	11/06/2023	Bees of Ireland	
insect - hymenopteran	Large Red Tailed Bumble Bee (Bombus (Melanobombus) lapidarius)	8	24/04/2022	Bees of Ireland	Threatened Species: Near threatened
insect - hymenopteran	Norwegian Wasp (Dolichovespula (Pseudovespula) norwegica)	1	10/06/2020	Wasps of Ireland	
insect - hymenopteran	Red Mason Bee (Osmia (Osmia) rufa)	2	24/04/2022	Bees of Ireland	

Species group	Species name	Record count	Date of last record	Title of dataset	Designation
insect - hymenopteran	Red Wasp (Vespula (Vespula) rufa)	1	23/05/1893	Wasps of Ireland	
insect - hymenopteran	Shaggy Mining Bee (Lasioglossum (Evylaeus) villosulum)	1	06/07/2021	Bees of Ireland	
insect - hymenopteran	Small Black Ant (Lasius niger)	1	27/05/2021	Ants of Ireland	
insect - hymenopteran	Small Garden Bumble Bee (Bombus (Megabombus) hortorum)	2	30/03/2021	Bees of Ireland	
insect - hymenopteran	Tawny Mining Bee (Andrena (Andrena) fulva)	9	04/04/2023	Bees of Ireland	Threatened Species: Regionally Extinct
insect - hymenopteran	Tenthredo brevicornis	1	03/08/2021	Sawflies of Ireland	
insect - mayfly (Ephemeroptera)	Alainites muticus	1	26/07/2018	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
insect - mayfly (Ephemeroptera)	Baetis	6	26/07/2018	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
insect - mayfly (Ephemeroptera)	Baetis rhodani	2	07/07/2009	River Biologists' Database (EPA)	
insect - mayfly (Ephemeroptera)	Caenis	1	14/06/2012	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
insect - mayfly (Ephemeroptera)	Ecdyonurus	2	26/07/2018	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
insect - mayfly (Ephemeroptera)	Rhithrogena	4	26/07/2018	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
insect - mayfly (Ephemeroptera)	Serratella ignita	6	26/07/2018	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
insect - moth	Acleris hyemana	1	03/10/2016	Moths Ireland	
insect - moth	Agonopterix heracliana	2	09/06/1983	Moths Ireland	
insect - moth	Agonopterix propinquella	1	21/05/1983	Moths Ireland	
insect - moth	Agriphila geniculea	3	03/08/2013	Moths Ireland	
insect - moth	Ancylis badiana	2	14/08/1983	Moths Ireland	
insect - moth	Angle Shades (Phlogophora meticulosa)	2	20/10/2012	Moths Ireland	

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insect - moth	Argyresthia brockeella	1	06/07/2013	Moths Ireland	
insect - moth	Barred Fruit-tree Tortrix (Pandemis cerasana)	1	11/07/2014	Moths Ireland	
insect - moth	Barred Red (Hylaea fasciaria)	1	31/12/1879	Moths Ireland	
insect - moth	Bee Moth (Aphomia sociella)	5	11/07/2014	Moths Ireland	
insect - moth	Brimstone Moth (Opisthograptis luteolata)	4	11/07/2014	Moths Ireland	
insect - moth	Brown House-moth (Hofmannophila pseudospretella)	2	06/07/2013	Moths Ireland	
insect - moth	Bucculatrix ulmella	1	31/12/1910	Moths Ireland	
insect - moth	Buff Arches (Habrosyne pyritoides)	3	11/07/2014	Moths Ireland	
insect - moth	Buff Ermine (Spilosoma luteum)	4	11/07/2014	Moths Ireland	
insect - moth	Cameraria ohridella	2	21/09/2017	Moths Ireland	
insect - moth	Celypha lacunana	2	03/08/2013	Moths Ireland	
insect - moth	Chequered Fruit-tree Tortrix (Pandemis corylana)	1	03/08/2013	Moths Ireland	
insect - moth	Clepsis consimilana	1	11/07/2014	Moths Ireland	
insect - moth	Clouded Border (Lomaspilis marginata)	1	11/07/2014	Moths Ireland	
insect - moth	Codling Moth (Cydia pomonella)	2	11/07/2014	Moths Ireland	
insect - moth	Coleophora discordella	1	01/06/2010	Moths Ireland	
insect - moth	Common Emerald (Hemithea aestivaria)	2	11/07/2014	Moths Ireland	
insect - moth	Common Footman (Eilema lurideola)	2	11/07/2014	Moths Ireland	
insect - moth	Common Grass-veneer (Agriphila tristella)	3	03/08/2013	Moths Ireland	
insect - moth	Common Marbled Carpet (Chloroclysta truncata)	3	11/07/2014	Moths Ireland	
insect - moth	Common Pug (Eupithecia vulgata)	4	06/07/2013	Moths Ireland	
insect - moth	Common Quaker (Orthosia cerasi)	1	25/04/1983	Moths Ireland	
insect - moth	Common Swift (Hepialus lupulinus)	1	23/06/2012	Moths Ireland	
insect - moth	Convolvulus Hawk-moth (Agrius convolvuli)	4	30/09/1956	Moths Ireland	
insect - moth	Dark Arches (Apamea monoglypha)	3	03/08/2013	Moths Ireland	
insect - moth	Dark Fruit-tree Tortrix (Pandemis heparana)	1	03/08/2013	Moths Ireland	
insect - moth	Dark Spectacle (Abrostola triplasia)	1	14/08/1983	Moths Ireland	
insect - moth	Diamond-back Moth (Plutella xylostella)	2	09/06/1983	Moths Ireland	
insect - moth	Dotted Clay (Xestia baja)	1	14/08/1983	Moths Ireland	
insect - moth	Double-striped Pug (Gymnoscelis rufifasciata)	3	11/07/2014	Moths Ireland	
insect - moth	Dusky Brocade (Apamea remissa)	2	11/07/2014	Moths Ireland	

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insect - moth	Early Thorn (Selenia dentaria)	3	11/07/2014	Moths Ireland	
insect - moth	Elephant Hawk-moth (Deilephila elpenor)	1	30/06/2019	Moths Ireland	
insect - moth	Emmelina monodactyla	4	03/10/2016	Moths Ireland	
insect - moth	Esperia sulphurella	2	12/05/2018	Moths Ireland	
insect - moth	Eudonia angustea	1	14/08/1983	Moths Ireland	
insect - moth	Eulithis prunata	1	11/07/2014	Moths Ireland	
insect - moth	Fan-foot (Zanclognatha tarsipennalis)	4	05/08/2014	Moths Ireland	
insect - moth	Flame Carpet (Xanthorhoe designata)	2	03/08/2013	Moths Ireland	
insect - moth	Flounced Rustic (Luperina testacea)	1	14/08/1983	Moths Ireland	
insect - moth	Furness Dowd (Blastobasis adustella)	3	03/08/2013	Moths Ireland	
insect - moth	Garden Carpet (Xanthorhoe fluctuata)	6	27/08/2020	Moths Ireland	
insect - moth	Garden Grass-veneer (Chrysoteuchia culmella)	2	11/07/2014	Moths Ireland	
insect - moth	Garden Tiger (Arctia caja)	1	23/04/2019	Moths Ireland	
insect - moth	Ghost Moth (Hepialus humuli)	2	03/08/2013	Moths Ireland	
insect - moth	Heart & Dart (Agrotis exclamationis)	4	11/07/2014	Moths Ireland	
insect - moth	Hebrew Character (Orthosia gothica)	3	21/05/1983	Moths Ireland	
insect - moth	Herald (Scoliopteryx libatrix)	1	11/08/2014	Moths Ireland	
insect - moth	Humming-bird Hawk-moth (Macroglossum stellatarum)	4	15/10/2022	Moths Ireland	
insect - moth	Iron Prominent (Notodonta dromedarius)	1	11/07/2014	Moths Ireland	
insect - moth	July Highflyer (Hydriomena furcata)	1	03/08/2021	Moths Ireland	
insect - moth	Large Yellow Underwing (Noctua pronuba)	7	13/07/2017	Moths Ireland	
insect - moth	Lesser Broad-bordered Yellow Underwing (Noctua janthe)	3	03/08/2013	Moths Ireland	
insect - moth	Lesser Yellow Underwing (Noctua comes)	1	14/08/1983	Moths Ireland	
insect - moth	Light Brown Apple Moth (Epiphyas postvittana)	6	03/10/2016	Moths Ireland	
insect - moth	Light Emerald (Campaea margaritata)	1	11/07/2014	Moths Ireland	
insect - moth	Long-horned Flat-body (Carcina quercana)	2	03/08/2013	Moths Ireland	
insect - moth	Lozotaenia forsterana	2	11/07/2014	Moths Ireland	
insect - moth	Mallow (Larentia clavaria)	2	11/10/2005	Moths Ireland	
insect - moth	Map-winged Swift (Hepialus fusconebulosa form gallicus)	1	11/07/2014	Moths Ireland	
insect - moth	Marbled Green (Cryphia muralis)	1	03/08/2013	Moths Ireland	
insect - moth	Marbled Minor agg. (Oligia strigilis agg.)	4	11/07/2014	Moths Ireland	

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insect - moth	Marbled Orchard Tortrix (Hedya nubiferana)	1	06/07/2013	Moths Ireland	
insect - moth	Mesapamea secalis agg.	2	03/08/2013	Moths Ireland	
insect - moth	Miller (Acronicta leporina)	1	11/07/2014	Moths Ireland	
insect - moth	Monopis crocicapitella	1	25/06/1988	Moths Ireland	
insect - moth	Mother of Pearl (Pleuroptya ruralis)	4	03/08/2021	Moths Ireland	
insect - moth	Mottled Beauty (Alcis repandata)	2	11/07/2014	Moths Ireland	
insect - moth	Muslin Moth (Diaphora mendica)	1	21/05/1983	Moths Ireland	
insect - moth	Nematopogon schwarziellus	1	09/06/1983	Moths Ireland	
insect - moth	Northern Drab (Orthosia opima)	1	25/04/1983	Moths Ireland	
insect - moth	Oak Eggar (Lasiocampa quercus)	1	27/07/2019	Moths Ireland	
insect - moth	Ochreous Pug (Eupithecia indigata)	1	09/06/1983	Moths Ireland	
insect - moth	Pale Tussock (Calliteara pudibunda)	1	17/11/2019	Moths Ireland	
insect - moth	Peach Blossom (Thyatira batis)	2	30/06/2019	Moths Ireland	
insect - moth	Peppered Moth (Biston betularia)	1	06/07/2013	Moths Ireland	
insect - moth	Poplar Hawk-moth (Laothoe populi)	3	24/07/2019	Moths Ireland	
insect - moth	Powdered Quaker (Orthosia gracilis)	2	21/05/1983	Moths Ireland	
insect - moth	Pseudargyrotoza conwagana	1	11/07/2014	Moths Ireland	
insect - moth	Raspberry Moth (Lampronia corticella)	1	09/06/1983	Moths Ireland	
insect - moth	Riband Wave (Idaea aversata)	5	11/07/2014	Moths Ireland	
insect - moth	Scalloped Oak (Crocallis elinguaria)	1	11/07/2014	Moths Ireland	
insect - moth	Scoparia ambigualis	3	11/07/2014	Moths Ireland	
insect - moth	Shaded Broad-bar (Scotopteryx chenopodiata)	1	07/08/2014	Moths Ireland	
insect - moth	Sharp-angled Carpet (Euphyia unangulata)	1	03/08/2013	Moths Ireland	
insect - moth	Silver Y (Autographa gamma)	1	03/10/2016	Moths Ireland	
insect - moth	Silver-ground Carpet (Xanthorhoe montanata)	1	06/07/2013	Moths Ireland	
insect - moth	Single-dotted Wave (Idaea dimidiata)	3	13/07/2017	Moths Ireland	
insect - moth	Six-spot Burnet (Zygaena filipendulae)	1	02/07/2021	Moths Ireland	
insect - moth	Small Fan-foot (Herminia grisealis)	2	11/07/2014	Moths Ireland	
insect - moth	Small Fan-footed Wave (Idaea biselata)	1	03/08/2013	Moths Ireland	
insect - moth	Small Magpie (Eurrhypara hortulata)	2	28/05/2020	Moths Ireland	
insect - moth	Small Square-spot (Diarsia rubi)	1	14/08/1983	Moths Ireland	
insect - moth	Smoky Wainscot (Mythimna impura)	3	11/07/2014	Moths Ireland	
insect - moth	Snout (Hypena proboscidalis)	1	11/07/2014	Moths Ireland	
insect - moth	Spectacle (Abrostola tripartita)	1	11/07/2014	Moths Ireland	

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insect - moth	Spotted Magpie (Phlyctaenia coronata)	1	03/08/2013	Moths Ireland	
insect - moth	Spruce Carpet (Thera britannica)	1	06/07/2013	Moths Ireland	
insect - moth	Square-spot Rustic (Xestia xanthographa)	1	14/08/1983	Moths Ireland	
insect - moth	Straw Grass-veneer (Agriphila straminella)	3	11/07/2014	Moths Ireland	
insect - moth	Swallow-tailed Moth (Ourapteryx sambucaria)	5	11/07/2014	Moths Ireland	
insect - moth	True Lover's Knot (Lycophotia porphyrea)	1	11/07/2014	Moths Ireland	
insect - moth	Turnip Moth (Agrotis segetum)	1	14/07/2012	Moths Ireland	
insect - moth	Udea lutealis	2	14/08/1983	Moths Ireland	
insect - moth	Udea olivalis	2	06/07/2013	Moths Ireland	
insect - moth	Uncertain (Hoplodrina alsines)	4	11/07/2014	Moths Ireland	
insect - moth	White Ermine (Spilosoma lubricipeda)	1	06/07/2013	Moths Ireland	
insect - moth	White-shouldered House-moth (Endrosis sarcitrella)	1	03/08/2013	Moths Ireland	
insect - moth	Willow Beauty (Peribatodes rhomboidaria)	3	11/07/2014	Moths Ireland	
insect - orthopteran	Oak Bush-cricket (Meconema thalassinum)	1	20/08/2012	Grasshoppers, Crickets and Allied Insects (Orthoptera) of Ireland	
insect - orthopteran	Speckled Bush-cricket (Leptophyes punctatissima)	1	12/10/2013	Grasshoppers, Crickets and Allied Insects (Orthoptera) of Ireland	
insect - stonefly (Plecoptera)	Amphinemura	1	26/07/2018	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
insect - stonefly (Plecoptera)	Amphinemura sulcicollis	1	26/07/2018	Stoneflies (Plecoptera) of Ireland	
insect - stonefly (Plecoptera)	Chloroperlidae	2	02/07/2015	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
insect - stonefly (Plecoptera)	Leuctra	4	26/07/2018	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
insect - stonefly (Plecoptera)	Perla bipunctata	3	26/07/2018	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
insect - stonefly (Plecoptera)	Protonemura	1	07/07/2009	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	

Species group	Species name	Record count	Date of last record	Title of dataset	Designation
insect - true bug (Hemiptera)	Birch Shieldbug (Elasmostethus interstinctus)	1	04/10/2017	True Bugs (Heteroptera) of Ireland	
Insect - true bug (Hemiptera)	Eurydema ventralis	1	31/07/2020	True Bugs (Heteroptera) of Ireland	
insect - true bug (Hemiptera)	Forest Bug (Pentatoma rufipes)	3	23/08/2020	True Bugs (Heteroptera) of Ireland	
insect - true bug (Hemiptera)	Green Shieldbug (Palomena prasina)	4	22/06/2020	True Bugs (Heteroptera) of Ireland	
insect - true fly (Diptera)	Chironomidae	5	26/07/2018	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
insect - true fly (Diptera)	Dicranota	5	26/07/2018	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
insect - true fly (Diptera)	Diptera larva (Diptera)	2	26/07/2018	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
insect - true fly (Diptera)	Marmalade Hoverfly (Episyrphus balteatus)	1	20/05/2023	Hoverflies (Syrphidae) of Ireland	
insect - true fly (Diptera)	Meliscaeva cinctella	1	02/06/2019	Hoverflies (Syrphidae) of Ireland	
insect - true fly (Diptera)	Simuliidae	5	26/07/2018	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
insect - true fly (Diptera)	Symplecta stictica	1	31/07/1940	Craneflies of Ireland	
insect - true fly (Diptera)	Tipula unca	1	31/07/1940	Craneflies of Ireland	
liverwort	Crescent-cup Liverwort (Lunularia cruciata)	1	25/09/2010	Bryophytes of Ireland	Threatened Species: Least concern
marine mammal	Common Porpoise (Phocoena phocoena)	3	09/04/2020	Explore Your Shore	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts || Threatened Species: OSPAR Convention
Marine mammal	Dolphin species possibly Harbour Porpoise	1	04/03/2018	IWDG Cetacean Strandings Database	

Species group	Species name	Record count	Date of last record	Title of dataset	Designation
marine mammal	Grey Seal (Halichoerus grypus)	1	21/05/2016	Mammals of Ireland 2016-2025	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex V || Protected Species: Wildlife Acts
mollusc	Ancylus fluviatilis	4	14/06/2012	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
mollusc	Jenkins' Spire Snail (Potamopyrgus antipodarum)	3	26/07/2018	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species
mollusc	Wandering Snail (Radix balthica)	1	26/07/2018	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
moss	Aloina	1	25/09/2010	Bryophytes of Ireland	
moss	Bird's-claw Beard-moss (Barbula unguiculata)	1	25/09/2010	Bryophytes of Ireland	Threatened Species: Least concern
moss	Common Pottia (Tortula truncata)	1	25/09/2010	Bryophytes of Ireland	Threatened Species: Least concern
moss	Fallacious Beard-moss (Didymodon fallax)	1	25/09/2010	Bryophytes of Ireland	Threatened Species: Least concern
moss	Fissidens taxifolius var. taxifolius	1	25/09/2010	Bryophytes of Ireland	Threatened Species: Least concern
moss	Lesser Bird's-claw Beard-moss (Barbula convoluta)	1	25/09/2010	Bryophytes of Ireland	Threatened Species: Least concern
moss	Long-beaked Water Feather-moss (Rhynchostegium riparioides)	1	07/07/2009	River Biologists' Database (EPA)	
moss	Pea Bryum (Bryum ruderale)	1	25/09/2010	Bryophytes of Ireland	Threatened Species: Least concern
moss	Pointed Spear-moss (Calliergonella cuspidata)	1	25/09/2010	Bryophytes of Ireland	Threatened Species: Least concern
moss	Smallest Pottia (Microbryum davallianum)	2	25/09/2010	Bryophytes of Ireland	
moss	Strap-leaved Earth-moss (Ephemerum recurvifolium)	3	25/09/2010	Bryophytes of Ireland	Threatened Species: Data deficient
moss	Swartz's Feather-moss (Oxyrrhynchium hians)	1	25/09/2010	Bryophytes of Ireland	Threatened Species: Least concern
moss	Tortula acaulon var. acaulon	2	25/09/2010	Bryophytes of Ireland	
moss	Variable Forklet-moss (Dicranella varia)	1	25/09/2010	Bryophytes of Ireland	Threatened Species: Least concern
reptile	Common Lizard (Zootoca vivipara)	1	01/09/1908	Reptiles and Amphibians Distribution Atlas 1978 (An Foras Forbartha)	Protected Species: Wildlife Acts
spider (Araneae)	Misumena vatia	1	16/06/2020	Citizen Science Spider Records for Ireland	
spider (Araneae)	Steatoda	2	01/08/2019	Citizen Science Spider Records for Ireland	

Species group	Species name	Record count	Date of last record	Title of dataset	Designation
terrestrial mammal	Brown Rat (Rattus norvegicus)	2	03/11/2015	Atlas of Mammals in Ireland 2010-2015	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
terrestrial mammal	Daubenton's Bat (Myotis daubentonii)	15	29/08/2014	National Bat Database of Ireland	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
terrestrial mammal	Eastern Grey Squirrel (Sciurus carolinensis)	22	19/12/2022	Mammals of Ireland 2016-2025	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> EU Regulation No. 1143/2014 || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
terrestrial mammal	Eurasian Badger (Meles meles)	1	16/05/2008	Road Kill Survey	Protected Species: Wildlife Acts
terrestrial mammal	Eurasian Red Squirrel (Sciurus vulgaris)	2	07/07/2022	Mammals of Ireland 2016-2025	Protected Species: Wildlife Acts
terrestrial mammal	European Otter (Lutra lutra)	2	04/09/2017	Mammals of Ireland 2016-2025	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
terrestrial mammal	European Rabbit (Oryctolagus cuniculus)	2	16/09/2018	Mammals of Ireland 2016-2025	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species
terrestrial mammal	Irish Hare (Lepus timidus subsp. hibernicus)	1	05/02/2017	Mammals of Ireland 2016-2025	
terrestrial mammal	Lesser Noctule (Nyctalus leisleri)	1	08/08/2005	National Bat Database of Ireland	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
terrestrial mammal	Pine Marten (Martes martes)	1	11/07/2021	Mammals of Ireland 2016-2025	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex V || Protected Species: Wildlife Acts

Species group	Species name	Record count	Date of last record	Title of dataset	Designation
terrestrial mammal	Pipistrelle (Pipistrellus pipistrellus sensu lato)	3	29/09/2007	National Bat Database of Ireland	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
terrestrial mammal	Red Fox (Vulpes vulpes)	9	15/03/2023	Mammals of Ireland 2016-2025	
terrestrial mammal	Sika Deer (Cervus nippon)	1	06/04/2011	Atlas of Mammals in Ireland 2010-2015	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland) || Protected Species: Wildlife Acts
terrestrial mammal	Soprano Pipistrelle (Pipistrellus pygmaeus)	4	29/09/2007	National Bat Database of Ireland	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
terrestrial mammal	West European Hedgehog (Erinaceus europaeus)	89	22/12/2022	Mammals of Ireland 2016-2025	Protected Species: Wildlife Acts