

Project Co-Ordinator

Dr. Liam Lysaght

The National Biodiversity Data Centre
Beechfield House
SETU West Campus
Carriganore,
Waterford
X91 PE03

Tel.: 051 306 240

llysaght@biodiversityireland.ie

Data Analysis

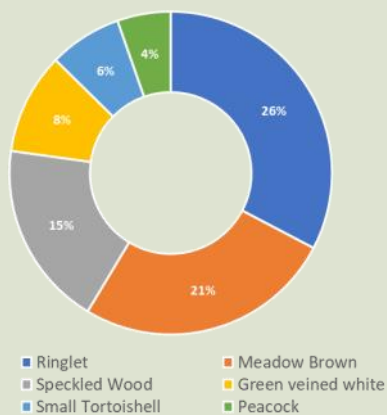
Dr. Michelle Judge

The National Biodiversity Data Centre
Beechfield House
SETU West Campus
Carriganore,
Waterford
X91 PE03

Tel.: 051 306 240

mjudge@biodiversityireland.ie

At a glance - top 6 species



**National
Biodiversity
Data Centre**

Documenting Ireland's Wildlife



Irish Butterfly Monitoring Scheme



No increase in any resident species populations compared to 2008

About the Irish Butterfly Monitoring Scheme

The IBMS is a citizen science scheme that tracks population and phenology (flight) trends in Irish butterflies, detecting the impacts of factors such as land use and climate change on the Irish butterfly population. It involves walking a fixed route (transect) on a weekly basis from 1st April to 30th September each year, when weather conditions are favourable. The number of the different butterfly species seen along different sections of each transect are recorded. These records are the basic data upon which the analysis is based.

Results at a glance

The multi-species index showed that once again there was a moderate decline (-57%) in the number of butterflies flying in 2022 when compared with the baseline year of 2008 (the start of the monitoring scheme). With regards to the individual species trends, results showed that no resident species increased when compared to 2008. The Holly Blue (*Celastrina argiolus*: pictured right) was the only species to show an increase in the last 10 years, with all other species showing uncertain, stable or moderately declining trends. In terms of the raw data, the most abundant species in 2022 was the Ringlet (*Aphantopus hyperantus*) which accounted for 26% of the total number of butterflies recorded. The Speckled Wood (*Pararge aegeria*) was recorded across the highest number of sites (124), while it was a nice surprise that Purple Hairstreak was recorded at one site, given its very restricted status and difficulty of observation.



Figure 1 . The top 3 species in 2022. Ringlet (26% of all butterflies; left), Meadow Brown (21% of all butterflies; top right) and Speckled Wood (15% of all butterflies; bottom right)

Irish Butterfly Monitoring Scheme Analysis

What type of analysis is completed?

Two separate analyses are undertaken to determine the change (if any) in butterfly populations. The first is a multi-species index which estimates the overall direction of change in the butterfly population, as a whole, using Ireland's most common resident butterflies (15 species). A trend line is estimated from the multi-species index which summarises the overall direction of the population change since the commencement of the recording scheme. The second analysis is the estimation of a trend that tracks the status of the individual species of butterflies. This analysis includes migratory species of butterflies to Ireland and not just native or common species like in the multi-species analysis.

The trends are then categorized based on how much they change per year (e.g., more or less than 5%) and the confidence associated with that prediction (i.e., is the change statistically significant and what is the confidence interval surrounding the trend?).

Individual species trends were estimated using the 'rbms' package (Schmucki R., Harrower C.A., Dennis E.B. (2022) rbms: Computing generalised abundance indices for butterfly monitoring count data. R package version 1.1.3. <https://github.com/RetoSchmucki/rbms>). Multispecies index was estimated using international best practice methods developed by Statistics Netherlands (Multi-Species Indicators, MSI, Soldaat et al., 2017).

The Five Visit butterfly Monitoring Scheme

The Five Visit Monitoring Scheme (FVMS) is a reduced effort butterfly transect monitoring scheme that involves walking a fixed route five times per year counting all the butterflies seen. It helps track changes in butterfly populations and provides valuable information on regional butterfly abundance across the country. It is intended to be used for recorders who don't have time to devote to the full weekly monitoring scheme and although it does not collect the detailed flight period data of the full 26-week scheme, it collects sufficient data to enable changes in butterfly populations to be tracked.

The data collected in the Five Visit Monitoring Scheme is now included in the analysis of the full Irish Butterfly Monitoring Scheme. Combining the data from the FVMS and IBMS allows us to generate more accurate trends and will improve the quality of our results.

Butterfly phenology 2008-2022

In 2022, the butterfly flight curve peaked at week 15 (mid-July) meaning that the highest percentage of butterflies were flying during this time. The peak of the flight curve occurred 2 weeks earlier and was higher than the peak observed in 2021. The percentage of butterflies flying in the last 5 weeks of the scheme were lower in 2022 than in both 2021 and the overall average of all years included in the scheme.

Met Eireann's Annual Climate Statement for 2022, stated that it was the 'warmest year on record' and had 'below average rainfall'. High pressure from the Azores built over Ireland numerous times in July and August leading to warmer and drier than average weather, this may have influenced the higher than average peak flight curve observed in 2022. September 2022 was recorded as 'wetter than average' and this may have influenced the reduction in butterflies flying when compared to 2021, where lower than average rainfall was recorded for the same month (Met Eireann's according to Annual Climate Statement for 2021).

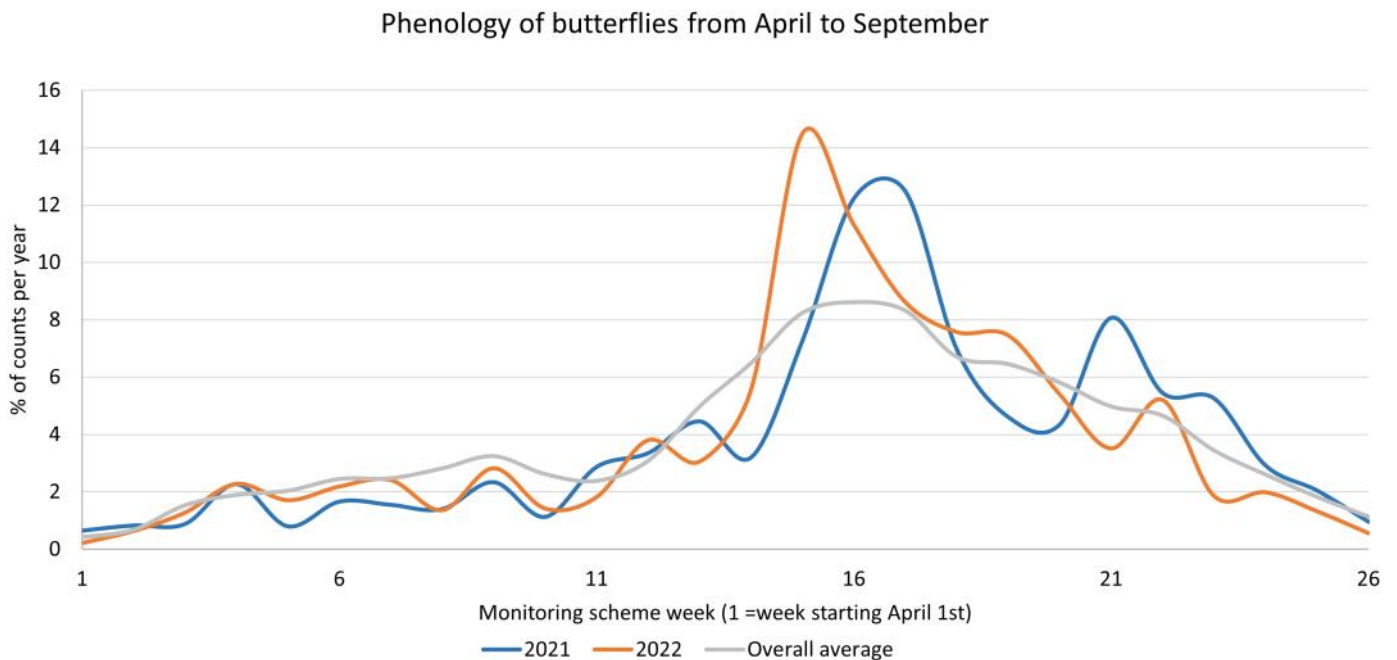


Figure 2. Phenology (flight curves) of butterflies across monitoring scheme week. This was completed using the raw data thus it includes all records and species recorded in the Irish Butterfly Monitoring Scheme



Figure 3. The Peacock was in the top 6 species recorded in 2022. They are part of the Vanessids group and are large and distinctive so typically easy to identify

Irish butterfly population trends 2008-2022

Multi-species analysis

Results from multi-species index of the 15 most common butterfly species highlight that there was a moderate decline (-57%) in the population of butterflies in 2022 when compared to the baseline year of 2008 (Figure 4). Results from the last 10 years (from 2013 to 2022) also show a moderate decline, but this was at a lower rate of 14%.

For a species to be included in the multi-species index it must be recorded in at least 5 sites on at least 2 occurrences. Sites must be visited at least 3 times, and must be visited during at least 10% of the flight period of the species being investigated. Sites are weighted based on the proportion of flight curve sampled thus ensuring that the absence of species are correctly accounted for

in the statistical model used for the data analysis. Table 1 (page 5) identifies the species that are included in the multi-species analysis based on this criteria.

It is important to note that the multi-species index is a useful index to show overall trends in population changes of common butterflies of the wider countryside. However, it does not generate sufficiently reliable data to track how the populations of our more localised or specialised butterfly species are changing. This is because there is currently not enough data being recorded for these species. In order to capture adequate information on these species additional species specific schemes (like the Marsh Fritillary Monitoring Scheme) are needed.

Multispecies Index of butterfly population change 2008-2022

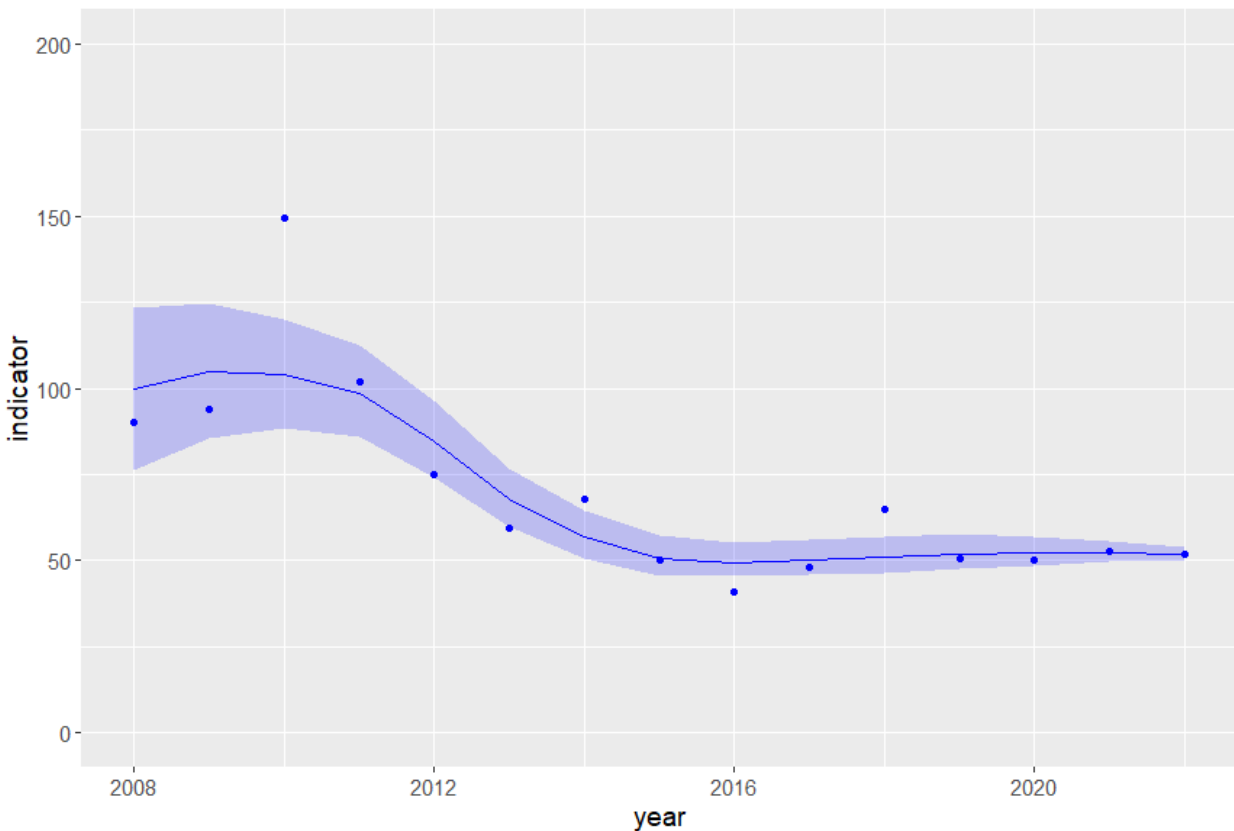


Figure 4. The multi-species index derived from the amalgamation of the population trends of 15 common species of butterflies from 2008 to 2022. The dark purple line is the smoothed trend line, and the circle markers represent the multispecies index per year. The shaded area surrounding the trend line is the 95% confidence interval calculated using the Bootstrapping method.

Table 1. Irish Butterfly population trends 2008 to 2022

Species	Trend 2008 - 2022	MSI
Brimstone	Stable	No
Holly Blue		Yes
Orange Tip	Moderate decline	Yes
Small Copper		Yes
Small Heath		Yes
Small Tortoiseshell		Yes
Wall Brown		No
Wood White		Yes
Green Veined White	Strong decline	Yes
Large White		Yes
Meadow Brown		Yes
Ringlet		Yes
Small White		Yes
Speckled Wood		Yes
Dark Green Fritillary	Uncertain	No
Dingy Skipper		No
Grayling		No
Peacock		Yes
Silver Washed Fritillary		Yes
Common Blue		Yes
Painted Lady*	Moderate increase	No
Red Admiral*	Moderate increase	No

*Migrant species; changes in numbers recorded in Ireland largely dependent on conditions external to Ireland

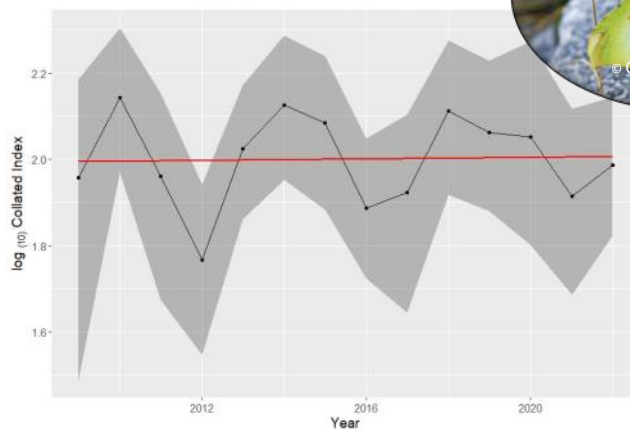
Population trends of individual butterfly species



© Niamh Phelan

Brimstone *Gonepteryx rhamni*

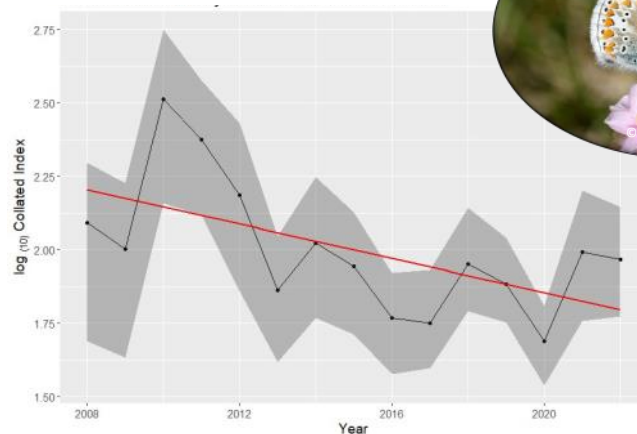
Trend 2009 -2022: Stable
Trend 2013-2022: Stable
Conservation status (2010):
Least Concern



© Oslin Duffy

Common Blue *Polyommatus icarus*

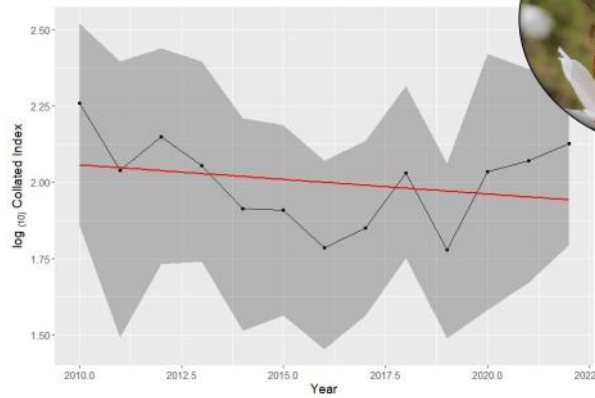
Trend 2008-2021: Uncertain
Trend 2012-2021: Uncertain
Conservation status (2010):
Least Concern



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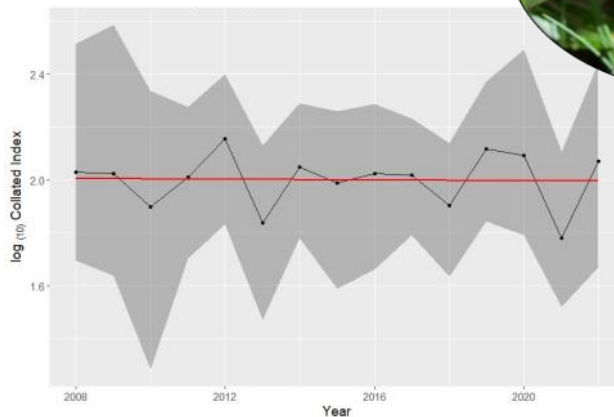
Dark Green Fritillary *Argynnis aglaja*

Trend 2010-2022: Uncertain
Trend 2012-2022: Uncertain
Conservation status (2010):
Vulnerable



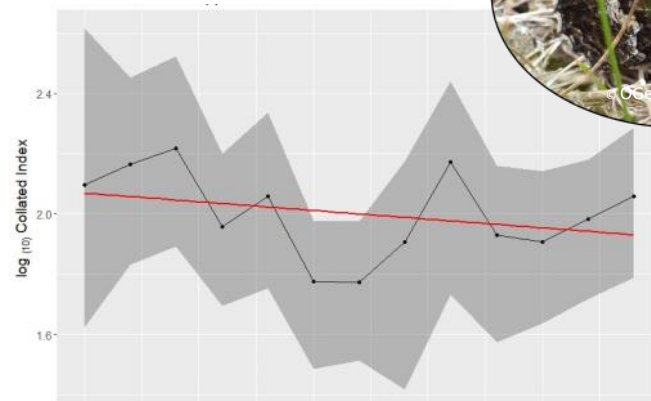
Dingy Skipper *Erynnis tages*

Trend 2008-2022: Uncertain
Trend 2013-2022: Uncertain
Conservation status (2010):
Near Threatened



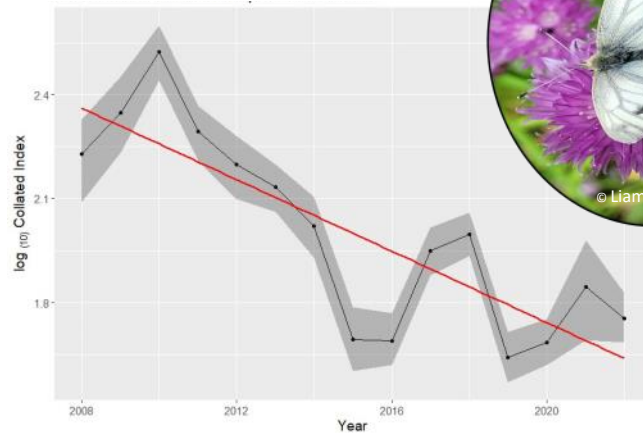
Grayling *Hipparchia semele*

Trend 2010-2022 :Uncertain
Trend 2013-2022: Uncertain
Conservation status (2010):
Near Threatened



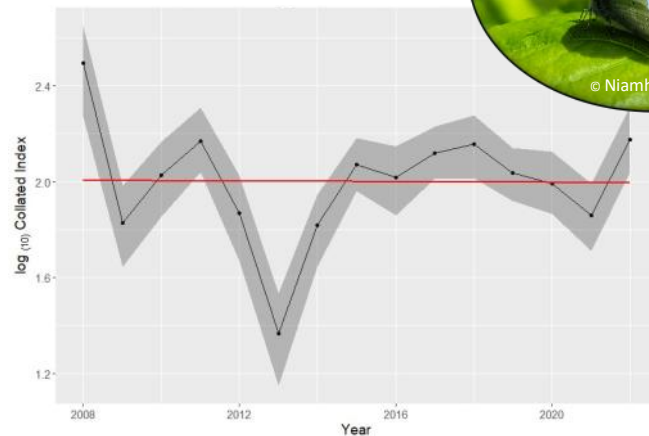
Green-veined White *Pieris napi*

Trend 2008-2022: Strong decline (-81%)
 Trend 2013-2022:
 Moderate decline (-45%)
 Conservation status (2010):
 Least concern



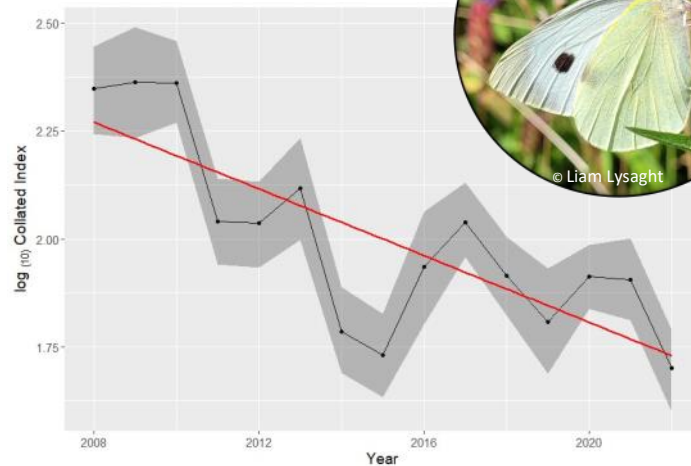
Holly Blue *Celastrina argiolus*

Trend 2008-2022: Stable
 Trend 2013-2022:
 Strong increase (+149%)
 Conservation status (2010):
 Least Concern



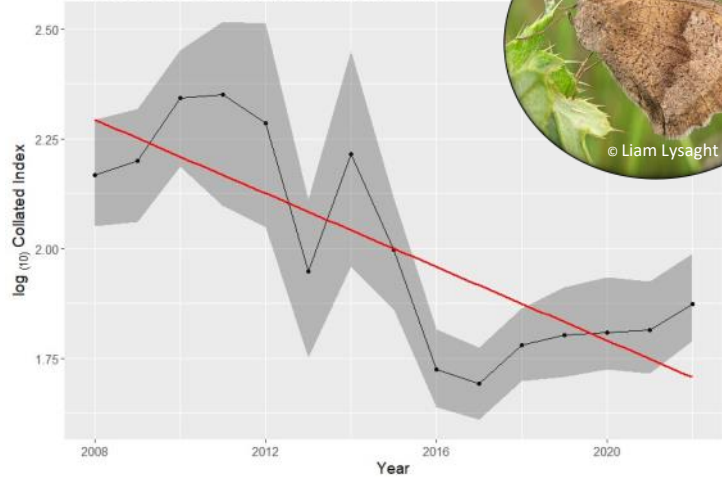
Large White *Pieris brassicae*

Trend 2008-2022:
 Strong decline (-71%)
 Trend 2013-2022:
 Moderate decline (-27%)
 Conservation status (2010):
 Least Concern



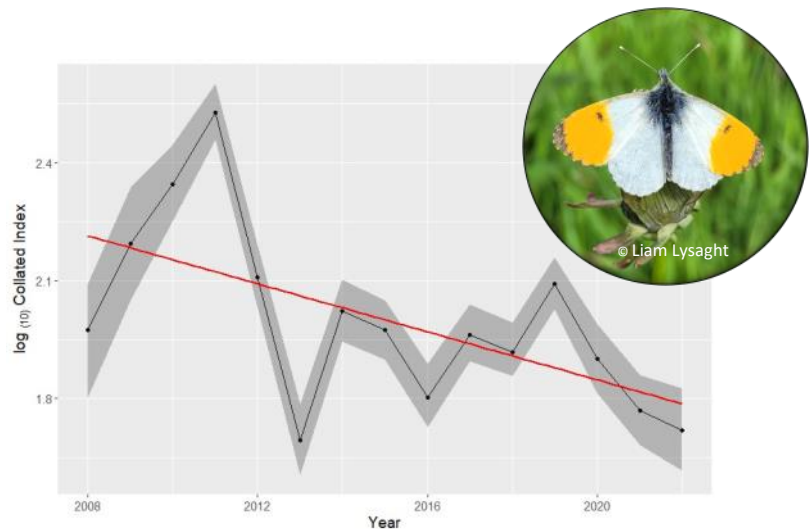
Meadow Brown *Maniola jurtina*

Trend 2008-2022:
Strong decline (-74%)
Trend 2013-2022: Uncertain
Conservation status (2010):
Least Concern



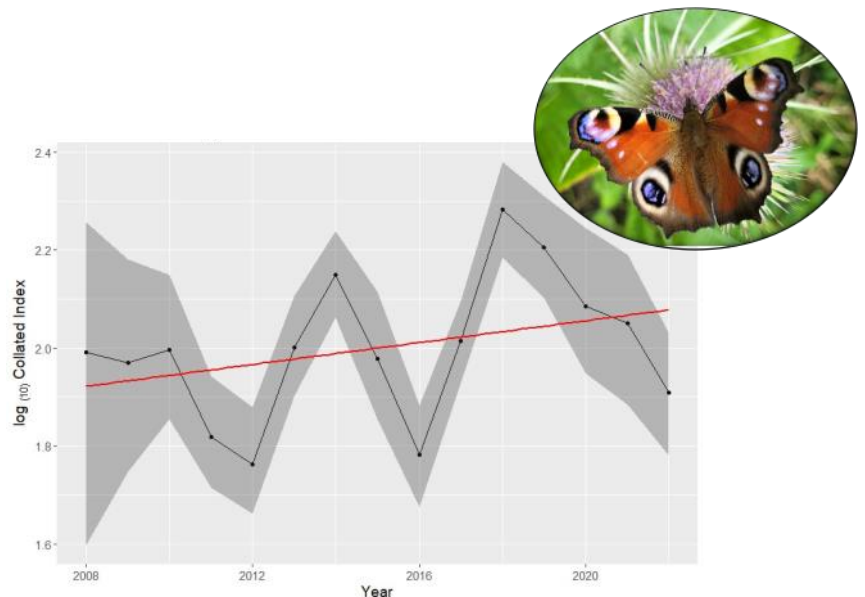
Orange Tip *Anthocharis cardamines*

Trend 2008-2022:
Moderate decline (-63%)
Trend 2013-2022: Stable
Conservation status (2010):
Least Concern



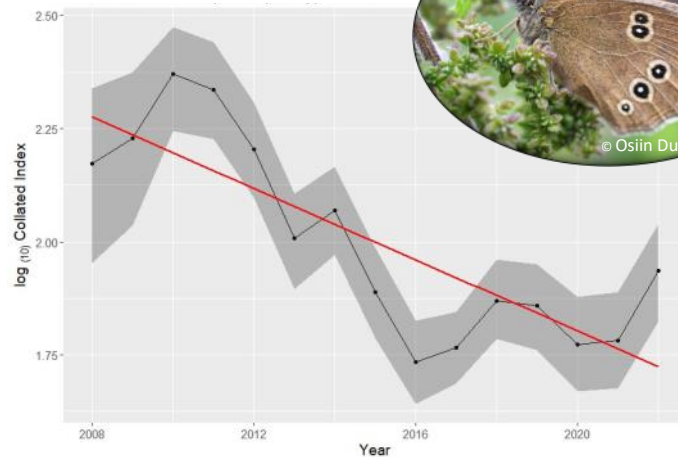
Peacock *Aglais io*

Trend 2008-2022: Uncertain
Trend 2013-2022: Stable
Conservation status (2010):
Least Concern



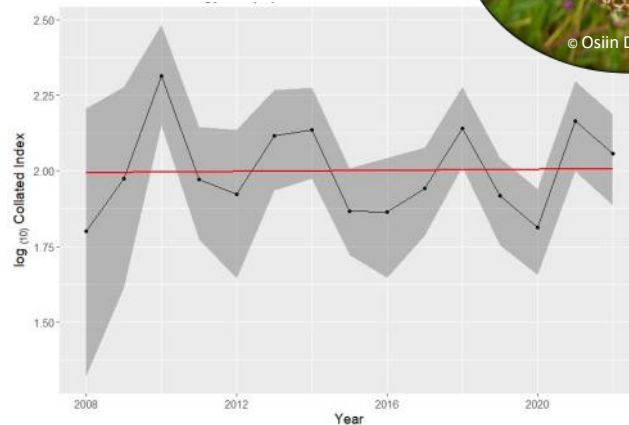
Ringlet *Aphantopus hyperantus*

Trend 2008-2022:
Strong decline (-72%)
Trend 2013-2022:
Moderate decline (-29%)
Conservation status (2010):
Least Concern



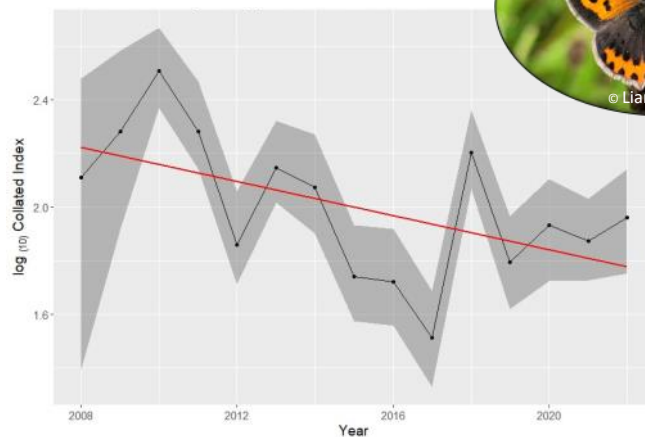
Silverwashed Fritillary *Argynnis paphia*

Trend 2008-2022: Uncertain
Trend 2013-2022: Uncertain
Conservation status (2010):
Least Concern



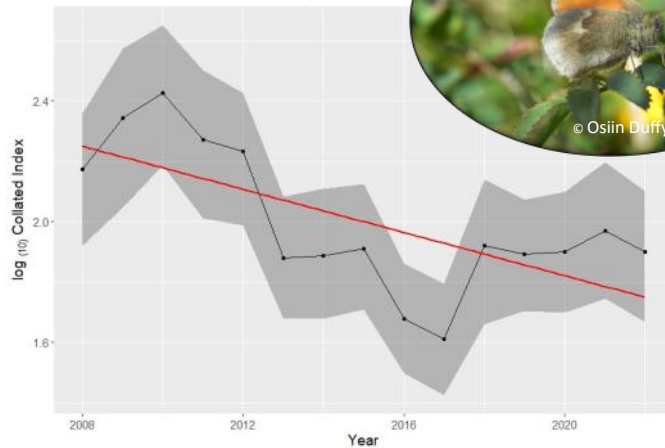
Small Copper *Lycaena phlaeas*

Trend 2008-2022:
Moderate decline (-64%)
Trend 2013-2022: Uncertain
Conservation status (2010):
Least Concern



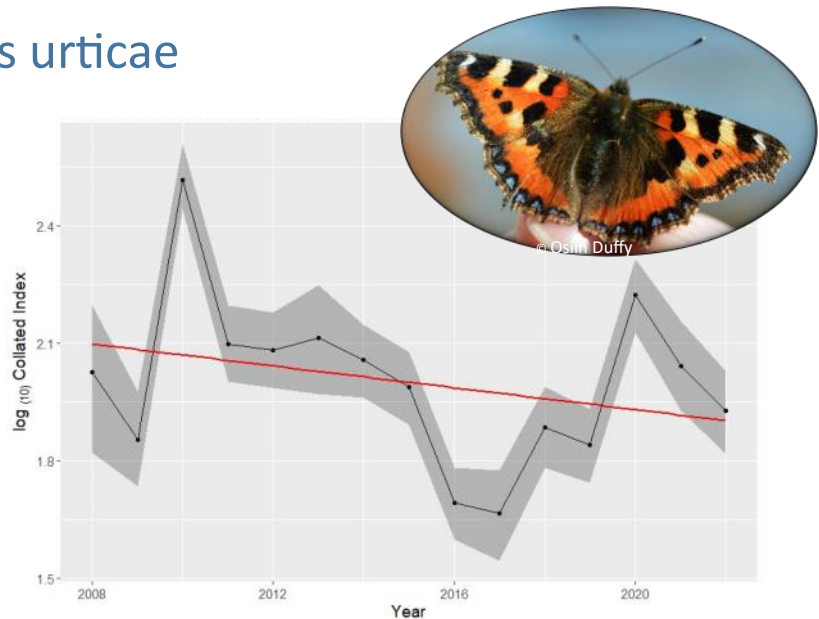
Small Heath *Coenonympha pamphilus*

Trend 2008-2021:
Moderate decline (-68%)
Trend 2012-2021: Uncertain
Conservation status (2010):
Near Threatened



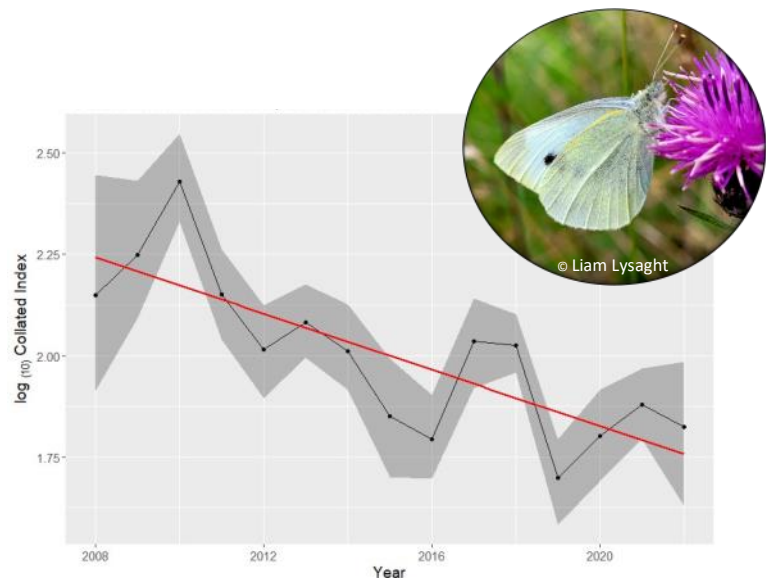
Small Tortoiseshell *Aglais urticae*

Trend 2008-2022:
Moderate decline (-36%)
Trend 2013-2022: Stable
Conservation status (2010):
Least Concern



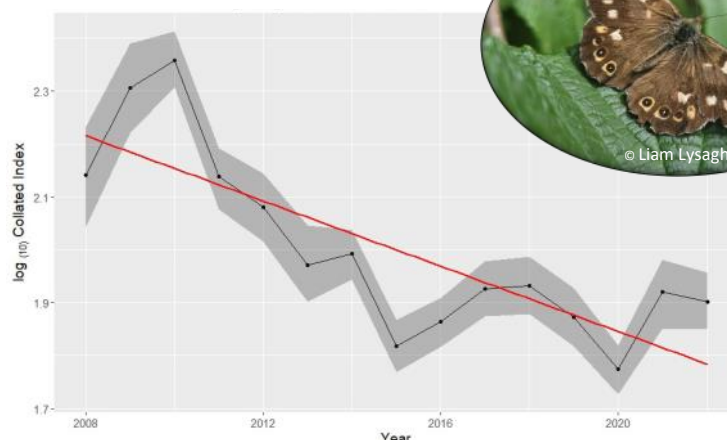
Small White *Pieris rapae*

Trend 2008-2022: Strong decline
(-67%)
Trend 2013-2022: Moderate decline
(-38%)
Conservation status (2010): Least
Concern



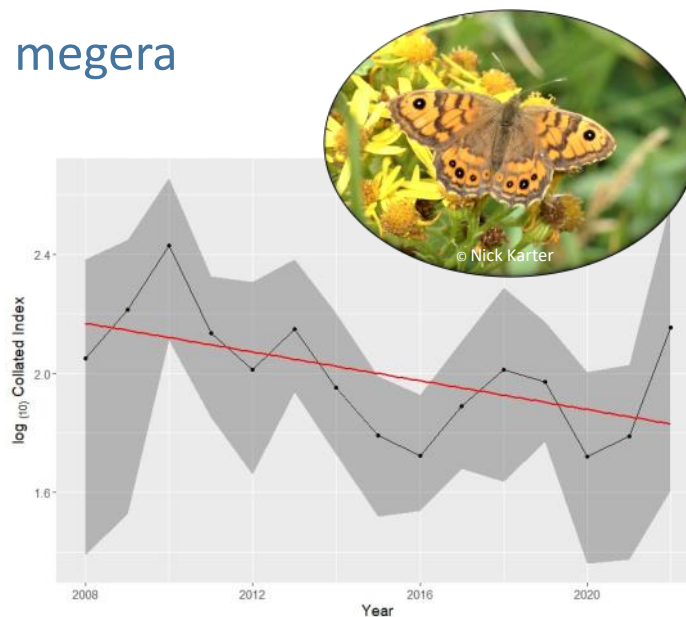
Speckled Wood *Pararge aegeria*

Trend 2008-2022:
Strong decline (-63%)
Trend 2013-2022: Stable
Conservation status (2010):
Least Concern



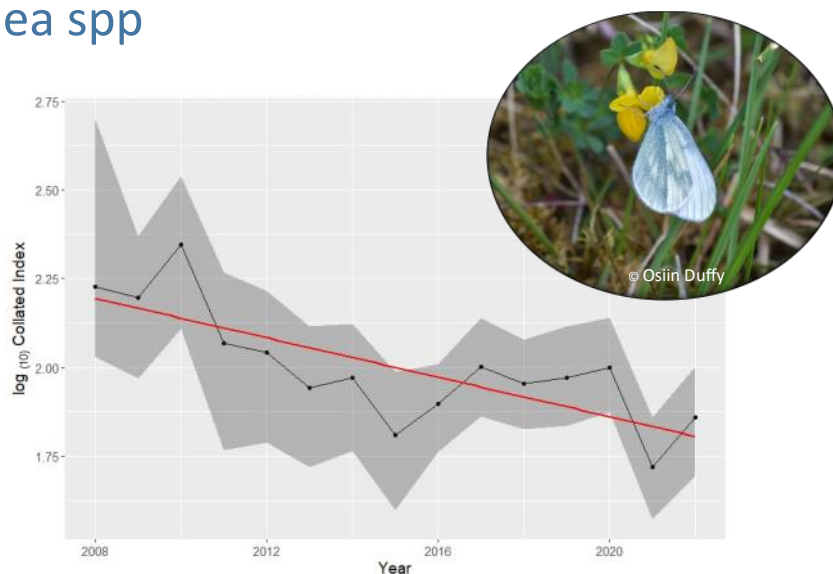
Wall brown *Lasiommata megera*

Trend 2008-2021:
Moderate decline (-53%)
Trend 2012-2021: Uncertain
Conservation status (2010):
Endangered



Wood White agg. *Leptidea* spp

Trend 2008-2022 :
Moderate decline (-59%)
Trend 2013-2022: Uncertain
Conservation status (2010):
L. sinapis, Near Threatened; *L. ju-vernica*, Least Concern



Ensuring continued success of the IBMS

For a species to be included in the multi-species analysis it needs to fulfil certain criteria. It is very important to carry out as many transect walks as possible to ensure as much data as possible can be included in the analysis. Where some weeks are missed, it is possible to calculate estimated counts using the previous and subsequent counts, but the fewer missed counts the greater the accuracy of the data.

Table 2 outlines the summary statistics of the numbers of records, transects walk, number of records submitted and the number of butterflies for the last 5 years. As

seen in the table the number of recorders and transects has been dropping since 2018. This drop off in number of transect walks is a concern for the future of the scheme. Undertaking a butterfly transect requires a big and regular commitment from participants throughout the summer and not many people are able to make this commitment in a voluntary capacity. We will explore options for how to grow the number of transects walked over the coming months.

Tables 4 shows the list of transects plus the recorders for the Irish Butterfly Monitoring Schemes.

Table 2 Summary statistics for the last 5 years of the IBMS

	2018	2019	2020	2021	2022
Total number of recorders	115	85	73	69	68
Total number of transects	118	87	97	88	85
Total number of records	15,436	13,111	10,585	10,074	11,217
Total number of butterflies	46,012	36,171	26,547	27,900	31,137

Five visit monitoring scheme

Data from the Five Visit Monitoring Scheme walks completed as part of the Irish Pollinator Monitoring Scheme have been incorporated in the analysis. The Irish Pollinator Monitoring Scheme is funded jointly by the Department of Agriculture, Food and the Marine and National Parks and Wildlife Service. In 2022, this monitoring scheme contributed over 30 new transects to the analysis.

Table 3 shows the summary statistics for the five-visit monitoring scheme. Table 5 shows the sites and recorders involved in the five-visit monitoring scheme.

Table 3 Summary statistics for the last 5 years of the five-visit monitoring scheme

	2018	2019	2020	2021	2022
Total number of recorders	29	44	21	19	49
Total number of Transects	36	88	46	28	64
Total number of records	2,363	7,534	2,443	2,125	2,455
Total number of Butterflies	7,048	22,903	6,061	4,852	8,823

Contributing to pan-European monitoring

The Irish Butterfly Monitoring Scheme is one of 22 monitoring schemes across Europe that form the European Butterfly Monitoring Scheme. An initiative of Butterfly Conservation Europe and the Centre for Ecology & Hydrology (UK) the partnership brings together data from 10,816 transects walked by 100,000 citizen scientist from 22 different countries. This allows pan-European butterfly trends to be detected and provides the data to enable the European Grassland Butterfly Indicator to be generated.

The European Grassland Butterfly Indicator 1990-2020 shows that Europe has lost 36% of its grassland butterfly populations since 1990 (Figure 5). The European Grassland Butterfly Indicator has been identified as one of the indicators of progress for the proposed EU Nature Restoration Law. This will greatly increase the importance and value of maintaining and extending butterfly monitoring in Ireland.

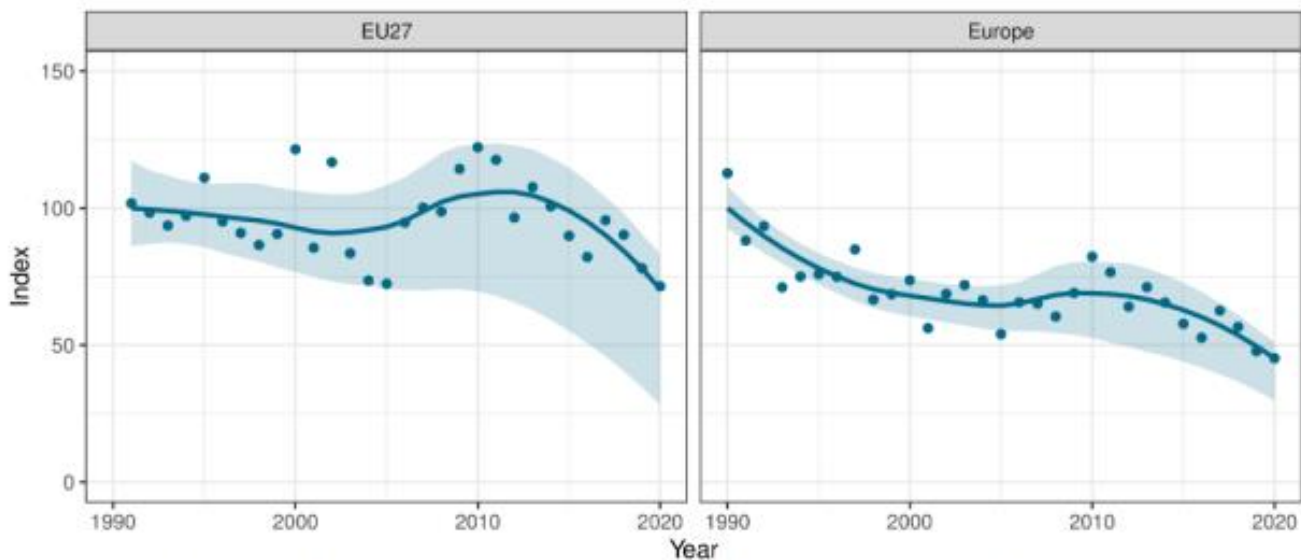


Figure 5. Grassland butterfly indicators for EU27 and Europe. Shaded areas represent 95% confidence intervals.



Figure 6. Selection of grassland species found in Ireland

Summary of Butterfly transects (2008-2022) from Carnowen Farm, Co Donegal

Recorders: Liz & Ralph Sheppard

Liz and Ralph Sheppard have been involved with the Irish Butterfly Monitoring Scheme since it began in 2008. Earlier this year they shared details of the monitoring they have done since the scheme started. The Sheppard's say 'it has been interesting to watch the changes over the years' and that the Butterfly Monitoring Scheme adds greatly to their overall monitoring of biodiversity on their farm. Below are some graphs the Sheppard's compiled.

Total number of butterflies per year

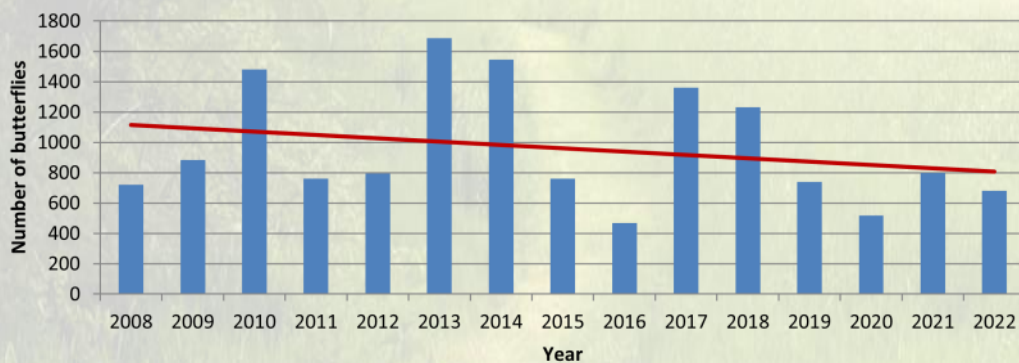
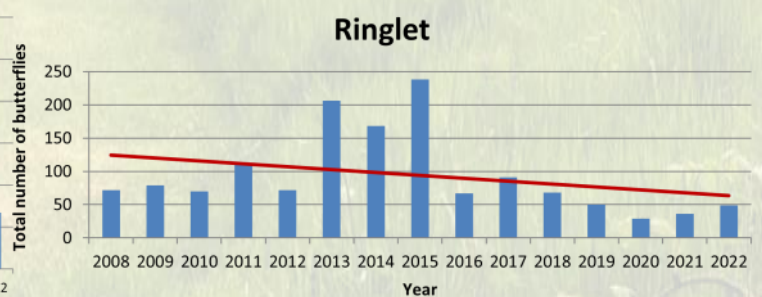
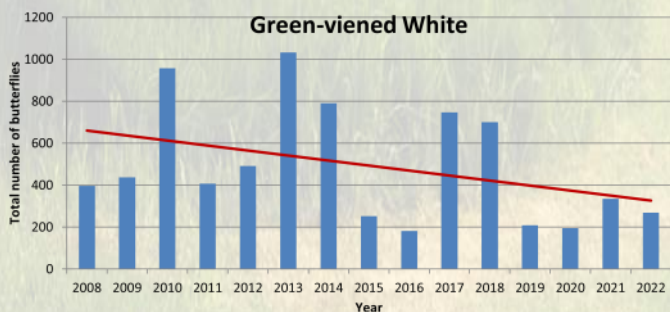


Figure 7. Total number of butterflies per year (average 962) across 15 years



Peacock

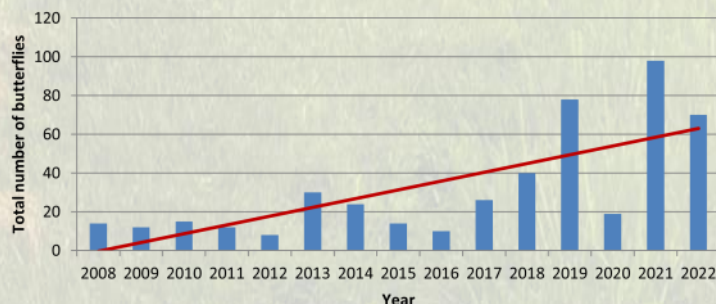


Figure 8. Total numbers of Green-veined White, Ringlet and Peacock. Recent planting of several late-flowering *Buddleja "globosa"* bushes may have aided the Peacocks survival. It has certainly concentrated them, and so aids detectability.

In other news

Test your identification knowledge!

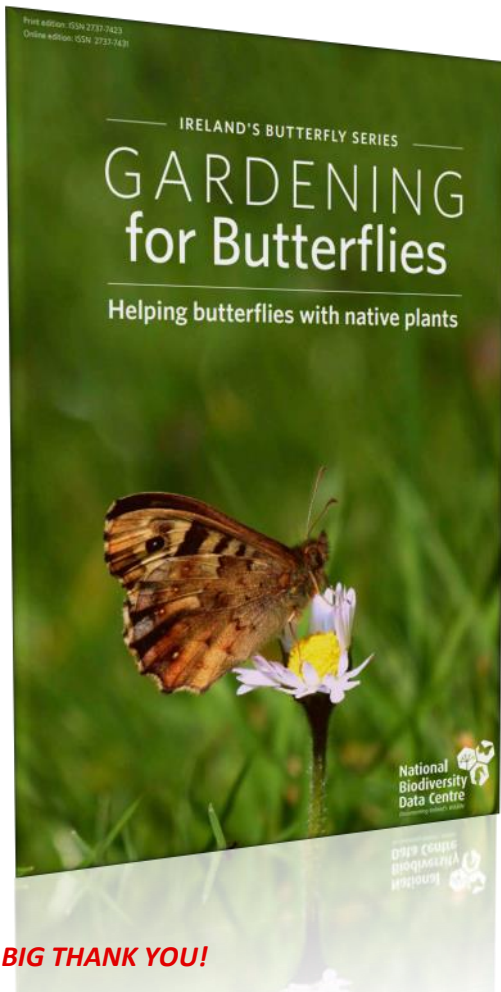
The National Biodiversity Data Centre has created an online course on butterfly identification. You can find the course under the 'Online training' section of the centre's website (<https://biodiversityireland.ie/online-training/>). There is also a quiz at the end of the course to test your identification skills.



The National Biodiversity Data Centre have developed an e-learning course that aims to teach you how to identify Irish butterflies. Butterflies are an essential part of our biodiversity and by learning to identify them and submit records, you will help their conservation.

Within this course, we will cover the key identification features of each butterfly species on their upper and lower wing and any physical differences between male and females.

We will also briefly cover the butterfly monitoring schemes that you can get involved with through the National Biodiversity Data Centre.



Gardening for Butterflies released

Earlier this year, the National Butterfly Data Centre released the 'Gardening for Butterflies' booklet as part of Ireland's Butterfly series. This booklet aims to offer evidence-based recommendations on how to manage gardens to create favorable conditions for butterflies. Whether in private homes, schools, or community spaces, together we can make a significant impact in nurturing and safeguarding these important creatures. An online version of the booklet can be found on the Data Centres website: <https://biodiversityireland.ie/>

Other booklets within the series include: Habitat management for the Small Heath, Habitat management for the Marsh Fritillary and Habitat management for the Small Blue.

A BIG THANK YOU!

Once again we would like to express our thanks to all of our recorders. Without giving your time and expertise so generously we would not be able to complete such in-depth analysis of butterfly populations in Ireland and we really appreciate your efforts each year.

To note: An error was recently identified in the 2022 Newsletter. This error has been corrected and an updated version of the newsletter has been published on The National Biodiversity Data Centre website.

If you would like to reference this document:

Judge, M and Lysaght, L. (2023). *The Irish Butterfly Monitoring Scheme Newsletter*, Issue 15. National Biodiversity Data Centre

Table 4. Sites monitored under the Irish Butterfly Monitoring Scheme since 2012

Site Name	Recorder	Site Name	Recorder
32 Castle Grove	John Linehan	Beaumont Quarry	Isobel Abbott
Abbeyleix Killamuck	Annemarieke van der Voort; Clare Coffey; Chris Uys	Bellanierin	Anthony Pickering
ABP Cahir	Thomas Farrell	Bishopsland	Lynda Weekes
Aghalane New	Naomi Mitten	Bleach Field	John Cullen
Aill An Mhienaigh	Aedamar Hofmann	Blessington Reserve	Native Woodland-Trust
Annagh	Triona Finnen	Blossom Farm	Donal Sheehan
Annaghnaddoo	Kealin Beattie	Boardstown Bridge	Lesley Whiteside
Annaloughan Mullaghatten	Enda Flynn	Bog Walk Frenchpark	Padraig Rocke
Ardacarha	Karina Dingerkus	Borris Demesne	Fintan Ryan
Ardaghowen Lane	Robert Richardson	Bothwell's Farm	Heather Bothwell; Ismay Bothwell
Ardan Wood	Native Woodland-Trust	Boyle Canal	Louise McAlavey
Ardenode Stud	Theresa Bennett	Boyne Coast	Annette Lynch
Ardnaturrish Beg	Clare McIntyre	Bramblestown	Liam Lysaght
Ardrums Great	Ian Fox	Brayhead	Cathy Kelly; Derry Gibson
Ards	Mairi-Elena Crook	Brooklodge	Caitriona Fenton
Ardtarmon	Howard Preston	Burke Lake Walk	Raymond Kazmierczak
Ascreachin a Radharc 2	Ted Cook	Bushy Park	Alan Dunne Derry Gibson; Nigel O'Brien; Rachel Gerrard; Sue White
Bailesalach	Dermot McNelis	Cabinteely Park	
Baldwinstown Eastwards	Harm Deenen	Cabragh Wetlands	Louise Garcia
Ballinacarriga	Angela Brewer	Calvertown Farm& Garden Walks	Mireille McCall
Ballinahown	Lorna Folan	Camcor Wood	Native Woodland-Trust
Ballinacrough Bridge	Malcolm Tanner	Camolin Woods	Janet Whelehan
Ballintra East	Maeve Foran	Capard, Slieve Blooms	Jason Monaghan
Ballyarra	Donal Sheehan	Cappagh Park Bearn Wood	Deirdre Murphy
Ballybeg Newcastle	Louise Garcia	Cappamurra	Finbarr Ryan
Ballycashin	Denis Cullen	Carnowen Farm	Liz & Ralph Sheppard
Ballycross Apple Farm	John Morgan Brid Colhoun; R O'Dwyer; R McDonald	Carriganore	Niamh Phelan
Ballycroy National Park		Carriganard-Ballycashin	Denis Cullen
Ballydonarea	Justin Ivory	Carrigeencor	Sara Garcia Hipolito
Ballyfracta	Morgan Murphy	Carrigeens	Howard Preston
Ballygunnarmor Boreen	Stefanie Fleischer	Carrigmore	Christian Osthoff
Ballyhullen	Nancy Murphy	Carrow/ Scarrough	Malcolm Tanner
Ballymachola	Mark Holmes	Carrowcroy	Gregory Daly
Ballymachola Lower	Mark Holmes	Castleconnell Riverside Meadow	John Hardiman
Ballymore	Finbarr Ryan	Castletaylor	Padraig Keirns
Ballymore Eustace	Pat Walsh	Cavetown	Rebecca Cogan
Ballyteige Burrow	Harm Deenen; John Morgan	Claragh Road	Trisha Robertson
Ballyteige Burrow 2 East	Harm Deenen	Cloonacleigha	Michael Bell
Baltrasna Bridge	Lesley Whiteside	Cloonahinch Bog	Brigid Seale; Catherine Seale
Barna Woods	Eamonn Twomey	Cloonaquin	Fiona Lloyd

Table 4. Sites monitored under the Irish Butterfly Monitoring Scheme since 2012

Site Name	Recorder	Site Name	Recorder
Cloughjordan	Rachel Vaughan	Flynns Field	Ger O'Donnell
Commen	Lisa Scarff	Forth Mountain Transmitter	Harm Deenen
Coolcaha	Damaris Lysaght	Fota Arboretum 1	SECAD Biodiversity
Coolcotts	Mary Foley	Fota Arboretum 2	SECAD Biodiversity
Coole Park	Hannah Mulcahy	Fountain Cross Farm	Stephen Lester
Cosy Corner	Kevin Deering	Garretstown Wood	Peter Wolstenholme
Courtown woodland 1	Maja Gawlikowska;Tomasz Babiarz	Garryland Wood	Martin Byrnes; Elizabeth Byrnes
Courtown woodland 2	Maja Gawlikowska;Tomasz Babiarz	Geashill	Caren Carruthers
Creevagh	Eugene McGettrick	Girley Wood/Bog	Native Woodland-Trust
Cronykeery	Angus Tyner	Glencoum	Liam Lysaght
Crooderry	Howard Preston	Glendalough Upper Lake	Ian Edwards
Crosswood	Dave McKay	Glengariff Woods	Clare Heardman
Crucknagerragh	Irene Deisler	Glenmacannive	Richard McCafferty
Cuil Aodha	Colin Hamilton	Glenveagh	Clare Bromley
Cuiscrigh Kilcar	Leo Solosy; Geraldine Solosy	Golden Mile	Lorna Folan
Cullenstown Beach	Philomena Cahill; Jacintha Cloney	Golf Forest	Sean Forde
Curabaha	Evelyn Simons; Scott Simons	Gortigrenane	Rodney Daunt
Dangan	Peter Duffy	Gortlecka Orange Trail	Eamonn Twomey
Dangan Gate	Emma Stewart-Liberty	Gracedieu	Native Woodland-Trust
Deerpark	Eric Corbett	Grallagh Knocknauus	John Fogarty
Dooneen	Eileen Maguire	Green Road Murrough	Mary Howard
Doonis Bog	Chris Martin	Grove Farm	John Kinsella
Donard	Carol Melody	Gurteen Bog	Aine Fenner
Dromahair Greenway Loop	Patricia OLoughlin	Gurteen College Top Moor	Kevin Healion
Dromore Woods White Trail	Eamonn Twomey	Higginstown/Balrenny	Owen McCabe
Dromsally 2	Gearoid Jackson	Hortland	Patrick Sheridan
Drumkeen	Oisín Duffy	Howth Cliff Path	Derry Gibson; Frank Smyth
Dun Aonghasa	Ronan Mac Giollapharaic	Humphrystown Reserve	Native Woodland-Trust
Duncormick	Mary Foley	Hurtle	Oisín Duffy; Mairead Crawford
Dunmore	Sally McElhinney	Inchinashincane	Enda Kiernan
Dunmore East	Oisín Duffy	Inis Mor 1 An Fhirpis	Michael O'Connell
Durrow Road	Bernard Brewer	Keadeen	John Rossiter
ECNR2	Derry Gibson; Justin Ivory	Keelcuil 2	Bryony Williams
Errionagh Bog	Kate Welsby	Kerinstown Bawn	Lesley Whiteside
EstuaryRoadAndEcoPark	Lesley Whiteside	Kilbride	Marie Power
Ethos	Eugene Dunbar	Kilcornan Woods	Mary Geoghegan
Farnaght Wood	Native Woodland-Trust	Kilkeran	Abigail Brewer; Ciaran Cronin
Feakle	Hannah Mulcahy	Killanniv ED	Raymond Kazmierczak
Fermoy Bypass Bridge	Tom Kenny	Killesk	Nigel O'Brien
Fishersgrague	Cliona O'Connell	Killiney Hill Park	Michael Kingston
Flagmount	Donna Smith	Killiney Shanganagh Estuary	Derry Gibson; Roslyn Nicholson
Flemingstown to Burgesland	Louise Garcia	Killinick	John Kehoe

Table 4. Sites monitored under the Irish Butterfly Monitoring Scheme since 2012

Site Name	Recorder	Site Name	Recorder
Killruddery House	Derry Gibson; Justin Ivory	Monaghan Town	Rory Sheehan
Killyconny Bog	Tina Aughney	Monard	Tim Butter
Killykeen	David McDonagh	Money	Siobhan Hardiman Caitriona Cunningham; Eddie Smyth
Killywilly	Naomi Mitten	Montiagh	
Kilmacroy	Kate Welsby	Mount Usher	Justin Ivory
Kilmeedy	Trisha Robertson	Moy	Kate Thompson
Kilmichael Point	Michael O'Donnell	Muckcross	Sean Forde
Kilmoon	Barry Mahon; Nuala Mahon	Mulhussey	Jesmond Harding
Kiloughter	Margaret O'Keeffe	Mullaghmore	Linda Morrison; Linda Paterson
Knockavota Kilderry	Michael O'Sullivan	Mullinderry	John Cullen
Knockreer	Shonagh Gray	National Botanic Gardens	Darren Reidy
Knocklyon	Derry Gibson; Pauline Murray	Newbridge Park Fingal	John Lovatt
Knocknamanagh Minane Bridge	Philip O'Donoghue	Newpark	Eugene McGettrick
Knockreer	Shonagh Gray	Newvillage, Oughterard	Frank Murphy
Knuttery Bog	Michael John O' Mahony	O'Sullivan Mile	Pat Doncaster
Ladystown	Jim Galloway	Old Quarry Walk	Anne Griffin; Anthony Griffin
Landfill	Benedicta McArdle	Old Railway Walk	Philip Duggan
Laragh Reserve	Native Woodland-Trust	Pollardstown Fen	Roy Thompson
Lecarrow Wood	Native Woodland-Trust	Pollough	Grainne Reidy; Mary Burke
Letter	Daragh Smyth	Portland Park	Thomas Hanrahan
Lismorhaun	Therese Fitzgerald	Portlick	Dave McKay
Lough Doire Bhile	Matt Alexander	Poulshone	Tracy Anne Fennell
Louisa Bridge	Eddie Gilligan	Quinaltagh	Linda McGagh Christopher J Wilson; John Kinsella; Bruce Walker
Lower Dodder Road	Malcolm Taylor	Raven Nature Reserve	
Luimnagh East	Rory O'Callaghan	Renville Park	Rebecca Teesdale Kate Lavender-Duncan; Eileen O'Connor
Lullybeg	Jesmond Harding Irish Peatland Conservation Council	Rinnamona	
Lullymore West Bog		River Martin	Tim Butter
Lurgabrack/Tramore	Hannah Sheridan	Rocky Road	Paula McHale
Mannin	Simone Schmalzer Derry Gibson; Karin Manning; Sue White	Roo East	Vicki Davitt
Marlay Park		Ross East	James Kilroy
Marlinstown South	Lesley Whiteside	Rosslare Strand	Emmet Fahy
Mass Path Kilcoole	Justin Ivory	Rossnagreine	Ryner Weinreich
Merlin Park Woods	Caroline Stanley	Royal Canal Clongawny	Richella Duggan
Midleton Route 1 & 2	Barry O'Sullivan	Royal Canal, Maynooth	Pat Bell
Millrace Meadow	Ronnie Murphy	Rusheen and Hunters	Ciaran Bruton
Milltown Wood	Rob Wheeldon	St Brendans Well	Patrick Fahy
Milltown Wood 2	Sara Garcia Hipolito	St Endas National Historic Pk	Edward Hill
Minane Bridge (Tracton Route)	Barry O' Sullivan	Saint Helens	Derry Gibson; Valerie McGrath
Miners Village Glendalough	Gillian Stewart	Sceachin a Radharc	Ted Cook
Moig	Lyn Nolan		

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Site Name	Recorder	Site Name	Recorder
Scilly Walk	Lorna Folan	Timahoe Esker Nature Reserve	Roy Thompson
Scragh Bog	John Sullivan	Tinnakeenly House	Caroline Murphy
Sea Road	Sam Connolly	Tintern Trails	John Cullen
Sean Lenihan Walk Aughrim	Gillian Stewart	Togher Bog	Sean Mullins
Shanganagh Park	Nigel O'Brien	Tooreen	Tony Miller
Shanvolahan	Jon Freestone	Toragh Wood	Native Woodland-Trust
Slieve Carran	Eamonn Twomey	Trail Kilkenny Bennettsbridge	Lynda Weekes
Sommerville Tramore	Niamh Brennan	Tramore River	Carol Fynn
Spain Road	Orla Murphy	Tramore Valley Park	Letizia Cocchiglia
Stacumny	Pat Bell	Turraun	Mark McCorry
St Brendans Well	Patrick Fahy	Uragh	Fiona Farrell; Fiona Wheeldon
St. Johns Wood	Native Woodland-Trust	Waterford Nature Park	Oisin Duffy Kathryn Freeman; Sean Forde; Shonagh Gray
Tayto Park	Lee donohoe	Westmeadow	Darren Ellis
Terenures Bushy Park	Angela Dakin; Derry Gibson	Wicklow Head	Andrew Butler; John Kinsella
Terryland River	Tom Cuffe	Wildfowl Reserve Drive	Michael Dunne
The Bog Lane	Fiona Johnson	Woodlands	Eileen McGrath
The Circle	Emma Stewart-Liberty	Woodville Bog	

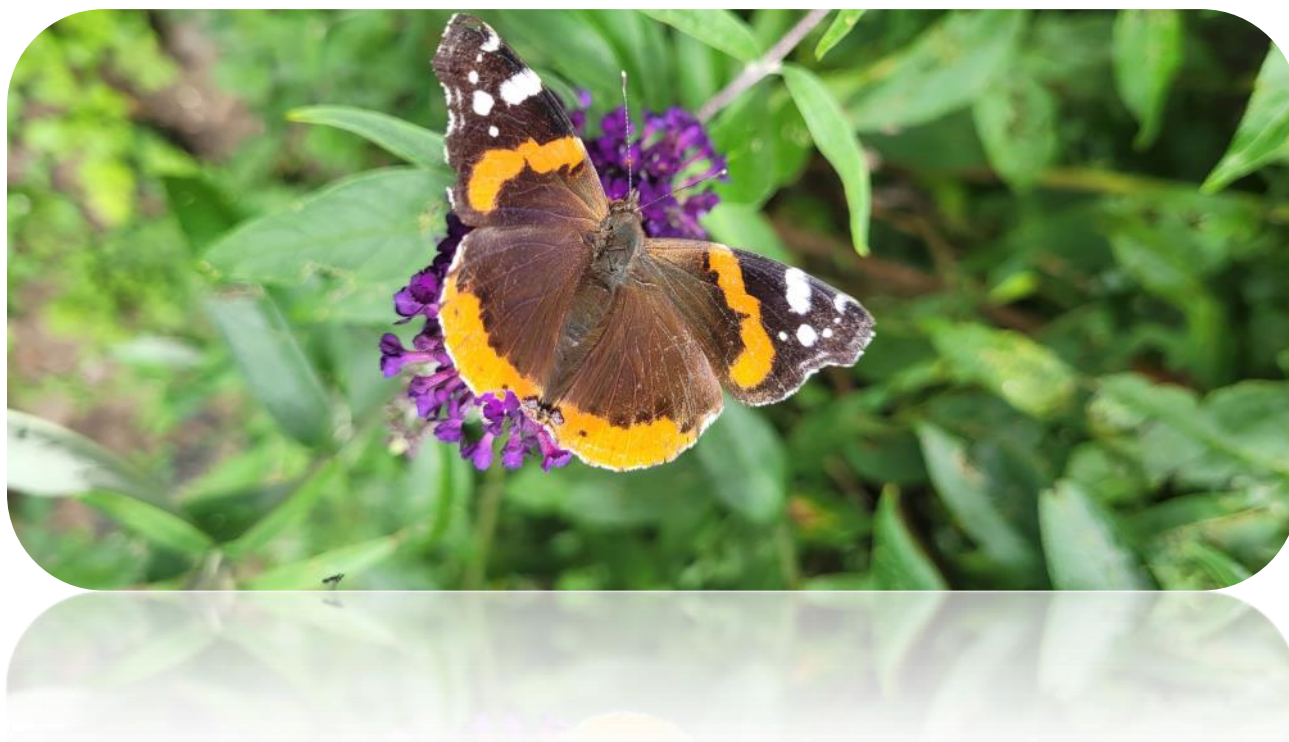


Table 5. Sites monitored under the Five-visit Monitoring Scheme

Site Name	Recorder	Site Name	Recorder
15th Lock, Grand Canal	Pat Bell	Carrignagour, Lismore	Ann Trimble
Abbeyleix Bog Walk 2	Chris Uys	Carton House	Pat Bell
ABP Walk 1	Chris Uys	Castlecoote	Joe Duane
Ardmore	Paddy Sheridan	Castlemorris	Ciara Ryan
Ardra Start	Lorcan Scott	Castletown House Parklands	Pat Bell
Ardtermon	Howard Prreston	Christianstown	Paddy Sheridan
Baldoyle racecourse	Frank Smith	Cloncurry Bridge, Royal Canal	Sandra Sheridan
B01	Colm Moriarty	Cloney Beg	Val Swan
Ballina	Paddy Sheridan	Cois Coinne/Cuskinny	Colm Ó Ceallacháin
Ballinafagh Bog, Prosperous	Pat Bell	Colclough Walled Gardens	Jacintha Cloney
Ballinclogher	Sandra Sheridan	Coolcurtoga, Glenflesk	Mary Mahony
Ballon circuit	Paul Cutler	Coolronan Bog verge	Goska Wilkowska
Ballyboy	Mick O'Connor	Coolure, Castlepollard	Richella Duggan
Ballyconniger	Lynn Cassidy	Corballis Hill	Paddy Sheridan
Ballycrossal, Co. Laois	Sophia Couchman	Corbally	Theresa Bennett
Ballyhuppahane	Richard Duff	Corlea	Áine Fenner
Ballymachola-Ballintober	Mark Holmes	Cornamucklagh	Paddy Sheridan
Ballymacsliney	Paul Moore	Cromwellstown	Paddy Sheridan Philomena Cahill; Jacintha Cloney
Ballymartin	Liam Lysaght	Cullenstown Beach	
Ballynomasna Farm	Louise Garcia	D01	Kyle Kenny
Ballyroon, Sheep's Head	Damaris Lysaght	Deerpark House Mountrath	Richard Duff
Ballyteague	Paddy Sheridan	Dempsey's Deerpark	Richard Duff
Barrow Way, Ardreigh, Athy	Pat Bell	Derrycahill	Joe Duane
Baunskeha	Liam Lysaght	Derrylea	Paddy Sheridan
BE02 Pollinator monitoring route	Ita Sherlock	Donadea Forest	Sandra Sheridan
BE03.Pilot Irish Pollinators Monitoring Scheme	Raymond Kazmierczak	Down the lane	Goska Wilkowska
BI01	Leon van der Noll	Drumgeeny walk	Victoria Fitzpatrick
BI02	John Sherry	Drummin	Karina Dingerkus
BI03	Pvm Foley	Dzogchen Beara/Pulleen Harbour	Damaris Lysaght
BI04	Claire Kelly	Dempsey's Deerpark	Richard Duff
BI05	Michelle Larkin	EH02	Clare Hamilton
Bredagh Glen	Carol Gilroy	EH04	Michelle Larkin
Bull Island , Dollymount , D13	Frank Smyth	Farmland and Hedgerows	Mark Holmes
Bunakippaun Wood 1,2 & 3	Nick Larter	Fisherstown Bridge, Barrow Line	Val Swan
Buncrana	Carol Gilroy	Garrarus	Tomas Murray
Burtown House	Paddy Sheridan	Gealain Greine	Margaret Brennan
ButterflyWalk	Gemma Sidney	Gortlicka Dawros Kenmare	Mary Mahony
Cabragh	Ciaran O'Sullivan	Gortyarn	Carol Gilroy
Calverstown	Mireille McCall	Grand Canal from Lock 22	Vanessa Mack
Camolin Woods	Janet Whelehan	Rathangan	
Caragh View, Killorglin,	Mary Mahony	Grand Canal, Lyons Demesne	Eddie Gilligan
		Greencastle	Carol Gilroy

Table 5 Sites monitored under the Five-visit Monitoring Scheme

Site Name	Recorder	Site Name	Recorder
Greenway Clonea	Rene Murray	OR01	Adrian Allen
Harper's Island	Jim Wilson	OR02—Kilnamoragh North	Sophia Couchman
Head of Glen	Clare Bromley	OW01 - Clara Vale	Justin Ivory
Hillswood	Joe Duane	OW03	Fiona Mohr
Hollybush Lane to Thompson's Farm	Lynne Gillespie	OW04 Pilot Irish Pollinator Monitoring Scheme	Mary Sheehan
IPMS EH03	Celia Graebner	OW05	John Deasy
Jamestown	Will Warham	Philipstown	Paddy Sheridan
JF Kennedy Arboretum	Julie Kendall	Phoenix Park	Hugh Gryspeerdt
Johnstown	Sophia Couchman	Pollardstown Fen	Michael Jacob
Kilcoagh Field and Horses	Hugh Gryspeerdt	Ponsonby Bridge, Grand Canal	Pat Bell
Kilcoagh Lane	Hugh Gryspeerdt	Rahin Wood	Pat Bell
Kildoney coastal walk	Frank Smyth	Rathduff Lane, Killanne	Joanna Hodghton
Kilfarrasy	Tomas Murray	Rathgorragh to Cranareen	Jacqueline Rynhart
Kill Hill	SJ O Byrne	Rathsilla Wood	Marion Brady
Killinthomas Woods	Vanessa Mack	Rock Island	Damaris Lysaght
Kings Bog	Paddy Sheridan	Royal Canal, Kilcock	Pat Bell
Knockgriffin	Paul Moore	Rushnachara Ahakista	Damaris Lysaght
Lakeshore at Ladestown	Richella Duggan	Slatt Lower	Hugh Sheppard
Leixlip	Paddy Sheridan	SNG01	Michelle Larkin
Leixlip Castle	Eddie Gilligan	SNG02	Shane Brien
Leixlip Reservoir, Barnhall	Eddie Gilligan	SNG03	Aine Na Fhlatharta
Lisduane	Joe Duane	Solsborough	Mick O'Connor
Lodgepark	Sophia Couchman	St Kierans	Marion Brady
Lotabeg / Luaiteach Beag	Colm Ó Ceallacháin	Streamstown	Áine Fenner
Lough Funshinagh	Joe Duane	Tarmonbarry	Áine Fenner
Lr. Rossnowlagh	Frank Smyth	The Curragh of Kildare	Val Swan
Lullymore East	Pat Bell	The Ragg	Ciaran O'Sullivan
Lurgabrack	Anita Donaghy	Thomastown	Joe Duane
M01	Tom Gittings	Transect1	Olivia L
M03	Clare Hamilton	UB02	Niamh Phelan
Maganey	Paddy Sheridan	UB03	Charles Heasman
Meelick	Joe Duane	UB04	Michelle Larkin
Moher	Joe Duane	UBI01	Aideen Kane
Monamolin	Mick O'Connor	Upper Newtown	Joanna Hodghton
Moyle Abbey	Paddy Sheridan	Wet-Willow-Alder-Ash Wood	Mark Holmes
Muff Border to Kilderry Forest	Lynne Gillespie	Wicklow Head	Christian Osthoff; Ian Edwards
Murvagh	Ethna Diver	Woodstown	Tomas Murray
Mylerstown	Liam Lysaght	Wyckham	Rossa Meade
New Down, The Downs,	Richella Duggan		