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## Data analysis

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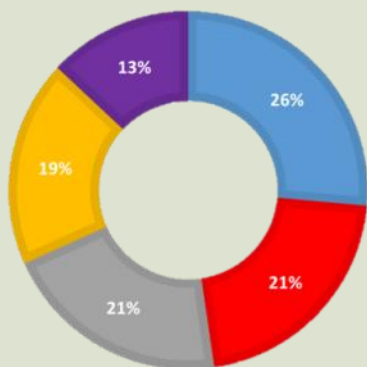
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## At a glance

### Top 5 species in 2020

**Meadow Brown**, **Small Tortoiseshell**, **Ringlet**, **Speckled Wood**, **Peacock**



# Irish Butterfly Monitoring Scheme



## Butterfly populations still declining

2020 was a challenging year defined by many restrictions imposed by the COVID-19 virus. Despite the restrictions many volunteers still managed to walk their transects and, as such, enough data was generated to create both the individual species trends and the multi-species index. We would like to thank all our volunteers for continuing to walk their transects safely, especially in such an unprecedented year. For those who couldn't walk their transects in 2020, we really hope you join us again this year – your data is very valuable, and we hope to include it in the 2021 analysis.

Results from the multi-species index showed that there was no significant difference between the numbers of butterflies flying in 2020 and the baseline year of 2008 (when the monitoring scheme began). Before we delve into the results in more depth, here's a quick recap on the Irish Butterfly Monitoring Scheme.



### About the Irish Butterfly Monitoring Scheme

**What is the IBMS?** 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 1<sup>st</sup> April to 30<sup>th</sup> 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 recordings are the basic data upon which the analysis is based.

**What type of analysis is completed within the scheme?** 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 type of 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 multispecies index and the individual species trends are estimated using international best practice methods developed by Statistics Netherlands (Trends and Indices for Monitoring data, TRIM, Pannoeck & van Strein, 2005; Multi-Species Indicators, MSI, Soldaat et al., 2017).

# Irish butterfly population trends 2008-2020

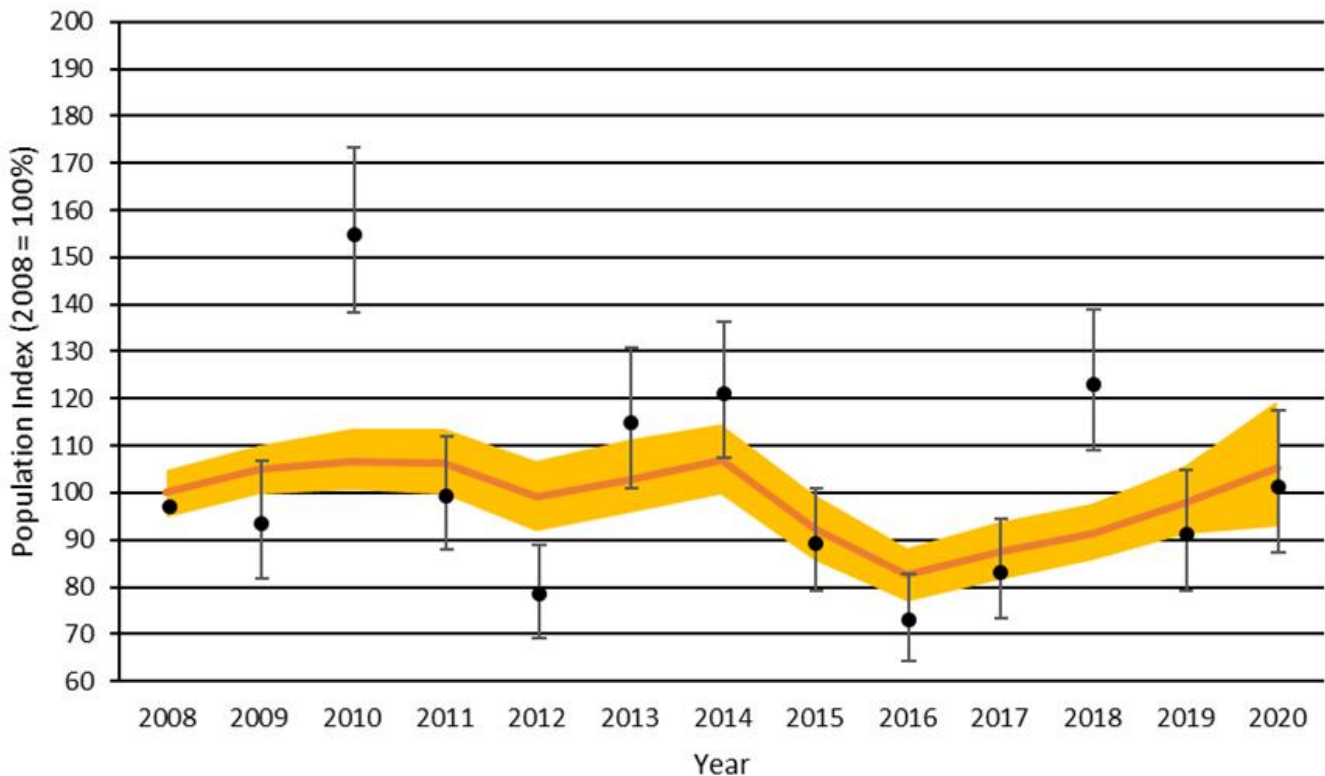
## Multi-species analysis

Using the multi-species index of the 15 most common butterfly species that fit the criteria to be included in the analysis, results show that there was no significant difference in the numbers of butterflies flying in 2020 when compared to the baseline year of 2008 (Figure 1). Even though there have been some years where the numbers of butterflies increased (2010 and 2018 being the most stand-out years), the fall in population numbers also contribute to the overall trend of the index and it is now estimated that the rate of change in our butterfly populations since 2008 is  $-0.93 \pm 0.88\%$  ( $\pm 95\%$  confidence interval surrounding the estimate) per year. In good news however, there has been a strong increase (+7.8%) in the rate of change since 2016; this upward trend is largely due to the recovery of butterfly populations after the drop in numbers post 2014.

For a species to be included in the multi-species index it must be recorded in at least 25 sites, with 70% or more of its flight period per year and with a minimum of 8 years across sites. Table 1 (page 5) identifies the species that are included in the multi-species analysis.

As mentioned in last year's newsletter, 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 2008-2020



**Figure 1** The multi-species index derived from the amalgamation of the population trends of 15 common species of butterflies from 2008 to 2020. The dark orange line is the smoothed trend line, and the circle markers represent the multispecies index per year. Error bars (on markers) and the shaded area surrounding the trend line are the 95% confidence intervals.



# Irish butterfly population trends 2008-2020

Figure 2 is a heatmap showing the percentage of total butterfly populations recorded per week for the monitoring scheme period from 2008 to 2020. The values in the heatmap were generated from the multi-species analysis and therefore control for differences in the number of transects walked per year and the number of walks conducted per transect.

The vertical Total bar on the right sums up the percentage per week, e.g. the 1st peak of butterfly counts typically occurs in week 8 to 10 of the scheme (3.45% of all butterflies within a year are recorded in week 9), with the main peak usually occurring in weeks 14 to 17 (30% of butterflies recorded within these three weeks). The horizontal Total bar represents the percentage of

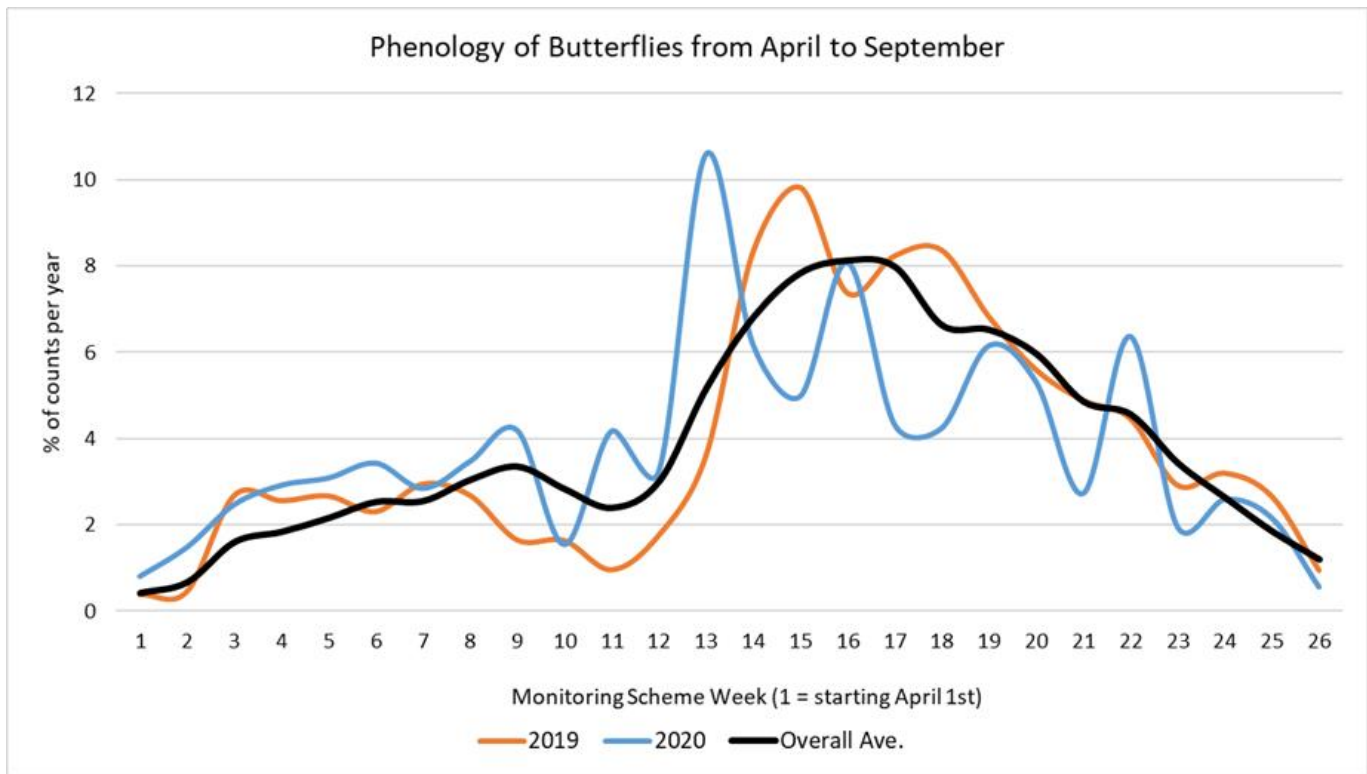
butterflies recorded per year since the scheme began; 2010 stands out as the best year with 11.82% of butterflies recorded since 2008 being recorded in that year. The worst year on record was 2016 where only 5.57% of butterflies recorded since 2008 were recorded in this year.

		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total	
Monitoring scheme week	April	1	0.03	0.01	0.00	0.06	0.03	0.00	0.05	0.04	0.01	0.03	0.01	0.03	0.06	0.36
		2	0.02	0.02	0.02	0.13	0.05	0.00	0.10	0.16	0.01	0.05	0.02	0.03	0.10	0.73
		3	0.03	0.09	0.06	0.38	0.05	0.01	0.22	0.15	0.03	0.08	0.07	0.19	0.17	1.55
		4	0.07	0.11	0.12	0.53	0.06	0.03	0.27	0.23	0.03	0.07	0.06	0.18	0.20	1.94
		5	0.17	0.14	0.16	0.35	0.12	0.04	0.21	0.11	0.04	0.28	0.12	0.19	0.22	2.15
	May	6	0.27	0.23	0.32	0.15	0.11	0.06	0.18	0.09	0.12	0.36	0.20	0.16	0.24	2.48
		7	0.37	0.07	0.33	0.16	0.05	0.11	0.39	0.21	0.19	0.16	0.29	0.21	0.20	2.72
		8	0.25	0.17	0.58	0.13	0.25	0.15	0.22	0.11	0.15	0.25	0.36	0.19	0.24	3.06
		9	0.31	0.36	0.38	0.16	0.27	0.22	0.32	0.14	0.26	0.24	0.39	0.11	0.29	3.45
	June	10	0.29	0.22	0.33	0.16	0.23	0.39	0.24	0.11	0.20	0.08	0.39	0.11	0.11	2.87
		11	0.14	0.25	0.37	0.18	0.17	0.12	0.31	0.24	0.12	0.09	0.16	0.07	0.29	2.50
		12	0.12	0.26	0.53	0.18	0.12	0.16	0.42	0.21	0.13	0.30	0.27	0.12	0.23	3.04
		13	0.21	0.48	0.83	0.29	0.18	0.21	0.46	0.27	0.20	0.33	0.62	0.25	0.74	5.05
	July	14	0.31	0.54	0.75	0.63	0.32	0.39	0.51	0.63	0.29	0.50	0.88	0.58	0.43	6.76
		15	0.47	0.56	0.79	0.70	0.23	0.87	0.51	0.49	0.38	0.54	1.11	0.68	0.35	7.69
		16	0.61	0.55	0.67	0.25	0.44	1.19	0.62	0.63	0.61	0.59	0.77	0.51	0.56	8.00
		17	0.84	0.33	0.82	0.55	0.57	0.95	0.83	0.41	0.36	0.50	0.82	0.57	0.30	7.86
	August	18	0.63	0.38	0.58	0.48	0.37	0.76	0.70	0.37	0.40	0.33	0.75	0.58	0.30	6.63
		19	0.47	0.43	0.89	0.44	0.58	0.70	0.60	0.30	0.38	0.37	0.49	0.48	0.43	6.55
		20	0.47	0.37	0.76	0.48	0.47	0.50	0.48	0.43	0.46	0.30	0.34	0.39	0.37	5.82
		21	0.39	0.39	0.63	0.47	0.31	0.46	0.33	0.39	0.47	0.19	0.33	0.34	0.19	4.89
	September	22	0.35	0.22	0.76	0.28	0.26	0.46	0.25	0.36	0.29	0.28	0.42	0.31	0.44	4.69
		23	0.28	0.24	0.47	0.14	0.36	0.40	0.36	0.23	0.18	0.16	0.25	0.20	0.14	3.40
		24	0.14	0.36	0.31	0.14	0.18	0.25	0.27	0.21	0.17	0.11	0.12	0.22	0.18	2.67
		25	0.11	0.19	0.23	0.07	0.15	0.19	0.23	0.17	0.07	0.10	0.07	0.19	0.15	1.91
		26	0.08	0.16	0.10	0.09	0.07	0.15	0.16	0.13	0.05	0.06	0.08	0.07	0.04	1.24
Total		7.41	7.13	11.82	7.58	5.99	8.77	9.25	6.83	5.57	6.35	9.40	6.96	6.96	100.00	

**Figure 2** Normalised % of total butterflies recorded 2008-2020

# Irish butterfly population trends 2008-2020

Butterflies were flying early in 2020 with counts for April being almost double the overall average count for the month from 2008 to 2020. Like 2019, there was a below average dip in weeks 9 to 11 (i.e., the end of May/early June) and the highest peak in 2020 occurred in week 13 (mid-June) which was slightly earlier than previous years. After the peak in week 13, the flight curve was more erratic than the overall average of previous years (Figure 3). Based on the counts it appears that weather conditions had a big influence on butterfly numbers during 2020. The unusually high number of butterflies early in the season coincided with a period of fine, settled weather whereas the large variability in counts during the second half of the season was likely due to the unsettled weather.



**Figure 3** Phenology (flight curves) of butterflies across monitoring scheme week. This was completed using the full dataset so it includes all records and species



Small Tortoiseshell populations grew in 2020

# Table 1 Irish Butterfly population trends 2008 to 2020

Species	Change 2008-2020	Statistical confidence, sites per year	Included in multi-species index?
Peacock	Strong increase (> +5% p.a.)	99%, >50 sites	Yes
Brimstone	Moderate increase (< +5% p.a.)	95%, 25 - 50 sites	No
Small Tortoiseshell		95%, >50 sites	Yes
Dingy Skipper		95%, 10 - 24 sites	No
Holly Blue		95%, >50 sites	Yes
Orange-tip	Stable ( $\pm$ 5% p.a.)	95%, > 50 sites	Yes
Ringlet		95%, > 50 sites	Yes
Meadow Brown		95%, > 50 sites	Yes
Green-veined White	Moderate decline (< 5% p.a.)	99%, >50 sites	Yes
Large White		95%, >50 sites	Yes
Speckled Wood		95%, >50 sites	Yes
Small Copper		95%, >50 sites	Yes
Small Heath	Strong Decline (> -5% p.a.)	95%, >50 sites	Yes
Common Blue	Uncertain	95%, > 50	Yes
Dark Green Fritillary		95%, 25 - 50	No
Grayling		95%, 25 - 50	No
Wall Brown		95%, 25 - 50	No
Wood White		95%, > 50 sites	Yes
Silver-washed Fritillary		95%, >50 sites	Yes
Small White		95%, >50 sites	Yes
Brown Hairstreak	Unknown	<15 sites	No
Comma			No
Essex Skipper			No
Gatekeeper			No
Green Hairstreak			No
Large Heath			No
Marsh Fritillary*			No
Pearl-bordered Fritillary			No
Purple Hairstreak			No
Small Blue			No
Small Skipper			No
Clouded Yellow**	Unknown	<15 sites	No
Painted Lady**	Strong increase (> +5% p.a.)	99%, > 50 sites	No
Red Admiral**	Moderate increase (< +5% p.a.)	99%, > 50% sites	No

\*Since 2015, 49 sites are now being systematically surveyed as part of the Marsh Fritillary Monitoring Scheme

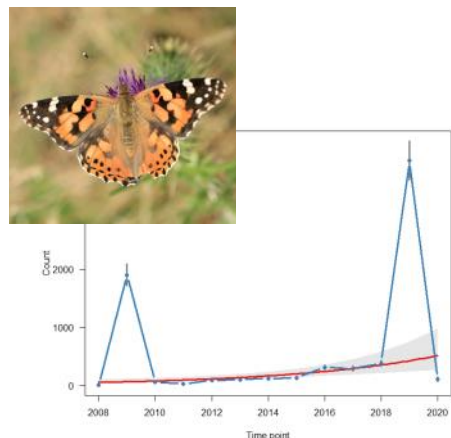
\*\*Migrant species; changes in numbers recorded in Ireland largely dependent on conditions external to Ireland



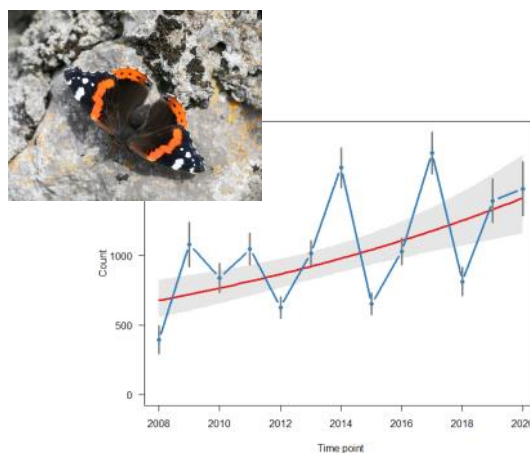
# Irish butterfly population trends 2008-2020

## Individual species analysis

After its record year in 2019, sightings of the Painted Lady returned to pre-2019 figures. Indeed, numbers seen were lower than any year since the monitoring began. On the other hand, the results showed continued growth for the Red Admiral (increase of 60% on 2008 figures).

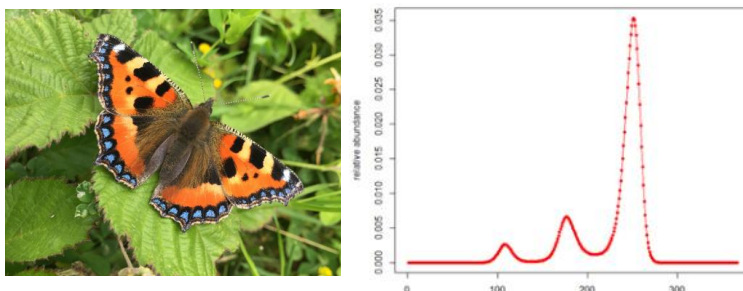


**Figure 4a** The estimated population index (blue markers) and population trend (red line) of the Painted Lady since 2008



**Figure 4b** The estimated population index (blue markers) and population trend (red line) of the Red Admiral since 2008

The ‘good news story’ of 2020 is that of the Small Tortoiseshell who went from having a ‘stable’ population for the past 2 years to moderately increasing in 2020 after a high level of sightings during the scheme. This was due to the population experiencing a particularly good second generation (Figure 4c).

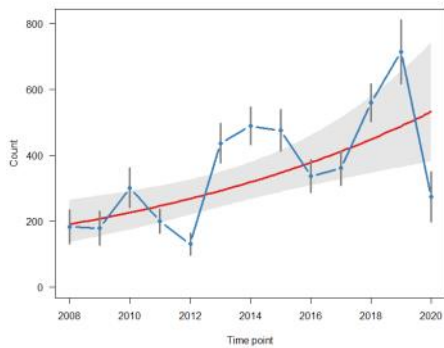


**Figure 4c** The Small Tortoiseshell and its flight curve obtained using the data from the MSI

The Peacock showed a strong increase in numbers from 2008 (+184%), while the Brimstone (+74%), Dingy Skipper (+52%) and the Holly Blue (+9%) continue to grow but at a slower rate. Interestingly, the data showed a drop in the numbers of sightings for the Peacock, Brimstone, and Holly Blue in 2020, but the overall trend from 2008 to 2020 is still positive.

Three of our commoner species (Orange-tip, Ringlet, Meadow Brown) were stable in 2020; with the Meadow Brown moving into the ‘stable’ status from a ‘moderate decline’ status in 2019. Unfortunately, six species showed a decrease in 2020 when compared to 2008; the strongest declines were identified in the Small Heath (-51%) and Green-veined White (-48%). After further declines in populations since last year, the Speckled Wood moved from a ‘stable’ status to one of ‘moderate decline’ in 2020.

## Figure 5 Population trends of individual butterfly species



Brimstone *Gonepteryx rhamni*

Ave. sites per year in monitoring scheme: 25 - 50

Change 2008-2020: +75%

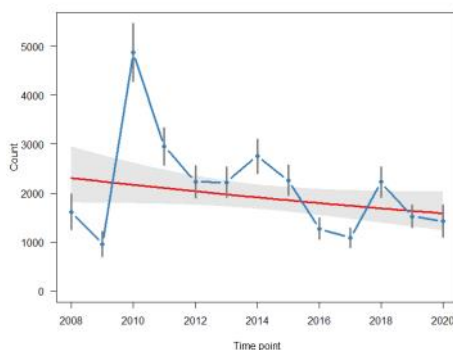
Generations per year: 2

Overwinters as: Adult

Conservation status (2010): Least Concern



Mary Broughall



Common Blue *Polyommatus icarus*

Ave. sites per year in monitoring scheme: >50

Change 2008-2020: Uncertain, too variable

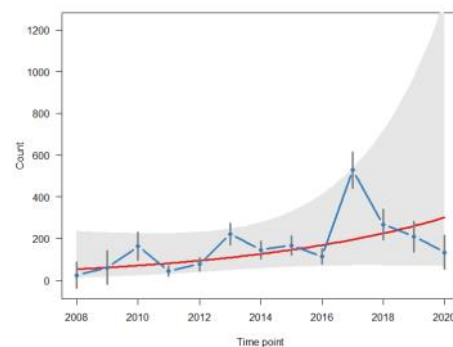
Generations per year: 2

Overwinters as: Larva

Conservation status (2010): Least Concern



Chris Uys



Dark Green Fritillary *Argynnis aglaja*

Ave. sites per year in monitoring scheme: 25-50

Change 2008-2020: Uncertain, too variable

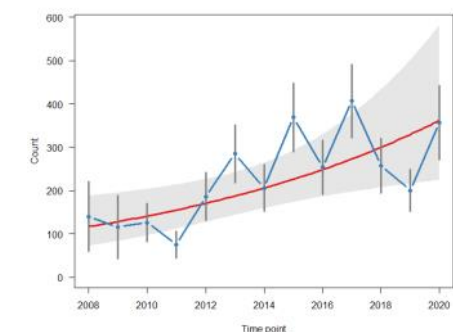
Generations per year: 1

Overwinters as: Larva

Conservation status (2010): Vulnerable



Gillian Stewart



Dingy Skipper *Erynnis tages*

Ave. sites per year in monitoring scheme: 10-24

Change 2008-2020: +52%

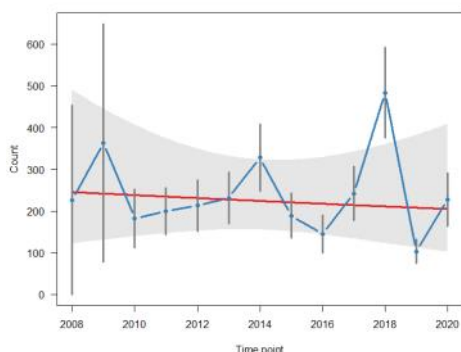
Generations per year: 1

Overwinters as: Larva

Conservation status (2010): Near Threatened



Lill Dunne



Grayling *Hipparchia semele*

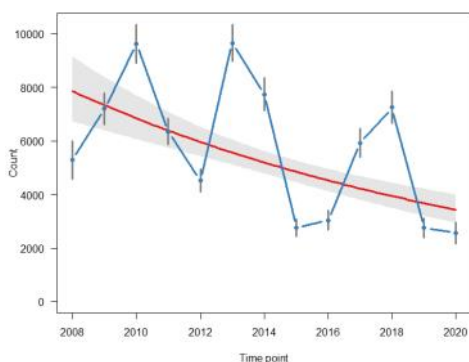
Ave. sites per year in monitoring scheme: 25-50

Change 2008-2020: Uncertain, too variable

Generations per year: 1

Overwinters as: Larvae

Conservation status (2010): Near Threatened



Green-veined White *Pieris napi*

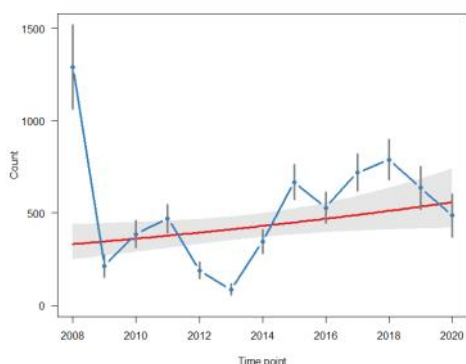
Ave. sites per year in monitoring scheme: >50

Change 2008-2020: -48%

Generations per year: 2

Overwinters as: Pupa

Conservation status (2010): Least Concern



Holly Blue *Celastrina argiolus*

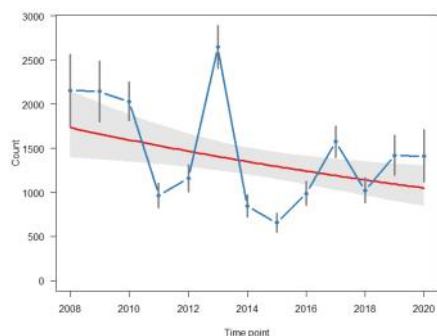
Ave. sites per year in monitoring scheme: >50

Change 2008-2020: +9%

Generations per year: 2

Overwinters as: Pupa

Conservation status (2010): Least Concern



Large White *Pieris brassicae*

Ave. sites per year in monitoring scheme: >50

Change 2008-2020: -18%

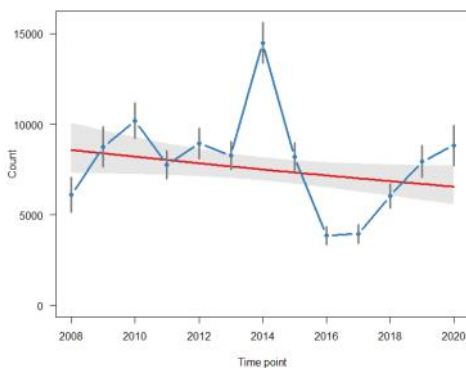
Generations per year: 2

Overwinters as: Pupa

Conservation status (2010): Least Concern







Meadow Brown *Maniola jurtina*

Ave. sites per year in monitoring scheme: >50

Change 2008-2020: Stable

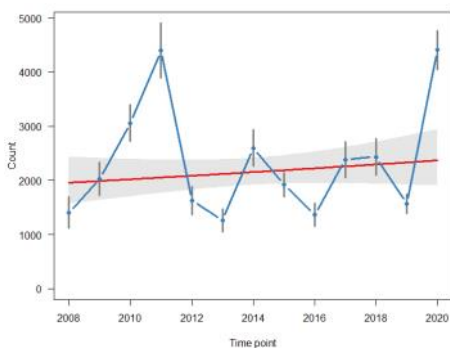
Generations per year: 1

Overwinters as: Larva

Conservation status (2010): Least Concern



Carol Gilroy



Orange-tip *Anthocharis cardamines*

Ave. sites per year in monitoring scheme: >50

Change 2008-2020: Stable

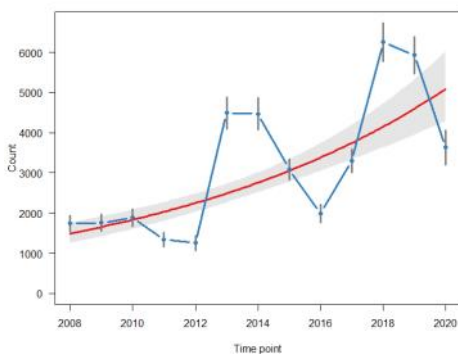
Generations per year: 1

Overwinters as: Pupa

Conservation status (2010): Least Concern



Ann Francis



Peacock *Aglais io*

Ave. sites per year in monitoring scheme: >50

Change 2008-2020: +185%

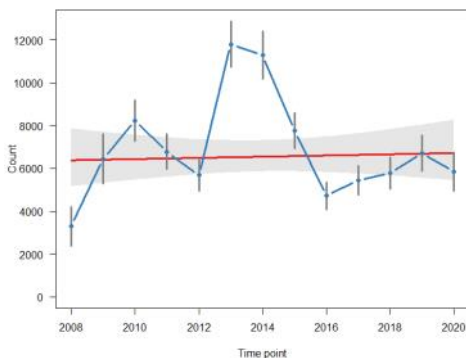
Generations per year: 2

Overwinters as: Adult

Conservation status (2010): Least Concern



Brian Fitzpatrick



Ringlet *Aphantopus hyperantus*

Ave. sites per year in monitoring scheme: >50

Change 2008-2020: Stable

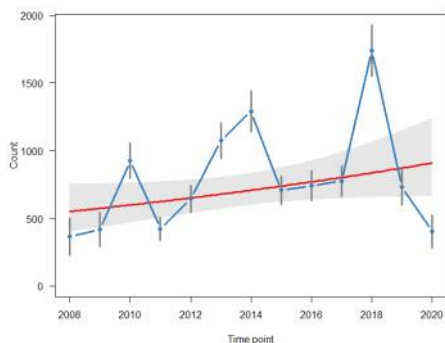
Generations per year: 2

Overwinters as: Larva

Conservation status (2010): Least Concern



Shona MacDonald



Silver-washed Fritillary *Argynnis paphia*

Ave. sites per year in monitoring scheme: >50

Change 2008-2020: Uncertain, too variable

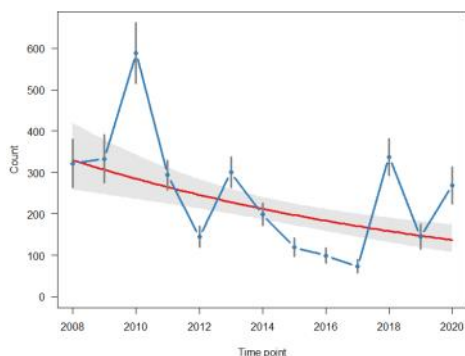
Generations per year: 1

Overwinters as: Egg

Conservation status (2010): Least Concern



Nikki McColgan



Small Copper *Lycaena phlaeas*

Ave. sites per year in monitoring scheme: >50

Change 2008-2020: -43%

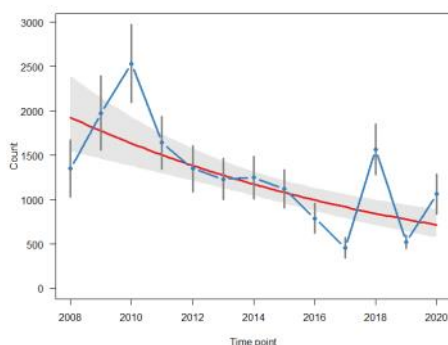
Generations per year: 2

Overwinters as: Larva

Conservation status (2010): Least Concern



Andrew Malcolm



Small Heath *Coenonympha pamphilus*

Ave. sites per year in monitoring scheme: >50

Change 2008-2020: -51%

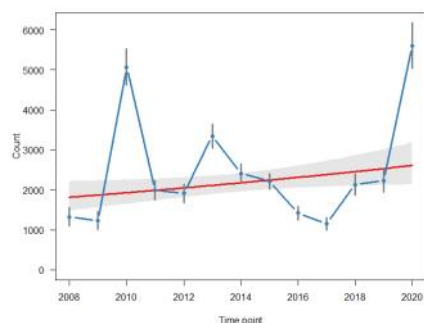
Generations per year: 2

Overwinters as: Larva

Conservation status (2010): Near Threatened



Fionn Moore



Small Tortoiseshell *Aglais urticae*

Ave. sites per year in monitoring scheme: >50

Change 2008-2020: +6%

Generations per year: 2

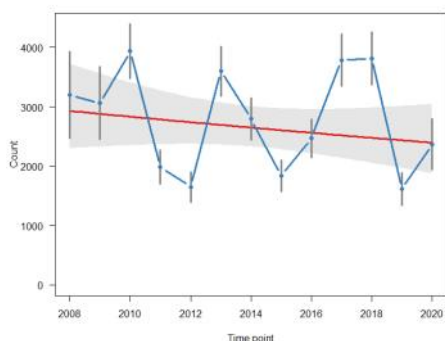
Overwinters as: Adult

Conservation status (2010): Least Concern



Anna Szwedziak





### Small White *Pieris rapae*

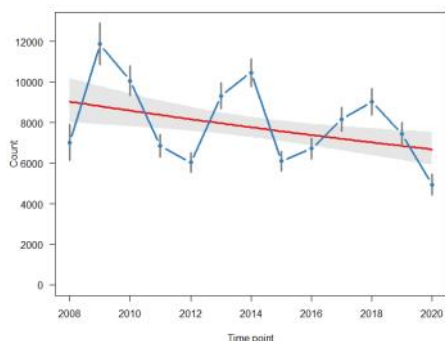
Ave. sites per year in monitoring scheme: >50

Change 2008-2020: Uncertain, too variable

Generations per year: 2

Overwinters as: Pupa

Conservation status (2010): Least Concern



### Speckled Wood *Pararge aegeria*

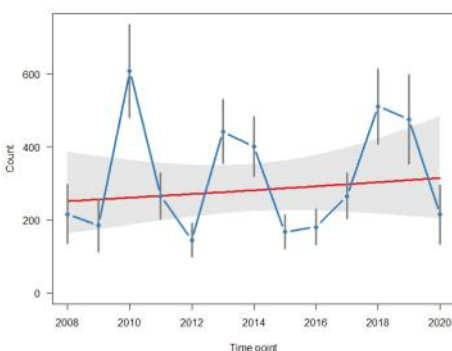
Ave. sites per year in monitoring scheme: >50

Change 2008-2020: -12%

Generations per year: 2-3

Overwinters as: Larva/pupa

Conservation status (2010): Least Concern



### Wall Brown *Lasiommata megera*

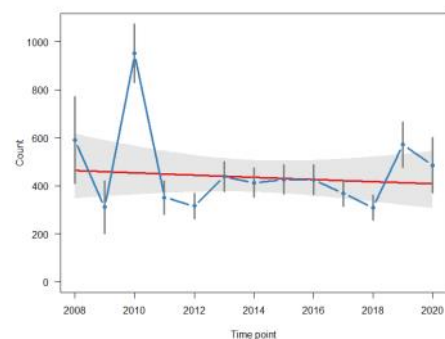
Ave. sites per year in monitoring scheme: 25 - 50

Change 2008-2020: Uncertain, too variable

Generations per year: 2

Overwinters as: Larva

Conservation status (2010): Endangered



### Wood White agg. *Leptidea* spp.

Ave. sites per year in monitoring scheme: >50

Change 2008-2020: Uncertain, too variable

Generations per year: 1

Overwinters as: Pupa

Conservation status (2010): *L. sinapis*, Near Threatened; *L. juvernica*, Least Concern





# Ensuring continued success of the IBMS

As stated previously, for a species to be included in the multi-species analysis it needs to fulfil certain criteria. There is a similar criterion for the addition of data into analyses from each of the transects. Data from each transect can only be included in the multi-species analysis if that transect has been visited for at least 8 years since the commencement of the recoding scheme (i.e., 2008), and has been visited at least 10 times each year. 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 4 shows the list of transects plus the recorders for the Irish Butterfly Monitoring Scheme sites.

Table 3a 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 dropped in 2020 however the number of transects increased. This may have been due to recorders walking new transects to adhere to COVID-19 travel restriction rules.

Ensuring transects are walked as much as possible, for as many years as possible, will allow us to reap the biggest benefits from that data we are collecting year on year.

**Table 3a** Summary statistics for the last 5 years of the IBMS

	2016	2017	2018	2019	2020
Total number of recorders	114	118	115	85	73
Total number of Transects	125	120	118	87	97
Total number of records	13,515	14,908	15,436	13,111	10,585
Total number of Butterflies	33,046	38,172	46,012	36,171	26,547

## In other news

### Five visit monitoring scheme

In addition to the 26 weekly Irish Butterfly Monitoring Scheme walks, the reduced five-visit monitoring scheme produces quantitative data on butterfly populations which will initially feed into the Butterfly Atlas 2021 initiative. Many recorders have chosen to adopt a five-visit monitoring scheme to walk each year, thereby providing data that will contribute to butterfly monitoring; table 3b shows the summary statistics for the five-visit monitoring scheme. Table 5 shows the sites and recorders involved in the five-visit monitoring scheme. At the end of 2020, 42 recorders monitored an additional 92 sites through the five-visit monitoring scheme.

**Table 3b** Summary statistics for the last 4 years of the five-visit monitoring scheme

	2017	2018	2019	2020
Total number of recorders	25	29	44	21
Total number of Transects	34	36	88	46
Total number of records	1,630	2,363	7,534	2,443
Total number of Butterflies	5,312	7,048	22,903	6,061

### A big thank you!

As always 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.

If you would like to reference this document:

Judge, M and Lysaght, L. (2021) 'Butterfly populations still declining', *The Irish Butterfly Monitoring Scheme Newsletter*, Issue 13.

**Table 4 Sites monitored under the Irish Butterfly Monitoring Scheme**

Site Name	Recorder	Site Name	Recorder
Abbeyleix Killamuck	Annemarieke van der Voort; Clare Coffey	Cherryfield	DerryGibson; KarinManning; SueWhite
Annaghamaddoo	Kealin Beattie; Kealin Ireland	Cloonacleigha	Michael Bell
Annaloughan Mullaghatten	Enda Flynn	Cloonahinch Bog	Catherine Seale
Ardacarha	Karina Dingerkus	Cloonaquin	Fiona Lloyd
Ardan Wood	Native Woodland-Trust	Cloughjordan	Rachel Vaughan
Ardenode Stud	Theresa Bennett	Coole Park & Coole Park 2	Hannah Mulcahy
Ardnaturrish Beg	Clare McIntyre	Coolcaha	Damaris Lysaght
Ardrums Great	Ian Fox	Coolcotts	Mary Foley
Ards	Mairi-Elena Crook	Corbally Mungret	Eileen Histon
Ardtarmon	Howard Preston	Cosy Corner	Kevin Deering
Ascreachin a Radharc 2	Ted Cook	Courtown Woodland 1 & 2	Maja Gawlikowska; Tomasz Babiarz
Back Graphs Field	Linda Nixon; Lynn Daley	Creevagh	Eugene McGettrick
Bailesalach	Dermot McNelis	Cronykeery	Angus Tyner
Ballinacarriga	Angela Brewer	Crucknagerragh	Irene Deisler
Ballinacloough Bridge	Malcolm Tanner	Cuil Aodha	Colin Hamilton
Ballybeg Newcastle	Louise Garcia	Cuiscrigh Kilcar	Leo Solosy; Geraldine Solosy
Ballycross Apple Farm	John Morgan	Cullenstown Beach	Philomena Cahill; Jacintha Cloney
Ballycroy National Park	Annette Lynch	Curabaha	Evelyn Simons; Scott Simons
Ballydonarea	Justin Ivory	Dangan	Peter Duffy
Ballyfracta	Morgan Murphy	Dangan Gate	Emma Stewart-Liberty
Ballyhullen	Nancy Murphy	Davidstown	Alberto Villarejo
Ballymachola	Mark Holmes	Deerpark	Eric Corbett
Ballymachola Lower	Mark Holmes	Dooneen	Eileen Maguire
Ballymore	Finbarr Ryan	Dromore Woods White Trail	Eamonn Twomey
Ballyteige Burrow & BB East	Harm Deenen	Dun Aonghasa	Ronan Mac Giollapharaic
Baltrasna Bridge	Lesley Whiteside	Dunmore East	Oisin Duffy
Barna Woods	Eamonn Twomey	Drumkeen	Oisin Duffy
Beaumont Quarry	Isobel Abbott	Duncormick	Mary Foley
Bellanierin	Anthony Pickering	Durrow Road	Bernard Brewer
Bishopsland	Lynda Weekes	ECNR2	Derry Gibson; Justin Ivory
Bleach Field	John Cullen	Errionagh Bog	Kate Welsby
Blessington Reserve	Native Woodland-Trust	Esker Monastery	Ben Lodge
Blossom Farm	Donal Sheehan	Farnaght Wood	Native Woodland-Trust
Boardstown Bridge	Lesley Whiteside	Feakle	Hannah Mulcahy
Bog Walk Frenchpark	Padraig Roche	Fermoy Bypass Bridge	Tom Kenny
Borris Demesne	Fintan Ryan	Flagmount	Donna Smith
Bothwell's Farm	Heather Bothwell; Ismay Bothwell	Flynns Field	Ger O'Donnell
Boyne Coast & Boyne Coast 2	Annette Lynch	Fountain Cross Farm	Stephen Lester
Brayhead	Cathy Kelly; Derry Gibson	Garretstown Wood	Peter Wolstenholme
Burke Lake Walk	Raymond Kazmierczak	Garryland Wood	Martin Byrnes; Elizabeth Byrnes
Cabinteely Park	Sue White	Geashill	Caren Carruthers
Calvertown Farm & Garden Walks	Mireille McCall	Girley Wood/Bog	Native Woodland-Trust
Camolin Woods	Janet Whelehan	Glenanore Knockanaffrin	Mary Niblett
Camcor Wood	Native Woodland-Trust	Glencoum	Liam Lysaght
Capard, Slieve Blooms	Jason Monaghan	Glendalough Upper Lake	Ian Edwards
Cappagh Park Bearn Wood	Deirdre Murphy	Glengarriff Woods	Clare Heardman
Cappamurra	Finbarr Ryan	Glenmacannive	Richard McCafferty
Carnowen Farm	Liz Sheppard	Glenveagh & Glenveagh 2	Clare Bromley
Carriganard-Ballycashin	Denis Cullen	Golden Mile	Lorna Folan
Carriganore	Niamh Phelan	Golf Forest	Sean Forde
Carrigeens	Howard Preston	Gortigrenane	Rodney Daunt
Carrigmore	Christian Osthoff	Gortlecka Orange Trail	Eamonn Twomey
Carrow/ Scarrough	Malcolm Tanner	Gracedieu	Native Woodland-Trust
Carrowcrory	Gregory Daly	Grallagh Knocknanuss	John Fogarty
Castleconnell Riverside Meadow	John Hardiman	Green Road Murrough	Mary Howard
Castletaylor	Padraig Keirns	Gurteen Bog	Aine Fenner

**Table 4** Sites monitored under the Irish Butterfly Monitoring Scheme

Site Name	Recorder	Site Name	Recorder
Higginstown/Balrenny	Owen McCabe	Muckcross	Sean Forde
Hortland	Patrick Sheridan	Mulhussey	Jesmond Harding
Humphrystown Reserve	Native Woodland-Trust	Mullaghmore	Linda Morrison; Linda Paterson
Hurtle	Oisin Duffy; Mairead Crawford	Mullinderry	John Cullen
Howth Cliff Path	Frank Smyth	Newbridge Park Fingal	John Lovatt
Inchinashincane	Enda Kiernan	Newpark	Eugene McGettrick; Rosemary Kitchin
Inis Mor 1 An Fhirpis	Michael O'Connell	Newvillage, Oughterard	Frank Murphy
Keadeen	John Rossiter	Old Woodland	Linda Nixon; Lynn Daley
Keelcuil 2	Bryony Williams	O'Sullivan Mile	Pat Doncaster
Keiloge	Stefanie Fleischer	Pollardstown Fen	Roy Thompson
Kilbride	Marie Power	Pollough	Grainne Reidy
Kilkenny City Canal Walk	Brian Good	Portlick	Dave McKay
Kilkeran	Abigail Brewer; Ciaran Cronin	Quinaltagh	Linda McGagh
Killanniv ED	Raymond Kazmierczak	Raven Nature Reserve	John Kinsella; Bruce Walker
Killesk	Nigel O'Brien	Renville Park	Rebecca Teesdale
Killiney Hill Park	Michael Kingston	Rinnamona	Kate Lavender
Killiney Shanganagh Estuary	Roslyn Nicholson	River Corrib	Elaine O'Riordan; Elizabeth Gosling; Nick Marchant
Killinick	John Kehoe	River Martin	Tim Butter
Killruddery House	Derry Gibson; Justin Ivory	Rocky Road	Paula McHale
Killyconny Bog	Tina Aughney	Ross East	Native Woodland-Trust
Killykeen	David McDonagh	Rosslare Strand	Emmet Fahy
Killywilly	Naomi Mitten	Rosnaggreine	Ryner Weinreich
Kilmoon	Barry Mahon; Nuala Mahon	Royal Canal, Clongawny	Richella Duggan
Kilmacroy	Kate Welsby	Royal Canal, Maynooth	Pat Bell
Kiloughter	Margaret O'Keeffe	St Endas National Historic Park	Edward Hill
Knockavota Kilderry	Michael O'Sullivan	Saint Helens	Derry Gibson; Valerie McGrath
Knocklyon	Derry Gibson; Pauline Murray	Sceachin a Radharc	Ted Cook
Knocknamanagh Minane Bge	Philip O'Donaghue	Sea Road	Sam Connolly
Knockreer	Shonagh Gray	Sean Lenihan Walk Aughrim	Gillian Stewart
Ladystown	Jim Galloway	Shanganagh Park	Brendan Dunleavy; Nigel O'Brien
Laragh Reserve	Native Woodland-Trust	Shanvolahan	Owen McCabe
Leixlip-Louisa Bridge	Eddie Gilligan	Slieve Carran	Eamonn Twomey
Letter	Daragh Smyth	Spain Road	Orla Murphy
Lecarrow Wood	Native Woodland-Trust	St. Brendans Well	Patrick Fahy
Lower Dodder Road	Malcolm Taylor	St. Johns Wood	Native Woodland-Trust
Luimnagh East	Rory O'Callaghan	Stacumny	Pat Bell
Lullymore West Bog	Irish Peatland Conservation Council	Tayto Park	Jessica Harley; Lee Donohoe
Lurgabrack/Tramore	Hannah Sheridan	Temple House	Cicely Gunton
Mannin	Simone Schmalzer	Terenures Bushy Park	Angela Dakin
Marlay Park	Karin and Gerald Manning	Terryland River	Sean Gallanagh; Tom Cuffe
Marlinstown South	Lesley Whiteside	Togher Bog	Sean Mullins
Mass Path Kilcoole	Justin Ivory	Tooreen	Tony Miller
Merlin Park Woods	Caroline Stanley	Toragh Wood	Native Woodland-Trust
Midleton Route 1 & 2	Barry O'Sullivan	Trail Kilkenny Bennettsbridge	Lynda Weekes
Millrace Meadow	Ronnie Murphy	Tramore River	Carol Fynn
Milltown Wood	Rob Wheeldon	Turraun	Mark McCorry
Milltown Wood 2	Sara Garcia Hipolito	Uragh	Fiona Wheeldon
Miners Village Glendalough	Gillian Stewart	Waterford Nature Park	Oisin Duffy
Minane Bridge (Tracton Route)	Barry O' Sullivan	Waterstown Park 2	Christopher Walsh; Derry Gibson; Paul Corcoran
Monaghan Town	Rory Sheehan	Westmeadow	Kathryn Freeman
Monard	Tim Butter	Wicklow Head&Wicklow Head2	Darren Ellis
Money	Siobhan Hardiman	Wildfowl Reserve Drive	Andrew Butler
Montiagh	Caitriona Cunningham; Eddie Smyth	Woodville Bog	Eileen McGrath
Mount Usher	Justin Ivory		



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

Site name	Recorder	Glencoum	Liam Lysaght
Abbeyleix Bog Walk	Chris Uys	Glencree River	Jonathan Stanley
Ardmore	Paddy Sheridan	Gortlicka Dawros Kenmare	Mary Mahony
Ardtermon	Howard Preston	Gortyarn	Carol Gilroy
Baldoyle Racecourse	Frank Smyth	Grand Canal, Rathangan	Vanessa Mack
Ballina	Paddy Sheridan	Grand Canal, Lyons Demesne	Eddie Gilligan
Ballinafagh Bog	Pat Bell	Greencastle	Carol Gilroy
Ballinclogher	Sandra Sheridan	Greenway, Clonea	Rene Murray
Ballon circuit	Paul Cutler	Hillswood	Joe Duane
Ballyboy	Mick O'Connor	Hollybush Lane	Lynne Gillespie
Ballyconniger	Lynn Cassidy	Jamestown	Will Warham
Ballyhuppahane	Richard Duff	JF Kennedy Arboretum	Julie Kendall
Ballymartin	Liam Lysaght	Kildoney coastal walk	Frank Smyth
Ballyroon, Sheep's Head	Damaris Lysaght	Kilfarrasy	Tomás Murray
Ballyteague	Paddy Sheridan	Kill Hill	S.J. O Byrne
Barrow Way, Ardreigh	Pat Bell	Kings Bog	Paddy Sheridan
Bredagh Glen	Carol Gilroy	Ladestown, Lough Ennell	Richella Duggan
Bull Island, Dollymount	Frank Smyth	Leixlip	Paddy Sheridan
Bunakippaun Wood	Nick Larter	Leixlip Castle	Eddie Galligan
Buncrana	Carol Gilroy	Lisduane	Joe Duane
Burtown House	Paddy Sheridan	Lough Funshinagh	Joe Duane
Cabragh	Ciaran O'Sullivan	Lr. Rossnowlagh	Frank Smyth
Caragh View, Killorglin	Mary Mahony	Lurgabrack	Anita Donaghy
Carriganore	Tomás Murray	Maganey	Paddy Sheridan
Castlecoote	Joe Duane	Meelick	Joe Duane
Castletown House Parklands	Pat Bell	Moher	Joe Duane
Christianstown	Paddy Sheridan	Monamolin	Mick O'Connor
Cloncurry Bridge, Royal Canal	Sandra Sheridan	Moyle Abbey	Paddy Sheridan
Cloney Beg	Val Swan	Kilderry Forest Walk	Lynne Gillespie
Cois Coinne/Cuskinny	Colm Ó Ceallacháin	Murvagh	Ethna Diver
Coolcurtoga, Glenflesk	Mary Mahony	Mylerstown	Liam Lysaght
Coolure, Castlepollard	Richella Duggan	New Down, The Downs	Richella Duggan
Corballis Hill	Paddy Sheridan	Philipstown	Paddy Sheridan
Corbally	Theresa Bennet	Ponsonby Bridge, Grand Canal	Pat Bell
Corlea	Áine Fenner	Rahin Wood	Pat Bell
Cornamucklagh	Paddy Sheridan	Rathsilla Wood	Marion Brady
Cromwellstown	Paddy Sheridan	Rock Island	Damaris Lysaght
Deerpark House, Mountrath	Richard Duff	Rushnachara Ahakista	Damaris Lysaght
Dempsey's Deerpark	Richard Duff	Slatt Lower	Hugh Sheppard
Derrycahill	Joe Duane	Solsborough	Mick O'Connor
Derrylea	Paddy Sheridan	St Kierans	Marion Brady
Donadea Forest	Sandra Sheridan	Streamstown	Áine Fenner
Drumgeeny	Victoria Fitzpatrick	Tarmonbarry	Áine Fenner
Drummin	Karina Dingerkus	The Ragg	Ciaran O'Sullivan
Fisherstown Bridge, Barrow Line	Val Swan	Thomastown	Joe Duane
Garrarus	Tomas Murray	Upper Newtown	Joanna Hodghton
Gealáin Gréine	Margaret Brennan	Wicklow Head	Christian Osthoff
Geashill	Patrick Foley	Wicklow Head	Ian Edwards
Glen Lake	Áine Fenner	Woodstown	Tomás Murray