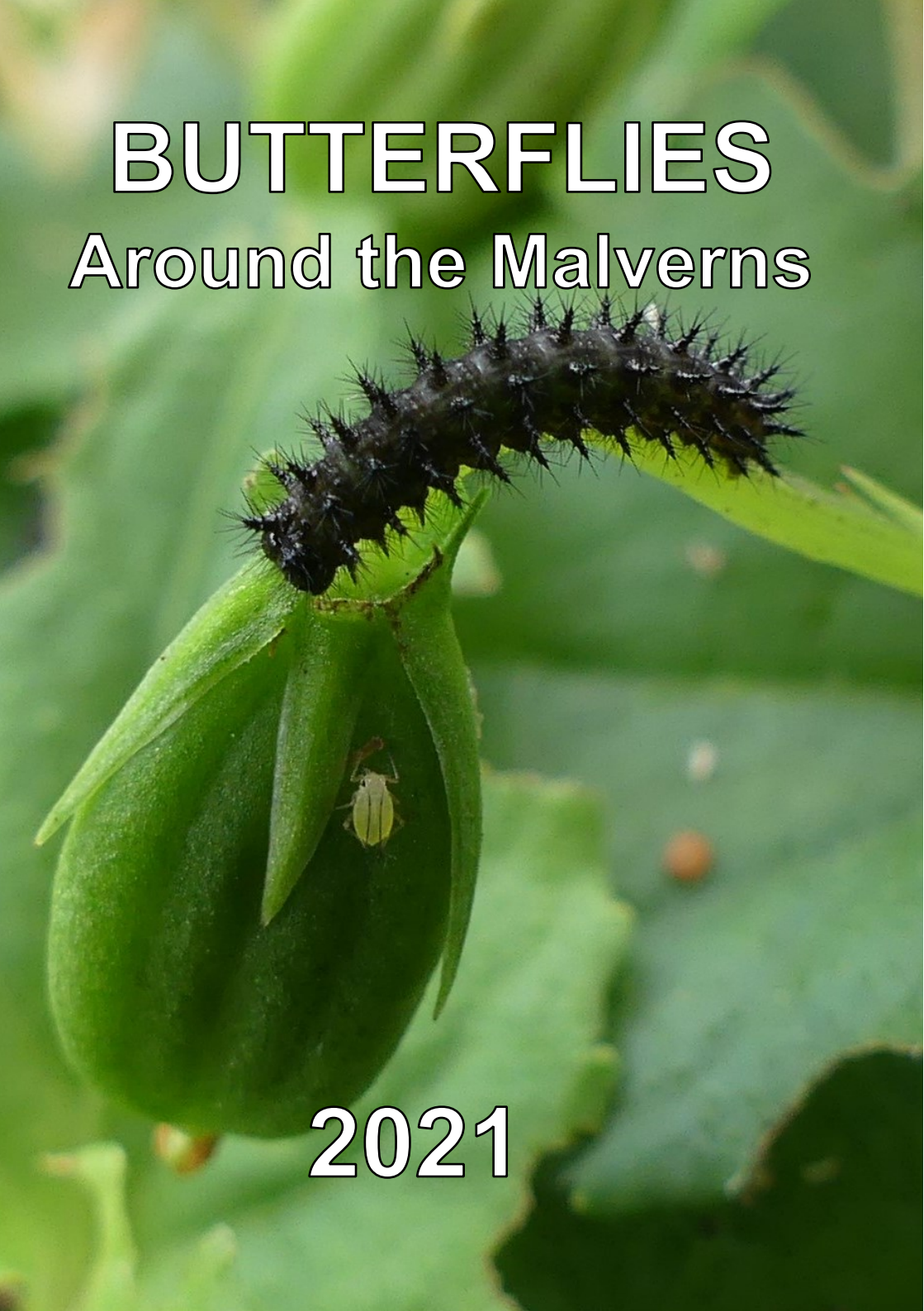
BUTTERFLIES

Around the Malverns



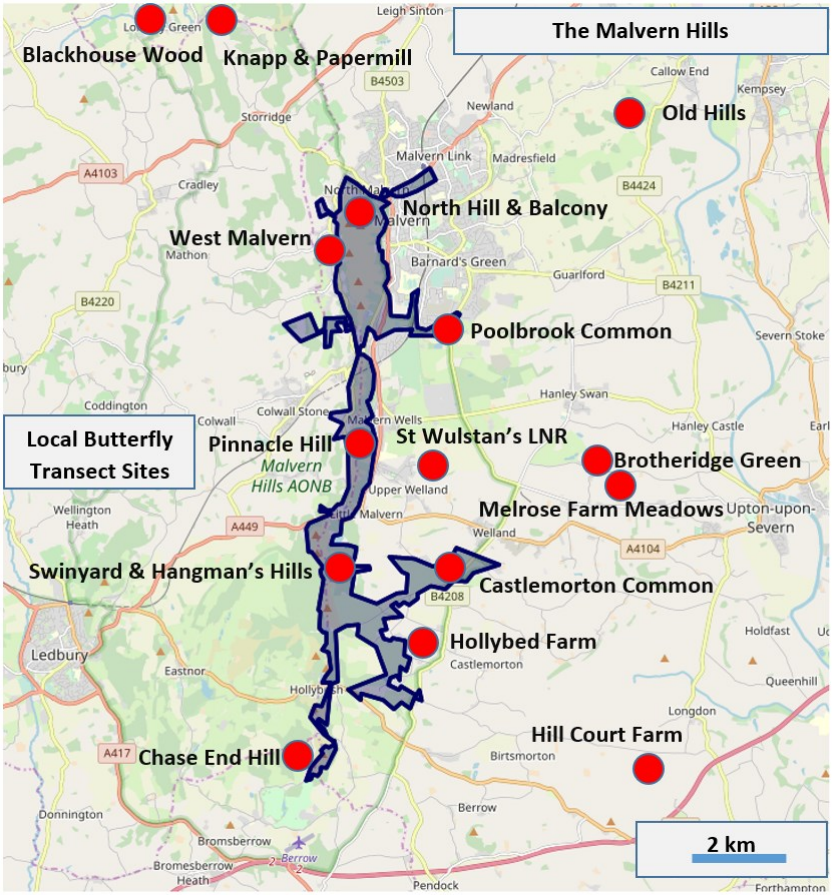
2021

Malvern Hills
Lost Fritillaries Project

Published by Malvern Butterfly Group &
West Midlands Butterfly Conservation

Butterflies of the Malvern Hills

Butterfly Transect Sites around the Malvern Hills



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Butterflies Around the Malverns 2021

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Mel Mason – Editor
Malvern Butterfly Group & Vice-chair West Midlands Butterfly Conservation

Foreword

This report is designed to celebrate the diversity of butterflies around the Malverns. It is compiled from the records of a large and increasing number of casual and transect recorders.

Butterflies are one of the key indicators of the health of our environment. The wealth of data accumulated over recent years is analysed to provide population trends and an insight into the present state of our local wildlife. This information helps to inform wildlife organisations to consider appropriate wildlife management on the Malvern Hills, surrounding Commons & Meadows, and nearby local wildlife reserves.

There are plenty of opportunities to become more involved in recording and conservation work with the Malvern Butterfly Group and West Midlands Butterfly Conservation, and also Malvern Hills Trust and Worcestershire Wildlife Trust. Check the online websites / email addresses for more details.

Many thanks to all those who have contributed to this report.
All contributors are listed and acknowledged at the end of the book.

You can share your butterfly and moth sightings at:

Facebook Malvern Butterfly Group – local WMBC members

Facebook BC West Midlands butterflies and moths – all WMBC members

Please submit all records of sightings at:

iRecord online... https://irecord.org.uk/home

For more information from around the West Midlands:

West Midlands Butterfly Conservation website at:

https://westmidlandsbutterflyconservation.wordpress.com

Introduction

This report is compiled from a combination of transect and casual records. Fifteen local transects are walked by volunteers on a weekly basis from April to September and up to 40,000 transect records counts are submitted each year to UK Butterfly Monitoring Scheme (UKBMS). In addition, many casual sightings of butterflies and day-moths are submitted via iRecord online. Contributors are acknowledged at the end of this report, although notable records are linked to the observer's initials given to authorise species records. Details of site locations are also given at the end. Local transect counts are analysed to give an overview of the abundance of local butterfly species and population trends while casual sightings help to provide an overview of the less common species often overlooked on transect sites. Timed counts provide more detailed information for less common species including Grayling, *Hipparchia Semele* [VU].

Overall abundance of butterflies in 2021 declined by at least 3% between 2020-2021 and approximately -19% compared with the average between 2011-20, and the fourth lowest since 2011 [refer to table pp 20-21 Population trends between 2011- 2021]. However, the annual change is an estimate due to the comparison with 2020 when some records in April and early May were missing during "Lockdown" and restricted access to monitoring sites.

Butterfly Conservation produced an important report called "The State of the UK's Butterflies 2015" with the headline "40 year slump for UK Butterflies". More than three quarters of UK's butterfly species have declined in either abundance or occurrence (or both) in the last 40 years with some common species suffering significant slumps.

Between 2021-25 we are planning to buck this trend and reintroduce the **Pearl-bordered Fritillary** *Boloria euphrosyne* in a project called the **Malvern Hills Lost Fritillaries Project** pp 52-71.

Leaflet - Butterflies around the Malvern Hills

This free leaflet is available by visiting the Malvern Hills Trust, Manor House, Grange Road, Malvern, WR14 3EY and the Local Tourist Office, The Lyttelton Well Courtyard, 6 Church Street, Malvern WR14 2AY. It includes an identification chart of 36 local species, a distribution map, the flight times, hibernation state in winter, caterpillar foodplants and habitat hotspots.

Overview of the local butterfly year 2021

Population trends… The significant increase of 34% in the overall abundance of butterfly numbers on our transect sites in 2019 is in contrast to a 30-40% decrease in 2020 and a further decrease of at least 3% this year. It is difficult to be more accurate because many sites could not record numbers in spring 2020 during "Lockdown". However, 31 species of butterflies were recorded around the Malverns in 2021.

Casual Sightings… All the four hibernators **Brimstone**, **Small Tortoiseshell**, **Peacock** and **Comma** emerged in good numbers in local gardens as early as 25-Feb.

Small White, **Orange-tip**, **Holly Blue**, **Large White** and **Speckled Wood** emerged before the end of March.

In a cold April **Green-veined White**, and **Small Copper** emerged, while a migrant **Red Admiral** individual appeared as early as 23-Apr. As in Lockdown 2020, male **Emperor Moths** were lured into several recorders' gardens dismissing the myth of it being a rare species around the Malverns.

In a dull and damp May **Brown Argus**, **Dingy Skipper**, **Green Hairstreak, Small Heath** and **Common Blue** emerged.

Meadow Brown, Painted Lady, **Large Skipper**, **Marbled White, Ringlet**, **Small Skipper**, **Gatekeeper** emerged during June.

Silver-washed Fritillary, White Admiral, Grayling, Essex Skipper, **Purple Hairstreak** and **White-letter Hairstreak** emerged during a very hot July.

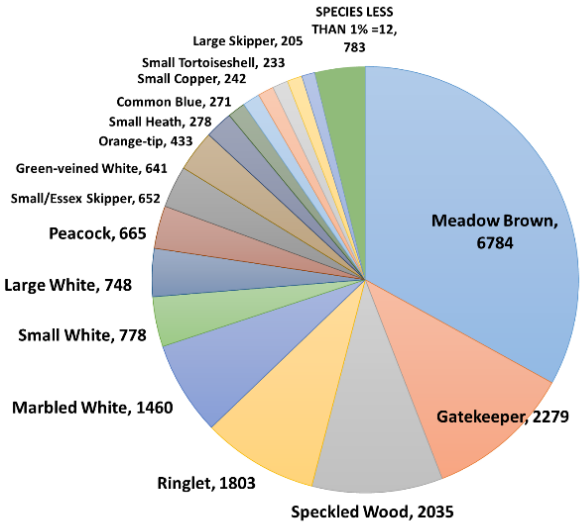
Many species emerged later than usual following a cold spring, and Dark Green Fritillary and Clouded Yellow were not recorded in 2021.

At the end of the recording season, October was mild with casual sightings of Speckled Wood, Red Admiral, and the odd Comma.

A sighting of **Purple Emperor** on 19-Jul (TWO) in a garden at Fruitlands, is the most surprising record for 2021 and the first since last century. It has also been recorded in "...Grafton Wood, Tiddesley Wood, and Broadway Hill this year; and on 28-Sep the first two larvae were confirmed at Tiddesley Wood - hence they are definitely breeding here" (SPR).

Percentage abundances at 15 local transect sites

2021 UKBMS Transect Abundances - 30 species total 20,537



TRANSECT SPECIES	Number	% TOTAL		TRANSECT SPECIES	Number	% TOTAL
ORDER OF ABUNDANCE				LESS THAN ONE PERCENT		
Meadow Brown	6784	33.0		Red Admiral	188	0.9
Gatekeeper	2279	11.1		Holly Blue	168	0.8
Speckled Wood	2035	9.9		Brimstone	150	0.7
Ringlet	1803	8.8		Silver-washed Fritillary	84	0.4
Marbled White	1460	7.1		Purple Hairstreak	60	0.3
Small White	778	3.8		Green Hairstreak	40	0.2
Large White	748	3.6		Painted Lady	40	0.2
Peacock	665	3.2		Brown Argus	28	0.1
Small/Essex Skipper	652	3.2		Dingy Skipper	15	0.1
Green-veined White	641	3.1		White Admiral	8	0.0
Orange-tip	433	2.1		Grayling	3	0.0
Small Heath	278	1.4		White-letter Hairstreak	2	0.0
Common Blue	271	1.3				
Comma	247	1.2				
Small Copper	242	1.2				
Small Tortoiseshell	233	1.1				
Large Skipper	205	1.00				
SPECIES LESS THAN 1% =12	783	3.81				
TOTAL records	20537	100.0		REMAINING 12 SPECIES	783	3.81

**Grayling from timed count record*

Historic loss & gain of species

1886 – Malvern Naturalist Field Club publish a Calendar of 46 Butterfly species regularly seen around the Malverns including Brown Hairstreak, Small (Little or Bedford) Blue, Marsh (Greasy) Fritillary. Pale Clouded Yellow, Bath White, Black-veined White

1960's – WMBC & MHC report 40 Butterfly species including Large Tortoiseshell, Camberwell Beauty and Purple Emperor

1980's – WMBC and MHC report 37 species including Wood White, Wall, Grizzled Skipper, High Brown Fritillary, Pearl-bordered Fritillary, Small Pearl-Bordered Fritillary

2000's – WMBC and MHC report 31 species regularly seen around the Malverns including Grayling and a new species Essex Skipper – plus regular sightings of Dark-Green Fritillary in small numbers, occasional sightings of Clouded Yellow

2021-25 – WMBC plan to reintroduce Pearl-bordered Fritillary *Boloria euphrosyne* on the southern Malvern Hills.

Surprise sightings in recent years

Small Pearl-bordered Fritillary photographed 2013 on Swinyard Hill [Mick Colquhoun] and two recorded on 06-Jul-2017 on Chase End Hill [DVE]

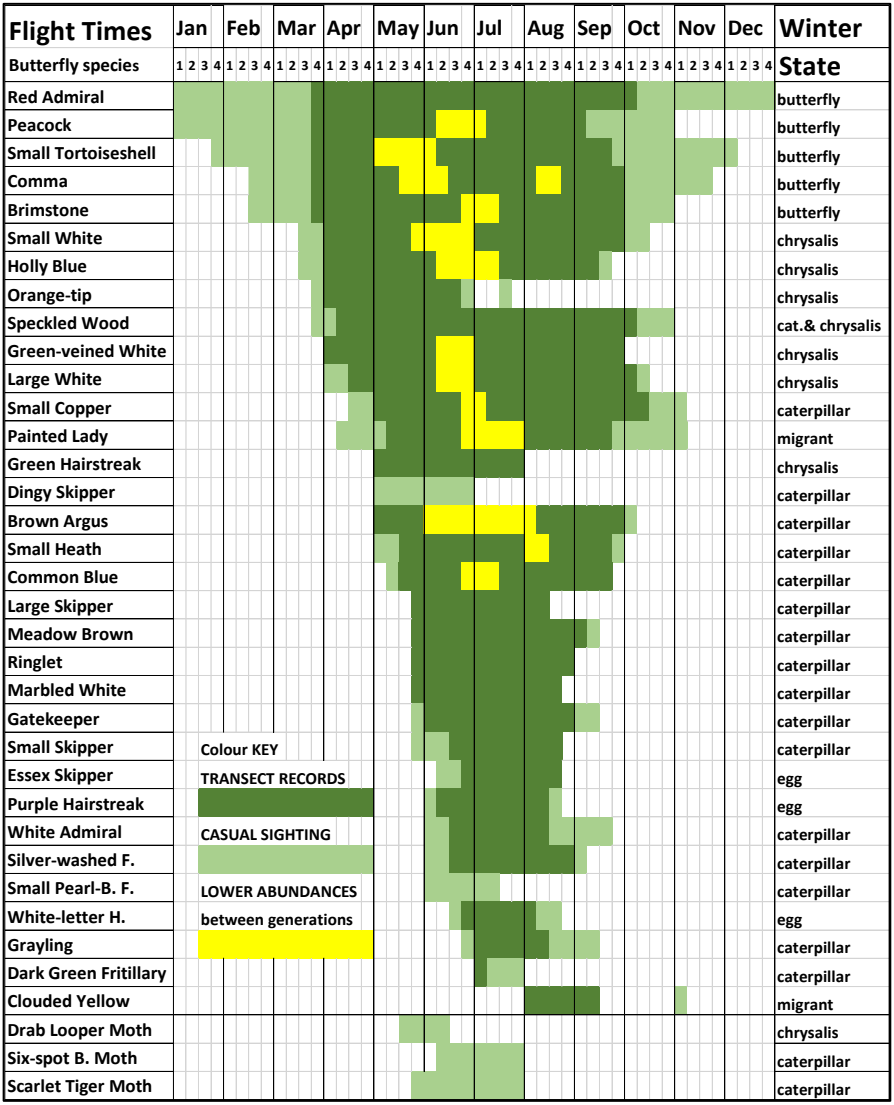
Grizzled Skipper photographed on 22-May-2018 at Leigh Sinton fisheries [JLA]

Swallowtail photographed on the top of North Hill on 23-Jul-2019 [Claire Alcock] and possibly a release from a nearby wedding ceremony

Wall photographed on the eastern slopes of North Hill on 24-Jul-2019 [John Howes] and 16-Aug-2018 [Edward Betteridge]. Both these sightings suggest this species may be migrating from nearby sites in Shropshire in an attempt to recolonise the Malvern Hills – previously recorded in 2009 and 2010.

Purple Emperor photographed in a Fruitlands garden 19-Jul-2021 [TWO}, the first record this century.

Flight Times (taken from local records over recent years)



Phenology and weather 2021

Weather summary - 2021 produced several extreme weather events. Following a mild winter, our four hibernators were seen as early as Feb-21. However, April was unusually cold but very dry and sunny, while May was one of the dullest and wettest on record - and many spring butterflies emerged later than usual. June was warmer and drier than usual. July was the fifth warmest on record including 8 continuous days 16-22-Jul above 27°C. August was slightly warmer, drier, and sunnier than normal, and September was the second warmest on record. October was mild with good numbers of Speckled Wood still recorded. The averaging period used by the Met Office is 1981-2010. More details available online:

https://www.metoffice.gov.uk/research/climate/maps-and-data/summaries/index

Phenology

The RAW data is used from fifteen local transect sites in 2021 to inform the phenology. Casual sightings are used where species emerged prior to April and for the less common species not regularly seen on the transect routes.

The table on page 9 lists the first flight dates in chronological order for local sightings in 2020. A species name ending in “2” or “3” denotes a second or third emergence. Further broods of the following species can appear in August - October, but dates for these emergences are less reliable or omitted: Large White, Small White, Green-veined White, Small Copper, Red Admiral, Painted Lady, Comma, Speckled Wood and Small Heath

The last column shows the change in the number of days between the emergent dates of each species in 2021 compared with the average emergent dates between 2011-2020.

A mild winter encouraged the four hibernators to emerge earlier in February, but a cold April and wet May resulted in many spring species emerging later than usual. Overall, 16 out of 30 species of first-generation butterflies emerged between 3-28 days later compared with the average numbers and dates between 2011 and 2020. However, in a warmer summer the gap was reduced and only 5 out of 15 second-generation butterflies emerged between 1-6 days later.

Notable records include an early Small Copper on 19-Apr and a late first migrant Painted Lady on 5-Jun.

Phenology in chronological order 2021

Key: calculated from transect records except bold *italic* from *casual sightings*

Phenology determined from 15 Transects in 2021: Blackhouse Wood, Brotheridge Green, Castlemorton Common, Chase End Hill, Hill Court Farm, Hollybed Farm, Knapp&Papermill, Melrose Farm Meadows, North Hill & Balcony, Old Hills, Pinnacle Hill, Poolbrook Common, St.Wulstan'sLNR, Swinyard Hill. West Malvern

Species	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	Gen.	Change 2011-2021 Days
Brimstone	***25-Feb***	***16-Mar***	***15-Feb***	***15-Mar***	***24-Feb***	***12-Mar***	***07-Mar***	20-Feb	18-Mar	23-Feb	12-Mar	1	-8
Comma	***25-Feb***	***11-Mar***	***23-Feb***	*25-Mar*	***20-Feb***	***25-Mar***	01-Apr	09-Mar	06-Apr	06-Mar	12-Mar	1	-21
Peacock	***25-Feb***	***07-Mar***	***04-Feb***	***13-Mar***	***15-Mar***	***25-Mar***	***11-Mar***	07-Mar	03-Apr	24-Feb	04-Mar	1	-9
Small Tortoiseshell	***25-Feb***	***06-Mar***	***03-Feb***	***25-Mar***	***09-Mar***	***15-Mar***	***27-Feb***	24-Feb	04-Mar	07-Mar	24-Feb	1	-6
Small White	***21-Mar***	***23-Mar***	***25-Feb***	***26-Mar***	***15-Mar***	15-Apr	01-Apr	29-Mar	25-Apr	08-Apr	25-Mar	1	-8
Orange-tip	***30-Mar***	***01-Apr***	***26-Mar***	*08-Apr*	***31-Mar***	***31-Mar***	25-Mar	29-Mar	17-Apr	26-Mar	02-Apr	1	-2
Holly Blue	*31-Mar*	***23-Mar***	***24-Mar***	***14-Apr***	***25-Mar***	***07-Apr***	***05-Apr***	09-Mar	23-Apr	23-Mar	22-Mar	1	3
Large White	***31-Mar***	***01-Apr***	15-Apr	*08-Apr*	***08-Apr***	08-Apr	01-Apr	12-May	17-Apr	08-May	08-Apr	1	-15
Speckled Wood	*31-Mar*	***01-Apr***	***24-Mar***	***26-Mar***	***31-Mar***	08-Apr	08-Apr	11-Apr	06-May	28-Mar	02-Apr	1	-5
Green-veined White	***02-Apr***	***11-Apr***	***11-Apr***	*15-Apr*	***02-Apr***	08-Apr	15-Apr	30-Mar	29-Apr	26-Mar	02-Apr	1	-7
Small Copper	*19-Apr*	***15-Apr***	15-Apr	*06-May*	***15-Apr***	22-Apr	13-May	09-May	31-May	12-May	22-Apr	1	-12
Red Admiral	*23-Apr*	***22-Mar***	***15-Feb***	***28-Jan***	***24-Mar***	13-May	25-Mar	11-Mar	17-Jun	06-May	29-Apr	1	19
Brown Argus	*17-May*	***07-May***	13-May	***03-Jun***	***14-May***	20-May	10-Jun	21-May	none	22-May	30-Apr	1	-2
Dingy Skipper	17-May	02-May	14-May	20-May	13-May	20-May	20-May	03-May	18-May	12-May	28-Apr	1	5
Green Hairstreak	*18-May*	***07-May***	13-May	27-May	22-May	06-May	05-May	13-May	25-May	12-May	25-Apr	1	6
Small Heath	*20-May*	***06-May***	29-Apr	*13-May*	***08-May***	20-May	20-May	17-May	04-Jun	25-May	05-May	1	5
Common Blue	*25-May*	***01-May***	12-May	**23-May**	13-May	20-May	13-May	16-May	03-Jun	25-May	25-Apr	1	10
Meadow Brown	*04-Jun*	***21-May***	09-Jun	03-Jun	30-May	03-Jun	03-Jul	01-Jun	25-Jun	19-Jun	31-May	1	-4
Painted Lady	05-Jun	***12-May***	***19-Apr***	**20-Apr**	01-Apr	13-May	03-Jun	03-May	10-Jul	26-May	02-Apr	1	28
Large Skipper	12-Jun	19-May	01-Jun	27-May	31-May	03-Jun	03-Jun	26-May	14-Jun	24-Jun	22-May	1	11
Marbled White	22-Jun	08-Jun	16-Jun	10-Jun	14-Jun	10-Jun	17-Jun	17-Jun	30-Jun	24-Jun	13-Jun	1	6
Ringlet	*22-Jun*	***10-Jun***	16-Jun	15-Jun	11-Jun	10-Jun	17-Jun	14-Jun	29-Jun	04-Jul	13-Jun	1	5
Small Skipper	23-Jun	15-Jun	16-Jun	03-Jun	17-Jun	24-Jun	01-Jul	21-Jun	03-Jul	15-Jul	09-Jun	1	2
Gatekeeper	30-Jun	22-Jun	22-Jun	*01-Jul*	***24-Jun***	01-Jul	08-Jul	22-Jun	11-Jul	17-Jul	02-Jul	1	-1
Silver-W. Fritillary	*01-Jul*	***21-Jun***	***26-Jun***	24-Jun	10-Jun	17-Jun	***30-Jun***	17-Jun	13-Jul	21-Jul	Unk	1	4
White Admiral	02-Jul	21-Jun	***02-Jul***	10-Jun	10-Jun	17-Jun	08-Jul	24-Jun	13-Jul	10-Jul	Unk	1	7
Grayling	*08-Jul*	***23-Jun***	***28-Jun***	***27-Jun***	***23-Jun***	***01-Jul***	09-Jul	09-Jul	15-Jul	21-Jul	10-Jul	1	3
Essex Skipper	14-Jul	24-Jun	22-Jun	03-Jun	24-Jun	01-Jul	01-Jul	23-Jun	08-Jul	11-Jul	13-Jun	1	19
Purple Hairstreak	17-Jul	15-Jun	***01-Jul***	17-Jun	10-Jun	01-Jul	08-Jul	30-Jun	01-Jul	08-Jul	25-Jun	1	20
White-L. Hairstreak	*23-Jul*	***22-Jun***	***28-Jun***	***25-Jun***	***18-Jun***	***03-Jul***	***23-Jul***	01-Jul	31-Jul	10-Jul	13-Jun	1	21
Small Tortoiseshell 2	03-Jun	20-May	17-Jun	17-Jun	02-Jun	10-Jun	17-Jun	08-Jun	29-Jun	11-Jul	03-Jun	2	-10
Comma 2	17-Jun	10-Jun	17-Jun	17-Jun	10-Jun	24-Jun	10-Jun	13-Jun	01-Jul	04-Jul	13-Jun	2	-1
Small White 2	17-Jun	10-Jun	24-Jun	17-Jun	24-Jun	24-Jun	24-Jun	09-May	07-Jul	15-Jul	24-Jun	2	-4
Large White 2	24-Jun	10-Jun	24-Jun	17-Jun	17-Jun	01-Jul	01-Jul	04-Jul	07-Jul	08-Jul	20-Jun	2	-2
Red Admiral 2	24-Jun	27-May	17-Jun	20-May	17-Jun	15-Jul	17-Jun	01-Jul	22-Jul	01-Jul	26-Jun	2	2
Brimstone 2	01-Jul	01-Jul	15-Jul	02-Aug	08-Jul	22-Jul	08-Jul	11-Jul	23-Jul	08-Aug	25-Jun	2	-15
Green-veined White 2	01-Jul	10-Jun	24-Jun	24-Jun	24-Jun	24-Jun	01-Jul	29-Jun	17-Jul	15-Jul	26-Jun	2	3
Small Copper 2	01-Jul	01-Jul	22-Jul	08-Jul	08-Jul	22-Jul	08-Jul	07-Jul	01-Aug	22-Jul	27-Jun	2	-12
Peacock 2	08-Jul	24-Jun	15-Jul	01-Jul	01-Jul	08-Jul	15-Jul	07-Jul	13-Jul	28-Jul	20-Jun	2	1
Common Blue 2	15-Jul	08-Jul	29-Jul	08-Jul	08-Jul	22-Jul	15-Jul	14-Jul	27-Jul	09-Aug	26-Jun	2	-2
Holly Blue 2	15-Jul	24-Jun	15-Jul	01-Jul	01-Jul	15-Jul	15-Jul	16-Jul	22-Jul	15-Jul	01-Jul	2	6
Brown Argus 2	22-Jul	15-Jul	29-Jul	08-Jul	05-Aug	22-Jul	22-Jul	20-Jul	22-Jul	09-Aug	23-Jul	2	-2
Painted Lady 2	22-Jul	19-Aug	12-Aug			29-Jul	12-Aug	18-Jul	26-Jul	25-Jul	16-Jun	2	-6
Speckled Wood 2	29-Jul	17-Jun	24-Jun	15-Jul	29-Jul	18-Jul	22-Jul	23-May	22-Jun	08-Aug	05-Jul	2	23
Small Heath 2	29-Jul	29-Jul	12-Aug	05-Aug	05-Aug	01-Jul	26-Aug	11-Jul	26-Aug	05-Jul	04-Jul	2	1
Red Admiral 3	26-Aug	19-Aug	19-Aug	19-Aug	19-Aug	09-Sep	02-Sep	19-Aug	09-Sep				
Small Copper 3	09-Sep	19-Aug		09-Sep									
Clouded Yellow		30-Jul						04-Aug	02-Aug		08-Aug		
Dark Green Fritillary		***22-Jun***	***13-Aug***	***21-Jun***	***09-Jul***		01-Jul	27-Jul	14-Jul				
High Brown Fritillary					last seen 2008								
Pearl-bord. Fritillary					last seen 1997 & 1998								
Small Pearl-bord. Frit.					***06-Jul***				***30-Jun***				
Wall Brown			***24-Jul***	***16-Aug***	previously seen 2009 & 2010								
Species	**2021**	**2020**	**2019**	**2018**	**2017**	**2016**	**2015**	**2014**	**2013**	**2012**	**2011**	**Gen.**	**Days**
		Overall change in 2021 compared with average date between 2011-2020											**1**
		First generation - change in 2021 compared with average date between 2011-2020											**2**
		Second generation - change in 2021 compared with average date between 2011-2020											**-1**

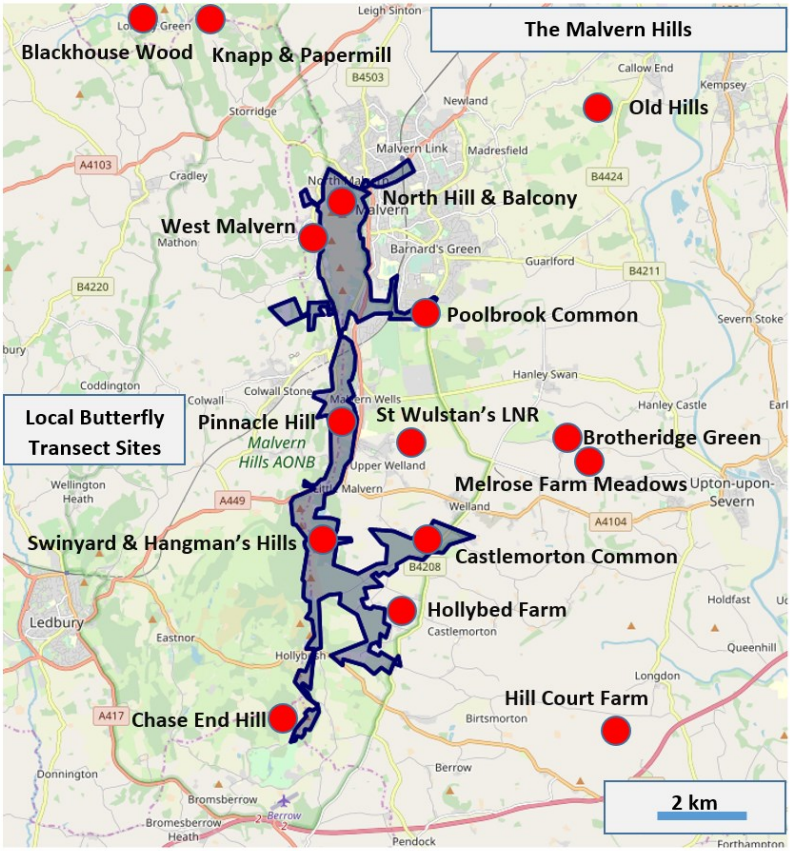
Annual Abundances 2014-2021

The percentage change in annual abundance is calculated by comparing the total records for the same sites between each two-year period.

Annual Abundances		2014 to 2015		2015 to 2016		2016 to 2017		2017 to 2018		2018 to 2019		2019 to 2020		2020 to 2021		2021 to 2022	
Transect 2021	Recorder	2014	2015	2015	2016	2016	2017	2017	2018	2018	2019	2019	2020	2020	2021	2021	2022
Blackhouse Wood	APE, KFA												incomplete	incomplete		998	
Brotheridge Green	KLE	1054	1049	1049	622	622	1015	1015	1214	1214	1123		incomplete	incomplete		850	
Castlemorton Common	PTA, IDU	2562	1763	1763	750	750	1562	1562	1476	1476	3275		incomplete	incomplete		833	
Chase End Hill	DVE	-	-	711	582	582	538	538	893	893	623		incomplete	incomplete		512	
Hill Court Farm	DVE	-	-	7266	2614	2614	6947	6947	4806	4806	9214		incomplete	incomplete		2546	
Hollybed Farm	MBE	2182	2351	2351	1720	1720	3164	3164	2281	2281	3039		incomplete	incomplete		2049	
Knapp & Papermill	GLO	2174	2508	2508	1893	1893	2268	2268	2235	2235	2752	2752	2016	2016	2105	2105	
Melrose Farm Meadows	KLE	1573	1589	1589	884	884	2263	2263	2282	2282	2297		incomplete	incomplete		1777	
North Hill &Balcony	LLO, MMA	1355	1208	1208	817	817	1249	1249	1529	1529	1343		incomplete	incomplete		958	
Old Hills	LLO, MMA	2162	2051	2051	2329	2329	4241	4241	3286	3286	3802		incomplete	incomplete		1732	
Pinnacle Hill	JSL	-	-		-			1789	2197	2197	2278		incomplete	incomplete		1874	
Poolbrook Common	JLA	-	-		-			2370	3185	3185	5366	5366	3002	3002	1442	1442	
St Wulstan's LNR	DTA	982	1255	1255	912	912	1493	1493	1782	1782	2107		incomplete	incomplete		1494	
Swinyard Hill	RBA	-	-		-		-			1115	949		incomplete	incomplete		726	
West Malvern	DCO	556	473	473	304	304	673	673	708	708	817		incomplete	incomplete		651	
No. Sites Compared	15	9	9	11	11	11	11	13	13	14	14	2	2	2	2	15	15
Totals		14600	14247	22224	13427	13427	25413	29572	27874	28989	38985	8118	5018	5018	3547	20547	0
Average no. per site		1622	1583	2020	1221	1221	2310	2275	2144	2071	2785	4059	2509	2509	1774	1370	0
Annual %change	-		-2		-40		89		-6		34		-38		-29		

Note: The change in annual abundance between 2020 to 2021 is calculated from just two sites that recorded every week between April & September in both years - Knapp & Papermill and Poolbrook Common (Lockdown restricted access to 13 other local sites in 2020).

Local Transect Sites 2021



Each transect site is monitored 26 times per year - every week between 01-Apr to 30-Sep. It is divided into sections relating to different habitats or conditions (shaded, bare ground, coarse grass, fine grass, wooded, meadow, field margin, embankment, slope, quarry, etc.). The type and number of each species, and the temperature, wind speed and percentage of sunshine are recorded on each section of the route - and then entered online into the UK Butterfly Monitoring Scheme database. These records are shared with all wildlife organisations for analysis of population trends and research, to inform habitat management and to provide a very good indicator of biodiversity and the health of our environment.

Local Transect Sites 2021

There are now fifteen transect sites around the Malverns that provide an extensive coverage of the region.

Five transect sites are spread along the higher slopes of the nine mile / 14 km ridgeline of the Malvern Hills, four sites are located on the eastern commons near the lower slopes, and six are located on the perimeter of the Malverns

The most recent transects include Pinnacle Hill & Poolbrook Common in 2017, Swinyard Hill in 2018 and Blackhouse Wood in 2020.

Malvern Hills Trust – Seven local transect sites:

Castlemorton Common – very good for common species and Emperor Moth.

North Hill & Balcony - one of the lowest abundances but one of the best for diversity of species, including Green Hairstreak and Grayling - refer *to Grayling Report on Timed Counts 2020* on pp 72-79

Old Hills – the highest abundance and one of the best for diversity of species including Purple Hairstreak, White-letter Hairstreak & White Admiral

Pinnacle Hill – best site for Small Heath and Green Hairstreak

Poolbrook Common – one of the highest abundance especially Small & Essex Skippers, Marbled White, Common Blue, and Six-spot Burnet Moth.

Swinyard & Hangman's Hill – best site for Silver-washed Fritillary and one of the best for Purple Hairstreak. Selected site for reintroduction of Pearl-bordered Fritillary 2023-225

West Malvern – good for common species and occasional Green Hairstreak

Local Transect Sites 2021

Worcestershire Wildlife Trust – Six local transect sites:

Blackhouse Wood – good for common species especially Silver-washed Fritillary.

Hollybed Farm – much improved for common meadow species following recent practice of retaining wide margins around fields after hay cutting.

Hill Court Farm – by far the best site for total abundance of common species including Meadow Brown, Ringlet, Gatekeeper, Common Blue and Brimstone.

Brotheridge Green – very good for common species

Melrose Meadows – very good for common meadow species

Knapp & Papermill – one of the highest diversity of species, including Dingy Skipper

Additional – Three local transect sites:

Worcestershire City Council - St Wulstan's LNR – very good for common species.

Bromesberrow Estate - Chase End Hill – good for common species and rare Drab Looper Moth. Selected site for reintroduction of Pearl-bordered Fritillary 2022-25

Eastnor Estate – East of Obelisk - Selected site for reintroduction of Pearl-bordered Fritillary 2022-25

The *adjusted annual total* (or Estimate) for each transect is adjusted statistically to account for missed weeks, and this will hereafter be referred to simply as *total*.

Local Abundance and Trends 2021

The table on page 15 indicates the abundance and distribution of species seen in 2021 on fifteen transect sites. The table requires some explanation but will allow annual comparisons based on simple objective analysis. “Maximum count” sub-columns detail the “Transect site” with the “Maximum Total” of all transects. The “Av. Transect Total” gives the *total averaged over all transects where the species occurred*. “Percentage of transects” *where the species occurred* is also given. “Annual % Change” sub-columns detail percentage change from the previous year for the “Average Transect Total” and “Percentage of Transects” *where the species occurred*, to indicate if each is becoming more or less abundant or widespread locally.

The national long-term trend according to UKBMS from 1976 to 2014 (Brereton *et al.* 2014) is shown as “+” for increasing, “=” for stable and “-” for decreasing. A two-letter code may also be given according to the Red List of British Butterflies (Fox *et al.* 2010) as follows: Critically Endangered (CR), Endangered (EN), Vulnerable (VU) or Near Threatened (NT). A species without a two-letter code is of Least Concern.

The following species are rarely seen or were absent in recent years and so are excluded from the table (year of the last local sighting and the national status code are given in parentheses): Small Pearl-bordered Fritillary *Boloria selene* (2013 & 2017, NT), Pearl-bordered Fritillary *Boloria euphrosyne* (1998, EN), High Brown Fritillary *Argynnis adippe* (2008, CR) and Wall Brown *Lasiommata megera* (2018 & 2019, NT).

The table gives approximate indications of local abundance and distribution because the following factors can introduce artificial variability to the annual transect counts. Transects can have different numbers of sections, lengths, variability of walkers and numbers of missed weeks. Furthermore, the number of transects completed may vary from year to year.

Care should be taken regarding the scarce and localised species, where the figures in the table can indicate general trends but their accuracy is questionable due to the shortage of underlying records. Discussion for such species is included in the following species reports.

The “Annual % Change” from this year’s data [page 15] indicate that the butterfly numbers generally declined by at least 1% in 2021 - but “Lockdown” in spring 2020 restricted access to 13 sites producing a lower total. Therefore, the general decline in 2021 is more than suggested in this table.

Local Abundance and Trends 2021

On average there were 22 species per transect. The butterflies were generally found in similar locations as in 2020. Both the abundance and occurrence of each species are described in more detail in the species reports.

The table below uses data from fifteen transects: Blackhouse Wood, Brotheridge Green, Castlemorton Common, Chase End Hill, Hill Court Farm, Hollybed Farm, Knapp & Papermill, Melrose Farm Meadows, North Hill & Balcony, Old Hills, Pinnacle Hill, Poolbrook Common, St.Wulstan's LNR, Swinyard Hill and West Malvern.

ORDER	Species 2021	Maximum count		Av Transect Total	% of Transects	Annual % Change 2020 - 2021		Long term trend
		Transect site	Total			Average Transect Total	% of Transects	
1	Small/Essex Skipper	Knapp & Papermill	184	50	87	-18	-6	-
2	Large Skipper	Knapp & Papermill	29	15	93	4	1	=
3	Dingy Skipper	Knapp & Papermill	14	8	13	88	73	-VU
4	Clouded Yellow		0	0	0	0	0	LC
5	Brimstone	Old Hills	23	11	93	51	35	=
6	Large White	Old Hills	168	50	100	-17	0	=
7	Small White	St. Wulstan's LNR	270	52	100	-57	0	=
8	Green-veined White	Knapp & Papermill	185	43	100	-18	0	=
9	Orange-tip	Knapp & Papermill	73	29	100	88	117	=
10	Green Hairstreak	Pinnacle Hill	30	13	20	21	-13	-
11	Purple Hairstreak	Old Hills	44	12	33	100	-28	=
12	White-letter Hairstreak	Brotheridge Green	1	1	13	0	0	-EN
13	Small Copper	Pinnacle Hill	76	19	87	1	2	=
14	Brown Argus	Pinnacle Hill	18	5	40	47	-13	=
15	Common Blue	Hollybed Farm	47	18	100	-29	8	=
16	Holly Blue	North Hill	56	13	87	52	-6	=
17	White Admiral	Swinyard Hill	4	3	20	60	-13	-VU
18	Red Admiral	St. Wulstan's LNR	35	13	93	-13	-7	+
19	Painted Lady	St. Wulstan's LNR	10	4	67	140	44	=
20	Small Tortoiseshell	West Malvern	42	16	100	-30	8	-
21	Peacock	Pinnacle Hill	132	44	100	30	0	=
22	Comma	Old Hills	67	19	87	3	2	+
23	Dark Green Fritillary		0	0	0	0	0	LC
24	Silver-washed Fritillary	Blackhouse Wood	27	11	53	21	-23	+
25	Speckled Wood	Pinnacle Hill	439	136	100	52	0	+
26	Marbled White	Poolbrook Common	371	97	100	-32	30	=
27	Grayling		0	0	7	0	0	-VU
28	Gatekeeper	Pinnacle Hill	320	152	100	7	0	-
29	Meadow Brown	Hill Court Farm	1295	452	100	-1	0	=
30	Small Heath	Pinnacle Hill	110	35	53	-15	16	-NT
31	Ringlet	Hollybed Farm	243	120	100	16	0	+
	Annual Total 2020	Poolbrook Common	2546	1369	N/A	-1	N/A	N/A

Local Transect Site Records 2021

This table shows the total number of each species recorded on each of fifteen transect sites around the region. Maximum counts of each species are highlighted.

ORDER	Sites / Species 2021	Blackhouse Wood	Brotheridge Green	Castlemorton Common	Chase End Hill	Hill Court Farm	Hollybed Farm	Knapp & Papermill	Melrose Farm Meadows	North Hill & Balcony	Old Hills	Pinnacle Hill	Poolbrook Common	St Wulstan's LNR	Swinyard Hill	West Malvern	TOTALS	% TOTALS
1	Small/Essex Skipper		5	19		58	57	184	31	11	62	31	144	39	7	4	652	3.2
2	Large Skipper	9	10	14		22	3	29	28	11	21	29	12	3	6	8	205	1.0
3	Dingy Skipper	1						14									15	0.1
4	Clouded Yellow																0	0.0
5	Brimstone	4	16	9	4	8	2	18	2	21	23	10		17	6	10	150	0.7
6	Large White	25	21	28	23	46	40	24	5	87	168	71	7	145	11	47	748	3.6
7	Small White	11	40	23	40	101	56	9	14	41	14	44	39	270	26	50	778	3.8
8	Green-veined White	98	64	56	29	54	2	185	26	30	34	10	7	36	1	9	641	3.1
9	Orange-tip	12	40	26	51	17	14	73	34	22	40	29	8	29	25	13	433	2.1
10	Green Hairstreak									6		30				4	40	0.2
11	Purple Hairstreak							1		1	44	3			11		60	0.3
12	White-letter Hairstreak		1							1							2	0.0
13	Small Copper		7	2	12	11	16		8	37	2	76	4	1	22	44	242	1.2
14	Brown Argus				1			3	3	1	2	18					28	0.1
15	Common Blue	7	4	20	5	23	47	33	24	9	32	8	35	14	8	2	271	1.3
16	Holly Blue	14	14	4	5		6	15	6	56	3	14		2	11	18	168	0.8
17	White Admiral							2			2				4		8	0.0
18	Red Admiral	23	2	5	16	14	6	4	2	13	21	22		35	6	19	188	0.9
19	Painted Lady	1		2	7			4		2	4	7		10	2	1	40	0.2
20	Small Tortoiseshell	8	2	29	7	14	5	4	2	8	23	29	19	27	14	42	233	1.1
21	Peacock	102	12	41	18	32	9	60	22	56	52	132	3	50	15	61	665	3.2
22	Comma	15	9	11	11	8	6	53	9	10	67	9		26		13	247	1.2
23	Dark Green Fritillary																0	0.0
24	Silver-washed Fritillary	27	1					13		6	10	14			12	1	84	0.4
25	Speckled Wood	350	137	55	69	122	52	50	81	262	124	439	2	92	126	74	2035	9.9
26	Marbled White	2	3	54	1	311	134	104	274	4	117	16	371	28	40	1	1460	7.1
27	Grayling									3							3	0.0
28	Gatekeeper	52	52	150	27	285	144	120	152	87	255	320	249	227	98	61	2279	11.1
29	Meadow Brown	95	335	245	175	1295	1204	922	898	79	374	214	490	302	86	70	6784	33.0
30	Small Heath			3	1		3			37		110	2		78	44	278	1.4
31	Ringlet	132	75	37	10	125	243	181	156	60	238	189	50	141	111	55	1803	8.8
	Annual Total 2021	988	850	833	512	2546	2049	2105	1777	961	1732	1874	1442	1494	726	651	20540	100.0
	No. Species 2021	20	22	22	20	19	21	25	21	28	25	26	17	21	24	24	22	
	Annual Total 2020	1246	na	890	611	1912	1356	2016	na	754	2156	1595	3002	1261	627	529	17955	
	No. Species 2020	19	na	21	17	20	19	25	na	23	23	23	21	22	26	22	22	
	Annual Total 2019	na	1123	3275	623	9214	3039	2752	2297	1343	3802	2278	5366	2107	949	817	38985	
	No. Species 2019	na	21	22	23	22	23	26	21	26	26	26	23	23	26	25	24	
	Annual Total 2018	na	1214	1476	893	4806	2281	2235	2282	1529	3286	2179	3185	1782	1115	708	28971	
	No. Species 2018	na	22	21	20	23	19	27	20	28	26	25	22	21	24	22	23	
	Annual Total 2017	na	1015	1562	538	6947	3164	2268	2263	1249	4241	1789	2370	1493	na	673	29572	
	No. Species 2017	na	22	20	21	24	22	27	23	29	26	25	19	23	na	21	23	
ORDER	Sites / Species	Blackhouse Wood	Brotheridge Green	Castlemorton Common	Chase End Hill	Hill Court Farm	Hollybed Farm	Knapp & Papermill	Melrose Farm Meadows	North Hill & Balcony	Old Hills	Pinnacle Hill	Poolbrook Common	St Wulstan's LNR	Swinyard Hill	West Malvern	TOTALS	% TOTALS

Casual Sightings submitted to MBG 2014 to 2020

CASUAL SIGHTINGS 2014-2020 - 36 species	2014	2015	2016	2017	2018	2019	2020	Total
Brimstone	112	83	58	86	78	200	166	783
Brown Argus	8	1	2	11	48	8	10	88
Clouded yellow	5						1	6
Comma	25	59	50	258	124	152	180	848
Common Blue	72	41	152	132	297	125	87	906
Dark Green Fritillary	1		1	4	9	1	2	18
Dingy Skipper	3	1	25				6	35
Essex Skipper	4	1	34	19	28	35	17	138
Gatekeeper	13	106	326	248	254	331	419	1697
Grayling	169	143	132	209	224	217	26	1120
Green Hairstreak	3	16	6	6	6	3	7	47
Green-veined White	10	29	123	105	205	49	126	647
Grizzled Skipper					1			1
Holly Blue	11	35	60	130	178	161	316	891
Large Skipper	5	41	50	66	51	59	50	322
Large White	14	53	145	155	302	140	383	1192
Marbled White	103	268	278	338	179	467	324	1957
Meadow Brown	276	433	1025	1191	1290	1725	2138	8078
Orange-tip	35	52	86	173	197	222	387	1152
Painted Lady	8	26	38	36	44	284	34	470
Peacock	80	135	46	95	81	399	558	1394
Purple Hairstreak	31	30	51	97	466	58	61	794
Red Admiral	29	33	133	472	112	185	119	1083
Ringlet	4	174	287	564	398	405	146	1978
Silver-washed Fritillary	17	88	115	106	81	42	21	470
Small Copper	23	40	44	67	82	18	28	302
Small Heath	168	267	128	347	308	127	124	1469
Small Pearl-bordered Fritillary				2				2
Small Skipper	111	265	189	210	69	113	68	1025
Small Tortoiseshell	154	137	93	171	120	221	333	1229
Small White		16	141	196	799	415	504	2071
Speckled Wood	56	119	243	333	354	255	329	1689
Swallowtail						1		1
Wall					1	1		2
White Admiral	14	9	5	7	7	2	3	47
White-letter Hairstreak	1	6	9	50	28	27	11	132
Grand Total	1565	2707	4075	5884	6421	6448	6984	34084

UKBMS Week by Week Transect (Estimate) Counts 2021

Adjusted Totals from 15 Transect Sites 2021

	Week	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	Date / Species	25-Mar	01-Apr	08-Apr	15-Apr	22-Apr	29-Apr	06-May	13-May	20-May	27-May	03-Jun	10-Jun	17-Jun	24-Jun	01-Jul
1	Small/Essex Skipper												1	6	10	36
2	Large Skipper												17	29	33	34
3	Dingy Skipper								1	2	6	3	3			
4	Clouded Yellow															
5	Brimstone	21	14	21	24	11	7	7	3	4	5	5	0	0	0	1
6	Large White				4	6	8	14	8	11	13	13	5	2	1	28
7	Small White		1	6	12	12	8	12	13	13	17	6	0	1	5	17
8	Green-veined White			3	5	14	31	24	16	31	36	18	9	4	0	6
9	Orange Tip		16	29	50	99	78	60	46	27	21	5	2			
10	Green Hairstreak							2	4	4	0	6	9	11	2	0
11	Purple Hairstreak															
12	White-letter Hairstreak															
13	Small Copper				3	5	6	7	9	13	16	15	9	3	4	2
14	Brown Argus								1	0	0	1	2	0	0	0
15	Common Blue								1	4	11	31	22	6	1	0
16	Holly Blue	3	6	7	13	24	14	13	12	10	12	2	2	0	0	0
17	White Admiral															2
18	Red Admiral					1	1	0	0	0	0	4	12	5	2	7
19	Painted Lady											1	3	3	2	2
20	Small Tortoiseshell	3	7	7	8	6	1	1	1	1	0	1	2	10	14	18
21	Peacock	25	69	49	48	46	20	10	7	8	9	3	1	2	0	0
22	Comma	2	12	6	2	5	2	9	1	4	1	0	0	1	7	9
23	Dark Green Fritillary															
24	Silver-washed Fritillary															2
25	Speckled Wood	1	3	5	18	21	22	24	10	9	17	31	84	70	83	62
26	Marbled White													45	178	310
27	Grayling													Timed counts		
28	Gatekeeper / Hedge Brown													1	1	30
29	Meadow Brown											5	26	280	470	698
30	Small Heath						1	1	3	4	16	22	39	33	13	21
31	Ringlet													13	110	264
	Total	55	128	133	187	250	199	184	136	145	180	172	248	525	936	1549
	Week	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14

UKBMS Week by Week Transect (Estimate) Counts of 2021

15	16	17	18	19	20	21	22	23	24	25	26	27	28	Est.	Week	
08-Jul	15-Jul	22-Jul	29-Jul	05-Aug	12-Aug	19-Aug	26-Aug	02-Sep	09-Sep	16-Sep	23-Sep	30-Sep	07-Oct	TOTAL	Date / Species	
117	242	168	27	30	13	1	1							652	Small/Essex Skipper	1
30	34	17	7	2	2									205	Large Skipper	2
														15	Dingy Skipper	3
															Clouded Yellow	4
1	6	4	6	3	2	2	2	1						150	Brimstone	5
62	116	121	81	80	39	39	40	39	12	4	2			748	Large White	6
23	68	143	73	79	61	51	45	59	37	13	3			778	Small White	7
14	47	90	68	68	44	41	23	35	9	3	2			641	Green-V. White	8
														433	Orange Tip	9
0	2													40	Green Hairstreak	10
	16	14	10	8	6	4	2							60	Purple Hairstreak	11
		1	1											2	White-L. Hairstreak	12
9	23	15	17	16	10	15	13	12	3	7	10			242	Small Copper	13
0	0	1	1	3	6	5	2	6						28	Brown Argus	14
0	5	42	33	43	39	16	11	4	2					271	Common Blue	15
0	5	7	6	10	9	5	4	1	2	1				168	Holly Blue	16
0	0	0	2	1	1	1								7	White Admiral	17
13	15	11	12	28	19	16	5	11	6	8	6	6		188	Red Admiral	18
3	0	1	6	6	2	6	4	1						40	Painted Lady	19
21	13	9	7	23	38	25	13	2	2					233	Small Tortoiseshell	20
4	27	130	84	63	25	12	14	3	1	5				665	Peacock	21
27	30	32	25	15	3	2	3	11	14	13	10	1		247	Comma	22
															Dark Green Fritillary	23
6	37	10	11	10	2	4	1	1						84	Silver-W. Fritillary	24
62	58	60	58	87	125	141	179	285	192	174	136	18		2035	Speckled Wood	25
347	377	156	24	11	8	4								1460	Marbled White	26
1	4	2	0	2										9	Grayling	27
62	278	646	537	335	214	121	45	8	1					2279	Gatekeeper	28
956	1380	1110	819	486	246	195	83	19	5	4	2			6784	Meadow Brown	29
12	20	12	1	10	13	15	16	13	9	3	1			278	Small Heath	30
404	546	307	107	34	14	3	1							1803	Ringlet	31
2174	3349	3109	2023	1453	941	724	507	511	295	235	172	25	0	20545	Total	
15	16	17	18	19	20	21	22	23	24	25	26	27	28	20545	Week	

Grayling records indicate timed counts in 2021

Population trends between 2011- 2021

This table shows the '*averaged counts of each species over all transects where the species occurred*'. The population trends of each species in the Malverns are calculated by comparing the average count in 2021 with the average count for the previous ten years 2011-20.

SCIENTIFIC ORDER	Malvern Hills - Average count per transect									
	Year / Species	**2011 Av**	**2012 Av**	**2013 Av**	**2014 Av**	**2015 Av**	**2016 Av**	**2017 Av**	**2018 Av**	**2019 Av**
	No. transect sites	**9**	**9**	**9**	**9**	**9**	**9**	**13**	**13**	**14**
1	**Small/Essex Skipper**	**34**	**31**	**47**	**103**	**91**	**40**	**84**	**60**	**94**
2	**Large Skipper**	**10**	**5**	**10**	**20**	**24**	**14**	**23**	**23**	**22**
3	**Dingy Skipper**	**7**	**21**	**8**	**4**	**3**	**3**	**4**	**6**	**5**
4	**Clouded Yellow**	**0**	**0**	**5**	**2**	**1**	**0**	**0**	**0**	**0**
5	**Brimstone**	**6**	**6**	**8**	**10**	**13**	**10**	**10**	**11**	**13**
6	**Large White**	**33**	**16**	**105**	**26**	**45**	**35**	**45**	**87**	**32**
7	**Small White**	**28**	**15**	**153**	**41**	**36**	**44**	**41**	**172**	**61**
8	**Green-veined White**	**148**	**37**	**115**	**103**	**71**	**88**	**67**	**96**	**53**
9	**Orange-tip**	**27**	**25**	**20**	**28**	**27**	**23**	**29**	**19**	**37**
10	**Green Hairstreak**	**4**	**1**	**5**	**3**	**5**	**5**	**7**	**6**	**6**
11	**Purple Hairstreak**	**3**	**4**	**10**	**11**	**11**	**19**	**20**	**12**	**6**
12	**White-L. Hairstreak**	**9**	**5**	**1**	**4**	**2**	**2**	**2**	**3**	**3**
13	**Small Copper**	**20**	**14**	**14**	**11**	**6**	**9**	**16**	**19**	**11**
14	**Brown Argus**	**8**	**3**	**4**	**5**	**4**	**2**	**7**	**22**	**13**
15	**Common Blue**	**65**	**22**	**17**	**43**	**104**	**16**	**96**	**163**	**70**
16	**Holly Blue**	**5**	**7**	**6**	**4**	**7**	**6**	**11**	**10**	**14**
17	**White Admiral**	**4**	**1**	**5**	**4**	**4**	**6**	**5**	**6**	**1**
18	**Red Admiral**	**7**	**11**	**2**	**10**	**6**	**8**	**31**	**6**	**17**
19	**Painted Lady**	**2**	**3**	**2**	**2**	**2**	**3**	**3**	**6**	**27**
20	**Small Tortoiseshell**	**14**	**9**	**18**	**53**	**23**	**10**	**15**	**14**	**22**
21	**Peacock**	**16**	**22**	**58**	**51**	**42**	**9**	**8**	**11**	**33**
22	**Comma**	**11**	**13**	**16**	**18**	**21**	**17**	**31**	**20**	**16**
23	**Dark Green Fritillary**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**
24	**Silver-W Fritillary**	**3**	**4**	**2**	**2**	**5**	**2**	**9**	**5**	**7**
25	**Speckled Wood**	**85**	**45**	**56**	**97**	**77**	**78**	**110**	**112**	**109**
26	**Marbled White**	**48**	**24**	**33**	**46**	**52**	**67**	**137**	**154**	**307**
27	**Grayling**	**9**	**5**	**4**	**4**	**6**	**3**	**2**	**2**	**0**
28	**Gatekeeper**	**175**	**111**	**133**	**174**	**165**	**93**	**192**	**138**	**264**
29	**Meadow Brown**	**303**	**454**	**572**	**568**	**588**	**416**	**1044**	**718**	**1257**
30	**Small Heath**	**29**	**66**	**71**	**54**	**43**	**47**	**96**	**159**	**87**
31	**Ringlet**	**257**	**80**	**159**	**203**	**169**	**148**	**256**	**249**	**312**
	GRAND TOTAL	**1370**	**1060**	**1659**	**1704**	**1651**	**1223**	**2400**	**2309**	**2897**

Population trends between 2011- 2021

UK trends are provided for short term (2005-2014) and long term (1976-2014). Transect records for less common species are too low to be meaningful: Dingy Skipper, Clouded Yellow, Green Hairstreak, Purple Hairstreak, White-letter Hairstreak, White Admiral, D.G.Fritillary, Grayling.

			Malverns		UK trends			
2020 Av	2021 Av	Av. 2011 - 2020	% Ch.2020-2021 ONE YEAR	% Ch.2011-2021 TEN YEARS	% Ch.2005-2014 SHORT	% Ch.1976-2014 LONG	Year / Species	SCIENTIFIC ORDER
13	15						No. transect sites	
61	50	65	-18	-22	-20	-82	Small/Essex Skipper	1
14	15	16	4	-11	23	-17	Large Skipper	2
4	8	7	88	15	69	-19	Dingy Skipper	3
2	0	1	0	0	-57	734	Clouded Yellow	4
7	11	9	51	14	-1	1	Brimstone	5
60	50	48	-17	3	-28	-30	Large White	6
121	52	71	-57	-27	9	-25	Small White	7
52	43	83	-18	-48	72	-7	Green-veined White	8
15	29	25	88	15	59	10	Orange-tip	9
11	13	5	21	152	-34	-41	Green Hairstreak	10
6	12	10	100	19	-10	-54	Purple Hairstreak	11
0	1	3	0	0	-77	-96	White-L. Hairstreak	12
18	19	14	1	33	-19	-37	Small Copper	13
3	5	7	47	-34	-11	-25	Brown Argus	14
26	18	62	-29	-71	1	-17	Common Blue	15
9	13	8	52	66	-61	37	Holly Blue	16
2	3	4	60	-27	-45	-59	White Admiral	17
15	13	11	-13	19	-40	257	Red Admiral	18
2	4	5	140	-22	-84	133	Painted Lady	19
22	16	20	-30	-22	146	-73	Small Tortoiseshell	20
34	44	28	30	56	21	17	Peacock	21
18	19	18	3	5	-28	150	Comma	22
3	0	0	0	0	18	186	Dark Green Fritillary	23
9	11	5	21	122	6	141	Silver-W Fritillary	24
89	136	86	52	58	4	84	Speckled Wood	25
144	97	101	-32	-4	25	50	Marbled White	26
0	0	4	0	0	10	-58	Grayling	27
143	152	159	7	-4	-44	-41	Gatekeeper	28
455	452	638	-1	-29	-15	1	Meadow Brown	29
41	35	69	-15	-50	18	-54	Small Heath	30
103	120	194	16	-38	72	381	Ringlet	31
1488	1439	1776	-3	-19			GRAND TOTAL	

Purple Emperor, Fruitlands Malvern 19-Jul (TWO)
The first local record this century!

Clifden Nonpareil, Upper Welland 15-Sep IDU

BUTTERFLY Highlights from Local recorders 2021

Chronological order

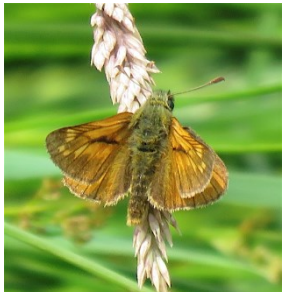
1 Small Tortoiseshell Malvern Wells 25-Feb SWO
2 Speckled Wood North Hill 31-Mar MMA
3 Brimstone Woodfords Meadow 05-Apr MMA
4 Orange-tip Chase End Hill 24-Apr MMA
5 Holly Blue Abbey Road May JLA
6 Large Skipper Peachfield Common June JLA
7 Gatekeeper Abbey Road July JLA
8 Green Hairstreak North Hill 14-Jul MMA
... the highest number recorded between 2011-21
9 Small Tortoiseshell July SJO
10 Essex Skipper July SJO
11 Ringlet July SJO
12 White-letter Hairstreak Abbey Road 29-Jul JLA
13 Silver-washed Fritillary fem, Brotheridge Green 09-Aug-RLE
14 Silver-washed Fritillary male, Malvern 31-Aug REU
15 Painted Lady 03-Aug JVA
16 Mating Speckled Wood Malvern Hills 09-Sep IHE

Green Hairstreak, Castlemorton Common 28-Aug-2021 BWE
... the latest ever recorded in the Malverns & the West Midlands

Highlights from Local recorders 2021

1 / 2

3 / 4



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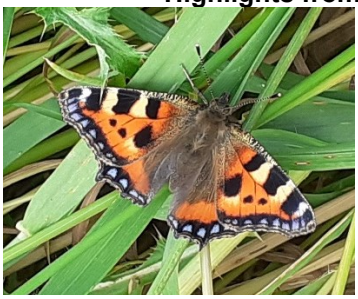
Highlights from Local recorders 2021



9 / 10

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13 / 14

15 / 16

MOTH Highlights from Local recorders 2021

Chronological order

1 Orange Underwing, Malverns 13-Mar ADO
2 Scarlet Tiger, Queen's Drive Malvern 21-Apr TPO
3 Lime Hawk Moth, Malvern Link 15-May NRO
4 Cinnabar, Malverns 30-May APE
5 Privet Hawk Moth, Malvern Link 07-Jun NRO
6 Mother Shipton, British Camp 10-Jun APE
7 Scarlet Tiger, Malverns 14-Jun APE
8 Elephant hawk Moth Worcester 22-Jun MSM
9 Six-spot Burnet, West Malvern 25-JunAPE
10 Red Belted Clearwing, Malvern Link 31-May NRO
11 Current Clearwing, Malvern Link 23-Jun NRO
12 Six-belted Clearwing, Malvern Link 30-Jun NRO
13 Pine Hawk Moth, Worcester 09-Jul MSM
14 Chinese Character Moth, 10-Jul APE
15 Rosy Tabby Moth, Malverns 18-Jul DCO
16 Six-spot Burnet, Malverns 22-Jul RWA
17 Common Wainscot. Leigh Sinton 25-Jul SPU
18 Small Emerald, Leigh Sinton 25-Jul SPU
19 Nutmeg *Anarta trifolii,* Welland 24-Jul PTA
20 Scalloped Oak, Peachfield Common Jul KLE
21 Trio of Broad-bordered Yellow Underwings *Noctua trimbiata,* Malvern Link 25-Jul NRO
22 Small Ranunculus, Malvern Link 25-Jul NRO
23 Antler Moth, Malvern Link 25-Jul NRO
24 Blood-veined Moth, Leigh Sinton 18-Aug SPU
25 Vapourer Moth, Malvern Link 08-Aug NRO
26 Vapourer Moth, Malvern Link 08-Aug NRO
27 Black Arches, Malvern Link 15-Aug NRO
28 Elephant Hawk Moth, Abbey Road 19-Aug JLA
29 Antler Moth, Dingle 08-Sep DCO
30 Pale Tussock Moth, Cradley 26-Sep GHA
31 Angle Shades Moth, Park Wood 30-Sep SPU
32 Merville du Jour, Malvern Link 02-Oct NRO
33 Satellite *Eupsilia transversa,* Bransford 10-Oct KFA
34 Dark chestnut *Conistra ligula,* Leigh Sinton 16-Oct SPU
35 Twenty-plume Moth, Leigh Sinton 21-Oct SPU
36 Ruby Tiger Moth, North Hill 06-Nov MMA
37 Red-Green Carpet, Bransford 23-Oct KFA

Highlights from Local recorders 2021

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3 / 4

5 / 6

7 / 8

Highlights from Local recorders 2021

9 / 10

11 / 12

13 / 14

15 / 16

Highlights from Local recorders 2021

17 / 18

19 /20

21 / 22

23 / 24

Highlights from Local recorders 2021

25 / 26

27 / 28

29 / 30

31 / 32

Highlights from Local recorders 2021

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Red-Green Carpet, Bransford 23-Oct KFA

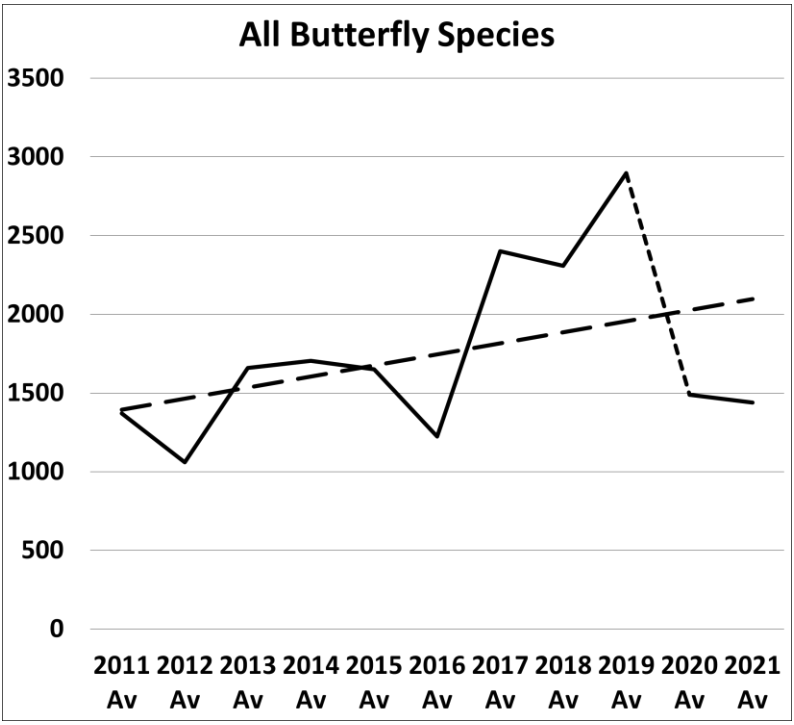
Butterfly Species Reports & Population Trends:

Index of Butterfly 34 Species Reports

Butterfly Species Reports & Population Trends:

The average transect count per annum of all butterfly species shows an overall increase between 2011 – 2021, despite a significant decrease in 2021.

The lower count in 2020 was affected by insufficient recording of spring species during April / early May due to Lockdown and Covid-19 restrictions.



This population increase is further illustrated by the population trend graphs of most of the common species in the following reports. Notable exceptions include Green-veined White, although records are subject to error as from a distance it is easily confused with Large White and Small White by recorders.

Note: where mentioned in the text, average transect counts are taken between 2011 – 2020 to compare with average transect counts in 2021

Small Skipper & Essex Skipper *Thymelicus sylvestris & T. lineola*

These two similar common species are counted together because they require careful examination of minute distinguishing features, and are difficult to separate. Essex Skipper is identified in particular by its characteristic black antenna and was first recorded in 2001. Prevalent sites were the lower areas with large open grasslands especially Knapp & Papermill (184) and Poolbrook Common (144).

One useful method to determine the ratio of these two similar looking skippers is to net a selection and apply the ratio to the total population counted on a particular site. Over recent years several recorders reported sampling ratios that suggest an even split of both species but varying from site to site, possibly depending on their different larval host plants – Cock's-foot for Essex Skipper and Yorkshire Fog for Small Skipper.

Large Skipper *Ochlodes sylvanus*

This widespread species emerges relatively early in the year and benefits from a mild spring and hot summer. Best sites include Knapp & Papermill (29), Poolbrook Common (29) and Melrose Farm Meadows (31)

Grizzled Skipper *Pyrgus malvae*

No further sightings of Grizzled Skipper were reported in 2021 following the first record in more than 30 years on 23-May-2018 at Leigh Sinton Fishery just 2km NW of Great Malvern. However, several locations around the Hills are potential sites for this elusive species where wild strawberry and tormentil, the larval host plants, still grow in less accessible quarries around the region.

Dingy Skipper *Erynnis tages*

This is a well-camouflaged species easily mistaken for Burnet Companion (a common day-flying moth). Knapp & Paper Mill recorded (14) in 2021, the highest since (21) in 2012. Fortunately, Dingy skipper was recorded for the first time at the nearby transect site at Blackhouse Wood.

Outside of the transect sites, the following were recorded in 2020 - two on 28-May [CGR] and one on 29-May [MMA] on Birchwood Common, one on 09-May at a new site in Lulsley [APE], and slightly further afield one seen on

23-May at another new site at Green Street near Kempsey [ABA]. A small colony survives on an open level area near Mathon, but none seen this year. Just beyond the Malvern Hills there is a small colony at Ankerdine Hill near Knightwick Bridge. However, Penny Hill Bank near Martley is the main stronghold for this species with over 50 annual (timed count) sightings in recent years (WMBC).

Clouded Yellow *Colias croceus*

A migrant which may breed after arrival in southern England to produce large numbers of north-bound offspring. This species is seen in small numbers at irregular intervals. Five individuals were last seen in 2013 from early August to late October, then two sightings at Knapp & Papermill in 2014, one individual in 2015, and in 2020 one was recorded on 30-Jul West Malvern [DCO], two on 10/17-Aug at Hill Court Farm [DVE] transect sites, and one on 16-Sep at Colwall Village Garden [TDi]. Outside the region there are regular sightings at Venus Pools in nearby Shropshire.

Brimstone *Gonepteryx rhamni*

This hardy and long-lived butterfly was seen very early by casual recorders from 25-Feb onwards during a very mild spring and then seen in small numbers up until September on all transects, except Poolbrook Common, or during June between two generations.

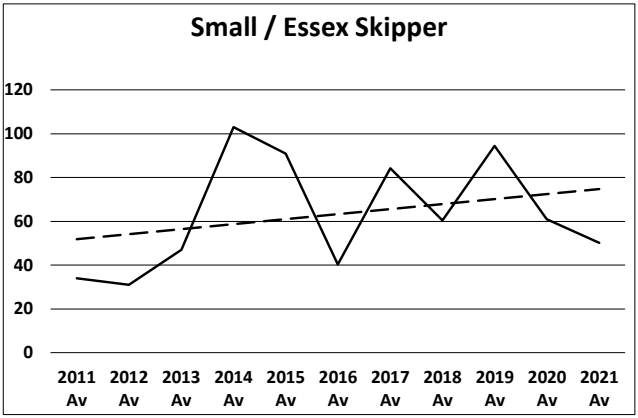
Eggs are laid on the two larval host plants of buckthorn and alder buckthorn.

Large White & Small White *Pieris brassicae & P. rapae*

Both Large White and Small White were seen on all sites from early April to late September, notably St Wulstan's LNR and Old Hills. Their annual numbers fluctuate widely, partly due to the variation in the arrival of migrants with peak counts in July. Furthermore, identification of these two species, along with Green-veined White is easily confused in flight and the figures are subject to some errors.

Green-veined White *Pieris napi*

This is a widespread species and the tenth most common species this year, but the average transect count (43) was the lowest since the wet summer of 2012 (37) following the highest in 2011 (148).


Small / Essex Skipper
120
100
80
60
40
20
0
2011 Av
2012 Av
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2017 Av
2018 Av
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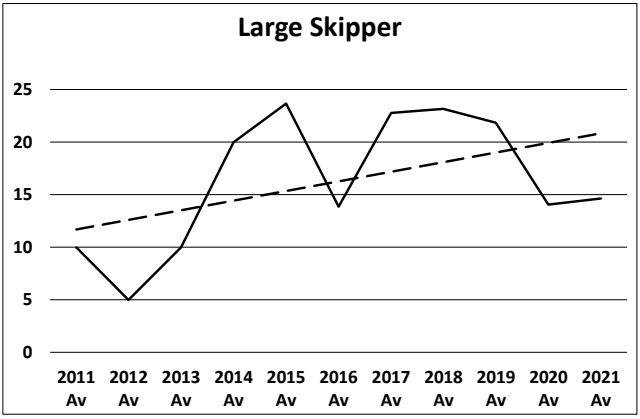
2020 Av
2021 Av


Large Skipper
25
20
15
10
5
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2011 Av
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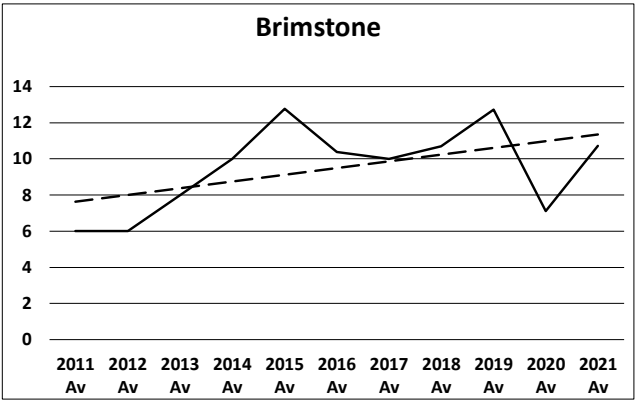
2021 Av


Brimstone
14
12
10
8
6
4
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0
2011 Av
2012 Av
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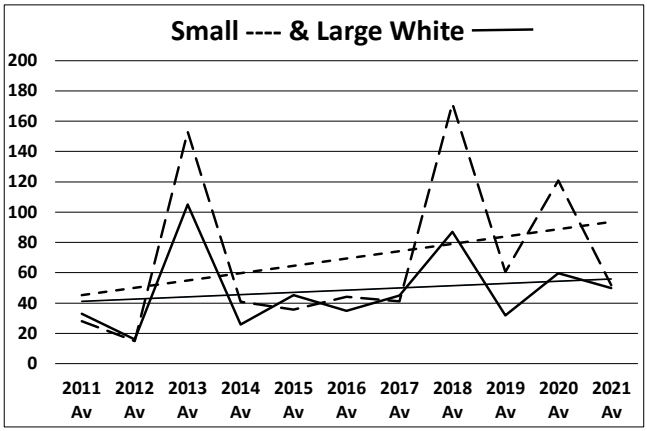
2021 Av


Small ---- & Large White ——
200
180
160
140
120
100
80
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0
2011 Av
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2013 Av
2014 Av
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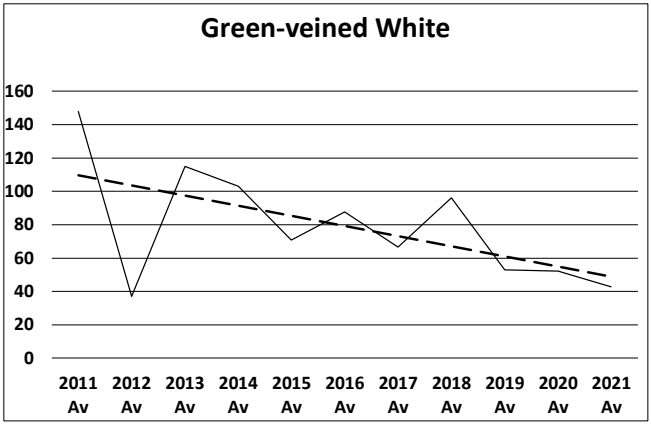
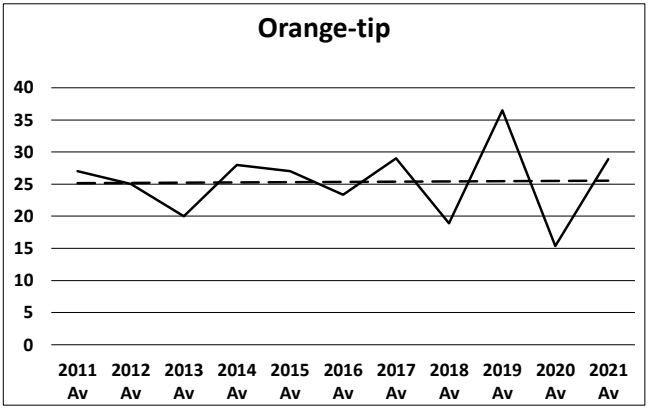
2021 Av


Green-veined White
160
140
120
100
80
60
40
20
0
2011 Av
2012 Av
2013 Av
2014 Av
2015 Av
2016 Av
2017 Av
2018 Av
2019 Av
2020 Av
2021 Av


Orange-tip
40
35
30
25
20
15
10
5
0
2011 Av
2012 Av
2013 Av
2014 Av
2015 Av
2016 Av
2017 Av
2018 Av
2019 Av
2020 Av
2021 Av

Orange-tip *Anthocharis cardamines*

This is a spring butterfly but in a cold April followed by a dull and wet May the average transect count was one of the lowest since 2011. However, it was not difficult to find females and their relatively large orange eggs in April and May on Lady's Smock and, to a lesser extent, Garlic Mustard.

Green Hairstreak *Callophrys rubi*

One of our most charismatic species, total transect records (40) are significantly higher than usual especially on the east side of Pinnacle Hill (30). Recorded between early May and early July, this butterfly emerges on the higher slopes characteristically later than other regional sites. The larval foodplants include Gorse, Broom, and Bilberry, which are common around the Hills.

Other transect records include West Malvern (4) and North Hill (6). Casual sightings include three on North Hill SBR 05-Jun, MMA 14-Jul, LLO 16-Jun – and two very late sightings on Pinnacle Hill JSL 21-Jul and Queens Drive TPO 23-Jul.

"In the Malverns, we have grown used to late records of Green Hairstreaks often into late July, but a record of a Green Hairstreak photographed on Castlemorton Common on 28th August this year by broadcaster Brett Westwood is truly remarkable. The previous latest record as far as I can see was 3rd August 1987, which is noted in the Butterflies of the West Midlands book and is more than 3 weeks earlier. This new record I suspect is a record breaker not just for the Malverns but the West Midlands region as a whole and may be even nationally!" [MWI].

Purple Hairstreak *Neozephrus quercus*

Seen in good numbers around sites containing oak trees, especially Old Hills (44) and Hangman's Hill (11). However, this species is under-recorded and unsuited to the transect method as it spends most of the time hidden in the top of oak trees where it feeds on aphids' honeydew. It is seen more often on warm and sunny summer evenings when males fly above and below the canopy defending their territories and seeking mates. The egg of this species is one of the easiest to find during the winter months tucked in the base of a plump oak bud on south facing branches.

White-letter Hairstreak *Satyrium w-album*

Like Purple Hairstreak, this species is under-recorded as it frequents tree-canopies and often appears outside the typical hours for butterfly flight, tending to be on the wing early in the morning. A sedentary species, it rarely flies very far from its larval foodplant – Elm or Wych Elm. It feeds on aphid honeydew found on neighbouring oak and ash, and may descend to feed on thistle and other flowers. However, with the severe effects of Dutch Elm Disease, this butterfly is an endangered species that has a reported 96% long-term decline in the UK. Hence the transect method is unsuitable. There were just two transect records at Brotheridge Green on 23-Jul and North Hill on 29-Jul. Casual records include several sightings in a reliable garden site along Abbey Road in July [JLA].

Small Copper *Lycaena phlaeas*

Preferring the hills where sorrels, the caterpillar food-plants, are more abundant, Small Copper was seen on most Malvern sites – including Pinnacle Hill (76), West Malvern (44), North Hill (37) and Swinyard Hill (22). Many late sightings depended on any remaining patches of ragwort and other yellow compositae still providing nectar nearby sheep's sorrel, the larval food plant.

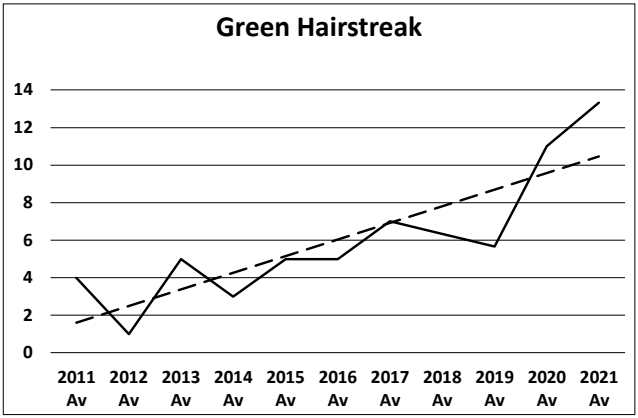
Brown Argus *Aricia agestis*

Numbers decreased significantly this year by 34% compared with the average between 2011-2020. This year. only four were seen in the first generation almost two weeks later than usual. However, the second brood is always more abundant - notably Pinnacle Hill (18) - but the average count per site was only five.

Common Blue *Polyommatus icarus*

Annual counts vary widely, in part depending on parasitism. The average transect count (18) was the third lowest since 2011 and contrasts with the peak count in 2018 (163). Notable sites include Hollybed Farm (47), Poolbrook Common (35), Knapp & Papermill (33) and Hill Court Farm (23).

Despite lower numbers in general, it is pleasing to see Hollybed Farm recording the highest number for the second year in succession, which might be a reflection of planned habitat management following disappointing numbers of this species recorded in the past – particularly leaving wider margins around the wildflower meadows during hay cutting.


Green Hairstreak
14
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2011 Av
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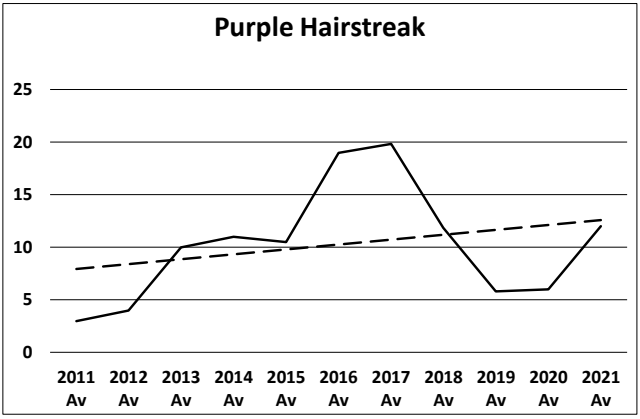
Purple Hairstreak
25
20
15
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2011 Av
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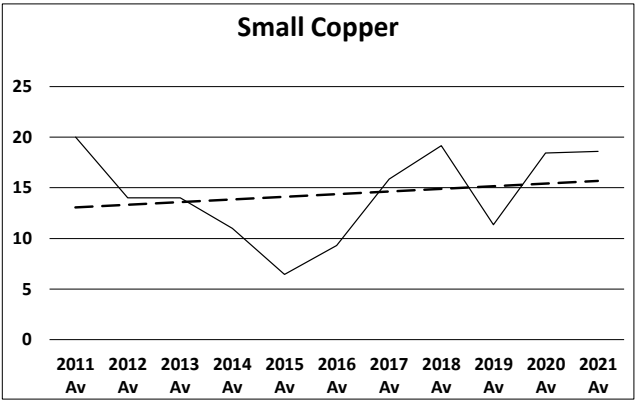
Small Copper
25
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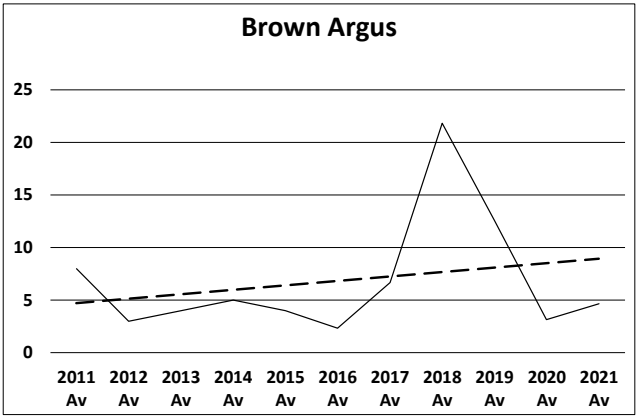
Brown Argus
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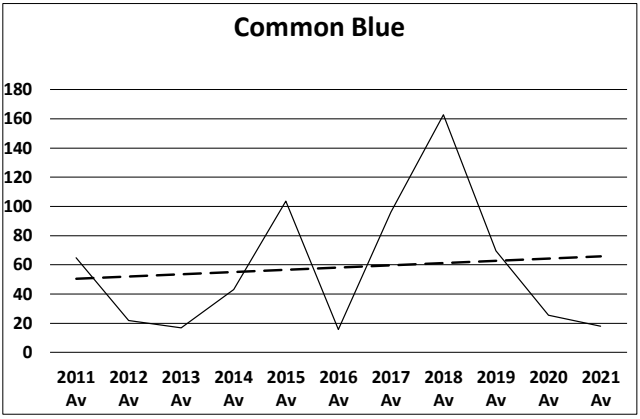
Common Blue
180
160
140
120
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2014 Av
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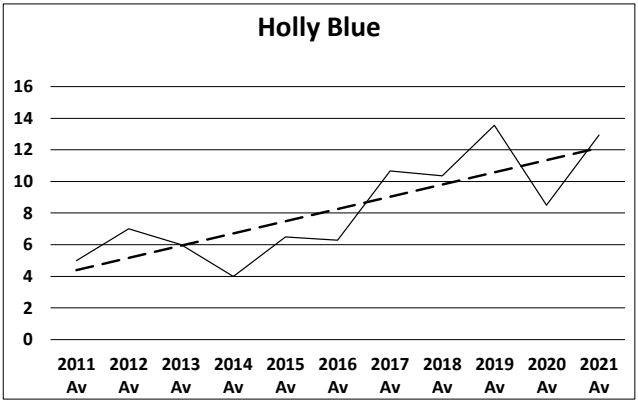
2019 Av
2020 Av
2021 Av


Holly Blue
16
14
12
10
8
6
4
2
0
2011 Av
2012 Av
2013 Av
2014 Av
2015 Av
2016 Av
2017 Av
2018 Av
2019 Av
2020 Av
2021 Av

Holly Blue *Celastrina argiolus*

Like the Common Blue, numbers are subject to annual fluctuations due to its complex ecology, particularly its relationship with two species of parasitic wasp (braconid *Cotesia inducta* & ichneumon *Listrodomus nycthemerus*) which tend to cause numbers to fluctuate in a five or six year cycle. However, Holly Blue is less colonial and typically widespread in low numbers. Holly Blue depends on two larval foodplants and is often seen in local gardens between April and September with very few sightings in June between both generations. Caterpillars feed on holly flower buds in spring and ivy flower buds in autumn before hibernating as a chrysalis.

Average transect numbers in 2021 (13) are the second highest since 2011 and only just short of the peak in 2019 (14).

White Admiral *Limenitis camilla*

Numbers of this impressive canopy-dweller have been disappointing in recent years with only six sightings this year at two transect sites - Swinyard Hill (4) Old Hills (2). White Admirals patrol woodland rides and edges, resting on the upper branches of large trees and swooping down to visit honeysuckle – the caterpillar foodplant. However, this species is under-recorded and numbers are typically low, worrying for this vulnerable species with a 59% long-term decline in the UK.

Red Admiral *Vanessa atalanta*

Migrants usually arrive on the Malverns towards the end of May or as late as mid-June. Recent autumns have been much warmer and Red Admiral is one of the most common species seen in Sep/Oct/Nov. It frequently feeds on ivy flower during this period and moves to the tops of hills on sunny days to exhibit breeding behaviour – defending territory, pursuing females – before the third generation returns south to the Continent. There is now growing evidence of an extended winter breeding cycle in sheltered areas of southern UK where nettles, the larval food-plant, survive. Early sightings may not be migrants but a growing number of adults emerging from pupae slowly developing in more sheltered and warmer winter sites.

Seen on all sites except Poolbrook Common with maximum count of 35 at St Wulstan's LNR.

Painted Lady *Vanessa cardui*

This large and handsome migrant was seen in record numbers (345) on thirteen sites in 2019 but this year only 40 were recorded on 10 transect sites. Reasons may have more to do with climate and habitat in its winter home in North Africa and the southern continent rather than its summer residence in the UK. In the summer it is often seen hill-topping with Red Admiral and Small Tortoiseshell on many of the summits along the Malvern Hills.

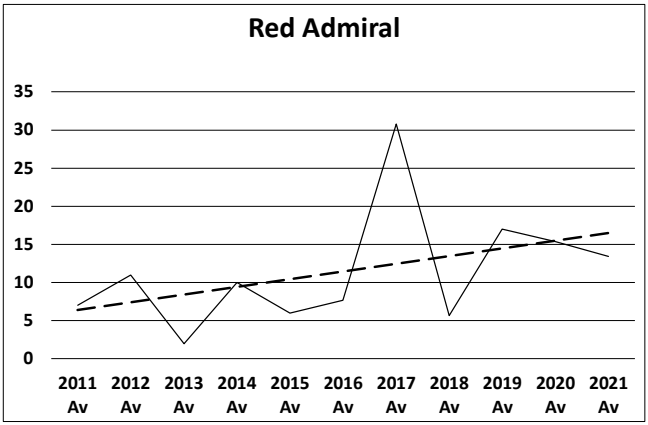
Small Tortoiseshell *Aglais urticae*

There has been a significant decline in average transect numbers since 2014 (53) but it was seen on all sites and the average transect number (16) in 2021 is the fourth lowest since 2011. Across the UK the long term trend is 73% down. These losses are partly due to parasitism including by the fly *Sturmia bella,* and it is possible that the local increase in 2014 represents a peak on a parasite-host cycle, followed by a rapid decline in 2016 and a steady increase in more recent years.

Peacock *Aglais io*

Like the other hibernators - Brimstone, Small Tortoiseshell and Comma - Peacock is one of the first species to emerge in early spring. Average transect records (44) are the highest since 2013 (58) and 2014 (51) - despite another mild winter that may be interrupting diapause.

Peacock are early hibernators and the vast majority have found shelter by early September. Research by Butterfly Conservation (Press Release, Nov. 2016) suggests that (recent) warm winters have affected the 'overwintering' life stage of our common species "… due to increased incidences of disease or potentially extreme hot temperatures acting as a cue for butterflies or their larvae to come out from overwintering too early and subsequently killed off by temperatures returning to colder conditions."


Red Admiral
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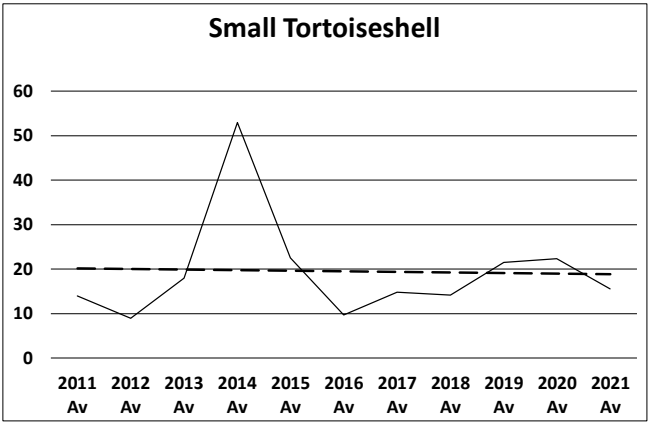
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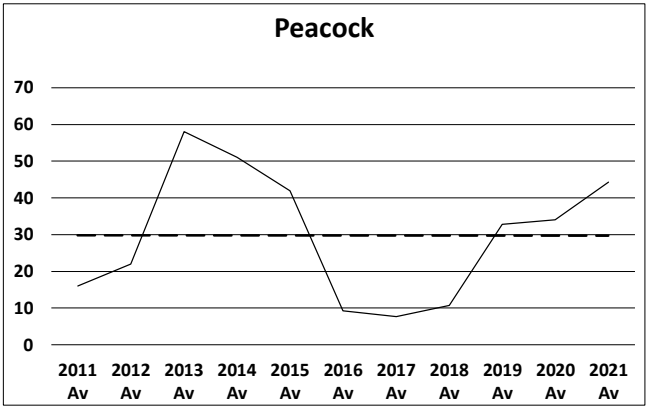
Peacock
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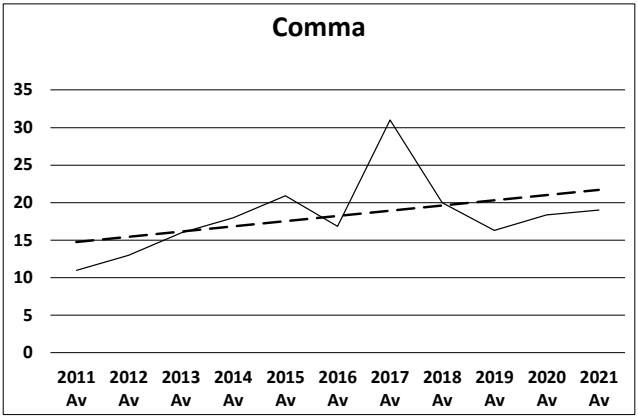
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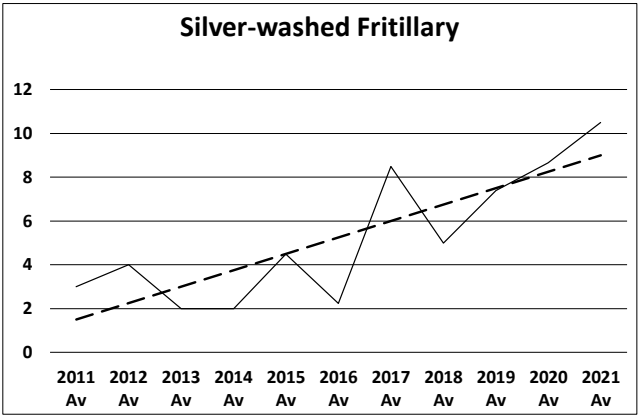
Silver-washed Fritillary
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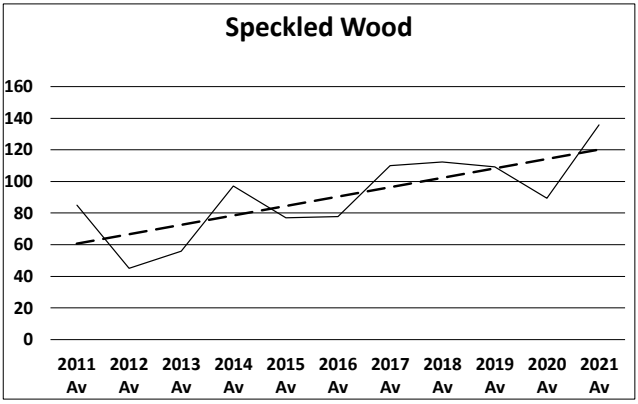
Speckled Wood
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Comma *Polygonia c-album*

This attractive well-camouflaged butterfly is easy to identify at rest with its distinctive wing shape and comma marking, but it is sometimes confused with Fritillaries when in flight. Early spring caterpillars eventually change to form "*Hutchinsoni*" adults which go on to mate and produce a second brood, while late spring caterpillars eventually change to form butterflies that do not breed before hibernation. The long-term increase of 150% hides a short term decline of 28% in the UK. Seen on all sites, the average transect count (19) is the third highest since 2011 but still well below the peak in 2017 (31). Highest transect counts include Old Hills (67) and Knapp & Papermill (53).

Dark Green Fritillary *Argynnis aglaja*

This butterfly is a wandering species and is occasionally seen in ones and twos almost anywhere around the Malverns. Surprisingly, this species has a 186% long-term increase in the UK, but local records are too few to determine any population trends. None were recorded this year.

Sightings in previous years include: two on 22-Jun-2020 near Birchwood (CGR); one on 29-Jul-2020 at Chase End Hill (DVE); one on 13-Aug-2019 at Lower Dingle (JWA); five individuals on 21-Jun-2018 in a meadow at Birchwood (CGR) and seen again on several other days by different visitors (MMA, GLO and MWI); one on 26-Jun-2018 in Tank Valley on the North Hill Transect (MMA); two on 09-Jul-2017 (JT) at the western edge of Swinyard Hill; one on 07-Jul-2016 at Berrington Quarry (SRO); one on 01-Jul-2015 at Hollybed Farm (PSE); one on 27-Jul-2014 in North Quarry (MWI, PSE, MMA); one on 14-Jul-2013 at Malvern Common (JSM); one on 15-Jul-2013 at North Hill (MMA).

Pearl-bordered Fritillary *Boloria euphrosyne*

Historically, Small Pearl-bordered Fritillary**,** Pearl-bordered Fritillary and High Brown Fritillary were regularly seen on the southern hills until 1997, 1998 and 2001 respectively. For Small Pearl-bordered Fritillary, singletons were also seen in 2010 (SRO) and 2013 (Mick Colquhoun), suggesting dispersal from a remnant colony perhaps in the less-monitored area around Eastnor Estate. This possibility is further supported by the sighting of two Small Pearl-bordered Fritillaries on 06-Jul-2017 at Chase End Hill (DVE).

Annual counts of violets (larval food-plant) between 2012 & 2020 (JTI, PSE,

IDU, LLO, MMA) show medium to high densities on Swinyard Hill and Eastnor Estate, and prolific numbers on the west side of Chase End Hill. The Butterfly Conservation / Natural England Survey in 2016 suggests these three sites may be suitable to re-introduce one of the three lost fritillaries. WMBC now plans to reintroduce the Pearl-bordered Fritillary following a captive larval breeding programme 2021-2025 – refer to ***Malvern Hills Lost Fritillaries Project*** on pp 52-71 for more detail.

Silver-washed Fritillary *Argynnis paphia*

This butterfly benefits from the wide wooded corridors and open scallops around the Malvern Hills, such as Blackhouse Wood, Hangman's Hill, Swinyard Hill, Gullet Quarry, Chase End Hill and Park Wood – all managed for the wildflowers and butterflies. However, this fast flying butterfly can reach almost anywhere on its journey between suitable habitats, and it is most probably under-recorded. This is the only Fritillary that has increased both in abundance (6% in short term and 141 % in long term) and in occurrence (56% in long term) in the UK.

This Fritillary was recorded on eight sites in 2021, notably 27 at Blackhouse Wood.

Speckled Wood *Pararge aegeria*

Unique amongst British butterflies it hibernates as either caterpillar or chrysalis. Although enjoying an 84% long-term increase, UK numbers have hardly increased (4%) in the short term.

Numbers are the highest since before 2011. The wooded lower slopes of the hills produce the highest counts notably Pinnacle Hill (439), Blackhouse Wood (350) and North Hill (262).

Marbled White *Melanargia galathea*

This butterfly, above all the rest, seems to be one of the winners in an increasingly changing climate. It has consistently achieved improving record numbers over recent years and in 2019 reached its highest count in local recorded history. This year it is the fifth most common species representing over 7% of all records. Across the UK, the long-term trend is 50% increase in abundance and 29% increase in occurrence as it moves further north in a warming climate.

Seen on all transect sites, this colonial species also produces wandering individuals and so is widespread but in greatly varying numbers. The best sites include Poolbrook Common (371), Hill Court Farm (311), Melrose Farm Meadows (274), Old Hills (117) Knapp & Papermill (104) and other long grass sites around the Hills.

Grayling *Hipparchia semele*

The Malvern Hills and several sites in Shropshire are the only places in the West Midlands for this vulnerable species, nationally becoming confined to coasts and southern heathlands, with 58% long-term decline in UK. On the Malvern Hills, it favours the rocky outcrops above 230m alongside its larval host-plant Sheep's-fescue. However, its local range has contracted by 5.5 miles from its southern most territory in Gullet Quarry to the northern hills, not recorded south of Worcestershire Beacon since 2007.
Refer to ***Report on Timed Counts of Grayling 2020*** on pp 72-79.

Gatekeeper *Pyronia tithonus*

The population of this common and widespread butterfly has fluctuated considerably in recent years. The average transect count in 2021 (152) contrasts with 2019 (264) the peak count between 2011-2021. The highest transect counts in 2021 include Pinnacle Hill (320), Hill Court Farm (285), Old Hills (255), Poolbrook Common (249) Hollybed Farm (144), plus many grassy sites in the region.

Meadow Brown *Maniola jurtina*

The population of this most common species boomed in 2019 to reach the highest count since before 2011, but slumped to the fourth lowest count in 2021. Counts are highest at Hill Court Farm (1295) and Knapp & Papermill (1204).

Meadow Brown is by far the most common species (33%) followed, this year, by Gatekeeper (11%), Speckled Wood (10%), Ringlet (9%) and Marbled White (7%). [Refer to Table Page 5 for Percentage abundances at 15 local transect sites around the Malverns].

Small Heath *Coenonympha pamphilus*

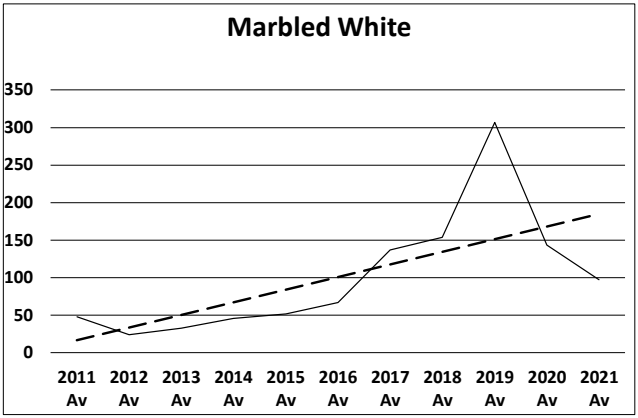
This year the average transect number (35) decreased significantly, the lowest since 2011 (29), and the peak in 2018 (159). It is largely restricted to the slopes of the hills including Pinnacle Hill (110), Swinyard & Hangman Hill (78), West Malvern (44), and North Hill (37). Two broods are typical but may overlap due to some caterpillars developing at different rates or even going into early hibernation. Nationally it has undergone a long-term decrease of 54% in the UK

Interestingly, the slump in numbers of Small Heath this year corresponds, as in 2020, with a similar slump in Grayling numbers – both species prefer the higher slopes linked to the abundance of their common larval foodplants, especially Sheep's Fescue.

Ringlet *Aphantopus hyperantus*

Ringlets tolerate humid and wet summers and will fly in dull, damp conditions. Even so, it thrived in the recent hot summers of 2017-2019 and reached the highest numbers in 2019 since before 2011. However, numbers slumped in 2020 and, following a dull and damp spring, numbers this year were down by 38% compared with the average between 2011-2020.

Seen on all sites notably Hollybed Farm (243) and Old Hills (238).


Marbled White
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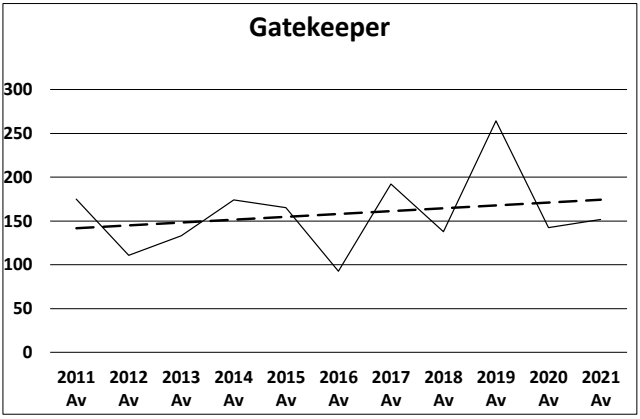
Gatekeeper
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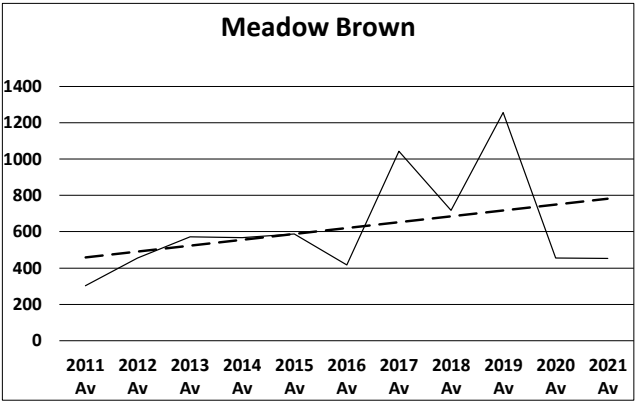
Meadow Brown
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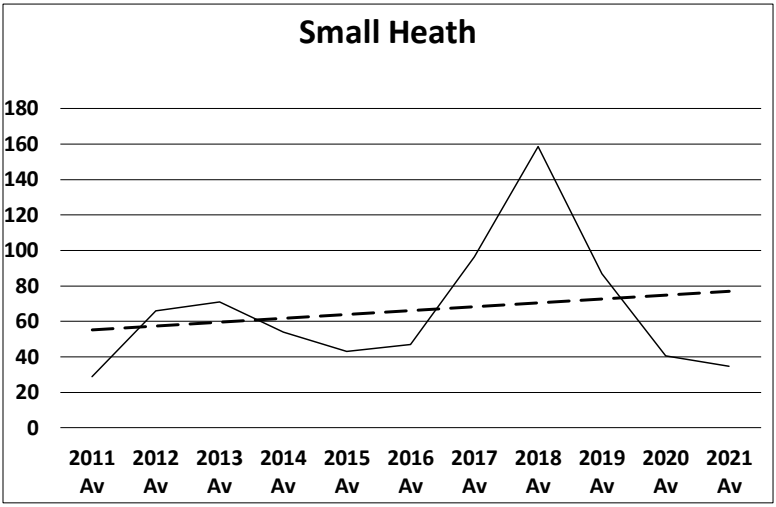
Small Heath
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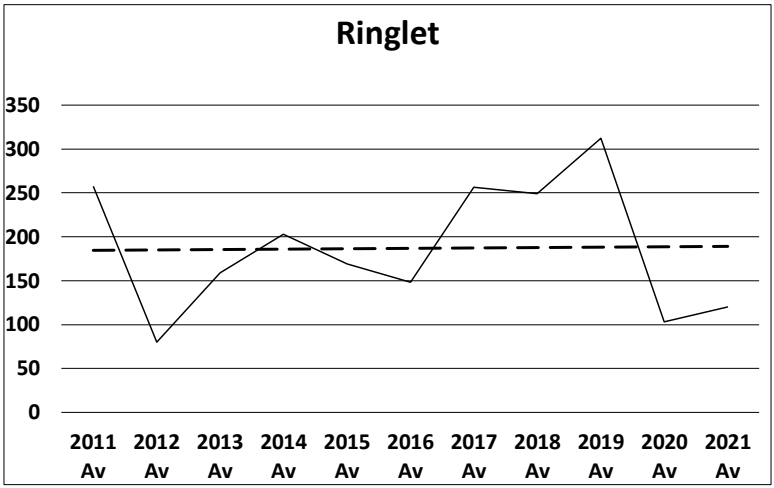
Ringlet
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Malvern Hills Lost Fritillaries Project

Reintroduction PBF – Report 2021

West Midlands Butterfly Conservation launched the Malvern Hills Lost Fritillaries Project in March 2020 at the height of Covid-19 and the first Lockdown. Since then, we have surveyed our receptor sites in three different counties on the southern Malverns, encouraged landowners to modify their habitat management, and raised over £15,000 to support the reintroduction of Pearl-bordered Fritillary *Boloria euphrosyne*, an endangered species lost from the Hills at the end of last century.

Additional aims... to enrich the environment for the local community and visitors, increase biodiversity, and improve connectivity between nearby PBF sites.

The **Project Proposal** was finally accepted by BC, Natural England and Forestry England in April 2021. Permissions were obtained to remove up to 8 gravid females from Wyre Forest to start the captive larval breeding in May 2021 to reintroduce PBF on to one or two receptor sites on the Malvern Hills next spring 2022 where the habitat is improved, and landowners have agreed to maintain sustainable habitat management in the future.

Metapopulation... Three sites are important to establish a metapopulation where the reintroduced butterfly can make choices to withstand changes in weather, climate, flora, predators and parasites – and ensure its survival in the long term.

PBF flight season April-June... During the frostiest April on record, the coldest & wettest May, a cool June and a historic heatwave in July, the first adults appeared in the second half of April in a season lasting well into June – but populations around the Midlands and beyond were down significantly compared with recent years. At our potential donor sites - including Ewyas Harold, Herefordshire; Wyre Forest, Worcestershire; and Y-Golfa, Montgomeryshire - it was frustrating and disappointing to see females laying eggs and giving initial hope of another good year while more objective timed counts were not meeting thresholds required to

release precious females to start our breeding cycle. Eventually, in June, the weather warmed up and numbers increased slightly in several colonies in the Wyre Forest – enough to release four gravid females.

Breeding... All females laid eggs but in small numbers (tens rather than hundreds). Unfortunately, significant losses in two of the breeding pots were caused by lacewing and hoverfly larvae predators accidentally introduced on nectar sources for our egg-laying females in the first half of June. However, more than 150 third instar larvae c10mm, mainly from two females, were distributed into three more pots with fresh violets and oak leaves. The majority of larvae were in diapause under oak leaves before the end of July. During early August, some larvae remained active, and three more pots with fresh violets were prepared on 24-Aug to transfer the hibernating larvae in preparation to overwinter. The other breeding pot managed by Ian Duncan contained at least 20 larvae, now in diapause.

During a mild autumn... some larvae temporarily emerged from diapause to bask and feed. The larvae were translocated to fresh pots of violets in October and November to ensure the larvae would survive over winter.

Growing violets... The breeding programme is supported by 12 volunteers who have been growing violets since September 2020 to ensure our hungry caterpillars have a sufficient food supply both during their first four instar stages May-July and, following hibernation, in the fourth & fifth instar stages next March-April. The caterpillars pupate in April and adult butterflies emerge between late April and early June. The breeding programme and violet growing will continue each year for 3-4 more years.

Genome sequence... One of the females, after laying eggs for one week, was donated to the Tree of Life Project to sequence the genome of the heterogametic WZ female – males are ZZ and don't have a W chromosome. This was transferred in dry ice to Liverpool University on 08-June, kept at a very low temperature and then forwarded to the Sanger Institute in Cambridge. Of the remaining butterflies, two died on day(s) 8 & 11 (average lifespan in wild: 6 to 7 days). Ian Duncan managed the fourth female, which survived until day 13.

Site Visits... Sites are surveyed regularly by project leaders, site managers and occasionally by BC officers. All violet growers and local transect recorders were invited to learn more about the project during three separate visits to the local receptor sites in late June / early July. **Guided visits are open to all interested groups on public paths.**

Fundraising... Our online campaigns with Spacehive & JustGiving have raised over £15,000. **MANY THANKS** to Malvern Hills District Council, WMBC, Bromesberrow Estate, Malvern Hills AONB, Waitrose Supermarket and many generous individuals. **We very much appreciate your support.**

Publicity... Since the launch of our project in March 2020 we have worked very hard to survey receptor and donor sites, meet with landowners, write numerous reports and seek permissions from Butterfly Conservation, Natural England and Forestry England. We have ensured all partners receive updates about the project at regular intervals. Wildlife groups in Herefordshire & Worcestershire are kept informed by various publications, including the WMBC Comma magazine, and by Zoom talks & presentations. Our local Malvern Butterfly Group Facebook & West Midlands BC Facebook sites keep in touch with more than 1600 members.

The **Malvern Gazette** printed an article in June-21 called ***Rare butterfly to be reintroduced to Malvern Hills after local extinction*** including a public fund-raising appeal. In December 2021 the **Malvern Gazette** printed an article called ***BBC Countryfile's Matt Baker visits Malvern Hills for new episode...*** to highlight the project, community support, and our aim to bring back local wildlife and reverse the decline in biodiversity.

Worcestershire Entomology Day... Mel Mason delivered a presentation about the project to an enthusiastic group of professional and amateur entomologists at this annual event in Rock Hall Worcestershire on Saturday 26th November 2021.

BBC Countryfile... filmed the captive larval breeding programme and the habitat management on Eastnor Estate, one of our three receptor sites where we intend to release the first butterflies in spring 2022.The programme is planned to be broadcast on Sunday 12th December 2021.

Matt Baker visits the Malverns on 23rd November 2021

Worcestershire Entomology Day on 27th November 2021

In conclusion... the success of the project ultimately depends on the habitat on our receptor sites, the connectivity between sites, and the long-term commitment to the management of sites.

Many thanks to the landowners and land managers on all receptor sites at Bromesberrow Estate, Eastnor Estate and Malvern Hills Trust who have agreed to modify their habitat management for the reintroduction of PBF and to maintain sustainable habitat into the future.

The successful reintroduction of PBF will be an important milestone in the recovery of our wildlife habitats and proof that we can buck the trend against decreasing biodiversity.

Mel Mason, WMBC Vice-chair & Project Leader, Nov-2021

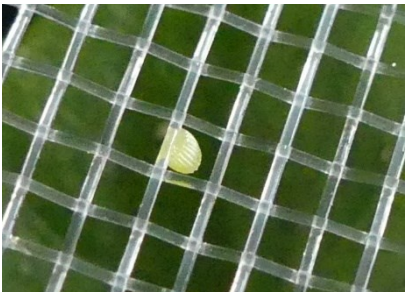
Acknowledgements – refer to page 85.

Volunteer violet growers Upper Colwall JSL

PBF on our donor sites

PBF on our donor sites

The Goldilock's Test for good habitat on the Malverns



June 1st – Gravid female from Wyre Forest and first egg


June 8th – the first instar


June 24th – the third instar


End of July – in diapause


Breeding pots with violets and oak leaves

The Pearl Hotel

Fund raising

Malvern Gazette

23rd June

Rare butterfly to be reintroduced to Malvern Hills after local extinction

By Tom Banner @TomBannerWNSenior Reporter

Publicity

Historic specimens 1908 Walter Sanders Collection Worcester Museum

RECEPTOR Sites for the Reintroduction of PBF

Bromesberrow Estate, Chase End Hill, Gloucestershire

Eastnor Estate, the Obelisk, Herefordshire

RECEPTOR Sites for the Reintroduction of PBF

Malvern Hills Trust, Swinyard Hill, Worcestershire
cattle help habitat management

“Goldilocks” breeding habitat...
Violets on bracken litter under a canopy of bracken

DONOR Sites for the Reintroduction of PBF

Wyre Forest, Worcestershire & Shropshire

DONOR Sites for the Reintroduction of PBF

Y Golfa, Montgomeryshire

DONOR Sites for the Reintroduction of PBF

Ewyas Harold, Herefordshire

DONOR Sites for the Reintroduction of PBF

Bathurst Estate, Gloucestershire

Pearl-bordered Fritillary: At risk butterfly lays foundations for her species' recovery

Luke Lythgoe
Tree of Life programme
Wellcome Sanger Institute

A single female butterfly is playing a crucial double role in her species' survival on these islands. This pearl-bordered fritillary (*Boloria euphrosyne*) and her offspring are at the heart of a reintroduction effort in the Malvern Hills. And as part of the Darwin Tree of Life project, she will also provide the reference genome for her endangered species.

"I think it's wonderful that we've got this butterfly which is doing two things," says Mel Mason, the driving force behind the Malvern reintroduction project. "This female is going to start a new colony on a site where the species had become extinct 30 years previously. And it will have its genome sequenced so that other sites can benefit across the country."

Missing in the Malverns

Once widespread, the number of sites at which pearl-bordered fritillaries can be spotted has **plunged 91%** since the 1970s. *B. euphrosyne* is arguably the second most at risk butterfly in Britain, only trumped in scarcity by the critically endangered high brown fritillary (*Fabriciana adippe*) – another butterfly that disappeared from the Malverns at roughly the same time.

"When I retired, I got involved in a hobby I'd had as a child which was chasing butterflies. But it rapidly turned into a lot more," explains Mel, formerly a science teacher and now Vice Chairman of **West Midlands Butterfly Conservation**. "I started learning a lot about conservation work, then leading work parties, then leading entire projects."

The pearl-bordered fritillary initiative Mel is spearheading in the Malverns will see the species reintroduced to three separate sites. Despite being within one or two kilometres of one another, each is in a different county – Herefordshire, Worcestershire and Gloucestershire. His team will then monitor the success of these reintroductions, and ultimately Mel wants to create wildlife corridors connecting the Malvern sites to other *B. euphrosyne* populations further afield.

“These butterflies are very much threatened, and they will become extinct in this country if we don’t manage their habitat, build these wildlife corridors and allow populations to expand,” Mel insists.

Mel and the pearl-bordered fritillary reintroduction project in the Malverns will feature on the **BBC’s Countryfile** on Sunday, December 12th (Image: Mel Mason, West Midlands Butterfly Conservation)

Starting a new line

There are two main challenges to these reintroduction efforts. First, the habitat needs to be returned to a state fit for the caterpillars to feed and mature into adults. This meant encouraging three different landowners to change their land usage. Instead of grazing these sites, bracken must be allowed to grow. The bracken litter provides the ideal natural shelter for the caterpillars and also encourages the growth of their favourite food plant, common dog violets (*Viola riviniana*).

The second challenge was procuring some butterflies for release. Mel approached several ‘donor sites’ where pearl-bordered fritillaries currently breed. But April and May of 2021 were so cold and wet that only one site – the Wyre Forest – had sufficient numbers to release to the Malvern programme. They provided Mel with four gravid (egg-carrying) females, one of which has gone on to become the DToL specimen for our reference genome.

Bracken litter is key to the success of *B. euphrosyne* caterpillars (Image: Mel Mason, West Midlands Butterfly Conservation)

Because of the difficulty of obtaining adults, Mel decided a captive breeding programme was the best way to get the numbers needed. From the eggs of those four original females, he and his wife Liz have now successfully reared 160 caterpillars from three butterflies in an impressive series of pots, given the opulent moniker the “Pearl Hotel”. Meanwhile, another volunteer, Ian Duncan, has reared more than 20 from the fourth butterfly in the “Pearl Motel”.

These pots are carefully protected from pathogens and parasites: filled with sterilised compost, plenty of tasty violets washed in detergent solution for four hours, and microwaved oak leaves (600W for 2 minutes) to provide shelter.

At time of writing, the caterpillars are in diapause, a resting state they go into over winter. They will emerge in March, feed on more violets, then moult and enter their fifth and final instar stage before adulthood. The plan is to then release a mixture of fifth-instar caterpillars and new adults onto two of the new sites on the Malvern slopes.

Liz Mason checks on the guests at the Pearl Hotel (Image: Mel Mason, West Midlands Butterfly Conservation)


A caterpillar enjoys a meal of violets (Image: Mel Mason, West Midlands Butterfly Conservation)

Genomics in the conservation toolkit

Laying the eggs to begin a new Malvern dynasty of *B. euphrosyne* was not the end of our female's story. Already at least eight days old, and with an average adult life expectancy in the wild of six or seven days, she will go on to be immortalised as the first full-genome sequence for her species. Mel became enthused by the possibilities of genomics after talking to **Ilik Saccheri**, Professor of Ecological Genetics at the University of Liverpool, who suggested this might be a powerful tool for keeping tabs on the progress of the new pearl-bordered fritillary populations. In particular, Mel was intrigued by the idea of using microsatellite markers – essentially a DNA fingerprint – to keep tabs on how our female's offspring are interacting within the Malvern metapopulation, i.e. the combined population of all three sites.

The last moments of this pearl-bordered fritillary, but a great hope for the future of her species (Image: Mel Mason, West Midlands Butterfly Conservation)

The conservation theory behind this is that, although the butterflies were released onto three sites, one or more of those sites may become compromised at some point. That might be due to bad weather, an increase in predators, or some catastrophic localised event. To avoid succumbing to these pressures, the butterflies need alternative options. Since each site is well within the pearl-bordered fritillaries' range of travel, those options are there. It's a matter of whether the insects are willing to make the journey. DNA can be used to answer this question – and might then prompt a change in conservation tactics.

End of a life cycle

On Tuesday, June 8, 2021, the ageing butterfly was gently removed from her enclosure into a labelled plastic wallet, sealed in a petri dish, and snap frozen in dry ice to prevent her DNA deteriorating after death.
“That was very high stress for me – this was a last chance moment,” Mel recalls. “But the butterfly behaved very well, not knowing what her fate was, of course.”

She was then transported to Professor Saccheri in Liverpool, and ultimately to the **Wellcome Sanger Institute** for full genome sequencing. We expect the completed genome to be published in 2022, around the same time her offspring are starting their new lives in the wild.

An adult pearl-bordered fritillary in Wyre Forest (Image: Mel Mason, West Midlands Butterfly Conservation)

If you want to learn more about Mel Mason and his team of volunteers’ conservation work in the Malvern Hills, tune in to Countryfile on Sunday, December 12th 2021.

https://www.darwintreeoflife.org/news_item/pearl-bordered-fritillary-at-risk-butterfly-lays-foundations-for-her-species-recovery/

Grayling *Hipparchia semele* **Report 2021**

Malvern Grayling *Hipparchia semele* on Grayling Crag 10-Aug-2021

Malvern Grayling *Hipparchia semele* female on DeWalden Loop 17-Aug-2021

Grayling *Hipparchia semele* **Report 2021**

Introduction

The Malvern Hills and several sites in Shropshire are the only places in the West Midlands for this vulnerable species, nationally becoming confined to coasts and southern heathlands, with 58% long-term decline in UK. On the Malvern Hills, it favours rocky outcrops above 230m where it can bask, defend rocky territories, shelter in vegetation, nectar on Bramble and where larvae can feed on finer grasses, such as Sheep's Fescue. However, its local range has contracted by 5.5 miles from its southern most territory in Gullet Quarry to the northern hills, not recorded south of Worcestershire Beacon since 2007.

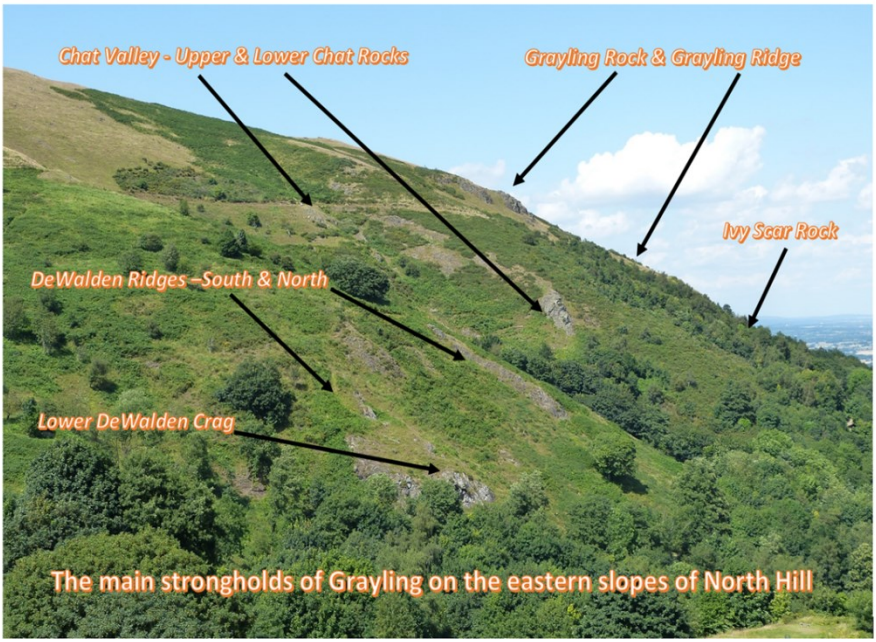
In recent years it has been restricted to the eastern slopes of North Hill around three parallel ridges called Grayling Ridge GRI – leading to a prominent buttress, Grayling Rock (330m) – Chat Valley CVA and De Walden Loop DWL; and to a lesser extent on Ivy Scar Rock ISR.

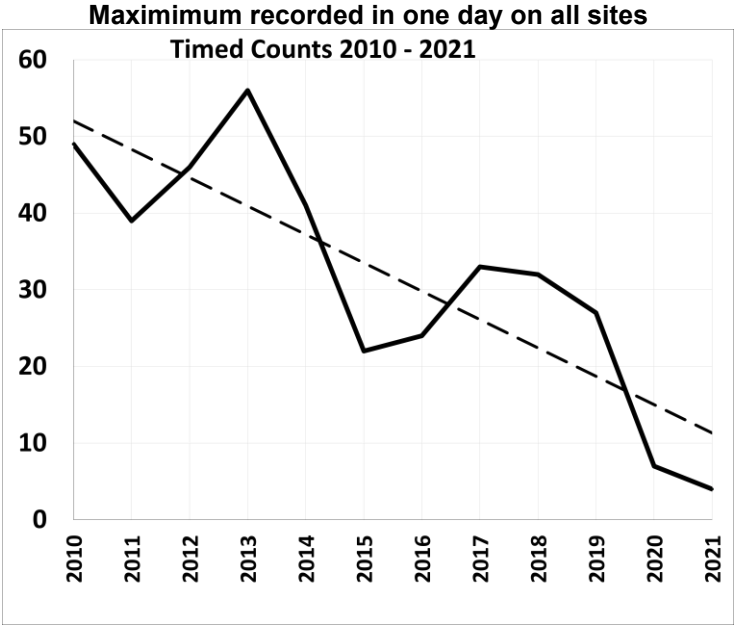
The population of Grayling seemed to fall over the edge of a cliff in 2020 with a maximum of seven recorded in a single timed count of all sites. As predicted, 2021 is no better with only a maximum of four recorded in any one day.

It is fairly certain that this species will be one more victim of extinction both locally and regionally next year or in the very near future without more radical intervention. Some may argue that we should allow this vulnerable species on one of the most isolated inland sites in the UK, to follow a natural course towards extinction as in Herefordshire, Gloucestershire, Warwickshire and Staffordshire. Others may argue that until we truly understand the reasons for the decline of this species there is little we can do to prevent this happening.

I do not accept these arguments which inevitably lead to procrastination and the loss of another species on the Malverns. Little is understood because it seems very little research is linked to the Grayling – 58% decline in abundance 62% decline in occurrence in the UK 1976-2015 [BC The State of the UK's Butterflies 2015].

Once very common inland and particularly on the Malverns it is now considered more of a coastal species – but only because it is more common there and not because it is maintaining a healthy population – quite the reverse, it is very much in decline across the UK.


Chat Valley - Upper & Lower Chat Rocks
Grayling Rock & Grayling Ridge
Ivy Scar Rock
DeWalden Ridges –South & North
Lower DeWalden Crag
The main strongholds of Grayling on the eastern slopes of North Hill


Maximimum recorded in one day on all sites
Timed Counts 2010 - 2021
60
50
40
30
20
10
0
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021

Comments on 2021 timed counts

John Howes and Mel Mason completed 17 timed counts (2-3 hour each count) between 23-June and 08-Aug.

As in 2020, most sightings in 2021 were on DeWalden Loop with very few sightings on Grayling Ridge & Grayling Rock, the sites with most records in previous years. Again, there were no records in Chat Valley or on Ivy Scar Rock, both strongholds for Grayling in previous years.

Casual records

Most years record occasional sightings of Grayling on nearby peaks and in Rushy Valley on the east side of Worcestershire Beacon. This year there was one casual record with photo from the summit of Worcestershire Beacon 05-Aug-21 (SBR).

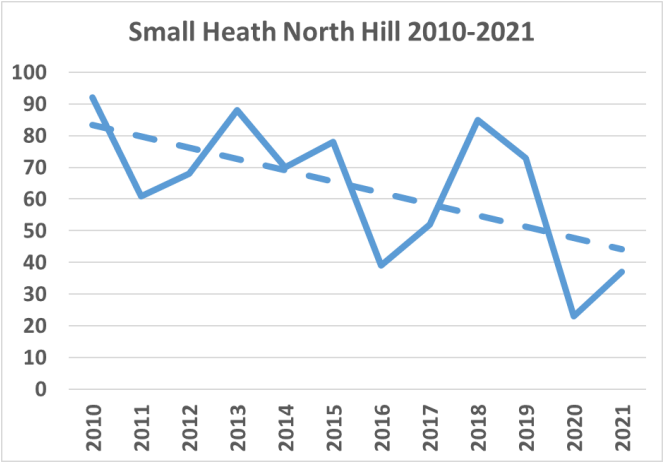
The habitat for Grayling on North Hill has improved considerably, particularly since the 2015 Habitat Survey [Mel Mason & Liz Lloyd] and significant increase in habitat management by MHT & WMBC. The population increase in 2016 and 2017 seems to reflect this improvement in the habitat – but the trendline on the graph above shows a dramatic decline between 2013 -2021.

The past four years 2017-2020 witnessed the earliest ever first records between 23rd – 27th June. Conversely, the last recorded sightings have decreased from 06-Sep-2014 to 30-Jul-2020. The earliest recorded sighting in 2021 was 08-Jul-21 and possibly reflects a cold and wet spring; the last sighting was 10-Aug-21 (MMA).

The population over recent years has been too low and vulnerable to survive sudden changes in the environment. The dramatic decline in 2020 may partly be due to the effect of two parasitic wasps – *Ichneumon xanthorius & suspiciosus* – refer to Report 2020. These wasps appeared on all the Grayling sites between January to March during a very mild winter. These wasps were much less in evidence during 2021.

Correlation with Small Heath *Coenonympha pamphilus*

The local North Hill transect shows a large decline to just 23 **Small Heath** in 2020 – which may also be affected by parasitoid wasps – and little better this year 37 in 2021, compared with 73 in 2019 and 85 in 2018. This species uses the same habitat and larval host-plant as the Grayling



Habitat Management

MHT and WMBC and many volunteers have worked very hard over recent years to improve the habitat, monitor the population and publicise the successful years – highlighted on BBC Midlands Today 2017.

This work is often an uphill task of trying to maintain previously managed sites without sufficient time and funding to improve sites further afield.

Despite Covid-19, MHT and WMBC completed 11 work parties between periods of lockdown from Jan-2020 to Dec-2021 on all the main strongholds – GRI, DWL, CVA AND IVS. Small groups of volunteers helped to partially maintain the open habitat around many of the prominent rocky ridges. Two of these work parties helped to open up access particularly to complete timed counts, which are difficult and risky on very steep slopes covered in bramble and bracken during the flight season.

Suggestions for 2021 onwards...

Funding

BC has successfully applied for funding to support some habitat management over the next 3 years. I hope this will support the removal of trees and scrub linking the main sites on the eastern slopes of North Hill and Worcestershire Beacon and uncover rocky areas presently covered or surrounded in scrub and bramble.

Grazing

Grazing is the key to maintaining managed areas, which have recently become overgrown again with long grasses and some scrub.

Volunteers

Volunteers from MHT and WMBC work hard to maintain open sites but do not have the capacity to extend the habitat essential for the survival of this species in the future.

Translocation or extinction?

Grayling have been recorded on the Malvern Hills since the Malvern Naturalists Field Club was established in 1853. Presumably they have occurred on the Malvern Hills for centuries and probably millennia. It was considered a common species until the beginning of the twenty first century. However, I fear the population is now so low there is little hope of a significant recovery next year.

For many years we have discussed the need to translocate some adult butterflies from further afield, such as the more abundant sites in Shropshire, or from the nearest coastal sites, to improve the genetic mix and perhaps save this iconic butterfly species of the Malvern Hills. Perhaps that time has now arrived – or are we too late!

Acknowledgements on page 84.


May 5th 2021 DeWalden Loop and Chat Valley


June 19th 2021 Ivy Scar Crag


Oct 5th 2021 Ivy Scar Crag


Oct 12th 2021 Grayling Ridge

Nov 6th 2021 – DeWalden Loop

Dec 1st 2021 – DeWalden Loop

Oct 12th 2021 – Grayling Ridge

Transect Reports

CASTLEMORTON COMMON 2021 by Phil Taylor

The season started slowly, but I was grateful to be out on the common, and not shut indoors in a lockdown. The flowers arrived before the butterflies, and the wet Spring encouraged swathes of Common Spotted orchids. The butterflies emerged much later than normal, and Meadow Browns seemed less plentiful than usual, and later on the Gatekeeper became the most numerous butterfly on the transect. Speckled Woods were among the first and last butterflies seen during the season, and it was good to see numbers of Small Tortoiseshell, Peacocks and Red Admiral on the thistle patches. A single Small Heath was nice to see, along with a few Skippers and Common Blue.

One highlight was coming across mud puddling Green Veined Whites, and I was able to get a photo, as they are not easily disturbed when displaying this behaviour. Another highlight was the day I came across what appeared to be an Emerald encrusted Faberge egg, which had been discarded in a Gorse bush. As the sunlight shone on ‘the egg’, it was a wondrous sight. I approached carefully and could see that it was a ball of lurid green lichen. From another angle I could see the face of a Long-Tailed tit through a small hole in ‘the egg’. A week later, the nest was invisible as the lichen had turned brown, and the bush had grown more foliage. Some day flying moths were seen, Emperor, Oak Eggar and a Straw Dot.

Transect Reports

POOLBROOK COMMON 2021 by John Lane

This was a difficult season, with rain and low temperatures making it very difficult to begin transect walks until the end of April. Hot dry spells also had an effect, with most of the grass in all sections brown by July 26th. Meadow Brown and Gatekeeper showed well, with both exceeding 100 on August 3rd. Marbled White were also abundant, with over 100 on July 14th, without reaching the staggering numbers recorded in 2019. A number of species were noticeably thin on the ground: Common Blue females were hard to find and I failed to record a single Brown Argus.

Burnets were less abundant than previous years and there were far fewer cocoons to be found; a search at the end of the season revealed only three spent cocoons in section 1. Large and Small Whites held up reasonably well, but Small Tortoiseshell numbers were down. Large and Small/Essex Skipper numbers were reasonable. Ringlets, reported by Alison Uren, the previous recorder, to be somewhat down in numbers in 2020, were still not as abundant as in the past.

The most significant change in recorded numbers occurred, alas, when the grass mowing of sections 2 and 3 took place much earlier than usual. The numbers show what happened: Transect counts: 3rd August: 242, 9th August 56, 14th August 12 - September counts were even lower. I visited the meadow on extra days to be sure of the effect of the mowing. Sections 2 and 3 were generally barren, with just the occasional butterfly passing through but rarely settling. Grasshoppers were absent from those parts of the sections where I normally find them.

By 10th August the Meadow Brown count for section 1 (unmown) was 30; only 3 recorded in section 3. It remains to be seen whether larvae, in particular, will have been removed with the grass, so next year's transects will perhaps reveal any unfortunate consequences. The cutting and removal of grasses is of course an essential component in the management of wildflower meadows, but I hope very much that it can take place next year in September, as in previous years. Poolbrook, with its knapweed, orchids and countless other precious flora and its treasure trove of insects, remains a jewel that sustains precious life. I was lucky enough to see a Kestrel hunting in Section 1, and both of the ponds in the common gave me the opportunity to record Emperor, Common Darter and Broad-bodied Chaser dragonflies. On my last transect, so bereft of butterflies, I found several 4 Spotted Orb spiders, *Araneus quadratus* – the UK's heaviest spider - and they were of course in section 1….

Transect Reports

NORTH HILL 2021 by Liz Lloyd

It was great to kick off April with a good spring selection. Peacocks featured on the first few transects before disappearing, not to reappear until just after the July heatwave. Good to see Brimstone and Holly Blue first brood and Orange-tip too, which I missed last year due to lockdown.

Numbers tailed off during a dull, wet May apart from the arrival of Green Hairstreak in Tank Quarry - also had one late sighting on 16th July – a somewhat battered specimen with not much green left on its wings. Large Skipper appeared as usual in June, including my regular sighting on the first nettle patch going up Tank Valley. Small and Essex Skipper only arrived in the mid July heatwave, mainly in the quarries.

Small Coppers were thin on the ground this year and only one Brown Argus in Tank Quarry in August. Silver-washed Fritillary appeared in North Quarry in the hot weeks of July, while just two Painted Lady flew in to Tank Quarry in mid-August.

A few more Small Tortoiseshell seen than last year but still single figures and fewer Comma, although good to see a fresh-looking pair in Tank Quarry in late September. Red Admiral were regulars between May and September. Small and Green-veined White were slightly down from last year.

Ringlet peaked during the July heatwave and then tailed off quickly, but Meadow Brown and Gatekeeper kept going into August. Small Heath numbers improved from last year but were still low. Speckled Wood always reliable throughout the season with good numbers in a warm August and September.

The highlights of this year's transect were a Purple Hairstreak and a White-letter Hairstreak both spotted below Ivy Scar in July. I even managed to get a film of the White-letter, taking nectar from Rosebay Willowherb – the only time I have seen a butterfly feeding on this plant, apart from a Holly Blue a couple of years ago.

Transect Reports

OLD HILLS 2021 by Sheila Jones

As a newcomer to butterfly recording, Mel and Liz walked the transect with me during the last week of March. It is a site with varied habitats, and they showed me where to look for certain species. It was a lovely sunny day and we saw about 20 butterflies, mainly Brimstones and Peacocks with one Comma.

Sadly, it went downhill from there on with a cold April and a particularly wet May, I hardly got counts in double figures increasing only steadily until the end of June. July suddenly became quite daunting with counts over three figures, 303 with 15 different species on my best week. An abundance of Gatekeepers and a thrill to find Purple Hairstreaks on several sections of the transect but sadly no sightings of White Letter Hairstreaks. It has been quite a learning curve and I do find the 'Whites' rather difficult especially in flight.

I have found it quite a challenge, trying to find the best conditions weather wise when I was able to visit, constantly checking weather forecasts like never before! Timing also rather crucial as living north of Worcester, I needed to avoid the busy traffic times. Overall, an enjoyable experience and I look forward to comparing figures next year.

BLACKHOUSE WOOD 2021 by Andy Pearce

After a cool start to the year butterfly numbers were initially very low. On a couple of occasions it wasn't until the last section of the transect I saw a single butterfly. The transect is still dominated for the most part by woodland species Speckled Wood and Green Veined White but as more work continues to open glades in the woodland to increase light levels for more of the day some sections show a good number of species from more open habitats such as Meadow Brown and Ringlet. This year there were good numbers of Silver-washed Fritillary, Red Admiral and tens of Peacock particularly when the Buddleia was in bloom.

Common Blue and Marbled White made brief appearances and for the first time, looking down at a patch of Bird's Foot Trefoil, a **Dingy Skipper made a first record for the site**.

Acknowledgements

Sincere thanks are due to: Rhona Goddard BC Regional Conservation Manager – Midlands; Mike Southall, Peter Seal, John Tilt and Mike Williams, at WMBC for their guidance and advice; all our partners for their expert advice and support with the Malverns Hills Lost Fritillaries Project (see p85); Liz Lloyd for editing & Mike Williams for proof reading; MHT for their support and vital habitat management and in particular Jonathan Bills, Andy Pearce, Simon Roberts, Rich Vale, Ben Taylor & Conor Willmott for organising the volunteer group; the **volunteers** at MHT, WMBC, WWT and MBG who work very hard to manage the habitat sites around the Hills; the **transect walkers** and **casual recorders**, especially those who discovered butterfly recording this year – we hope you enjoyed it and participate again next year.

Many thanks to both staff and volunteers at… Malvern Hills Trust – Seven transect sites; Worcestershire Wildlife Trust – Six transect sites; WCC St Wulstan's LNR

Pearl-bordered Fritillary sites; Landowners and land managers at Bromesberrow Estate, Eastnor Estate and Malvern Hills Trust

WMBC / MBG Grayling Work Party Volunteers 2016-2021

Alex Henderson	John Howes	Pete Parkes	Stephen Braim
Alison Uren	John Oldham	Peter Seal	Steve Miller
Andy Dorey	Jon Lloyd	Peter Suddaby	Tom Woodhall
Andy Pearce	Karen Leonard	Rex Eckley	Tony Simpson
Ann Hadfield	Ken Allcock	Rich Vale	Tracy Sutton
Dave Cooke	Liz Lloyd	Richard Clarke	Trevor Truman
Derek Fearnside	Mark Roberts	Rob Horey	Pershore College
Dick Stockford	Mel Mason	Sheila Jones	
Hugh Glennie	Mike Williams	Silvia Braim	
Ian Duncan	Nick Lobo	Simon Pugh	
Jess Sly	Nicky Heeley	Simon Roberts	

Grayling Timed Count Recorders – John Howes & Mel Mason

Acknowledgements

Malvern Hills Lost Fritillaries Project & Reintroduction of PBF

Many thanks for their expert advice and support with the Malverns Hills Lost Fritillaries Project:

Dan Hoare, BC National Conservation Director, Rhona Goddard, BC Regional Conservation Manager – Midlands, Ian Duncan, Nick Greatorex-Davies, Liz Lloyd, Mike Williams, Jenny Joy, Ian Hart, Tammy Stretton Montgomery Wildlife Trust, David Armitage & Karen Humphries at Malvern Hills AONB, Jonathan Bills at MHT, Esther Stephens & Nick Woodward & Tom Simpson at Natural England, & Forestry England at Wyre Forest.

Further afield:

Dave Wainwright North-East England, Martin Wain Cumbria, Chris Tracey Bathurst Estate Gloucestershire, Professor (Genetics) Ilik Saccheri at Liverpool University, The Tree of Life Project & Sanger Institute in Cambridge.

Special thanks to the landowners & managers on the receptor sites at the private Bromesberrow Estate, the private Eastnor Estate, and the Malvern Hills Trust; and on the donor sites at Wyre Forest Worcestershire & Shropshire, Ewyas Harold Herefordshire, Y-Golfa Montgomeryshire and Bathurst Estate Gloucestershire.

And...
the **volunteers** from BC, MHT and the Wildlife Trust.

PBF Captive larval breeding – First stage – growing violets 2020-22

Andy Pearce	Keith Falconer	Peter Seal
Ian Duncan	Margaret Embleton	Phil Taylor
Jess Sly	Mel Mason & Liz Lloyd	Roger Bates
John Lane	Nick Greatorex-Davies	

Butterfly and day-flying moth recorders (transect recorders in *italic*)

Alison Uren	AUR	Jim Beard	JBE	Rhys Leonard	RLE
Alex Barclay	ABA	Jim Bullett	JBU	Rich Vale	RVA
Alex Henderson	AHE	***John Howes***	JHO	Richard Medley	RME
Andy Dorey	ADO	John & Janis Bethell	JJB	Richard Newton	RNE
Andrew Magnay	AMA	***John Lane***	JLA	***Roger Bates***	RBA
Andy Pearce	APE	John Tilt	JTI	Roger Hales	RHA
Angie Hill	AHI	John Vaughan	JVA	Rosemary Eustace	REU
Ann Bowker	ABO	Jonathan Bills	JBI	Safi Szabolcs	SSZ
Ann Brookes	ABR	***Karen Leonard***	KLE	Samantha Craig	SCR
Brett Westwood	BWE	***Keith Falconer***	KFA	Shabra Dowson	SDA
Brian Iles	BIL	Laurence Gough	LGO	***Sheila Jones***	SJO
Brietta Pinder	BPI	***Liz Lloyd***	LLO	Silvia Braim	SBR
Cherry Greenway	CGR	Lynne Gardner	LGA	Simon Evans	SEV
Chris Hall	CHA	Maggie Jo St John	MJSJ	Simon Lampitt	SLA
Chris Leonard	CLE	***Margaret Embleton***	MEM	Simon Primrose	SPR
Christine Seymour	CSE	Margaret Vernon	MVE	Simon Pugh	SPU
Clive Lloyd	CLL	Marion Marsey	MMA	Simon Roberts	SRO
Dave & Carol	D&C	***Mel Mason***	MMA	Stuart Brown	SBR
Dave Cooke	DCO	Mick Woodward	MWO	Sue Wolfendale	SWO
Dave Cunliffe	DCU	Mike Perry	MPE	Susie Cunningham	SCU
Dave Taft	DTA	Mike Pullen	MPU	Tessa & Andy Dorey	T&A
Dave Vernon	DVE	Mike Uren	MUR	Tessa Bramall	TBR
Dave Palmer	DPA	Mike Williams	MWI	Tim Dixon	TDI
David Struggles	STR	Nick Rowberry	NRO	Tim Wolf	TWO
David West	DWE	Nick Underhill-Day	NUD	Tracy Sutton	TRU
Dick Stockford	DST	Peter Colwill	PCO	Tricia Portch	TPO
Garth Lowe	GLO	Peter Garner	PGA	Tony Simpson	TSI
Helena Kent	HKE	Peter Holmes	PHO	Tony Symmonds	TSY
Hugh Glennie	HGL	Peter Seal	PSE		
Ian Duncan	*IDU*	Phil Bunyan	PBU		
Jackie & Mark Walbridge	JWA	Philip Jones	PJO		
Jane Smith	JSM	***Phil Taylor***	PTA		
Jane Taverner	JTA	Ray Bishop	RBI		
Jess Sly	JSL	Rex Eckley	REC		

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11. UKBMS Transect Records for the West Midlands Region (2011-2019)
12. Fritillary Habitat Survey completed in 2016 by Katey Stephen, Natural England for WMBC
13. Grayling Habitat Survey completed in 2007 by Sue Clarke (Butterfly Conservation)
14. Grayling Habitat Survey completed in 2015 by Mel Mason & Liz Lloyd (WMBC)
15. Report on the Population & Distribution of the Malvern Grayling between 2007-2017 (Mel Mason).
16. Report(s) on the Population & Distribution of the Malvern Grayling in Summer 2018, 2019, 2020, 2021(Mel Mason).
17. Reports 2020 & 2021 Malvern Hills Lost Fritillaries Project (Mel Mason, Liz Lloyd, Ian Duncan, Nick Greatorex-Davies, Peter Seal,)

Gazetteer

The places mentioned in this report are generally shown on **Malvern Hills and Bredon Hill** 1:25,000 Ordnance Survey Explorer Series, Sheet 190, and **Worcester & the Malverns** 1:50,00 Ordnance Survey Landranger Series, Sheet 150. In addition, common names used by local naturalists are listed.

Site Name	Grid Reference
Bagburrow Wood	SO749451
Ballard's Land	SO766426
Berrington's Quarry	SO769412
Blackmore Park	SO815442
Brookbatch	SO757515
Brotheridge Green Nature Reserve	SO815413
Chat Valley, North Hill	SO772463
Clenchers Mill	SO732352
Coombe Green Common	SO777365
Cother Quarry and Cother Wood	SO757464
County (West of England) Quarry, Summer Hill	SO768447
Cowleigh	SO765477
Danemoor Farm	SO796413
DeWalden Ridge, North Hill	SO772460
Dingle Quarry and Dingle Valley	SO765456
Earnslaw Quarry	SO771445
Eastnor Park	SO750379
Firs Valley, Worcs Beacon	SO772449
Fish Pools, Colwall	SO740425
Gardiner's Quarry, Pinnacle Hill	SO766421
Grayling Ridge and Grayling Rock, North Hill	SO773465
Gullet, The (Gullet Quarry)	SO762381
Happy Valley	SO770458
Hill Court Farm	SO825355
Hollybed Common	SO776374
Hollybed Farm Meadows Nature Reserve	SO780378
Ivyscar Rock, North Hill	SO773463
Joyner's Meadow	SO765465
Kettle Sings, The	SO765421
Lower Mitchell	SO725388

Gazetteer

The places mentioned in this report are generally shown on **Malvern Hills and Bredon Hill** 1:25,000 Ordnance Survey Explorer Series, Sheet 190, and **Worcester & the Malverns** 1:50,00 Ordnance Survey Landranger Series, Sheet 150. In addition, common names used by local naturalists are listed.

Site Name	Grid Reference
Malvern Common East (Poolbrook Common)	SO785443
Malvern Common West (Peachfield Common)	SO777444
Mathon Gravel Pits (The Brays / Warner's Farm)	SO733444
Melrose Farm Meadows Nature Reserve	SO818410
New Pool (Poolbrook)	SO786438
News Wood	SO755382
North Quarry	SO770469
Obelisk, The	SO755379
Old Country Orchard	SO728445
Old Hills	SO827487
Old Hockey Field, nr Mathon Lodge	SO757452
Park Wood	SO764444
Purlieu, The	SO764443
Rhydd Green	SO833451
Rushy Valley, Worcs Beacon	SO772454
Shadybank Common	SO768395
St Ann's Well	SO772458
St Wulstan's Local Nature Reserve	SO783414
Stamp's Orchard, Colwall	SO751429
Swinyard Flush	SO764381
Tank Quarry	SO768470
Thirdsland	SO768425
Wells Common	SO775443
Westminster Quarry	SO765461
Wheatear Valley (unofficial name)	SO761399
Wide Valley, Worcs Beacon	SO771451
Wood Street	SO805443
Woodford's Meadow	SO782463
Wyche Cutting	SO768430

WMBC AGM Saturday 14th May 2022 11:00 – 13:00

Zoom link will be forwarded to all WMBC members
Non-members contact mbg.records@btinternet.com (talk only)

With Guest Speaker - **Dave Goulson**

"**The Plight of Insects, and what we can do to help them**"

Dave Goulson is Professor at the School of Life Sciences, University of Sussex. He is also founder of Bumblebee Conservation Trust, and a much sought-after speaker on insect behaviour, environmental issues and climate change. He is the author of six popular wildlife books – three about bees, two on insects and his most recent, called Silent Earth, is an extremely well researched description of the plight of insects and "... the simple steps we can all take to encourage insects and counter their destruction".

Silent Earth... 'Compelling, penetrating, devastating – Silent Earth is a wake-up call for the world'- Isabella Tree.

The Garden Jungle... 'This book will teach you a great deal about the creatures that live right outside your door and are waiting for you to get to know them. It is a constant revelation' – John Carey, Sunday Times.

Sting in the Tail... 'Enormously informative, hugely entertaining, this is essential reading' – Independent.

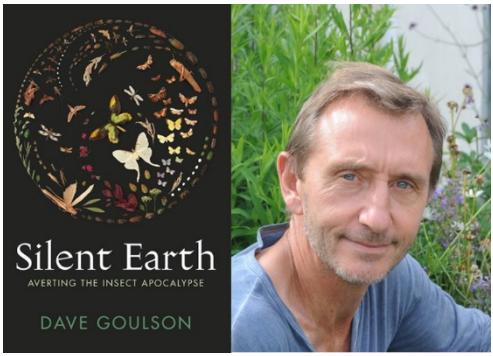
A Buzz in the Meadow... 'Wonderfully entertaining... engages with the reader as much as with the eloquence of its argument as with the charm of its humour' – Mark Cocker, Mail on Sunday.

Bee Quest... 'Going on Bee Quest with him puts the natural world within our reach – to enjoy but also to protect...this is a truly positive and empowering read' – Laline Paull, Observer.

"*Silent Earth: Averting the Insect Apocalypse*" by Dave Goulson

ISBN 9781787333345 hardback Publisher: Jonathan Cape, Cost £20.00

This book is a thought provoking read, filled with fascinating and in some cases mind-blowing information about insects... "the overall weight of ants on the planet is roughly similar to the total weight of humans". Insects play a crucial role in the world's ecosystems and food chains. Not only does Dave Goulson point out that we cannot live without them, but also highlights the devastating ignorance of most people (present company excepted) with regard to their importance, graphically illustrated by an Australian radio presenter: "So insects are disappearing... that's a good thing, isn't it?". Even worse, Lord Winston's remark about global declines "There are quite a lot of insects we don't really need on the planet". Some people seem to see insects just as pests and irritations, just as with media interpretation of every moth as a clothes moth!



The author goes on to explore all the evidence and reasons for insect losses and the effects. Among a wealth of information, salutary facts jump out at you, especially about pesticides: "each field or orchard in the UK is now, on average, treated sixteen times annually… this could be the same pesticide…or sixteen different pesticides each applied once." The effects of herbicides, fungicides, monocultures and many other man-made interventions are detailed as well as the effect of climate change.

This is not a comforting read, but it is a gripping one. He intersperses and lightens the main theme with snapshots of particularly fascinating insect species and their behaviour. The final part looks at what actions we can take to change the situation – this is where we all come in and this is going to be the hard part, but we need to back people like Dave Goulson to fight the insects' corner before it is too late.

Review by Liz Lloyd, WMBC volunteer

BUTTERFLIES AROUND THE MALVERN HILLS

The Malvern Hills is in an Area of Outstanding Natural Beauty (AONB). The 14km spine with 22 individual summits runs north-south and straddles the Worcestershire and Herefordshire border. The high hills are typically open acid grasslands, with the hillsides of mixed woodland, bracken and scrub, while the lower commons are primarily rough and wet grasslands.

Natural England (NE) has designated the Malverns as a Site of Special Scientific Interest (SSSI). Most of this land comes under the stewardship of local charity the Malvern Hills Trust (MHT). These varied habitats provide a rich diversity of wildlife including 33 species of butterflies.

This leaflet provides information about the butterflies that occur, how to identify them and when to see them.

WEST MIDLANDS BUTTERFLY CONSERVATION

Butterfly Conservation

Produced by Butterfly Conservation in partnership with AONB, Natural England and MHT

Butterfly Conservation. Company limited by guarantee, registered in England (2206468). Registered Office: Manor Yard, East Lulworth, Wareham, Dorset, BH20 5QP. Charity registered in England and Wales (254937) and in Scotland (SCO39768). VAT No GB 991 2771 89.

Identification guide to the Butterflies of the Malvern Hills

Malvern Hills
Lost Fritillaries Project

Published by Malvern Butterfly Group &
West Midlands Butterfly Conservation