

**DRAFT Butterflies 2022**  
*Keith Balmer*

January started mild with a Brimstone and a Peacock on the 1st and a Red Admiral on the 2nd. Following cooler weather, Small Tortoiseshell was seen on the 27th. 12 butterflies were reported in the whole month.

Comma bided its time until 9th February, and then the same five overwintering species were reported on occasional mild days throughout the month, totalling 36 adults.

Increasingly-warm weather led to the first emergence from a pupa, a Small White on 14th March, followed by Holly Blue on the 20th, Orange Tip and Speckled Wood on the 22nd, and Green-veined White on the 26th. All five of these species were early with respect to their 10-year average first-sighting date, by between four and twelve days, setting the pattern for nearly all emergences throughout the year. 1,572 adults were reported for the month, predominantly the ex-hibernators.

Poorer weather during the last three days of March continued through the first week of April, with very few reports for week 14 (2nd-8th April). Once over, the first Large White was noted on the 10th, the only species this year to be first seen later than its average first-sighting date. Small Copper was next on the 14th, then Duke of Burgundy and Green Hairstreak on the 15th, Grizzled Skipper on the 16th, Dingy Skipper on the 20th, Small Heath on the 24th and Brown Argus on the 30th.

Early emergences continued through May with Small Blue on the 5th and Common Blue on the 6th. The first Painted Lady of a small migration was noted on the 16th, before the first Large Skipper on the 18th, then another migrant, Clouded Yellow, was seen on the 22nd. Meadow Brown was the final emergence of May on the 27th.

Marbled White was the first new species of June, on the 3rd. Black Hairstreak followed on the next day. Dark Green Fritillary was spotted on the 6th, Ringlet on the 8th, and Small Skipper and Silver-washed Fritillary on the 11th. Three species were noted on the 17th, Essex Skipper, White Admiral and White-letter Hairstreak. Gatekeeper came next on the 19th, then Purple Emperor on the 22nd, Purple Hairstreak on the 25th and finally, as usual, Chalkhill Blue on the 29th, but unusually in June rather than July.

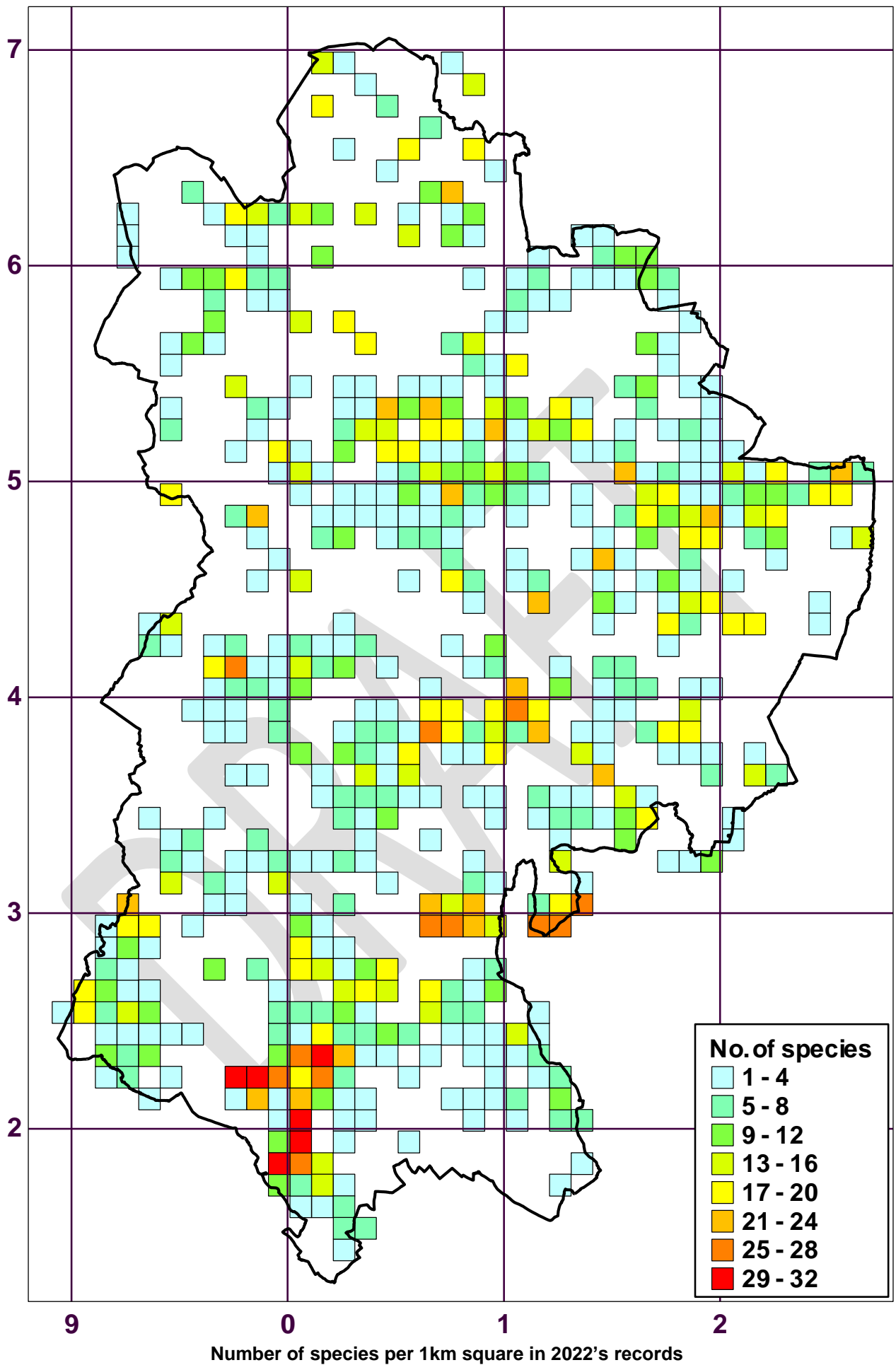
July had notable spells of really hot weather, firstly peaking at around 30C on the 11th and then it approached 40C on the 19th. Observers courageous enough to venture out found shady hedgerows filled with sedentary butterflies and other insects, conditions too extreme for normal activity. Hairstreaks also came down in abundance from the canopy to the ground, easily observed on woodland rides. July was the peak month for overall abundance with 32,605 adults reported, 42% of the annual total.

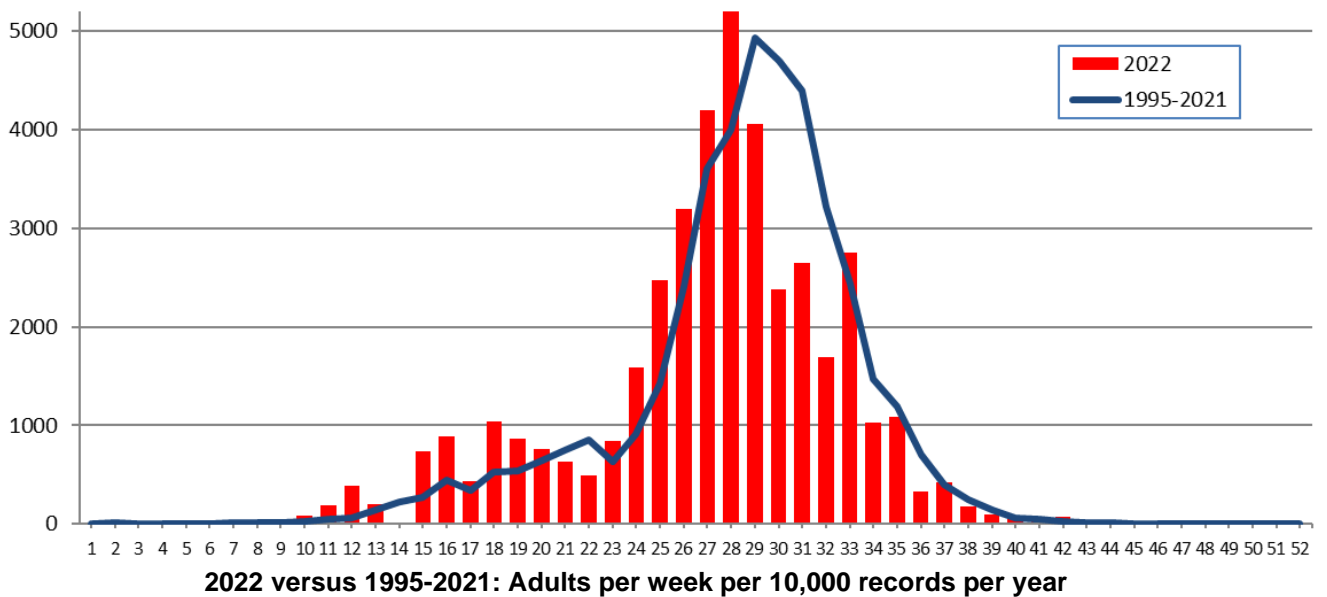
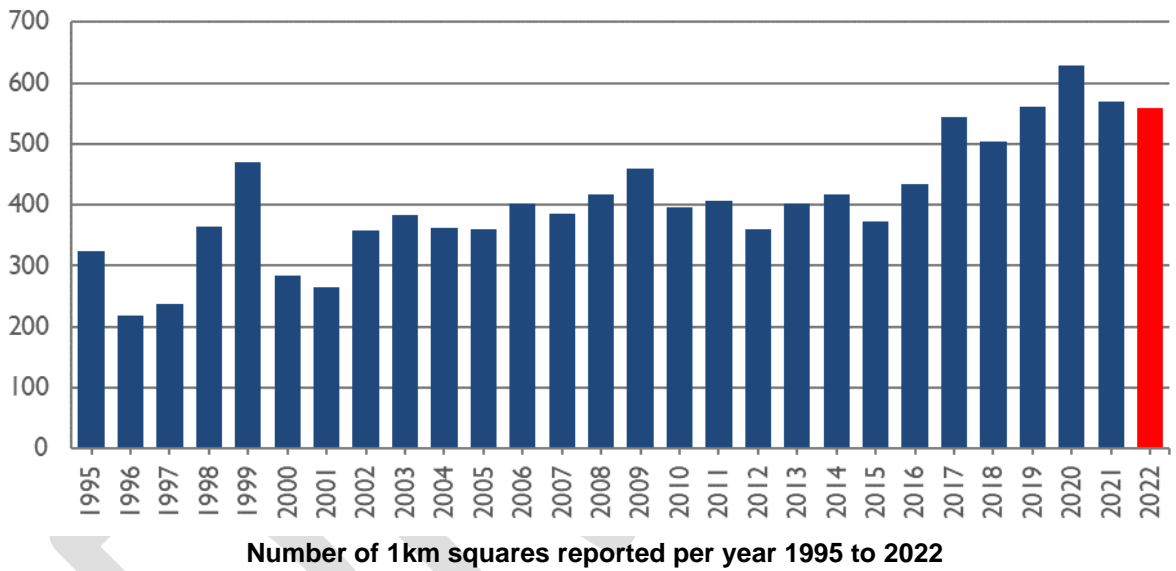
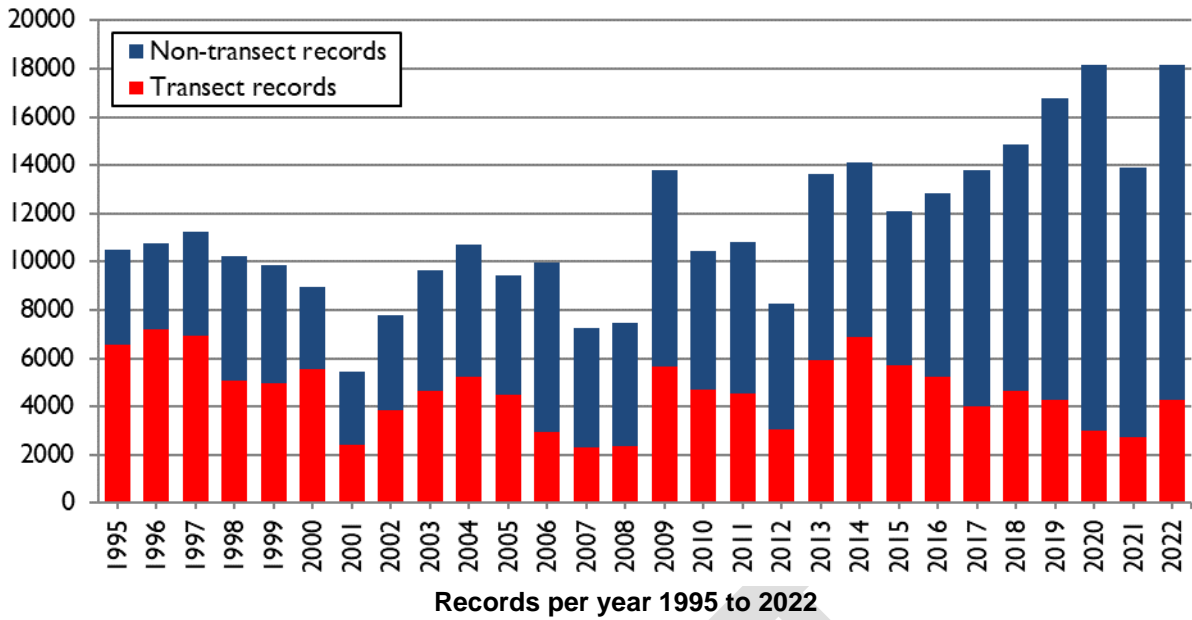
Extra partial broods for Dingy Skipper and Small Blue were observed through the summer, and most-noticeably for Holly Blue which had a distinct third brood taking its season to 12th November, the last non-overwintering species to be seen. Chalkhill Blue, Common Blue and Peacock may also have had partial extra broods, suggested by late ends to their seasons and some fresh-looking late-flying individuals. An extra peak in Small White's numbers in August might have been due to an extra brood or to immigration. Against this trend, Comma and Small Tortoiseshell showed few signs of having their normal second broods, instead, hopefully, going into hibernation after just one generation rather than failing with their second brood. Species that stayed with their normal number of broods generally finished their season early, the fine weather throughout much of the year having advanced their entire flight period.

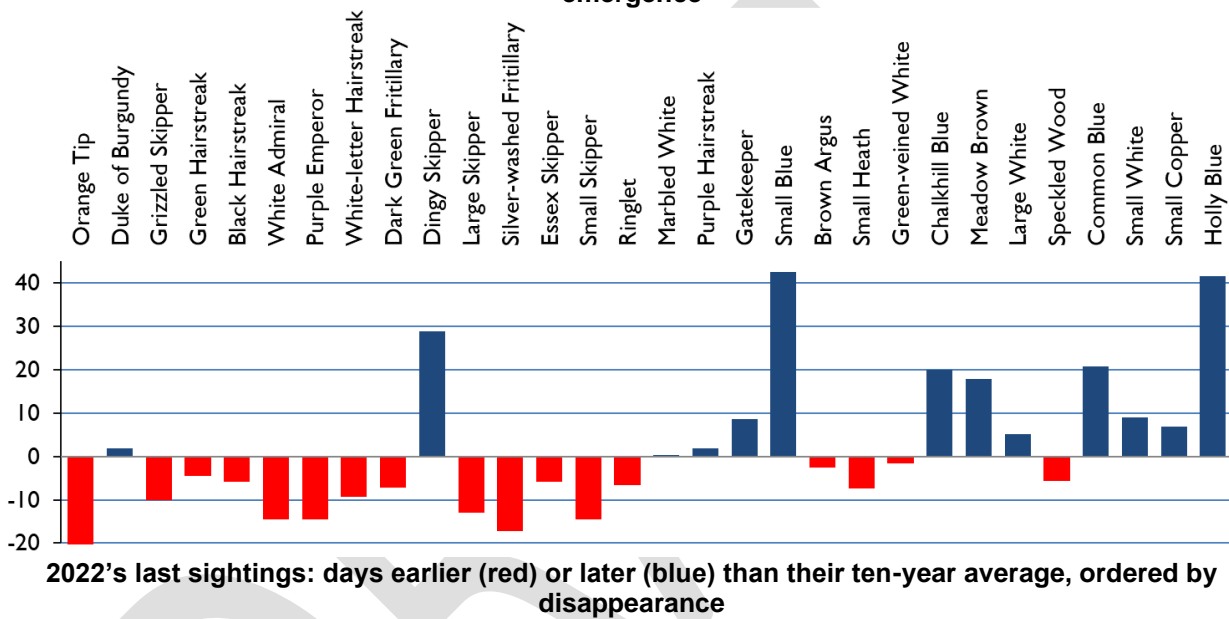
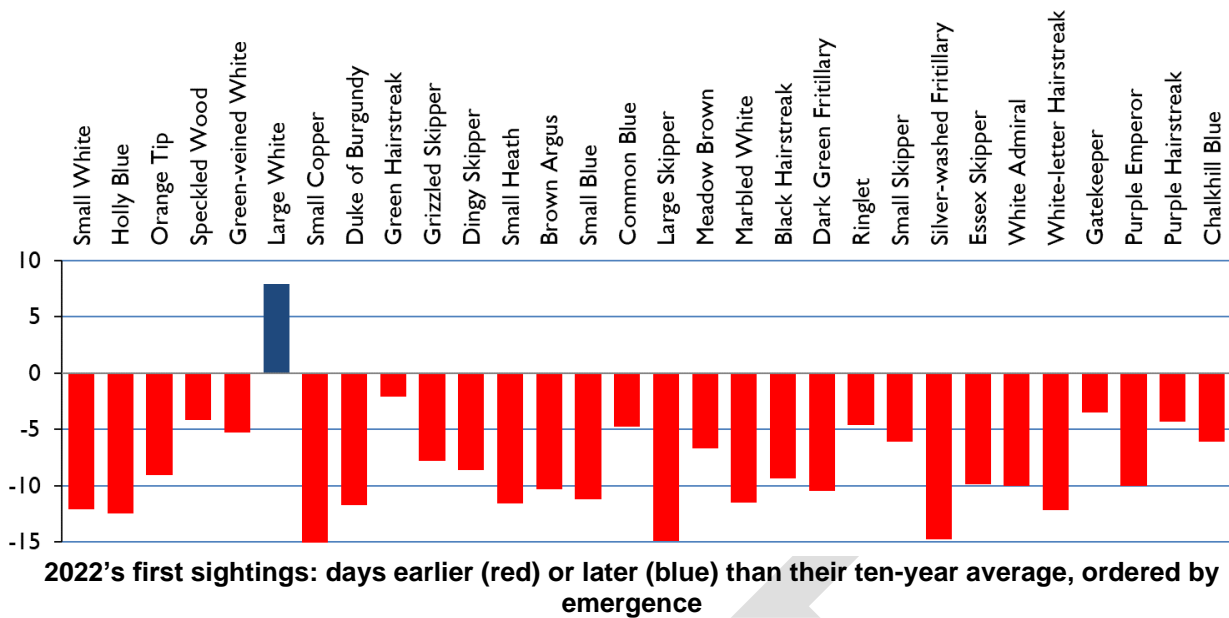
### **Analysis of Data**

At the time of analysing records for this report (2nd February 2023) 18,133 records had been received and computerised, containing reports of 76,823 adults from 559 1km squares. 67 records were of the immature life-stages. Records were analysed at this date and may be subject to minor revision. 4,300 records were from transects and 13,833 records were from other sources, mostly casual recording.

Where an abundance was reported through an App using a letter (i.e. A=1; B=2-9; C=10-29; D=30-99; E=100+) the lowest value of the range has been assumed in the statistics (i.e. B=2; C=10; D=30; E=100) as this is the only abundance of which I can be certain. It is therefore much better to report abundances using digits please.







### Transects

The total number of adults, numbers of species ( ), and number of weekly walks out of the theoretically possible 26 [ ] for the recent transects are shown in the table below. My thanks again go to those who attempt to systematically walk and record these transects once per week every year, between 1<sup>st</sup> April and 30<sup>th</sup> September, allowing year-on-year comparisons to be made. These data are also combined at the national level with data from other transects as part of the United Kingdom Butterfly Monitoring Scheme (UKBMS).

	2018	2019	2020#	2021	2022
Dunstable Downs	3830 (31) [21]	1873 (31) [17]	2259 (29) [17]	2816 (30) [17]	2701 (29) [19]
Harrold Odell CP	1493 (19) [25]	2022 (21) [24]	1117 (19) [15]	158 (15) [9]	*
Hill Rise	*	*	*	*	222 (15) [21]
Knocking Hoe	2595 (25) [25]	2369 (25) [25]	2497 (25) [25]	2083 (23) [23]	1663 (24) [24]
Mowsbury Hill	1232 (21) [13]	1090 (19) [13]	655 (18) [9]	1071 (18) [17]	901 (22) [13]
Old Warden Tunnel	817 (22) [25]	829 (21) [21]	421 (20) [13]	715 (22) [23]	700 (21) [23]
Pegsdon Hills	2719 (25) [23]	2481 (26) [24]	3011 (24) [23]	2991 (25) [25]	2419 (24) [25]
Potton Wood	*	*	*	*	1851 (22) [19]
Priory CP	*	2171 (23) [26]	1615 (19) [18]	1182 (20) [23]	1277 (21) [20]
Sharpenhoe Clappers	4477 (29) [18]	3288 (29) [15]	1092 (27) [9]	80 (16) [2]	6079 (25) [18]
The Lodge NR	*	*	*	*	474 (23) [16]
Totternhoe Quarry	2352 (27) [23]	1280 (26) [17]	1621 (24) [14]	1843 (25) [19]	*
Whipsnade Downs	2856 (27) [23]	*	*	*	270 (22) [6]
Whipsnade Zoo	3143 (25) [15]	2767 (27) [11]	*	*	*

\* The transect was not walked this year.

# 2020's season was affected by COVID-19 restrictions.

## Species Reports

In the following species reports “10ya” is an abbreviation for “10-year average”. Analyses look back to 1995 unless stated otherwise.

### Hesperiidae (Skippers)

#### Dingy Skipper *Erynnis tages tages*

Dingy Skipper was reported with good abundances from many of its usual sites: Barton bypass, Barton Hills, Brogborough Hill, Brogborough landfill site, Dog Kennel Down, Dunstable Downs, Houghton Regis chalk pit, Knocking Hoe, Marston Vale CP, Pegsdon Hills, Rookery Pit, Sandy Smith NR, Sewell Cutting, Sharnbrook Summit, Sharpenhoe Clappers, Shocott Spring, Sundon Chalk Pits, Totternhoe, and Whipsnade Downs. Clophill Lakes and Quest Pit were also added as new sites this year. In total, 40 1km squares were reported, beating 2014's 38. The largest count of 35 was from Totternhoe on 13th May. The first brood's sightings started on 20th April, nine days earlier than the 10ya, and ended on 23rd June, but there were two records from a partial second brood - two at Knocking Hoe on 23rd July and one near Marston Thrift on 7th August.

#### Grizzled Skipper *Pyrgus malvae*

Grizzled Skipper was reported from known sites at Brogborough Hill, Brogborough landfill site, Bromham Lake, Cranfield University, Dunstable Downs, Lidlington pit, Marston Vale CP, Rookery Pit, Sandy Smith NR, Sharnbrook Summit, Totternhoe, and Whipsnade Downs. Additionally, Quest Pit was a newly-reported site. It was seen in 21 1km squares (c.f. 2021-22, 1998-23, 2004-28). Abundances were generally low, the largest count of eight was from Dunstable Downs on 22nd May. The single brood's 59-day duration was typical for the species but it was shifted about nine days earlier than the 10ya.

#### Essex Skipper *Thymelicus lineola*

Sightings for Essex Skipper started on 17th June, ten days earlier than the 10ya and ended six days earlier. Its peak was week 28 (9th-15th July), two weeks earlier than usual. The largest count of 17 was made on Dog Kennel Down on 5th July. It was also reported from other chalk grasslands in the south, through scattered grasslands and woodland rides northwards to Strawberry Hill Farm. The 34 1km squares reported exceeded the 10ya of 26, but was well below the 79 reported during intensive surveying in 1995.

#### Small Skipper *Thymelicus sylvestris*

As for many species, Small Skipper's season was advanced by around ten days. Coverage was good, the reported 114 1km squares (10ya 84) represented decent grasslands in most parts of the county. Some of the larger counts were of 38 at an evening roost at Cut-throat Meadow NR on 20th June; 40+ at Beeston on 30th June; and 50+ in Maulden Wood on 11th July. The largest however was made in the extreme heat on 19th July when over 1,000 “skippers”, together with many of other species, congregated in the shade of a 200m length of hedge and trees at Dog Kennel Down, “too many to count”.

#### Large Skipper *Ochlodes sylvanus*

Transect data suggest that Large Skipper had a reasonable season with counts at, or above, average at most sites. Casual recording reported 152 well-distributed 1km squares, second only to 2020's 169, with abundance slightly above average overall. Its first and last sighting dates were respectively 15 and 13 days ahead of its 10ya. As usual, the largest counts were mostly from woodland rides, such as Chicksands Wood (20+), Maulden Wood (20+), Home Wood, Northill (25), King's Wood, Heath and Reach (52), though a bridleway in Shelton produced a count of 22.

### Pieridae (Whites, Yellows)

#### Orange Tip *Anthocharis cardamines britannica*

Orange Tip's season started nine days ahead of the 10ya on 22nd March and its broad peak was in the second half of April. It was the first species to end its season, last seen on 7th June. There was no indication of a second brood. There were 11 counts in double figures, the largest being of 16 at Chalton on 7th May. Overall statistics suggest it had a near average year and was reported from 38% of all 1km squares visited (10ya 37%) and from most parts of the county. 11 eggs and 10 larvae were recorded on Garlic Mustard, and egg-laying on Honesty was also observed.

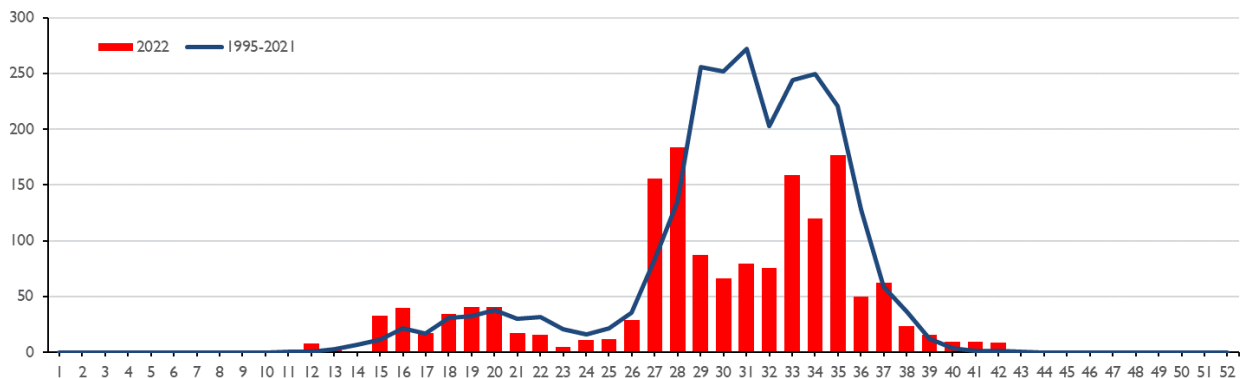
#### Large White *Pieris brassicae*

Large White's first sighting on 10th April was probably delayed by unfavourable weather spanning 29th March to 7th April, and hence was the only species first seen later than its 10ya. The first brood peaked in week 19 (7th-13th May) and the second in week 28 (9th-15th July), respectively one and two weeks earlier than their long-term averages. Abundance for this species can fluctuate from year to year and most transects showed numbers to be lower this year, supported by data from casual recording. It was reported from 36% of all visited 1km squares, 202 in total, and from most parts of the county. The modest high count was of 24 at Upper Caldecote on 20th July. There were no reports of the immature stages this year.

#### Small White *Pieris rapae*

Small White's first brood was sighted on 14th March, 12 days earlier than the 10ya, and its broad peak covered mid-April to mid-May. The second brood began in early June and peaked in week 28 (9th-15th July).

Numbers then reduced between mid-July and mid-August before rising to another slightly larger peak covering the second half of August. This may have resulted from a third brood and/or migration. Numbers then fell throughout the autumn to end on October 28th. Despite the extra peak overall abundance was a bit low this year, but its distribution was typical, seen in 43% of visited 1km squares (10ya 44%) in most parts of the county. The largest count was of 40 on Biggleswade Common on 1st September. Just one egg was reported, laid on an unidentified crucifer, and one larva found on Kale.



**2022 versus 1995-2021: Small White adults per week per 10,000 records per year, showing the late August peak**

### **Green-veined White *Pieris napi sabellicae***

Data from the transects suggest that Green-veined White had a reasonable year with numbers a little either side of average, but casual recording suggested a rather poor season, slightly better than 2021's but ranking as the third to sixth-worst year in the last 28 depending upon the chosen statistic. It was reported from 32% of visited 1km squares, below the 10ya of 39%. The Potton Wood transect returned the highest counts with an annual total of 394 (24% of the whole county's total), reaching 85 on July 10th, the 16 counted in Section 4 being the highest individual record anywhere in 2022. The first brood peaked in early May and the second in mid-July. Four larvae on Garlic Mustard in Biggleswade on 16th May were the only reported immature stages.

### **Clouded Yellow *Colias croceus***

The first Clouded Yellow sighting, on Whipsnade Downs on 22nd May, preceded the next by 38 days (29th June) when regular reports began, continuing until late October. Breeding probably occurred in a field south-east of Toddington where at least 12 were seen in early September, and a Lucerne field near Ickleford hosted at least ten around the same time. In early October up to eight were recorded at Barton Hills and four in Houghton Regis chalk pit. With many other scattered records, the total of 24 1km squares was the 8th-best year for this migrant species.

### **Brimstone *Gonepteryx rhamni rhamni***

Brimstone's transect counts were either close to average, or a little below, but overall recording was strong, recorded from a record high of 288 1km squares (286 in 2021), 51.5% of all visited squares, the most for any species this year. Despite the first being seen on New Year's Day, overwintering adults mostly begin to emerge in early March and flew until mid-June when the new brood began to appear, peaking in mid-July before heading into hibernation. Small numbers were seen throughout the autumn until 4th November, but a female was seen in Sreatley on 21st December. 14 eggs were reported between 29th April and 19th May, and 12 larvae between 14th May and 4th June, all on Purging Buckthorn.

### **Nymphalidae (Browns, Fritillaries, Aristocrats)**

#### **Speckled Wood *Pararge aegeria tircis***

Speckled Wood's observed flights started on 22nd March, four days before the 10ya, and its presumed three broods overlapped with peaks around weeks 16 (16th-22nd April), 24 (11th-17th June) and 34 (20th-26th August), but breeding appeared continuous. The final sighting on 22nd October was 6 days before the 10ya. There were 32 double-digit counts, mostly from woodlands as expected, but scrub, hedgerows and copses were all represented. Overall abundance may have been slightly above average. The 215 1km squares reported (38.5% of all visited squares, identical to the 10ya) were well distributed across the county. The only immature stage reported was the pupa overwintering at Upper Alders which successfully hatched between the dip-well checks of 18th March and 13th April.

#### **Small Heath *Coenonympha pamphilus pamphilus***

Transect counts for Small Heath were close to average at Dunstable Downs and Pegsdon Hills but were well down at Knocking Hoe and Old Warden Tunnel. Overall recording suggests below-average abundance, but typical county-wide distribution, reported from 20% of visited 1km squares. Its season started 12 days earlier than the 10ya on 24th April, the first brood giving way to the second in the second half of July, ending on 24th September, seven days before the 10ya. This species favours unimproved grasslands, the maximum

double-digit site counts were from Barton Hills (10+), Clophill Lakes NR (12), Dunstable Downs (26), Knocking Hoe (13), Pegsdon Hills (48), Sandy Smith NR (26), Sharpenhoe Clappers (12), The Lodge NR (15), Totternhoe (19), and Whipsnade Downs (17).

#### **Ringlet** *Aphantopus hyperantus*

Transect totals for Ringlet were variable, e.g., up at Old Warden Tunnel, average at Dunstable Downs, and down at Knocking Hoe and Pegsdon Hills. Overall recording suggests abundance was just below average, with a slight drop in reported distribution, recorded from 29% of 1km squares versus the 10ya of 35%. Where present, local abundance can be high as indicated by triple-digit counts at Chicksands Wood, King's Wood Heath and Reach, Maulden Wood, Pottton Wood and Totternhoe, putting Ringlet's adult total for 2022 in third place, behind Chalkhill Blue and Meadow Brown. The flight period was slightly advanced relative to the 10ya, starting and ending early by five and seven days respectively.

#### **Meadow Brown** *Maniola jurtina jurtina*

Meadow Brown was, as usual, the most reported of all species with 8.39% of all records and 14.37% of all adults, though below the 10ya average of 19.1% and actually its sixth-worst year in this respect. Most transects registered an abundance drop from 2021's good season. Reported from 44.4% of visited 1km squares, below the 47% 10ya, and the fourth-most widely reported species, dropping from third in 2021. The largest casual count was 200+ at King's Wood, Heath and Reach on 3rd July, and the largest transect count was 166 at Priory CP on 22nd June. The observed season started seven days earlier than the 10ya on 27th May, peaked in week 28 (9th-15th July) and continued 25 days beyond the 10ya end date, flying on Barton Hills until 18th October.

#### **Gatekeeper** *Pyronia tithonus tithonus*

Gatekeeper was reported from 34% of visited 1km squares (10ya 33.5%) suggesting stable distribution, and was present in grasslands, woodlands and hedgerows over most of the county. Abundance is harder to interpret but 5.4 adults were reported per record versus the 10ya of 4.6 suggesting greater local density. Transects should give the best clue, but with inconsistent recording on some, others showing a rise, and others a fall, it's not a clear picture, but the species is probably stable looking over all the statistics. The first sighting on 19th June was four days before the 10ya, the peak was in week 28 (9th-15th July) and observations continued until 20th September, nine days later than the 10ya. The largest count of 87 was from Totternhoe on 13th July.

#### **Marbled White** *Melanargia galathea serena*

Marbled White's season started 11 days ahead of the 10ya on 3rd June but ended at it, on 15th August. Its peak in week 26 (25th June - 1st July) when 1,317 were reported, was about one week before usual. It was reported from 29.5% of visited 1km squares, its highest ever proportion, having now expanded its range to grasslands in many parts of the county. Abundance was up a little on the last couple of years and there were some large counts reported such as 130 at Dunstable Downs on 10th July, 172 at Totternhoe on 26th June and 247 at Great Denham on 22nd June.

#### **Silver-washed Fritillary** *Argynnis paphia*

The 57-day reported season for Silver-washed Fritillary was two days shorter than the 10ya and was advanced by about 16 days, from 11th June to 7th August. Abundance was very good and the total of 624 adults reported was the highest for any year. Reported from 43 1km squares, joint highest with 2018, the majority of records came from woodlands as expected, some of the largest counts being: Chicksands Wood (12), Home Wood, Northill (16), King's Wood, Heath and Reach (39), Maulden Wood (12), Odell Great Wood (7), Salem Thrift (20), West Wood (15), and Wilstead Wood (6). The most unexpected record was from Maulden Wood on 13th May where a larva was swept from undergrowth where violets were present, the first Bedfordshire larval record in modern times.

#### **Dark Green Fritillary** *Speyeria aglaja aglaja*

Distribution was good for this large fritillary, reported from 22 1km squares, second only to 2020's 23. It was seen at Barton bypass, Barton Hills, Dunstable Downs, Galley and Warden Hills, Knocking Hoe, Pegsdon Hills, Sharnbrook Summit, Sharpenhoe Clappers/Moleskin, Sundon Chalk Pits, Totternhoe, Whipsnade Downs, and Whipsnade Zoo. There were a couple of unconfirmed reports from other sites in the north-west, but these might have been Silver-washed, so please try to take photographs at any other sites to confirm possible range expansion. The observed flight period started ten days before the 10ya on 6th June and lasted until 5th August seven days before the 10ya. The peak was in week 26 (25th June - 1st July) when 284 were reported. The transects at Pegsdon Hills and Sharpenhoe Clappers both set new record high counts (24 and 444 respectively) and counts at Dunstable Downs and Knocking Hoe were also above average. The total of 843 adults across all recording far exceeded the 642 of 2013. A female was video'd egg-laying on violets on Sharnbrook Summit on 26th June.

#### **White Admiral** *Limenitis camilla*

This graceful butterfly is resident in a small number of our larger woodlands, the highest counts from those reported in 2022 being: Chicksands Wood (4), College Wood/Home Wood, Northill (5), King's Wood, Heath

and Reach (11), Marston Thrift (1), Maulden Wood (5+), and West Wood (5). The 33-day observed flight period started on 17th June, ten days before the 10ya, and ended on 20th July, 14 days before the 10ya.

### Purple Emperor *Apatura iris*

Purple Emperor was reported slightly less than in recent years with the largest count from each site being: Chicksands Wood (3), College Wood/Home Wood, Northill (1), King's Wood, Heath and Reach (3), Maulden Wood (3) and Wilstead Wood (1). Encouragingly though there were reports from two new locations, Melchbourne Woods (2) and Sundon Chalk Pits (6). The latter location is interesting because they were present at a concentration of willows, the larval food plant, suggesting a population in this brownfield site. The first report on 22nd June was of one freed from a greenhouse in Northill, the last was 28 days later on 20th July from Chicksands Wood, the flight season having advanced 10-14 days ahead of the 10ya.

### Red Admiral *Vanessa atalanta*

Red Admiral's observed season of 338 days was the third-longest, behind Peacock (340) and Brimstone (354). As it doesn't hibernate deeply a few were seen on mild days in most weeks before mid-May when numbers rose, reaching a broad peak between early June and mid-July. Abundance then fell more quickly than for an average year, the weather perhaps affecting breeding success, so the abundance for the whole year was a little below average, confirmed by lower counts on most transects. The largest count was of eight at Totternhoe on 26th June. Distribution was slightly better though, seen in 38.5% of 1km squares (10ya 37.8%), and the joint-sixth most-widely reported species this year (with Speckled Wood). Stinging Nettle is the usual larval food plant, with 12 eggs and one larva reported on it this year, but unusually a larva was also found using Pellitory-of-the-Wall in Bedford on 15th September.

### Painted Lady *Vanessa cardui*

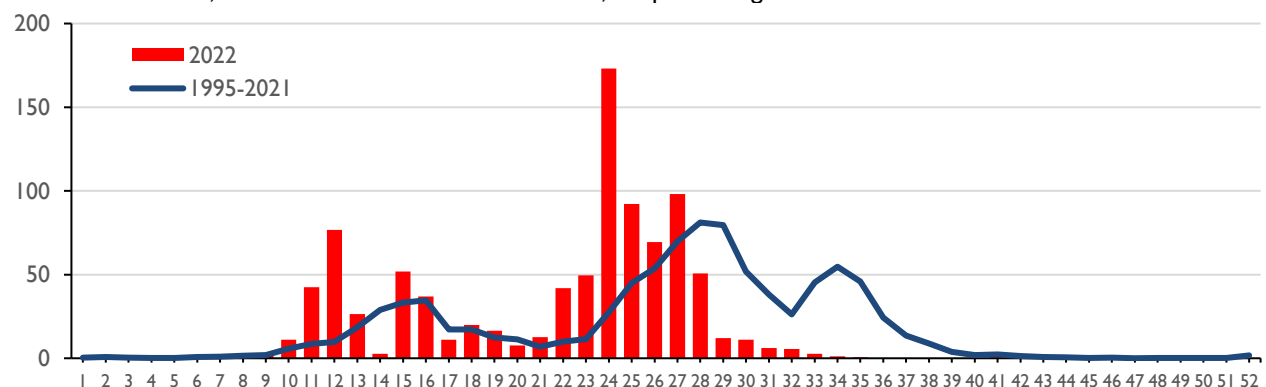
2022 was the sixth-best year for number of records, adults and 1km squares reported for this migrant species, making it a good, but unexceptional, year. A small wave started to arrive on 16th May peaking almost immediately in week 21 (21st-27th May) when 44 were reported. Weekly totals then steadily declined without any further waves or noticeable breeding success, eventually petering-out on 24th September. One additional sighting was made on Sandy Heath on 9th November. Sightings were well-distributed across the county with the largest count anywhere of just five.

### Peacock *Aglais io*

Peacock had another good year, but perhaps not quite as good as 2021, with abundance slightly lower and fewer larval webs noted, totalling about 965 larvae. Transect counts were generally still above average. Distribution remained good, reported from 51% of visited 1km squares (second only to Brimstone) and well up on the 10ya (41.4%). It was seen from 1st January, the overwintered brood peaking in week 15 (9th-15th April) when 440 were reported, and the new brood's observance corresponded mostly with the month of July, its peak of 637 reported in week 28 (9th-15th July). Only small numbers were reported beyond the start of August, but a very small rise in numbers during October hinted at a partial second brood. On 6th May an engorged female was noted laying a cluster of approximately 130 eggs on Stinging Nettle at Old Warden Tunnel, her presence disclosed by the antics of a frustrated male.

### Small Tortoiseshell *Aglais urticae*

Overall abundance statistics for Small Tortoiseshell were close to the 10ya, but counts on most of the transects were lower except at Priory CP where an above-normal 28 were seen. Distribution was up slightly, reported from 45.3% of visited 1km squares versus the 10ya of 41.7%, and it was the third-most widely reported species, having been seen in 253 1km squares. Overwintered adults peaked in week 12 (19th-25th March) with 139 reported. The new brood peaked at 314 in week 24 (11th-17 June) and was the only new brood peak, with little sign of a second brood once again, a notable change in the breeding pattern for this species. Numbers had fallen significantly by the end of July and dwindled to almost none by the end of August, with just six more seen before the year end. Only seven larval records were submitted, totalling only about 158 larvae, the latest of these was 3rd June, emphasising the lack of a second brood.



**2022 versus 1995-2021: Small Tortoiseshell adults per week per 10,000 records per year, showing the apparent absence of a second brood**



### **Comma** *Polygonia c-album*

Comma was the ninth-most widely reported species this year, noted in 38.1% of visited 1km squares, its largest ever percentage and well up on the 10ya of 32.6%. Abundance data were also above average suggesting the species had a good year, however, like Small Tortoiseshell, there was little sign of the second new brood that would normally occur in September, when only about two dozen adults were reported, compared with the "first" new brood when about 1,100 were noted between mid-June and mid-August, most hopefully having gone into hibernation. The only record of an immature stage this year was of an egg laid on Hop in a Bedford garden on 1st July.

### **Riodinidae (Metalmarks)**

#### **Duke of Burgundy** *Hamearis lucina*

The highest counts reported from each site were: Dunstable Downs transect (12), Totternhoe (30), and Whipsnade Downs (21). It is pleasing to report that Dukes were also seen on three dates in Sewell Cutting (2) where it had been unreported since 2011. The first and last sightings were both on the Dunstable Downs transect, on 15th April and 12th June, the latter surprisingly late as casual reports finished on 28th May. The first sighting was 12 days ahead of the 10ya.

### **Lycaenidae (Coppers, Hairstreaks, Blues)**

#### **Small Copper** *Lycaena phlaeas phlaeas*

From its first sighting at Houghton Regis Chalk Pit on 14th April (15 days ahead of the 10ya), Small Copper's numbers built through each brood such that the largest counts were made in mid-September, the greatest, 14, at Dog Kennel Down on 12th September. Abundances then declined until the final record on 4th November at The Lodge NR. Overall abundance was slightly below average. Reported from 62 1km squares (10ya 52), 11% of visited squares, records mostly came from the chalk, the greensand and several sites around the north of Bedford.

#### **Purple Hairstreak** *Favonius quercus*

Purple Hairstreak can potentially be found anywhere that there are mature Oaks, and so the reported 35 1km squares (third-best year behind 1999 (41) and 2018 (42)) included quite a few gardens, churchyards and hedgerows. The highest counts however came from large woodlands, e.g., Chicksands Wood (10), Home Wood, Northill (54), King's Wood, Heath and Reach (26), and Maulden Wood (100), all made during the extreme heat around the 10th-11th and 18-19th July, when stupefied adults came down to ground level and could be seen in their dozens, or more, an impressive sight for the hardy individuals who ventured outdoors. The 56-day flight period started on 25th June, four days earlier than the 10ya and ended on 20th August, two days later.

#### **Green Hairstreak** *Callophrys rubi*

The largest Green Hairstreak count for each reported site was: Barton Bypass (1), Brogborough Hill (1), Dog Kennel Down (7), Dunstable Downs (6), Grovebury Sand Pit (1), Houghton Regis Chalk Pit (3), Knocking Hoe (1), Marston Vale CP (1), Pegsdon Hills (5), Rectory Wood (1), Sewell Cutting (13), Sharnbrook Summit (5), Sharpenhoe Clappers (4), Totternhoe (8), and Whipsnade Downs (15). The overall total of 267 adults was the highest since 2014 (722). The first sightings were at Knocking Hoe and at Houghton Regis Chalk Pit on 15th April, two days before the 10ya. The last, four days before the 10ya, was on 14th June south-west of Marston Thrift feeding on wild privet flowers in the company of two Black Hairstreaks. It was reported from 22 1km squares, equalling 2014's high.

#### **White-letter Hairstreak** *Satyrium w-album*

The greatest count for White-letter Hairstreak at each location was: Astey Wood (1), Barton Hills (1), a Biggleswade garden (1), Chicksands Wood (7), Hill Rise NR (3), Home Wood, Northill (9), Houghton Hall Park (4), Linslade Wood (1), Little Barford churchyard (1), Marston Vale CP (1), Maulden Wood (10), near Putnoe Wood (6), Wilstead Wood (3), and Wrest Park (1). As for Purple Hairstreak, they came down to ground level during the really hot days around the 10th-11th and 18-19th July when they were easier to see, resulting in the larger counts, abundances however were modest compared with some years. Reported from 18 1km squares, second only to the 37 of 2018 (an exceptional year). The 37-day reported flight period started 12 days before the 10ya on 17th June and ended 9 days before it on 24th July.

#### **Black Hairstreak** *Satyrium pruni*

A total of 26 adult Black Hairstreaks were seen over seven dates between 4th and 19th June, mostly at its usual locations within Marston Thrift and along its south-western edge on Route 51. The largest count was of five on 13th June. However, on three dates, up to three were found nectaring on wild privet 600-800m from Marston Thrift towards Holcot Wood alongside Route 51, a previously unrecorded location. Are they present elsewhere in this general area?

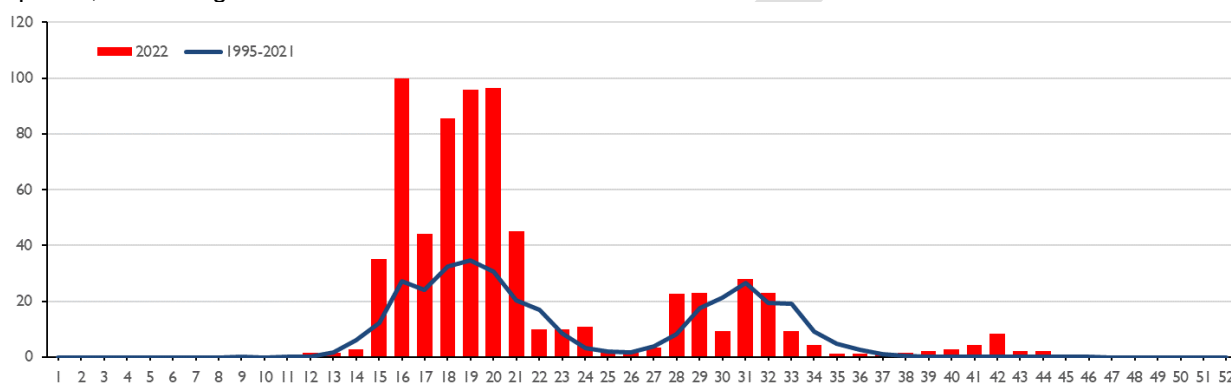
#### **Small Blue** *Cupido minimus*

Following the first sighting on 5th May, 11 days before the 10ya, Small Blue's main brood sightings peaked in week 23 (4th-10th June) and ended around the end of June, however small numbers (but totalling 83),

continued to be seen throughout most of the following weeks until 21st September, 43 days later than the average last sighting date. These were presumably of a partial second brood, and, as several of the late sightings appeared to be very fresh, possibly a third. Maximum counts at each reported site were: Barton Bypass (21), Brogborough landfill (6), near Chalton (19), Dog Kennel Down (39), Dunstable Downs transect (3), Houghton Regis Chalk Pit (45), Knocking Hoe (1), Sewell Cutting area (11), Sharpshoe Clappers (3), Sundon Chalk Pits (7), Totternhoe (84), and Whipnade Downs (1). Three eggs were also reported from the Brogborough landfill site which persists away from the chalk.

### Holly Blue *Celastrina argiolus britanna*

Of the non-hibernators Holly Blue had the longest observed season, 237 days (its longest ever) starting on 20th March (12 days before the 10ya) and ending on 12th November (41 days later than the 10ya). This is because the species had an unusual partial third brood starting in early September and totalling about 48 reported adults from around the county. Its peak was in week 42 (15th-21st October) when 15 were reported. This was presumably in response to the warm weather this year. This extra brood was not reported mating or laying and it is unknown what larval food plants it may have chosen if successful, but during the first two broods this polyphagous species was observed laying on Wild Liquorice, Wayfaring Tree and Purple Loosestrife, the latter in a Bedford garden pond where probable larval feeding damage was later found. Overall, the species had a good year owing to a strong first brood and was reported from a record 179 1km squares, exceeding 2020's 172.



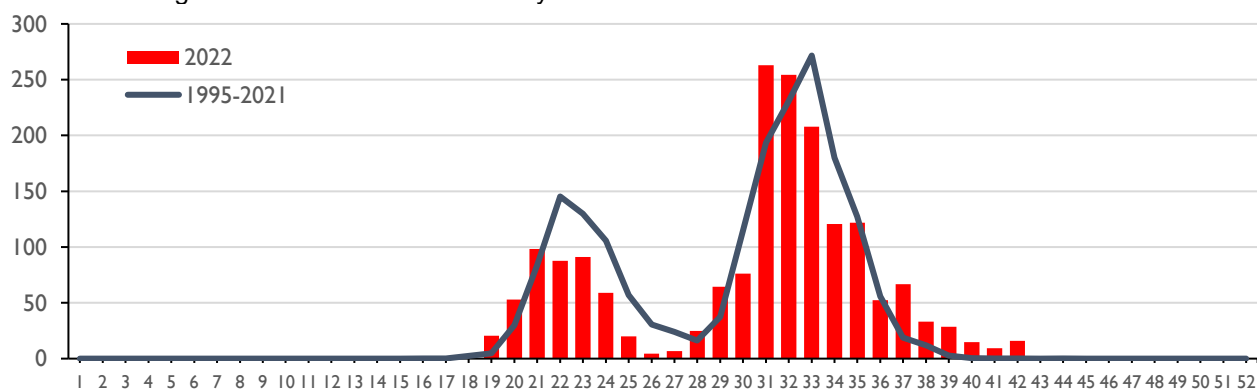
**2022 versus 1995-2021: Holly Blue adults per week per 10,000 records per year, showing the strong first brood and the partial third brood**

### Brown Argus *Aricia agestis*

Abundance in the second brood of Brown Argus was four times that of the first (more usually just over double) suggesting that it bred well during the year, but most transect counts still ended the year a little below average. It was reported from 13.6% of visited 1km squares, slightly up on the 11.4% 10ya. The first sighting on 30th April was ten days ahead of the 10ya and the last, on 23rd September, was three days before. The largest count was of 25 at The Lodge NR on 23rd July. Two eggs were reported from Renhold on 27th August, laid on a *Geranium* sp.

### Common Blue *Polyommatus icarus icarus*

Common Blue's second-brood abundance will typically be twice the size of the first, but this year it was 3.1 times. It also spread over about 16 weeks instead of the usual 11 or so, so might it have actually included a partial third brood? This seems possible as fresh males were still being reported at the end of September and the final sighting on 22nd October was 21 days later than the 10ya. Transect counts were generally below average, suggesting lower abundance, but distribution was good, reported from 29% of visited 1km squares, compared with the 10ya of 25%. The 162 1km square total was second only to 2019's 163, with records coming from most areas of the county.



**2022 versus 1995-2021: Common Blue adults per week per 10,000 records per year, showing the extra-wide second brood which may have included a partial third brood**

## **Chalkhill Blue** *Polyommatus coridon*

With an average count on the Knocking Hoe transect, above average counts on those at Dunstable Downs and Pegsdon Hills, and the highest count since 2013 on Sharpenhoe Clappers, Chalkhill Blue seems to have had a good year. Records came from most sites along the chalk between Whipsnade Downs and Knocking Hoe, the largest counts of 1000 coming from Houghton Regis Chalk Pit in mid-August, though this was probably a couple of weeks past the species' peak. The first sighting on 29th June was six days before the 10ya and the last on 11th October was 20 days beyond the 10ya and was of a pristine male, which, together with other fresh specimens seen in September suggests a partial second brood occurred.

## **Acknowledgements**

I am very grateful for the efforts of the 343 people listed here who reported their sightings online, directly or via newsgroups. I apologise if any name has been inadvertently omitted.

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Map produced using DMAP.

*Keith Balmer is the Society's honorary butterfly recorder, a position he has held since 2003, jointly with Peter Glenister throughout this period until the autumn of 2019 when Peter retired from the role.*

Data tables continue on the following pages...

### Flight periods and peak abundances in 2022

Species	Earliest Date	Latest Date	Peak Date	Peak Abundance
Dingy Skipper	20/04/2022	07/08/2022	13/05/2022	35
Grizzled Skipper	16/04/2022	14/06/2022	22/05/2022	8
Essex Skipper	17/06/2022	09/08/2022	05/07/2022	17
Small Skipper	11/06/2022	10/08/2022	11/07/2022	50+
Large Skipper	18/05/2022	07/08/2022	01/07/2022	52
Orange Tip	22/03/2022	07/06/2022	07/05/2022	16
Large White	10/04/2022	19/10/2022	20/07/2022	24
Small White	14/03/2022	28/10/2022	01/09/2022	40
Green-veined White	26/03/2022	07/10/2022	10/07/2022	16
Clouded Yellow	22/05/2022	12/11/2022	05/09/2022	12
Brimstone	01/01/2022	21/12/2022	06/05/2022	42
Speckled Wood	22/03/2022	22/10/2022	24/06/2022	57
Small Heath	24/04/2022	24/09/2022	27/08/2022	48
Ringlet	08/06/2022	14/08/2022	03/07/2022	300+
Meadow Brown	27/05/2022	18/10/2022	03/07/2022	200+
Gatekeeper	19/06/2022	20/09/2022	13/07/2022	87
Marbled White	03/06/2022	15/08/2022	22/06/2022	247
Silver-washed Fritillary	11/06/2022	07/08/2022	09/07/2022	39
Dark Green Fritillary	06/06/2022	05/08/2022	20/06/2022	69
White Admiral	17/06/2022	20/07/2022	01/07/2022	11
Purple Emperor	22/06/2022	20/07/2022	05/07/2022	6
Red Admiral	02/01/2022	06/12/2022	12/06/2022	8
Painted Lady	16/05/2022	09/11/2022	22/05/2022	5
Peacock	01/01/2022	07/12/2022	16/04/2022	37
Small Tortoiseshell	27/01/2022	12/11/2022	16/06/2022	21
Comma	09/02/2022	25/11/2022	29/06/2022	20
Duke of Burgundy	15/04/2022	12/06/2022	13/05/2022	30
Small Copper	14/04/2022	04/11/2022	12/09/2022	14
Purple Hairstreak	25/06/2022	20/08/2022	19/07/2022	100
Green Hairstreak	15/04/2022	14/06/2022	18/04/2022	15
White-letter Hairstreak	17/06/2022	24/07/2022	10/07/2022	10
Black Hairstreak	04/06/2022	19/06/2022	13/06/2022	5
Small Blue	05/05/2022	21/09/2022	08/06/2022	84
Holly Blue	20/03/2022	12/11/2022	16/04/2022	18
Brown Argus	30/04/2022	23/09/2022	23/07/2022	25
Common Blue	06/05/2022	22/10/2022	05/08/2022	57
Chalkhill Blue	29/06/2022	11/10/2022	16/08/2022	1000

Adults reported per month in 2022

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Dingy Skipper				69	572	84	2	1				
Grizzled Skipper				34	69	12						
Essex Skipper						66	171	4				
Small Skipper						362	454	14				
Small/Essex Skipper						247	3121	14				
Large Skipper					12	638	802	14				
Orange Tip			12	641	509	7						
Large White				77	168	176	1191	472	128	21		
Small White			22	184	230	118	931	982	382	52		
Green-veined White			2	260	332	100	672	232	36	1		
Small/G.V. White				38	13	8	107	37	2	1		
Clouded Yellow					1	1	10	16	54	25	1	
Brimstone	2	12	572	869	744	163	223	76	15	27	1	1
Speckled Wood			8	283	319	853	435	611	313	36		
Small Heath				5	268	473	94	698	69			
Ringlet						1700	4902	52				
Meadow Brown					2	3190	4814	2795	206	36		
Gatekeeper						15	3630	845	1			
Marbled White						2349	2269	4				
Silver-washed Fritillary						109	503	12				
Dark Green Fritillary						459	372	12				
White Admiral						32	79					
Purple Emperor						12	17					
Red Admiral	4	6	10	16	51	309	260	131	79	90	27	1
Painted Lady					86	114	53	48	9		1	
Peacock	4	7	424	1028	365	35	1077	23	13	24	8	1
Small Tortoiseshell	2	6	285	202	120	732	327	29		3	3	
Comma		5	231	121	33	311	721	103	24	12	2	
Duke of Burgundy				113	305	2						
Small Copper				2	17	4	29	67	127	36	1	
Purple Hairstreak						1	334	18				
Green Hairstreak				131	127	9						
White Letter Hairstreak						5	67					
Black Hairstreak						26						
Small Blue					260	708	24	40	19			
Holly Blue			6	396	530	56	117	113	12	36	1	
Brown Argus				1	93	75	217	406	50			
Common Blue					378	411	385	1666	345	74		
Chalkhill Blue						2	4195	6195	406	8		
<b>Totals</b>	<b>12</b>	<b>36</b>	<b>1572</b>	<b>4470</b>	<b>5604</b>	<b>13974</b>	<b>32605</b>	<b>15730</b>	<b>2290</b>	<b>482</b>	<b>45</b>	<b>3</b>

### Summary of 2022's records of adults

Species	Records	Adults	Squares		Records (%)	Adults/All-species adults <sup>1</sup> (%)				
			10km	1km		2018	2019	2020	2021	2022
Dingy Skipper	182	728	11	40	1.00	0.90	0.89	0.78	0.80	0.95
Grizzled Skipper	61	115	10	21	0.34	0.19	0.18	0.11	0.19	0.15
Essex Skipper	81	241	11	34	0.45	0.12	0.17	0.22	0.15	0.31
Small Skipper	239	830	18	114	1.32	1.21	1.22	0.98	0.90	1.08
Small/Essex Skipper	118	3382	14	37	0.65	0.57	1.08	0.96	0.36	4.40
Large Skipper	435	1466	18	152	2.40	1.58	1.53	2.01	1.96	1.91
Orange Tip	577	1169	20	214	3.18	1.97	2.10	2.82	2.32	1.52
Large White	1056	2233	20	202	5.82	5.39	3.96	3.99	3.31	2.91
Small White	1263	2901	22	239	6.97	8.54	6.50	7.04	5.59	3.78
Green-veined White	720	1635	20	178	3.97	2.76	1.92	2.78	1.79	2.13
Small/G.V. White	75	206	13	40	0.41	1.02	0.71	0.83	0.33	0.27
Clouded Yellow	48	108	13	24	0.26	0.07	0.03	0.13	0.01	0.14
Brimstone	1254	2705	21	288	6.92	3.23	3.47	2.91	3.99	3.52
Speckled Wood	1035	2858	19	215	5.71	4.57	2.58	2.53	3.24	3.72
Small Heath	500	1607	18	111	2.76	5.81	4.34	4.52	3.29	2.09
Ringlet	657	6654	18	164	3.62	7.55	7.59	4.80	6.68	8.66
Meadow Brown	1522	11043	21	248	8.39	16.82	25.71	21.97	20.28	14.37
Gatekeeper	832	4491	20	190	4.59	4.08	6.69	6.86	6.23	5.85
Marbled White	537	4622	18	165	2.96	5.28	5.72	5.44	5.76	6.02
Silver-washed Fritillary	139	624	13	43	0.77	0.70	0.63	0.58	0.67	0.81
Dark Green Fritillary	156	843	8	22	0.86	0.69	0.60	0.80	0.71	1.10
White Admiral	43	111	7	12	0.24	0.07	0.09	0.09	0.09	0.14
Purple Emperor	17	29	7	11	0.09	0.08	0.06	0.04	0.08	0.04
Red Admiral	737	984	20	215	4.06	0.89	3.65	2.13	3.80	1.28
Painted Lady	247	311	18	129	1.36	0.18	2.24	0.09	0.51	0.40
Peacock	1232	3009	22	285	6.79	0.90	1.86	4.48	5.70	3.92
Small Tortoiseshell	812	1709	21	253	4.48	1.48	1.37	2.37	1.97	2.22
Comma	795	1563	20	213	4.38	1.12	1.67	2.18	2.08	2.03
Duke of Burgundy	81	420	4	7	0.45	0.84	0.42	0.27	0.33	0.55
Small Copper	161	283	14	62	0.89	0.61	0.41	0.75	0.41	0.37
Purple Hairstreak	69	353	14	35	0.38	0.63	0.10	0.34	0.09	0.46
Green Hairstreak	100	267	11	22	0.55	0.46	0.35	0.14	0.18	0.35
White-letter Hairstreak	31	72	9	18	0.17	0.51	0.15	0.14	0.03	0.09
Black Hairstreak	9	26	1	3	0.05	0.05	0.01	0.01	0.01	0.03
Small Blue	123	1051	6	20	0.68	0.20	0.58	0.21	0.16	1.37
Holly Blue	708	1267	20	179	3.90	1.35	1.62	2.28	0.99	1.65
Brown Argus	319	842	17	76	1.76	2.05	1.30	1.12	1.12	1.10
Common Blue	764	3259	18	162	4.21	8.78	2.44	2.98	2.41	4.24
Chalkhill Blue	331	10806	7	25	1.83	6.75	4.05	7.32	11.48	14.07
Overall	18066	76823	22	559						

<sup>1</sup> These values show the number of adults reported for each species relative to the number of adults reported for all species, allowing crude year-on-year comparisons to be made using data partially acquired by casual recording.