

## Butterflies 2020

Keith Balmer

The year started quietly with just two Peacocks reported in January, on the 3rd and the 8th, and then a Red Admiral on the 31st.

Six more Red Admirals and another Peacock were seen in February before the first Brimstone was sighted on the 17th.

Those three species were joined by Small Tortoiseshell on 8th March and Comma on the 11th completing the set of species that overwinter as adults. The first "hatching" from the pupal stage was of Small White on the 21st, closely followed by Orange Tip, Green-veined White and Speckled Wood on the 23rd and Holly Blue on the 24th. Each of these species was well ahead of its typical first-flight date, setting the pattern for nearly every species throughout 2020.

The first COVID-19 lockdown from 24th March to 12th May (late week 12 to late week 19) then restricted recording to only what could be achieved during permitted daily exercise from home, or noted by key workers while doing their jobs, and so this put the specialist springtime species beyond the range of most. Conversely, garden and local species received greater attention than usual and were well reported during this period.

Large White was the first emergence in April on the 4th and an early migrant Painted Lady was seen on the 5th. Those lucky enough to live near, or work on, key sites were able to witness the emergence of the next five species: Green Hairstreak on the 14th, Duke of Burgundy on the 20th, Dingy Skipper on the 23rd, and Grizzled Skipper and Small Copper on the 24th. Small Heath completed the emergences for the month on the 27th.

Brown Argus was the first emergence in May, on the 2nd, and Common Blue followed on the 7th. Small Blue was the first post-lockdown first-flight to be seen, on the 19th, surprisingly a week later than on average. Maybe we had simply missed it? Large Skipper was seen on the 22nd and Meadow Brown on the 25th. Also on the 25th, a Swallowtail, believed to be of the migrant race *gorganus*, was unexpectedly seen in a Meppershall garden. A to-be-expected migrant, Clouded Yellow, was spotted on Dunstable Downs on the 28th and this species went on to be seen frequently throughout the year. The next emergence of the month, making its first ever recorded appearance as early as May, was Black Hairstreak on the 29th. Small Skipper and Marbled White rounded off May with first flights on the 31st.

June opened with Dark Green Fritillary on the 1st, and on the 2nd, Ringlet, which went on to have a rather poor season, unlike most other species. Gatekeeper followed on the 5th, Essex Skipper on the 12th, Silver-washed Fritillary on the 13th, White Admiral on the 16th, White Letter Hairstreak on the 22nd, and Purple Emperor and Purple Hairstreak on the 23rd.

A male Orange Tip made a surprise reappearance on 2nd July in Wrest Park, then Chalkhill Blue was the last native species to emerge, on 4th July. As usual, July was the month of greatest butterfly abundance with 23,366 adults of 33 species reported.

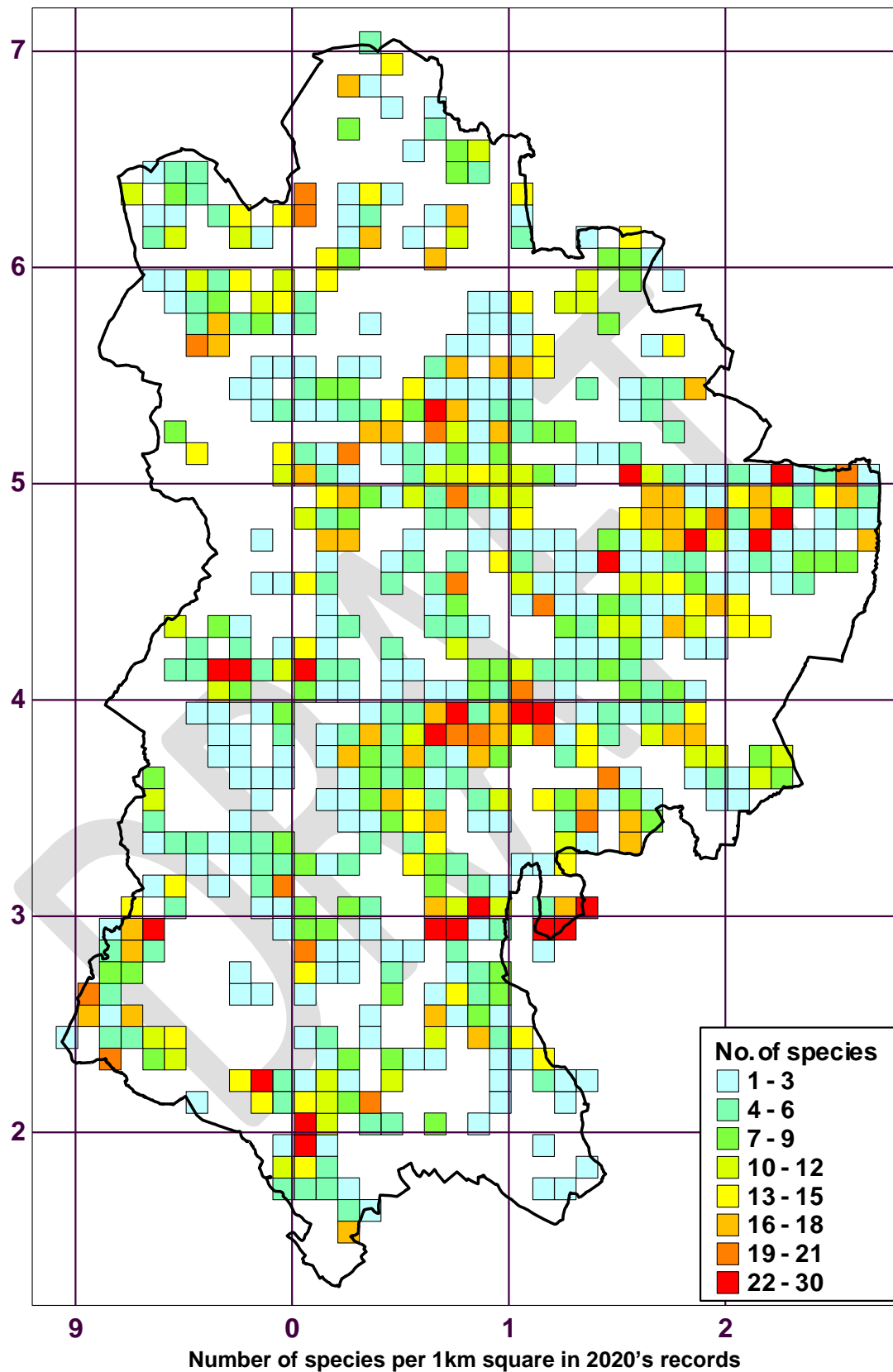
The annual peak over, abundance then faded throughout August and the autumnal months without great note. The final sightings of non-overwintering species whose seasons persisted into November were Small White and Speckled Wood on the 4th, Small Copper on the 5th, and Green-veined White on the 13th. The only December sightings were of a Brimstone on the 1st and a Red Admiral on the 19th.

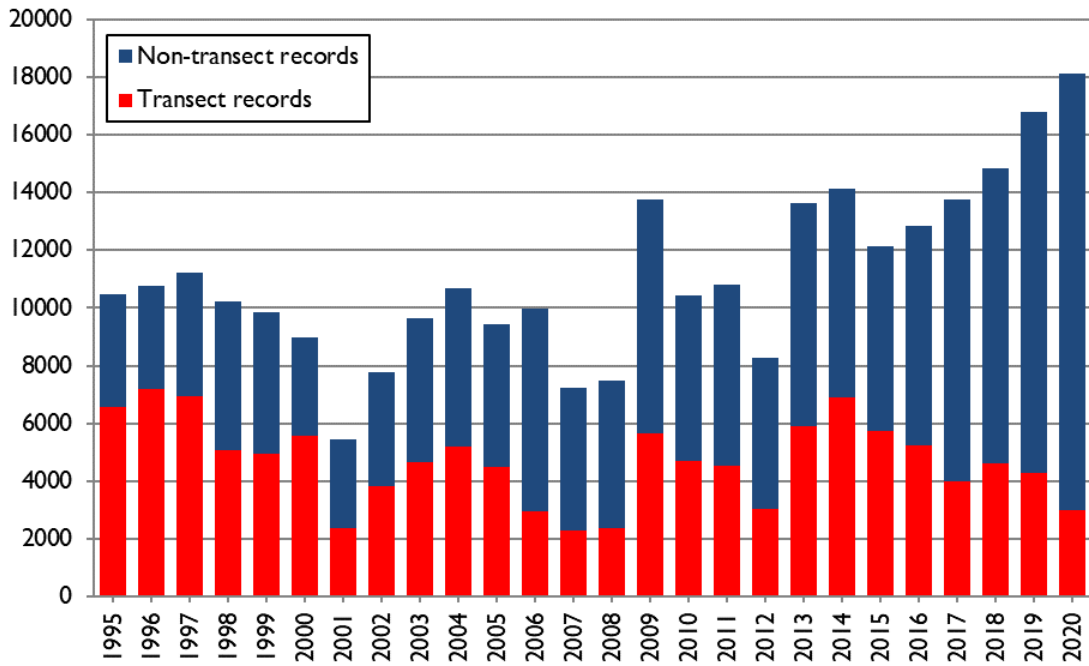
Additional to the above, Marsh Fritillary was seen at Totternhoe on 21st May and at Whipsnade Downs on 24th May, and a Large Blue on Whipsnade Downs on June 17th, all were photographed so identifications were certain. These will have been of unauthorised releases. Another species that might just have had a natural origin was a Large Tortoiseshell, spotted in Stotfold on 1st September.

### Analysis of Data

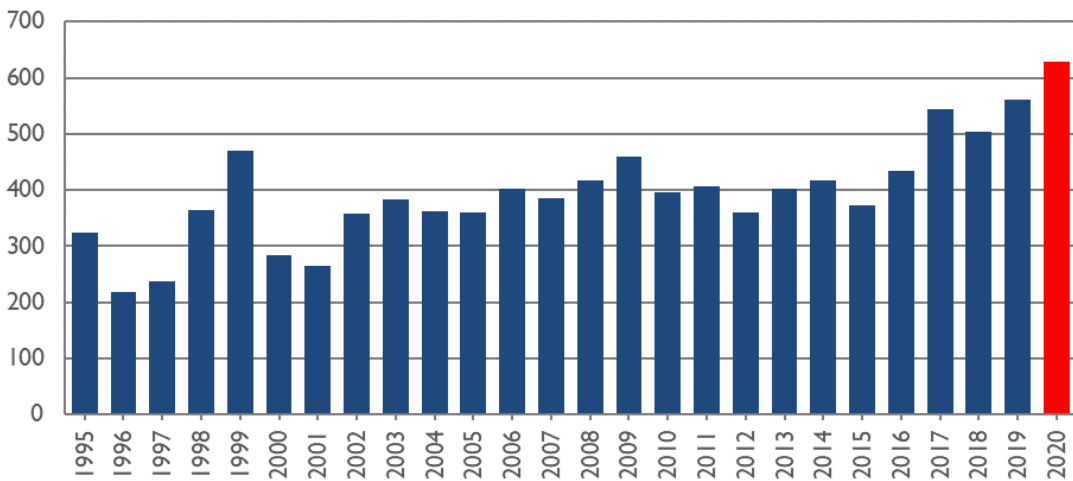
At the time of analysing records for this report (1st February 2021) 18,131 records had been received and computerised, containing reports of 58,387 adults from 629 1km squares. 151 records were of the immature life-stages. Records were analysed at this date and may be subject to minor revision. 3002 records were from transects and 15,129 records were from other sources, mostly casual recording. The total number of records received and 1km squares reported were again larger than for any prior year. Thank you to everyone that helped to achieve this despite the problems caused by the pandemic.

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.

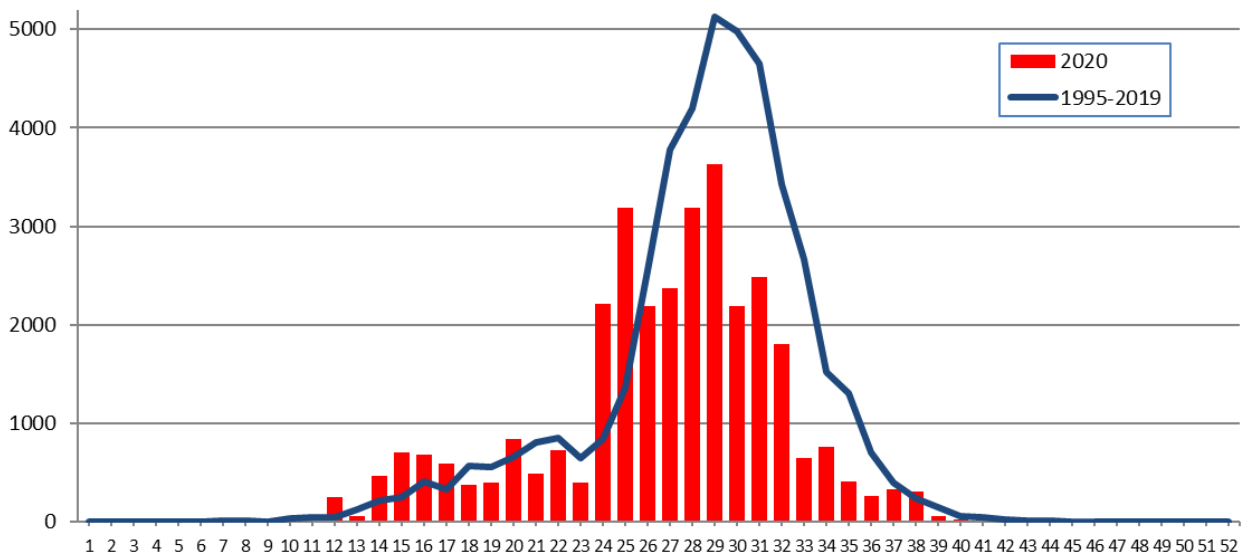




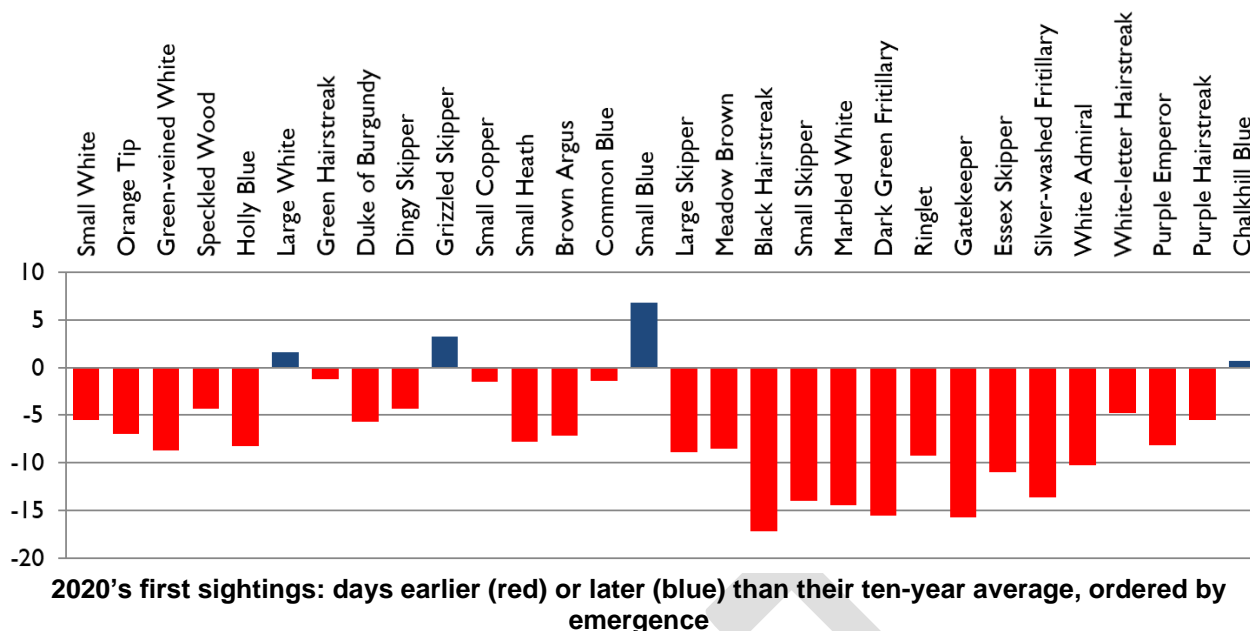
Number of records submitted per year 1995 to 2020



Number of 1km squares reported per year 1995 to 2020



2020 versus 1995-2019: Adults per week per 10,000 records per year



### Transects

The total number of adults, numbers of species ( ), and number of weekly walks out of the possible 26 [ ] for the recent transects were:

	2016	2017	2018	2019	2020
Dunstable Downs	2789 (31) [22]	2224 (29) [21]	3830 (31) [21]	1873 (31) [17]	2259 (29) [17]
Harrold Odell CP	*	1350 (20) [21]	1493 (19) [25]	2022 (21) [24]	1117 (19) [15]
Knocking Hoe	2107 (24) [26]	1989 (25) [25]	2595 (25) [25]	2369 (25) [25]	2497 (25) [25]
Mowsbury Hill	504 (19) [16]	590 (18) [11]	1232 (21) [13]	1090 (19) [13]	655 (18) [9]
Old Warden Tunnel	323 (18) [17]	442 (20) [17]	817 (22) [25]	829 (21) [21]	421 (20) [13]
Pegsdon Hills	1314 (25) [24]	1744 (26) [23]	2719 (25) [23]	2481 (26) [24]	3011 (24) [23]
Potton Wood	1897 (16) [26]	3079 (21) [26]	*	*	*
Priory Country Park	*	*	*	2171 (23) [26]	1615 (19) [18]
Sharpenhoe Clappers	5951 (27) [26]	3666 (28) [18]	4477 (29) [18]	3288 (29) [15]	1092 (27) [9]
Totternhoe Quarry	1797 (26) [22]	*	2352 (27) [23]	1280 (26) [17]	1621 (24) [14]
Whipsnade Downs	1422 (27) [20]	*	2856 (27) [23]	*	*
Whipsnade Zoo	4272 (26) [19]	4020 (26) [14]	3143 (25) [15]	2767 (27) [11]	*

\* The transect was not walked this year.

My thanks again go to those who attempt to systematically walk and record these transects once per week each 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). The COVID-19 lockdown in April and May badly affected monitoring of the spring species this year and health precautions affected some recorders throughout the season.

### Species Reports

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

#### Papilionidae

##### Swallowtail *Papilio machaon gorganus*

On 25<sup>th</sup> May a fresh-looking Swallowtail was photographed feeding on *Erysimum* in a Meppershall garden. Consultation with national experts suggested it was probably of the continental race *gorganus* which occasionally migrates to this country, though there was no suggestion of a migration around this date. So, was it a recently emerged over-wintered offspring from a 2019 migrant, a 2020 migrant, or just someone's release from captive stock? We may never know.

#### Hesperiidae (Skippers)

##### Dingy Skipper *Erynnis tages tages*

Dingy Skipper's season started during lockdown but it was nonetheless first observed four days earlier than its 10ya, on 23<sup>rd</sup> April on the Knocking Hoe transect, when 15 were counted, clearly already well into its season. That near-complete transect recorded 49 (5ya 25) in total and the one at Pegsdon Hills reported 27

(5ya 9). Other sites with double-digit counts were Barton Hills, Dunstable Downs, Galley and Warden Hills, Sundon Quarry, Totternhoe and Whipsnade Downs. The total of 27 1km squares reported was very respectable in the circumstances. These covered many chalk sites, Marston Vale brownfield sites, Sandy Smith NR and Ledburn Pit at Linslade. After the main flight period ended around 24th June there were several later sightings on 21st July, 30th July, 6th August and 7th August suggesting that a partial second brood may have occurred.

#### **Grizzled Skipper** *Pyrgus malvae*

The first report of Grizzled Skipper occurred during lockdown on 24th April and was three days later than the 10ya suggesting that we may have missed the actual first flight date. During the season, which lasted until 2nd June, ending three weeks earlier than the 10ya, the species was reported from Brogborough landfill site, Bromham Lake LNR, Dunstable Downs, Marston Vale Millennium CP, Rookery Clay Pit, Sandy Smith NR, Sharnbrook Summit NR, Totternhoe Limeworks / Quarry, and Whipsnade Downs. The 14 1km squares total reported was typical of a normal year. The largest count was of eight on Whipsnade Downs on 20th May.

#### **Essex Skipper** *Thymelicus lineola*

Essex Skipper is difficult to distinguish from Small Skipper requiring a face-on view to be sure. There were therefore twice as many records submitted as Small/Essex Skipper (126) than as Essex Skipper (63). Records came from grasslands and woodland rides in all parts of the county, from 6% of all 1km squares visited. (This compares with an average of 19% of 1km squares visited during 1995 to 1999 when intensive surveying was underway for the Millennium Atlas). The 38 1km squares reported for 2020 was actually the fifth-highest annual total. The only double-digit count reported was of 12, from Sandy Smith NR on 12th June. This also started the year's reports, 11 days before the 10ya, and they then continued until 1st August, 15 days earlier than the 10ya.

#### **Small Skipper** *Thymelicus sylvestris*

Abundance of Small Skipper continues to be low and 2020 was within its worst three years with only 0.98% of all adults reported being this species. Distribution however remains good and the 117 1km squares reported from grassland and woodland rides over most of the county was the largest since 1995 (123). Its season started 14 days before the 10ya on 31st May and ended on 24th August on the 10ya. Only eight double-digit counts were reported, the largest of 25 was from Sandy Smith NR on 15th June.

#### **Large Skipper** *Ochlodes sylvanus*

The transects say different things about Large Skipper's season with counts below average at Dunstable Downs, Old Warden Tunnel and Sharpenhoe Clappers but above at Harrold Odell CP and Totternhoe Quarry, while Knocking Hoe and Pegsdon Hills were close to normal. High recording effort led to a new high for 1km squares (169 versus 149 in 2019), and the total number of records (424) was just below that for 1995 (434), however the number of adults recorded (1176) was only the 11th-best year and well below 2002's 2933. Records came from grasslands and woodland rides in all parts of the county with the largest count of 34 from Home Wood, Northill on 28th June. The first flight on 22nd May was nine days before the 10ya and the last record on 10th August was ten days before the 10ya.

#### **Pieridae (Whites, Yellows)**

##### **Orange Tip** *Anthocharis cardamines britannica*

Orange Tip was another species whose flight period coincided with lockdown and therefore enhanced attention and recording. New highs were set for the number of records (972 versus 700 in 2019), adults (1647 versus 1252 in 2019) and 1km squares (266 versus 232 in 2019). The main flight period started on 23rd March, seven days ahead of the 10ya, peaked in week 16 (16th to 22nd April) and ended on 5th June. A lone male was also seen in Wrest Park on 2nd July. Also received were 30 records of eggs from 16th April to 18th May, 28 larval records from 3rd May to 20th June, and one pupal record from a Bedford garden on 13th June. On 14th April a *mosaic gynandromorph* was photographed in a Bedford garden, and although photos suggested it might have been egg laying on Honesty none could subsequently be found.

##### **Large White** *Pieris brassicae*

Large White had a fairly ordinary season, both starting and ending within three days of its 10ya, and the second brood more numerous than the first. The peak was in week 28 (9th to 15th July) which included a count of 86 in farmland north of Potton on the 12th. The high levels of recording led to 240 1km squares being reported, exceeding the 235 of 2019. The 2,332 adults reported was consistent with an average year.

##### **Small White** *Pieris rapae*

Reported from 332 1km squares, more than for any other species, Small White could be encountered almost anywhere and the near-complete transect counts at Knocking Hoe 60 (5ya 47) and Pegsdon Hills 120 (5ya 103) demonstrated good abundance. More records were submitted than for any other species, and the overall reported abundance put it in third place behind Meadow Brown and Chalkhill Blue. The first flight on

21st March was five days ahead of the 10ya. The second brood, the larger as usual and possibly boosted by migrants, peaked in week 28 (9th to 15th July) when 606 were reported. The season ended with one on 4th November at Chiltern Green, about two weeks after other sightings finished, and three weeks later than the 10ya. The largest count of 53 was alongside a field of rape near Woburn on 5th July, part of a survey in SP9431 which totalled 188 that day.

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

Despite being reported from a record number of 1km squares (253 versus 250 in 2009) reported abundance for Green-veined White was again relatively low and it was only the 13th most-commonly reported species. The flight season started nine days ahead of the 10ya on 23rd March, the first brood peaked in early May, the second brood in early July about two weeks earlier than usual, then the main flight period ended on 28th September about ten days earlier than the 10ya. There was a final unexpected sighting of a fresh specimen on 13th November in a Linslade garden. The largest count of 15 was made on section 5 of the Priory Country Park transect on 12th July, though an App "count" of "C" (10-29) was reported from farmland south of Pulloxhill on 13th July. The only immature stages reported were of eggs in Renhold on 17th and 24th July.

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

The first Clouded Yellow, seen on 28th May at Dunstable Downs, preceded the second by seven weeks on 17th July at Felmersham Gravel Pits. Sightings were then made every week bar three until 19th October. Most reports were of one or two, but up to seven were noted along the Cranfield edge of Brogborough landfill site from late July to early October. The total of 73 adults from 30 well-distributed 1km squares were both very respectable numbers, but considerably below the "Clouded Yellow year" of 2000 with its 222 adults in 57 1km squares.

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

Brimstone was regularly seen from early March, and was well reported during the spring lockdown. The near-complete transects at Knocking Hoe and Pegsdon Hills both returned counts a little above average and the overall statistics also suggest the species had a relatively good year. As usual the post-hibernation counts were larger than those for the new brood, the peak being in week 14 (2nd to 8th April) when 238 were reported. The season lasted 288 days from 17th February to 1st December, but only 38 were reported after the second week of August, most already having gone into hibernation. The total of 271 widespread 1km squares reported was second only to 2019's 280, making it the fourth most-widely reported species in 2020. Eggs were reported between 10th April and 21st May, larvae between 8th May and 25th June, and pupae between 25th June and 17th July, all developing on purging buckthorn.

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

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

Speckled Wood did not have a very good season as suggested by the transects, e.g., Dunstable Downs 2 (5ya 30), Knocking Hoe 1 (5ya 4), Old Warden Tunnel 53 (5ya 58), Pegsdon Hills 0 (5ya 9). In overall recording 2020 ranked within the four worst years for abundance and its brood peaks are not distinct in the data. Distribution however remained good with 231 countywide 1km squares, the third-best year. Its season started 4 days before the 10ya on 23rd March and ended on 4th November seven days later than the 10ya. There were 19 double-digit counts from a selection of wooded sites, the largest two of 20 each from Wilstead Wood on 22nd July and Maulden Wood on the 24th July.

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

The transect data suggest that Small Heath had a solid year for abundance with Dunstable Downs 182 (5ya 196), Knocking Hoe 221 (5ya 260), Old Warden Tunnel 10 (5ya 8) and Pegsdon Hills 298 (5ya 216). Overall, 4.52% of adult butterflies reported were of this species (the seventh-most abundant species) and the last four years has seen the 1km square count more than double, increasing at a much faster rate than recording effort (2017 – 90, 2018 – 111, 2019 – 152, 2020 - 204). The species was reported from 32.4% of visited squares compared with 16.5% in 2017. As noted in the 2019 report there was again a northerly bias to the squares when mapped. Its season started during lockdown on 27th April, eight days earlier than the 10ya. As usual, the first brood had the greater abundance, peaking in weeks 24 and 25 (11th to 24th June). The second brood peaked in week 34 (20th to 26 August), both peaks about one week earlier than average. The season's end coincided with the 10ya on 1st October. The largest count of 97 was made along the track around the edges of Flitwick sewage works on 15th June, and 61 double-digit counts were reported, reflecting good local abundance where present.

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

In a year in which most species had at least a fair season Ringlet managed to have a rather poor year as illustrated by the transect counts: Dunstable Downs 54 (5ya 290), Knocking Hoe 9 (5ya 47), Old Warden Tunnel 31 (5ya 174), Pegsdon Hills 59 (5ya 71). Only 4.80% of adult butterflies reported were Ringlets compared with the 10ya of 10.99% and the year ranked as one of its three worst years for abundance.

Distribution, however, is another matter and the 207 1km squares reported was actually its best year, beating 2018's 185. The season started nine days ahead of the 10ya on 2nd June, peaked in week 27 (2nd to 8th July) and ended on 7th August, 15 days ahead of the 10ya.

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

As usual, Meadow Brown was easily the most abundant species with 21.97% of all adults reported being of this species. Its season started on 25th May eight days before the 10ya and the hot weather during weeks 24 and 25 (11th to 24th June) corresponded with an early peak of abundance which would normally occur in mid-July. The season's end on 28th September coincided with the 10ya. Transect counts were generally high, Knocking Hoe 1,172 (5ya 868), Old Warden Tunnel 63 (5ya 38), Pegsdon Hills 1,374 (5ya 658), but Dunstable Downs' count was down a little at 306 (5ya 360). Overall, the species had a reasonable year and the high recording levels produced a new 1km square high of 323 versus 2019's 271. Seen in 51% of all 1km squares visited, up slightly from the 45% average of the previous decade, Meadow Brown continues to be a stalwart of summer.

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

The high levels of overall reporting in 2020 resulted in more records for Gatekeeper than ever before (793 versus 736 in 2019) and more 1km squares reported (236 versus 192 in 2009) from all parts of the county. 6.86% of all adult butterflies reported were of this species compared with the average of 10.92% from 1995 to 2008 so relative abundance is still a bit reduced, but nonetheless it was the fourth most-reported species in 2020. Its season started on 5th June, 16 days ahead of the 10ya, peaked in week 29 (16th to 22nd July) and ended on 7th September, four days ahead of the 10ya. Transect counts were above their 5ya at Dunstable Downs, Mowsbury Hill, Old Warden Tunnel and Pegsdon Hills but below at Knocking Hoe and Sharpenhoe Clappers. 108 were counted along the Mowsbury Hill transect on 22nd July, but the largest single section count was of 40 at Pegsdon Hills on 12th August. In casual recording the largest "counts" were all via Apps reporting a vague abundance of "D" (30-99) from a mixture of grassland and woodland sites, but the largest actual count of 27 was from Broom Gravel Pits on 8th July.

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

The transects at Dunstable Downs, Knocking Hoe and Pegsdon Hills all returned counts below average for Marbled White, and casual recording also suggested a mediocre year for abundance, however reported distribution continues to increase with another new high set for 1km squares of 174, adding to the favourable progression over the last few years (2015 - 89, 2016 - 103, 2017 - 110, 2018 - 112, 2019 - 146). 28% of visited squares reported this species compared with about 14% just over a decade ago as the species consolidates its range within the county. The flight period started 14 days earlier than the 10ya on 31st May and ended three days early on 10th August. The largest count of 135 on 24th June was made at Great Denham.

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

This large fritillary may be encountered in almost any woodland and it was reported from such all over the county, the annual total of 339 adults was its fourth-highest. Its flight period started 14 days before the 10ya on 13th June and ended on 12th August, 11 days before the 10ya. 85 were reported in week 26 (25th June to 1st July) at the peak. The largest woodland counts were Chicksands Wood 62, College Wood / Home Wood - Northhill 53, King's Wood Heath and Reach 30, Marston Thrift 17, Maulden Wood 52, Potton Wood 28, Putnoe Wood 16, Salem Thrift 15. A handful of lucky gardens in Blunham, Cranfield and Luton also received visits by wanderers. A *valezina* was reported from King's Wood Heath and Reach on 2nd August.

#### **Dark Green Fritillary** *Argynnis aglaja aglaja*

Now to be found along the entire chalk arc Dark Green Fritillary was reported from Barton Bypass, Barton Gravel Pit NR, Barton Hills, Blow's Down, a Dunstable garden, Dunstable Downs, Galley Hill, Knocking Hoe, Moleskin, Pegsdon Hills, Rokum Hole, Sharpenhoe Clappers, a Shillington garden, Streatley, Sundon Hills CP, Totternhoe Quarry and Whipsnade Downs. Sharpenhoe Clappers remains the strongest site with 75 reported on the 24th June transect walk. Excitingly, in addition, the species was re-found on Sharnbrook Summit NR on 8th June with up to five seen on subsequent days. It was last recorded there in 1998 and before that, 1984. This raised the 1km square count to 23, the highest ever for the species. The first sighting on 1st June was 15 days ahead of the 10ya and the final report on 5th August was six days before the 10ya.

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

Most records for White Admiral were, as to be expected, from woodlands, the largest count from each being Chicksands Wood 2, College Wood / Home Wood - Northhill 4, King's Wood, Heath and Reach 2, Maulden Wood 6, Rectory Wood 1, West Wood 4. A tatty individual was also picked up dead on Pulloxhill High Street on 25th June, presumably a mis-adventurous wanderer. The total count of 55 adults was just above the 10ya

of 50. The first flight on 16th June was ten days ahead of the 10ya, and the last on 12th July was 17 days earlier than the 10ya. The reported flight period of 26 days exceeded only Black Hairstreak's 17 days.

### Purple Emperor *Apatura iris*

The largest reported Purple Emperor count at each location was: Chicksands Wood 2, Home Wood - Northill 1, King's Wood, Heath and Reach 1, Luton Hoo Estate 1, Maulden Wood 1, Potton Wood 1, Sandy Smith NR 1, The Lodge 1, near Tingrith 1, Worley's Wood 1. The total count of 23 adults, which will include some repeat counting, was close to the 10ya of 26. They were all seen between 23rd June and 17th July with the exception of one late individual in Maulden Wood on 4th August. The main flight period was therefore early, about eight to twelve days ahead of the 10ya.

### Red Admiral *Vanessa atalanta*

Reported from 31st January to 19th December, Red Admiral had the longest season of any species (323 days). Numbers slowly built throughout spring, with a small spike during weeks 16 and 17 (16th to 29th April) when 50 were reported, then climbed increasingly rapidly towards a sharp peak in weeks 28 and 29 (9th to 22nd July) when 420 were recorded. A quick drop in abundance ensued, followed by a steady decline throughout the remainder of the season without further spikes, numbers during autumn being lower than usual. The species was encountered in 40% of the 1km squares visited, without any particular preference for locality. Data suggest it had a solid but unexceptional season, the largest count being of 11 at Totternhoe Quarry on 20th July.

### Painted Lady *Vanessa cardui*

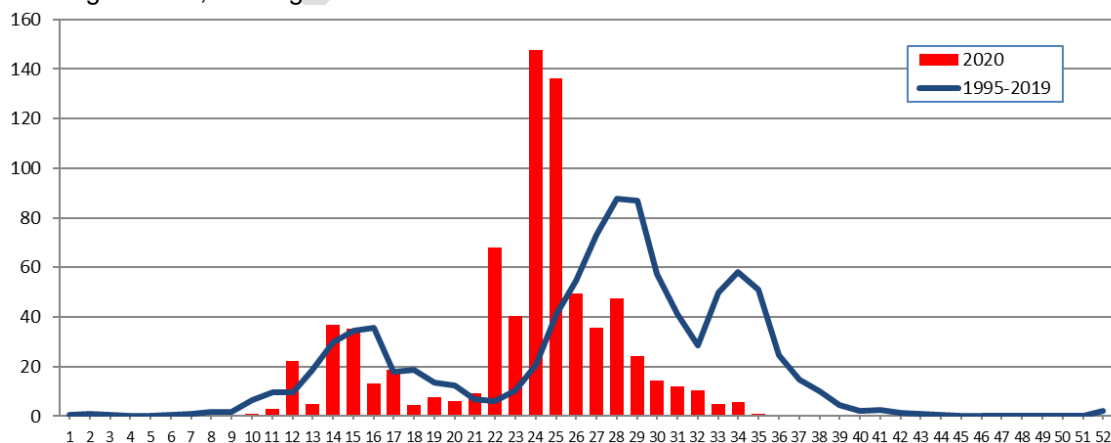
The first sighting of Painted Lady was on 5th April in Blunham and the last on 25th October on Whipsnade Downs. At least one was reported each week from late May to late August but the "peak" was of only eight in week 34 (20th to 26th August). The annual total reached only 53 adults from 35 widespread 1km squares, typical of a year in which this migrant comes our way in only small numbers.

### Peacock *Aglais io*

The strong post-hibernation emergence which peaked in weeks 14 and 15 (2nd to 15th April) when 562 adults were reported suggested that Peacock had indeed recovered from its recent lean years. Larval webs started to be reported from 25th May and these were often abundant on nettle beds, especially alongside river courses, where they could easily be counted in dozens, each carrying maybe 50 to 100 larvae and approximately 10,000 larvae were reported this way throughout June! Hopes were therefore high for a strong summer spike of fresh adults and these duly emerged in weeks 28 and 29 (9th July to 22nd July) when 1,096 were reported. This peak, which was about two weeks ahead of normal, was short-lived as usual as they quickly went into hibernation and few were seen after the first week of August. The near-complete transect counts at Knocking Hoe and Pegsdon Hills were both above their 5ya and in overall recording the year's abundance was slightly above average, however the 1km square total of 299 easily eclipsed 2009's previous high of 226.

### Small Tortoiseshell *Aglais urticae*

Following the post-hibernation peak in weeks 14 and 15 (2nd to 15th April) which was much as normal, Small Tortoiseshell's observed weekly abundance once again differed markedly from the historic average. The new brood began to emerge strongly at the end of May and peaked in weeks 24 and 25 (11th to 24th June) four weeks earlier than usual. Traditionally there is a second brood peak about six to seven weeks after the first, but abundance was in steady decline then and the season was essentially over. After 27th August only five more adults were seen in the remainder of the year. Overall, the season's reported abundance was unremarkable but a new 1km square record of 255 was set, beating 2017's 245. There were 12 double-digit counts, the largest of 20 from Melchbourne on 20th June.



Small Tortoiseshell adults per week per 10,000 records per year, 2020 vs 1995-2019



### **Large Tortoiseshell** *Nymphalis polychloros*

A Large Tortoiseshell of unknown origin was seen feeding in a garden in Stotfold on 1st September.

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

Post-hibernation abundance of Comma was good with a peak of 85 reported in week 12 (19th to 25th March) and this resulted in a very strong first brood which peaked in the first half of July, with 188 reported in week 27 (2nd to 8th July). The September second brood however barely shows in the data with no week reporting more than 13. The highest count of "26 and probably more" was made in Home Wood, Northill on 5th July. The year as a whole ranks as one of the best on record, the high levels of overall recording achieving the largest ever totals for numbers of adults (1270) and 1km squares (215). The species was reported from 34% of all 1km squares visited and from all parts of the county. Only four eggs and two larvae were reported this year, all from one garden in Bedford.

### **Riodinidae (Metalmarks)**

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

As a result of lockdown restrictions Duke of Burgundy's first flight on 20th April at Whipsnade Downs, six days earlier than the 10ya, was detected by the site manager this year, and only half the usual number of records were submitted for the season. The largest counts were of 24 on 24th April at Whipsnade Downs, 11 at Totternhoe Quarry on 25th April, and three at Dunstable Downs on 20th May. No other sites were reported. The final sighting was on 30th May, eight days earlier than the 10ya.

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

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

More adults of Small Copper were reported in 2020 than for any previous year (438 versus 339 in 2018) and the largest site totals were at Cooper's Hill 18, Maulden Heath 58, Sandy Heath/Quarry 20, and The Lodge 182, all on the greensand. Although these totals will include some repeat counting the 1km square total of 80, beating 2004's 75, reflected a widespread distribution across the county. It was mostly seen only one or two at a time, but 32 were counted at The Lodge on 26th June. The first sighting, during lockdown, was on 24th April, just ahead of the 10ya, and the season continued until 5th November, one week later than the 10ya. Reported weekly totals fluctuated greatly throughout the season and week 38 (17th to 23rd September) had the largest count of 63.

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

The first Purple Hairstreak record was of three eggs on Oak twigs at The Pinnacle, Sandy on 4th January. Next, a larva was beaten from Oaks at Cooper's Hill on 15th May and it was also here that the first adult was seen on 23rd June, five days ahead of the 10ya and sightings continued until 12th August four days before the 10ya. When mapped, records chiefly fall along the Greensand Ridge from Linslade Woods in the west to Pott Wood in the east, with only a handful from elsewhere including Clapham Park Wood, Luton Hoo, Marston Thrift, Putnoe Wood and West Wood. The 30 1km squares reported is the third-highest annual total, and the 201 adults reported is the fourth-highest. The highest count of 20+ was from Maulden Wood main ride on 31st July when the very high temperatures brought hairstreaks down to eye level and below, a behaviour noted during very hot weather in previous years.

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

Green Hairstreak was another species that started to fly during lockdown so the first detected flight, on the Pegsdon Hills transect on 14th April one day ahead of the 10ya, may not have been its first outing. Sites reported were Aspley Woods, Barton Hills, Brogborough landfill site, Dunstable Downs, Knocking Hoe, Marston Vale Millennium CP, Pegsdon Hills, Sharpenhoe Clappers, Totternhoe Quarry, Wavendon Heaths and Whipsnade Downs. The largest count was of ten on 8th May on Whipsnade Downs. It was good to receive reports for the second consecutive year from the western heathlands and this year they included confirmation of the use of Broom, *Cytisus scoparius*, for egg-laying on 20th May.

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

Reported from 15 1km squares, White-letter Hairstreak's sightings in 2020 were at Barton, Brogborough, Chicksands Wood, College Wood / Home Wood - Northill, Elstow, Flitwick Wood, John O'Gaunt golf course, Linslade Wood, Maulden Wood, Putnoe Wood and Wrest park. The season started on 22nd June, five days before the 10ya, and lasted until 5th August, close to normal. The peak was in week 27 (2nd to 8th July) when 26 were reported, which included the largest count of nine from Home Wood, Northill on 5th July.

#### **Black Hairstreak** *Satyrion pruni*

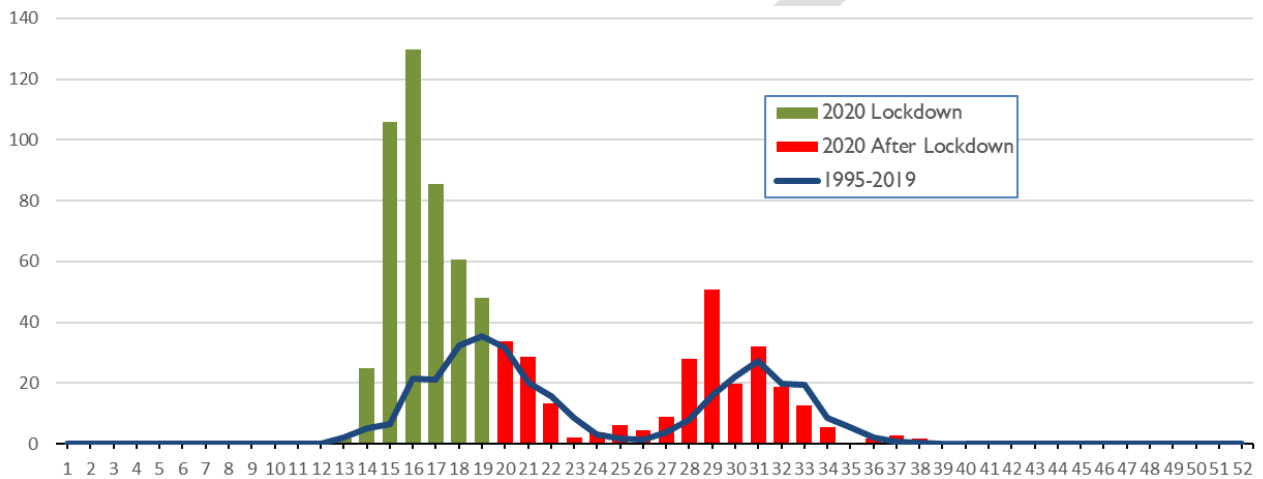
All sightings of Black Hairstreak were made at Marston Thrift as usual, but the first, on 29th May, was the earliest on record by seven days. The season was so advanced this year that the last of the five sightings, on 15th June, occurred on the 10ya first flight day!

**Small Blue** *Cupido minimus*

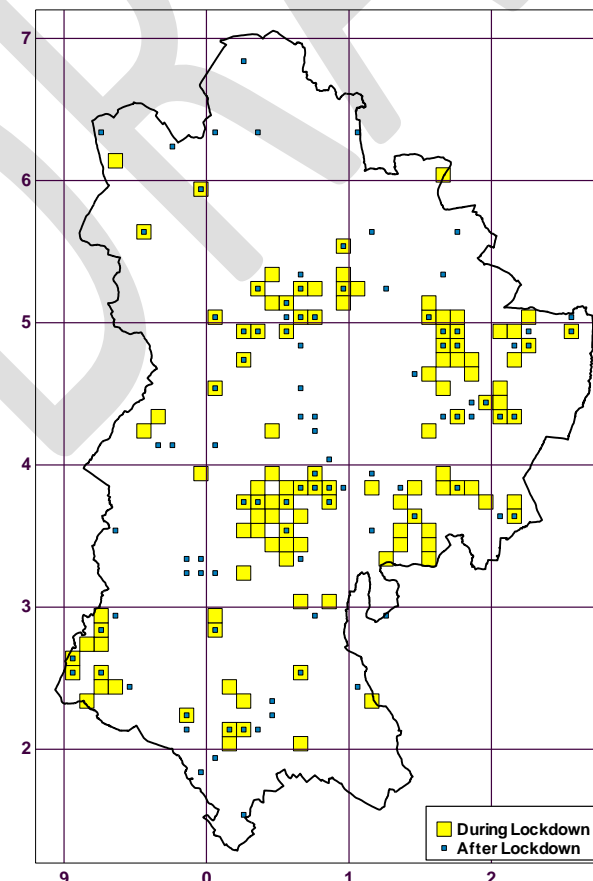
The first sighting of nine Small Blues at Totternhoe on 19th May was seven days later than the 10ya. Given the advancement of other species, this suggests we probably missed the first flight by quite a few days, maybe during lockdown. Reports came from Barton Bypass, Blow's Down, Galley and Warden Hills, Sharpenhoe Clappers, Sundon Quarry and Totternhoe, this last site producing the largest counts of up to 24+ on 30th May. The most exciting observations though again came from the Cranfield side of the Brogborough landfill site where sightings were made close to the 2019 location, but this time in association with Kidney Vetch and egg-laying was observed on 31st May and 13th June, confirming our first known Small Blue population away from the chalk.

**Holly Blue** *Celastrina argiolus britanna*

Holly Blue started to fly on 24th March, eight days earlier than the 10ya. This coincided with the start of lockdown and being a species easily observed in gardens and during walks from home its first brood was particularly well observed resulting in 235 being reported during week 16 (16th to 22nd April) far more than for any normal year. The total number of adults reported for the year was 1,329 far exceeding 2019's 966.



**Holly Blue adults per week per 10,000 records per year, 2020 vs 1995-2019**



**Holly Blue record distribution in 2020 relative to lockdown**

The distribution of Holly Blue records during lockdown strongly reflects home locations with all the larger urban areas showing well when mapped, except, curiously, for Luton which returned rather few records. Rural locations could be visited again once government restrictions eased and these allowed the large annual total of 172 1km squares reported to exceed 1998's 141. Reports had largely finished by around the 26th August but a long tail to the season extended it until 28th September, coinciding with the 10ya.

### **Brown Argus** *Aricia agestis*

The first Brown Argus was sighted on the Knocking Hoe transect on 2nd May seven days ahead of the 10ya. Numbers built quickly to a first brood peak in week 20 (14th to 20th May) when 95 were reported. The second brood peak of 94 was in week 31 (30th July to 5th August) and it was last seen on 28th September, one day later than the 10ya. Reported from 77 1km squares, the third highest to 2019 (86) and 2018 (88), it was well distributed around the county but double-digit counts were only reported from near Brogborough Landfill, Cooper's Hill, Dunstable Downs, Knocking Hoe, Moleskin, Sandy Smith NR, The Lodge, and Whipsnade Downs.

### **Common Blue** *Polyommatus icarus icarus*

Common Blue may have been recovering from its rather poor 2019 with a reasonable showing in the first brood and a stronger start to the second, with 455 reported in week 31 (30th July to 5th August) but reports then dropped off sharply in week 32 (6th to 12th August) which corresponded with a very hot spell and remained low in the subsequent weeks of unsettled weather. The Pegsdon Hills transect was the only one to return an above average count and the reserve also reported the largest counts in casual recording. Overall, statistics were again rather poor but distribution remains strong with 151 widespread 1km squares reported, second only to 2019's 163. [The text of the 2019 report carries incorrect numbers for the 1km squares for 2019 and 2018. These should have read 163 and 144 respectively, for which I apologise].

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

First reported at Sharpenhoe Clappers on 4th July (the 10ya first flight day) Chalkhill Blue was subsequently seen at Barton Bypass, Barton Hills, Blow's Down, Dunstable Downs, Knocking Hoe, Moleskin, Pegsdon Hills, Sharpenhoe Clappers, and Totternhoe Quarry. The largest record was of 1000 was from Moleskin on 23rd July. The main abundance was over by the middle of August but the final sightings were made on the Dunstable Downs and Knocking Hoe transects on 14th September, six days earlier than the 10ya. The transects at Dunstable Downs, Knocking Hoe and Pegsdon Hills all produced counts well above average suggesting the species had a good season.

### **Acknowledgements**

I am very grateful for the efforts of the 338 people listed here who reported their sightings online, directly or via newsgroups. I apologise if any name has been inadvertently omitted.

C.Adcock, C.Alanine, A.Allen, D.Allen, Mrs Almond, P.Almond, L.Alton, D.Anderson, J.Anderson, K.Anderson, H.Appleyard, J.Arnold, L.Arnold, S-J.Arnold, M.Bailey, Martin Bailey, Mike Bailey, K.Balmer, A.Banthorpe, M.Banthorpe, I.Barber, D.Barnes, S.Barrow, R.Bashford, A.Bates, B.Bellamy, G.Bellamy, P.Bellamy, P.Benbow, R.Bennett, K.Bernas-Sawer, M.Bird, F.Bishop, J.Bishop, S.Blain, H.Bolton, J.Bonfield, C.Boon, L.Brailsford, R.Brind, S.Bristow, S.Brooke, D.Brooker, A.Brown, M.Brown, N.Brown, V.Brown, M.Browning, S.Buckingham, A.Bucknall, A.Budd, H.Butler, A.Butterworth, D.Cahill, S.Cain, C.Campbell, C.Carpenter, D.Carroll, R.A.Cartwright, G.Castle, N.Ceconi, S.Cham, D.Chandler, J.Chapman, J.Charsley, V.Chew, A.Chick, P.Christopher, A.Clark, C.Clark, G.Clark, R.Clark, S.Clark, E.Clarke, G.Clarke, A.Clarkson, P.Clegg, M.Clifton, A.Coates, J.Codling, S.Codling, C.Coleman, F.Coleman, J.Coley, R.Coley, D.Connors, S.Constable, A.Cooke, B.Cooke, L.Coulson, R.Cousins, J.Crossman, C.Curd, J.Curd, A.Davies, S.Davis, G.Dawes, M.Dawson, J.Day, T.De La Fuente, R.de Selincourt, A.de Winter, M.de Winter, G.Delayahu, Lior Delayahu, Lorna Delayahu, M.Delayahu, B.Dennis, A.Dickerson, E.Dobbie, M.Dominey, A.Donnelly, A.Doody, C.Downey, L.Downton, S.Draper, O.Dul, T.Dunbar, R.Dunham, R.Egan, L.Elliot, C.Ellis, D.Ellison, J.England, M.Esh, A.Evans-Hill, L.Evans-Hill, P.Ewer, Faraday, D.Felts, D.Fisher, J.Fisher, P.Ford, S.Ford, P.Foster, J.Francis, T.Gardner, A.Garner, E.Garner, H.Gaukrodger, G.Gauntlett, W.George, K.Giddings, C.Gilby, M.Glavin, A.Green, R.Green, S.Green, K.Greenway, H.Griffiths, J.Griffiths, A.Grimsey, J.Grisdale, J.Gurney, D.Hallsworth, M.Hallsworth, S.Halton, A.Hards, C.Harrington, A.Harris, M.Harrow, M.Hart, S.Hearle, G.Herbert, J.Hicks, R.Hicks, G.Hogg, R.Hogg, P.Holden, N.Hollis, P.Hollis, M.Holloway, B.Hook, M.Hooper, P.Humphrey, S.Humphreys, Hutchings, J.Hutchinson, R.Ilie, A.Ilsley, K.Isaac, A.Ixer, P.Jarman, C.Jiggins, B.Johnson, D.Johnston, S.Johnston, M.Jones, D.Kay, F.Kay, J.Keens, N.Keep, I.Kelly, I.Kimsey, S.Kimsey, J.King, L.King, S.Kirby, J.Knight, R.Knock, C.Le Boutillier, P.Le Boutillier, M.Ledlie, H.Lewis, M.Lewis, N.Lindsay, H.Lloyd, M.Lunt, J.Lynch, S.Mackey, J.Maddison, W.McEwan, A.McLennan, J.McShane, S.Meldrum-Lester, L.Melling, J.Miles, L.Milne, T.Moon, J.Moore, T.Morgan, D.S.Morrissey, R.E.Morrissey, H.Muir-Howie, M.Mundy, C.Murphy, S.Murphy, P.Nash, A.K.Nelson, B.Newton, D.Niemann, S.Niemann, S.Northwood, D.Oakley-Martin, S.O'Brien, R.Olney Ogden, A.Outen, E.Outram-Rees, K.Owen,

C.Page, J.Palmer, I.Parsons, T.Payne, S.Perkins, K.Philbin, B.Pike, J.Pitts, S.Plummer, N.Pollard, C.Porch, L.Porter, Jon Powell, Julia Powell, R.Powell, W.Powell, A.Price, A.Proud, J.Proud, C.Rathbone, S.Raven, P.Reed, R.Revels, Mrs Revill, T.Revill, S.Reynolds, M.Roberts, S.Roberts, A.Robertson, J.Robertson, M.Robinson, T.Robson, P.Rodgers-Gibbs, T.Royston, R.Ruffhead, M.Russell, S.Saunders, J.Searle, J.Sears, J.T.R.Sharroch, K.Sharroch, M.Sheridan, C.Shortall, A.M.J.Skinner, I.Small, C.Smart, A.Smith, K.Smith, N.Spencer, T.Spencer, S.Squires, A.Steele, B.Steurs, M.Sturges, P.Sutton, S.Thompson, A.Thorpe, J.Tomlin, K.Towler, E.Turner, E.Viciuviene, E.Wade, L.Wagstaff, G.Waite, H.Waite, S.Waiting, L.Walker, M.Wallace, S.Walsh, M.Ward, A.Warne, G.Warne, S.Warrington, E.Was, C.Wedge, K.R.Weeden, S.West, S.Wheeler, A.Whitfield, E.Whitfield, N.D.Willits, T.Wilson, K.Winder, D.Withers, Ian Woiwod, Isla Woiwod, R.Wolfe, A.Wood, D.Wood, K.Wood, T.Wood, K.Woodburn, N.Wright, Paul Wright, Philip Wright, F.Wynde, P.Young, R.Young, S.Young BNHS Members, Wildlife Trust Staff and Volunteers.

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 2020

Species	Earliest Date	Latest Date	Peak Date	Peak Abundance
Swallowtail	25/05/2020	25/05/2020	25/05/2020	1
Dingy Skipper	23/04/2020	07/08/2020	25/04/2020	50+
Grizzled Skipper	24/04/2020	02/06/2020	20/05/2020	8
Essex Skipper	12/06/2020	01/08/2020	12/06/2020	12
Small Skipper	31/05/2020	24/08/2020	15/06/2020	25
Large Skipper	22/05/2020	10/08/2020	28/06/2020	34
Orange Tip	23/03/2020	02/07/2020	16/04/2020	15
Large White	04/04/2020	14/10/2020	12/07/2020	86
Small White	21/03/2020	04/11/2020	05/07/2020	53
Green-veined White	23/03/2020	13/11/2020	12/07/2020	15
Clouded Yellow	28/05/2020	19/10/2020	17/09/2020	7
Brimstone	17/02/2020	01/12/2020	24/04/2020	21
Speckled Wood	23/03/2020	04/11/2020	22/07/2020	20
Small Heath	27/04/2020	01/10/2020	15/06/2020	97
Ringlet	02/06/2020	07/08/2020	07/07/2020	100+
Meadow Brown	25/05/2020	28/09/2020	22/06/2020	140
Gatekeeper	05/06/2020	07/09/2020	12/08/2020	40
Marbled White	31/05/2020	10/08/2020	24/06/2020	135
Silver-washed Fritillary	13/06/2020	12/08/2020	24/06/2020	15
Dark Green Fritillary	01/06/2020	05/08/2020	24/06/2020	75
White Admiral	16/06/2020	12/07/2020	25/06/2020	6
Purple Emperor	23/06/2020	04/08/2020	25/06/2020	2
Red Admiral	31/01/2020	19/12/2020	20/07/2020	11
Painted Lady	05/04/2020	25/10/2020	18/08/2020	2
Peacock	03/01/2020	18/11/2020	20/07/2020	46
Small Tortoiseshell	08/03/2020	08/11/2020	20/06/2020	20
Large Tortoiseshell	01/09/2020	01/09/2020	01/09/2020	1
Comma	11/03/2020	10/11/2020	05/07/2020	26
Duke of Burgundy	20/04/2020	30/05/2020	24/04/2020	24
Small Copper	24/04/2020	05/11/2020	26/06/2020	32
Purple Hairstreak	23/06/2020	12/08/2020	31/07/2020	20+
Green Hairstreak	14/04/2020	16/06/2020	08/05/2020	10
White-letter Hairstreak	22/06/2020	05/08/2020	05/07/2020	9
Black Hairstreak	29/05/2020	15/06/2020	01/06/2020	2+
Small Blue	19/05/2020	05/08/2020	30/05/2020	24+
Holly Blue	24/03/2020	28/09/2020	05/05/2020	20+
Brown Argus	02/05/2020	28/09/2020	22/07/2020	22
Common Blue	07/05/2020	09/10/2020	29/07/2020	100
Chalkhill Blue	04/07/2020	14/09/2020	23/07/2020	1000

Adults reported per month in 2020

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Swallowtail					1							
Dingy Skipper				103	324	8	4	2				
Grizzled Skipper				6	55	1						
Essex Skipper						41	85	1				
Small Skipper					1	231	323	15				
Small/Essex Skipper					1	120	435	3				
Large Skipper					36	648	463	27				
Orange Tip			14	1009	616	7	1					
Large White				72	150	437	1158	370	140	5		
Small White			10	303	333	501	1757	820	368	16	1	
Green-veined White			8	151	306	224	607	252	75		1	
Small/Green-veined White				103	73	97	179	16	17	1		
Clouded Yellow					1		16	34	17	5		
Brimstone		2	248	663	382	67	224	80	20	5	6	1
Speckled Wood			1	174	187	294	313	302	189	18	1	
Small Heath				1	547	1132	203	417	338	1		
Ringlet						947	1821	34				
Meadow Brown					46	5601	4400	2330	451			
Gatekeeper						104	2950	948	1			
Marbled White					1	1870	1294	12				
Silver-washed Fritillary						154	168	17				
Dark Green Fritillary						310	150	2				
White Admiral						34	21					
Purple Emperor						15	7	1				
Red Admiral	1	6	13	59	64	143	633	172	98	36	14	1
Painted Lady				4	3	15	13	15	2	1		
Peacock	2	1	166	751	153	114	1306	61	16	6	13	
Small Tortoiseshell			56	189	98	745	237	54	3		1	
Large Tortoiseshell									1			
Comma			128	136	25	228	608	90	45	7	1	
Duke of Burgundy				62	97							
Small Copper				4	39	47	113	79	145	8	3	
Purple Hairstreak						21	155	25				
Green Hairstreak				31	50	2						
White Letter Hairstreak						28	48	1				
Black Hairstreak					1	4						
Small Blue					78	40	2	2				
Holly Blue			5	627	324	40	212	108	13			
Brown Argus					181	36	191	143	105			
Common Blue					368	117	642	495	117	2		
Chalkhill Blue							2627	1592	54			

### Summary of 2020's records of adults

Species	Records	Adults	Squares		Records (%)	Adults/All-species adults <sup>1</sup> (%)				
			10km	1km		2016	2017	2018	2019	2020
Swallowtail	1	1	1	1	0.01	0.00	0.00	0.01	0.00	0.01
Dingy Skipper	110	458	9	27	0.61	1.36	0.87	0.90	0.89	0.78
Grizzled Skipper	33	62	9	14	0.18	0.23	0.22	0.19	0.18	0.11
Essex Skipper	63	127	12	38	0.35	0.29	0.19	0.12	0.17	0.22
Small Skipper	223	570	18	117	1.23	1.56	1.39	1.21	1.22	0.98
Small/Essex Skipper	126	559	14	50	0.69	0.95	0.72	0.57	1.08	0.96
Large Skipper	424	1176	20	169	2.34	1.57	1.38	1.58	1.53	2.01
Orange Tip	972	1647	20	266	5.36	1.86	2.04	1.97	2.10	2.82
Large White	1108	2332	20	240	6.11	3.68	3.57	5.39	3.96	3.99
Small White	1678	4109	21	332	9.25	5.20	4.05	8.54	6.50	7.04
Green-veined White	909	1624	20	253	5.01	3.08	2.14	2.76	1.92	2.78
Small/G.V. White	162	486	15	65	0.89	1.12	0.54	1.02	0.71	0.83
Clouded Yellow	50	73	13	30	0.28	0.05	0.09	0.07	0.03	0.13
Brimstone	1125	1698	20	271	6.20	3.39	3.33	3.23	3.47	2.91
Speckled Wood	748	1479	19	231	4.12	4.03	3.74	4.57	2.58	2.53
Small Heath	702	2639	20	204	3.87	2.91	4.32	5.81	4.34	4.52
Ringlet	565	2802	21	207	3.12	11.50	14.82	7.55	7.59	4.80
Meadow Brown	1608	12828	20	323	8.87	14.31	19.76	16.82	25.71	21.97
Gatekeeper	793	4003	19	236	4.37	4.49	5.41	4.08	6.69	6.86
Marbled White	488	3178	20	174	2.69	9.07	5.38	5.28	5.72	5.44
Silver-washed Fritillary	115	339	14	41	0.63	0.56	0.87	0.70	0.63	0.58
Dark Green Fritillary	111	465	8	23	0.61	0.40	0.57	0.69	0.60	0.80
White Admiral	28	55	5	12	0.15	0.03	0.07	0.07	0.09	0.09
Purple Emperor	22	23	7	13	0.12	0.03	0.05	0.08	0.06	0.04
Red Admiral	886	1241	21	253	4.89	2.36	3.82	0.89	3.65	2.13
Painted Lady	49	53	15	35	0.27	0.32	0.20	0.18	2.24	0.09
Peacock	1173	2615	21	299	6.47	1.88	1.66	0.90	1.86	4.48
Small Tortoiseshell	785	1383	20	255	4.33	2.55	3.33	1.48	1.37	2.37
Large Tortoiseshell	1	1	1	1	0.01	0.00	0.01	0.00	0.00	0.01
Comma	753	1270	20	215	4.15	1.20	2.41	1.12	1.67	2.18
Duke of Burgundy	29	159	4	5	0.16	0.46	0.57	0.84	0.42	0.27
Small Copper	177	438	16	80	0.98	0.70	0.65	0.61	0.41	0.75
Purple Hairstreak	64	201	11	30	0.35	0.08	0.15	0.63	0.10	0.34
Green Hairstreak	39	83	9	13	0.22	0.26	0.32	0.46	0.35	0.14
White-letter Hairstreak	38	81	7	15	0.21	0.04	0.21	0.51	0.15	0.14
Black Hairstreak	4	5	1	1	0.02	0.01	0.00	0.05	0.01	0.01
Small Blue	37	122	5	14	0.20	0.71	0.76	0.20	0.58	0.21
Holly Blue	830	1329	20	172	4.58	1.23	0.50	1.35	1.62	2.28
Brown Argus	250	656	18	77	1.38	1.12	1.23	2.05	1.30	1.12
Common Blue	511	1741	20	151	2.82	3.31	3.52	8.78	2.44	2.98
Chalkhill Blue	190	4276	6	12	1.05	12.08	5.14	6.75	4.05	7.32
Overall	17980	58387	23	629						

<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.