

Butterflies 2019

Keith Balmer

With no exceptionally warm days in January it was a quiet month for butterflies with just a Red Admiral seen on the 8th and a Peacock on the 28th.

February was a much warmer month which elicited a lot more activity. The first Small Tortoiseshell was seen on the 5th, Brimstone on the 9th and Comma on the 15th. By the 24th the balmy weather had also brought out a Large White and three Small Whites. The counts by the end of February were extraordinary: Brimstone 245, Comma 54, Large White 1, Peacock 14, Red Admiral 30, Small Tortoiseshell 61, Small White 4, making a total of 409 adults and seven species!

March was another warm month resulting in an advanced start to the season for four more species: Speckled Wood on the 2nd, Orange Tip and Holly Blue on the 24th, and Green-veined White on the 29th. On the 30th a Painted Lady was seen in the van of a strong migration which saw large numbers arrive in the UK later in the year. 12 species and 706 butterflies were reported during March.

April opened with another early sighting, a Green Hairstreak on the 1st. Small Copper showed next on the 15th, followed by Grizzled Skipper on the 19th, Duke of Burgundy on the 20th, Small Heath on the 21st and Dingy Skipper on the 22nd. Fine weather in week 16 (16th to 22nd April) produced a large volume of sightings and resultant spike in the weekly data.

In May, Brown Argus was noted on the 2nd and the first Small Blue on the 10th. Up to this point in the year all species had emerged ahead of their average first-flight date, advanced by the warm early months, but this is roughly the time when emergences became closer to normal for the rest of the season. Common Blue was seen next on the 12th, the final first-flight of the month. The rediscovery of Green Hairstreaks on our heathland habitats between the 15th and 25th of May, not seen there since 2003, was a highlight of the month and year.

June opened with Large Skipper and Meadow Brown both showing on the 1st. Marbled White and Dark Green Fritillary came next on the 8th, Small Skipper on the 15th, Ringlet on the 16th, and Gatekeeper on the 18th. Black Hairstreak's only sightings were made on the 22nd. White-letter Hairstreak was first noted on the 24th. The 28th saw three more first sightings, for Essex Skipper, Silver-washed Fritillary and White Admiral. Purple Emperor was first seen the following day. A highlight of this month was the discovery on June 17th of a cluster of Small Blues in the Marston Vale, a long way from their normal sites on the chalk.

The last two emergences were in July, Purple Hairstreak on the 2nd and Chalkhill Blue on the 7th.

The final species to be sighted in 2019 was the migrant Clouded Yellow noted on August 23rd, one of just a handful seen this year.

The absence of an extended summer then meant a decline of abundance of species throughout September in a manner typical of an average year.

Eleven species flew into October, these being Brimstone, Comma, Green-veined White, Large White, Painted Lady, Peacock, Red Admiral, Small Copper, Small Tortoiseshell, Small White and Speckled Wood.

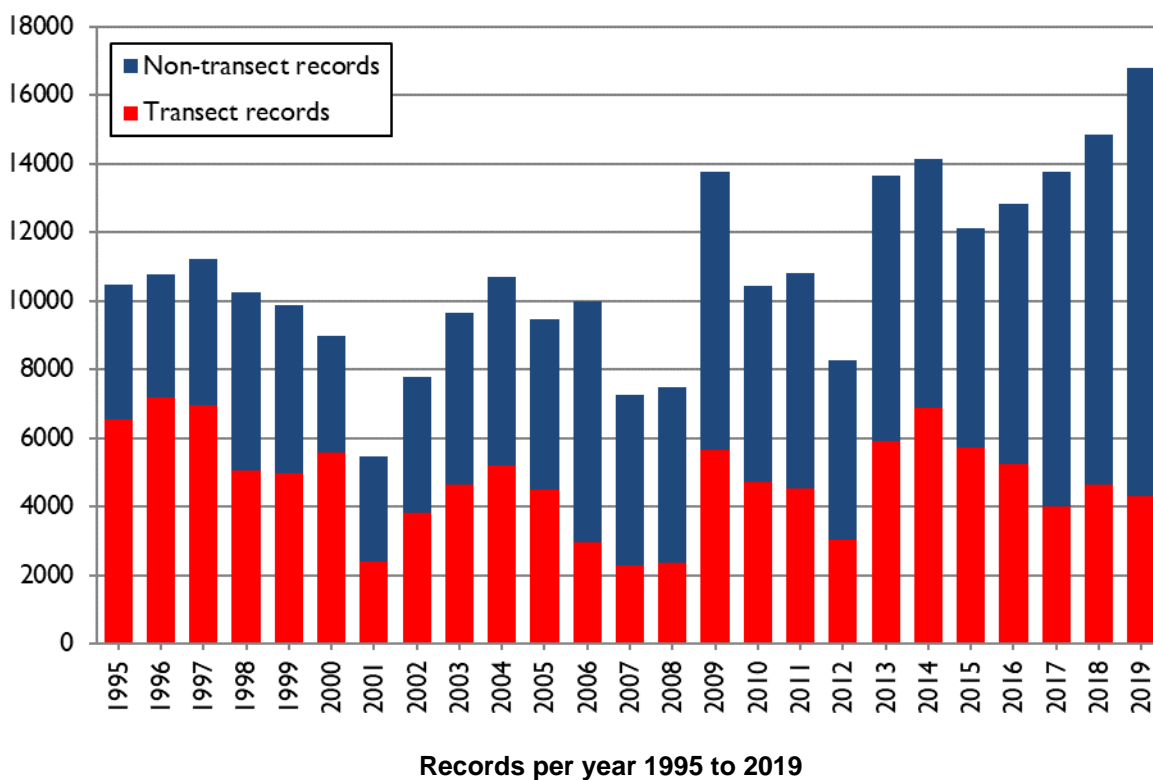
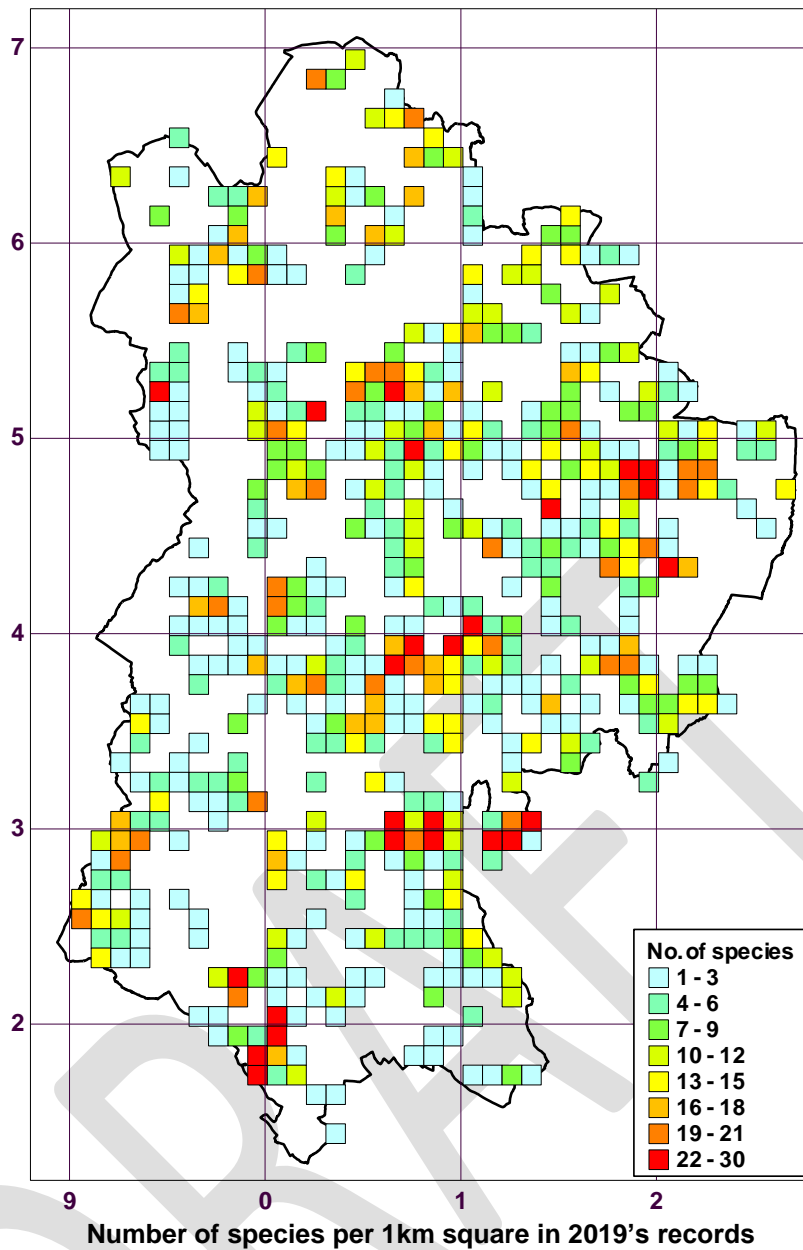
The colder November weather put a stop to all flights except for five Red Admirals, five Peacocks and a Small Tortoiseshell.

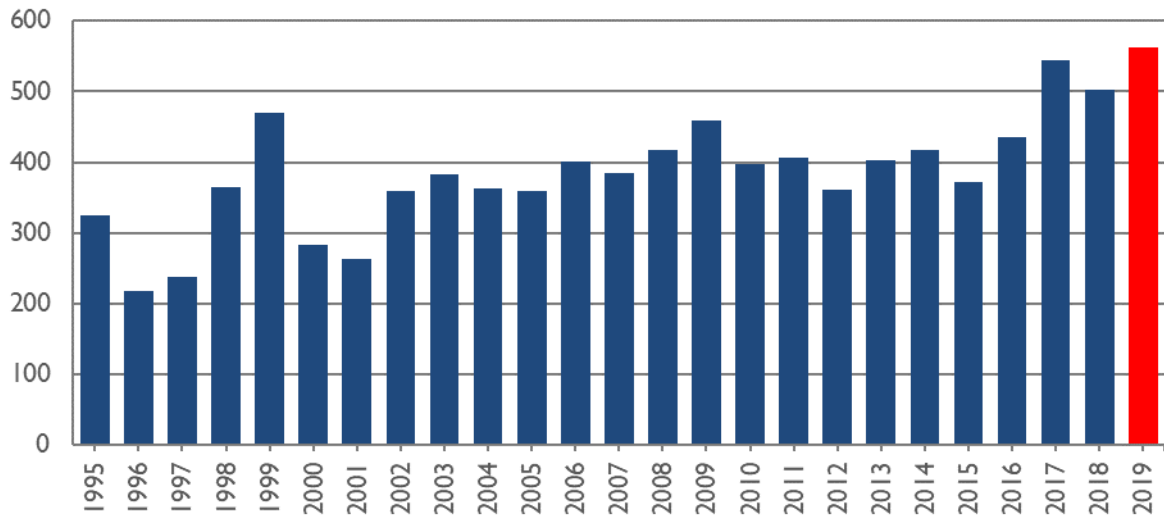
Those same three species also made fleeting appearances during December, the year closing on the 30th with sightings of three Red Admirals and a Peacock.

Analysis of Data

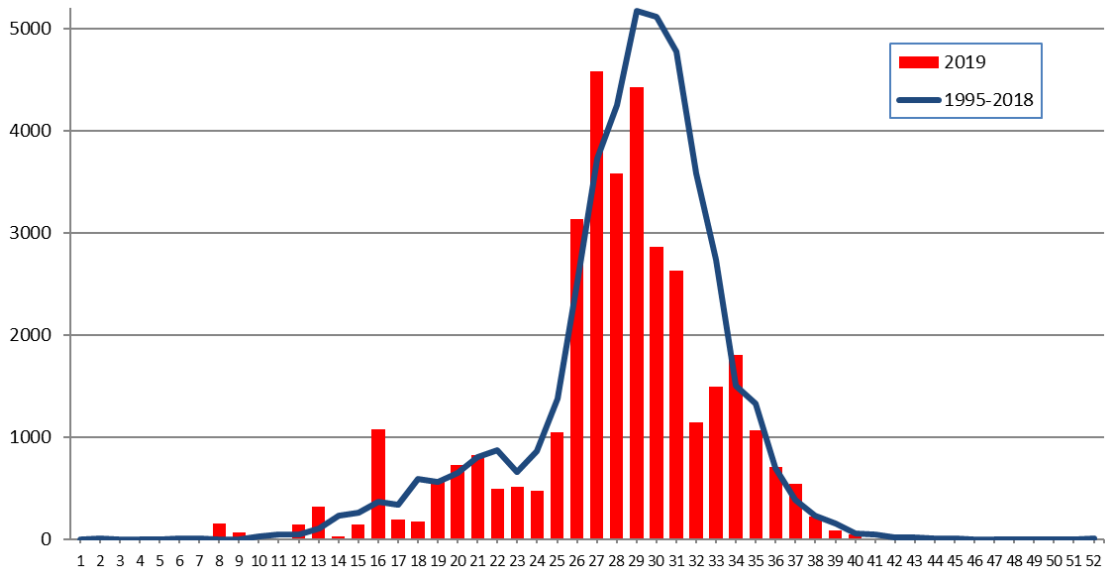
At the time of analysing records for this report (7th February 2020) 16,786 records had been received and computerised, containing reports of 59,546 adults from 562 1km squares. Records were analysed at this date and may be subject to minor revision. 4,290 records were from transects and 12,496 records were from other sources, mostly casual recording. The total number of records received and 1km squares reported were both the largest for any year. Thank you to everyone that helped to achieve this.

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.

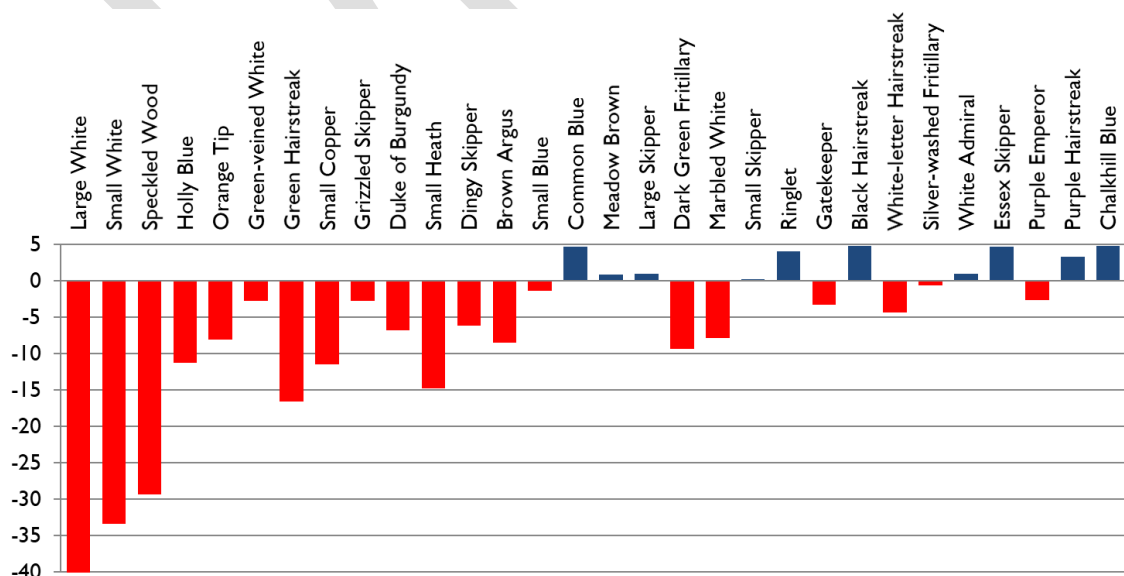




Number of 1km squares reported per year 1995 to 2019



2019 versus 1995-2018: Adults per week per 10,000 records per year



2019's first sightings: days earlier (red) or later (blue) than their ten-year average, ordered by emergence

Transects

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

	2015	2016	2017	2018	2019
Dunstable Downs	3217 (32) [24]	2789 (31) [22]	2224 (29) [21]	3830 (31) [21]	1873 (31) [17]
Harrold Odell CP	*	*	1350 (20) [21]	1493 (19) [25]	2022 (21) [24]
Knocking Hoe	2161 (22) [25]	2107 (24) [26]	1989 (25) [25]	2595 (25) [25]	2369 (25) [25]
Mowsbury Hill	361 (18) [14]	504 (19) [16]	590 (18) [11]	1232 (21) [13]	1090 (19) [13]
Old Warden Tunnel	418 (22) [16]	323 (18) [17]	442 (20) [17]	817 (22) [25]	829 (21) [21]
Pegsdon Hills	1270 (24) [21]	1314 (25) [24]	1744 (26) [23]	2719 (25) [23]	2481 (26) [24]
Potton Wood	1841 (20) [26]	1897 (16) [26]	3079 (21) [26]	*	*
Priory Country Park	355 (19) [12]	*	*	*	2171 (23) [26]
Sharpenhoe Clappers	6704 (27) [26]	5951 (27) [26]	3666 (28) [18]	4477 (29) [18]	3288 (29) [15]
Totternhoe Quarry	1452 (28) [20]	1797 (26) [22]	*	2352 (27) [23]	1280 (26) [17]
Whipsnade Downs	3037 (28) [21]	1422 (27) [20]	*	2856 (27) [23]	*
Whipsnade Zoo	4623 (27) [18]	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 that systematically walk and record these transects once per week each year, between 1st April and 30th 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).

Species Reports

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

Hesperiidae (Skippers)

Dingy Skipper *Erynnis tages tages*

Reports for Dingy Skipper started at Pegsdon Hills on 22nd April, six days earlier than the 10ya, but cooler weather meant the next sighting wasn't until the 30th and near-daily reports didn't start until about the 7th May, but they then continued until 9th June, with one final sighting near Marston Thrift on 22nd June. The species was reported from Barton Bypass, Barton Gravel Pits, Barton Hills, Dunstable Downs, Elstow Pit, Grovebury Sand Pit, Knocking Hoe NNR, near Marston Thrift, Marston Vale Millennium Country Park, Pegsdon Hills, Sandy Smith NR, Sharpenhoe Clappers, the Totternhoe complex (Knolls/Limeworks/Quarry), Upper Sundon, Whipsnade Downs, and Whipsnade Zoo. Transect counts were both above and below average: Dunstable Downs 33 (5ya 75), Knocking Hoe 30 (5ya 22), Pegsdon Hills 15 (5ya 9), Sharpenhoe Clappers 12 (5ya 26), Totternhoe Quarry 27 (5ya 25), Whipsnade Zoo 88 (5ya 84). The overall statistics suggest that the species had an unexceptional year. The peak abundance was in week 20 (14th to 20th May) when 216 were reported, the largest count of 26 coming from Totternhoe on the 19th May.

Grizzled Skipper *Pyrgus malvae*

Grizzled Skipper started flying on 19th April, three days earlier than its 10ya and a few days earlier than Dingy Skipper, allowing more sightings to be made (10 on the 21st) before the cooler weather shut down further observations until 7th May. They then continued until 22nd June. The species was reported from Bromham Lake LNR, Coronation Pit, near Cranfield, Dunstable Downs, Elstow Pit, Marston Vale Millennium Country Park, Sandy Smith NR, near Souldrop, Totternhoe, Whipsnade Downs, and Whipsnade Zoo. 78 of the 108 adults reported were from the Dunstable Downs/Whipsnade Downs/Whipsnade Zoo scarp, with only small numbers seen at the other sites, Marston Vale Millennium Country Park accounting for 11 of these 30. The largest count of eight was reported from Whipsnade Downs on 25th May. The peak abundance was in week 19 (7th to 13th May) when 29 were reported. The total of 14 1km squares reported was equal to the 10ya, but abundances on the transects and in casual recording were below average suggesting a relatively poor season for the species.

Essex Skipper *Thymelicus lineola*

Essex Skipper was recorded in small numbers (typically one to three) over a small but wide range of grassy sites from Whipsnade Zoo in the south to West Wood in the north, where at the latter a pair was seen in copulation on 29th July. The 32 1km squares reported was the largest total since 1999's 49. This doesn't imply a recovery in the species though as abundances are still well below those recorded in the late 1990s, the count of three on the Sharpenhoe Clappers transect comparing unfavourably with the average of 42 over the period 1995 to 1999. The largest count was of 10+ reported from a large area around Totternhoe and Sewell Cutting on 17th July. This species, which is difficult to distinguish from Small Skipper, was first confirmed flying on 28th June, five days later than the 10ya, and last seen on 13th August, five days earlier. The peak was in week 29 (16th to 22nd July) when 50 were reported.

Small Skipper *Thymelicus sylvestris*

The flight period for Small Skipper (15th June to 23rd August) was close to average and its peak was in week 29 (16th to 22nd July) when 235 were reported. The largest count of 65 was made over a long walk in and around Abbey Park, Turvey on 18th July. Although recorded in 107 well-distributed 1km squares, second only to the 123 of 1995, the abundance statistics were again very poor for this struggling species ranking among the worst of the last 25 years, well down from the counts of the late 1990s. This is illustrated by the total count of 10 on the Sharpenhoe Clappers transect in 2019 compared with its average of 200 for the period 1995 to 1999.

Large Skipper *Ochlodes sylvanus*

Large Skipper's flight period from 1st June to 22nd August matched its 10ya, and its peak in week 27 (2nd to 8th July) when 266 were reported was also on schedule. The species was recorded from grassland and woodland rides in 149 1km squares, a new record high beating 1995's 136. These covered most of the county but, notably, none from south of Dunstable/Luton away from the chalk. Despite good distribution, abundances are still historically weak with the largest counts from woods like Maulden and Chicksands being of only 20 to 30, and only 15 double-digit counts were received overall. The largest annual total for the transects was 36 on Dunstable Downs, its peak being 58 in 2011. Only two were counted on the Sharpenhoe Clappers transect compared with its peak of 78 in 1996.

Pieridae (Whites, Yellows)

Orange Tip *Anthocharis cardamines britannica*

Orange Tip's season started on 24th March, eight days before its 10ya, and ended on 9th June, 19 days before its 10ya. Week 16 (16th to 22nd April) was the clear peak when 479 were reported. The species was reported county-wide from 232 1km squares, a new high, beating 2017's 197. Reported abundances suggest it had a good season with more records (700) and adults (1252) than for any previous year. The largest count of 14 came from Priory Country Park on 13th May. 40 eggs and 87 larvae (the latest seen on 20th June), all found on garlic mustard, were also reported, but no pupae which are more challenging to find in the wild.

Large White *Pieris brassicae*

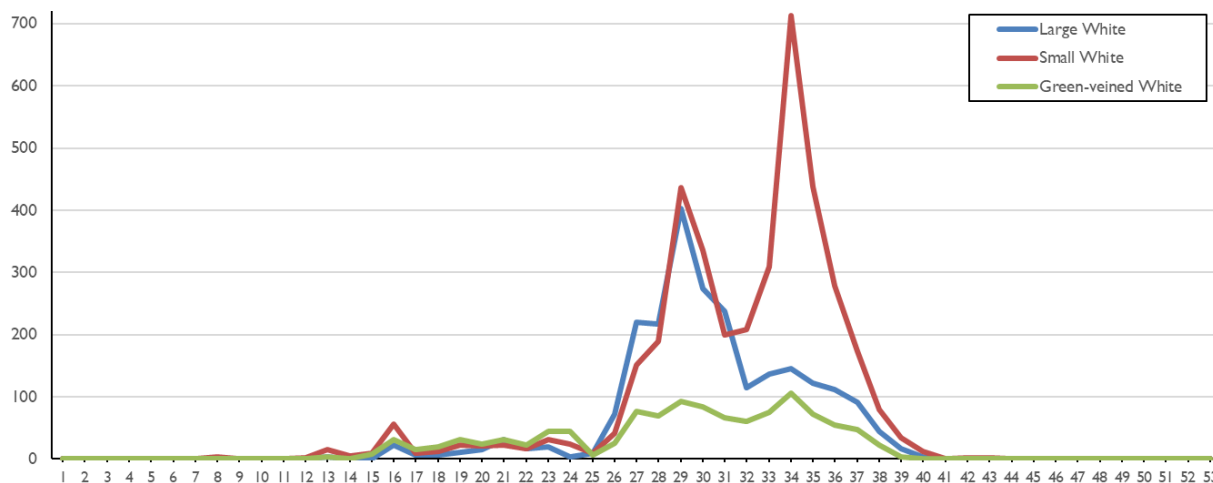
One Large White was tricked into early emergence by the February warm spell, seen at Rushmere Park on the 24th, 40 days before its 10ya. Four more were seen on the 28th and 29th March. The main flight period finally started on the 17th April and then continued until 6th October, with one final sighting on the 16th. The much larger second brood, which started emerging around the 20th June, contained over 94% of the annual total. The peak was in week 29 (16th to 22nd July) when 403 were reported. Abundance overall was around average but a new record for 1km squares was set at 235, exceeding 2009's 231, covering most areas of the county.

Small White *Pieris rapae*

Small White was another of the species that responded to the warm spell in late February by starting its flight season very early, 33 days before its 10ya, with three reported on the 24th and one on the 25th. Two were photographed as proof, always reassuring when verifying records. Another early one on the 14th March preceded the main flight period beginning on March 24th which then continued uninterrupted until late October. The transition between the two broods occurred in late June and the second brood was, as usual, the larger, the year overall ranking 7th to 10th best for abundance depending upon the chosen statistic. A new high for 1km squares however was set at 269 beating 2018's record of 246 (which was shared with 2009), making it the third most-widely reported species of 2019, behind Meadow Brown and Brimstone. Egg-laying on horse radish in Priory Country Park was observed on 20th September and four larvae were reported from a Kempston garden on 28th September.

Green-veined White *Pieris napi sabellicae*

No Green-veined Whites were seen during the premature warm spells and its first sighting on 29th March was only three days before its 10ya. It was then reported during every week until the final sighting on 1st October, nine days earlier than the 10ya. The transition between broods occurred in the second half of June with the second brood accounting for about 78% of the annual total. It is sometimes easy to forget that Green-veined White is its own species independent of Small White and Large White, but in 2019 it demonstrated that it has its own preferences and that they hadn't been to its liking. The percentage of all adult butterflies reported (1.92%) and percentage of all records submitted (3.83%) were both the second-worst of the last 25 years (to 1996). Despite the high volume of overall recording the 189 1km squares reported was only equal to the 10ya. The low abundance may have been a knock-on effect from the drought conditions in 2018 when its second brood was noticeably smaller than usual. The species will hopefully recover when conditions become more favourable. No immature stages were reported this year.



Comparison of the weekly totals for the three common whites in 2019

Clouded Yellow *Colias croceus*

A few reports of Clouded Yellow were received that were possibly of Brimstone, so for the sake of accuracy these records have been laid to one side until they can be confirmed. The first true record came on 23rd August at Octagon Farm, Willington. The second was of one feeding in a field of *Phacelia* at Chicksands on 18th September. The remaining sightings were from two fields under clover, one of the species' larval food plants, on the north edge of Bedford near Renhold and Ravensden where up to four were seen flying over each field. These were reported from the 20th to 26th September and were possibly the offspring from one gravid female that had happened to pass that way some weeks earlier.



A Clouded Yellow near Ravensden on 23rd September

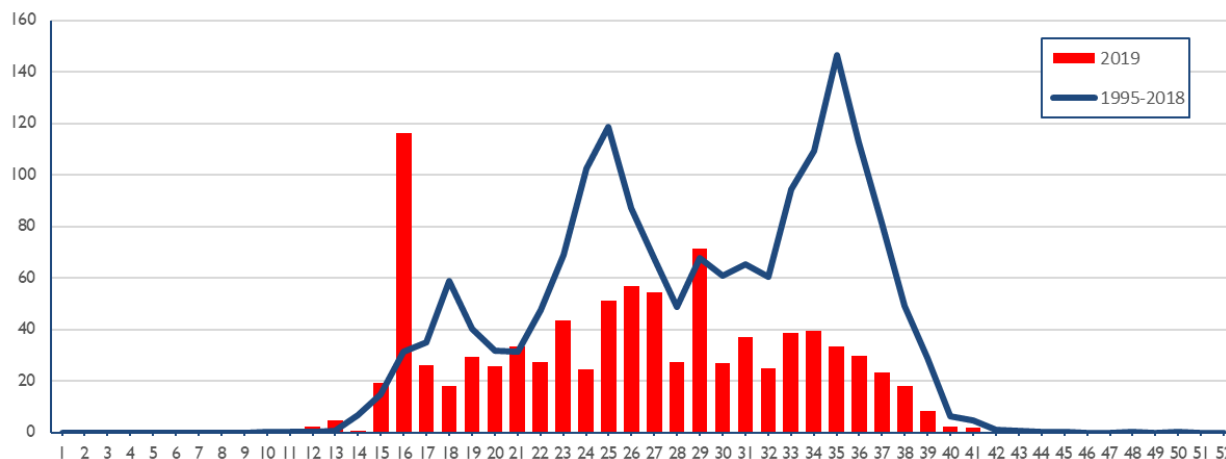
Brimstone *Gonepteryx rhamni rhamni*

Brimstone had a good year with abundance amongst the largest of the last 25 years, probably a carry-over from a successful 2018 as most reports were of post-hibernation adults in February to May, rather than the new brood in July to September which constituted only 11% of the annual total. The total of 280 1km county-wide squares reported exceeded 2017's record 248 and made Brimstone the most widespread species of 2019, seen in 49.8% of all the 1km squares reported. As usual the greatest numbers were reported from chalk sites with all double-digit counts coming from Dunstable/Whipsnade Downs, the Icknield Way, Sewell Cutting, and the Totternhoe area. Week 16 (16th to 22nd April) was the peak when 455 were reported. The final sighting on 28th October was 20 days earlier than the 10ya. Nine records of eggs and egg-laying covered the period 19th April to 2nd June, and nine records of 13 larvae from 20th May to 2nd July, all on buckthorn. No pupae were reported.

Nymphalidae (Browns, Fritillaries, Aristocrats)

Speckled Wood *Pararge aegeria tircis*

Speckled Wood's broods were not distinct this year. The first started 29 days before the 10ya on 2nd March and reached a very sharp peak in week 16 (16th to 22nd April) when 195 were reported. Numbers then dropped back to about 30 per week, seamlessly transitioning into the second brood while numbers were building towards a peak of 120 in week 29 (16th to 22nd July). Then instead of building towards a final brood climax the numbers faded away towards an early completion on 9th October, 21 days before the 10ya. Abundance ranked in the lowest five years of the last 25 but the 1km square count remained high at 232 (second only to 2018's 237) and all 10km squares were represented apart from the slivers of county in SP82 and TL07. The only sites to report double-digit counts were Center Parcs bridleway, Chicksands Wood, Clapham Park Wood, Home Wood (Northill), the Totternhoe/Sewell area, and Wigmore Park, the latter with the highest count of 20+ during the first brood peak on 21st April.



2019 versus 1995-2018: Speckled Wood's adults per week per 10,000 records per year

Small Heath *Coenonympha pamphilus pamphilus*

Small Heath had a successful season with several transects reporting well above average abundance (though some were below): Dunstable Downs 151 (5ya 207), Knocking Hoe 351 (5ya 229), Old Warden Tunnel 24 (5ya 4), Pegsdon Hills 380 (5ya 160), Sharpenhoe Clappers 124 (5ya 123), Totternhoe Quarry 88 (5ya 45), Whipnade Zoo 494 (725). The total of 152 1km squares reported from all recording was a new record, easily beating 2018's 111, but distribution was biased towards the north with far few records south of the greensand ridge other than on the main chalk sites. The flight season started on 21st April 15 days ahead of the 10ya and finished nine days early on 23rd September. The largest single record of 70 was from Thurleigh airfield on 31st August, but week 26 (25th June to 1st July) saw 498 reported, more than twice as many as any other week.



Small Heath pupa formed 26th May and then on day of emergence 5th June

Ringlet *Aphantopus hyperantus*

It wasn't a very successful year for Ringlet with transect counts generally below average: Dunstable Downs 221 (5ya 376), Knocking Hoe 30 (5ya 60), Old Warden Tunnel 140 (5ya 185), Pegsdon Hills 95 (5ya 71), Sharpenhoe Clappers 131 (5ya 209), Totternhoe Quarry 34 (5ya 119), Whipsnade Zoo 233 (5ya 423). Casual recording suggested the same, with abundance relative to other species down on average, but the sheer quantity of recording meant a respectable total of 601 records were submitted, the fifth-best year, but only the ninth-best year for number of adults with 4,517, nonetheless this still made Ringlet the second-most common species, behind Meadow Brown. The 163 1km squares (the fourth-best year), were distributed county-wide, but with a slight northerly bias. The flight period started on 16th June, four days later than the 10ya and ended after a long tail to its season on 31st August, nine days later than the 10ya. Week 27 (2nd to 8th July) was the peak when 2,043 were reported. The largest count was of 274 from West Wood on 8th July.

Meadow Brown *Maniola jurtina jurtina*

As usual Meadow Brown took first place for the number of records submitted (1,560) and adults reported (15,310). With 25.71% of all adults seen, one in every four butterflies reported was a Meadow Brown (beaten only in 1999 with 28.99%). Transect numbers were both above and below average: Dunstable Downs 262 (5ya 443), Knocking Hoe 1,116 (5ya 855), Old Warden Tunnel 99 (5ya 24), Pegsdon Hills 1,153 (5ya 502), Sharpenhoe Clappers 821 (5ya 1,081), Totternhoe Quarry 309 (5ya 240), Whipsnade Zoo 598 (5ya 757). The total of 271 1km squares reported (48.2% of all 1km squares visited) was the largest ever for this species, and it was seen in decent grassland over most of the county. The largest count of 662 was in Abbey Park, Turvey on 10th July. The flight time started on 1st June, one day later than its 10ya, and ended four days earlier on 26th September. The peak was in week 27 (2nd to 8th July) when 2,643 were reported.

Gatekeeper *Pyronia tithonus tithonus*

The transects differ on whether Gatekeeper had a good year: Dunstable Downs 111 (5ya 188), Knocking Hoe 113 (5ya 111), Old Warden Tunnel 97 (5ya 37), Pegsdon Hills 181 (5ya 118), Sharpenhoe Clappers 101 (5ya 174), Totternhoe Quarry 51 (5ya 100), Whipsnade Zoo 197 (5ya 373). Overall statistics suggest some improvement with 6.69% of adults of all species being Gatekeepers, up from 4.08% in 2018. The large amount of overall recording resulted in 736 records being submitted, more than for any prior year, but these represented 3,981 adults, only the 11th-best annual total, so recovery isn't yet complete. The 1km square count of 190 was second only to 2009's 192, so it remains well distributed, reported from most parts of the county. Sightings started on 18th June three days before the 10ya and ended on 8th September, five days before the 10ya. The largest count of 150 was made in Abbey Park, Turvey on 2nd August. The peak was spread across weeks 29 to 31 (16th July to 5th August) when the weekly totals were each just over 900.

Marbled White *Melanargia galathea serena*

The transect data show that Marbled White had a good season at some sites but poor at others: Dunstable Downs 174 (5ya 207), Knocking Hoe 172 (5ya 183), Old Warden Tunnel 153 (5ya 46), Pegsdon Hills 122 (5ya 136), Sharpenhoe Clappers 237 (5ya 753), Totternhoe Quarry 168 (5ya 153), Whipsnade Zoo 394 (5ya 625). The 1km square count for Marbled White has steadily risen from 41 in 1995 to 146 in 2019, a new record, beating 2018's 112. Whilst increased recording effort accounts for some of this rise there appears to have been a genuine expansion in range of this species over the last 25 years, and it is now reported from decent grassland over much of the county and was reported from 26% of all 1km squares visited. Flight reports started on 8th June, eight days before the 10ya and ended on 13th August, exactly on the 10ya. Week 27 (2nd to 8th July) was the peak when 990 were reported. The largest count was of 129 in Abbey Park, Turvey on 10th July.

Silver-washed Fritillary *Argynnis paphia*

The observed flight period for Silver-washed Fritillary from 28th June to 22nd August exactly corresponded with its 10ya. The 40 1km squares reported were second only to 2018's 43, and the 375 adults was third to 2018's 384 and 2017's 447. The species therefore had a very good year. Week 29 (16th to 22nd July) was the peak when 106 were reported. The highest count in records for each woodland was: Chicksands Wood (11), College Wood (10), Home Wood, Northill (2), Kempston Wood (2), King's Wood, Heath and Reach (21), Linslade Wood (2), Marston Thrift (9), Maulden Wood (6), Odell Great Wood (2), Potton Wood (8), Putnoe Wood (2), Round Wood, Sharnbrook (2), Salem Thrift (6), Upper Alders (1), Warden Warren (1), West Wood (7), White's Wood, Stagdsen (1), Wilstead Wood (2). Other sites reported included a Bedford garden; two Biggleswade gardens; Flitton Moor; a Heath and Reach garden; a domestic kitchen in Luton; Luton Hoo estate; Sandhouse Lane NR; Sharpenhoe Clappers; The Lodge; near Tingrith; a Toddington garden; Abbey Park, Turvey; and a Woburn garden. The *valezina* form was reported from Chicksands Wood, Maulden Wood and a Biggleswade garden.

Dark Green Fritillary *Argynnis aglaja aglaja*

Abundances on the transects where Dark Green Fritillary is present were generally close to average: Dunstable Downs 14 (5ya 12); Pegsdon Hills 15 (5ya 11); Sharpenhoe Clappers 123 (5ya 124); Whipsnade Zoo 12 (5ya 14). The Knocking Hoe transect however showed a marked increase to 39 (5ya 18) having built

from just three when the transect was commenced in 2013. On 9th July 94 were counted along the Sharpenhoe Clappers transect, still the strongest site for the species. Other sites reported were Barton Gravel Pits; Barton Hills NNR; Galley and Warden Hills; Rokum Bank; Sundon Chalk Pits; and Totternhoe. A lucky garden in Biggleswade was also visited by a wandering male on 18th July, confirmed by photograph. (The same garden was also visited by two Silver-washed Fritillaries, again photographed thus making record verification straightforward). The 19 1km squares reported was third to 2014's 20 and 2013's 21. The observed flight period started on 8th June, nine days earlier than the 10ya, and ended on 4th August eight days earlier than average. The peak was in week 28 (9th to 15th July) when 116 were reported.

White Admiral *Limenitis camilla*

The first reports of White Admiral on 28th June of seven in College Wood and three in Chicksands Wood suggest that we missed the first flight by several days, though they were only one day after the 10ya. The final record was on 29th July, seven days before the 10ya. The highest count from each reported woodland was: Chicksands Wood (3), College Wood/Home Wood, Northill (7), King's Wood, Heath and Reach (1), Maulden Wood (2), and West Wood (4). So, as usual, just small numbers from a few woodlands were reported, and no wanderers this year.

Purple Emperor *Apatura iris*

All Purple Emperor sightings were made between 29th June and 25th July, both dates a few days before recent averages. The largest counts for public woodlands were: Chicksands Wood (2), King's Wood, Heath and Reach (1), Maulden Wood (2), and Potton Wood (1). (Chicksands Wood's total of 12 probably includes multiple reporting, as does Maulden Wood's seven). There were also a pleasing number of sightings at irregular places: One at The Lodge on the 8th July and another on the 17th. On 12th July a male landed on a lady's jeans in Campton. One was sighted on the 7th green of John O'Gaunt golf course on 17th July. A female landed on a lady's top in a back garden in Linslade on 22nd July. On Sharpenhoe Clappers on 23rd July one was picked up alive from a path and placed to rest on vegetation before flying off. One was seen on trackside nettles near Henlow Grange on 25th July. A male was found in a conservatory in Clophill, regrettably dead, in July (date not provided). A small private woodland in mid-Bedfordshire also produced several sightings between 29th June and 13th July, including ground-level mineralizing and tree-top flights by two, suggesting a resident population.

Red Admiral *Vanessa atalanta*

Red Admiral's season started early with the first sighting on 8th January and was last seen on 30th December. The warm spell in February brought out more overwintering adults, of which 30 were reported. Their later home-grown offspring were probably joined by continental migrants to boost the summer population, but the proportion coming from each source cannot be determined. The species had a very successful season with weekly abundances from mid-June to mid-September well above average, the peak being in week 33 (13th to 19th August) when 340 were reported which included 12 at the old church graveyard in Clophill, 42 in the flower beds of Wrest Park, and 150+ along the main ride of Chicksands Wood. There were 15 other double-digit counts reported throughout the summer. The 256 county-wide 1km squares reported was second to 2017's 259, and the 2,173 adults was second to 2006's 2,380.

Painted Lady *Vanessa cardui*

The UK witnessed a strong migration of Painted Ladies in 2019 with some regions seeing vast numbers, but in Bedfordshire abundance was more modest. 720 records of 1,335 adults were received making it the best year since 2009 (which had 846 records of 9,519 adults). Early arrivals were seen at the end of March on the 30th and 31st. Two more followed in April on the 18th and 24th. Sustained reports began from 12th May and lasted until the end of October, with a small peak in the second half of May, a much larger one from mid-June to mid-July, and the largest throughout August. Abundance then tailed off into autumn. Only one record of the immature stages was received, that of several larval tents on thistles on 26th July in Clapham Park.

Peacock *Aglais io*

Peacock's reported abundance remained at historically low levels in 2019 but the number of new brood adults seen from mid-July to mid-August seemed to be greater than in recent years giving some hope for a revival. These included six double-digit counts, the largest of 54 from West Wood on 29th July. Distribution certainly remains strong as the 215 county-wide 1km squares reported was second only to 2009's 226 and made it the eighth-most widespread resident species in 2019. Larval webs were also reported from Maulden Heath, Shocott Spring and Willington between 24th June and 7th July. Interestingly a web of about 100 one-inch long 4th-instar larvae was found at Sandy Smith NR on 5th September, very late for the normal brood time and probably of a partial second brood.

Small Tortoiseshell *Aglais urticae*

The first post-hibernation Small Tortoiseshell was seen on 5th February, with three more on the 14th to 16th, then the warm spell from the 21st brought out many more, 61 having been reported by the month end. Another flurry of 107 were reported in March (mostly during the second half) and then 101 more during the middle two weeks of April. The resulting post-hibernation abundance was close to average. The first brood began to emerge around early June and peaked as usual around mid-July but its abundance was smaller

than average, as was the second brood's, which at least showed as a peak in the data this year (unlike 2018) in week 34 (20th to 26th August). The species was reported from 212 1km squares (c.f. 234 in 2014 and 245 in 2017), seen in 38% of all the visited 1km squares, almost identical to the 25ya of 39%. The largest adult count was of 10+ on thistle flowers on 21st June in North Brickhill CP and adjacent field edges. The final sighting was on the BNHS Boxing Day walk in Woburn car park. 14 larvae were reported from Blow's Down on 18th June.

Comma *Polygonia c-album*

The first post-hibernation Comma was seen on 15th February, then the warm spell brought out many more from the 22nd, 54 having been reported by the month end. 81 more were seen during March, mostly in the second half, and 50 during the middle two weeks of April. The resulting post-hibernation abundance was close to average. The first brood began to emerge in early June and peaked as usual around mid-July with an abundance slightly larger than average, as was the second brood's which peaked in early September a week or two earlier than usual. The final sighting on 19th October was 25 days earlier than the 10ya. Reported from 197 1km squares, in 35% of all 1km squares visited, this was better than the 31.5% 10ya. Only two larvae were reported this year, both on nettles, near Putnoe Wood on 1st June and at Upper Alders on 15th August.

Riodinidae (Metalmarks)

Duke of Burgundy *Hamearis lucina*

Eight Dukes of Burgundy were recorded on the Dunstable Downs transect (5ya 6.4, 10ya 3.5) and 14 on the Totternhoe Quarry transect (5ya 21.8, 10ya 23). The Whipsnade Downs transect wasn't walked this year. A total of 112 were reported from casual recording at Totternhoe Quarry, the largest count of 22 on 10th May. 119 were reported from Whipsnade Downs (Bison Hill) with the largest count of 26 on 19th May. The season started on 20th April, seven days before the 10ya, and ended on 14th June, seven days later than the 10ya. There were no reports from Sewell Cutting this year.

Lycaenidae (Coppers, Hairstreaks, Blues)

Small Copper *Lycaena phlaeas phlaeas*

Small Copper was reported from a pleasing total of 70 1km squares, second only to 2004's 75, distributed over much of the county, usually seen in ones and twos, but was more populous at a few sites, the largest counts for these being: Felmersham Gravel Pits (4), Maulden Heath (7), The Lodge (23), and Whipsnade Downs (5). The peak week of the first brood, which started on 15th April, 11 days before the 10ya, was in week 21 (21st to 27th May) when 27 were reported. Week 25 (18th to 24th June) was the gap between the first and second broods, the latter starting in week 26 (25th June to 1st July) and which merged into the third brood, ending on 22nd October, 9 days before the 10ya. Week 36 (3rd to 9th September) was the peak of this period when 30 were reported.

Purple Hairstreak *Favonius quercus*

The highly successful 2018 season appears to have had little carry-over into 2019 as Purple Hairstreak's abundance and distribution statistics were more like those of a typical year. The flight period of 2nd July to 22nd August were both just a couple of days later than their 10ya and the peak was in weeks 29 and 30 (16th to 29th July). The highest adult count for reported sites were: Beeston (5+), Carthagenia golf course (1), Chicksands Wood (2), Clapham Park Wood (1), Cooper's Hill (4), Keysoe, (3), Maulden Wood (15), Odell Great Wood (1), Putnoe Wood (2), Pertenhall (2), Renhold (4), Sharpshoe Clappers (1), The Lodge (5), The Pinnacle (1), Tingrith (1), and Turvey (1). In addition, overwintering eggs in January and February were reported from Flitwick Moor (12), The Pinnacle (2), and near Putnoe Wood (2).



A Purple Hairstreak egg on terminal oak buds near Putnoe Wood on 25th January

Green Hairstreak *Callophrys rubi*

The first sighting of Green Hairstreak was on 1st April on the Knocking Hoe transect, four days before the previous earliest (5th April 2002) and 17 earlier than the 10ya. The next sighting though wasn't until the 17th April which started the main flow of reports that continued until the 6th June. Most sightings came from chalk sites, their totals being: Barton Hills (5), Dunstable Downs (19), Knocking Hoe (9), Pegsdon Hills (12), Sharpenhoe Clappers (11), Totternhoe (27), Whipsnade Downs (68), Whipsnade Zoo (33). 12 were also reported from Marston Vale Millennium Country Park. The most exciting reports though came from western heathland sites where the species hadn't been seen since 2003 and was feared lost. It was reported from Aspley and Wavendon Heaths (both north and south of the A5130), Shire Oak Heath, and near Stockgrove CP entrance. All these heathland sightings, 10 in total, were made between 15th and 25th May. It is desirable to discover the extent of this heathland population and learn which larval food plants it is using.

White-letter Hairstreak *Satyrrium w-album*

The abundance of 2018 didn't greatly carry over into 2019 and White-letter Hairstreak was once again elusive. One egg was found on elm on 20th March near Streatley. All other sightings were of adults, between 24th June, four days before its 10ya start date, and 26th July, 11 days before its 10ya end date. Total counts from their sites were: Barton Hills chalk pit (1), Carthagea road and bridleway (11), Chicksands Wood (47), College Wood (6), Linslade Woods (11), Maulden Wood (1), Newton Gorse green lane (2), near Putnoe Wood (4), Spanoak Wood (4). The 10 1km squares covering these sightings was close to the 10ya of 11.

Black Hairstreak *Satyrrium pruni*

Only two Black Hairstreaks were reported this year, one each from two different areas of Marston Thrift, on 22nd June.

Small Blue *Cupido minimus*

There were no records of a second brood of Small Blue this year and reported site totals during the flight period from 10th May to 28th June were: Barton Bypass RNR (8+), Dunstable Downs (5), Sharpenhoe Clappers (6), Totternhoe (306), Warden Hill ("plenty"), and Whipsnade Downs (7). These sites, being on chalk where the larval food plant kidney vetch (*Anthyllis vulneraria*) grows, were all normal locations and to be expected. There was an additional site reported, a path south-east of Cranfield near Route 51 in SP9641, where on 17th June a small cluster of Small Blues was encountered, comprising at least three males and two females, determined later from photographs taken at the scene. An intensive search for kidney vetch in the area found none, and no other Small Blues in the vicinity. A return visit on 22nd June found at least five males and one female at the same location, and a repeat search for the larval food plant and other adults was again fruitless. Between 2004 and 2014 there were six unrepeated reports of Small Blue scattered around the Marston Vale. The presence of a population away from the chalk is an interesting mystery which deserves further investigation.



Two of the Marston Vale Small Blues found on 17th June

Holly Blue *Celastrina argiolus britanna*

Holly Blue was very well reported this year setting new highs for the number of records submitted (600 vs 506 in 2018) and adults (966 vs 954 in 1996). The first brood, flying from 24th March (11 days earlier than the 10ya) until mid-June, accounted for 75% of the annual total. The smaller second brood which followed on without a break from the first continued until 21st September, six days earlier than the 10ya. The 135 1km squares reported was second only to 1998's 141, the largest proportion of records as usual coming from gardens in towns and villages where they were easy to spot and identify flitting around shrubbery. On 1st June a female was observed laying eggs on the flowers of wild liquorice at Mowsbury Hill, also noted in 2018.

Brown Argus *Aricia agestis*

Brown Argus was first seen on 2nd May, eight days earlier than the 10ya and the first brood peaked in week 21 (21st May to 27th May) as usual. There was a dip rather than a gap between the two broods and the second peaked around week 31 (30th July to 5th August) before declining to end on 20th September, nine days earlier than the 10ya. It was reported from 86 1km squares, just two below the record set in 2018, and was seen in 15.3% of all 1km squares visited. Transect data suggest that abundance was below average: Dunstable Downs 61 (5ya 149), Knocking Hoe 33 (5ya 65), Pegsdon Hills 30 (5ya 37), Sharpenhoe Clappers 36 (5ya 46), Whipsnade Zoo 108 (5ya 129). The largest record of 40+ was from Stratton Park balancing pond on 29th July, one of the few places to report double-digit counts, the others being King's Wood, Heath and Reach; Sharpenhoe Clappers; The Lodge; and Whipsnade Downs.

Common Blue *Polyommatus icarus icarus*

Common Blue followed its excellent 2018 season with a rather poor 2019, illustrated by the transect counts: Dunstable Downs 61 (5ya 299), Knocking Hoe 81 (5ya 225), Old Warden Tunnel 52 (5ya 51), Pegsdon Hills 41 (5ya 158), Sharpenhoe Clappers 109 (5ya 359), Totternhoe Quarry 55 (5ya 174), Whipsnade Zoo 166 (5ya 292). Although the first brood was smaller than usual the deficiency was primarily in the second brood which comprised only 51% of the annual total instead of the average of 67%. For abundance 2019 ranked in the worst five of the last 25 years, however the species remains widespread and was actually reported from a record number of county-wide 1km squares (142) beating 2018's 132. The season started on 12th May, five days behind the 10ya, and finished on 21st September, 10 days before the 10ya. The largest count was of only 20+, from Stratton Park balancing pond on 29th July.

Chalkhill Blue *Polyommatus coridon*

The transect data suggest that Chalkhill Blue also had a rather poor summer: Dunstable Downs 249 (5ya 415), Knocking Hoe 155 (5ya 254), Pegsdon Hills 118 (5ya 160), Sharpenhoe Clappers 952 (5ya 1,646), Totternhoe Quarry 277 (5ya 836), Whipsnade Zoo 20 (5ya 55). The overall statistics place it within the worst five years of the last 25 for abundance. Being limited by its food plant to the chalk there isn't much capacity for an increase in 1km squares recorded, unlike other species, so the 20 squares reported was close to average. The season started on 9th July five days later than the 10ya and ended on 18th September, four days earlier. The largest count of 259 was on section 11 of the Sharpenhoe Clappers transect on 26th July, when that day's total over all sections was 337.

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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...

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Flight periods and peak abundances in 2019

Species	Earliest Date	Latest Date	Peak Date	Peak Abundance
Dingy Skipper	22/04/2019	22/06/2019	19/05/2019	26
Grizzled Skipper	19/04/2019	22/06/2019	25/05/2019	8
Essex Skipper	28/06/2019	13/08/2019	17/07/2019	10+
Small Skipper	15/06/2019	23/08/2019	18/07/2019	65
Large Skipper	01/06/2019	22/08/2019	02/07/2019	30+
Orange Tip	24/03/2019	09/06/2019	13/05/2019	14
Large White	24/02/2019	16/10/2019	03/08/2019	35
Small White	24/02/2019	22/10/2019	15/08/2019	30
Green-veined White	29/03/2019	01/10/2019	16/07/2019	20
Clouded Yellow	23/08/2019	26/09/2019	23/09/2019	4
Brimstone	09/02/2019	28/10/2019	21/04/2019	38
Speckled Wood	02/03/2019	09/10/2019	21/04/2019	20+
Small Heath	21/04/2019	23/09/2019	31/08/2019	70
Ringlet	16/06/2019	31/08/2019	08/07/2019	274
Meadow Brown	01/06/2019	26/09/2019	10/07/2019	662
Gatekeeper	18/06/2019	08/09/2019	02/08/2019	150
Marbled White	08/06/2019	13/08/2019	10/07/2019	129
Silver-washed Fritillary	28/06/2019	22/08/2019	16/07/2019	21
Dark Green Fritillary	08/06/2019	04/08/2019	09/07/2019	55
White Admiral	28/06/2019	29/07/2019	28/06/2019	7
Purple Emperor	29/06/2019	25/07/2019	08/07/2019	2
Red Admiral	08/01/2019	30/12/2019	17/08/2019	150+
Painted Lady	30/03/2019	29/10/2019	03/08/2019	20+
Peacock	28/01/2019	30/12/2019	29/07/2019	54
Small Tortoiseshell	05/02/2019	26/12/2019	21/06/2019	10+
Comma	15/02/2019	19/10/2019	17/07/2019	20+
Duke of Burgundy	20/04/2019	14/06/2019	19/05/2019	26
Small Copper	15/04/2019	22/10/2019	03/09/2019	23
Purple Hairstreak	02/07/2019	22/08/2019	25/07/2019	15
Green Hairstreak	01/04/2019	06/06/2019	23/05/2019	10
White-letter Hairstreak	24/06/2019	26/07/2019	04/07/2019	10+
Black Hairstreak	22/06/2019	22/06/2019	22/06/2019	2
Small Blue	10/05/2019	28/06/2019	09/06/2019	60
Holly Blue	24/03/2019	21/09/2019	14/05/2019	11
Brown Argus	02/05/2019	20/09/2019	29/07/2019	40+
Common Blue	12/05/2019	21/09/2019	29/07/2019	20+
Chalkhill Blue	09/07/2019	18/09/2019	26/07/2019	259

Adults reported per month in 2019

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Dingy Skipper				8	473	48						
Grizzled Skipper				15	82	11						
Essex Skipper						4	93	6				
Small Skipper						112	535	77				
Small/Essex Skipper						10	604	30				
Large Skipper						327	553	32				
Orange Tip			25	709	495	23						
Large White		1	4	33	63	110	1130	730	284	4		
Small White		4	16	88	81	109	1140	1762	655	17		
Green-veined White			2	62	114	128	333	353	150	1		
Small/Green-veined White				26	9	11	188	161	29			
Clouded Yellow								1	17			
Brimstone		245	286	560	645	99	112	109	6	7		
Speckled Wood			11	283	182	328	305	272	150	7		
Small Heath				5	217	1021	515	528	298			
Ringlet						430	3999	88				
Meadow Brown						3675	8461	2885	289			
Gatekeeper						6	2280	1688	7			
Marbled White						808	2570	30				
Silver-washed Fritillary						55	265	55				
Dark Green Fritillary						74	265	20				
White Admiral						14	37					
Purple Emperor						1	31					
Red Admiral	1	30	14	7	35	205	420	877	488	87	5	4
Painted Lady			2	2	17	335	149	707	101	22		
Peacock	2	14	144	299	77	23	334	190	12	5	5	2
Small Tortoiseshell		61	107	128	34	126	212	127	14	4	1	2
Comma		54	81	73	23	83	382	151	136	11		
Duke of Burgundy				13	239	1						
Small Copper				19	68	12	29	52	54	10		
Purple Hairstreak							57	4				
Green Hairstreak				50	154	2						
White Letter Hairstreak						43	44					
Black Hairstreak						2						
Small Blue					194	151						
Holly Blue			14	279	385	61	86	133	8			
Brown Argus					172	134	115	295	61			
Common Blue					251	447	140	537	78			
Chalkhill Blue							973	1352	88			

Summary of 2019's records of adults

Species	Records	Adults	Squares		Records (%)	Adults/All-species adults ¹ (%)				
			10km	1km		2015	2016	2017	2018	2019
Dingy Skipper	117	529	9	23	0.70	1.54	1.36	0.87	0.90	0.89
Grizzled Skipper	50	108	9	14	0.30	0.28	0.23	0.22	0.19	0.18
Essex Skipper	60	103	14	32	0.36	0.30	0.29	0.19	0.12	0.17
Small Skipper	222	724	16	107	1.32	1.78	1.56	1.39	1.21	1.22
Small/Essex Skipper	118	644	15	45	0.70	1.09	0.95	0.72	0.57	1.08
Large Skipper	358	912	19	149	2.13	1.40	1.57	1.38	1.58	1.53
Orange Tip	700	1252	21	232	4.17	0.97	1.86	2.04	1.97	2.10
Large White	1044	2359	21	235	6.22	4.11	3.68	3.57	5.39	3.96
Small White	1396	3872	21	269	8.32	4.01	5.20	4.05	8.54	6.50
Green-veined White	643	1143	20	189	3.83	2.31	3.08	2.14	2.76	1.92
Small/G.V. White	83	424	14	47	0.49	0.54	1.12	0.54	1.02	0.71
Clouded Yellow	7	18	3	3	0.04	0.05	0.05	0.09	0.07	0.03
Brimstone	1093	2069	20	280	6.51	2.50	3.39	3.33	3.23	3.47
Speckled Wood	793	1538	21	232	4.72	2.57	4.03	3.74	4.57	2.58
Small Heath	696	2584	19	152	4.15	2.55	2.91	4.32	5.81	4.34
Ringlet	601	4517	20	163	3.58	9.01	11.50	14.82	7.55	7.59
Meadow Brown	1560	15310	20	271	9.29	14.69	14.31	19.76	16.82	25.71
Gatekeeper	736	3981	20	190	4.38	5.75	4.49	5.41	4.08	6.69
Marbled White	494	3408	19	146	2.94	7.57	9.07	5.38	5.28	5.72
Silver-washed Fritillary	117	375	14	40	0.70	0.24	0.56	0.87	0.70	0.63
Dark Green Fritillary	110	359	8	19	0.66	0.57	0.40	0.57	0.69	0.60
White Admiral	29	52	5	10	0.17	0.06	0.03	0.07	0.07	0.09
Purple Emperor	29	33	6	15	0.17	0.03	0.03	0.05	0.08	0.06
Red Admiral	1063	2173	21	256	6.33	0.73	2.36	3.82	0.89	3.65
Painted Lady	720	1335	20	216	4.29	0.33	0.32	0.20	0.18	2.24
Peacock	632	1107	21	215	3.77	3.60	1.88	1.66	0.90	1.86
Small Tortoiseshell	551	816	21	212	3.28	2.49	2.55	3.33	1.48	1.37
Comma	624	994	21	197	3.72	1.38	1.20	2.41	1.12	1.67
Duke of Burgundy	42	253	4	5	0.25	0.39	0.46	0.57	0.84	0.42
Small Copper	150	244	17	70	0.89	0.33	0.70	0.65	0.61	0.41
Purple Hairstreak	26	61	8	21	0.15	0.10	0.08	0.15	0.63	0.10
Green Hairstreak	88	206	9	20	0.52	0.45	0.26	0.32	0.46	0.35
White-letter Hairstreak	25	87	6	10	0.15	0.12	0.04	0.21	0.51	0.15
Black Hairstreak	1	2	1	1	0.01	0.01	0.01	0.00	0.05	0.01
Small Blue	48	345	6	13	0.29	0.61	0.71	0.76	0.20	0.58
Holly Blue	600	966	19	135	3.57	0.59	1.23	0.50	1.35	1.62
Brown Argus	330	777	18	86	1.97	1.24	1.12	1.23	2.05	1.30
Common Blue	574	1453	20	163	3.42	4.51	3.31	3.52	8.78	2.44
Chalkhill Blue	177	2413	7	20	1.05	19.22	12.08	5.14	6.75	4.05
Overall	16786	59546	21	562						

¹ 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.