

Butterflies 2018

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We have grown accustomed to seeing Red Admirals throughout winter and it was the first species on the wing in 2018 with seven reported during January. There was lying snow only three days after the second sighting and once this had cleared one each of Small Tortoiseshell and Peacock were sighted. There were also reports of five hibernating Small Tortoiseshells and two Peacocks.

Ten Red Admirals were reported during February, plus three Small Tortoiseshells and a lone Brimstone on the 15th during the brief mild spell in the middle of the month. The severe cold weather that followed curtailed further sightings until March.

An intermittent flow of records began on 11th March, interrupted by cold snaps. The first Comma was seen on the 13th. 111 butterflies had been reported by the end of the month, Brimstones having dominated with 62. Just three Peacocks were reported foretelling another poor season.

The cold winter pushed the first hatchings into April this year, with Holly Blue, Small White and Green-veined White all on the 5th. Large White followed on the 7th, Speckled Wood on the 13th, Orange Tip on the 14th, Small Copper on the 17th and Green Hairstreak on the 22nd. A lone, presumably migrant, Painted Lady was seen on the 18th. By this time the weather had become hot and it was unclear how much this would counter the effects of the cold spring that had so far led to late first flights for most species. There was poor weather in week 17 (23rd to 29th April) with few sightings, but this was the last significant unsettled weather until August, resulting in a prolonged period of fine and hot flying weather, but which turned increasingly to concerns about how the ensuing drought might affect butterflies.

The first Common Blues were reported from 4th May and would go on to have a good season. Grizzled Skipper and Duke of Burgundy were seen on the 5th, Dingy Skipper on the 6th, Small Heath on the 10th, Small Blue on the 14th and Brown Argus on the 15th. This is approximately the point in the year that first flights transitioned from being late to early. Large Skipper was the only other species to emerge in May, on the 26th.

June opened with the first Meadow Brown on the 1st and the earliest ever Black Hairstreak on the 6th. Ringlet followed on the 7th, Marbled White on the 11th, Dark Green Fritillary on the 13th and White Admiral on the 15th. Purple Hairstreak and White-letter Hairstreak emerged on the 19th and both went on to have record-breaking seasons. Small Skipper, Gatekeeper and Silver-washed Fritillary emerged on the 20th. Essex Skipper flew on the 23rd and Purple Emperor was sighted on the 24th, completing the June emergences.

Chalkhill Blue was the last species to hatch as usual, on July 1st, but there were two more species reported in the month. The first migrant Clouded Yellow was finally seen on the 8th and there was an unexpected sighting of a Swallowtail of unknown origin on the 16th.

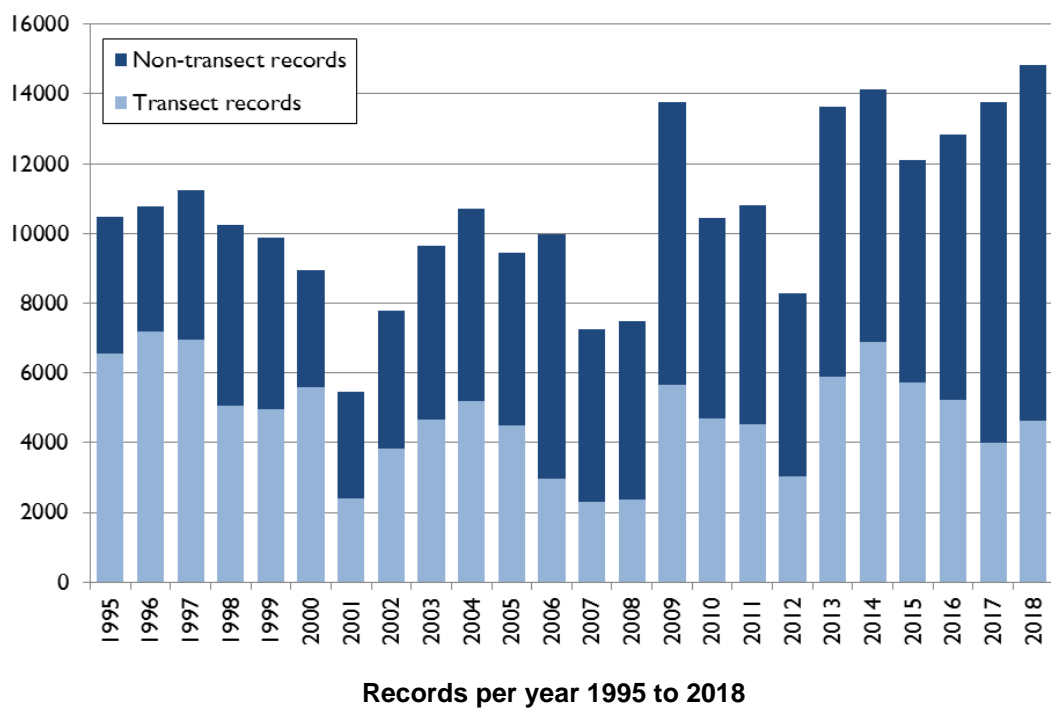
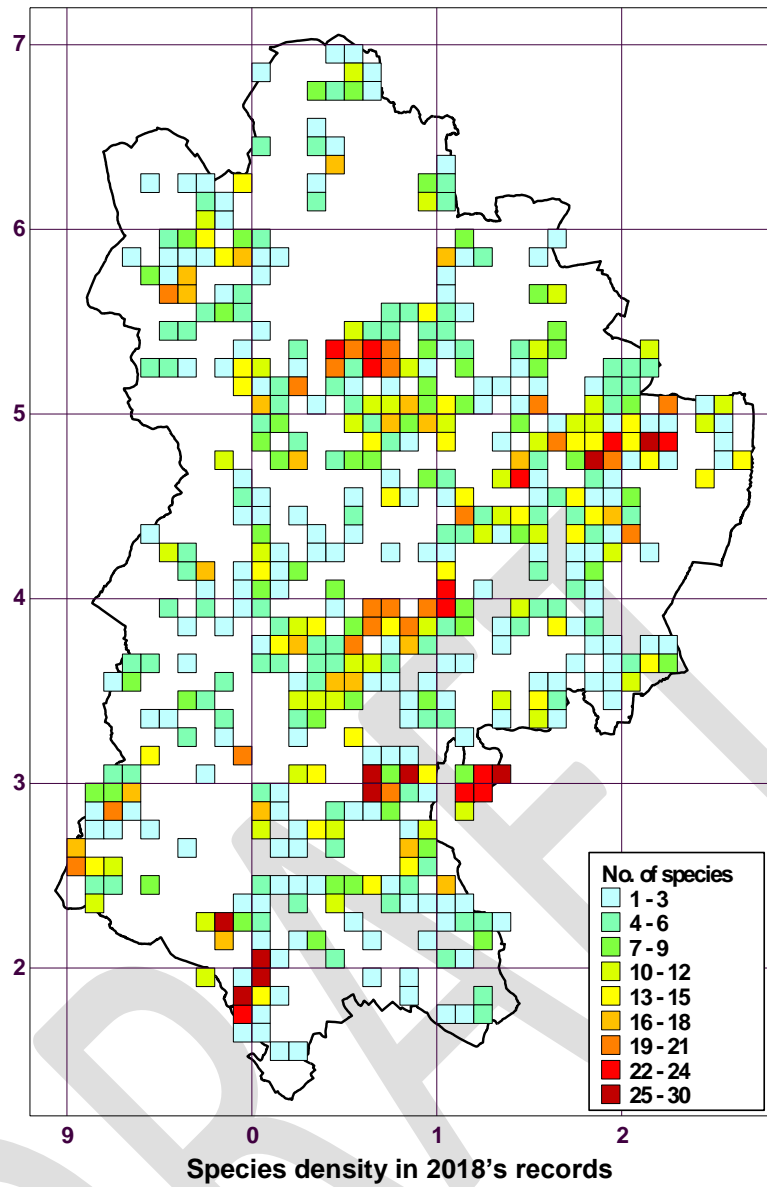
The hot and dry weather continued into August. By now many larval food plants had suffered from the drought, particularly the shallow rooted herbs and grasses, and the knock-on effect for future generations remains to be seen. Welcome rains finally arrived on the 9th and by the end of the month it felt autumnal.

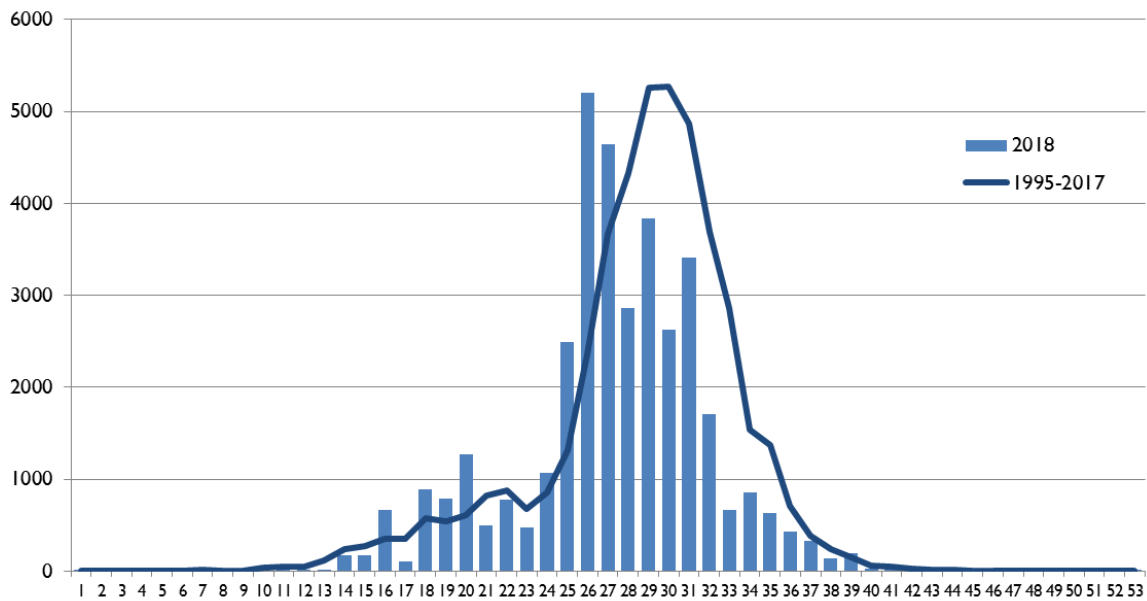
There was then a long tail to the flying season as much fine weather occurred throughout the autumn, with 20 species active in September and 16 in October. Small Copper was the last native non-hibernator seen flying, on 13th November, but a Painted Lady was seen on the 18th. Three Red Admirals were noted flying in December, but the final sighting belonged to a Comma on the 31st.

The weather made for an interesting year with species responding in different ways, some successfully and other less so, discussed in the following species accounts.

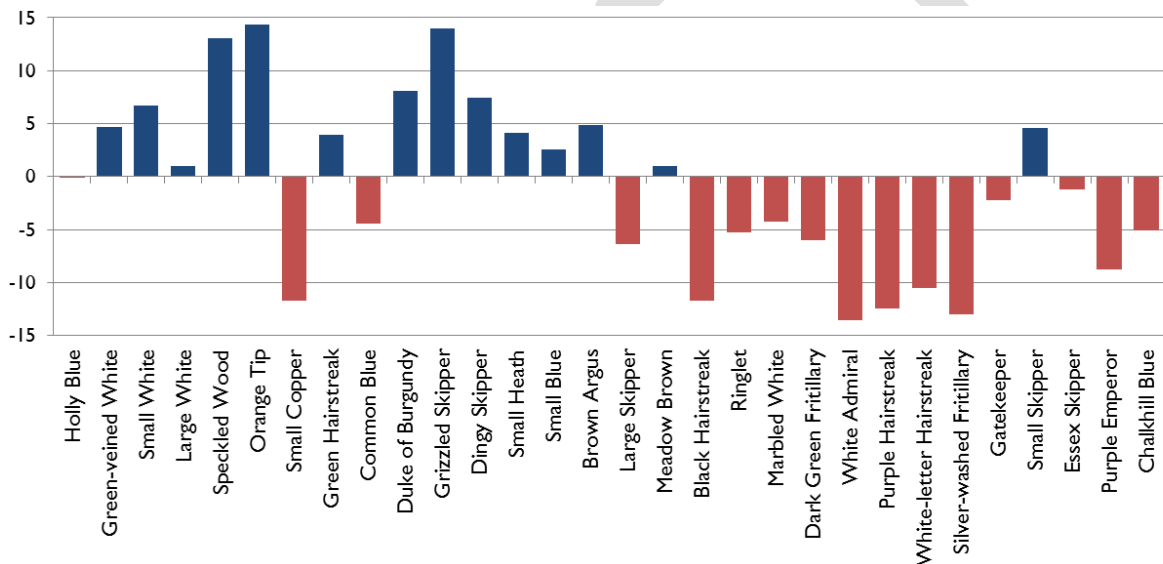
Analysis of Data

At the time of analysing records for this report (1st February 2019) 14,841 records had been received and computerised, containing reports of 55,246 adults from 503 1km squares. Records were analysed at this date and may be subject to minor revision. 4,637 records were from transects and 10,204 records were from other sources, mostly casual recording.





2018 versus 1995-2017: Adults per week per 10,000 records per year



2018's first flights. Days later (blue) or earlier (red) than their ten year average, ordered by emergence

It is tempting to "clean up" the records for seemingly anomalous species such as Small Copper and Common Blue to better fit a story, but they were provided by several reliable observers.

Transects

The total number of adults and numbers of species () for the eleven recent transects were:

	2014	2015	2016	2017	2018
Dunstable Downs	4090 (30)	3217 (32)	2789 (31)	2224 (29)	3830 (31)
Harrold Odell CP	*	*	*	1350 (20)	1493 (19)
Knocking Hoe	2505 (23)	2161 (22)	2107 (24)	1989 (25)	2595 (25)
Mowsbury Hill	1174 (19)	361 (18)	504 (19)	590 (18)	1232 (21)
Old Warden Tunnel	687 (20)	418 (22)	323 (18)	442 (20)	817 (22)
Pegsdon Hills	1358 (26)	1270 (24)	1314 (25)	1744 (26)	2719 (25)
Potton Wood	2691 (20)	1841 (20)	1897 (16)	3079 (21)	*
Sharpenhoe Clappers	6138 (30)	6704 (27)	5951 (27)	3666 (28)	4477 (29)
Totternhoe Quarry	2634 (27)	1452 (28)	1797 (26)	*	2352 (27)
Whipsnade Downs	3767 (30)	3037 (28)	1422 (27)	*	2856 (27)
Whipsnade Zoo	5020 (27)	4623 (27)	4272 (26)	4020 (26)	3143 (25)

* Mowsbury Hill and Pegsdon Hills (a new route) were first walked in 2014. Harrold Odell Country Park was first walked in 2017. Totternhoe Quarry and Whipsnade Downs were not walked in 2017. Potton Wood was not walked in 2018.

Our thanks again go to those that consistently walk and record these transects for 26 weeks each year, allowing scientific 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.

Papilionidae

Swallowtail *Papilio machaon*

On 16th July a Swallowtail, presumed to be this species, was observed flying around a Linslade garden for several minutes before disappearing over a fence and returning 15 minutes later. It was in perfect condition. These are sometimes released at ceremonies such as weddings and are difficult to separate from migrants so its origin remains a matter of speculation.

Hesperiidae (Skippers)

Dingy Skipper *Erynnis tages tages*

The total of 33 1km squares reported for Dingy Skipper equalled that of 2013 and was second only to 2014's 38. New sites included a back garden in Heath and Reach (there are prior records from nearby pits) and the road cutting leading to Brown's Wood near Clapham. All other records came from known sites on the chalk, brownfield sites in Marston vale, Old Warden Tunnel, and Sandy Smith NR. There was little consistency between the transect counts with a marked fall on Dunstable Downs to 29 (5ya 80) and rise at Whipsnade Zoo to a record 102 (5ya 65). The other transects fell between these extremes. In overall recording abundance was a little below average. The first sighting was on 6th May, seven days later than the 10ya.

Grizzled Skipper *Pyrgus malvae*

The three transects on which this species is regularly recorded all reported reduced counts: Dunstable Downs 19 (5ya 44), Whipsnade Downs 12 (5ya 28), Whipsnade Zoo 12 (5ya 15). Non-transect counts were: Barton Hills (1), Bromham Lake (1), near Lidlington (12), Marston Vale Country Park (9), Rookery Pit (2), Sewell Cutting (4), Sharnbrook Summit (1), Whipsnade Downs (33), south of Willington church (1). (Its last sighting at Bromham Lake was in 2004). Reported abundances have been in steady decline since a peak around 2012 and 2018 continued the trend, but the 1km square count of 16 was just above the 5ya of 14. The first sighting was on 5th May, 14 days later than the 10ya.

Essex Skipper *Thymelicus lineola*

As a percentage of records of all species 0.28% is the lowest ever for Essex Skipper, as is the 0.12% of adults of all species. The 18 1km square count is also below the 10ya of 24. Reported sites and abundances were: the Carthagenia bridleway (1), Clapham Park woods (1+), Duck End NR (1), Dunstable Downs transect (5), near Harlington (1), Knocking Hoe transect (1), Mowsbury Hill (1), Priory Country Park (1+), near Pulloxhill (3), Sandy Heath (1), Sharpenhoe Clappers transect (4), near Tingrith (6), Totternhoe Quarry transect (1), Whipsnade Zoo transect (31), near Woburn (3), Working Woodland Centre (1). The first record on 23rd June was one day earlier than the 10ya.

Small Skipper *Thymelicus sylvestris*

The first record for Small Skipper on 20th June was 5 days later than the 10ya and the last was on 6th August, 23 days earlier than the 10ya, meaning that the species had a very compressed season of just 47 days, the shortest on record (replacing 2013's 58). After a slight and brief revival in fortunes that peaked around 2014/2015 a decline resumed and abundance is again approaching a historic low. It remains a widespread species in suitable grassland though and the 78 1km squares reported is actually above the 10ya of 71. Records came mostly from chalk sites, grasslands along the Greensand ridge and around the north of Bedford. A female on 17th July was watched in Park Lane trying to find a suitable grass stem for laying but all were dried and yellow and no egg was laid. The drought may have knock-on effects for this struggling species.

Large Skipper *Ochlodes sylvanus*

Most transect counts suggest that 2018 was a slightly better year for Large Skipper: Dunstable Downs 30 (5ya 22), Knocking Hoe 18 (5ya 7), Old Warden Tunnel 33 (5ya 15), Pegsdon Hills 12 (5ya 10), Totternhoe Quarry 13 (5ya 7), Whipsnade Downs 28 (5ya 10), but two transects suggested the opposite: Sharpenhoe Clappers 19 (5ya 26), Whipsnade Zoo 9 (5ya 29). Regardless, recent abundances are still lower than they

were in the 1990s, underlined by the largest count of only 12, at four different sites. Distribution remains good however with records from decent grassland all over the county, the 1km square count of 120 the third highest, behind 122 in 2014 and 136 in 1995. The first flight on 26th May was six days earlier than the 10ya and the last flight on 18th August was four days earlier than the 10ya.

Pieridae (Whites, Yellows)

[Wood White *Leptidea sinapis*

No reports of Wood White were received this year.]

Orange Tip *Anthocharis cardamines britannica*

Transect counts for Orange Tip were generally a little below average but a few were slightly higher. The total of 187 1km squares was only ten below the record high of 2017. TL06 was anomalous in being the only major 10km square without any records, the others being well represented, and the total of 1091 adults was the highest reported for any year. The first flight on 14th April was 14 days later than the 10ya and the peak was in week 18 (30th April to 6th May) when 339 were reported. On 25th April 50 were reported at Begwary Brook NR accompanied by the comment "actually too many to count. Masses of Garlic Mustard in flower". A total of 16 eggs and 14 larvae were reported from a small range of sites.

Large White *Pieris brassicae*

It was a good year for Large White, coming third behind Small White and Meadow Brown for the number of records submitted. The 224 1km squares reported was second only to 2009's 231. Records came from all over the county with only the two fragmentary 10km squares of SP82 and TL07 unrepresented. The second brood, with a large spike in week 27 (2nd to 8th July), was far larger than the first brood and accounted for the majority of the total. The largest individual count of 62 however wasn't made until the 1st August in TL2250 (north of Potton). The first flight on 7th April was only one day later than the 10ya.

Small White *Pieris rapae*

More records were submitted for Small White this year than for any other species, and it came third for the number of adults reported, behind Meadow Brown and Common Blue. It was probably its third-best year for abundance and the 246 1km squares reported made Small White the most widely reported species in 2018, pushing Meadow Brown into second place with 242. The second brood was much larger than the first and peaked about three weeks earlier than usual, just after mid-July. There were two triple-digit records, one of 103 on 1st August in TL2250 (north of Potton) and the other of 600 on 19th July in TL1948 (Sandy Heath) where there were "Large numbers over crop". The first flight on 5th April was seven days later than the 10ya.

Green-veined White *Pieris napi sabellicae*

When looking at the percentage of records submitted and percentage of adults reported for Green-veined White it was only its 18th-best year, meaning that it didn't fare as well as other species this year. The abundance of the first brood was close to expectations but the second brood wasn't as large as usual and it peaked about two weeks early in mid-July rather than at its end. The 207 1km squares reported however was its fourth-best year (1999 – 208, 1998 – 210, 2009 – 250) owing to the large number of records submitted overall. Transect totals for most sites were at, or a little below, their 5ya, e.g. Sharpshoe Clappers 59 (5ya 73), Totternhoe Quarry 7 (5ya 14), Whipsnade Downs 17 (5ya 18), Whipsnade Zoo 0 (5ya 5), but some were up e.g. Dunstable Downs 46 (5ya 32), Old Warden Tunnel 41 (5ya 16), Pegsdon Hills 11 (4ya 2), showing the picture to be uneven. The first flight on 5th April was five days later than the 10ya.

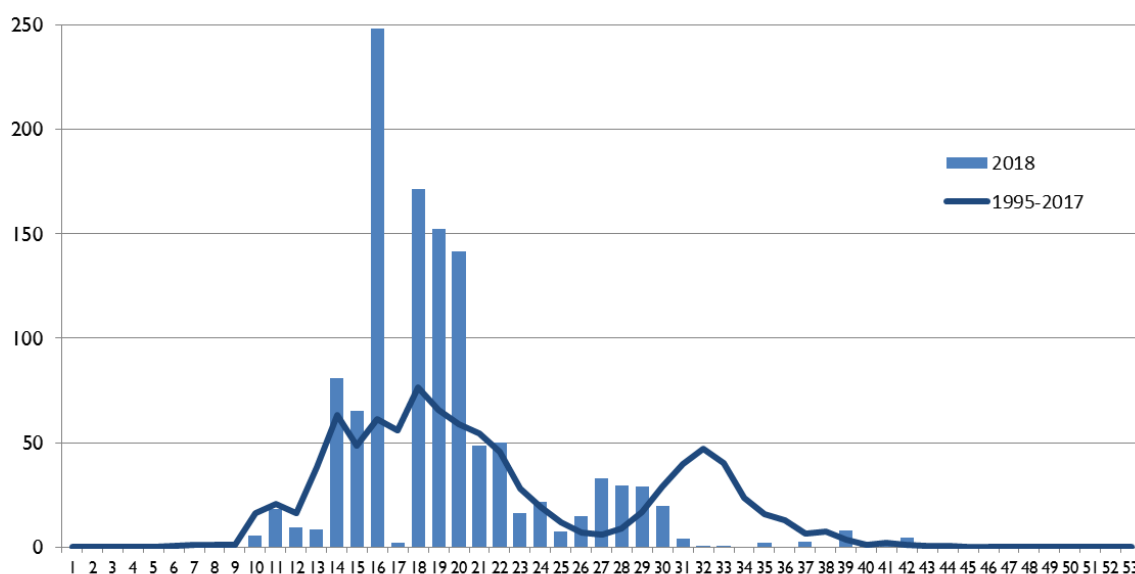
Clouded Yellow *Colias croceus*

Of the 36 Clouded Yellows reported 15 were from the Broom Gravel Pits / west Biggleswade area and probably included multiple reporting as the highest count was of four. Two were seen in Astral Park near Leighton Buzzard. Scattered individuals were sighted in Bedford, Clifton, Dunstable Downs, Luton, Knocking Hoe, Potton, Quest Pit, Shillington, Sutton, The Paddocks at Dunstable, and Yelden. There were two waves of reports, the first between 8th and 26th July (13 adults) and the second between 13th and 29th September (21 adults). Two later individuals were seen on 16th and 21st October.

Brimstone *Gonepteryx rhamni rhamni*

The spring peak of post-hibernation adults was strong, reaching greatest numbers in week 16 (16th – 24th April) when 368 were reported, but the new brood peaked in the first half of July, about a month earlier than usual, and with a slightly reduced abundance. Only 42 adults were reported after the 31st July in what would normally have been the peak period. (Approximately 295 would have been expected in an average year, based on records since 1995). Despite the lower summer abundances the 216 1km squares reported was second only to 2017's 248 and the 1786 adults was second to 2014's 1805. The largest counts, of up

to 30, were all at Whipsnade Downs in late April and early May. Eight eggs were found on Barton Hills on 14th May and on 24th May seven larvae and two eggs were found on Galley and Warden Hills.



2018 versus 1995-2017: Brimstone adults per week per 10,000 records per year

Nymphalidae (Browns, Fritillaries, Aristocrats)

Speckled Wood *Pararge aegeria tircis*

It was a rather ordinary year for Speckled Wood with most statistics close to their 5ya, e.g. transect counts for Dunstable Downs 42 (5ya 41), Sharpenhoe Clappers 111 (5ya 114), Whipsnade Downs 45 (5ya 44), Whipsnade Zoo 45 (5ya 46). Only Old Warden Tunnel 94 (5ya 53) and Pegsdon Hills 21 (4ya 9) showed a marked deviation. The second brood was slightly larger than the third, reversing the norm, but otherwise weekly abundances were typical, except that the cold start to the year delayed the first flight to 13th April, 13 days later than the 10ya. The sheer quantity of overall recording though did set a new record of 237 1km squares beating the 215 of 2017, and the 2,525 adults reported was second only to 2009's 2,903. The only region not to report any Speckled Woods was the southern tip of the county, below Luton/Dunstable.

Small Heath *Coenonympha pamphilus pamphilus*

2018 was an excellent year for Small Heath with high counts on all transects bar one: Dunstable Downs 273 (5ya 209), Knocking Hoe 573 (5ya 164), Old Warden Tunnel 11 (5ya 3), Pegsdon Hills 371 (4ya 107), Sharpenhoe Clappers 271 (5ya 106), Totternhoe Quarry 148 (5ya 8), Whipsnade Downs 213 (5ya 90). Whipsnade Zoo was down to 522 (5ya 776). Both broods were larger than normal but they peaked in late June and at the end of August as normal. The first flight on 10th May was four days later than the 10ya. The 111 1km square total far exceeded the previous high of 90 in 2017 and the species was reported from decent grassland in all parts of the county.

Ringlet *Aphantopus hyperantus*

The transect counts for Ringlet were equally split between above average and below: Dunstable Downs 410 (5ya 388), Knocking Hoe 40 (5ya 60), Old Warden Tunnel 216 (5ya 153), Pegsdon Hills 83 (5ya 68), Sharpenhoe Clappers 172 (5ya 252), Totternhoe Quarry 131 (5ya 140), Whipsnade Downs 332 (5ya 259), Whipsnade Zoo 331 (5ya 402). Overall, the data suggest that Ringlet didn't fare as well as other species, with only 7.55% of adults reported being of this species, its 17th-best season, compared with 17.96% in 2007, its best year. The peak was in week 26 (25th June to 1st July) a week earlier than usual and numbers then fell off quickly. The largest non-transect count was of 67 at West Wood on 2nd July. Records came from all over the county and, like other browns, a new 1km record was set at 185, beating 2012's 173.

Meadow Brown *Maniola jurtina jurtina*

Meadow Brown's season started on 1st June, one day earlier than the 10ya, and peaked three weeks earlier, in week 26 (25th June to 1st July) then declined at a normal rate to finish early. Transect counts were both above and below average: Dunstable Downs 426 (5ya 622), Knocking Hoe 741 (5ya 968), Old Warden Tunnel 36 (5ya 24), Pegsdon Hills 811 (4ya 425), Sharpenhoe Clappers 844 (5ya 1277), Totternhoe Quarry 425 (5ya 298), Whipsnade Downs 654 (5ya 539), Whipsnade Zoo 543 (5ya 797). 16.82% of all adults were of this species putting it in clear first place as usual, above Common Blue's 8.78% in second place, nonetheless this was below the average of 17.3% for the 1995-2017 period, and

ranked as only its 14th-best year. The high level of overall recording though allowed a new 1km record to be set at 242, beating 2017's 227, with sightings in all parts of the county.

Gatekeeper *Pyronia tithonus tithonus*

Gatekeeper's long-term decline resumed in 2018 and with only 4.08% of adults of all species the year ranked second-worst to 2013's 3.89%. This is a large reduction from its heyday of 14.14% in 2004 and it hasn't been above 10% since 2005. In a year when all the other browns set new 1km square count records Gatekeeper's count of 135 was only its twelfth-best year and far below the 192 of 2009. Transect counts were: Dunstable Downs 192 (5ya 180), Knocking Hoe 38 (5ya 127), Old Warden Tunnel 34 (5ya 39), Pegsdon Hills 143 (5ya 111), Sharpenhoe Clappers 189 (5ya 164), Totternhoe Quarry 77 (5ya 122), Whipsnade Downs 134 (5ya 149), Whipsnade Zoo 206 (5ya 368), showing some variation by site. The flight period started on 20th June two days earlier than the 10ya.

On the 12th July near Renhold there was an unusual sighting of a Green-veined White in flight with a Gatekeeper suspended in copulation beneath. Several photos were taken of this curious liaison once they landed. Male butterflies will often chase anything that flies past but to actually mate with another species is rare as any confusion is normally resolved first.



A Green-veined White mating with a Gatekeeper on 12th July

Marbled White *Melanargia galathea serena*

Although not encountered as often as some of the other browns, Marbled White's distribution in the records matches recording effort, so the chalk sites, the greensand ridge and north Bedford feature prominently. A new record of 112 1km squares was set this year, beating 2017's 110. Transect counts were: Dunstable Downs 235 (5ya 205), Knocking Hoe 169 (5ya 166), Old Warden Tunnel 56 (5ya 38), Pegsdon Hills 92 (4ya 147), Sharpenhoe Clappers 556 (5ya 816), Totternhoe Quarry 191 (5ya 145), Whipsnade Downs 245 (5ya 241), Whipsnade Zoo 337 (5ya 595) showing a mixture of raised and lowered counts. In overall recording it appears to have been a relatively poor year for the species ranking between 13th-best and 20th-best depending upon the chosen statistic. The first flight on 11th June was four days earlier than the 10ya, and the clear peak was in week 26 (25th June to 1st July) when 1,328 were reported.

Silver-washed Fritillary *Argynnis paphia*

There were no records for Silver-washed Fritillary in 2000, but the successful establishment of this species in the county has now resulted in 384 adults being reported in 2018, and from a record 43 1km squares, making the sites now too numerous to list fully. As usual though the largest counts were made in woodlands, chiefly Chicksands Wood, King's Wood Heath and Reach, Marston Thrift, Maulden Wood, Northill (College Wood and Home Wood), Putnoe Wood and Salem Thrift though they were also reported from many other woodlands, wider-countryside sites, and a handful of urban locations as they dispersed, including Arlesey, Bedford, Clifton, Leighton Buzzard, Linslade, Luton and Sharnbrook. The first flight on

20th June was 13 days earlier than the 10ya and the peak was quickly reached in week 26 (25th June to 1st July) when 143 were reported.

Dark Green Fritillary *Argynnis aglaja aglaja*

Dark Green Fritillary is now well established along the length of the chalk scarp and in 2018 was reported from Barton Gravel Pits, Barton Hills, Dunstable Downs, Galley and Warden Hills, Knocking Hoe, Pegsdon Hills, Sewell Cutting, Sharpenhoe Clappers, Sundon Chalk Pit, Totternhoe Knolls, Upper Sundon, Whipsnade Downs and Whipsnade Zoo. Transect Counts were generally above average: Dunstable Downs 19 (5ya 13), Knocking Hoe 41 (5ya 10), Pegsdon Hills 18 (4ya 9), Sharpenhoe Clappers 189 (5ya 160), Whipsnade Downs 13 (5ya 17), Whipsnade Zoo 9 (5ya 14). Sharpenhoe Clappers remains the stronghold and on its transect on 1st July 115 were counted. The first flight on 13th June was six days earlier than the 10ya.

White Admiral *Limenitis camilla*

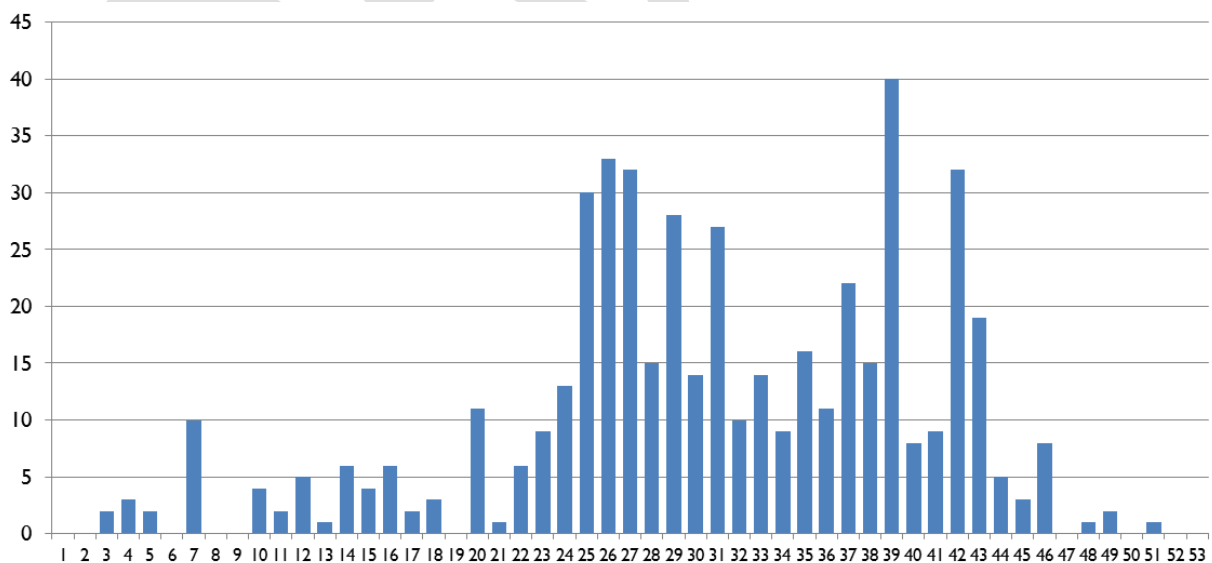
White Admiral continues to survive in low numbers, the total count from each reported site this year being: Chicksands Wood (14), Northill (College Wood and Home Wood) (13), Maulden Wood (3), Rushmere Park (2), The Lodge (2), West Wood (4). The total of 38 adults contrasts with the highest count of 191 in 2010. On 2nd July at West Wood one was seen seemingly laying on low honeysuckle at a ride edge though no egg could be found. The first flight on 15th June was 14 days earlier than the 10ya.

Purple Emperor *Apatura iris*

It was a very good season for Purple Emperor with new record highs for numbers of adults (43 vs 40 in 2010) and 1km squares (18 vs 12 in 2014). The site counts were: Chicksands Wood (23), Cockayne Hatley (1), south of Luton (2), Marston Thrift (1), Maulden Wood (6), Northill (College/Home Wood) (1), Potton Wood (2), Swiss Garden (1), The Lodge (3), Tingrith (1), West Wood (1), Wilstead Wood (1). The first flight on 24th June was nine days earlier than the 10ya and the peak was week 26 (25th June to 1st July) when 24 were reported.

Red Admiral *Vanessa atalanta*

It has become normal for Red Admiral to be seen at any time of the year and its season in 2018 was 335 days long, from 16th January to 17th December. Weekly numbers rose and fell throughout the year, with multiple spikes, and it isn't clear how many broods there were or when migration occurred. It wasn't a particularly successful year with only 0.89% of all adults being of this species, its 14th-best year and the 159 1km squares reported was its fifth-best year and exactly 100 fewer than for 2017. Reports came from all parts of the county with no particular preference for location.



Red Admiral adults per week in 2018

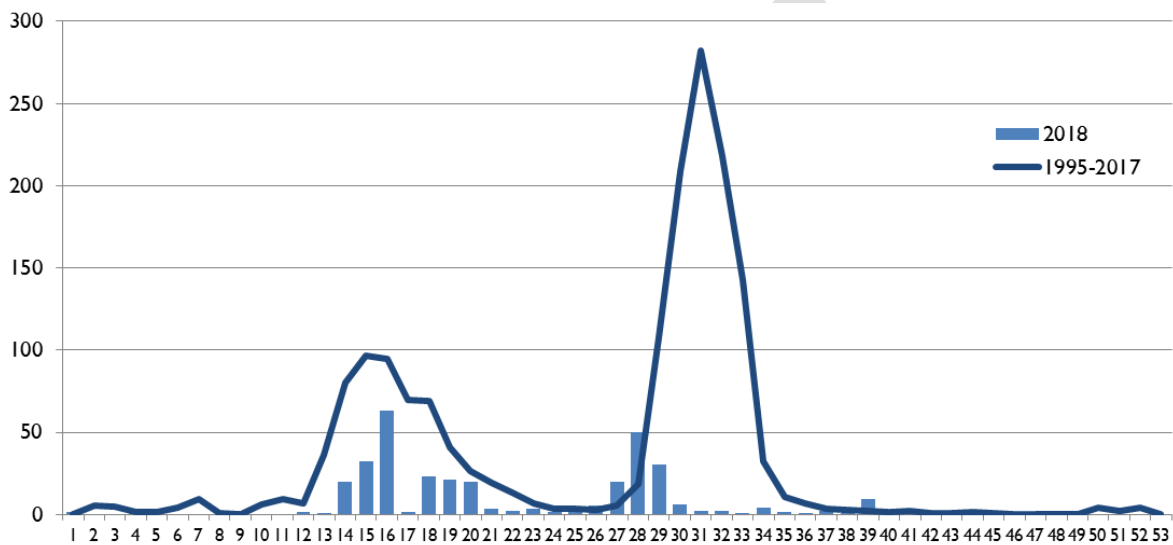
Painted Lady *Vanessa cardui*

There was no spectacular migration this year and the distribution of the modest total of 99 adults reported closely matched where people were recording other species, encountering Painted Ladies serendipitously. The first encounter on 18th April on the Knocking Hoe transect preceded the second on 25th May by 37

days. Reports then occurred from most weeks until mid-November, with a distinct peak of 27 in week 31 (30th July to 5th August).

Peacock *Aglais io*

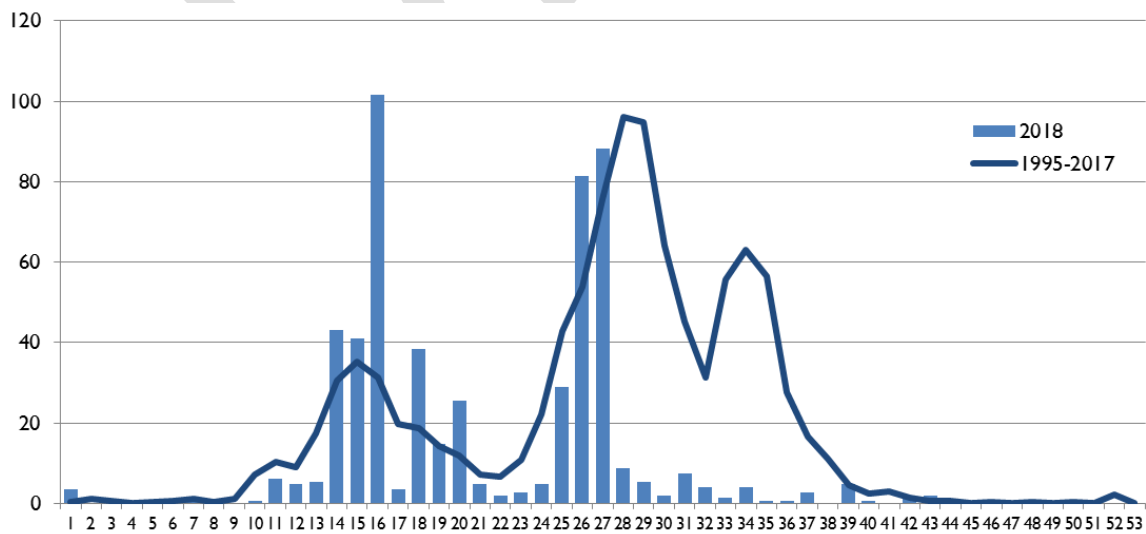
Peacock’s recent decline continued in 2018 and the 0.90% of all adults reported was its lowest ever value, well down from its most recent peak of 5.26% in 2014. Transect counts were all low: Dunstable Downs 17 (5ya 66), Knocking Hoe 7 (5ya 30), Old Warden Tunnel 5 (5ya 25), Pegsdon Hills 5 (4ya 29), Sharpenhoe Clappers 7 (5ya 43), Totternhoe Quarry 9 (5ya 48), Whipsnade Downs 13 (5ya 45), Whipsnade Zoo 5 (5ya 19). The spring peak of post-hibernation adults was smaller than historic values and the summer peak of the new brood was early and extremely small. Interestingly in week 39 (24th to 30th September) 14 adults were reported, possibly of a partial second brood. The reasons for the poor run of seasons for Peacock are currently unclear. From a web of 43 larvae collected in June and bred through, 36 were lost to the parasitoid wasp *Phobocampe confusa* and four to a parasitoid fly, unhatched and thus unidentified at time of writing. *P.confusa* is a parasitoid of *Aglais* species but as it isn’t monitored little can be inferred from this single observation.



2018 versus 1995-2017: Peacock adults per week per 10,000 records per year

Small Tortoiseshell *Aglais urticae*

The spring post-hibernation peak was slightly larger than usual, especially in week 16 (16th to 22nd April) and the first brood was near to normal in abundance but peaked a couple of weeks early. The second brood however doesn’t show as a peak in the data. As a result the year ranked about 12th-best overall, but the apparent absence of the second brood is of concern unless the species went into hibernation early after the first brood. The 180 1km squares recorded represented all parts of the county, its sixth-best year, but well down from the 245 in 2017.



2018 versus 1995-2017: Small Tortoiseshell adults per week per 10,000 records per year

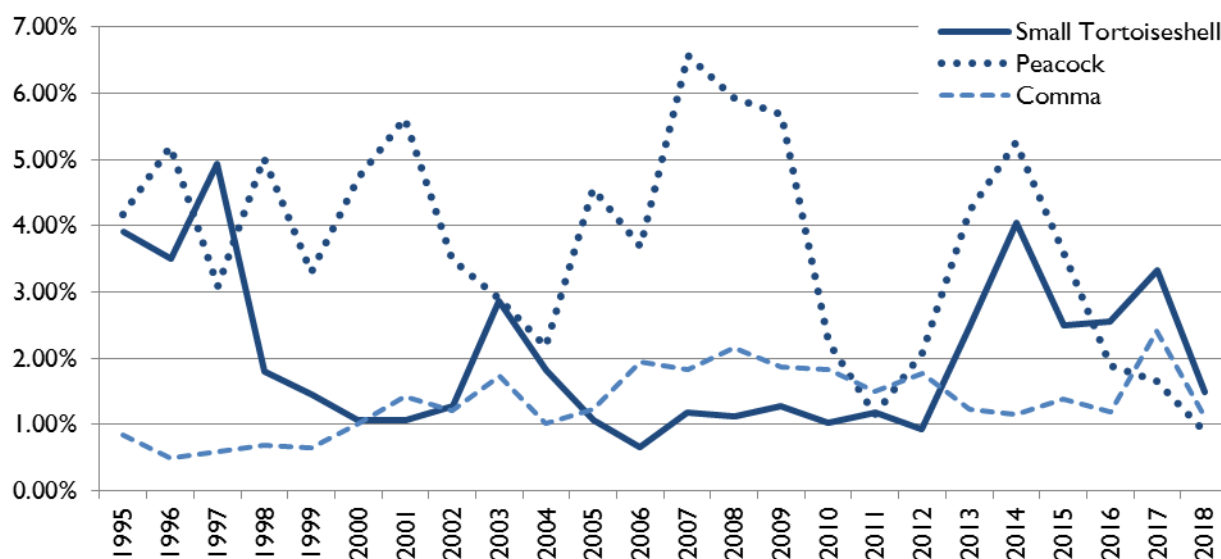
[Camberwell Beauty *Nymphalis antiopa*

No reports of Camberwell Beauty were received this year.]

Comma *Polygonia c-album*

Comma's post-hibernation peak was in week 16 (16th April to 22nd April) two weeks later than usual, but its abundance was near normal, as was the first brood which peaked in weeks 26 & 27 (25th June to 8th July) two weeks earlier than usual. The second brood however, which would normally occur in mid-September, barely showed in the data. Overall therefore the year was a bit below average and ranked about 17th-best. Records were received from all parts of the county and the 160 1km square count was second only to 2017's 198. The only record of larvae this year was on 19th July of nine developing on hops planted earlier that year in a Bedford garden.

It is interesting to compare the fortunes of the three non-migratory species (Comma, Peacock and Small Tortoiseshell) whose larvae develop on nettles. Sometimes they seem to be in phase and at other times out of phase. It would be interesting to understand the underlying reasons for these fluctuations.



Comma, Peacock and Small Tortoiseshell adults as a percentage of adults for all species, 1995-2018

Riodinidae (Metalmarks)

Duke of Burgundy *Hamearis lucina*

The transect counts suggest that Duke of Burgundy had a good year: Dunstable Downs 11 (5ya 4), Totternhoe Quarry 32 (5ya 21), Whipsnade Downs 93 (5ya 63). The largest count in casual records from Totternhoe Quarry was 18 on 10th May, and from Whipsnade Downs was 49 on 15th May. It wasn't reported from Sewell Cutting this year. The total of 462 adults reported set a new high, exceeding 2014's 346 but to some degree this may reflect the number of records submitted for this highly sought species. The first flight on 5th May was eight days later than the 10ya, and the last report on 11th June was five days later than the 10ya.

Lycaenidae (Coppers, Hairstreaks, Blues)

Small Copper *Lycaena phlaeas phlaeas*

Small Copper started a good season on 17th April, 12 days earlier than the 10ya but these ten years include some particularly late first flights, so 2018 may not have been as advanced as it first appears. The first sighting was confirmed by two more sightings by two different observers on the following two days at two other sites. The next sightings were on 4th May which started the main flight period. The 63 1km squares eventually reported was second equal (with 1997) to 2004's 75. The total of 339 adults was a new high, just exceeding 2017's 334. As usual The Lodge provided a large total count, 150 this year. 45 were from Sandy Heath, 20 from Maulden Heath and 13 from Whipsnade Downs. The remaining sites were scattered all over the county with most 10km squares represented. The peak count of 44 was on 21st July at The Lodge, and a new latest-ever record was set there on 13th November.

Purple Hairstreak *Favonius quercus*

2018 was the best year on record for Purple Hairstreak by every measure. 348 adults were reported beating the prior record of 222 in 1996. It was reported from 42 1km squares (41 in 1999) well in excess of the 10ya of 12. Distribution was strongly focussed on the Greensand ridge right across the county, plus the north Bedford areas around Clapham Park and Putnoe Woods. The highest count of 42 on 3rd July was

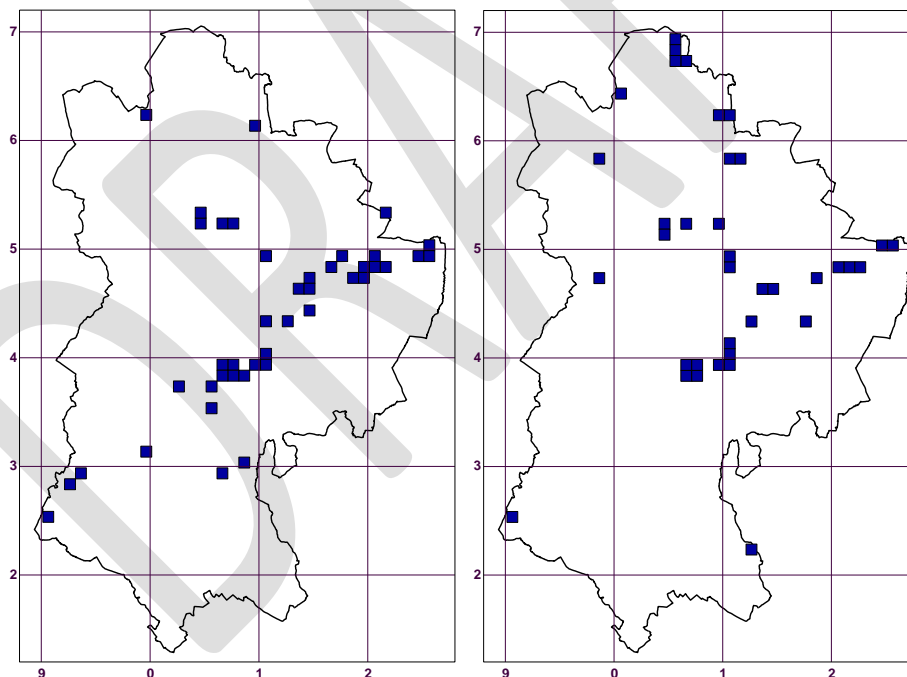
from Warden Great Wood. In addition to the normal activity high around the canopy observers also reported sightings low down on oaks, on the ground and on pond vegetation, the high temperatures possibly bringing them down as noted in other hot years. Laying was observed at eye level on oaks near Putnoe Wood and eggs were found there during the following winter. The first record on 19th June was 12 days earlier than the 10ya and its large count of 11 at Clapham Park announced the arrival of an excellent season.

Green Hairstreak *Callophrys rubi*

The first sightings of Green Hairstreak were four days later than the 10ya on 22nd April at Dunstable Downs, Knocking Hoe, and Whipsnade Downs. The next sighting though wasn't until the 1st May. Statistics suggest the species had an undistinguished season with counts on most transects a little below normal, but in overall recording they were close to long-term averages. It was reported from Barton Hills, Dunstable Downs, Knocking Hoe, near Lidlington, Moleskin, Marston Vale CP, Sewell Cutting, Sharpenhoe Clappers, Totternhoe Limeworks/Quarry, Whipsnade Downs, and Whipsnade Zoo. The 14 1km squares reported was just below the 10ya of 17.

White-letter Hairstreak *Satyrrium w-album*

This species had an outstandingly good season, recorded from 37 1km squares, easily eclipsing the previous highest total of 16 in 1996. The total of 283 adults reported also far exceeded the 10ya of 56, though was still fewer than the 427 reported in 2006. Many sightings were from the same sites as Purple Hairstreak requiring care to distinguish. It was a common experience to see adults flying around elms in hedgerows and woodlands after only a short period of looking and it was undoubtedly flying at additional unvisited locations. There have traditionally been more records from the northern half of the county, and this was true in 2018, though recording effort could have been a factor. The largest abundances came from Chicksands Wood, Clapham Park, Maulden Wood, Northill (College and Home Woods), the Putnoe Wood area, Sandye Lane, Sandy Heath, and Upper Dean. The first record on 19th June was ten days earlier than the 10ya.



1km squares for Purple Hairstreak (left) and White-letter Hairstreak (right) in 2018

Black Hairstreak *Satyrrium pruni*

Black Hairstreak also had a good season and was easier than usual to find at Marston Thrift, though still a challenge to get close views as they flitted around the tops of blackthorns in the hot weather. Sightings were made in several areas of the wood, the first on 6th June, its earliest ever date. The largest count of nine came just two days later, though 8+ were also reported on the 11th June. The fourth and final day on which sightings were reported was 24th June, when three were seen.

Small Blue *Cupido minimus*

Small Blue this year was reported in low numbers, its 32 records totalling only 109 adults across all sites, which were: Barton Bypass road verge, Blow's Down hayfield, Dunstable Downs, Galley and Warden Hills, Sewell Cutting, Sharpenhoe Clappers, Totternhoe Limeworks/Quarry and Whipsnade Downs. The total count across all the transects was only 21 versus the 5ya of 38. With such small counts of a tiny butterfly

trends are tricky to discern, but this appears to have been a below-average year. The first sighting on 14th May was three days later than the 10ya.

Holly Blue *Celastrina argiolus britanna*

Holly Blue had a much better year than predicted in the 2017 report. Abundance was probably the best since 2005, and the 134 county-wide 1km squares reported was second only to 1998's 141. There were also more records submitted than ever before, 506 versus 1996's 398, though that year's total of 954 adults still exceeded 2018's 745. There was no clear separation between the two broods as there were sightings in every week from 5th April (exactly equal to the 10ya first-flight date) to 29th September, but there were peaks in week 20 (14th – 20th May) and week 31 (30th July – 5th August). Two more sightings on 13th and 19th October may, or may not, have been of a partial third brood. In mid-September larvae on developing Ivy seeds were locally common, but not universally found.

Brown Argus *Aricia agestis*

It was an excellent season for Brown Argus. Counts on the transects were generally high, e.g. Dunstable Downs 226 (5ya 134), Knocking Hoe 96 (5ya 55), Pegsdon Hills 63 (4ya 31), Sharpenhoe Clappers 63 (5ya 40), and Whipnade Zoo 177 (5ya 108), but on Whipnade downs they were lower at 55 (4ya 74). Overall, the 88 1km squares reported easily beat 2009's 65 to set a new high for distribution, with records coming from all parts of the county. The number of records and number of adults reported were only exceeded by those of 1996. The first record on 15th May was five days later than the 10ya. The first brood peaked near the start of June and the second brood, which was larger, peaked near the start of August.

Common Blue *Polyommatus icarus icarus*

Common Blue also had an excellent season setting a new distribution record of 144 county-wide 1km squares, beating 2010's 138. Abundances were also high with 8.78% of all adults reported being of this species, placing it in second place to Meadow Brown, and the total of 4849 adults was second only to 2010's 6967. Counts on the transects were so high that the automated checks in the UKBMS software were querying the numbers as they were entered! The long-running transect counts were: Dunstable Downs 445 (5ya 181), Old Warden Tunnel 166 (5ya 26), Pegsdon Hills 493 (4ya 74), Sharpenhoe Clappers 700 (5ya 321), Totternhoe Quarry 398 (4ya 100), Whipnade Downs 153 (4ya 172), Whipnade Zoo 365 (5ya 258). The first record on 4th May was four days earlier than the 10ya. There wasn't a gap between the two broods and the first brood peaked in early June and the second brood, which was much larger, peaked at the start of August. This is when the largest count of 87 was made, on Section 11 of the Sharpenhoe Clappers transect on 4th August, the total for the whole transect that day was 268.

Chalkhill Blue *Polyommatus coridon*

Most transect counts suggest that Chalkhill Blue didn't fare as well as the other blues, producing below-average counts: Knocking Hoe 194 (5ya 274), Sharpenhoe Clappers 804 (5ya 2455), Totternhoe Quarry 458 (5ya 1155), Whipnade Downs 342 (5ya 771), Whipnade Zoo 43 (5ya 62), however two transects told the opposite story: Dunstable Downs 688 (5ya 337) and Pegsdon Hills 207 (4ya 149). Perhaps surprisingly, there were only 36 casual records submitted. These provided data for these additional sites: Barton Bypass, Barton Hills, Blow's Down, Galley and Warden Hills, Hoo Bit, and Moleskin. The first report on 1st July was five days earlier than the 5ya and the peak was in week 31 (30th July to 5th August).

Acknowledgements

We are very grateful for the efforts of the 282 people listed here who reported their sightings online, directly or via newsgroups. We apologise if any name has been inadvertently omitted.

M.Adair, M.Addis, A.Allen, D.Allen, Pat Almond, Peter Almond, L.Alton, D.Anderson, I.Ashwell, J.Ashwell, T.Austin, K.Balmer, K.Banham, A.Banthorpe, M.Banthorpe, J.Barnard, R.Bashford, C.B Beard, G.Bellamy, P.Bellamy, M.Bird, S.Blain, J.Blofield, S.Boar, J.Bonfield, C.Boon, N.Bowles, M.Brandon, R.Brind, S.Brooke, M.Bruce, D.Buckingham, A.Bucknall, A.Budd, P.Burfield, C.Butt, S.Cain, C.Campbell, J.Carles, L.Carman, C.Carpenter, G.Carpenter, R.A.Cartwright, G.Castle, S.Cham, D.Chandler, A.Chapman, Jean Chapman, John Chapman, M.Chapman, A.Charles, V.Chew, A.Chick, A.Clark, R.Clark, S.Clark, E.Clarke, G.Clarke, P.Clarke, P.Clegg, J.Codling, B.Cooke, M.Cooke, K.Cope, R.Cope, P.Cottier, C.Curd, J.Curd, W.Curry, C.Davies, B.Davis, G.Dawes, A.Daws, J.Day, A.de Winter, M.de Winter, L.Delayahu, L.Dickinson, M.Dominey, A.Donnelly, A.Doody, M.Dove, L.Downton, O.Dul, C.Dumant, T.Dunbar, S.Eckersley, A.Edwards, R.Egan, K.Elsby, J.England, M.Esh, A.Evans-Hill, L.Evans-Hill, E.Evershed, S.Fannon, J.Fisher, M.Fitzpatrick, A.Fleckney, P.Ford, J.Fowler, M.Fowlie, S.Foyle, A.Gardiner, A.Garner, E.Garner, J.George, S.George, W.George, C.Gilby, P.Glenister, L.Goodyear, A.Green, J.Griffiths, H.Griffiths, A.Grimsey, B.Guynn, B.Haines, D.Hallsworth, M.Hallsworth, S.Halton, R.Hance, A.Harris, M.Harrow, C.Hawkes, M.Hawkes, S.Hearle, A.Hedges, G.Herbert, B.Hicks, T.Hicks, G.Hitchcock, G.Hogg, R.Hogg, N.Hollis, P.Hollis, Malcolm Holloway, Mandy Holloway, B.Hook, A.Hughes, H.Hughes, P.Humphries, A.Ilsley, D.Inward, A.Ixer, M.Johnson, C.Jones, D.Kay, F.Kay, N.Keep, I.Kelly, I.Kimsey,

C.Kitchiner, J.Knight, R.Knock, P.Laker, A.Lambert, L.Lane, N.Lane, C.Le Boutillier, P.Le Boutillier, M.Ledlie, A.Lewis, G.H.Lewis, J.Lewis, B.Liggitt, J.Lintott, G.Livermore, A.Lucy, V.Lum, S.Mackey, P.Marshall, S.Marshall, D.McCarthy, R.McDonald, A.McLennan, A.McVeigh, A.Middleton, M.Miller, J.Mitchell, T.Moon, D.S.Morrissey, R.E.Morrissey, H.Muir-Howie, M.Mundy, T.Murfitt, J.Murphy, C.Murray, A.K.Nelson, Z.Newman, D.Norman, S.Northwood, D.Oakley-Martin, S.O'Brien, B.O'Connor, J.O'Sullivan, A.Outen, P.Outen, K.Owen, J.Palmer, D.Parsons, R.Patient, J.Pitts, S.Plummer, Jon Powell, Julia Powell, W.Powell, A.Proud, J.Proud, H.Ramsden, C.Rankin, S.Raven, N.Reed, P.Reed, L.Reid, R.Revels, P.Rhodes, A.Richardson, M.Roberts, S.Roberts, J.Robertson, T.Robson, V.Robson, K.Roy, M.Russell, R.Sanderson, S.Saunders, J.Sawyer, J.Sears, E.Sharrocks, J.T.R.Sharrocks, K.Sharrocks, R.Sharrocks, J.Shayler, M.Sheridan, C.Shortall, A.Simpson, C.Sims, R.L.Sinclair, C.Smart, P.Soper, T.Spencer, D.Spring, A.Squire, S.Squires, T.Starnes, S.Taylor, C.Tenneson, S.Thompson, A.Thorpe, P.Townsend, J.Ullyett, M.Varney, P.Vickers, A.Waddoups, C.Wakely, J.Wakely, M.Wallace, M.A.Ward, G.Warne, D.Warner, M.Warner, S.Warrington, C.Watts, C.Wedge, C.Weightman, S.West, M.Wheatley, A.Whitney, P.Wilkinson, I.Williams, N.Williams, N.D.Willits, R.Wilson, K.Winder, D.Withers, Ian Woiwod, Isla Woiwod, A.Wood, A.Wyldes, P.Young, Colworth Natural History Society

Map produced using DMAP.

Keith Balmer and Peter Glenister are the Society's honorary joint butterfly recorders, a position they have held since 2003.

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Flight periods and peak abundances in 2018

Species	Earliest Date	Latest Date	Peak Date	Peak Abundance
Swallowtail	16/07/2018	16/07/2018	16/07/2018	1
Dingy Skipper	06/05/2018	26/06/2018	22/05/2018	27
Grizzled Skipper	05/05/2018	23/06/2018	15/05/2018	9
Essex Skipper	23/06/2018	04/08/2018	12/07/2018	6
Small Skipper	20/06/2018	06/08/2018	12/07/2018	22
Large Skipper	26/05/2018	18/08/2018	17/06/2018	12
Orange Tip	14/04/2018	27/06/2018	25/04/2018	50
Large White	07/04/2018	10/10/2018	01/08/2018	62
Small White	05/04/2018	21/10/2018	19/07/2018	600
Green-veined White	05/04/2018	03/10/2018	31/07/2018	7
Clouded Yellow	08/07/2018	21/10/2018	20/07/2018	4
Brimstone	15/02/2018	18/11/2018	05/05/2018	30
Speckled Wood	13/04/2018	25/10/2018	10/09/2018	46
Small Heath	10/05/2018	03/10/2018	31/08/2018	36
Ringlet	07/06/2018	04/08/2018	02/07/2018	144
Meadow Brown	01/06/2018	22/09/2018	24/06/2018	120
Gatekeeper	20/06/2018	08/09/2018	20/06/2018	48
Marbled White	11/06/2018	04/08/2018	02/07/2018	98
Silver-washed Fritillary	20/06/2018	13/08/2018	25/06/2018	15
Dark Green Fritillary	13/06/2018	01/08/2018	01/07/2018	32
White Admiral	15/06/2018	15/07/2018	23/06/2018	4
Purple Emperor	24/06/2018	25/07/2018	29/06/2018	3
Red Admiral	16/01/2018	17/12/2018	24/09/2018	6
Painted Lady	18/04/2018	18/11/2018	01/08/2018	3
Peacock	30/01/2018	29/11/2018	21/04/2018	14
Small Tortoiseshell	25/01/2018	14/11/2018	14/04/2018	12
Comma	13/03/2018	31/12/2018	28/07/2018	8+
Duke of Burgundy	05/05/2018	11/06/2018	15/05/2018	49
Small Copper	17/04/2018	13/11/2018	21/07/2018	44
Purple Hairstreak	19/06/2018	02/08/2018	03/07/2018	42
Green Hairstreak	22/04/2018	09/06/2018	05/05/2018	23
White-letter Hairstreak	19/06/2018	03/08/2018	25/06/2018	34
Black Hairstreak	06/06/2018	24/06/2018	11/06/2018	8+
Small Blue	14/05/2018	16/07/2018	11/06/2018	21
Holly Blue	05/04/2018	19/10/2018	05/08/2018	20
Brown Argus	15/05/2018	28/09/2018	23/07/2018	25
Common Blue	04/05/2018	10/10/2018	04/08/2018	87
Chalkhill Blue	01/07/2018	22/09/2018	24/07/2018	300+

Adults reported per month in 2018

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Swallowtail							1					
Dingy Skipper					386	110						
Grizzled Skipper					97	10						
Essex Skipper						4	60	1				
Small Skipper						128	514	24				
Small/Essex Skipper						37	269	9				
Large Skipper					3	530	316	17				
Orange Tip				184	881	26						
Large White				28	254	319	1685	571	112	5		
Small White				100	386	280	2754	998	170	8		
Green-veined White				69	283	168	699	220	34	2		
Small/Green-veined White				11	128	93	280	38	11	1		
Clouded Yellow							13		21	2		
Brimstone		1	62	588	787	128	176	7	19	14	2	
Speckled Wood				46	275	836	372	632	327	37		
Small Heath					236	1195	453	831	494	1		
Ringlet						1789	2333	30				
Meadow Brown						3362	4437	1430	60			
Gatekeeper						152	1784	313	3			
Marbled White						1369	1540	9				
Silver-washed Fritillary						175	200	9				
Dark Green Fritillary						128	252	1				
White Admiral						27	11					
Purple Emperor						27	16					
Red Admiral	7	10	12	18	16	85	104	56	98	71	14	3
Painted Lady				1	3	21	26	35	9	3	1	
Peacock	5		3	173	100	19	157	14	20	5	1	
Small Tortoiseshell	6	3	25	281	125	161	171	26	12	7	1	
Comma			9	74	30	118	246	85	47	6	1	1
Duke of Burgundy					445	17						
Small Copper				4	83	10	96	30	84	31	1	
Purple Hairstreak						98	247	3				
Green Hairstreak				3	243	7						
White Letter Hairstreak						216	65	2				
Black Hairstreak						30						
Small Blue					42	66	1					
Holly Blue				74	277	56	181	134	15	3		
Brown Argus					143	183	248	430	129			
Common Blue					221	938	984	2446	257	3		
Chalkhill Blue							2094	1590	46			

Summary of 2018's records of adults at 1st February 2019

Species	Records	Adults	Squares		Records (%)	Adults/All-species adults ¹ (%)				
			10km	1km		2014	2015	2016	2017	2018
Swallowtail	1	1	1	1	0.01	0.01	0.00	0.00	0.00	0.01
Dingy Skipper	129	496	12	33	0.87	1.15	1.54	1.36	0.87	0.90
Grizzled Skipper	57	107	10	16	0.38	0.32	0.28	0.23	0.22	0.19
Essex Skipper	41	65	10	18	0.28	0.28	0.30	0.29	0.19	0.12
Small Skipper	200	666	18	78	1.35	1.39	1.78	1.56	1.39	1.21
Small/Essex Skipper	110	315	13	33	0.74	1.07	1.09	0.95	0.72	0.57
Large Skipper	352	873	19	120	2.37	1.86	1.40	1.57	1.38	1.58
Orange Tip	532	1091	19	187	3.58	1.21	0.97	1.86	2.04	1.97
Large White	1158	2979	21	224	7.80	1.58	4.11	3.68	3.57	5.39
Small White	1334	4716	21	246	8.99	2.08	4.01	5.20	4.05	8.54
Green-veined White	795	1525	19	207	5.36	2.12	2.31	3.08	2.14	2.76
Small/G.V. White	142	565	15	59	0.96	0.30	0.54	1.12	0.54	1.02
Clouded Yellow	28	36	9	18	0.19	0.08	0.05	0.05	0.09	0.07
Brimstone	856	1786	20	216	5.77	2.85	2.50	3.39	3.33	3.23
Speckled Wood	939	2525	20	237	6.33	3.63	2.57	4.03	3.74	4.57
Small Heath	700	3210	16	111	4.72	3.44	2.55	2.91	4.32	5.81
Ringlet	675	4172	20	185	4.55	12.45	9.01	11.50	14.82	7.55
Meadow Brown	1268	9291	20	242	8.54	16.56	14.69	14.31	19.76	16.82
Gatekeeper	584	2252	19	135	3.94	5.44	5.75	4.49	5.41	4.08
Marbled White	375	2918	18	112	2.53	8.18	7.57	9.07	5.38	5.28
Silver-washed Fritillary	143	384	15	43	0.96	0.42	0.24	0.56	0.87	0.70
Dark Green Fritillary	108	381	7	16	0.73	0.46	0.57	0.40	0.57	0.69
White Admiral	24	38	4	10	0.16	0.06	0.06	0.03	0.07	0.07
Purple Emperor	34	43	9	18	0.23	0.05	0.03	0.03	0.05	0.08
Red Admiral	397	494	19	159	2.68	1.24	0.73	2.36	3.82	0.89
Painted Lady	83	99	17	49	0.56	0.12	0.33	0.32	0.20	0.18
Peacock	358	497	18	147	2.41	5.26	3.60	1.88	1.66	0.90
Small Tortoiseshell	500	820	20	180	3.37	4.05	2.49	2.55	3.33	1.48
Comma	423	620	20	160	2.85	1.14	1.38	1.20	2.41	1.12
Duke of Burgundy	56	462	4	6	0.38	0.55	0.39	0.46	0.57	0.84
Small Copper	156	339	16	63	1.05	0.23	0.33	0.70	0.65	0.61
Purple Hairstreak	95	348	11	42	0.64	0.13	0.10	0.08	0.15	0.63
Green Hairstreak	84	253	7	14	0.57	1.14	0.45	0.26	0.32	0.46
White-letter Hairstreak	80	283	13	37	0.54	0.07	0.12	0.04	0.21	0.51
Black Hairstreak	10	30	1	1	0.07	0.01	0.01	0.01	0.00	0.05
Small Blue	32	109	5	12	0.22	1.11	0.61	0.71	0.76	0.20
Holly Blue	506	745	19	134	3.41	0.14	0.59	1.23	0.50	1.35
Brown Argus	398	1133	19	88	2.68	1.17	1.24	1.12	1.23	2.05
Common Blue	843	4849	20	144	5.68	5.11	4.51	3.31	3.52	8.78
Chalkhill Blue	211	3730	7	17	1.42	11.55	19.22	12.08	5.14	6.75
Overall	14841	55246	21	503						

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.