

# Markstakes Common Butterfly Transect Survey 2020: Summary Report



Photo: Marbled Whites, Markstakes Common, 24th June 2020 © Ian Seccombe

Ian Seccombe  
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## Introduction and summary

This is the ninth consecutive year of recording butterflies at Markstakes using the United Kingdom Butterfly Monitoring Scheme (UKBMS) transect method. This year the transect was walked on all 26 of the weeks specified by the UKBMS between the beginning of April and the end of September 2020. The UKBMS suspended recording on transects in England from 23 March until 15 May during the first national Covid-19 lockdown. However, I was able to complete the scheduled walks as part of the permitted daily exercise. During this period, we experienced the driest spring for 124 years and the sunniest spring since records began. These conditions led, nationally, to many butterfly species appearing early. In June Butterfly Conservation reported 53 (of 59 resident and regular migrant) species had been recorded by the end of May<sup>1</sup> while Patrick Barkham writing in The Guardian commented on the 'best summer for butterflies in nearly 25 years'<sup>2</sup>.

In Markstakes nothing could be further from the truth. While sightings of butterflies occurred on 25 of the 26 transect walks only 375 butterflies were recorded. This is the lowest total since 2014 (346) and the second lowest total ever. It represents a drop of 42% on 2019. Only 19 species were recorded, the smallest number ever and with no sightings of seven species that have previously been present. For the first time ever the iconic Silver-Washed Fritillary was absent from Markstakes. Several other species were recorded in very low numbers: Red Admiral (6), Comma (6), Brimstone (4) Green-veined White (1), Small White (2), Ringlet (5) and White Admiral (3).

The Big Butterfly Count (which ran from 17th July to 9th August) reported the lowest average number of butterflies logged in its eleven-year history and a 34% drop compared with 2019<sup>3</sup>. This is in part due to the huge numbers of Painted Lady reported in the Big Butterfly Count 2019 as well as the unusually warm spring leading many species to peak before the Big Butterfly Count took place. Nevertheless, if we take the same period (weeks 17-20) of the UKBMS survey we find a 51% drop in the number of butterflies recorded at Markstakes compared with 2019. In other words, the pattern seems to be the same although the scale of reduction is greater, suggesting that additional factors may be affecting butterfly numbers at Markstakes.

Four broad trends are apparent from the nine years of recording:

- **many species are found in very small numbers, these numbers fluctuate year to year but are generally falling**: in 2020 two-thirds of species had fewer than 10 records.
- **year on year we are seeing fewer spring butterflies**: in 2020 only 17 butterflies were recorded in the first six weeks of the season.

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<sup>1</sup> "Butterflies emerge early thanks to the sunniest May on record", Butterfly Conservation 9 June 2020

<sup>2</sup> "UK butterfly season off to unusually early start after sunniest of springs" The Guardian 6 June 2020

<sup>3</sup> Big Butterfly Count 2020: the results, [www.butterfly-conservation.org](http://www.butterfly-conservation.org) 28/09/2020

- **sightings are increasingly dominated by a few species notably Meadow Brown and Gatekeeper:** in 2020 these two accounted for over half (56%) of all sightings.
- **the distribution of butterflies is concentrated in fewer areas:** in 2020 two of the 12 transect sections accounted for over half (52%) of all records.

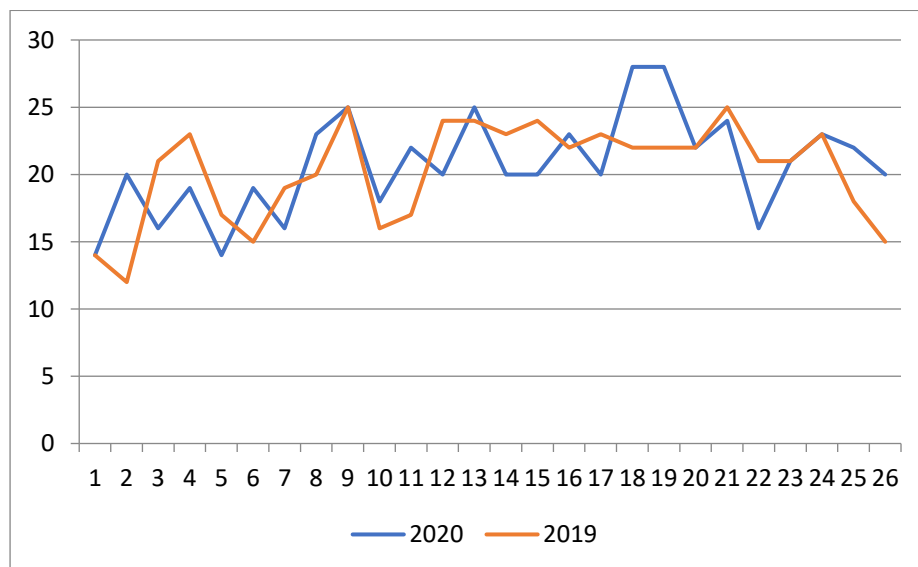
The marked decline in butterfly numbers at Markstakes in 2020 is probably due to a combination of factors. These include:

- the low number of butterflies in 2019 meant that fewer eggs were laid
- the winter of 2019/20, especially February, was the wettest on record, meaning that fewer eggs and larvae would survive.
- the warm dry spring meant that some larvae would emerge before their larval food plants were available.
- the expansion of the tree canopy cover and deterioration of habitat in some parts of Markstakes meaning fewer sources of nectar for adult butterflies.

### Weather conditions

At the start of each walk some simple weather observations (temperature, wind speed, wind direction and cloud cover) are made. Chart 1 compares the temperature records for Markstakes in 2019 and 2020 which are broadly similar. However, the average percent sunshine on the days when the transect was walked was 85% in 2020 compared with 61% in 2019. In other words, warm and sunny conditions prevailed across the transect walks and should have been ideal for butterflies.

**Chart 1 Temperature profile for Markstakes, 2019 and 2020**

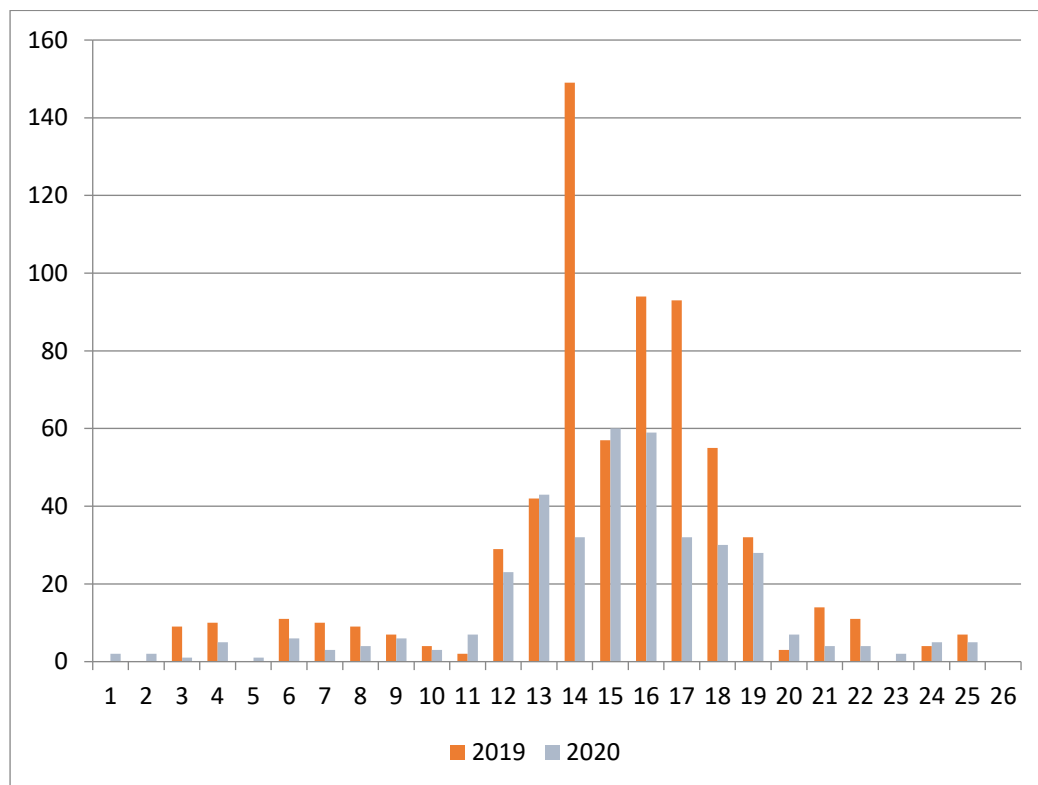


## **Abundance**

Chart 2 below compares the number of butterflies recorded each week in 2019 and 2020. It shows that the numbers recorded were lower in almost every week of 2020 compared with 2019.

Only 17 butterflies were recorded over the first six weeks of the survey period, half the level of 2019 which was itself a comparatively low spring number. The decline in springtime butterflies has now continued unchecked year-on-year for six consecutive years (see chart 3 below). To confirm that this trend is real and not an artefact arising from the frequency of the transect survey I decided to walk the route four times a week in the first six weeks and to vary the timing of those walks. On 10 of these additional 18 walks I recorded no butterflies at all. On the eight additional walks when butterflies were recorded the numbers ranged from one to six. This strongly suggests that the pattern is real.

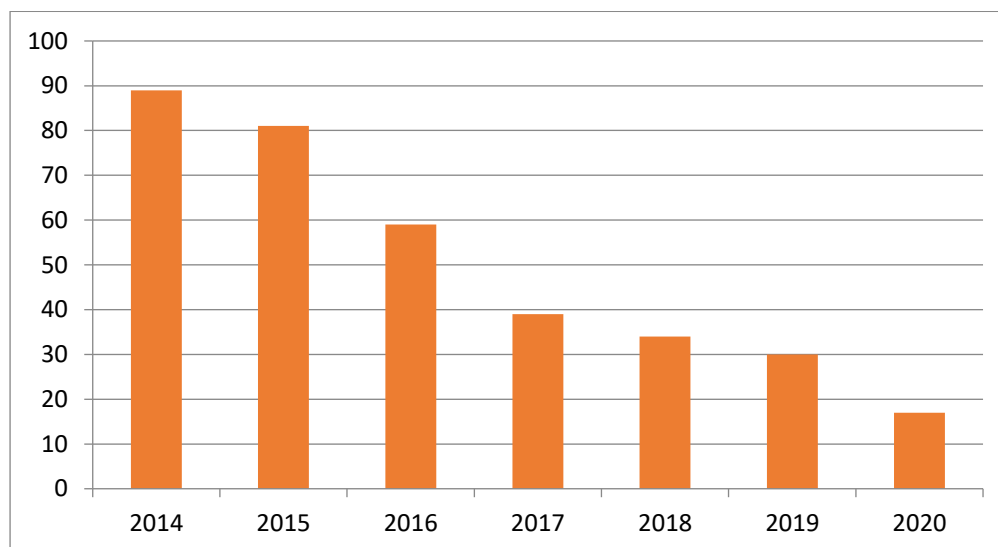
**Chart 2 Markstakes: Number of butterflies by week, 2019 and 2020**



Butterfly numbers began to increase from week 12 (17th June), rising to a peak- a month later (13th July) and tailing off rapidly thereafter. This pattern is broadly similar- to 2019 and 2018. Compared with earlier years butterfly numbers appear to be peaking ~~two~~ to three weeks earlier in the season. In

2020- the peak was however much smaller, at only 60, considerably fewer than the 149 in 2019. More than half -the butterflies recorded at the peak in 2020 were Meadow Browns. Butterfly numbers fell very rapidly after this peak: only 29 were recorded in the final seven weeks.

**Chart 3 Markstakes: decline of Springtime\* butterflies, 2014 to 2020**



\* For the purposes of this report Springtime is defined as the first six weeks of the recording season

Fifteen of the 19 species recorded in 2020 declined in number with many falling by 50% or more. Numerically the largest declines were among the grassland species: Meadow Brown (-107), Gatekeeper (-64) and Small Heath (-21). Several species disappeared altogether. No Silver washed fritillary were recorded for the first year ever (declining from 15 in 2019). No Purple Hairstreak, Orange Tip, Common Blue, Purple Emperor or Small Tortoiseshell were recorded. The latter have not been recorded at Markstakes in any of the last four years while Purple Emperor have not been recorded for the last three years<sup>4</sup>. Of the three large iconic woodland butterflies that we hope to see at Markstakes - Silver-Washed Fritillary, Purple Emperor and White Admiral - only the latter was recorded in 2020 and it had declined to just three.

In 2020 Meadow Brown- were first recorded at Markstakes on 2nd June (week 9) peaking (at 34) six weeks later. The last sighting was in week 19 (6th August). Overall, the flight period started a week earlier than in 2019, peaked a couple of weeks later and ended at the same time. However, the overall number recorded was down by fifty per cent.

Gatekeeper had the same flight period as in 2019, starting in week 14 (5th July), peaking in week 17 and ending in week 20 (14th August) but the number was down by 39% compared with 2019.

<sup>4</sup> I did see one Purple Emperor in Markstakes (26/06/20) but it was not seen during a transect walk.

Alongside these falling numbers are a few notable increases. Large Skippers had their best year with 31 records (in contrast only six Small Skipper were seen). Holly Blue also had a comparatively good year, reaching double figures for the first time with all of these records coming from the second brood in July. Similarly, Small Copper had their best year on record, rising from a single sighting in 2019 to nine in 2020. In 2019 Speckled Wood had their worst year on record but in 2020 recovered somewhat, rising from 18 to 27, although still well down on several previous years.

For the full list of species recorded, and their abundance, since 2014, see Annex.

### **Distribution**

Table 1 presents the number of butterflies in each sub-section of the transect in 2019 and 2020 and the change over the two years. This shows the concentration of butterflies in section G (the Mire) and the adjoining section H. In 2020 these accounted for 53% of all butterflies recorded. In contrast sections C, J and L combined had fewer than four percent of the records. Eight of the 12 sections declined, and one had no change. Only three (A, I and K) show increased numbers and these increases are comparatively small. Although section G (the Mire) accounts for the largest share of the total it also had the largest decline, with more than a hundred fewer butterflies recorded than in 2019. Sections B, H, L and E (the Butterfly Glades) also had substantial losses.

**Table 1 Change in number of butterflies by transect sub-section, 2019-2020**

	Butterflies (n)		Change	
	2019	2020	N.	%
A	8	13	5	62.5
B	62	15	-47	-75.8
C	3	3	0	0.0
D	59	36	-23	-39.0
E	59	27	-32	-54.2
F	30	24	-6	-20.0
G	230	126	-104	-45.2
H	115	70	-45	-39.1
I	9	14	5	55.6
J	5	2	-3	-60.0
K	22	37	15	68.2
L	50	8	-42	-84.0

## Annex

### Markstakes: number of butterflies recorded by species and year, -2014-2019<sup>5</sup>

	2014	2015	2016	2017	2018	2019	2020
Small Skipper	57	34	11	7	22	44	6
Large Skipper	5	5	1	4	8	2	30
Brimstone	32	41	23	15	21	17	4
Large White	33	24	23	30	43	28	21
Small White	12	2	0	2	9	7	2
Green veined white	2	3	0	6	1	2	1
Orange Tip	5	12	3	1	0	3	0
Clouded Yellow	1	0	0	0	0	0	1
Small Copper	4	2	5	7	2	1	9
Holly Blue	3	2	4	4	4	3	11
Common Blue	33	14	0	25	31	4	0
White Admiral	6	2	4	5	9	4	3
Red Admiral	13	4	5	12	2	6	6
Peacock	51	42	48	25	12	15	7
Comma	6	10	7	8	4	9	6
Silver Washed Fritillary	28	15	12	27	15	15	0
Small Tortoiseshell	11	3	1	0	0	0	0
Painted Lady	0	1	1	0	1	5	0
Marbled White	7	14	16	14	7	21	16
Purple Emperor	1	1	1	2	0	0	0
Purple Hairstreak	0	0	0	1	14	22	0
Speckled Wood	29	21	32	43	40	21	27
Gatekeeper	63	77	45	112	52	165	101
Meadow brown	197	178	102	317	157	215	108
Small Heath	3	12	1	2	11	31	10
Ringlet	0	11	1	16	7	12	5

<sup>5</sup> For 2012 and 2013 see earlier reports