

Where have all the Small Tortoiseshells gone?

Article for linking to Butterfly Magazine by Malcolm Hull

In recent years there have been concerns about the declining numbers of Small Tortoiseshells recorded in the Big Butterfly Count, particularly in the South east of England. In January BBC Winterwatch broadcast the results of my observations on Small Tortoiseshell hibernation. This is based on observations from my garden shed in St Albans, Herts, which provides the perfect environment for both Peacocks and Small Tortoiseshells to over winter.

Previous years findings

- Small Tortoiseshells begin to enter hibernation in late June/early July
- In some years all Small Tortoiseshells have entered hibernation by the end of July. In other years there is an additional trickle of second-generation individuals which enter hibernation up until the end of September
- In each of the last four years, a substantial majority of Small Tortoiseshells are in hibernation well before the end of the Big Butterfly Count in August
- Once in hibernation, the Small Tortoiseshells very seldom wake up before Spring the next year



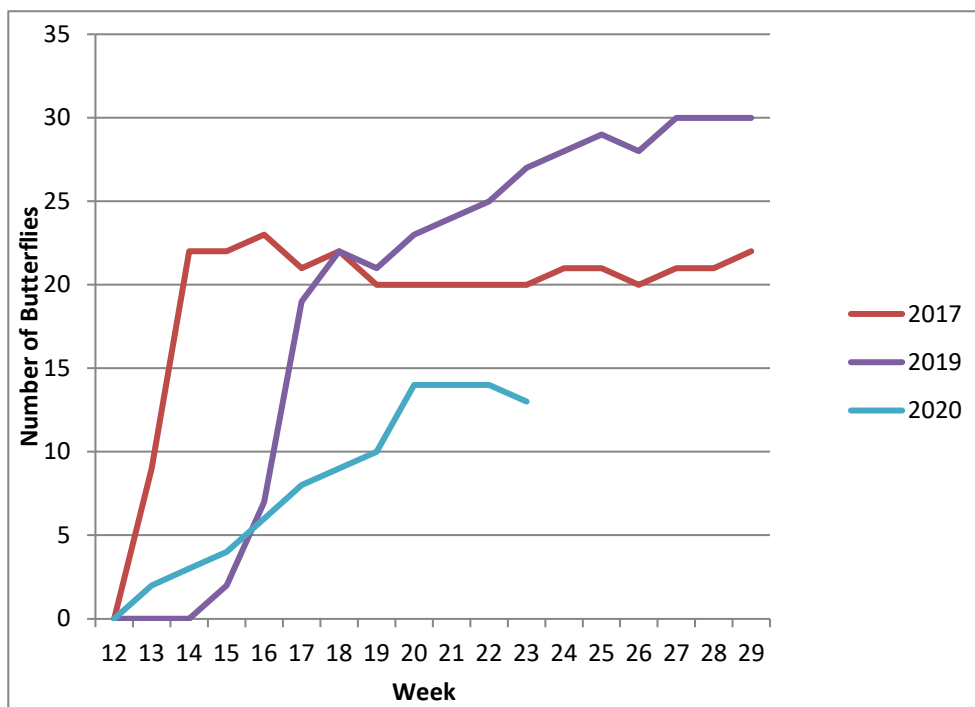
Small Tortoiseshell in hibernation, St Albans 24/06/20 photo by Malcolm Hull

What is happening in 2020?

- Small Tortoiseshells began to emerge from hibernation in early March. The vast majority flew in two very warm weeks at the end of March and early April. This is slightly later than normal.
- The warm weather in April and May helped the overwintering generation complete their breeding cycle quickly. The first of the summer generation of Small Tortoiseshells were on the wing in late May.
- On 24th June I saw that two Small Tortoiseshells had entered hibernation, the earliest date in any year I have recorded this.
- Number slowly increased over the next two months. By the start of the Big Butterfly Count on 17th July there were six Small Tortoiseshells hibernating and by mid-August the total had reached 14.
- Why do they start hibernating so early? My butterfly book says they hibernate at the end of summer, not the beginning! They are three months early and missing the best summer weather.

What is Normal?

The chart below plots the weeks in which the Small Tortoiseshells entered hibernation from year to year. From this it's apparent that there is a wide variation from year to year.



Small Tortoiseshells entering hibernation in St Albans Shed (week 12 starts 17th June)

In 2017 all had entered hibernation by 7th July. In 2019 there was a mass rush to hibernate at the end of July, but a steady trickle of latecomers through until early October. These later individuals must have been from a second or even third generation of Small Tortoiseshells. 2020 shows a different pattern with lower numbers of first-generation hibernators. The biggest single week for entering hibernation was 14th August, after the end of Big Butterfly Count.

I have received reports from several other recorders around the country. My experience of early hibernation seems fairly typical of the south-east, but patterns are radically different around the UK. What is it which determines whether a first-generation individual hibernates or mates and goes on to produce a new generation? It may be that this years long hot Spring persuaded a few more individuals to breed in early Summer rather than wait until next year. Or it may be that there are genetic differences, with some individuals pre-programmed to be single brooded.

Peacocks also begun their hibernation in the shed early this year with the first three recorded on 22nd July. This is just one day earlier in the year than the first hibernating records in 2018 and 2019, showing this species has far greater consistency in its habits. Although there was a profusion of Peacock caterpillars in early summer, the total number of hibernators is just 5 compared to a record 13 last year. It seems possible that the success of the Peacocks in recent times may have encouraged an increase in its parasites and a reduction in the number of adult butterflies.



If you are lucky enough to find hibernating Small Tortoiseshells or Peacocks, I would love to hear from you. My contact email is

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Malcolm Hull

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