

The Return of the Large Tortoiseshell

Observations on four successive years of monitoring in Sussex

The direction of prevailing wind means that the area between Brighton and Eastbourne is in a direct line between lift off point on the Cherbourg Peninsula and landfall in the UK for many species of migrating insects. It has been postulated that river valleys such as the Ouse and Cuckmere actively channel these insects through their mouths where they then spill into the surrounding countryside via the numerous dry valleys and tributaries. One such species that appears to have benefitted in this way is the Large Tortoiseshell. An enigmatic species, at one time it was observed in nearly every county of England and Wales, even in some parts of Scotland. In the 1940s it was apparently more or less common in all counties around London, including Sussex, but after 1950 it pretty much disappeared from all of its former wooded haunts and clung on in ones and twos only in the Houghton Forest / North Stoke area north of Arundel in West Sussex until finally disappearing from there in about 1981. (**Refer also note 1 below**). The reasons for this are unclear, but the species is known to be particularly prone to attack by parasitic wasps, and the ravages of Dutch Elm disease cannot have helped. Luckily the species is an occasional migrant to our shores, and perhaps as a consequence of global warming it has started sporadically appearing in greater numbers in Sussex since about 2007. In 2020 and 2021 it was confirmed to have successfully bred on the Isle of Portland in Dorset and has also bred at Sheringham Park in Norfolk.

Note 1. In late July 1979 one was seen in Friston Forest on a pathway by S.O. Ripley (Sussex Life Magazine October 1979), and another adult near Seaford by J. Gasgoine in 1981, so it may be that the butterfly held out similarly in that part of East Sussex.

Here in Sussex caterpillars of the butterfly were noticed during a family visit to a remote valley in June 2021. It was not immediately certain that they were Large Tortoiseshell given the paucity of information about an insect that has effectively been extinct here for around 60 years. Confirmation of the significance of the find was made following microscopic examination of the cast skins by the County Recorder, Colin Pratt. This was the first larval web seen in Sussex since a certain Mr. Wheeler looked up at the branches of his tree in Balcombe one June day in 1948. On keeping vigil near the web eventually a single diminutive male emerged in early July but nothing further was seen. It is obvious others managed to emerge and slip away unobserved as two larval webs appeared in the general vicinity the following year and a total of nine larval webs have now been recorded in an approximate eight square miles of surrounding countryside over the period 2021 to 2024. In addition, the butterfly has also bred at the Knepp Rewilding Project near Dial Post in 2022 (Hulme & Oates) and a mature caterpillar was found at Siverhill in Hastings by O & G Hopgood, also in 2021.

Adults have also been seen in the following loci between 2021 and 2024 (Sources C. Pratt – A revised History of the Butterflies and Moths of Sussex and Sussex B.C. branch website):

East Sussex: Abbot's Wood just north of Alfriston; Battle; Birling Gap; Bishopstone; Beckley; Brighton; Canada (Battle); Chailey; Cripps Corner; Ditchling; Eastbourne; East Dean; Friston Forest; Hastings; Hollingbury; Laughton / Lower Vert Wood north of Alfriston; Newhaven; Northiam; Ovingdean; Peacehaven; Ringmer; Rye; St. Leonards; Saltdean; Seaford; Wadhurst; West Chiltington; Westmeston; Woodingdean. **West Sussex:** Angmering; Arundel; Bolney; Perry Hill, Burpham; Dial Post; East Grinstead; Felpham; Hassocks; Houghton Forest; Kingley Vale just north of Chichester, North Stoke; Storrington; Worthing.

The following represents personal observations of the butterfly and life stages over the four years of confirmed residency in Sussex from 2021 to 2024.

Overwintering adults.

These are more likely to be seen from mid – March through to the first week or two of April when they nectar on Cherry Plum, Blackthorn, Bullace and Sallow, in particular. Other plants may also be

used, for example Garden Aubrieta. The butterfly emerges very early, about 8.00 a.m., and then flutters weakly to an evergreen tree or wall to sunbathe for a couple of hours. Once fully warmed it seeks out a suitable nectar source and commences feeding furiously at about 10.00 a.m.. This activity continues for a couple of hours when it actively seeks the woods. It will then power down the glades, rides and edges in the quest for a mate. At this stage males will often use large trunks or the surface of the road to bask and chase off intruders of all descriptions, or pursue mates. Females tend to do more tree hugging and will fly up to males searching them out and lead them on a merry dance from trunk to trunk or rock to rock, with males in tow about a foot or so behind. The hunch is that the female may release a pheromone because males tend to power down their strokes and glide and soar in 'looping' fashion often backtracking on themselves and getting closer to the soil surface until the pair meet up. Such activity continues until about 3.30 p.m. or a little later when unpaired individuals may again return to nectar before retiring to bed quite early. As with the Red Admiral, air temperature seems fairly academic to the insect. The presence of sun is a prerequisite, though, and winds must be quite moderate or absent. If you go looking for the butterfly on warmish days with clouds you will just be wasting your time.

Note 2: Barrett records eggs laid by a female in early September overwintering as larvae when half an inch long. This probably either refers to reared specimens or a southern European record where second broods do occur.

Summer adults

The adults emerge from their pupae from about late June into early July but are only active for about a fortnight, as they enter hibernation very early and are then not seen again until the following spring. Typical nectar plants include most types of thistles (e.g. Spear Thistle, Creeping Thistle), Field Scabious, Bramble and Buddleia. They are quite catholic in their choice. In areas of wood with aphid infestation it is worth looking up at the canopy for specimens sucking up honeydew from the leaves and also where sap is exuding from split bark.

Overwintering sites

The impression gained is that the majority of individuals in Sussex use dense hedgerows and bramble scrub and ivy rather than the oft quoted use of outbuildings and faggot or log piles. To confute this, last year there was a hint one may have been using an abandoned farm building and a local farmer found them overwintering in his summerhouse in 2022. In addition, on 29th April 2023 'JB' of Hollingbury, Brighton found a Large Tortoiseshell fluttering against the glass of his greenhouse and 'GH' of Ovingdean found one on 7th April the same year "within 6 inches of our greenhouse open louvre windows. I can't claim to have seen it come out of my greenhouse but the state of the beast suggested I may have parked my motor mower on it a couple of times!" In northern France open faced barns and wood piles are regularly utilized as well as underground military bunkers, railway tunnels and the like.

Larvae and larval food plants

Best to look for these in early to mid-June when they are present in their webs. English Elm is a preferred food-plant but they have also been found on Wych Elm, Hybrid Disease Resistant Elm and Bullace in Sussex. On a site holding the largest concentration of adults there is a suspicion they are using Wild Cherry but larvae have not been found so far on these trees so they may be using something entirely different such as Sloe or Hawthorn. They also use Aspen, Poplar, Service Tree, Whitebeam, Birch, Willows (including Sallow) and fruit trees such as Pear, Apple and Cherry. Bird Cherry seems to be a particular favourite in northern France. In 2023 over 300,000 suitable trees were investigated over a **huge** landscape area and just 4 larval webs were found. So, the odds of finding a larval web work out at about 75000 to 1 ! Evidence tends to lend support to the research of Kirby and Spence that the development of the eggs of this species might not be delayed by cold in quite the same way as other Nymphalids, insofar as the larvae seem to be just as advanced in cold springs as in warm ones.

Despite historical records suggesting a south-facing site is required, recent experience demonstrates

that any part of the tree or hedge may be used, provided it is sheltered from the winds and in a warm and sunny position free from interference from other trees. Webs have been found looking east, north, west and south facing. The only common denominator is that there needs to be surrounding open ground such as fields, tracks or glades with plenty of sunshine. The height at which eggs are laid appears to be from about 8 feet to 15 feet but on rare occasions may be as high as 35 to 40 feet. Young isolated trees are particularly attractive to the females, it seems.

2021 – Active web north-facing 8 to 10 feet; failed web south-facing 18 to 20 feet.

2022 – Active web south-facing 12 to 15 feet and another east-facing 15 to 18 feet; West Sussex web south-facing 8 to 9 feet on Wych Elm.

2023 – Active web south-facing 35 to 40 feet; two webs at top of Bullace tree not facing any particular direction 15 feet; north-west facing 9 feet; south-facing 8 feet.

2024 - Active web 15 to 20 foot south-west facing; 8 to 12 feet west-facing on Wych Elm.

Summary – East-facing – 2; North-facing – 2; West-facing – 2; South-facing – 4; No direction – 2

Note 3 : A minimum of 20 webs would be required to assess statistical significance.

Note 4: Portland 2020 20ft high SW facing; 2021 13ft and 26 to 32ft high S facing; Sheringham 10ft high S facing

Identifying larval webs

Below is an extensive set of images that may help in the positive identification of larval feeding damage and web characteristics for the species. As discussed above there is quite a narrow window to undertake such a search, when both the size of the larvae and their feeding damage is obvious. Prior to this they are easily overlooked as it is only after the third instar that the larvae disperse more widely and produce the extensive leaf stripping detailed in the photographs. Heavy rains and new growth will rapidly hide any evidence of web or stripping activity within a fortnight or so.



2021 Heavy feeding attack by late instar larvae. North-facing isolated suckering English Elm tree.

2021 Spent larval skins remain in the communal web.



2021 Further feeding damage. Note how the main veins of the leaves remain uneaten while every other green part has been stripped bare.



2022 Feeding damage. South-facing hedgerow. English Elm.





Above and below feeding damage east-facing isolated English Elm tree



2023 Feeding damage field edge isolated English Elm tree south-facing. Note the *Tetraneura ulmi* aphid galls remain untouched!





2024 Feeding damage topmost branches disease resistant elm.



Once again these photos highlight how the shed larval skins are retained in the communal part of the web. Each instar creates a new larval web, the webs becoming progressively larger and more impressive in much the same way as that of Small Tortoiseshell larvae on nettles. Some authors suggest that nettle may also be used as a larval food plant by Large Tortoiseshell but that very small adults are produced as a consequence. A number of trees with larval webs had beds of nettles below and near the trees. It is tempting to postulate that these old records from nettle refer to larvae that have prematurely fallen off the trees and, being unable to feed up, were undernourished at the time of normal pupation. In other words, it *seemed* the larvae were feeding on nettle but in fact they had merely been found wandering on them.

The other point to make is that it is quite easy to confuse Large Tortoiseshell webs with those of communal web - forming moths such as Lackey, Ermines or even Brown – tail where their food plants overlap. Generally, the moth webs are much denser and the degree of stripping of the leaves less intense, as illustrated by this photo of a Small Eggar tent photographed on the same day and similar location to a Large Tortoiseshell web. Further information on this subject is provided on UK Butterflies under the article title Tracking Down the Large Tortoiseshell by Pete Eeles where Matthew Oates has provided a lovely photograph of a Lackey nest photographed in Portland, Dorset. URL link <https://www.dispar.org/reference.php?id=177>.

Matthew and Will Langdon have also written extensively on the matter with their experiences on larval webs in Portland, Dorset and at Knepp, West Sussex.



Above Small Eggar web and cast skins on Cherry Plum. Below Large Tortoiseshell web and skins.





Top – cast Large Tortoiseshell larval skins 2024; below overwintered butterfly on Aubrieta (Rock Cress), April 2021.

Photos above courtesy of Audrey Harris, Dave Palmer, Pete Varnham and Heather Ball. Thanks also to Sue Cross, Colin Pratt, Neil Hulme, Matthew Oates and Will Langdon for additional information.