

'Citizen Scientists – A Thank-you' by Dick Ashford with Jonathan Jones & Jamie Burston ©

When searching for my last butterfly I turned to a citizen scientist. In doing so I began to realize their importance. A network of them had discovered the jet stream by recording the spread of the ash cloud from Krakatoa, as it circled the globe. Gregor Mendel, who founded the science of genetics, was a monk. Today citizen scientists contribute in many areas, notably in astronomy and ornithology. And citizen scientists have been recording changes in our butterfly populations through the UK Butterfly Monitoring Scheme (UKBMS) for the last 40 years. Citizen scientists are all ages and come from all walks of life.

By the end of last year I had seen and photographed 58 of our 59 butterflies and was left with just the White-letter Hairstreak (WLH). In 2017 I made several unsuccessful attempts to see it. Some were hampered by bad weather and in others I was just looking in the wrong of a large site. Local knowledge is essential and success is more likely if visiting the site with a Butterfly Conservation field trip where the leader will take you to the right place. So, although I was excited to hear that the WLH had been recorded in the county, it was the expert article in the newsletter by the young citizen scientist Jamie Burston that caught my eye. Jamie is a young wildlife and portrait artist from Sussex, who has studied the butterfly in detail. His online article on the Sussex BC website (1) is a detailed treatise on all aspects of the butterfly and its foodplant the Elm. Helpfully for me there are tips on how and when to see the butterfly. But clearly the best bet was to contact him and hopefully he would agree to take me to it. So, following an introduction from Jo Poland, we made contact and agreed to meet at a BC outing in Sussex.

Unlike Patrick Barkham (2), who saw the WLH in a North London park, where the elms were scarred by dogfights, and which he described as 'a psycholand' in his book, we were travelling to the genteel retirement town of Seaford on the south coast. I imagined rows of bungalows, shingly beaches and old peoples homes. My friend Jonathan had joined me for the early start.

Meeting in a church car park, and after the health and safety briefing, Jamie gave us a run-through of the WLH life cycle. As the caterpillar feeds on Elm, the butterfly has suffered badly in the aftermath of Dutch Elm Disease. The eggs are laid on the junction between the old and new growth on the sunny side of the tree. After overwintering they hatch in late February or March and produced characteristic holes in the tips of the leafbuds. More mature caterpillars then cause distinctive leaf damage, which leaves a diamond shape at the top of the leaf (see photo). They usually pupate



in crevices in the bark. However they have been documented to sometimes pupate on the leaves of English & Wych Elm (3). On emergence the males fly around the tops of the trees, and squabble over territory by characteristically spiraling upwards

above the trees in dogfights. This distinguishes them from the Purple Hairstreak, which is on the wing at the same time. The Purple Hairstreak tends to tumble around the tree in a more languid style. The female WLH is more elusive & only visits the tree canopy when ready to mate. The WLH is also a morning butterfly, which I had already found my cost, as we had started early, something I am less than keen on.

Of course I already knew that all the tree flying Hairstreaks were fiendishly difficult to photograph, especially using a pocket camera with no viewfinder! However I felt confident, as we headed out, that I would have no difficulty in getting that last elusive shot.

We were soon pointing cameras and binoculars skyward at the tops of the Elms. Jamie then turned to Dutch Elm Disease. The fungus *Ophiostoma Novo-ulmi* is carried by the adult Elm Bark Beetle. They pick up the fungal spores on their body, as they emerge from an infected tree. Females can also collect spores when laying eggs in an infected tree and can lay many thousands of eggs in galleries underneath the bark. Adult Beetles also spread the spores by seeking out healthy elm on which to feed so causing open wounds from their feeding damage in the crotch of branches. In this way the beetle introduces the fungal spores into the xylem of the tree (the tree's circulation). The fungus then spreads through the trees circulation slowly starving it. This produces the tell-tale wilting and browning of the leaves and the die-back. The rootstock, however, can survive and, even now, old affected Elms are producing new shoots. These survive for some years, as the characteristic fissured bark frequented by the beetles doesn't form until the sapling is about 10 years old. At this point it is re-infested and again dies back. Jamie then showed us some Elm leaves with their characteristic asymmetry and also the leaves of the Wych Elm, which are more deeply fissured.

It was getting hot and we had had lots of treetop sightings, so I had definitely seen it. But I couldn't get my binoculars on it, let alone get a photo. Even Jonathan with his huge telephoto lens was having difficulty getting a decent shot resulting in neck ache and the need to lie down! So, although we had seen it, it was becoming clear that we weren't going to get a proper photograph on this outing. This was not good.

Although we weren't doing well, the WLH has done much better than expected since the arrival of Dutch Elm Disease. More mobile than previously realized, its treetop lifestyle has meant that, unless one looks carefully, large populations can remain undiscovered. Andrew Middleton and Liz Goodyear from Herts and Middlesex BC (more citizen scientists) have discovered many colonies in the Home Counties. Also, as the English Elm was being wiped out, councils replaced it with disease-resistant varieties such as 'Sapporo Autumn Gold' on which the butterfly survives quite happily. We learned that Brighton has a relatively favorable climate for Elms, and holds the National Elm Collection with 124 different sub-types of Elm. 'Where is this held?' I asked Jamie. His reply that the trees were on the streets and in the parks of Brighton was a surprise. Furthermore since the first outbreak of the disease in 1971 East Sussex County Council has had a Dutch Elm Disease policy. More recently it has formed the Elm Partnership, bringing together local interest groups and are at the

forefront of research into the most effective control measures (4). Any sightings of die-back can be reported to the council, who will send out their team to aerial prune and destroy infected branches, which can sometimes save the tree. It has also been found that infected trees are more attractive to the beetle than un-infected trees, owing to their lower water content. This has led to the idea of 'Priority Pruning' or the 'Tree-trap' approach. Here selected infected trees are left to attract more beetles until just before the adults emerge in the spring. They are then destroyed. This looks to be lowering the beetle population, which will continue to be monitored. Much of the pressure for this work and the ongoing monitoring has come from citizen scientists in the form of the 'Save the Elm' campaign. Indeed we now also have the 'Great British Elm Search', which has its own website (5). All this work maintains the health of the Elm stock of the town, which is an interesting use of municipal funds and an encouraging crossover between politics, civic pride and the environment.

Luckily for us the WLH will leave the safety of the tree-top to nectar. So, by prior arrangement with Jamie, we headed to Brighton. There he kindly took us to another less well-known location, where the WLH comes down from the trees to nectar on a large patch of thistles. And there they were in profusion. Many fresh specimens, and as they gorged on nectar, we held our cameras within inches of them. Jamie pointed out their tails, like false antennae, which are more pronounced in the females. In common with several other hairstreaks, the WLH also has lines converging on the tails and small eyespots at their base creating the image of the head. The 'W' which gives it its name enhances this illusion. This 'false head' strategy is widely used (e.g. Swallowtails) to mislead or confuse a predator and often gives the insect a second chance. These and other ruses used by butterflies are beautifully described in Philip Howe's book 'Seeing Butterflies' (6).

Replete with photographs and then further repleted with coffee and cake, Jamie took us to another park to look at some of the more recent disease-resistant Elm plantings. These included the beautiful columnar Elm *Columella*. After posing for selfies we said farewell and headed sedately home.

On his website Jamie sells a number of beautiful graphite/pencil reproductions of the WLH (7) and gives a percentage of all his sales to the planting of disease-resistant Elms. This led me back to thinking about his continuing and generous contribution, and the ongoing contribution of our other citizen scientists. UKBMS is one of the largest citizen science projects in the world. By recording butterfly populations we can judge the health of the whole environment. We are beginning to see the impact of climate change on our butterfly populations, for example the northern spread of the Comma and the gradual disappearance of The Wall. We can only hope that as time goes by and the world's population hurtles toward 10 billion, our citizen scientists are not just the chroniclers of the planet's destruction.



WLH false head



WLH feeding on a thistle



Brown Hairstreak minus "Head" (Photo Courtesy Jonathan Jones ©)

Jonathan, Dick & Jamie after their Success



References

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