

# Camilla's Cats – searching for White Admiral larvae in the Lincolnshire Limewoods – August 2017 and beyond

by Pete Smith

The delightful White Admiral butterfly, emblematic species of the Lincolnshire branch of Butterfly Conservation, is a familiar sight to visitors of Chambers Farm Wood and other woodlands in our area during the summer. In 2017, White Admirals, in common with most other butterfly species, emerged earlier than usual and could be found on the wing from the second week of June. I always enjoy watching them flying gracefully along ride edges, and also like the challenge of photographing them when they descend to nectar on their favourite bramble blossoms, but this year I decided I would like to try and learn a bit more about their life-cycle and ecology. To this end, I spent a total of six days out in the Lincolnshire Limewoods during mid-August, searching for White Admiral caterpillars. At this time of year the larvae are just a few millimetres long, and you would imagine that they would be very difficult to find. Well, they are not easy, but by engaging in a little research, asking a friend, employing a modicum of trial and error, and exercising an awful lot of patience, I was able to locate quite a few...

For my initial study site, I chose College Wood near Apley, a wood that I know from personal experience currently supports a strong colony of White Admirals. The first factor that became apparent when I began my searches was that there is an awful lot of honeysuckle out there in our local woods! And the key to having any chance of success is learning what type of honeysuckle growth is most likely to support larvae. Unlike many British butterfly species, whose females select the healthiest, most nutrient-rich plants on which to lay their eggs (often in warm sunny situations), the female White Admiral by comparison is a perverse mother! For she will completely ignore any lush, rich, healthy-looking honeysuckle growth, and will choose instead the most straggly, spindly and often quite unhealthy looking wispy trails of honeysuckle on which to oviposit: these must be growing in either partially or completely shaded conditions alongside ride edges, beneath the shade of larger trees, or straggling through shrubby growth of Sallow, Birch or other ride-side scrub.

I spent between five and six hours out in the woods each day during my six day study period, and the whole experience was a steep learning curve, but I was delighted to find my first larva in College Wood on 11<sup>th</sup> August. I decided to name him Hendrix, and continued the theme of deceased rock star names for each subsequent find...

Despite being so small, the feeding damage pattern made by these caterpillars is so distinctive that once you see it, you cannot really mistake it for anything else. The young larvae eat both sides of the mid-rib of the honeysuckle leaf, but leave the mid-rib itself intact, and take up resting positions at the leaf tip. This in itself is very helpful, but a further clue to their presence is that they also usually silk up their droppings (“frass” pellets) into a small parcel within a dead piece of leaf. The typical appearance is shown below:



*Typical feeding damage  
on honeysuckle*



*Hendrix (1<sup>st</sup> instar larva)*

After the initial thrill of finding my first larva, I spent several hours failing to locate any more, before stumbling across Marley, a second instar larva. Lennon and Curtis quickly followed, making a total find of four larvae at College Wood after three hours of searching.



*Marley (2<sup>nd</sup> instar)*



*Curtis (2<sup>nd</sup> instar)*

I then moved on to Southrey Wood, another good White Admiral site, and found three more larvae here, Mercury, Zappa and Cobain, before heading home, quite satisfied with having found a total of seven caterpillars during my first full day on this project.

Further searches on subsequent visits to both sites, and also to Chambers Farm Wood, gave mixed results. I began to find more and more “empty piers” the more I searched. The term “empty pier” refers to a honeysuckle leaf that once held a larva, but no longer supports one, presumably because the larva has been predated (The “pier” reference is due to the similarity between the exposed mid-rib stretching out from the remains of the leaf, and a seaside pier stretching out into the sea from the beach). I also found further

larvae at all three sites. The photographs below show some examples of empty piers, one of which has also been heavily leaf-mined:



As I spent more hours out searching, I began to get a much better feel for where I was likely to get positive results. The larvae that I found, and also the empty piers, tended to fall into one of three types of location:

1. Thin straggly honeysuckle growing up around the base of Oak trees
2. Wispy twining growth winding up around small-to-medium shrubs, especially Sallow
3. Spindly dangling growth in fully shaded ride side habitat on the south (north-facing) edges of rides

With regards to height above the ground, all were between ankle and chest height, with the majority being below waist level, and just to calibrate these observations, I am about two inches below average height, at five feet seven inches!

Below is a typical larval location, low down by an Oak trunk:



The larval leaf is just visible, being the lower of the top leaves of the honeysuckle growth in front of the Oak. It is noteworthy that the females seem often to lay on bits of honeysuckle with very little available foliage. Fortunately, the larvae appear to be able to grow

sufficiently to the hibernation stage by feeding on just one or two leaves. Below is Holly at Chambers Farm Wood, just beginning the process of constructing a hibernaculum (overwintering “tent”) in which the larva will sit out the winter months:



The final results of my six days in search of Camilla’s Cats can be found below:

(searches carried out between 11<sup>th</sup> and 22<sup>nd</sup> August 2017)

**College Wood: 8 larvae (Hendrix, Marley, Lennon, Curtis, Barrett, Bowie, Prince, Presley)  
+ 18 empty piers**

**Southrey Wood: 5 larvae (Mercury, Zappa, Cobain, Drake, Cohen)  
+ 9 empty piers**

**Chambers Farm Wood: 3 larva (Cable, Holly, Berry)  
+ 7 empty piers**

**Total find: 16 larvae + 34 empty piers**

One of the most striking findings to my mind is the very high mortality rate during the first few weeks of the lives of these young caterpillars. Although this is a relatively small sample size, it represents 50 larvae who had survived long enough to create the characteristic feeding damage patterns on honeysuckle. By mid-August, the apparent mortality rate of 68% must be, if anything, lower than the true rate of loss, as some eggs/larvae would not even have made it to the stage where they would leave visible

damage. Clearly, enough must survive every year for the populations of White Admirals to persist, and as the females lay large numbers of eggs, such mortality is probably the norm.

All larvae were GPS referenced and their locations were tagged. I hope that a few might make it through to next year and that I will be able to follow them again in the spring when they resume feeding, although statistically, the chances of any of my sixteen actually making it through to a pupa, or even better a freshly emerged adult, are slim.

For me, this has been a fascinating journey into the secret world of the White Admiral butterfly, and I have learned a great deal about the larvae and where to find them, whilst also enjoying just being out and about in our marvellous Limewoods. By the end of my study I was beginning to feel like I was thinking like a female White Admiral, imagining which bits of ride edge would appeal as egg-laying sites, and where I would be best off concentrating my searches! I hope to be able to repeat this again next August, with a larger sample size, and better prospects of following the life-cycle right through full circle.

## **Camilla's Cats – The Sequel**

### **The search for post-hibernation White Admiral larvae in the Limewoods**

This is the continuation of a previous article which appeared in an earlier edition of the BC Lincolnshire branch newsletter, describing my searches for White Admiral larvae in the Lincolnshire Limewoods during August 2017. My previous write up described the finding of 16 larvae of this species, and included details of the type of locations in which they had been found, along with a few photographs of the young caterpillars themselves. All of the larvae were allocated names, and I ended the article with the hope that I would be able to follow some of these characters through their development during the following spring, assuming that any of them survived the winter.

On the 23<sup>rd</sup> April 2018, in what was proving to be quite a late spring, I ventured out to try and rediscover the subjects of my study. I had no idea how many, if any, of the

overwintering larvae would survive, but on this day I was delighted to find three of them alive and well! At College Wood I found **Barrett**, still in the third instar, sat motionless close to his hibernaculum and still very brown in colour.



*Barrett, post-hibernation*

Further round the wood I met up with **Lennon**, who had moved a good 15cm away from his hibernaculum; he had clearly been feeding for a while as he was in his fourth instar, considerably bigger than Barrett, and was sporting a fine green coat! Moving on to Southrey Wood, I found **Cobain** sat on a bare twig, 10cm below his hibernaculum. He was in the fourth instar, but still quite small.

Weekly visits were now in order to monitor these surviving larvae. On 30<sup>th</sup> April I found **Barrett**, **Lennon** and **Cobain** in exactly the same positions that they had been in a week previously. With warmer weather forecast, I hoped that they would have a growth spurt soon!

A visit to College Wood on 7<sup>th</sup> May found **Barrett** still in the same position on his hibernaculum – he hasn't been eating at all and is still small and brown, but he looks healthy enough. **Lennon**, on the other hand, has been eating plenty, and is now resplendent in the green finery of his final instar new coat! The rediscovery of **Curtis** nearby was a great surprise; he is in his late fourth instar and looks fit and well. At Southrey there was no sign of **Cobain**, but there is fresh-looking frass on two leaves very close to where I last saw him, so I am hopeful he is still around and merely well-hidden today. I was very happy to also rediscover **Drake** not far away from Cobain's last sighting but on a completely different stem of honeysuckle. This means that at least 5 of my larvae have survived the winter!

15<sup>th</sup> May – at College Wood **Barrett** is still progressing very slowly, having hardly grown since last week, but he is now showing some nice green colouration. **Lennon** and **Curtis** are both looking well, with **Curtis** having had a growth spurt and now well into his final instar. The highlight of the day was rediscovering **Marley**! I had high hopes of re-finding him, as his hibernaculum looked intact on 23<sup>rd</sup> April, but today is the first time I have actually managed to locate him. At Southrey, **Drake** was in almost the same place as last week, and once again there was no sign of **Cobain**. I fear he may have been lost... Still, the rediscovery of **Marley** puts the post-hibernation survivor total up to 6!

21<sup>th</sup> May – at College Wood **Barrett** is finally catching up, eating well and growing nicely! **Marley** and **Lennon** remain healthy, but of **Curtis** there is no sign. He may have wandered off to pupate.

28<sup>th</sup> May – Drake will surely be pupating any day now. He looks to be fully grown.



*Drake (final instar)*

Despite my best efforts, I lost track of all remaining larvae over the latter days of their lives, and didn't manage to follow any of them to the pupal stage. It may be that they had all been predated, or it may be that the pupae were too well hidden or camouflaged for me to find – we shall never know for sure, but I like to think that at least one of them managed to make it through to emerge as an adult White Admiral butterfly. Barrett, who was the slowest off the mark coming out of hibernation, was the last larva that I managed to keep up with. He was still feeding on 11<sup>th</sup> June, but had vanished just a few days later.



*Barrett (final instar) on 11<sup>th</sup> June 2018*

In conclusion, from my cohort of 16 White Admiral larvae found in August 2017, at least 6 survived through the winter to emerge from their hibernacula and resume feeding in spring 2018. Of these 6, at least 5 made it through to the final instar. What happened to these 5 remains unknown, but this study, although only covering a small sample size, has enabled me to learn much about the habits and survival rates of these larvae in our local woods.

This August I have already been out to locate more larvae, and this year I have also been able to find a number of White Admiral eggs. With more subjects to follow through another season I hope to be able to build up a better, more accurate picture of survival rates and phenology – the more individuals that I can find and follow, the more robust the data that I should be able to gather. There is a fascinating secret world of life and death, survival and failure going on out there in amongst the shady honeysuckles of our Limewoods!

## Post-script, Autumn 2020

I have continued to follow the successes and failures of White Admiral larvae over the 2019 and 2020 seasons, and cumulatively have now observed well over two hundred eggs/larvae. My initial observations on predation rates in the early stages from the small sample size of just fifty seem to have been borne out by subsequent data.

At least 66% of larvae at my Limewood study sites are lost each year by mid-August. The main predators appear to be small spiders, although this is somewhat anecdotal, as I have never actually seen a spider in the act of taking a larva. However, the honeysuckles chosen as egg-laying sites by female White Admirals are very well populated with arachnids during August when my main searches take place.

It seems that if a larva makes it into the hibernaculum, then there is a high probability of it surviving to the following spring, and from what I have observed, post-hibernation predation rates are very much lower than those in the early instars, with good survival through to the final instar. However, other studies have suggested high predation rates of late larval and pupal stages by birds in seasons where the weather in early June is poor, and development is delayed. I cannot comment on this, as I have yet to follow any final instar larvae through to the pupal stage. I seem to suffer from White Admiral “pupa-blindness”!

I hope to continue studying these fascinating creatures in future years. They are beautiful at every stage of their life-cycle.



*White admiral larva, 3<sup>rd</sup> instar, August 2020*