Orange-tip (Early Stages)

Vince Massimo

Orange-tip ova are easy to find on Cuckoo Flower and Garlic Mustard in April and May.

On 25th May 2010 I observed a female Orange-tip fluttering about in the garden, landing on every plant except the large multi-stemmed Cuckoo Flower, which she seemed to be purposely avoiding. She continued to do this despite me shouting and pointing at it. Perhaps there were eggs already there? After she departed I checked the plant and was surprised to find 3 well developed larvae. They were on separate stems, so there was enough food for all.
Once I knew what to look for (and what part of the plant to inspect) I began to find larvae in many different locations, but mainly on Garlic Mustard which is the dominant larval host plant in this area. Some of these plants were on roadside verges or alongside public footpaths and were in danger of being cut back, so I relocated many larva but kept a few back to rear on.

There were 11 larvae in all, the first of which pupated on 13th June 2010 and the last on 27th June 2010. Most attached themselves to twigs that I provided for them.
For a long time I have mistakenly thought that the larva started off facing the stem and then flipped round to face outwards during the course of pupation. I have only just realised that this is an illusion caused by the shape of the pupa as it enters its final form. This is apparent in the above series of images and those of the hatching female later down the page.

I wanted to replicate natural conditions so I put the pupae in a wire cage and left them in a sheltered spot in the garden for the next few weeks, but later found that many had become detached from their stems for some reason. Thereafter they were put in a cool shed for the rest of the year and to see out the winter.

All Orange-tip pupae are initially green, but the majority then turn brown. All of mine went brown and continued to darken as the winter progressed. In my third season of trying I got a green one.

There are then further colour changes in the week prior to hatching.
This sequence seems to have taken longer than usual in 2012, probably due to the cool conditions existing at the time.
The female pupae suddenly go quite pale before the adult colouration shows through the wing casings.
When they were ready they were released into the garden where I had already got some established Garlic Mustard plants.

In 2011 I saw my first Orange-tip in the wild on 28th March, which is my earliest ever sighting. The first of my pupae hatched on 8th April 2011 and the last on 19th April 2011. They were over-wintered in a cool shed on the north side of the house. This location had good natural light and ventilation, offering protection from the worst of the weather, but not warming up too readily. Of the 11 pupae, 10 hatched successfully (5 male and 5 female). On the day of my first hatching I also found a mating pair in the garden. I strongly suspect that the female had developed from one of the 3 original larvae found on the Cuckoo Flower on 25th May 2010 and had just emerged from the garden undergrowth. Here she waited and was found by the male.
In 2012 my first sighting of an adult in the wild was on 23rd March, while the first of my pupae hatched on 16th April, and on 26th February 2012 I even managed to find a wild pupa while out on a local walk. It was on an Honesty stem.

Of all the foodplants used, it seems to me that most reported pupae are found on Honesty (*Lunaria annua*). This particular pupa turned out to be a female which hatched on 7th May:

The colour of the pupa is quite variable, ranging from pale green to a creamy brown to a very dark brown. With these very dark pupae, the wing colours of the developing adult are masked to a greater degree, making them quite un-photogenic. Here are two at the same stage of development:
2011 / 2012 gave me the opportunity to complete another sequence. This sequence has taken the longest of all (almost 11 months) because it follows a single individual larva from pupation in 2011 to the adult emerging in 2012. The first image is a typical larva, but all the rest are of the same individual which emerged on 25th April 2012.

Having missed the emergence of all males in 2011 and the first three in 2012, sometimes just by a matter of seconds, I was determined to capture the event in 2012. For this species, apart from the obvious dramatic colour changes to the pupa, there is no sign that emergence is imminent. The pupa is rigid, so there is no initial wriggling to indicate that something is about to happen. All I had to guide me were the observations made on previous pupae. Judging the date was the easy part. The previous three males had all hatched between 10am and 2pm, so at 9.45am on 25th April I was all set up and waiting for something to happen. At midday, again without any warning, the top of the pupal case began to split and I finally got my sequence as shown below.
As I write, I have yet to see an Orange-tip in the wild in the 2013 season and records will show that they are running approximately one month later than usual. However, adults from the pupae that I have been over-wintering have now started to emerge and they still never cease to amaze.

Whilst many aspects of the development of the Orange-tip have already been covered in this article, a new opportunity was to present itself in July 2012 when I found a green pupa. Up until that time I had only encountered the brown form of this stage, so I was keen to document its development as it approached the time for the adult to emerge. The pupa was found on a Garlic Mustard stem in my garden and was not the result of one of numerous larvae that I usually rescue from roadside verges.

You can still see signs of old feeding damage on the seedpod above the pupa. It stayed green all winter, but started to darken towards the end of March 2013.
Almost overnight on 21st April it suddenly paled. This was a sure sign that it would be a female.

In the next few days the wing colours started to show more strongly, but then grew paler again in the hours just before the adult emerged.
She was released into the garden a few hours later and flew away strongly. I had 10 pupae in all, which have so far produced 5 males and 2 females. To date all have been released and there are 3 females yet to hatch.

Some of the 5 Orange-tip males which I released have stayed in the close vicinity and continue to patrol adjacent gardens when the sun comes out. I have also observed both of the females I released a few days ago being mated, but they were in a neighbouring garden, so did not get any photos. All tend to roost in the same area overnight or when the temperature drops during the day. Two females which emerged yesterday were released today, whilst the final one should emerge shortly.

The release point is a clump of Garlic Mustard which self-seeded from last year’s plants in a sheltered spot of the garden. I wait for an approaching break in the cloud and put them on the plant. When the sun breaks through, each will gradually open their wings and bask for a few moments before flying off.

I only got photos of one of the 5 males. This one appears to have some extra black markings on the wingtips, but I don’t know if it counts as an aberration.
Reference Images of Adults

Orange-tip male (release 5)
Caterham, Surrey 27-April-2013
Photo © Vince Massimo

Orange Tip male 2
Crawley, Sussex 28-March-2011
Photo © Vince Massimo

Orange Tip male
Crawley, Sussex 28-March-2011
Photo © Vince Massimo

Orange Tip male
Caterham, Surrey 26-April-2012
Photo © Vince Massimo

Orange Tip male
Caterham, Surrey 8-April-2011
Photo © Vince Massimo

Orange Tip female
Crawley, Sussex 24-April-2007
Photo © Vince Massimo

Orange Tip female
Caterham, Surrey 15-April-2011
Photo © Vince Massimo
Aberrations

Orange Tip male (pale ab.)
Crawley, Sussex 28-April-2008
Photo © Vince Massimo

Orange Tip male (ab.macula-punctata)
Crawley, Sussex 23-March-2012
Photo © Vince Massimo