



Life cycles of White Butterflies

Part 1: Orange-tip and Green-veined Whites

There are four species of white butterfly in Scotland: Large White, Small White, Green-veined White and Orange-tip. These species all feed upon plants within a group called the Brassicacea.

Brassicas include some cultivated crops like Cabbage, Kale and Broccoli as well as garden plants like Honesty and **Dame's Violet**. **There's also a very large number of species in this family which grow mostly in the wild,** such as Cuckooflower.

While all of these butterflies have caterpillars which feed on Brassicas, other species of white butterfly found elsewhere can feed on other types of plant.

Let's start by looking at the only species in this group which has a single generation by year in Scotland: the Orange-tip. Here, Orange-tips typically emerge in numbers from **the beginning of May and usually aren't seen much after the middle of June.**

The male of the species gives us the name 'Orange-tip', as females have no orange. The orange marks may indicate to predators such as birds that the butterfly is unpalatable. As with many brassica-feeding species, the caterpillars build up mustard oils in their bodies, so they must taste like a mouthful of sharp mustard! It is **possible that the females don't have these orange tips on their wings** as they are generally less active than males, and will spend more time close to caterpillar plants waiting for males to mate with. In contrast, the males have to fly about, patrolling a territory and intimidating other males.

Both sexes are distinctive by having a marbled-green appearance to the underwings. An interesting fact is that this green colour is actually made from a mixture of black and yellow scales on the wings – our eyes combine those colours to make green!

When they mate, the female will search out some plants to lay eggs on. The great majority of eggs are laid on either Cuckoo-flower (also known as **Lady's-smock**), or Garlic Mustard. Cuckooflower is widespread in damp **grasslands, and you'll often see it growing along water edges, road verges and** a wide range of sites. The flowers are a pale lilac, and the leaves are divided into small lobes. Garlic mustard is mostly found in disturbed ground at woodland edges. The flowers are very small and white, and when you crush the leaves they smell of garlic.

Females find the plants by sight at first, choosing large plants. She'll then land and taste the plant with her feet to assess with nutrient quality of it. If it's suitable, she will usually lay a single egg (or a very small number of eggs). Orange-tips eggs are orange or yellow and oval, like Orange Tic-Tacs, and are always laid on the flower stalk which will develop into the seed pod



Photos top—bottom:
Orange-tip Male (Iain Leach); Orange-tip Female (Tamas Nestor) and Orange-tip underside (Adam Gor)

(other white butterflies mostly lay on the leaves).

They're very easy to find – why not go looking for some?

The reason she normally lays eggs in small numbers is that the caterpillars are cannibals! They will eat other Orange-tip eggs and caterpillars!

When not eating other caterpillars, the caterpillars will feed mostly on the developing seed pods and develop quite quickly. They shed their skins four times and after three or four weeks will have reached full size. At this point they wander off in search of a place to pupate, sometimes travelling many meters to find woody plant stems as the plants they have been feeding on will die back over winter. The caterpillar attaches itself to the stem using silk threads, then sheds its skin a final time to form the pupa – or chrysalis – which is shaped like a thorn. At first this is green, but it turns light brown to match its surroundings. It will remain this way until the following spring, so this butterfly spends about 10 months of its 12-month life like this!



Orange-tip egg (Gilles San Martin) and Pupa (Dean Morley)



Green-Veined Whites (Tamas Nestor and Dean Morely)

The Green-veined White is our other white species which is mostly found in more natural habitats. It first emerges around the same time as Orange-tips, and they share some of the same caterpillar foodplants. If laying on Cuckooflower or Garlic mustard, the female usually lays on the undersides of leaves, but will sometimes lay on the seed pod or stems. The eggs are pale yellow or white, in contrast to the yellow or orange of Orange-tips. This species can also lay eggs on other plants in the Brassica family, including Charlock, Hedge Mustard, Large Bitter-Cress and others.

The caterpillars develop quickly, and take less than three weeks to reach full size and pupate. They usually do this low-down in vegetation or on hard surfaces like woody stems.

Unlike the Orange-tip, Green-veined Whites can have multiple generations per year. So the offspring of those adults we see in early summer will likely be adults themselves by mid-late summer. Then their offspring will survive the winter as pupae, and emerge the following year.

Green-veined Whites can be found in many habitats, but you'll most often see them in large numbers wherever the soil is damp, and where there is some shelter from wind. This can include along riverbanks, hedgerows, pond margins and woodland clearings. They are distinctive by being the only species in Scotland with the thick grey veins on the undersides, but the ground colour varies from pale grey to a strong yellow-green. They also usually have thin thread-like black veins on the uppersides of the wings.



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