**Get off my Brassicas!** (One gardener's battle for Broccoli)
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I love Purple Sprouting Broccoli: I love the colour of the flower, the crunchiness of the stalk, the way the water turns purple as it cooks and feeling healthy simply by having it on the plate. More than eating it though, I love *growing* it, or more accurately, *trying* to grow it.

Every year I watch the shoots appear in the pots, protect them from frost, keep them watered and thin them out so the strongest have the best access to nutrients and sunlight. The highlight is planting out the young plants and seeing them flourish in the ground. It is around this time that the Large White (*Pieris brassicae*) appears. Initially I celebrate that my small urban garden can attract any wildlife at all. That changes though when I notice a proliferation of small holes in the leaves of my beloved Broccoli.

The butterflies have laid their eggs in clusters on the underside of the leaves. The caterpillars hatch and start munching their way through their favourite food (we do at least have that in common!). I have been seen picking caterpillars off leaves and yelling 'Get of my Brassicas' as they are unceremoniously flung to a less Broccoli-centric part of the garden. This year however, I discovered an unlikely ally.

I noticed a Large White caterpillar being very still at the top of a fence post. It seemed so out of place that, rather than flinging it down the garden with its contemporaries, I left it where it was to see what happened. The following day it was still there, but was now surrounded by what looked like lots of tiny balls of yellow felt. What's more, the caterpillar was tending to them! The tiny balls of felt were in fact the cocoons of a wasp. Not the yellow and black stripy sort that ruins picnics, but something very small (adults are just a few millimetres long) and on the face of it quite unremarkable: Its name is *Cotesia glomerata.*

*Cotesia glomerata* is a parasitoid wasp. The female has a sharp 'ovipositor' which pierces the outer surface of newly hatched caterpillars. She places 25-30 eggs within each caterpillar where they are protected from harm[i]. Despite the caterpillar's extra cargo, it continues to grow until it is ready to pupate[ii]. It is at this point that the wasp eggs hatch and the larvae all break through the skin of the caterpillar and spin a cluster of cocoons[iii]. Incredibly, this doesn't kill the caterpillar who survives for another couple of days guarding the cocoons! Unsurprisingly, being parasitised takes its toll and, as the adult wasps emerge from their cocoons, the caterpillar dies.

I'm amazed at how tiny wasps locate tiny caterpillars. There have been lots of studies on what visual and chemical signals might be helping them locate hosts. One of the most surprising findings is that the wasps don't actually search for the caterpillars. Instead, the damaged plants give off the signals they're attracted to.[iv] It's as if the cabbage is calling for help! Perhaps the weapon I need to attract the wasps to my Brassicas is a sacrificial leaf and my trusty hole-punch!

As a keen gardener the thought of anything helping with the battle against the caterpillars fills me with joy. If you're not a gardener or entomologist though it is understandable that you could find the fate of the caterpillar a little distasteful. If that is the case, take heart from the fact that there is a sting in this tale. There is another wasp, (a type of Ichneumonid wasp) which is also a parasitoid, and its host of choice just happens to be our friend *Cotesia glomerata*: Our parasitoid becomes the parasitised.

Harvest this year was not a success – not one leaf or flower of Purple Sprouting Broccoli made it to my table. Next year, I shall follow Gardener's World's advice and cover the plants with netting to

prevent the adult Large Whites laying their eggs in the first place. In the meantime, I shall take heart that at least one species of butterfly and two species of wasp fed well on my Brassicas this summer. My small urban garden sustains more wildlife than I realised….

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**References:**


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[iv] Vet, L.E.M. 1999. From chemical to population ecology: Infochemical use in an evolutionary context. *Journal of Chemical Ecology,* 25(1) pp 31-49