



The Orchid and the Bee



Plants are sneaky tricksters. They use a variety of techniques to **entice** insects and some small animals to pollinate them. Some like honeysuckle use the reward of sweet, tasty nectar; others like jasmine use a strong smelling perfume and most such as roses use bright coloured petals that stand out amongst the green surrounding environment. These three techniques are very general, as they don't tend to target a specific species – they just hope to attract any insect. Others are a bit more specific such as flowers like the corpse flower that produces a smell like dead and **decaying** meat to attract flies and other **carrion**-eating beetles. Some flowers even trap their pollinators in order to ensure they are completely covered in pollen as they struggle to escape. It makes sense to be more specific in the species that they target as it means less competition between plants for pollinators and it guarantees that pollen is transferred to the same species of plant.

A subfamily of plants that goes even further than pretty petals and nice smells are orchidoid orchids. They are probably the most **deceptive exploiters** of them all. Some of these orchids are specially adapted into tricking various insects by mimicking the female insect.

One particular orchid, *Ophrys bombyliflora* (or commonly known as the bumblebee orchid) is specially adapted into tricking solitary bees (which are not actually bumblebees at all like the name suggests). The flowers of the orchids are mostly dark brown-black with hairy bits, making them look like a female solitary bee. They also release chemical signals called **pheromones** that are very similar to those released by the female solitary bee. The bees use this to attract a male for mating. The orchids actually releases a stronger pheromone than the female bees, which makes them more attractive than the bee itself. When a male solitary bee sees the flower and senses the pheromones, it flies to the flower and starts to mate with it. As he struggles and shifts about, the flower drops **pollinia** (a mass of pollen grains in a sticky blob made by the anther) that stick to his head or rear end depending on the way he mates. Once he realises that the flower isn't a female bee at all, he flies away, carrying the pollen with him. He is then attracted to another flower and again tries to mate with it. This time as he jiggles, he rubs off the pollen onto the stigma of the flower and so pollinates it. Yet again, he realises that he has been **duped** and flies off in search of a female solitary bee.

Other examples include hammer orchids, which attract specific species of thynnid wasps and bee orchids (such as the yellow bee orchid, fly orchid, cyprus bee orchid, early spider orchid) which attract specific species of bees and other insects.

This subfamily of orchids has evolved to attract a specific pollinator and expends much energy to ensure pollination. The benefit of this is that its pollen is guaranteed to be collected and deposited on the same species of flower resulting in **fertilisation** and the continuation of their species. The relationship between these two organisms is **commensalistic** because the flower benefits by being pollinated and while it is an inconvenience to the bee, it neither benefits nor is harmed. Plants are sneaky, conniving and don't think twice about getting animals to do their dirty work; you might even think that they are very, very smart.



corpse flower



early spider orchid



bee orchid



fly orchid



bumblebee orchid