A Mumbo Jumbo Moment

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Most of us orchid tragics have heard how our beloved plants evolved over thousands of years to aid reproduction. We're told that many orchids have private parts that look like those of insects, thereby tricking some naïve bug into trying to mate with a plant and miraculously enabling pollination. Other orchids produce nectar that is attractive to insects or hummingbirds and somehow in the "sucking up" process, pollen is transferred. Some orchids have a fragrance, or stench that is supposedly mind blowing for only one particular bee or wasp or gnat.

Have you ever wondered, like me, how those in the know have figured all that out? Who **are** these people who sit around in the bush all over the world for days or nights on end, in the hope of seeing what creature pollinates a particular orchid? Or is it mostly educated guessing? Could it be a bit of scientific mumbo jumbo, based on data collected by people like Charles Darwin? Perhaps even knowledgeable supposition, after painstakingly examining the structure of a particular orchid? Who can blame them for theorizing? After all, surely you'd have to be extraordinarily lucky to actually see the process of natural orchid pollination with your own eyes!

Lucky indeed, not to mention excited. Mother Nature herself put a stop to my skepticism a few years ago. The following is how it unfolded.

With nothing better to do during COVID-19 lockdown in 2020, I set a goal of getting some multifloral paphs to flower that had been stubbornly refusing to do so for many years. Nightly, I put a dozen of them in the heated glasshouse. Every morning, out they came to be hung up under a north-facing pergola with primo light during the winter. Repeat, repeat and repeat, every day for six months without fail. These paphs got kid glove treatment. In November my efforts were rewarded. I noticed sheaths in the tops of three growths of one of the multiflorals, *Paphiopedilum philippinense*. That in itself was pretty exciting! But it got better.

Once those sheaths had appeared, the flower spikes grew at a great rate of knots. I had to adjust the ties almost daily to keep the spikes nice and straight on their stakes. Three spikes then produced three buds each, creating more excitement!

All nine flowers opened successfully, and I was quite pleased with completing my goal.

One day shortly after all the flowers had opened, I sat my paph on the table under the pergola. As I was gazing at it lovingly, I noticed what I thought was a bee also having a good look. Buzzing around, it landed on a stake, then on a clip, then on one of the dorsal sepals. The colouration of the bee was very similar to the maroon of the flowers. I thought to myself that this is quite a coincidence.

The bee got closer, and closer to the column, until it managed somehow to tumble into the pouch. Didn't that throw it into a panic! It buzzed around angrily for a few minutes before sussing out that the only way to escape was to crawl up the back of the pouch. The rear of the pouch is slanted at a ramp-like angle, and also contains hairs which the bee could grab on to. Am I right that this is another coincidence? The bee slowly and carefully made its way up the pouch, and then had to squeeze through a small opening behind the column to find freedom. It stuck its head out first, and then pulled itself out with its front legs. Lo and behold, was that a bit of pollen stuck on its head?

I could not believe what I was seeing! With my own eyes, right there in front of me, in my own backyard! Had I actually witnessed an insect collecting pollen from my *Paph. philippinense*? Is that what all that mumbo jumbo had been trying to explain to me?

Straight to one of the Face Book orchid groups I went in a high level of excitement to pose the question. Is it possible for a non-native orchid to be pollinated by a native bee? Specifically, a *Paph. philippinense*? Very quickly, the answer came back from a very knowledgeable-sounding person that *Paph philippinense*, native to Borneo and the Philippines, is pollinated by a type of hover fly, of which there are many close relatives in Australia. The person went on to say that the female hover fly is looking for a place to lay her eggs, and may effect pollination in the process.

Back to my paph for another look. Sure enough, what must be a hover fly, and not a bee as I had originally thought, was buzzing around again. It landed on a flower, and then proceeded to drop three tiny white things out of the back of her abdomen onto the pouch. They had to be hover fly eggs, right? I quickly removed them, as the last thing I wanted was for little grubs to hatch out and munch the flowers that I had worked so hard to obtain.

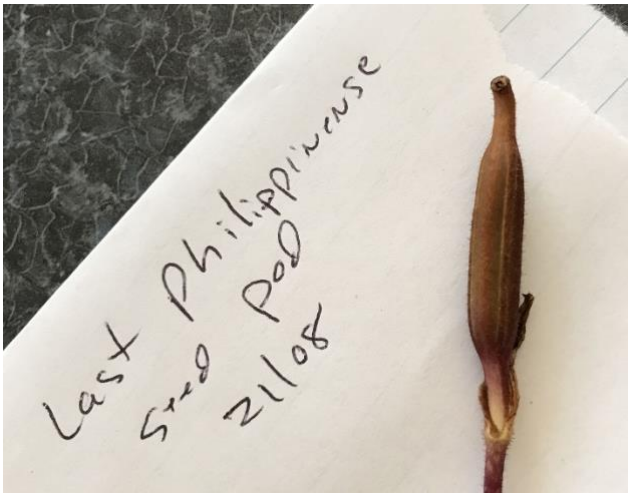
Although I continued to watch on and off that day, and for a few days afterwards, I did not see a repeat of the hover fly process. This left me wondering if pollination had actually occurred? Or, was that just the antics of one confused insect? Maybe it was so smart, it didn't want to fall into another pouch, and have to scramble back out again. Had it moved on to different plants, dropping the paph pollen somewhere along the way. My skepticism was still running rampant.

Several days later, some of my beautiful *Paph. philippinense* flowers started turning brown. After over six months of daily walking that orchid back and forth between the glasshouse and pergola, and after all nine buds only being open a few days, the flowers were drying up already! Then they started falling off! What was going on?

Mother Nature, that's what. Within a week all nine flowers turned brown and fell off the spikes. But the spikes didn't go brown and dry up. Nor did the ovaries that had connected the flowers to the spike turn brown. On the contrary, they started to swell. Of the nine flowers, seven ended up with swollen ovaries. All seven of those developed seed pods over the next seven months. When three of the pods dried up, I dissected them, and found that one had started forming tiny hairs down the length of the pod where presumably the seeds would have attached. The other two were empty.

By August, the remaining four pods started turning yellow. An orchid mate advised me to cut the pods off the spikes and place in a paper envelope in the fridge until lock down was over. I could give them to someone who could have a go at flasking the seeds, if any were viable. Several months later when I took the envelope out of the fridge, I opened it up to have a look. There in the bottom of the envelope was orchid seed. Several of the pods had split open and spilled out squillions of miniscule black specks, which could be nothing other than *Paph. philippinense* seed.

It was only at that point that I fully conceded that I had in fact experienced a miraculous, mumbo jumbo moment. On 22nd December 2020, the process of natural orchid pollination began to unfold right in front of my own eyes. In my backyard. Between a wild insect and my non-native orchid. Not just any insect, a particular insect that was the perfect size to barely squeeze through the opening in the flower where the pollen was strategically placed. An insect dumb enough to fly to the next flower, fall into the pouch, climb back out again and transfer the pollen from the first flower to the second in exactly the right spot needed to complete pollination. Was it the same hover fly that repeated the whole process seven times? Who knows? How did *Paph. philippinense* remain in existence all those thousands of years ago while it was evolving into the perfect plant it is today with reproductive parts that can be quite easily pollinated by a passing hover fly? That is another great mystery of the orchid world.



All I know is the instant I saw that hover fly pull itself out of the gap in my paph flower with pollen attached to its head, that was the most exciting moment of my orchid life. I will never again refer to anything I hear about orchid pollination as scientific mumbo jumbo. Thank you, Mother Nature. Lesson learned, never to be forgotten.