



## Wonderland: The Mystery of the Orchid

Transcript for the Audio Clip by Ewen Cameron, Auckland Museum Curator of Botany as published on [www.aucklandmuseum.com/wonderland](http://www.aucklandmuseum.com/wonderland) for the Mystery of the Orchid exhibition.

### The Auckland Museum Collection

As Curator of Botany I'm involved in research. My personal interests are recording the distribution of wild vascular plants of northern New Zealand especially the threatened native species (which includes the orchids), and the ever increasing weeds. Some of my favourite areas for field work are the many northern offshore islands. Baseline documenting of the complete vascular flora of these islands for the first time can be fun – the excitement of the unknown. In remote areas of Northland I've been fortunate to see some of the orchids whose seed has blown across the Tasman Sea in recent times from Australia, e.g. *Cryptostylis subulata*, *Thelymitra matthewsii* and *Plumatichilos tasmanicum*.

As Curator of Botany I also oversee the herbarium, which numbers more than 0.3 million pressed dried plant specimens, over 5,000 of them are orchids and most were collected in New Zealand. The earliest Museum herbarium specimens were collected by Joseph Banks and Daniel Solander on Cook's first visit to New Zealand in 1769-70, and they include 5 species of orchids. In fact Solander made one of his few mistakes referring to our epiphytic orchids as parasites – coming from Europe he wasn't familiar with epiphytic orchids.

The Museum's herbarium began with Thomas Cheeseman's bequest of his personal collection of some 20,000 specimens to the museum. *Thomas Frederick Cheeseman* was the Director and sole curator of the Auckland Museum for 50 years, 1874-1923. During that period he described many new plant species, including 4 orchids – all his type specimens remain in the Museum along with his extensive personal correspondence. The year before Cheeseman began working at the museum he sent a copy of his just published paper to Darwin on his observations on a New Zealand greenhood orchid (*Pterostylis alobula*), being pollinated by a small fly.

Darwin was impressed and he later sent Thomas Frederick Cheeseman a copy of his revised edition of his book on the Fertilisation of Orchids, annotated "with the authors compliments and respect".

### What makes an orchid an orchid? How do they differ from other flowers?

With 3 sepals, 3 petals they are typical monocots, similar to lilies and irises. However, where they differ is having a central column containing the stigma and stamen. This central column and the usually enlarged 3<sup>rd</sup> petal characterise most orchids.

**Orchids are considered the most evolved flower in the world. What does this mean?**

The most primitive flowers have whorls of floral parts (sepals, petals, stamens and carpels), with the ovary inside/above the flower, e.g. magnolias, water lilies. Over time flowers evolved to reduce and fuse their floral parts and the ovary moved to be under the flower (better protection from pollinators). In most orchids the stamens are reduced to one, it's fused in the column along with the stigma, and the ovary is under the flower – all highly evolved characters.

**One of the extraordinary things about orchids is that they often have unique pollinators. Can you explain what this means and what advantage it gives orchids?**

It's a wonderful example of co-evolution that that has developed over time, and has fascinated biologists since Darwin's first observations. Some other plants have also unique pollinators, e.g. the figs, but the orchids take it to the extreme and usually do it for deceit rather than rewarding their pollinators, like most others flowers. The advantage of this relationship is that it increases the chances of pollination with just enough effort to attract a single pollinator. The disadvantage is if you lose your pollinator you may be history.

**Why do you think so many people find orchids so fascinating?**

I think it's the bizarre diversity of shape and colour of the flowers – some look more like animals rather than plants, and others look a bit suggestive of human anatomy. That fact that many of the flowers are long-lasting increases their attraction. Ground orchids fascinate people, they are common in New Zealand, and magically appear each year from their underground tubers, flower with all their splendour, seed, and then disappear for another year.



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