

ORCHIDS AND THEIR POLLINATORS

While some orchids are self-pollinating, most attract and rely on a specific pollinator to reproduce. Orchids evolved alongside their pollinators, including bees, wasps, flies, moths, butterflies, crickets, and the occasional bird. Many of the plant's unique shapes and smells accommodate just one pollinator or a closely related group of pollinators.

Masters of Deception

Orchids are world class liars, using energy-rich nectar, protein-rich pollen, color, shape, and fragrance to attract pollinators. In doing so, pollinators unknowingly collect pollen on their bodies, which fertilizes the next orchid they visit. Mimicking the smell and shape of a female insect or the flower of another plant, or temporarily entrapping their victims, are just a few of the tricks orchids use.



The labellum of the mirror orchid (*Ophrys speculum*) resembles the female wasp (*Dasyscolia ciliata*) to lure the male wasp to the flower for pollination.



Madagascar star orchid or Darwin orchid (*Angraecum sesquipedale*)



Morgan Sphinx moth (*Xanthopan morgani praedicta*)

Darwin's Orchid

In 1862, Charles Darwin, the naturalist most known for his theory of evolution, was sent a sample of the Madagascar star orchid (*Angraecum sesquipedale*). After seeing the orchids long, narrow nectar tube, he predicted that there must be an insect with a very long proboscis (i.e. tongue-like part) that could reach all the way to the bottom of the tube to drink the nectar. However, no such insect had been discovered. Many believed that Darwin's claim was ridiculous and some ridiculed his theory. However, in 1903, more than 20 years after Darwin's death, the Morgan Sphinx moth (*Xanthopan morgani praedicta*) was discovered, fulfilling Darwin's prediction. Darwin's orchid and the Morgan Sphinx Moth are depicted in the artwork above.

From the Mouth of Darwin

"I must say a few words on the *Angraecum sesquipedale*...[which] have excited the admiration of travellers in Madagascar. A whip-like green nectary of astonishing length hangs down beneath the labellum. In several flowers sent me by Mr. Bateman I found the nectaries eleven and a half inches long, with only the lower inch and a half filled with very sweet nectar. What can be the use, it may be asked, of a nectary of such disproportional length? We shall, I think, see that the fertilisation of the plant depends on this length and on nectar being contained only within the lower and attenuated extremity. It is, however, surprising that any insect should be able to reach the nectar: our English sphinxes have probosces as long as their bodies; but in Madagascar there must be moths with probosces capable of extension to a length of between ten and eleven inches!"

