Sundews just want to be loved

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Source: wikipedia

Sex can be complicated at the best of times, but plants have an extra difficulty. If you're a plant who relies on insects to pollinate your flowers and reproduce, you will want your flowerstalks to be long. That way your flowers are on display to insects above the crowd. But if your stalk is too long, you'll stand out to herbivores, and you flower will end up as someone's lunch. It used to be thought that carnivorous plants like Sundews had the opposite problem.

They reproduce better if they avoid eating insects that pollinate them, so a long stalk prevents an unfortunate meal. Simply looking at a plant, it's impossible to tell if the stalks evolved for sex or safety, but Bruce Anderson at the University of Stellenbosch has now found an answer to be published in the October issue of the *Annals of Botany*.

He examined two Sundews, *Drosera cistiflora*, which has a long stalk above its rosette of traps and *Drosera pauciflora*, which is more upright and has a shorter flower stalk. Both plants attract the same pollinators, so Anderson reasoned if a longer stalk is safer, *D. pauciflora* should accidentally catch more pollinators in its traps. To test his idea he observed the pollination of 500 plants of each species. Then he examined a sample of the traps to see what they had caught. Anderson said: "The pollinators all tended to be quite large, over 5mm. Most of them were monkey beetles. But the traps had a different catch. It's harder to say what many of them were exactly, because the Sundews left their bodies in poor condition, but they were small. Most were less than 2mm long. Only one plant had caught a pollinator. Statistically the length of the flower stems made no difference to the safety of the pollinators."

"But just because the stems didn't affect safety, it doesn't automatically follow that the other explanation, attracting pollinators, must be right by default. So I tested that too."

Flowers were cut from *D. pauciflora* and placed in test tubes. Some were set so the flowers were at normal height, while the other test tubes were buried so that the flower was barely above ground level. Anserson said: "Doing this meant there were few variables in the experiment. The flowers were identical. The only difference was their height. This way it's possible to simulate how well a Sundew that hadn't evolved a long stem could attract insects."

The results were emphatic. The taller flowers had ten times the number of visitors than the short flowers.

Anderson said: "There have been a few people who've suggested that the flower stalks are for attracting pollinators. However, the standard explanation in most textbooks is that the stems are to protect pollinators. It's a good story. It sounds like the kind of elegant solution that evolution

comes up with. Now we have the hard data from these experiments and it shows that explanation is wrong. It's not about food, it's about sex. Sundews want to improve their chances of pollination and maximise their reproductive success."

Provided by Oxford University