***Extra smells make finding flowers harder***

Insects consume nectar from flowers. To find their favorite flowery snacks, they follow the odors flowers give off, but a new study in the 27 June issue of the journal *Science* reports that competing odors, including manmade ones, make this task harder for bugs.

Scientists trying to figure out how insects pick out the odors of certain flowers amid the variety of natural and manmade odors in the air have had trouble. Here, the University of Washington's Jeffrey Riffell and colleagues performed tests on *Manduca sexta* moths, also known as hawkmoths. These moths feed on the nectar of flowers called angel's trumpets, which are often separated by hundreds of yards.

Angel's trumpets also often grow in creosote bushes, which give off compounds that smell a lot like their own. This makes finding angel's trumpets more difficult for hawkmoths (they might think they smell their favorite flower, when really they smell a creosote bush).

Riffell and his team wanted to understand how hawkmoths find angel's trumpets, especially when flower odor gets weaker because the moth is far from the flower, or when different smells were added to the air.

The researchers put hawkmoths in wind tunnels and tested their responses to the angel's trumpet scent at different intensities, or frequencies, ranging from 1 to 20 hertz (Hz). Moths responded most strongly to flower odor pulses between one and two Hz, zooming in to find the flower.

At higher frequencies, they didn't respond.

The researchers also tested moths' responses to the flower mixture in different odor backgrounds, including those that smelled like creosote bushes and those that smelled of manmade pollutants. Changing the background odor prevented moths from tracking angel's trumpet flowers, they found. This was because different odor backgrounds affect odor-processing neurons in the brain, they say.

The work of Riffell *et al*. reveals that two elements matter when it comes to an insect's ability to track a target scent -- target odor intensity (or frequency) and odor background. Humans have an effect on the nature odor background. Changes we make to it (like from exhaust odors from combustion engines) could make finding target flowers more difficult for pollinators.