



# CALIFORNIA SCIENCE & ENGINEERING FAIR 2019 PROJECT SUMMARY

<b>Name(s)</b> <b>Madeline Christopher</b>	<b>Project Number</b> <b>S2202</b>
<b>Project Title</b> <b>Honeybee Food Transfer and Foraging Activity</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives</b> My goal is to ascertain how much honeybees can store with a supplemental nectar source I provided vs. out foraging on their own. I also proceeded to observe and record the bees behavior relating to the three different concentrations of nectar sources I had provided outside the hive.</p> <p><b>Methods</b> I had access to my dad's beehive we keep on our property which included the empty frames of honeycomb I used inside the hive and the external and internal feeders I used in different parts in the project. The first part of my experiment I measured how much the bees could store with a supplemental nectar source placed inside the hive. The second part of my experiment I measured how much the bees could store when they were out foraging on their own. The third part of my experiment I made three supplemental nectar sources with different concentrations and placed them equally 50 ft from the hive in different directions. I decided to use three different paints to mark the bees to see how many return to the three different nectar sources outside the hive.</p> <p><b>Results</b> The results pertaining to the first and second part of my project indicated that the bees could produce more with the supplemental nectar source inside the hive than when they were out foraging on their own. The results pertaining to the third part of my experiment indicated that the highest concentration nectar source was the most popular when I recorded the bees activity every day.</p> <p><b>Conclusions</b> One of the most influential factors that played a part in my experiment was the inclement weather. The cold, rainy days during the time I conducted my experiment caused the bee behavior at each source to drop. It also caused the bees to stay inside the hive in order to survive and not be able to go out and forage. At the end of my experiment, I was able to conclude that my hypothesis was correct. The bees had shown that they were able to produce more with the man-made nectar source inside the hive than when they were out foraging on their own. I was able to identify this because the frame at the end of week one was noticeably heavier than week twos results. I also had predicted that the bees would show their preference by returning to the highest concentration nectar source.</p>	
<b>Summary Statement</b> I observed honeybee behavior and storage relative to sugar concentrations in supplemental nectar sources.	
<b>Help Received</b> The hive, protective gear, and guidance inside the hive was provided by my dad.	