

Colony Collapse Disorder

By: Alexis Archambault

Table of Contents

1. Title Page
2. Table of Contents
3. Introduction
4. Problem/Purpose
5. Hypothesis
6. Materials/Procedure
7. Results
8. Observation
9. Conclusion
10. Recommendations
11. Acknowledgments
12. Bibliography

Introduction

Colony Collapse Disorder is an unknown happening in which the honey bees are disappearing around the world, significantly throughout the United States and European crops. The effect in the agricultural industry is causing countries millions of dollars. Colonies of honey bees and bee hives are vanishing rapidly without a trace. This phenomenon is affecting agriculture around the world causing prices in the food industry to rise, do to the shortage of reproduction in fruits, vegetables, etc.

Scientists have been studying the CCD phenomenon, but still there is little progression in the experimentations. At the rate of the Colony Collapse Disorder, the honey bees could be extinct within a few years. If this happens, Einstein once said, "If the bee disappeared off the surface of the globe, then man would have only four years of life left. No more bees, no more pollination, no more plants, no more animals, no more man."

In my experiment, I created five bees and infected them with various diseases that might be affecting the honey bees. My focus is to see how many days it will take an infected honey bee to die. Colony Collapse Disorder is dangerous to mankind, and more people should pay attention before it's too late.

Problem/Purpose

The problem which has come to my attention is that the honey bees are disappearing swiftly, and that the cause is unknown. Colony Collapse Disorder is completely mysterious; it's frightening to know that the honey bee population is declining without a clue. The mysterious cause or causes of the CCD will affect mankind in future life. Also, that the scientists who are investigating the happening are not entirely confident in the causes. Honey bees everywhere are dying, there is no explanation, and the source is undetected.

My purpose is to prove that the disappearance of the honey bees isn't caused by one disease, but many together that have contributed to the happening. Also, to discover how many days it takes for an infected honey bee to die and a possible theory to the Colony Collapse Disorder.

Hypothesis

Question: When the honey bee is infected by a disease, how many days after being effected will the bee live?

My educated guess is that the honey bees only have up to 2-3 days to live after being infected by a disease.

Materials/Procedures

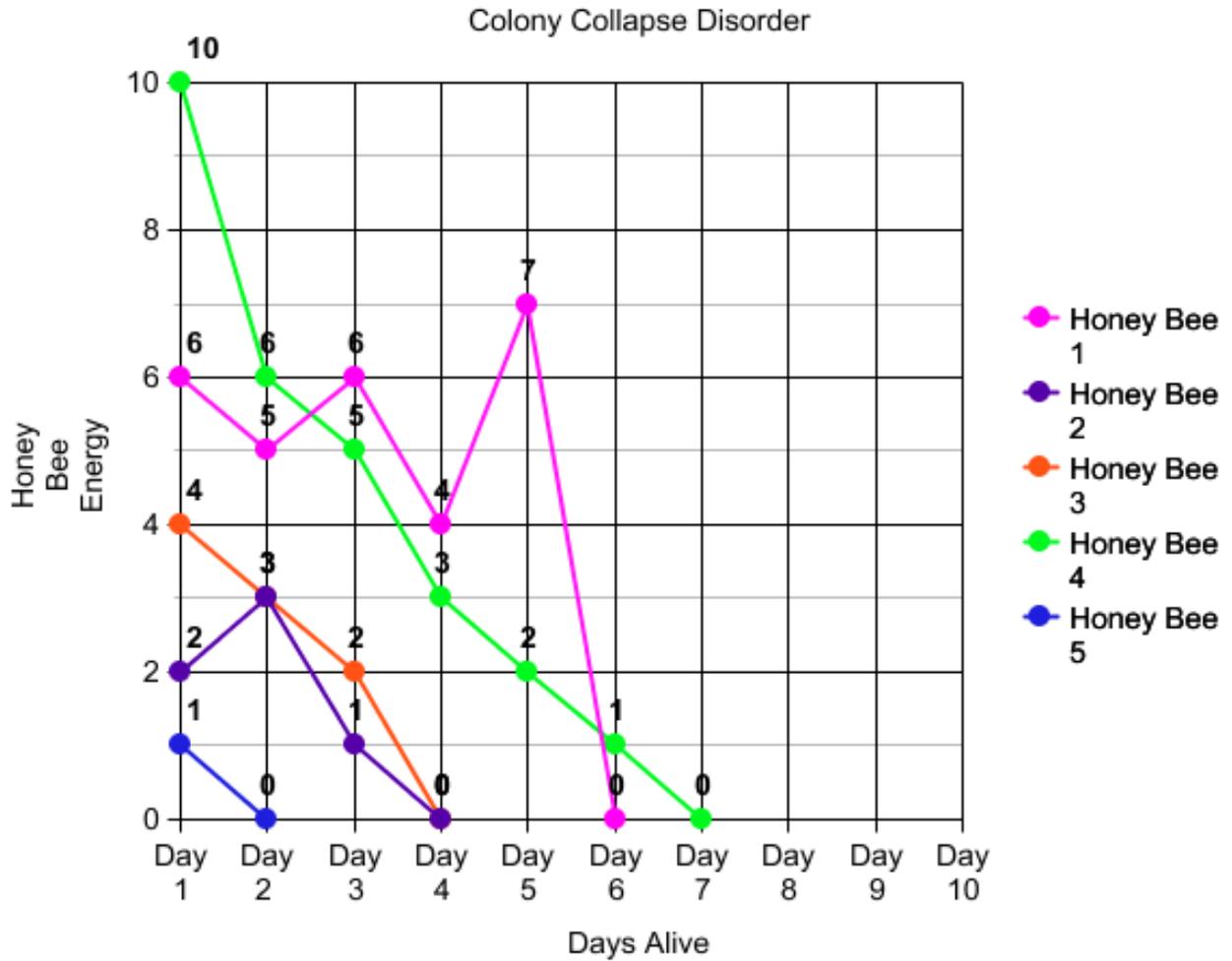
Materials:

1. Computer
2. Information pertaining possible causes of CCD
3. Star Logo Program
4. Jump Drive to store data

Procedure:

1. Downloaded the Star logo Program
2. Opened the Adventure Projects file, and the Energizer Turtles file
3. Conducted my experiment using the Energizer Turtles file
4. Created Patches to represent the various diseases that took energy from the honey bee
5. Created 5 Turtles of represent 5 Honey bees
6. Set the Turtle Procedures to randomize the honey bees path
7. Set the Turtle Procedures to weaken the honey bees when randomly running into different colored patches
8. Set-up the patches to decrease the Turtles energy
9. Created more patches the will increase the Turtles energy
10. Set the honey bees energy at random
11. If the honey bees energy went below 0.1 they die automatically
12. Set-up the plot to automatically graph the results of the honey bees' energy through the procedure.

Results



The Results of my experiment using the star logo program was successful. The graph portrays the five Honey Bees I created, and how their energy slowly decreased; also how many days unit their death.

Observation

During the experiment with the star logo program, I observed the turtles (honey bees) that move around at a random pace and direction. The turtles moved around randomly into the five different diseases I created. When the turtle wandered into one the diseased infected patches, it lost energy and became weak or died. I ran the experiment numerous times to understand the results that graphed the experiment automatically. While running the experiment again, there were changes in the paths of each individual honey bee.

The changes that I observed was when I reset the procedure, each honey bee took a different path than the one before. These changes changed the results, but only by a little. The results each time came very closely to the results previous to it. After re-running the procedure ten times, I decided to go with the eleventh results. On the eleventh run of the experimentation, the honey bees went into different diseases than before; and either died early or later. The eleventh run was my final result, and the experiment was well tested.

Conclusion

The result of my experimentation supports possible answers to the Colony Collapse Disorder, because it provides a reasonable explanation. That the Colony Collapse Disorder is killing the bees off rapidly isn't caused by just one disease in particular; but many in either nature or man created. My results provide evidence that the honey bees aren't affected by just one disease, but many causes together. When a honey bee is infected by a disease, it flies off to die so that it does not infect the colony.

In conclusion, the pollution and overseas diseases' are finally being recognized after many years are affecting agriculture and the honey bees. The mistake made by man with pesticides is finally paying us back by the disturbance of the honey bee population. The disturbance of the honey bee population is unknown and a phenomenon that will most likely remain unsolved. This unknown phenomenon is called the Colony Collapse Disorder.

Recommendations

From my experience of working with the project of Colony Collapse Disorder, I highly recommend working on a hands-on project rather than a computerized project. I recommend this because it will be more fun to work with real honey bees. Being able to work with real honeybees and physically observing bees will hopefully make the project more exciting. Also, take advantage of the Colony Collapse Disorder project while you can, because it is very interesting on how it is not only affecting today; but also the future.

Acknowledgments

Mavis Yazzie – Native Geeks G&T Supervisor

Kimberly White Bull – Mother

Ray and Denise Joe – Friends of the Family

Liz Encinias – NAISEF

Bibliography

Nature, "Silence of the Bees." [PBS.org](http://www.pbs.org/wnet/nature/episodes/silence-of-the-bees/introduction/38/) 16 Mar 2009

<<http://www.pbs.org/wnet/nature/episodes/silence-of-the-bees/introduction/38/>>.

Maher, Bill. "The Birds, the Bees, and Earth Day." [The Huffington Post](http://www.huffingtonpost.com/bill-maher/the-birds-the-bees-and-_b_46410.html) 20 April 2007 16 Mar 2009

<http://www.huffingtonpost.com/bill-maher/the-birds-the-bees-and-_b_46410.html>.

Mission Statement- Honeybeequiet.com

Wikipedia, "Colony Collapse Disorder." [Wikimedia Foundation, Inc](http://en.wikipedia.org/wiki/Colony_Collapse_Disorder) 16 Mar 2009

<http://en.wikipedia.org/wiki/Colony_Collapse_Disorder>.

Colony Collapse Disorder- movie