BZZZZ! The Sequel

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Team 67 Melrose High School

Team Members:

Misha Riley

Kendra Jacobs

Kye Skelton

Teachers:

Mr. Alan Daugherty Mrs. Rebecca Raulie

Table of Contents

Executive Summary
Problem
Method5
Results and Conclusions7
Software
Acknowledgements
Bibliography10

Executive Summary

The problem we are dealing with is the spread of Africanized bees. The Africanized bees seem to be spreading at a high rate. Africanized bees have greatly increased since they originated from a few original colonies. At the moment, 99% of Hybrid bees are now Africanized. The bees can be an Agricultural problem which could cause devastation to our area. We have already found out that all breeds grow at a drastic rate until they reach a domesticated hive. Notionally the beekeeper will kill the Africanized bees off. With this person being in the problem it causes the population to increase or decrease over time. This makes it a problem that can be easily modeled using StarLogo TNG.

Solving the problem of the bees is something that the community will have to participate in. It's a world-wide problem that could cause wide spread devastation based upon the decrease in honey quality and an uprising in Africanized bee aggression.

Our project is unique due to the fact that there are no other known simulations like ours done on the spread of Africanized bees. This simulation may help the community through farmers and people in the area that are around the species.

Problem

Our project is over the movement, spread, and reproduction of Africanized Honey Bees. We are also examining the process of Africanization. We found that there are three major types of bees in North America: Africanized Honey Bees, European Honey Bees (domestic), and Wild Bees. The Africanized bees usually are not born Africanized. Africanized bees spread by invading and overtaking wild bee hives. Wild bees are not the only breed at risk of being attacked. European bees are attacked also; however they have bee keepers that customarily kill of the Africanized bees.

After we acquired this information, we used StarLogo TNG to model this information. When using StarLogo we prepared different hives and the different breeds of the bees.

In our research, we established that Africanized bees in the Western Hemisphere descended from twenty-six Tanzanian queen bees. Africanization takes place within the hive. Africanized bees repositioned from Brazil, south to Northern Argentina and north, to South and Central America, Trinidad (West Indies), Mexico, Texas, Arizona, New Mexico, and Southern California.

Method

We used StarLogo TNG as the method to solve this problem. It easily displayed the types of bees (African, Domesticated, and Wild) and the hives from which they originated. It also made it easier to show the spread of the colonies. The problem involves many things that can change the population of the African bees and well as the Domesticated and Wild bees. These include such things as weather and the action of bee keepers, ect. The interaction of all the variables made it harder to keep the population steady.





Results and Conclusions

Our results show that the Africanized bees progressively subside overall non-Africanized bee population over time. The other breeds either die out or are either transformed into Africanized bees themselves. This is proven to have been happening in our real life situation through agricultural destruction and economical devastation. Deaths of livestock, pets, and humans have been accruing due to the fact of the bee's violent nature.

The conclusion is that the bee population will slowly deteriorate into Africanized honey bees. In conclusion though, the Africanized bees will take over the population of both the Wild and Domesticated bees.

Software

The software we have utilized is StarLogo TNG, Microsoft Word, and Microsoft PowerPoint. We felt that StarLogo TNG was the best way to represent what we were trying to do develop than any other program. We used Microsoft Word for our reports. Microsoft PowerPoint we used for presentations of the project to students and staff at ENMU. We used the Microsoft programs since it was necessary for reports and documentation.

We used StarLogo TNG for the reasons of: it was higher utilized, it was easier to work with than writing code, and we have been to a seminar that used this program in demonstrations, which led us to use it. It was also easier to organize and correct.

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