CALIFORNIA STATE SCIENCE FAIR
2014 PROJECT SUMMARY

Name(s)

Patrick I. Wildenhain

Project Number

34472

Project Title

Resurrecting the Thylacine to Save the Tasmanian Devil: An Ecological Exploration with an Agent Based Model

Abstract

Objectives/Goals

The objective is to develop the code to simulate the environment of the Tasmanian devil, including the devil facial tumor disease, and to add Thylacines into that simulated environment. It is hoped that the program will accurately simulate the Tasmanian Devil's environment, and that the Thylacines reduce disease prevalence and let the Tasmanian devil's survive. The effect of changing the number of Thylacines added will be observed.

Methods/Materials

A computer was used for the coding and running of this experiment. The program used for the creation and running of this experiment was Starlogo TNG. The program would generate 850 Tasmanian devils and a set number of Thylacines, then infect a number of the Tasmanian devils. It would then run until the last devil had died or when the disease had been eradicated and there were 50 devils alive. Then Starlogo TNG would export a log of the numbers of infected, incubating and healthy Devils.

Results

With 10, 25 or 50 Thylacines, the simulations did not survive as many times as with the control number of 0 Thylacines. Of the 30 runs done with no Thylacines, in three of the runs the Devils survived. Of the 30 runs done with 10 Thylacines, in two of the runs the Devils survived. Of the 30 runs done with 25 Thylacines and the 30 runs with 50, none of the runs had the Tasmanian devils successfully survive. However, the simulations with an addition of 10 Thylacines survived for a longer average time than any other runs. Also, the more Thylacines added the faster the disease was exterminated.

Conclusions/Discussion

The addition of Thylacines eradicated the disease of the Tasmanian devil populations faster than without. However, they also hunted the remainder of the Devil populations, stopping the Devils from recovering after the disease. The Thylacines killed too many healthy Devils along with the infected Devils, therefore human culling of infected Devils may be a more effective solution to saving the Tasmanian devils, as it will kill no healthy Devils.

Summary Statement

This project involved creating a Starlogo TNG model to simulate the environment of the Tasmanian devil and to add in the Thylacine.

Help Received

Parent helped with discussing the design of the project.