

Feral Boars in New Mexico

New Mexico

Supercomputing Challenge

Final Report

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SFHS120

Santa Fe High School

Team members:

Tenzin Lungtok

Mirabai Venkatesh

Justin Reynolds

Gabriela Armendariz

Teacher(s):

Mr. Smith

Project Mentor(s):

N/A

The wild boar is an invasive species in New Mexico. They ruin farmland, eat farm animals and are not native to the area. The boars, also called hogs or Javelinas, are originally from Europe, specifically Northern Spain. They are large, hairy pigs that have tusks below their bottom lip. The males have curved tusks and the females have longer sharper tusks. The damage that they cause the farmers has led to the NM Department of Hunting and Fish to allow hunters to shoot the hogs without a license or permit. This was an attempt to decrease the population and keep it under control. Our project is on alternative solutions to keep the wild boar population under control. While our project is not finished, or very far in the process due to time constraints, we were thinking that a released disease, decreased food supply, or increase in natural predators would help to decrease the population.

The wild boar is an invasive species that should be eliminated. The best way to eliminate a species is to decrease the population. The most common ways to decrease population are to either decrease food supply, increase natural predators, or release a controlled disease. So far we have tried to change the food supply so that the boars will eventually die off. When this happens, the rest of the population also starts to die off. The code for the other two options is still a work in progress so we have yet to see if that works. One problem that we ran into was for a controlled disease to work, it has to be injected into the animal. A controlled disease is one that does not spread to other animals, it can not be contagious. This means that the disease must be injected into each individual animal. This is extremely hard to model because it is a hard process to enact in reality. Another problem that we encountered was with increasing the population of the natural predators. If you interrupt the balance between predator and prey, there are many things

that can go wrong. The most notable case of this is between the native Red squirrel and the invasive Grey squirrel. The grey squirrel started to beat out the red squirrel and when there was intervention by the locals, the population started to fluctuate. The eventual result was a near extinction of the Red Squirrel.

We have yet gotten to the part of the process where we test all of our model, but the method that we would use would be trial and error to see which of our ideas worked best.

We have yet to get to verify or validate our model. So far we have our world set up. The background is green, there is a different colored grass that acts as food and will give the animals energy as they move around. We also have sliders that control the number of boars, bears and squirrels in our model environment. While our model does not run completely, we have code to reproduce, eat and die when a disease hits them as well as the code to decrease the energy as the animals move across the environment.

We have also not gotten to test our model so we do not have any data.

Our model is made with Netlogo and research of the wild boar and its predators. Our research has told us that the main problem in getting rid of these pests is that they will eat just about anything. They are also omnivorous, which means that the other prey in the area are also at risk. We have looked into what can be done as far as spreading a controlled disease. Many of the diseases that are species specific have to be injected into the animal itself and will not spread to

other animals. If we released a disease that spreads, it could possibly affect the other species as well. Many of the predators of the wild boar are native to the area and when the boar damages the food supply, that hurts all the animals around them. We discovered that most species came over from Europe during the Columbian exchange or during the era of Spanish exploration. The wild boar is a large problem because it damages the roots of plants and creates hole in the ground that severely destroy expensive farm equipment. The also make it hard for trees and plants to grow back after the damage is done. Some other invasive species in New Mexico would be the Canadian Thistle, the Common Carp, the Crapemyrtle Bark Scale, and the European Starling.

We have the help of the internet and our teacher, Mr. Smith. The sources below helped us the most and many include information of the behavior and habitat of the wild boar.

<https://medical-dictionary.thefreedictionary.com/species-specific>

<https://www.lakeforest.edu/live/news/1650-the-biology-of-native-and-invasive-wild-boar-sus>

<https://www.newsmax.com/fastfeatures/hunting-new-mexico-invasive-species/2015/05/29/id/647591/>

<https://www.woodlandtrust.org.uk/blog/2016/09/red-squirrel-facts/>