Supercomputing Interim Report

Team: LosLunasHigh-2

School Name: Los Lunas High School

Area of Science: Environmental Science

Project Title: Rattlesnake Hunting Regulation

Problem Definition:

Rattlesnake hunting has been going on in New Mexico for decades. When captured, rattlesnakes are used for a variety of commercial purposes such as their meat for food and their skin for clothing and accessory purposes. Many rattlesnake harvests are conducted during rattlesnake roundups held around the state. It is said that unregulated rattlesnake roundups increasingly threaten the population of rattlesnakes as well as that most herpetologists believe it to be ecologically damaging.[2]

Our problem is to then explore how rattlesnake hunting affects the population of rattlesnakes in New Mexico and using our data, propose a regulation that would help keep the rattlesnake population at a steady amount.

Problem Solution:

For this project, we have decided to look at how the number of hunters and the minimum length a snake has to be in order to be captured would affect the population of rattlesnakes. To do this, a NetLogo model will be created simulating an abstract rattlesnake environment with rattlesnake hunters. The NetLogo model will be based around data previously collected by the late state herpetologist Charles W. Painter along with personal research. Experimentation and data will be conducted through the NetLogo feature BehaviorSpace.

Progress to Date:

Currently, we have a model that is almost complete. We have gone through the data from Charles Painter as well as personally researched information about rattlesnakes which we then incorporated into our model. As a basic outline, our model simulates the rattlesnakes moving, reproducing, and dying. The hunters only hunt during hunting season.

As of now, we have run the model through BehaviorSpace and looking at our data, determined that our numbers are not what we were expecting and are slightly off. We will be going back and making changes to make it more accurate.

Expected Results:

The reason we chose to look at how the number of hunters and the minimum snake length for harvest will affect the population of rattlesnakes is because using the data compiled from our model, we can perhaps propose a maximum number of rattlesnake hunting licenses that would be the best amount to give out and/or propose a regulation for the minimum snake length for harvest in order to keep the specie population stable. For example, if we find that 40 hunters keep the rattlesnake population at a good amount while 60 does not, then we can conclude that if hunting licenses were given out, then the maximum they can give would be 40. Or, if we see that a length of 900mm for harvest is a good length for capture, then we can say that the number of hunters don't matter so long as snakes are only harvested if they are 900mm long. Whenever we get more accurate results, our expectation is that we will be able to propose reasonable hunting regulations in order to keep the rattlesnake population healthy.

Team Members: Jen Marie Phifer, Aaron Martin, Zach Collins

Sponsoring Teacher(s): Anne Loveless

Project Mentor(s): Creighton Edington

Resources

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8. UTA Amphibian and Reptile Diversity Reseach Center. *Western Diamonback Rattlesnake (Crotalus atrox)*. n.d. Web. 25 November 2016. <https://www.uta.edu/biology/herpetology/western_diamondback_rattlesnake.htm>.

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