

Summary: This week I added another grazing species that also eats grass. I also started working on hyena packing, by making hyenas have a certain chance of facing a hyena in a certain range. This week I think adding the features went smoothly, but I still am not getting results that I would like to see. Populations are still growing too fast and causing extinction to occur in a short amount of ticks.

- **Agent behavior:**How do the agents behave/work?

Hyenas now have a certain chance of facing another hyena within a certain range. Rabbits function the same as antelopes, but can be targeted differently based on the set preferences of the predators in the ecosystem.

- **System behavior:**How does the overall system behave/work?

The system tends to lead to one population of predator to explode leading to a near extinction of prey, which then causes the predators to die out.

- **Rationale for agent rules:**Why did you give the agents these rules?

I designed the rules to be as simple as possible, but simultaneously relating to reality.

- **Model output:**Have you developed new measures for the output? Do you think your model currently provides a good description of the system's behavior? Why or why not?

With hyena packing a new output I am working on is tracking the amount of packs and the average size of each pack and seeing how they fluctuate with the hyena population.

- **Questions:**What questions do you have about your model?

Are there any good ways to reduce the extreme swings in population sizes?

- **Next steps:**Briefly list your next steps for improving the model.

I want to change the speed of my model. I want there to be less explosive population growth and try to make it play out more like the safari, where animals are sparsely located. I am going to give each animal more energy and have movement cost less energy. Reproduction will cost more. I hope these changes will lead to much slower changes in population size.

- **Model Analysis:**What conclusions can you draw from the model's output?

Hyena packing allows hyenas populations to grow at a faster rate and allow them to overtake the lion population.