# Rabbits Grass Weeds: Netlogo Project pd 3 Mark De Paula and Winston Peng

## Things to Demo

How to kill the rabbits by lowering the grass weed energy production as well as by decreasing the energy threshold of rabbit reproduction.

Show how the number of the rabbits oscillates (think that’s the right word) when the program runs for a long time, just like how it would work in real life, as well as what changes can impact the average population of rabbits. Also note how making the rabbit population oscillate more makes the food population oscillate the same amount.

Lowering and increasing the birth threshold makes the population of rabbits oscillate more while using a more stable birth threshold increases the linearity of the population.

Changing the energy and growth of weeds and grass can change the significance of each patch type.

Grass always oscillates around the same point

## Info About Model

The function of the Rabbits Grass Weeds Model is the simulate a rabbit colony’s growth when placed in a controlled environment of grass and weeds. The rabbits eat the colored patches which represent the plants in order to survive and produce more rabbits.

This model is useful for demonstrating the growth of a population as well as the limitations of growth due to the limited resources of the environment.

Although the weeds and grass imply different things, they are in reality two variables that do the same task, the only differences being name and slider variables.

## How to Model

*Setup and Go:*

Rabbits start out with a set amount of energy. Every time they move, they lose energy, but every time it hits a green patch or a purple patch (the grass and weeds), it gains energy. After a rabbit has a certain amount of energy, it reproduces, and if the amount of energy falls to zero, it dies.

*Sliders:*

The starting amount of rabbits and energy required to breed more rabbits can be controlled by sliders. Another group of sliders controls the growth speed and energy gain for grass and weeds.

## New Things

*Plot:*

It is a type of interface item. It displays a graph that is updated depending on the information. It is kind of like a monitor with a graph that plots the data as it appears. As it is a graph, there are several key differences. For one, although the graph also counts an agent set, it requires the plot keyword before the code in order to actually display the information. Second, one plot can count multiple agent sets, although for each unique agent set that you count, you need a new name as well as a new color for the agent set. Third, you need to set a name for the x-axis and the y-axis.

*Rabbits-own:*

Rabbits-own is used to give turtles labeled with the “rabbit” breed special properties that not all turtles will have. This is useful when dealing with models using turtles with different roles, but not particularly useful in this model.

*Breed:*

A breed can be assigned to certain turtles which allows them to be identified as this breed. A turtle breed can have its own specific properties and be called on as an agent set in a function, allowing turtles of different breeds to perform different actions without the constant use of “ask turtles with”.