Braden Ackles

CS 475

5/8/16

Project 4 Grianville

# Own Choice Function:

I implemented zombies that attacked. If the number of deer divided by two is greater than the current number of zombies, then a zombie will wonder his way to the forest. If not, then the odds of a zombie finding deer to eat is to low and one of them will starve to death. This effects the number of deer in the forest and there for will affect how much grain there is.

# Table:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Month** | **Zombies** | **Deer** | **Height (inches)** | **Precipitation (inches)** | **Temperature (C)** |
| January | 0 | 1 | 2.1495 | 7.13045 | 3.047333333 |
| February | 0 | 1 | 4.54966 | 11.4364 | 5.288777778 |
| March | 1 | 2 | 9.95421 | 10.5858 | 11.69811111 |
| April | 0 | 2 | 13.772 | 12.8685 | 11.04488889 |
| May | 1 | 2 | 15.3325 | 10.4585 | 15.38755556 |
| June | 0 | 3 | 14.5506 | 8.0684 | 20.48138889 |
| July | 1 | 4 | 13.5455 | 4.50069 | 19.23011111 |
| August | 2 | 5 | 11.5801 | 3.42214 | 22.8815 |
| September | 3 | 5 | 12.4475 | 1.07363 | 14.38366667 |
| October | 2 | 6 | 11.2542 | 0.63232 | 3.142055556 |
| November | 3 | 5 | 8.27506 | 0.728906 | -3.231166667 |
| December | 2 | 5 | 5.78191 | 5.66379 | -4.763277778 |
| January | 1 | 5 | 3.29022 | 7.15669 | -4.547166667 |
| February | 2 | 5 | 0.861959 | 8.67788 | -1.970166667 |
| March | 1 | 4 | 3.47034 | 10.6686 | 12.66783333 |
| April | 2 | 4 | 5.04023 | 13.152 | 13.01944444 |
| May | 1 | 4 | 3.52411 | 9.42677 | 19.10827778 |
| June | 2 | 4 | 1.5838 | 7.65006 | 22.26088889 |
| July | 1 | 4 | 0 | 6.33819 | 20.66122222 |
| August | 2 | 4 | 0.667835 | 2.84279 | 15.55138889 |
| September | 1 | 3 | 3.28997 | 1.2841 | 13.17294444 |
| October | 2 | 4 | 5.78964 | 1.77056 | 6.015666667 |
| November | 1 | 4 | 3.99817 | 1.16719 | -0.264333333 |
| December | 2 | 4 | 3.4121 | 6.12319 | 2.686666667 |
| January | 1 | 4 | 1.41504 | 9.35022 | -5.513 |
| February | 0 | 3 | 0.584885 | 8.58686 | 2.432111111 |
| March | 1 | 2 | 0.546364 | 12.4485 | 3.704388889 |
| April | 0 | 2 | 0.679389 | 11.1911 | 17.21166667 |
| May | 1 | 2 | 5.32638 | 8.32273 | 13.01422222 |
| June | 0 | 2 | 4.58999 | 5.8053 | 20.2625 |
| July | 1 | 2 | 4.68936 | 6.32962 | 17.8245 |
| August | 0 | 3 | 3.7431 | 3.16104 | 22.32572222 |
| September | 1 | 3 | 8.05055 | 0.363486 | 10.28316667 |
| October | 2 | 4 | 10.0928 | 1.24544 | 5.737666667 |
| November | 1 | 4 | 9.11515 | 2.42825 | 2.282555556 |
| December | 2 | 5 | 7.33219 | 2.60421 | -0.381333333 |
| January | 3 | 5 | 4.93679 | 9.28025 | -1.425444444 |
| February | 2 | 5 | 6.9693 | 11.1264 | 6.930055556 |
| March | 3 | 5 | 6.53023 | 12.7497 | 4.7275 |
| April | 2 | 5 | 7.25758 | 11.2118 | 14.43111111 |
| May | 1 | 5 | 5.0561 | 8.90654 | 19.94411111 |
| June | 2 | 5 | 2.82902 | 9.07322 | 20.067 |
| July | 1 | 4 | 0.338303 | 3.76843 | 24.39027778 |
| August | 0 | 3 | 1.82011 | 3.33085 | 14.84527778 |
| September | 1 | 2 | 6.23132 | 0.951124 | 11.21311111 |
| October | 0 | 3 | 10.3206 | 0.559005 | 12.19611111 |
| November | 1 | 4 | 11.0272 | 3.19206 | 3.891055556 |
| December | 2 | 4 | 9.14553 | 6.14297 | -1.404055556 |
| January | 1 | 5 | 7.22301 | 8.81198 | -1.861 |
| February | 2 | 5 | 6.61813 | 11.8865 | 4.190111111 |
| March | 3 | 5 | 8.86252 | 10.6589 | 6.929666667 |
| April | 2 | 5 | 6.97478 | 13.4761 | 17.87855556 |
| May | 3 | 5 | 7.94227 | 11.7669 | 13.94183333 |
| June | 2 | 6 | 5.50077 | 7.28073 | 22.30005556 |
| July | 1 | 5 | 2.56845 | 3.57132 | 22.06133333 |
| August | 2 | 4 | 0.188853 | 0.987191 | 21.03455556 |
| September | 1 | 3 | 2.90004 | 0 | 12.28727778 |
| October | 0 | 2 | 2.91286 | 0 | 3.652388889 |
| November | 1 | 3 | 3.10594 | 1.42336 | 2.770388889 |
| December | 2 | 4 | 1.61557 | 6.0743 | -4.403555556 |
| January | 1 | 3 | 0 | 6.05722 | -5.141722222 |
| February | 0 | 3 | 0 | 11.2845 | 2.092611111 |
| March | 1 | 2 | 2.19659 | 13.5356 | 12.51038889 |
| April | 0 | 3 | 3.9411 | 11.3283 | 14.92516667 |
| May | 1 | 4 | 2.61995 | 9.71729 | 20.632 |
| June | 0 | 3 | 1.41146 | 6.48196 | 18.44538889 |
| July | 1 | 3 | 0.00214944 | 3.42474 | 21.67127778 |
| August | 0 | 2 | 2.77663 | 2.68595 | 13.99438889 |
| September | 1 | 3 | 7.90109 | 1.37833 | 8.714388889 |
| October | 0 | 3 | 7.94269 | 1.18473 | 3.392055556 |
| November | 1 | 4 | 6.48724 | 3.55777 | -2.584166667 |
| December | 2 | 5 | 4.48989 | 4.53334 | -5.704388889 |

# Graph:

# Commentary:

To evaluate properly we need to separate each dependent variable out.

Note: Parallelism talk before explanation of what happened. Because of the way its programmed with the barriers before continuing this is most likely what causes the delay between weather, growth and deer. Because it depends on when the variable is read in and what its value is when its read in. There for these barriers are what causes the program not to recalculate early and there for a one month delay in reaction to events that happen because of when they are forced to be calculated.

Grain depends on precipitation and temperature and the amount of deer around to eat it. With grain we see very slim to no delay in the growth related to the amount of water and temperature. Maybe a data point away from an increase in those is an increase in grain and same with decreases immediately after a decrease we see a decrease in grain height because it doesn’t grow as much and the deer eat it. Another instance that occurs Is when the amount of deer gets out of control compared to the temp and precipitation and eat more grain then can grow and this causes a decrease in grain even when it should be growing.

Deer depends on how much grain is available and if zombies are around to eat the deer. So as the grain grows we tend to see a small delay in the growth of the deer population but this delay is greater than that between the growth of grain and the weather. So the deer take a little longer to populate since deer can only grow by 1 at a time where grain can grow by more than 1 per grain available. Also zombies come and eat the deer. If the number of deer divided by 2 is greater than the number of zombies a new zombie comes if it is not than a zombie does. But for all the zombies present one third of them will find and kill a deer. So this affects the deer population because deer get eaten.

Finally, zombies. As previously mentioned one third of the zombies find a kill a deer, but if there are less than twice as many deer as zombies a zombie starves and dies off. So this creates a fluctuation in the number of zombies.

To conclude deer grain and zombies all affect one another. Weather and precipitation are not affected by anything besides the month but that is built in and part of the function. Colder temperatures in the winter and warmer in the summer and wetter in the spring. This has effect on everything else. Where the other three also all affect each other. Zombies indirectly effect how much grain there is because they kill deer and if less deer are there to eat then more grain grows. This is true for all of them they all effect each other.