

CS\_475 Project #2  
Benjamin Anderson II  
anderbe2@oregonstate.edu

1. I added in bears which both gain 1 member if there are more of them than half the deer population, and also kill off an extra deer, making the deer population die considerably easier. What I did to counter this was have the bears hibernate from September 'til April, so the deer could more easily replenish their population
2. I have no idea how to make a function out of data from a table, so instead I'll just post all of my data. I should note that I replaced the first temp with a zero for the sake of graphing (the value would always be -17.7777778 regardless of the seed).

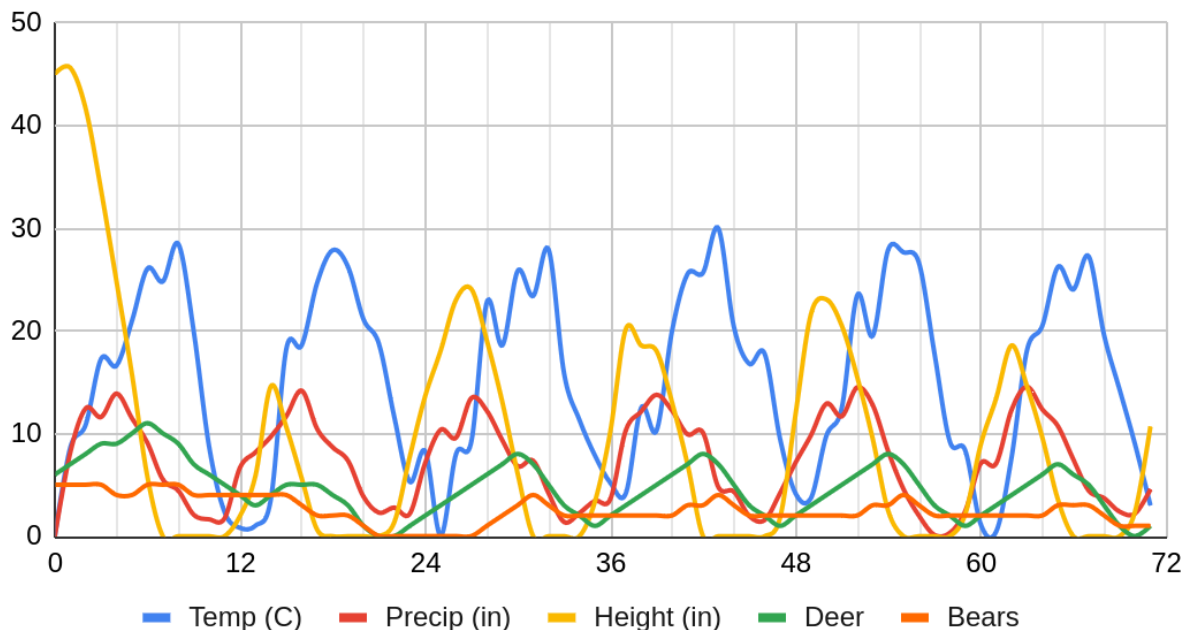
0	0	0	45	6	5
1	8.60291	8.130446	45.617161	7	5
2	10.84436	12.4364	41.616756	8	5
3	17.253649	11.58576	33.674236	9	5
4	16.600467	13.868473	24.760319	9	4
5	20.943129	11.458521	15.762054	10	4
6	26.036919	9.068398	5.762057	11	5
7	24.785669	5.500689	0	10	5
8	28.437072	4.42214	0	9	5
9	19.939228	2.073633	0	7	4
10	8.697595	1.63232	0	6	4
11	2.324378	1.728906	0	5	4
12	0.792285	6.663795	1.968807	4	4
13	1.008371	8.156693	5.88092	3	4
14	3.585375	9.677876	14.585238	4	4
15	18.223394	11.668583	10.610101	5	4
16	18.575016	14.152004	5.625757	5	3
17	24.663853	10.426767	0.625778	5	2
18	27.816421	8.650064	0	4	2
19	26.216761	7.338185	0	3	2
20	21.106928	3.84279	0	1	1
21	18.728485	2.2841	0	0	0
22	11.571219	2.770563	1.372499	0	0
23	5.291201	2.167192	7.720546	1	0
24	8.242207	7.123193	13.643492	2	0
25	0.042551	10.350223	18.040792	3	0
26	7.98765	9.586864	23.016819	4	0
27	9.259942	13.448462	24.043015	5	0
28	22.767241	12.191127	19.04323	6	1

29	18.569756	9.322733	13.061836	7	2
30	25.818083	6.805298	6.06184	8	3
31	23.380063	7.329622	0	7	4
32	27.881275	4.161038	0	5	3
33	15.838716	1.363486	0	3	2
34	11.293199	2.24544	0	2	2
35	7.838097	3.428254	3.36492	1	2
36	5.174228	3.604209	10.199831	2	2
37	4.13013	10.280254	20.15209	3	2
38	12.485589	12.12645	18.563663	4	2
39	10.283048	13.749693	18.018625	5	2
40	19.986644	12.21175	13.023184	6	2
41	25.499645	9.906537	7.02319	7	3
42	25.622559	10.073215	0.023196	8	3
43	29.945852	4.768434	0	7	4
44	20.400831	4.330849	0	5	3
45	16.768655	1.951124	0	3	2
46	17.751658	1.559005	0	2	2
47	9.446638	4.192064	1.807126	1	2
48	4.151488	7.142966	11.835811	2	2
49	3.694566	9.811982	21.614996	3	2
50	9.745687	12.886529	23.056725	4	2
51	12.485241	11.658855	20.493765	5	2
52	23.434126	14.476068	15.493847	6	2
53	19.497409	12.76689	9.50105	7	3
54	27.855623	8.280728	2.50105	8	3
55	27.616912	4.571323	0	7	4
56	26.590097	1.987191	0	5	3
57	17.842806	0.108871	0	3	2
58	9.207935	0.309384	0	2	2
59	8.325969	2.423364	2.148333	1	2
60	1.152013	7.074303	8.901413	2	2
61	0.413837	7.057216	13.402329	3	2
62	7.648193	12.284541	18.56982	4	2
63	18.065919	14.535571	14.593754	5	2

64	20.480711	12.328308	9.59649	6	2
65	26.187528	10.717295	3.596493	7	3
66	24.000956	7.481961	0	6	3
67	27.226825	4.424736	0	5	3
68	19.549963	3.685954	0	3	2
69	14.269931	2.378326	0	1	1
70	8.947589	2.184731	2.377396	0	1
71	2.971369	4.557775	10.695398	1	1

3.

### Deer-Grain-Bear Environment Simulator



4. N/A

5. There's a large spike at the start because I opted to give the ecosystem a bit of a boost overall, but that number quickly dies due to the deer population. Every Fall/Winter the bears go into hibernation, and leave the deer unchecked. During this time the deer are able to recover from the previous year and eat the new grain crops that are growing in. The bears then wake up and increase their population on the new deers until they drain their supply and go back into hibernation. As for observable proof that the bears are affecting the simulation, you can see that the repopulation slope for the deer is noticeably shallower than the fall-off slope, namely because the bears kill one extra deer while they're dying due to lack of grain. This causes the deer to go nearly extinct every year, something that wouldn't happen if the bears weren't there. I would wager the deer would be some 2-5 members higher on average if the bears weren't in the mix.