

Jung-Che Chang

Project #2

Functional Decomposition

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1. What your own-choice quantity was and how it fits into the simulation.

I took the wolf as my simulation agent. These wolves grow in number when there is an increase in the number of rabbits and decrease when the rabbits' number is lower than the wolves. In addition, the number of rabbits decreases when the number of wolves exceeds the number of rabbits.

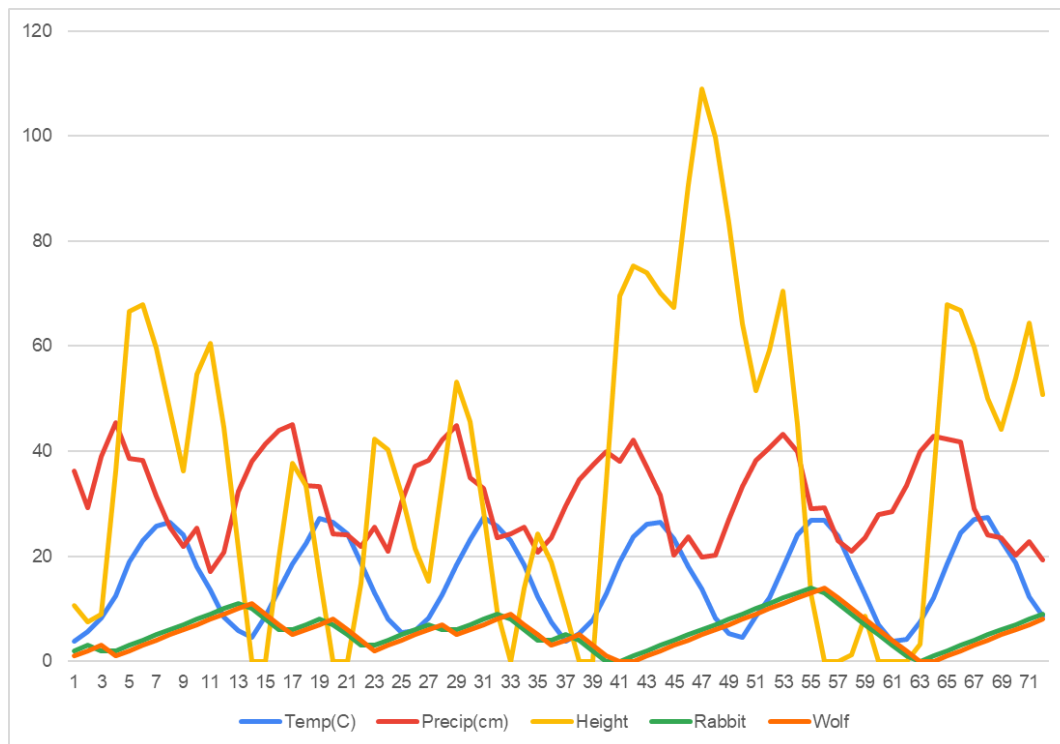
2. A table showing values for temperature, precipitation, number of rabbits, height of the rye grass, and your own-choice quantity as a function of month number.

Year	Month	Temp(C)	Precip(cm)	Height	Rabbit	Wolf
2023	1	3.71	36.15	10.7	2	1
2023	2	5.57	29.12	7.5	3	2
2023	3	8.28	39.03	8.87	2	3
2023	4	12.52	45.37	36.25	2	1
2023	5	18.81	38.61	66.67	3	2
2023	6	22.86	38.26	67.97	4	3
2023	7	25.72	31.44	59.55	5	4
2023	8	26.39	25.59	47.83	6	5
2023	9	24.05	21.77	36.25	7	6
2023	10	17.9	25.38	54.7	8	7
2023	11	13.48	17.12	60.46	9	8
2023	12	8.42	20.8	44.55	10	9

2024	1	5.85	32.41	21.51	11	10
2024	2	4.52	37.97	0	10	11
2024	3	8.65	41.32	0	8	9
2024	4	13.6	43.98	19.87	6	7
2024	5	18.53	45.1	37.73	6	5
2024	6	22.43	33.38	33.39	7	6
2024	7	27.16	33.2	16.25	8	7
2024	8	26.51	24.15	0	7	8
2024	9	24.31	24	0	5	6
2024	10	18.72	21.87	14.78	3	4
2024	11	12.97	25.58	42.2	3	2
2024	12	7.97	20.94	40.23	4	3
2025	1	5.37	30.37	31.77	5	4
2025	2	5.86	37.17	21.47	6	5
2025	3	8.28	38.28	15.29	7	6
2025	4	12.63	42.11	33.56	6	7
2025	5	18.31	44.83	53.08	6	5
2025	6	23.15	34.88	45.66	7	6
2025	7	27.35	32.91	28.43	8	7
2025	8	25.74	23.53	9.53	9	8
2025	9	23.03	24.27	0	8	9
2025	10	18.27	25.45	13.84	6	7
2025	11	12.31	20.68	24.23	4	5
2025	12	7.49	23.43	18.97	4	3
2026	1	3.73	29.64	9.33	5	4
2026	2	5.24	34.53	0	4	5
2026	3	7.87	37.34	0	2	3
2026	4	12.91	39.9	34.24	0	1
2026	5	18.86	38.1	69.54	0	0
2026	6	23.65	42.03	75.23	1	0

2026	7	26.16	36.88	74.02	2	1
2026	8	26.36	31.52	70.07	3	2
2026	9	23.38	20.19	67.28	4	3
2026	10	18.01	23.66	90.67	5	4
2026	11	13.76	19.74	109.02	6	5
2026	12	8.13	20.2	99.68	7	6
2027	1	5.3	27.05	83.41	8	7
2027	2	4.59	33.18	64.11	9	8
2027	3	8.56	38.19	51.56	10	9
2027	4	12.1	40.72	59.24	11	10
2027	5	17.84	43.17	70.53	12	11
2027	6	23.98	39.89	45.01	13	12
2027	7	26.85	29.11	12.75	14	13
2027	8	26.86	29.3	0	13	14
2027	9	23.94	22.91	0	11	12
2027	10	18.19	20.94	1.2	9	10
2027	11	12.56	23.44	8.57	7	8
2027	12	6.85	28.01	0	5	6
2028	1	3.88	28.55	0	3	4
2028	2	4.22	33.45	0	1	2
2028	3	7.43	39.8	3.29	0	0
2028	4	12.14	42.93	35.27	1	0
2028	5	18.58	42.36	67.91	2	1
2028	6	24.34	41.82	66.75	3	2
2028	7	27.08	29.07	59.77	4	3
2028	8	27.38	24.12	50.06	5	4
2028	9	22.98	23.5	44.14	6	5
2028	10	18.8	20.2	53.97	7	6
2028	11	12.33	22.85	64.43	8	7
2028	12	8.5	19.21	50.79	9	8

3. A graph showing temperature, precipitation, number of rabbits, height of the rye grass, and your own-choice quantity as a function of month number.



4. A commentary about the patterns in the graph and why they turned out that way. What evidence in the curves proves that your own quantity is actually affecting the simulation correctly?

Based on the graph, we can see that the population of wolves is directly proportional to the population of rabbits over a period of several years. As the amount of rye grass available to the rabbit increases, the rabbit population begins to increase gradually. However, as the rabbit population rises, so does the wolf population, which puts pressure on the rabbit population. As a result, the rabbit population begins to decrease, causing the wolf population to decrease as well. This simulation accurately reflects the relationship between these populations in response to changes in food availability over time.