**Lesson 4.9: Real World Models**

*Break into POGIL teams of 4. Each team member should take the following roles.*

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| **Student Name** | **Role** | **Responsibility** |
|  | Facilitator | Records the team’s predictions and observations. |
|  | Spokesperson | Reports the team’s results and conclusions. |
|  | Quality Control | Validates the team's results and conclusions. |
|  | Process Analyst | Keeps track of the team’s progress and assesses its performance. |

This simulation of [rabbits and wolves](http://www.shodor.org/interactivate/activities/RabbitsAndWolves/) (<https://goo.gl/58BVY0>) shows how nature attempts to stay balanced. Read the Learner's Tab about how the simulation works and then complete the following activities.

1. On the Activity tab, click Start Simulation. You can open the population graphs at any point to see how they change over time. Record your group’s observations about how the population of rabbits and wolves changed over time.
2. **Hypothesis:** What would happen if there were lots more bunnies than there are were wolves? Would the bunnies take over and live forever?
3. **Prediction:** What does your group predict will happen?
4. **Experiment:** Test the hypothesis by first resetting the simulation. Then click the View/Modify Parameters button followed by the View/Modify Start Parameters. Adjust the settings to increase the initial number of rabbits. Record your observations. Did your prediction match with the results? How was it different than the first run of the simulation?
5. **(Portfolio)** Reverse the hypothesis: What would happen if there were lots more wolves than there are bunnies? Would the wolves live forever? Record your hypothesis, prediction and experiment results. (Don't forget to reset the simulation before changing the parameters.)
6. Explain how the rabbits and wolves live in balance in this simulation.