***Biology 1*** Name:

*Hunting Bugs* Date:

Natural Selection Simulation Hour:

You will be using a computer simulation to model the hunting of a prey population by a predator. The prey population will be tracked over time and you will be able to review the impact of predation on the population as you follow the steps outlined below. You and your partner will take turns hunting, each following the steps below. Your goal should be to improve your hunting ability as much as possible.

Initial Set Up Instructions:

* Go to <http://www.netlogoweb.org/>
* Click “NetLogo Web”
* Use the drop down menu to search “Biology/Evolution/Bug Hunt Speeds”
* Be sure the “speed” and “wiggle” boxes are checked
* Set “initial-bugs-each-speed” to 10
* Uncheck the “show colors” box
* Click “setup”

Initial Hunting Instructions: Initial Hunting Data:

|  |  |
| --- | --- |
| Hunting Round | Time (seconds) |
| 1 |  |
| 2 |  |
| 3 |  |
| Hunting 3-Round Average |  |

* You will hunt until you’ve caught 30 bugs.
* Stop the timer when you have caught 30 bugs.
* Record your time in the chart.
* Click “go” to start hunting bugs and start the timer
* Pay attention to the “caught” count
* Click “go” again to stop hunting and pause the simulation
* Switch roles and allow your partner to hunt
* Repeat this procedure 3 times for each hunter
* Calculate the average time to collect 30 bugs. Record this in the data table above.
* On your last hunt, you will copy the graphs created by the simulations

Recreate the graph created by the simulation during your last “hunt” from this round. Do this in the space below:

Average Bug Speed vs. Time

Current Bug Population

Bugs Caught

Discuss strategy with your partner. How did your strategy change as you got more familiar with the simulation? What did you change/learn to do to hunt better?

What can you see (from the graphs) about the fitness of the bugs? (hint: colors are coordinated to speed)

Note: A new variable will now be introduced.

Second Hunt Set Up Instructions:

* Go to <http://www.netlogoweb.org/>
* Click “NetLogo Web”
* Use the drop down menu to search “Biology/Evolution/Bug Hunt Speeds”
* Be sure the “speed” and “wiggle” boxes are checked
* Set “initial-bugs-each-speed” to 10
* Check the “show colors” box
* Click “setup”

Second Hunt Instructions: Second Hunt Data:

|  |  |
| --- | --- |
| Hunting Round | Time (seconds) |
| 1 |  |
| 2 |  |
| 3 |  |
| Hunting 3-Round Average |  |

* You will hunt until you’ve caught 30 bugs.
* Stop the timer when you have caught 30 bugs.
* Record your time in the chart.
* Click “go” to start hunting bugs and start the timer
* Pay attention to the “caught” count
* Click “go” again to stop hunting and pause the simulation
* Switch roles and allow your partner to hunt
* Repeat this procedure 3 times for each hunter
* Calculate the average time to collect 30 bugs. Record this in the data table above.
* On your last hunt, you will copy the graphs created by the simulations

Recreate the graph created by the simulation during your last “hunt” from this round. Do this in the space below:

Average Bug Speed vs. Time

Current Bug Population

Bugs Caught

Discuss strategy with your partner. How did your strategy change as you got more familiar with the simulation? What did you change/learn to do to hunt better? Was there anything different about hunting with the “show color” option checked compared to when it was not checked?

Make a hypothesis about the role of color vision in the predators for this simulation. Do you think color vision would increase or decrease a predator’s fitness? Why?

Use your graphs to discuss what the bug population will look like in the future. Use specific data to support your ideas.