LAB EXPLORATIONS: ADAPTATION
Download (if you have not already done so)
http://www.shodor.org/~rpanoff/CS150/NetLogoModels/PepperedMothsRev.nlogo

For each of these explorations, you will need to run the simulation many times (at least 10) to determine the range, variation, and/or pattern of behavior. You should record systematically in your notebook sufficient *quantitative and qualitative* observations so that you have enough information to reflect upon.

Explorations 1-3 all have: set selection to 0, cycle pollution is off.

1. Set initial number of moths to 200, set mutation to 0, keep pollution at 0.
    a. Run the model ***at least*** 10 times, with each run long enough to observe the "long range behavior." Before hitting "go" record the initial percentages of the moth populations (light, medium, dark). What do you observe about the relative moth populations? Do you see a pattern that would allow you to predict the long range behavior?

2. Repeat exploration 1, except set mutation to 15.

3. Repeat exploration 2, for pollution = 25%, 50%, 75%, 100%

Explorations 4-7 all have N=200, cycle pollution is off

4. Set mutation to 0. Set selection to 100. For each pollution level, run the model a sufficient number of times to determine the long range behavior:
   Pollution = 0%, 10%, 20%, 50%, 75%, 100%

5. Repeat exploration 4, except set mutation to 15

6. Repeat exploration 5, except set selection to 25

7. Repeat exploration 6, except set selection to 50

8. Before hitting set up: Set selection to 50. Set mutation to 15. Find the value of pollution that produces approximately matching behavior for the LIGHT and MEDIUM moths. (remember you can adjust the speed to make the *pollute* and *clean-up* buttons more or less sensitive).

9. Before hitting set up: Turn cycle pollution on. Set selection to 50, set mutation to 15, set speed to 5. Run the model to observe the long range behavior. What do you observe about the dominant color of moths as the pollution level changes?

10. Repeat Exploration 9, except set selection to 25. Run the model to observe the long range behavior. What do you observe about the dominant color of moths as the pollution level changes?