Module 5B
Advanced NetLogo Presenter’s Guide

In the initial NetLogo module, participants
- Learned about the agent modeling
- Explored the NetLogo platform and a variety of models
- Modified parts of a model
- Built a simple model from scratch

The intent of this module is to build a deeper familiarity with the NetLogo modeling tool. When completed, the participants should feel comfortable looking at the code of a model and making significant changes to adapt the model for their instructional purposes. Some participants may feel that they are capable of building a model from scratch.

To accomplish this, we will
- Examine a series of pre-built models, moving from simple to complex
- Examine the model
  - discussing instructional ideas for the model as is, and
  - identifying other concepts that might be illustrated with small changes to the model
- Build a complex model starting with a simple one

The Simplest Model – One Breed, standing still

Have participants work in pairs, with computers side-by-side. Both participants should open NetLogo and then one should open the Simple Decay model (available on the CAST website) and the other should open the Decay model that is found in the NetLogo Models Library (under Chemistry & Physics → Decay). Ask the participants to run each model, more than once if necessary.

What are similarities between the models? Differences? Focus the questions on choices allowed the user and output information (graphs and images).

Now look at the program itself (a handout with side-by-side programs is provided). Also be sure to look at the code beneath the plots on each model. This is not printed out in the handout.

Section by section, discuss the differences. What is gained or lost by the choices each programmer made? Discuss the validity of the models.

Add some movement

Next have participants look at some models where agents move, but still do not interact. Two simple examples are Protein Gel and Basic Population Sampling. Others listed in the Overview have more complicated user interactions. Have participants “Divide-and-conquer” and look at the models. In particular, they should look at the “go” process and see how the agents are asked to move. Is it random or directed? Are there any other events and how are they handled? Stop and discuss.
Agent interaction

Most NetLogo models feature some kind of interaction between the agents. Have participants recall or revisit the Pollination model. This is the simplest case, in that only one agent is moving and interacting with stationary agents. Several models in the NetLogo library are extensions of this, where the user is the “moving” agent.

Models get more complex when all the agents are moving and have different attributes or are of different breeds. Finally, the type of interaction can be fairly complicated, as in many of the GasLab and chemistry reactions, where there are conservation of energy, momentum and angle calculations as well as checks to see if the correct number of agents are present.

Have participants look at some examples of these models, noting how the interactions are handled. Have each participant choose one and “decode”: how many breeds, what are the properties of the breeds, how is interaction “controlled” and what happens when the agents interact?

Putting it All Together

Now we will build a food web model to illustrate the various types of models we have looked at.

Work through the “One Fish, Two Fish...” handout.